S

Siemens Industrial Services

A business of
Siemens Energy and Automation, Inc.

LOW VOLTAGE CIRCUIT BREAKER TEST REPORT

Customer	SM Electric	**Location**	Newark Airport Terminal B		
Substation	EMDS-North	**Feeder/Cubicle**	NB / Section #1	**Unique ID**	

Nameplate Data

Manufacturer	Siemens	**Charging Motor / Solenoid Voltage:**	NA	**Trip Unit: Type**	
Type / Model	SCLD6-A			**Style/Model**	NA
Bolted - or- Draw-out	Bolted	**Close Coil Voltage:**	NA	**Plug Rating**	600 amp
Shop Order/Serial Number		**Trip Coil Voltage:**	NA	**Sensor Rating/Tap**	600 amp
Frame Size/Rating	600 amp			**Timing Curve/Plot**	NA
Interrupting Rating	100 ka	**UV Device**	No	**Limiter: Type**	NA
Voltage Rating	600 volt			**Manuf.**	NA
		Test Position [Y/N]	N	**Rating**	NA

Trip Unit Settings

	As Found	As Left		As Found	As Left
Long Delay PU	100 %	100 %	**Long Time Delay**	25 sec	25 sec
Short Delay PU	1.5	1.5	**Short Time Delay**	.05	.05
Ground Fault PU	20 %	20 %	**Ground Fault Delay**	.1s	.1s
Instantaneous PU	2.0	2.0	**Other**	NA	NA

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	NA

Inspection

Main Contact Condition./Align.	A	**Control Wiring**	A
Arcing Contact Condition./Align.	A	**Primary Fingers**	A
Arc Chute Condition	A	**Frame Condition**	A
Open Close Indicator	A	**Secondary Contacts**	A
Lubrication	A	**Breaker Cleanliness**	A
Mechanical Condition	A	**Manual Close and Trip**	A
Insulation	A	**Electrical Close and Trip**	NA
Control Aux. And Interlocks	A	**Rack and D/O Mech.**	NA

CODE LEGEND
A= Like New Condition
B= Good Condition
C= Poor Condition Requires Correction
D= Corrections Made
E= Unacceptable Condition Do Not Use!
R= Reconditioned
NA= Not Applicable

Electrical Tests

☐ Primary Injection ☒ Secondary Injection

Function	(Test) Settings		Good	Fail						
LDPU	100%		Yes							
LTD	25		Yes							
SDPU	1.5		Yes							
STD	.05		Yes							
INSTPU	2.0		Yes							
GFPU	20 %		Yes							
GFD	.1s		Yes							

NPU = NO PICKUP; NT = NO TRIP; NTD = NO TIME DEL

Insulation Resistance (in GIG-Ohms) @ 1k VDC

As Found						As Left					
A-G		A-B		A-A	100	A-G		A-B		A-A	100
B-G		B-C		B-B	100	B-G		B-C		B-B	100
C-G		C-A		C-C	100	C-G		C-A		C-C	100

Contact Resistance (Microhms)

As Found		As Left	
A	199	A	199
B	200	B	200
C	200	C	200

Comments

Satisfactory for Continued Service	Yes	**Requires Repair**	NO	**Repairs Made During Maintenance**	*YES

Job No	5200-224524	**Tested By**	Ralph Walkowicz	**Date Tested**	3/10/11	**ID#**	

182 Forbes Road
Braintree, MA. 02184

S

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LOW VOLTAGE CIRCUIT BREAKER TEST REPORT

Customer	SM Electric	**Location**	Newark Airport Terminal B		
Substation	EMDS-North	**Feeder/Cubicle**	Section #3	**Unique ID**	

Nameplate Data

Manufacturer	Siemens	**Charging Motor / Solenoid Voltage:**	120 volt ac	**Trip Unit: Type**	ETU776
Type / Model	WLC3F340	**Close Coil Voltage:**	120 volt ac	**Style/Model**	NA
Bolted - or- Draw-out	Bolted	**Trip Coil Voltage:**	120 volt ac	**Plug Rating**	4000 amp
Shop Order/Serial Number	ID# 4001281211032			**Sensor Rating/Tap**	4000 amp
Frame Size/Rating	4000 amp			**Timing Curve/Plot**	NA
Interrupting Rating	100 ka	**UV Device**	No	**Limiter: Type**	NA
Voltage Rating	600 volt			**Manuf.**	NA
		Test Position [Y/N]	N	**Rating**	NA

Trip Unit Settings

	As Found	As Left		As Found	As Left
Long Delay PU	4000 amp	4000 amp	**Long Time Delay**	10 sec	10 sec
Short Delay PU	8000 amp	8000 amp	**Short Time Delay**	400 ms	400 ms
Ground Fault PU	1200 amp	1200 amp	**Ground Fault Delay**	500 ms	500 ms
Instantaneous PU	150000	150000	**Other**	NA.	NA

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	NA

Inspection

Main Contact Condition./Align.	A	**Control Wiring**	A
Arcing Contact Condition./Align.	A	**Primary Fingers**	A
Arc Chute Condition	A	**Frame Condition**	A
Open Close Indicator	A	**Secondary Contacts**	A
Lubrication	A	**Breaker Cleanliness**	A
Mechanical Condition	A	**Manual Close and Trip**	A
Insulation	A	**Electrical Close and Trip**	A
Control Aux. And Interlocks	A	**Rack and D/O Mech.**	NA

CODE LEGEND
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D= Corrections Made
E= Unacceptable Condition Do Not Use!
R= Reconditioned
NA= Not Applicable

Electrical Tests

☐ Primary Injection ☒ Secondary Injection

Function	(Test) Settings		Good	Fail						
LDPU	4000 amp		Yes							
LTD	10 sec		Yes							
SDPU	8000 amp		Yes							
STD	400 ms		Yes							
INSTPU	10000		Yes							
GFPU	1200 amp		Yes							
GFD	500 ms		Yes							

NPU = NO PICKUP; NT = NO TRIP; NTD = NO TIME DEL

Insulation Resistance (in GIG-Ohms) @ 1k VDC

As Found						As Left					
A-G	100	A-B	100	A-A	100	A-G	100	A-B	100	A-A	100
B-G	100	B-C	100	B-B	100	B-G	100	B-C	100	B-B	100
C-G	100	C-A	100	C-C	100	C-G	100	C-A	100	C-C	100

Contact Resistance (Microhms)

As Found		As Left	
A	*166	A	25
B	*65	B	43
C	*41	C	40

Comments

Satisfactory for Continued Service	Yes	**Requires Repair**	NO	**Repairs Made During Maintenance**	*YES

* Contacts on breaker cleaned

Job No	5200-224524	**Tested By**	Ralph Walkowicz	**Date Tested**	3/10/11	**ID#**	

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Siemens Industrial Services

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LOW VOLTAGE CIRCUIT BREAKER TEST REPORT

Customer	SM Electric	**Location**	Newark Airport Terminal B		
Substation	EMDS-North	**Feeder/Cubicle**	Section # 2	**Unique ID**	

Nameplate Data

Manufacturer	Siemens	**Charging Motor / Solenoid Voltage:**	120 volt ac	**Trip Unit: Type**	ETU776
Type / Model	WLC3F340	**Close Coil Voltage:**	120 volt ac	**Style/Model**	NA
Bolted - or- Draw-out	Bolted	**Trip Coil Voltage:**	120 volt ac	**Plug Rating**	4000 amp
Shop Order/Serial Number	ID# 4001281211031			**Sensor Rating/Tap**	4000 amp
Frame Size/Rating	4000 amp			**Timing Curve/Plot**	NA
Interrupting Rating	100 ka	**UV Device**	No	**Limiter: Type**	NA
Voltage Rating	600 volt			**Manuf.**	NA
		Test Position [Y/N]	N	**Rating**	NA

Trip Unit Settings

	As Found	As Left		As Found	As Left
Long Delay PU	4000 amp	4000 amp	**Long Time Delay**	10 sec	10 sec
Short Delay PU	8000 amp	8000 amp	**Short Time Delay**	400 ms	400 ms
Ground Fault PU	1200 amp	1200 amp	**Ground Fault Delay**	500 ms	500 ms
Instantaneous PU	150000	150000	**Other**	NA	NA

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	NA

Inspection

Main Contact Condition./Align.	A	**Control Wiring**	A
Arcing Contact Condition./Align.	A	**Primary Fingers**	A
Arc Chute Condition	A	**Frame Condition**	A
Open Close Indicator	A	**Secondary Contacts**	A
Lubrication	A	**Breaker Cleanliness**	A
Mechanical Condition	A	**Manual Close and Trip**	A
Insulation	A	**Electrical Close and Trip**	A
Control Aux. And Interlocks	A	**Rack and D/O Mech.**	NA

CODE LEGEND
A= Like New Condition
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C= Poor Condition Requires Correction
D= Corrections Made
E= Unacceptable Condition Do Not Use!
R= Reconditioned
NA= Not Applicable

Electrical Tests

☐ Primary Injection ☒ Secondary Injection

Function	(Test) Settings		Good	Fail						
LDPU	4000 amp		Yes							
LTD	10 sec		Yes							
SDPU	8000 amp		Yes							
STD	400 ms		Yes							
INSTPU	10000		Yes							
GFPU	1200 amp		Yes							
GFD	500 ms		Yes							

NPU = NO PICKUP; NT = NO TRIP; NTD = NO TIME DEL

Insulation Resistance (in GIG-Ohms) @ 1k VDC											
As Found						As Left					
A-G	100	A-B	100	A-A	100	A-G	100	A-B	100	A-A	100
B-G	100	B-C	100	B-B	100	B-G	100	B-C	100	B-B	100
C-G	100	C-A	100	C-C	100	C-G	100	C-A	100	C-C	100

Contact Resistance (Microhms)			
As Found		As Left	
A	39	A	39
B	54	B	54
C	29	C	29

Comments

Satisfactory for Continued Service	Yes	**Requires Repair**	NO	**Repairs Made During Maintenance**	*YES

Job No	5200-224524	**Tested By**	Ralph Walkowicz	**Date Tested**	3/10/11	**ID#**	

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LOW VOLTAGE CIRCUIT BREAKER TEST REPORT

Customer	SM Electric	**Location**	Newark Airport Terminal B		
Substation	EMDS-North	**Feeder/Cubicle**	NB / Section #1	**Unique ID**	

Nameplate Data

Manufacturer	Siemens	**Charging Motor / Solenoid Voltage:**	NA	**Trip Unit: Type**	
Type / Model	SCLD6-A			**Style/Model**	NA
Bolted - or- Draw-out	Bolted	**Close Coil Voltage:**	NA	**Plug Rating**	600 amp
Shop Order/Serial Number		**Trip Coil Voltage:**	NA	**Sensor Rating/Tap**	600 amp
Frame Size/Rating	600 amp			**Timing Curve/Plot**	NA
Interrupting Rating	100 ka	**UV Device**	No	**Limiter: Type**	NA
Voltage Rating	600 volt			**Manuf.**	NA
		Test Position [Y/N]	N	**Rating**	NA

Trip Unit Settings

	As Found	As Left		As Found	As Left
Long Delay PU	100 %	100 %	**Long Time Delay**	25 sec	25 sec
Short Delay PU	1.5	1.5	**Short Time Delay**	.05	.05
Ground Fault PU	20 %	20 %	**Ground Fault Delay**	.1s	.1s
Instantaneous PU	2.0	2.0	**Other**	NA	NA

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	NA

Inspection

Main Contact Condition./Align.	A	**Control Wiring**	A
Arcing Contact Condition./Align.	A	**Primary Fingers**	A
Arc Chute Condition	A	**Frame Condition**	A
Open Close Indicator	A	**Secondary Contacts**	A
Lubrication	A	**Breaker Cleanliness**	A
Mechanical Condition	A	**Manual Close and Trip**	A
Insulation	A	**Electrical Close and Trip**	NA
Control Aux. And Interlocks	A	**Rack and D/O Mech.**	NA

CODE LEGEND
A= Like New Condition
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D= Corrections Made
E= Unacceptable Condition Do Not Use!
R= Reconditioned
NA= Not Applicable

Electrical Tests

☐ Primary Injection ☒ Secondary Injection

Function	(Test) Settings		Good	Fail						
LDPU	100%		Yes							
LTD	25		Yes							
SDPU	1.5		Yes							
STD	.05		Yes							
INSTPU	2.0		Yes							
GFPU	20 %		Yes							
GFD	.1s		Yes							

NPU = NO PICKUP; NT = NO TRIP; NTD = NO TIME DEL

Insulation Resistance (in GIG-Ohms) @ 1k VDC

As Found						As Left					
A-G		A-B		A-A	100	A-G		A-B		A-A	100
B-G		B-C		B-B	100	B-G		B-C		B-B	100
C-G		C-A		C-C	100	C-G		C-A		C-C	100

Contact Resistance (Microhms)

As Found		As Left	
A	199	A	199
B	200	B	200
C	200	C	200

Comments

Satisfactory for Continued Service	Yes	**Requires Repair**	NO	**Repairs Made During Maintenance**	*YES

Job No	5200-224524	**Tested By**	Ralph Walkowicz	**Date Tested**	3/10/11	**ID#**	

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S

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LOW VOLTAGE CIRCUIT BREAKER TEST REPORT

Customer	SM Electric	**Location**	Newark Airport Terminal B		
Substation	EMDS-North	**Feeder/Cubicle**	NA / Section #1.	**Unique ID**	

Nameplate Data

Manufacturer	Siemens	**Charging Motor / Solenoid Voltage:**	NA	**Trip Unit: Type**	
Type / Model	SCLD6-A	**Close Coil Voltage:**	NA	**Style/Model**	NA
Bolted - or- Draw-out	Bolted	**Trip Coil Voltage:**	NA	**Plug Rating**	500 amp
Shop Order/Serial Number				**Sensor Rating/Tap**	500 amp
Frame Size/Rating	500 amp			**Timing Curve/Plot**	NA
Interrupting Rating	100 ka	**UV Device**	No	**Limiter: Type**	NA
Voltage Rating	600 volt			**Manuf.**	NA
		Test Position [Y/N]	N	**Rating**	NA

Trip Unit Settings

	As Found	As Left		As Found	As Left
Long Delay PU	100 %	100 %	**Long Time Delay**	25 sec	25 sec
Short Delay PU	1.5	1.5	**Short Time Delay**	.05	.05
Ground Fault PU	20 %	20 %	**Ground Fault Delay**	.1s	.1s
Instantaneous PU	2.0	2.0	**Other**	NA	NA

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	NA

Inspection

Main Contact Condition./Align.	A	**Control Wiring**	A
Arcing Contact Condition./Align.	A	**Primary Fingers**	A
Arc Chute Condition	A	**Frame Condition**	A
Open Close Indicator	A	**Secondary Contacts**	A
Lubrication	A	**Breaker Cleanliness**	A
Mechanical Condition	A	**Manual Close and Trip**	A
Insulation	A	**Electrical Close and Trip**	NA
Control Aux. And Interlocks	A	**Rack and D/O Mech.**	NA

CODE LEGEND
A= Like New Condition
B= Good Condition
C= Poor Condition Requires Correction
D= Corrections Made
E= Unacceptable Condition Do Not Use!
R= Reconditioned
NA= Not Applicable

Electrical Tests

☐ Primary Injection ☒ Secondary Injection

Function	(Test) Settings		Good	Fail						
LDPU	100%		Yes							
LTD	25		Yes							
SDPU	1.5		Yes							
STD	.05		Yes							
INSTPU	2.0		Yes							
GFPU	20 %		Yes							
GFD	.1s		Yes							

NPU = NO PICKUP; NT = NO TRIP; NTD = NO TIME DEL

Insulation Resistance (in GIG-Ohms) @ 1k VDC

As Found						As Left					
A-G		A-B		A-A	100	A-G		A-B		A-A	100
B-G		B-C		B-B	100	B-G		B-C		B-B	100
C-G		C-A		C-C	100	C-G		C-A		C-C	100

Contact Resistance (Microhms)

As Found		As Left	
A	238	A	238
B	199	B	199
C	203	C	203

Comments

Satisfactory for Continued Service	Yes	**Requires Repair**	NO	**Repairs Made During Maintenance**	*YES

Job No.	5200-224524	**Tested By**	Ralph Walkowicz	**Date Tested**	3/10/11	**ID#**	

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S

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SWITCHGEAR TEST REPORT

Customer:	SM Electric	**Location:**	Newark Airport		
Substation:	EMDS-North	**Switchgear Designation:**	EMDS-North	**Unique ID:**	

Nameplate Data

Manufacturer:	Siemens	**Type:**	3 phase, 4 wire
Serial No.:	SO# 86095-R20	**Current Rating:**	4000 amp
Voltage Rating:	480 volt	**Bus Fault Rating:**	150 ka

Inspection

Cell Heaters:	NA	**Key Interlocks:**	NA
Meter & Control Switches:	B	**Pilot Light:**	NA
Wiring:	B	**Terminal Blocks:**	B
Fuse & Fuse Blocks:	B	**Stationary Contact Bottles:**	NA
Ground Bus:	B	**Tracking / Corona:**	B
Bus Supports:	B	**Joint Insulation:**	B
Terminations:	B	**General Hardware:**	B
Paint – Inside & Outside:	B	**PT / CPT Compartment**	B

CODE LEGEND
A= Like New Condition
B= Good Condition
C= Poor Condition Requires Correction
D= Corrections Made
E= Unacceptable Condition Do Not Use!
NA= Not Applicable

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean / Dirty	clean
Wet / Damp / Dry	dry
Temp (Degree C)	
Relative Humidity (%)	

Electrical Tests

Insulation Resistance

Readings in Mega-Ohms @ 1k VDC

A-B	100 Gig ohms	B-C	100 Gig ohms	C-A	100 Gig ohms
A-G	100 Gig ohms	B-G	100 Gig ohms	C-G	100 Gig ohms

Ductor Test

Readings in micro-ohms @ 100amps

Section 1	Section 2S	Section 2	Section 3S	Section 3	Section 4 to1	
A-A =45	A-A =9	A-A =46	A-A =8	A-A =25	A-A =70	
B-B =36	B-B =8	B-B =39	B-B =7	B-B =43	B-B =66	
C-C =34	C-C =8	C-C =49	C-C =8	C-C =40	CC =57	
N-N =20	N-N =11	N-N =42	N-N =9	N-N =37	N-N =48	

COMMENTS:

Section # 1 reading: From the vertical bus to the horizontal bus.
Section #2S reading: From the bus duct through the splice plate connections to the vertical bus on the top of the breaker.
Section #2 readings: From the top of the breaker in section #2 to the horizontal bus in the front of section #4.
Section #3S reading: From the bus duct through the splice plate connections to the vertical us on the top of the breaker.
Section #3 readings: From the top of the breaker in sections #3 to the horizontal bus in the front of section #4.
Section #4 to #1 readings: From the front vertical bus in section #4 to the vertical bus in section #1.
Bus duct spice plates had been sent out for replating.
Based on the results the gear appears to be good for continued service.

Satisfactory for Continued Service	Yes	**Requires Repair**	No	**Repairs Made During Maintenance**	Yes
Job No:	5200-224524	**Tested By:**	Ralph Walkowicz	**Date Tested**	3/10/11
ID #					

182 Forbes Road
Braintree, Ma. 02184

Lochard, Daniel

From: Winkler, Eric [E.Winkler@vrhcorp.com]
Sent: Tuesday, February 15, 2011 3:21 PM
To: Nunez, Daniel; Lochard, Daniel
Subject: Fw: Switchgear NB Test Reports - Seimens & Scott Testing
Attachments: S11-1157.1.pdf; EDS0P01C_EXCHANGE_02142011-134349.pdf

---

From: Russ Elliott <russ.elliott@smelectric.com>
To: Winkler, Eric
Cc: Don Sapanara <don.sapanara@smelectric.com>
Sent: Tue Feb 15 15:16:37 2011
Subject: Switchgear NB Test Reports - Seimens & Scott Testing

Eric,

See attached files.

Thank you,

Russ Elliott
S.M. Electric Co., Inc.
at Newark Airport

Phone: 1-973-622-1470
Fax: 1-973-622-1471
Cell: 1-732-904-2354

SIEMENS Industry

To: Don Sapanara
SM Electric

February 14, 2011

From: Allan Worthy

CC: Doris Schornstein
Barry Powell
Ernie Braunschweig

Subject: Newark Airport Substation NB LVS Warranty Certification
(Siemens S.O.# 86095 – SAP # 3001295712)

Effective today (2/14/2011), the factory warranty for the Newark Airport Terminal B Substation NB low voltage switchgear supplied by Siemens Industry, Inc. is reinstated and with the purchase of the warranty extension previously consummated, will remain in effect until 2/14/2015.

The inspection, testing and refurbishment of the Substation NB low voltage switchgear was successfully completed and the results of the inspection and testing are detailed in a separate report that will accompany this letter.

The terms and conditions of the reinstated and extended factory warranty are the same as those detailed in the original warranty documentation.

Regards

Allan Worthy
Product Manager
Low Voltage Switchgear

Siemens Industry, Inc
5400 Triangle Parkway
Norcross, GA 30092
USA
Tel.: (770)326-2000
www.usa.siemens.com

SIEMENS

Siemens Industrial Services

A business of
Siemens Energy and Automation, Inc.

SWITCHGEAR TEST REPORT

Customer:	SM Electric	**Location:**	Newark Airport		
Substation:	NB	**Switchgear Designation:**	NB	**Unique ID:**	

Nameplate Data

Manufacturer:	Siemens	**Type:**	3 phase, 4 wire
Serial No.:	SO# 86095-R20	**Current Rating:**	4000 amp
Voltage Rating:	480 volt	**Bus Fault Rating:**	150 ka

Inspection

Cell Heaters:	B	**Key Interlocks:**	NA
Meter & Control Switches:	B	**Pilot Light:**	B
Wiring:	B	**Terminal Blocks:**	B
Fuse & Fuse Blocks:	B	**Stationary Contact Bottles:**	NA
Ground Bus:	B	**Tracking / Corona:**	B
Bus Supports:	B	**Joint Insulation:**	B
Terminations:	B	**General Hardware:**	B
Paint – Inside & Outside:	B	**PT / CPT Compartment**	B

CODE LEGEND
A= Like New Condition
B= Good Condition
C= Poor Condition Requires Correction
D= Corrections Made
E= Unacceptable Condition Do Not Use!
NA= Not Applicable

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean / Dirty	clean
Wet / Damp / Dry	dry
Temp (Degree C)	
Relative Humidity (%)	

Electrical Tests

Insulation Resistance

Readings in Mega-Ohms @ 1k VDC

A-B	2 Gig ohms	B-C	2 Gig ohms	C-A	100 Gig ohms
A-G	100 Gig ohms	B-G	100 Gig ohms	C-G	100 Gig ohms

Ductor Test

Readings in micro-ohms @ 100amps

Section 1	Section 2	Section 3	Section 4	Section 5	Section 6	Section 1-7
A-A =37	A-A =111	A-A =3	A-A =55	A-A =96	A-A =96	
B-B =36	B-B =109	B-B =3	B-B =58	B-B =102	B-B =101	
C-C =37	C-C =111	C-C =8	C-C =59	C-C =104	CC =102	
N-N =30	N-N =21	N-N =21	N-N =11	N-N =11	N-N =11	N-N =95

COMMENTS:

Section # 1 reading : From the bus duct through the splice plate connections to rear horizontal bus in section #2.
Section #1 neutral reading : From the bus duct through the splice plate connections to section #2 left horizontal neutral bus.
Section #2 readings : From the load side of the main breaker bus in section #2 to the bus duct connection in section #3 through one breaker.
Section #2 neutral reading : From the bus duct through the splice plate connections to the rear horizontal neutral bus.
Section #3 readings : From the bus duct through the splice plate connections.
Section #3 neutral reading : From the bus duct through the splice plate connections to the rear horizontal neutral bus.
Section #4 readings : From the bus duct splice plate connection to the lower section #2 breaker load connection .
Section #4 neutral reading : From the horizontal neutral bus in section #4 to the rear horizontal neutral bus.
Section #5 readings : From the bus duct through the spice plate to the load side of one breaker in section #7.
Section #5 neutral reading : From the bus duct connection to the horizontal rear neutral bus .
Section #6 readings : From section #6 through 2 breakers (1 in section 6 and 1 in section 7) to load side of breaker in section #7.
Section #6 neutral reading : From the bus duct connection to the rear horizontal neutral bus.
Section #1-#7 neutral reading: From the rear horizontal neutral bus in section #1 to the bus duct neutral connection in section #7.
*Spice plates for bus duct connections were re-plated and are in good condition.

Satisfactory for Continued Service	Yes	**Requires Repair**	No	**Repairs Made During Maintenance**			
Job No:	5200-	**Tested By:**	Ralph Walkowicz	**Date Tested**	1/05/11	**ID #**	

182 Forbes Road
Braintree, Ma. 02184

SIEMENS

Siemens Industrial Services

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Siemens Energy and Automation, Inc.

LOW VOLTAGE CIRCUIT BREAKER TEST REPORT

Customer	SM Electric	**Location**	Newark Airport Terminal B		
Substation	NB	**Feeder/Cubicle**	SW-B2	**Unique ID**	

Nameplate Data

Manufacturer	Siemens	**Charging Motor / Solenoid Voltage:**	120 volt ac	**Trip Unit: Type**	ETU776
Type / Model	WLF2A3340	**Close Coil Voltage:**	120 volt ac	**Style/Model**	NA
Bolted - or- Draw-out	Draw-out	**Trip Coil Voltage:**	120 volt ac	**Plug Rating**	3200 amp
Shop Order/Serial Number	ID# 4001281003000			**Sensor Rating/Tap**	4000 amp
Frame Size/Rating	4000 amp			**Timing Curve/Plot**	NA
Interrupting Rating	85 ka	**UV Device**	No	**Limiter: Type**	NA
Voltage Rating	508 volt			**Manuf.**	NA
		Test Position [Y/N]	Y	**Rating**	NA

Trip Unit Settings

	As Found	As Left		As Found	As Left
Long Delay PU	3200 amp	3200 amp	**Long Time Delay**	2 sec	2 sec
Short Delay PU	14620 amp	9600 amp	**Short Time Delay**	400 ms	200 ms
Ground Fault PU	400 amp	900 amp	**Ground Fault Delay**	500 ms	200 ms
Instantaneous PU	41800	150000	**Other**	NA	NA

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	NA

Inspection

Main Contact Condition./Align.	A	**Control Wiring**	A
Arcing Contact Condition./Align.	A	**Primary Fingers**	A
Arc Chute Condition	A	**Frame Condition**	A
Open Close Indicator	A	**Secondary Contacts**	A
Lubrication	A	**Breaker Cleanliness**	A
Mechanical Condition	A	**Manual Close and Trip**	A
Insulation	A	**Electrical Close and Trip**	A
Control Aux. And Interlocks	A	**Rack and D/O Mech.**	A

CODE LEGEND
A= Like New Condition
B= Good Condition
C= Poor Condition Requires Correction
D= Corrections Made
E= Unacceptable Condition Do Not Use!
R= Reconditioned
NA= Not Applicable

Electrical Tests

☐ Primary Injection ☒ Secondary Injection

Function	(Test) Settings		Good	Fail						
LDPU	3200 amp		Yes							
LTD	2 sec		Yes							
SDPU	9600 amp		Yes							
STD	200 ms		Yes							
INSTPU	150000		Yes							
GFPU	900 amp		Yes							
GFD	200 ms		Yes							

NPU = NO PICKUP; NT = NO TRIP; NTD = NO TIME DEL

Insulation Resistance (in GIG-Ohms) @ 1k VDC

As Found						As Left					
A-G	100	A-B	100	A-A	100	A-G	100	A-B	100	A-A	100
B-G	100	B-C	100	B-B	100	B-G	100	B-C	100	B-B	100
C-G	100	C-A	100	C-C	100	C-G	100	C-A	100	C-C	100

Contact Resistance (Microhms)

As Found		As Left	
A	11	A	11
B	10	B	10
C	10	C	10

Comments

Satisfactory for Continued Service	Yes	**Requires Repair**	NO	**Repairs Made During Maintenance**	*YES

* Rocker arm for charging motor switch replaced.

Job No	5200-224524	**Tested By**	Ralph Walkowicz	**Date Tested**	1/6/11	**ID#**	

182 Forbes Road
Braintree, MA. 02184

SIEMENS

Siemens Industrial Services

A business of
Siemens Energy and Automation, Inc.

LOW VOLTAGE CIRCUIT BREAKER TEST REPORT

Customer	SM Electric	**Location**	Newark Airport Terminal B		
Substation	NB	**Feeder/Cubicle**	Main breaker	**Unique ID**	

Nameplate Data

Manufacturer	Siemens	**Charging Motor / Solenoid Voltage:**	120 volt ac	**Trip Unit: Type**	ETU776
Type / Model	WLM3A340	**Close Coil Voltage:**	120 volt ac	**Style/Model**	NA
Bolted - or- Draw-out	Draw-out	**Trip Coil Voltage:**	120 volt ac	**Plug Rating**	4000 amp
Shop Order/Serial Number	ID# 4001281002028			**Sensor Rating/Tap**	4000 amp
Frame Size/Rating	4000 amp			**Timing Curve/Plot**	NA
Interrupting Rating	150 ka	**UV Device**	No	**Limiter: Type**	NA
Voltage Rating	508 volt			**Manuf.**	NA
		Test Position [Y/N]	Y	**Rating**	NA

Trip Unit Settings

	As Found	As Left		As Found	As Left
Long Delay PU	1600 amp	4000 amp	**Long Time Delay**	2 sec	2 sec
Short Delay PU	5000 amp	12000 amp	**Short Time Delay**	20 ms	300 ms
Ground Fault PU	400 amp	1200 amp	**Ground Fault Delay**	100 ms	300 ms
Instantaneous PU	6000	150000	**Other**	NA	NA

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	NA

Inspection

Main Contact Condition./Align.	A	**Control Wiring**	A
Arcing Contact Condition./Align.	A	**Primary Fingers**	A
Arc Chute Condition	A	**Frame Condition**	A
Open Close Indicator	A	**Secondary Contacts**	A
Lubrication	A	**Breaker Cleanliness**	A
Mechanical Condition	A	**Manual Close and Trip**	A
Insulation	A	**Electrical Close and Trip**	A
Control Aux. And Interlocks	A	**Rack and D/O Mech.**	A

CODE LEGEND
A= Like New Condition
B= Good Condition
C= Poor Condition Requires Correction
D= Corrections Made
E= Unacceptable Condition Do Not Use!
R= Reconditioned
NA= Not Applicable

Electrical Tests

☐ Primary Injection ☒ Secondary Injection

Function	(Test) Settings		Good	Fail						
LDPU	4000 amp		Yes							
LTD	2 sec		Yes							
SDPU	8000 amp		Yes							
STD	300 ms		Yes							
INSTPU	1500000		Yes							
GFPU	1200 amp		Yes							
GFD	300 ms		Yes							

NPU = NO PICKUP; NT = NO TRIP; NTD = NO TIME DEL

Insulation Resistance (in GIG-Ohms) @ 1k VDC

As Found						As Left					
A-G	100	A-B	100	A-A	100	A-G	100	A-B	100	A-A	100
B-G	100	B-C	100	B-B	100	B-G	100	B-C	100	B-B	100
C-G	100	C-A	100	C-C	100	C-G	100	C-A	100	C-C	100

Contact Resistance (Microhms)

As Found		As Left	
A	87	A	35
B	75	B	36
C	138	C	35

Comments

Satisfactory for Continued Service	Yes	**Requires Repair**	NO	**Repairs Made During Maintenance**	Yes

* New trip unit installed in this breaker.

Job No	5200-224524	**Tested By**	Ralph Walkowicz	**Date Tested**	1/05/11	**ID#**	

182 Forbes Road
Braintree, MA. 02184

SIEMENS

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LOW VOLTAGE CIRCUIT BREAKER TEST REPORT

Customer	SM Electric	**Location**	Newark Airport Terminal B		
Substation	NB	**Feeder/Cubicle**	ATS-Life Safety	**Unique ID**	

Nameplate Data

Manufacturer	Siemens	**Charging Motor / Solenoid Voltage:**	120 volt ac	**Trip Unit: Type**	ETU776
Type / Model	WLF2A308	**Close Coil Voltage:**	120 volt ac	**Style/Model**	NA
Bolted - or- Draw-out	Draw-out	**Trip Coil Voltage:**	120 volt ac	**Plug Rating**	600 amp
Shop Order/Serial Number	ID# 4001281002025			**Sensor Rating/Tap**	800 amp
Frame Size/Rating	800 amp			**Timing Curve/Plot**	NA
Interrupting Rating	200 ka	**UV Device**	No	**Limiter: Type**	NA
Voltage Rating	508 volt			**Manuf.**	NA
		Test Position [Y/N]	Y	**Rating**	NA

Trip Unit Settings

	As Found	As Left		As Found	As Left
Long Delay PU	600 amp	600 amp	**Long Time Delay**	10 sec	2 sec
Short Delay PU	6850 amp	3600 amp	**Short Time Delay**	400 ms	100 ms
Ground Fault PU	100 amp	300 amp	**Ground Fault Delay**	100 ms	200 ms
Instantaneous PU	200000	200000	**Other**	NA	NA

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	NA

Inspection

Main Contact Condition./Align.	A	**Control Wiring**	A
Arcing Contact Condition./Align.	A	**Primary Fingers**	A
Arc Chute Condition	A	**Frame Condition**	A
Open Close Indicator	A	**Secondary Contacts**	A
Lubrication	A	**Breaker Cleanliness**	A
Mechanical Condition	A	**Manual Close and Trip**	A
Insulation	A	**Electrical Close and Trip**	A
Control Aux. And Interlocks	A	**Rack and D/O Mech.**	A

CODE LEGEND
A= Like New Condition
B= Good Condition
C= Poor Condition Requires Correction
D= Corrections Made
E= Unacceptable Condition Do Not Use!
R= Reconditioned
NA= Not Applicable

Electrical Tests

☐ Primary Injection ☒ Secondary Injection

Function	(Test) Settings		Good	Fail						
LDPU	600 amp		Yes							
LTD	2 sec		Yes							
SDPU	3600 amp		Yes							
STD	100 ms		Yes							
INSTPU	2000000		Yes							
GFPU	300 amp		Yes							
GFD	200 ms		Yes							

NPU = NO PICKUP; NT = NO TRIP; NTD = NO TIME DEL

Insulation Resistance (in GIG-Ohms) @ 1k VDC

As Found						As Left					
A-G	100	A-B	100	A-A	100	A-G	100	A-B	100	A-A	100
B-G	100	B-C	100	B-B	100	B-G	100	B-C	100	B-B	100
C-G	100	C-A	100	C-C	100	C-G	100	C-A	100	C-C	100

Contact Resistance (Microhms)

As Found		As Left	
A	55	A	55
B	49	B	49
C	55	C	55

Comments

Satisfactory for Continued Service	Yes	**Requires Repair**	NO	**Repairs Made During Maintenance**	*Yes

Fuse readings:
Phase A = 24 micro-ohms Phase B = 25 micro-ohms Phase C = 24 micro-ohms
*Repaired rocker arm for charging motor switch.

Job No	5200-224524	**Tested By**	Ralph Walkowicz	**Date Tested**	1/5/11	**ID#**	

182 Forbes Road
Braintree, MA. 02184

SIEMENS

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LOW VOLTAGE CIRCUIT BREAKER TEST REPORT

Customer	SM Electric	**Location**	Newark Airport Terminal B		
Substation	NB	**Feeder/Cubicle**	DP-NB	**Unique ID**	

Nameplate Data

Manufacturer	Siemens	**Charging Motor / Solenoid Voltage:**	120 volt ac	**Trip Unit: Type**	ETU776
Type / Model	WLF2A316	**Close Coil Voltage:**	120 volt ac	**Style/Model**	NA
Bolted - or- Draw-out	Draw-out	**Trip Coil Voltage:**	120 volt ac	**Plug Rating**	1200 amp
Shop Order/Serial Number	ID# 4001280930033			**Sensor Rating/Tap**	1600 amp
Frame Size/Rating	1600 amp			**Timing Curve/Plot**	NA
Interrupting Rating	200 ka	**UV Device**	No	**Limiter: Type**	NA
Voltage Rating	508 volt			**Manuf.**	NA
		Test Position [Y/N]	Y	**Rating**	NA

Trip Unit Settings

	As Found	As Left		As Found	As Left
Long Delay PU	1200 amp	1200 amp	**Long Time Delay**	2 sec	2 sec
Short Delay PU	12260amp	4800 amp	**Short Time Delay**	400 ms	100 ms
Ground Fault PU	100 amp	900 amp	**Ground Fault Delay**	500 ms	200 ms
Instantaneous PU	200000	200000	**Other**	NA	NA

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	NA

Inspection

Main Contact Condition./Align.	A	**Control Wiring**	A
Arcing Contact Condition./Align.	A	**Primary Fingers**	A
Arc Chute Condition	A	**Frame Condition**	A
Open Close Indicator	A	**Secondary Contacts**	A
Lubrication	A	**Breaker Cleanliness**	A
Mechanical Condition	A	**Manual Close and Trip**	A
Insulation	A	**Electrical Close and Trip**	A
Control Aux. And Interlocks	A	**Rack and D/O Mech.**	A

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C= Poor Condition Requires Correction
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E= Unacceptable Condition Do Not Use!
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NA= Not Applicable

Electrical Tests

☐ Primary Injection ☒ Secondary Injection

Function	(Test) Settings		Good	Fail						
LDPU	1200 amp		Yes							
LTD	2 sec		Yes							
SDPU	4800 amp		Yes							
STD	100 ms		Yes							
INSTPU	200000		Yes							
GFPU	900 amp		Yes							
GFD	200 ms		Yes							

NPU = NO PICKUP; NT = NO TRIP; NTD = NO TIME DEL

Insulation Resistance (in GIG-Ohms) @ 1k VDC

As Found						As Left					
A-G	100	A-B	100	A-A	100	A-G	100	A-B	100	A-A	100
B-G	100	B-C	100	B-B	100	B-G	100	B-C	100	B-B	100
C-G	100	C-A	100	C-C	100	C-G	100	C-A	100	C-C	100

Contact Resistance (Microhms)

As Found		As Left	
A	19	A	19
B	16	B	16
C	15	C	15

Comments

Satisfactory for Continued Service	Yes	**Requires Repair**	NO	**Repairs Made During Maintenance**	No

Fuse readings:
Phase A = 19 micro-ohms Phase B = 18 micro-ohms Phase C = 18 micro-ohms

Job No	5200-224524	**Tested By**	Ralph Walkowicz	**Date Tested**	1/6/11	**ID#**	

182 Forbes Road
Braintree, MA. 02184

SIEMENS

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LOW VOLTAGE CIRCUIT BREAKER TEST REPORT

Customer	SM Electric	**Location**	Newark Airport Terminal B		
Substation	NB	**Feeder/Cubicle**	Spare/3D	**Unique ID**	

Nameplate Data

Manufacturer	Siemens	**Charging Motor / Solenoid Voltage:**	120 volt ac	**Trip Unit: Type**	ETU776
Type / Model	WLF2A308	**Close Coil Voltage:**	120 volt ac	**Style/Model**	NA
Bolted - or- Draw-out	Draw-out	**Trip Coil Voltage:**	120 volt ac	**Plug Rating**	600 amp
Shop Order/Serial Number	ID# 4001281002027			**Sensor Rating/Tap**	800 amp
Frame Size/Rating	800 amp			**Timing Curve/Plot**	NA
Interrupting Rating	200 ka	**UV Device**	No	**Limiter: Type**	NA
Voltage Rating	508 volt			**Manuf.**	NA
		Test Position [Y/N]	Y	**Rating**	NA

Trip Unit Settings

	As Found	As Left		As Found	As Left
Long Delay PU	600 amp	600 amp	**Long Time Delay**	10 sec	10 sec
Short Delay PU	15330 amp	15330 amp	**Short Time Delay**	400 ms	400 ms
Ground Fault PU	800 amp	800 amp	**Ground Fault Delay**	500 ms	500 ms
Instantaneous PU	20000	20000	**Other**	NA	NA

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	NA

Inspection

Main Contact Condition./Align.	A	**Control Wiring**	A
Arcing Contact Condition./Align.	A	**Primary Fingers**	A
Arc Chute Condition	A	**Frame Condition**	A
Open Close Indicator	A	**Secondary Contacts**	A
Lubrication	A	**Breaker Cleanliness**	A
Mechanical Condition	A	**Manual Close and Trip**	A
Insulation	A	**Electrical Close and Trip**	A
Control Aux. And Interlocks	A	**Rack and D/O Mech.**	A

CODE LEGEND
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D= Corrections Made
E= Unacceptable Condition Do Not Use!
R= Reconditioned
NA= Not Applicable

Electrical Tests

☐ Primary Injection ☒ Secondary Injection

Function	(Test) Settings		Good	Fail						
LDPU	600 amp		Yes							
LTD	10 sec		Yes							
SDPU	15330 amp		Yes							
STD	400 ms		Yes							
INSTPU	20000		Yes							
GFPU	800 amp		Yes							
GFD	500 ms		Yes							

NPU = NO PICKUP; NT = NO TRIP; NTD = NO TIME DEL

Insulation Resistance (in GIG-Ohms) @ 1k VDC

As Found						As Left					
A-G	100	A-B	100	A-A	100	A-G	100	A-B	100	A-A	100
B-G	100	B-C	100	B-B	100	B-G	100	B-C	100	B-B	100
C-G	100	C-A	100	C-C	100	C-G	100	C-A	100	C-C	100

Contact Resistance (Microhms)

As Found		As Left	
A	46	A	46
B	54	B	54
C	39	C	39

Comments

Satisfactory for Continued Service	Yes	**Requires Repair**	NO	**Repairs Made During Maintenance**	*Yes

Fuse readings:
Phase A = 19 micro-ohms Phase B = 18 micro-ohms Phase C = 19 micro-ohms
*Repaired rocker arm for charging motor switch.

Job No	5200-224524	**Tested By**	Ralph Walkowicz	**Date Tested**	1/5/11	**ID#**	

182 Forbes Road
Braintree, MA. 02184

Scott Testing

1698 Fifth Street • E..ing, NJ • 08638 • Tel 609 882 2400 • Fax 609 882 5660

February 9, 2011

SM Electric Company, Inc.
601 New Brunswick Ave.
Rahway, NJ 07065

Attention: Russ Elliot

Reference: Acceptance testing of Switchgear NB and associated equipment.

STI Project #: S11-1157.1

Dear Mr. Elliot,

The services that you requested at the above referenced facility have been completed and two (2) copies of the report are enclosed for your reference and records. All testing was performed to conform to NETA and manufacturer standards and procedures.

Please see the following report for our test procedures, our findings, and any concerns or comments we may have.

We appreciate this opportunity to have been of service to you and look forward to supporting you with your future electrical testing and maintenance needs.

Please feel free to contact us if you have any questions or need anything additional.

Sincerely,

Kevin Cubberley
Field Service Technician
Scott Testing, Inc.

Scott Testing

1698 Fifth Street • Ewing, NJ • 08638 • Tel 609 882 2400 • Fax 609 882 5660

Test Procedures

Switchgear Inspection
The front and back compartments of the switchgear enclosure were opened, cleaned and inspected. Proper shutter operation was verified in all compartments. Primary receivers were cleaned and lubricated. Cable support, spacing and tightness of connections were verified. Proper heater operation was verified. No visible signs of tracking were observed. Control switches, instrumentation and indicator lights were checked for proper operation. The bus was Megger tested at 1 kV DC. Bus connection resistance was measured using a 100 Amp ductor.

Instrumentation Transformers (Current and Voltage Type)
The access covers were removed and the enclosures were cleaned, and inspected as needed. The outer casings were inspected for signs of tracking or damage. The spacers, insulators and supports were checked. Nameplate data was recorded. The primary and secondary windings were isolated for testing. Tests performed included polarity checks, turns ratio, and insulation integrity. Cable and Bus connections were re-attached and tightened to correct torque levels

Meters
The meters were tested at all major scale values. Tests were conducted using field standards whose calibration is traceable to the United States Institute of Standards and Technology (NIST). All results were found to be within the meters designed accuracy. The meter leads were checked for tightness.

Low Voltage Breakers
Each breaker was removed from the cubicle, cleaned and inspected for damage. The mechanism was cleaned and lubricated as needed. The main and arcing contacts were cleaned and inspected for signs of pitting, correct alignment and closing sequence. Contact resistance values were measured. The protective trip device operation was verified by primary injection. Insulation integrity was verified using a 1kV DC Megger. The breaker cubicle was cleaned along with the line and load side stabs. New grease was applied to both the cubicle and breaker primary stabs and fingers. All breakers were racked in and out to verify correct racking operation.

Test Results

Please see the following test forms for our findings.

Comments or Concerns

The equipment tested satisfactory. Please see our equipment deficiency form for any repairs or corrections that were made during our testing, or need to be made prior to energization.

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

EED-14

EQUIPMENT COMMENTS AND DEFICIENCY REPORT

Customer	SM Electric	**Date** 2/9/2011	**Page** 1 **Of** 1
Customer Address	601 Newq Brunswick Ave. Rahway, NJ	**Project Number**	S11-1157.1
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Accp.
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Accp.
Equipment Location	Terminal B Expansion	**Air Temperature**	65F
Owner Identification	Switchgear NB	**Relative Humidity**	60%

1	Trip status light would not activate on Breaker DP-NB. Loose secondary connection found on cell side of breaker secondary connections. Connection tightened and ligth works.	*Repaired As Left*
2	Power supply 05PS1 found deffective. Would not power up. Fuses verified as good. Replaced with customer supplied spare.	*Replaced With Spare Unit*
3	Breaker Spare #2 now feeds ATS-2. Labeling on the switchgear needs to be changed to reflect this.	*Urgent Action Required*
4	Neutral link disconnected and CT removed in Sect. 1 rear. Needs to be re-installed prior to energization.	*Urgent Action Required*
5	Neutral link for Switchboard B2 buss duct is removed. Needs to be re-installed prior to energization.	*Urgent Action Required*

Submitted By	Kevin Cubberley	**Title**	Field Technician
		Date	2/9/2011
Reviewed By		**Title**	
		Date	

Scott Testing, Inc.

1698 Fifth Street. Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

LVCB-r4

LOW VOLTAGE CIRCUIT BREAKER REPORT

Customer	SM Electric	Date	2/7/2011	Page 2	Of 7
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S11-1157.1		
Owner	Newark Airport	Last Inspection Report	Accp.		
Owner Address	Newark, NJ	Last Inspection Date	Accp.		
Equipment Location	Terminal B Switchgear NB	Air Temperature	50F		
Owner Identification	ATS LIFE SAFETY	Relative Humidity	75%		

Nameplate Data		Trip Unit Data		Trip Unit Range		Inspection	
Bkr Mfg	Siemens	Trip Unit Mfg	Siemens	LT PU	0.4-1.0 x Ir	Contacts	Good
Bkr Type	WLF-800-EQ	Type	ETU776	LTD Band	2-30 sec @ 6 x Ir	Stabs	Good
Frame Size	800A	Rating	600A	ST PU	1.25xIn - 0.8x IC	Cubicle	Good
Voltage	635VAC MAX	Trip Unit S/N	NA	STD Band	0.08-4 sec, OFF	Arc Chute	Good
IC Rating	100KA	Cat Number	NA	GF PU	A-E (400-1200A)	Operation	Good
Bkr S/N	4001281002025	Curve	NA	GFD Band	0.1-0.5 SEC	Mechanism	Good
Instr Bk	CBIM02000-0204	Plug Rating	600A	Instant	NA	Heaters	Not Applicable
Other	NA	Sensor CTR	NA	Other	NA	Other	Not Applicable

Long Time (Note: All trip time in seconds

LT PU Set @ 1x In
LT Set Amps 600
LT PU Amps 600
LT Delay @ 300 %= 1800 Amps
I^2T Out x In LT Delay Set 2.0 LT Curve Range

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
600	600	600	600	600	600
600	600	600	600	600	600
6.038	6.037	6.041	6.038	6.037	6.041

Short Time (Note: All trip time in seconds

ST Set Amps 6x
ST PU Amps 3600
ST Delay @ 150 %= 5400 Amps
I^2T Out x In ST Delay Set 0.1 ST Curve Range

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
3600	3600	3600	3600	3600	3600
3600	3600	3600	3600	3600	3600
0.130	0.130	0.129	0.130	0.130	0.129

Ground Fault (Note: All trip time in seconds

GF Set Amps B
GF PU Amps 300
GF Delay @ 150 %= 450 Amps
I^2T Out x In GF Delay Set 0.2 GF Curve Range

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
300	300	300	300	300	300
300	300	300	300	300	300
0.245	0.245	0.245	0.245	0.245	0.245

Instantaneous (Note: All trip time in seconds

Inst Set Amps 200KA
Inst PU Amps 200KA
Inst Delay @ NA %= NA Amps

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Contact Resistance (Results in microhms)

A Phase
B Phase
C Phase

Insulation Resistance (results in megohms) Test Value: 1KVDC

A Phase to B/C/ Gnd	4000	A Phase (Line to Load)	4000
B Phase to A/C/ Gnd	4000	B Phase (Line to Load)	4000
C Phase to A/B/ Gnd	4000	C Phase (Line to Load)	4000

REMARKS BREAKER TESTED SATISFACTORY. FUSE INFO: FARRAZ SHAWMUT. CLASS L. CAT # A4BY3000-SEA-3. 3000A. 200KA IC. FUSE RES: A:8 B:9 C:12. Nuetral CT circuit and trip verified by primary current injection.

Submitted By K.CUBBERLEY/ M. STANLEY Equipment Used 302266,302662, FLUKE 1KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

LVCB-r4

LOW VOLTAGE CIRCUIT BREAKER REPORT

Customer	SM Electric	Date	2/7/2011	Page 4	Of 7
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S11-1157.1		
Owner	Newark Airport	Last Inspection Report	Accp.		
Owner Address	Newark, NJ	Last Inspection Date	Accp.		
Equipment Location	Terminal B Switchgear SA	Air Temperature	50F		
Owner Identification	DP-NB	Relative Humidity	75%		

Nameplate Data		Trip Unit Data		Trip Unit Range		Inspection	
Bkr Mfg	Siemens	Trip Unit Mfg	Siemens	LT PU	0.4-1.0 x Ir	Contacts	Good
Bkr Type	WLM3A340	Type	ETU776	LTD Band	2-30 sec @ 6 x Ir	Stabs	Good
Frame Size	1600A	Rating	1200A	ST PU	1.25xIn - 0.8x IC	Cubicle	Good
Voltage	635VAC MAX	Trip Unit S/N	NA	STD Band	0.08-4 sec, OFF	Arc Chute	Good
IC Rating	100KA	Cat Number	NA	GF PU	A-E (100A-1200A)	Operation	Good
Bkr S/N	4001280930033	Curve	NA	GFD Band	0.1-0.5 SEC	Mechanism	Good
Instr Bk	CBIM02000-0204	Plug Rating	1200A	Instant	NA	Heaters	Not Applicable
Other	NA	Sensor CTR	NA	Other	NA	Other	Not Applicable

Long Time (Note: All trip time in seconds

LT PU Set @ 0.9 x In
LT Set Amps 1080
LT PU Amps 1080
LT Delay @ 300 %= 3240 Amps
I^2T Out In x LT Delay Set 2.0

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
1200	1200	1200	1200	1200	1200
1200	1200	1200	1200	1200	1200
5.79	5.80	5.80	5.79	5.80	5.80

LT Curve Range

Short Time (Note: All trip time in seconds

ST Set Amps 4X
ST PU Amps 4800
ST Delay @ 150 %= 6200 Amps
I^2T Out x In ST Delay Set 0.1

A	B	C	A	B	C
4800	4800	4800	4800	4800	4800
4800	4800	4800	4800	4800	4800
0.350	0.350	0.350	0.350	0.350	0.350

ST Curve Range

Ground Fault (Note: All trip time in seconds

GF Set Amps D
GF PU Amps 900
GF Delay @ 150 %= 1350 Amps
I^2T Out x In GF Delay Set 0.2

A	B	C	A	B	C
900	900	900	900	900	900
900	900	900	900	900	900
0.247	0.247	0.247	0.247	0.247	0.247

GF Curve Range

Instantaneous (Note: All trip time in seconds

Inst Set Amps OFF
Inst PU Amps OFF
Inst Delay @ NA %= NA Amps

A	B	C	A	B	C
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Contact Resistance *(Results in microhms)*

A Phase
B Phase
C Phase

Insulation Resistance *(results in megohms)* Test Value: 1KVDC

A Phase to B/C/ Gnd	4000	A Phase (Line to Load)	4000
B Phase to A/C/ Gnd	4000	B Phase (Line to Load)	4000
C Phase to A/B/ Gnd	4000	C Phase (Line to Load)	4000

REMARKS BREAKER TESTED SATISFACTORY. FUSE INFO: FARRAZ SHAWMUT. CLASS L. CAT # A4BY3000-SEA-3. 3000A. 200KA IC. FUSE RES IN MICROHMS: A: 28 B: 39 C: 32 Nuetral CT circuit and trip verified by primary current injection.

Submitted By K.CUBBERLEY/ M. STANLEY **Equipment Used** 302266, 302662, FLUKE 1KVDC MEGGER

Scott Testing, Inc.

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LVCB-14

LOW VOLTAGE CIRCUIT BREAKER REPORT

Customer	SM Electric	Date	2/7/2011	Page 1	Of 7
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S11-1157.1		
Owner	Newark Airport	Last Inspection Report	Accp.		
Owner Address	Newark, NJ	Last Inspection Date	Accp.		
Equipment Location	Terminal B Switchgear NB	Air Temperature	50F		
Owner Identification	Main Breaker	Relative Humidity	75%		

Nameplate Data		Trip Unit Data		Trip Unit Range		Inspection	
Bkr Mfg	Siemens	Trip Unit Mfg	Siemens	LT PU	0.4-1.0 x Ir	Contacts	Good
Bkr Type	WLM3A340	Type	ETU776	LTD Band	2-30 sec @ 6 x Ir	Stabs	Good
Frame Size	4000A	Rating	4000A	ST PU	1.25xIn - 0.8x IC	Cubicle	Good
Voltage	635VAC MAX	Trip Unit S/N	NA	STD Band	0.08-4 sec, OFF	Arc Chute	Good
IC Rating	100KA	Cat Number	NA	GF PU	A-E (400-1200A)	Operation	Good
Bkr S/N	4001281002028	Curve	NA	GFD Band	0.1-0.5 SEC	Mechanism	Good
Instr Bk	CBIM02000-0204	Plug Rating	4000A	Instant	NA	Heaters	Not Applicable
Other	NA	Sensor CTR	NA	Other	NA	Other	Not Applicable

Long Time (Note: All trip time in seconds

LT PU Set @ 1x In
LT Set Amps 4000
LT PU Amps 4000
LT Delay @ 300 %= 12000 Amps
I^2T Out x In LT Delay Set 2.0

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
4000	4000	4000	4000	4000	4000
4000	4000	4000	4000	4000	4000
5.485	5.423	5.467	5.485	5.423	5.467

LT Curve Range

Short Time (Note: All trip time in seconds

ST Set Amps 3
ST PU Amps 12000
ST Delay @ 150 %= 18000 Amps
I^2T Out x In ST Delay Set 0.3

A	B	C	A	B	C
12000	12000	12000	12000	12000	12000
12000	12000	12000	12000	12000	12000
0.350	0.349	0.350	0.350	0.349	0.350

ST Curve Range

Ground Fault (Note: All trip time in seconds

GF Set Amps E
GF PU Amps 1200
GF Delay @ 150 %= 1800 Amps
I^2T Out x In GF Delay Set 0.3

A	B	C	A	B	C
1200	1200	1200	1200	1200	1200
1200	1200	1200	1200	1200	1200
0.348	0.348	0.348	0.348	0.348	0.348

GF Curve Range

Instantaneous (Note: All trip time in seconds

Inst Set Amps NA
Inst PU Amps NA
Inst Delay @ NA %= NA Amps

A	B	C	A	B	C
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Contact Resistance (Results in microhms)

A Phase 7
B Phase 10
C Phase 12

Insulation Resistance (results in megohms) Test Value: 1KVDC

A Phase to B/C/ Gnd 4000
B Phase to A/C/ Gnd 4000
C Phase to A/B/ Gnd 4000

A Phase (Line to Load) 4000
B Phase (Line to Load) 4000
C Phase (Line to Load) 4000

REMARKS BREAKER TESTED SATISFACTORY. Nuetral CT circuit and trip verified by primary current injection.

Submitted By K.CUBBERLEY/ M. STANLEY Equipment Used 302266, 302662, FLUKE 1 KVDC MEGGER

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LVCB-r4

LOW VOLTAGE CIRCUIT BREAKER REPORT

Customer	SM Electric	Date	2/7/2011	Page 3	Of 7
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S11-1157.1		
Owner	Newark Airport	Last Inspection Report	Accp.		
Owner Address	Newark, NJ	Last Inspection Date	Accp.		
Equipment Location	Terminal B Switchgear NB	Air Temperature	50F		
Owner Identification	NB-3	Relative Humidity	75%		

Nameplate Data		Trip Unit Data		Trip Unit Range		Inspection	
Bkr Mfg	Siemens	Trip Unit Mfg	Siemens	LT PU	0.4-1.0 x Ir	Contacts	Good
Bkr Type	WLF2A316	Type	ETU776	LTD Band	2-30 sec @ 6 x Ir	Stabs	Good
Frame Size	1600A	Rating	1200A	ST PU	1.25xIn - 0.8x IC	Cubicle	Good
Voltage	635VAC MAX	Trip Unit S/N	NA	STD Band	0.08-4 sec, OFF	Arc Chute	Good
IC Rating	100KA	Cat Number	NA	GF PU	A-E (400-1200A)	Operation	Good
Bkr S/N	4001281002033	Curve	NA	GFD Band	0.1-0.5 SEC	Mechanism	Good
Instr Bk	CBIM02000-0204	Plug Rating	1200A	Instant	NA	Heaters	Not Applicable
Other	NA	Sensor CTR	NA	Other	NA	Other	Not Applicable

Long Time (Note: All trip time in seconds

LT PU Set @ 1x In
LT Set Amps 1200
LT PU Amps 1200
LT Delay @ 300 %= 3600 Amps
I^2T Out In X LT Delay Set 2.0

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
1200	1200	1200	1200	1200	1200
1200	1200	1200	1200	1200	1200
6.009	6.053	6.099	6.009	6.053	6.099

LT Curve Range

Short Time (Note: All trip time in seconds

ST Set Amps 4X
ST PU Amps 4800
ST Delay @ 150 %= 7200 Amps
I^2T Out x In ST Delay Set 0.1

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
4800	4800	4800	4800	4800	4800
4800	4800	4800	4800	4800	4800
0.137	0.139	0.136	0.137	0.139	0.136

ST Curve Range

Ground Fault (Note: All trip time in seconds

GF Set Amps D
GF PU Amps 900
GF Delay @ 150 %= 1350 Amps
I^2T Out x In GF Delay Set 0.2

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
900	900	900	900	900	900
900	900	900	900	900	900
0.237	0.237	0.237	0.237	0.237	0.237

GF Curve Range

Instantaneous (Note: All trip time in seconds

Inst Set Amps 200KA
Inst PU Amps 200KA
Inst Delay @ NA %= NA Amps

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Contact Resistance (Results in microhms)

A Phase	20
B Phase	15
C Phase	17

Insulation Resistance (results in megohms) Test Value: 1KVDC

A Phase to B/C/ Gnd	4000	A Phase (Line to Load)	4000
B Phase to A/C/ Gnd	4000	B Phase (Line to Load)	4000
C Phase to A/B/ Gnd	4000	C Phase (Line to Load)	4000

REMARKS BREAKER TESTED SATISFACTORY. FUSE INFO: FARRAZ SHAWMUT. CLASS L. CAT # A4BY3000-SEA-3. 3000A. 200KA IC. FUSE RES: A:8 B:9 C:12. Nuetral CT circuit and trip verified by primary current injection.

Submitted By K.CUBBERLEY/ M. STANLEY **Equipment Used** 302266,302662, FLUKE 1KVDC MEGGER

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LVCB-r4

LOW VOLTAGE CIRCUIT BREAKER REPORT

Customer	SM Electric	Date	2/7/2011	Page 5	Of 7
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S11-1157.1		
Owner	Newark Airport	Last Inspection Report	Accp.		
Owner Address	Newark, NJ	Last Inspection Date	Accp.		
Equipment Location	Terminal B Switchgear NB	Air Temperature	50F		
Owner Identification	PANEL BOARD B-2	Relative Humidity	75%		

Nameplate Data		Trip Unit Data		Trip Unit Range		Inspection	
Bkr Mfg	Siemens	Trip Unit Mfg	Siemens	LT PU	0.4-1.0 x Ir	Contacts	Good
Bkr Type	WLM-4000-EQ	Type	ETU776	LTD Band	2-30 sec @ 6 x Ir	Stabs	Good
Frame Size	4000A	Rating	3200A	ST PU	1.25xIn - 0.8x IC	Cubicle	Good
Voltage	635VAC MAX	Trip Unit S/N	NA	STD Band	0.08-4 sec, OFF	Arc Chute	Good
IC Rating	100KA	Cat Number	NA	GF PU	A-E (100A-1200A)	Operation	Good
Bkr S/N	4001281003000	Curve	NA	GFD Band	0.1-0.5 SEC	Mechanism	Good
Instr Bk	CBIM02000-0204	Plug Rating	3200A	Instant	NA	Heaters	Not Applicable
Other	NA	Sensor CTR	NA	Other	NA	Other	Not Applicable

Long Time (Note: All trip time in seconds

LT PU Set @ 1x In
LT Set Amps 3200
LT PU Amps 3200
LT Delay @ 300 %= 9600 Amps
I^2T Out In X LT Delay Set 2.0

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
3200	3200	3200	3200	3200	3200
3200	3200	3200	3200	3200	3200
5.625	6.174	5.617	5.625	6.174	5.617

LT Curve Range

Short Time (Note: All trip time in seconds

ST Set Amps 3X
ST PU Amps 9600
ST Delay @ 150 %= Amps
I^2T Out x In ST Delay Set 0.3 SEC

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
9600	9600	9600	9600	9600	9600
9600	9600	9600	9600	9600	9600
0.330	0.319	0.305	0.330	0.319	0.305

ST Curve Range

Ground Fault (Note: All trip time in seconds

GF Set Amps D
GF PU Amps 900
GF Delay @ 150 %= 1350 Amps
I^2T Out x In GF Delay Set 0.2

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
900	900	900	900	900	900
900	900	900	900	900	900
0.250	0.250	0.250	0.250	0.250	0.250

GF Curve Range

Instantaneous (Note: All trip time in seconds

Inst Set Amps OFF
Inst PU Amps OFF
Inst Delay @ NA %= NA Amps

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Contact Resistance (Results in microhms)

A Phase 9
B Phase 9
C Phase 9

Insulation Resistance (results in megohms) Test Value: 1KVDC

A Phase to B/C/ Gnd	4000	A Phase (Line to Load)	4000
B Phase to A/C/ Gnd	4000	B Phase (Line to Load)	4000
C Phase to A/B/ Gnd	4000	C Phase (Line to Load)	4000

REMARKS BREAKER TESTED SATISFACTORY. Nuetral CT circuit and trip verified by primary current injection.

Submitted By K.CUBBERLEY/ M. STANLEY **Equipment Used** 302266,302662, FLUKE 1KVDC MEGGER

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LVCB-r4

LOW VOLTAGE CIRCUIT BREAKER REPORT

Customer	SM Electric	Date	2/7/2011	Page 6	Of 7
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S11-1157.1		
Owner	Newark Airport	Last Inspection Report	Accp.		
Owner Address	Newark, NJ	Last Inspection Date	Accp.		
Equipment Location	Terminal B Switchgear NB	Air Temperature	50F		
Owner Identification	Spare #1	Relative Humidity	75%		

Nameplate Data		Trip Unit Data		Trip Unit Range		Inspection	
Bkr Mfg	Siemens	Trip Unit Mfg	Siemens	LT PU	0.4-1.0 x Ir	Contacts	Good
Bkr Type	WLF2A380	Type	ETU776	LTD Band	2-30 sec @ 6 x Ir	Stabs	Good
Frame Size	800A	Rating	600A	ST PU	1.25xIn - 0.8x IC	Cubicle	Good
Voltage	635VAC MAX	Trip Unit S/N	NA	STD Band	0.08-4 sec, OFF	Arc Chute	Good
IC Rating	100KA	Cat Number	NA	GF PU	A-E (400-1200A)	Operation	Good
Bkr S/N	4001281002027	Curve	NA	GFD Band	0.1-0.5 SEC	Mechanism	Good
Instr Bk	CBIM02000-0204	Plug Rating	600A	Instant	NA	Heaters	Not Applicable
Other	NA	Sensor CTR	NA	Other	NA	Other	Not Applicable

Long Time (Note: All trip time in seconds

LT PU Set @ 1x In
LT Set Amps 600
LT PU Amps 600
LT Delay @ 300 %= 1800 Amps
I^2T Out x In LT Delay Set 10.0

AS FOUND A	B	C	AS LEFT A	B	C
600	600	600	600	600	600
600	600	600	600	600	600
26.77	27.72	27.08	26.77	27.72	27.08

LT Curve Range

Short Time (Note: All trip time in seconds

ST Set Amps 4X
ST PU Amps 2400
ST Delay @ 150 %= 3600 Amps
I^2T Out x In ST Delay Set 0.4

A	B	C	A	B	C
2400	2400	2400	2400	2400	2400
2400	2400	2400	2400	2400	2400
0.450	0.450	0.444	0.450	0.450	0.444

ST Curve Range

Ground Fault (Note: All trip time in seconds

GF Set Amps B
GF PU Amps 300
GF Delay @ 150 %= 450 Amps
I^2T Out x In GF Delay Set 0.5

A	B	C	A	B	C
300	300	300	300	300	300
300	300	300	300	300	300
0.540	0.540	0.540	0.540	0.540	0.540

GF Curve Range

Instantaneous (Note: All trip time in seconds

Inst Set Amps 200KA
Inst PU Amps 200KA
Inst Delay @ NA %= NA Amps

A	B	C	A	B	C
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Contact Resistance (Results in microhms)

A Phase 20
B Phase 20
C Phase 19

Insulation Resistance (results in megohms) Test Value: 1KVDC

A Phase to B/C/ Gnd 4000 — A Phase (Line to Load) 4000
B Phase to A/C/ Gnd 4000 — B Phase (Line to Load) 4000
C Phase to A/B/ Gnd 4000 — C Phase (Line to Load) 4000

REMARKS BREAKER TESTED SATISFACTORY. FUSE INFO: FARRAZ SHAWMUT. CLASS L. CAT # A4BY3000-SEA-3. 3000A. 200KA IC. FUSE RES: A:12 B:16 C:12. Nuetral CT circuit and trip verified by primary current injection. Tested at factory settings.

Submitted By K.CUBBERLEY/ M. STANLEY **Equipment Used** 302266,302662, FLUKE 1KVDC MEGGER

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LVCB-r4

LOW VOLTAGE CIRCUIT BREAKER REPORT

Customer	SM Electric	Date	2/8/2011	Page 7	Of 7
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S11-1157.1		
Owner	Newark Airport	Last Inspection Report	Accp.		
Owner Address	Newark, NJ	Last Inspection Date	Accp.		
Equipment Location	Terminal B Switchgear NB	Air Temperature	50F		
Owner Identification	Spare #2 * ATS- 2	Relative Humidity	75%		

Nameplate Data		Trip Unit Data		Trip Unit Range		Inspection	
Bkr Mfg	Siemens	Trip Unit Mfg	Siemens	LT PU	0.4-1.0 x Ir	Contacts	Good
Bkr Type	WLF2A380	Type	ETU776	LTD Band	2-30 sec @ 6 x Ir	Stabs	Good
Frame Size	800A	Rating	600A	ST PU	1.25xIn - 0.8x IC	Cubicle	Good
Voltage	635VAC MAX	Trip Unit S/N	NA	STD Band	0.08-4 sec. OFF	Arc Chute	Good
IC Rating	100KA	Cat Number	NA	GF PU	A-E (400-1200A)	Operation	Good
Bkr S/N	4001281002024	Curve	NA	GFD Band	0.1-0.5 SEC	Mechanism	Good
Instr Bk	CBIM02000-0204	Plug Rating	600A	Instant	NA	Heaters	Not Applicable
Other	NA	Sensor CTR	NA	Other	NA	Other	Not Applicable

Long Time (Note: All trip time in seconds

LT PU Set @ 1x In
LT Set Amps 600
LT PU Amps 600
LT Delay @ 300 %= 1800 Amps
I^2T Out x In LT Delay Set 2.0

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
600	600	600	600	600	600
600	600	600	600	600	600
3.966	3.970	3.955	3.966	3.970	3.955

LT Curve Range

Short Time (Note: All trip time in seconds

ST Set Amps 6X
ST PU Amps 3600
ST Delay @ 150 %= 5400 Amps
I^2T Out x In ST Delay Set 0.2

A	B	C	A	B	C
3600	3600	3600	3600	3600	3600
3600	3600	3600	3600	3600	3600
0.244	0.243	0.244	0.244	0.243	0.244

ST Curve Range

Ground Fault (Note: All trip time in seconds

GF Set Amps B
GF PU Amps 300
GF Delay @ 150 %= 450 Amps
I^2T Out x In GF Delay Set 0.2

A	B	C	A	B	C
300	300	300	300	300	300
300	300	300	300	300	300
0.247	0.247	0.247	0.247	0.247	0.247

GF Curve Range

Instantaneous (Note: All trip time in seconds

Inst Set Amps 200KA
Inst PU Amps 200KA
Inst Delay @ NA %= NA Amps

A	B	C	A	B	C
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Contact Resistance (Results in microhms)

A Phase 19
B Phase 16
C Phase 12

Insulation Resistance (results in megohms) Test Value: 1KVDC

A Phase to B/C/ Gnd 4000
B Phase to A/C/ Gnd 4000
C Phase to A/B/ Gnd 4000

A Phase (Line to Load) 4000
B Phase (Line to Load) 4000
C Phase (Line to Load) 4000

REMARKS BREAKER TESTED SATISFACTORY. FUSE INFO: FARRAZ SHAWMUT. CLASS L. CAT # A4BY3000-SEA-3. 3000A. 200KA IC. FUSE RES: A:14 B:18 C:16. Nuetral CT circuit and trip verified by primary current injection. Breaker now feeds ATS -2. Labling needs to be changed on switchgear.

Submitted By K.CUBBERLEY/ M. STANLEY **Equipment Used** 302266,302662, FLUKE 1KVDC MEGGER

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STI~r4

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric	Date 2/9/2011	Page 1 Of 7
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S11-1157.1
Owner	Port Authority of New York and New Jersey	Last Inspection Report	Accp.
Owner Address	Newark Airport, Newark, NJ	Last Inspection Date	Accp.
Equipment Location	Terminal B	Air Temperature	60F
Owner Identification	Switchgear NB	Relative Humidity	55%

Nameplate Data

Manufacturer	Siemens	Design Voltage	480VAC	System Voltage	480/277	BIL	NA
Serial #	NA	Rated Current	4000A	Style	WL	Age	2009
Model	NA	SC Withstand	150KA	Cat #	NA	ID #	SA

Breakers 7 # Relays 0 # Meters 8 # Vert Sect 7 # Cubicles 19

Other Info CONTAINS 1 FUTURE CELL

Inspection Report

Breaker Operation	Good	Covers/Glass	Good	Annunciator	Not Applicable
Equipment Access	Good	Cell Condition	Good	Panel Meters	Good
Control Switches	Good	Hinged Doors	Good	Panel Lights	Good
Swgr Grounds	Good	Bus Supports	Good	Cables	Good
Paint Condition	Good	Space Heaters	Good	Shutters	Good
Connections	Good	Tracking Signs	Not Applicable	Interlocks	Not Applicable
Control Wiring	Good	Cleanliness	Good	Insulation	Good
Control Relays	Good	Lubrication	Good	Test Stand	Not Applicable
"83" Transfer	Not Applicable	Ground Truck	Not Applicable	Maint Tools	Not Applicable

Other Inspections CONTROL POWER WAS APPLIED AND ALL FUNCTIONS VERIFIED.

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd
SERVICE ENTRANCE BUS	GROUND W/ 2 OPPOSING PH	1.0	4000	4000	4000
LOAD SIDE MAIN BREAKER B	GROUND W/ 2 OPPOSING PH	1.0	4000	4000	4000
ATS LIFE SAFETY BUSS DUC	GROUND W/ 2 OPPOSING PH	1.0	2400	2000	2000
ATS LOAD MAIN BUSS	GROUND W/ 2 OPPOSING PH	1.0	1500	1450	1485

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
Service entrance bus conn.	Main Breaker line side stabs	100	9	9	11
Main breaker load side stabs	Sec. 2 Metering	100	25	22	20
Main breaker load side stabs	ATS/Life Safety line side stabs	100	37	42	50
Main Breaker Load side stabs	NB-3 Line Side Stabs (inc. duct	100	39	45	55

REMARKS Cont. on next page.

Submitted By K.CUBBERLEY/M.STANLEY Equipment Used 100 AMP DUCTOR, FLUKE 1KVDC MEGGER

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STM-4

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric	**Date** 2/9/2011	**Page** 2 Of 7
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S11-1157.1
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Accp.
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Accp.
Equipment Location	Terminal B	**Air Temperature**	60F
Owner Identification	Switchgear NB	**Relative Humidity**	55%

Nameplate Data

Manufacturer	Siemens	**Design Voltage**	480VAC	**System Voltage**	480/277	**BIL**	NA
Serial #	NA	**Rated Current**	4000A	**Style**	WL	**Age**	2009
Model	NA	**SC Withstand**	150KA	**Cat #**	NA	**ID #**	SA

# Breakers	7	**# Relays**	0	**# Meters**	8	**# Vert Sect**	7	**# Cubicles**	19

Other Info CONTAINS 1 FUTURE CELL

Inspection Report

Breaker Operation	Good	**Covers/Glass**	Good	**Annunciator**	Not Applicable
Equipment Access	Good	**Cell Condition**	Good	**Panel Meters**	Good
Control Switches	Good	**Hinged Doors**	Good	**Panel Lights**	Good
Swgr Grounds	Good	**Bus Supports**	Good	**Cables**	Good
Paint Condition	Good	**Space Heaters**	Good	**Shutters**	Good
Connections	Good	**Tracking Signs**	Not Applicable	**Interlocks**	Not Applicable
Control Wiring	Good	**Cleanliness**	Good	**Insulation**	Good
Control Relays	Good	**Lubrication**	Good	**Test Stand**	Not Applicable
"83" Transfer	Not Applicable	**Ground Truck**	Not Applicable	**Maint Tools**	Not Applicable

Other Inspections CONTROL POWER WAS APPLIED AND ALL FUNCTIONS VERIFIED.

Test Data

Insulation Integrity Testing — Results in Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd
NB3 Busss Duct	Ground	1.0KV	4000	4000	4000
ATS Load Buss Duct and Line B	Ground	1.0KV	4000	4000	4000

Conducting Path Resistances — Results in Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
Main Breaker load side stabs	Spare line side Stabs	100	29	27	24
NB-3 Load side stabs	NB-3 Buss Duct Connections	100	23	24	24
ATS life safety Line Side Stabs	ATS Buss duct connections	100	28	26	23
B2 Line side stabs	B2 Buss Duct Connections	100	26	29	25

REMARKS Cont. on next page.

Submitted By K.CUBBERLEY/M.STANLEY **Equipment Used** 100 AMP DUCTOR, FLUKE 1KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

STI-14

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric	**Date**	2/9/2011	**Page**	3 **Of** 7
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S11-1157.1		
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Accp.		
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Accp.		
Equipment Location	Terminal B	**Air Temperature**	60F		
Owner Identification	Switchgear NB	**Relative Humidity**	55%		

Nameplate Data

Manufacturer	Siemens	**Design Voltage**	480VAC	**System Voltage**	480/277	**BIL**	NA
Serial #	NA	**Rated Current**	4000A	**Style**	WL	**Age**	2009
Model	NA	**SC Withstand**	150KA	**Cat #**	NA	**ID #**	SA

# Breakers	7	**# Relays**	0	**# Meters**	8	**# Vert Sect**	7	**# Cubicles**	19

Other Info CONTAINS 1 FUTURE CELL

Inspection Report

Breaker Operation	Good	**Covers/Glass**	Good	**Annunciator**	Not Applicable
Equipment Access	Good	**Cell Condition**	Good	**Panel Meters**	Good
Control Switches	Good	**Hinged Doors**	Good	**Panel Lights**	Good
Swgr Grounds	Good	**Bus Supports**	Good	**Cables**	Good
Paint Condition	Good	**Space Heaters**	Good	**Shutters**	Good
Connections	Good	**Tracking Signs**	Not Applicable	**Interlocks**	Not Applicable
Control Wiring	Good	**Cleanliness**	Good	**Insulation**	Good
Control Relays	Good	**Lubrication**	Good	**Test Stand**	Not Applicable
"83" Transfer	Not Applicable	**Ground Truck**	Not Applicable	**Maint Tools**	Not Applicable

Other Inspections CONTROL POWER WAS APPLIED AND ALL FUNCTIONS VERIFIED.

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd
See previous page.					

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
SEC 1 GROUND BUS	SEC 2 GROUND BUS	100	27		
SEC 1 GROUND BUS	SEC 3 GROUND BUS	100	39		
SEC 1 GROUND BUS	SEC 4 GROUND BUS	100	43		
SEC 1 GROUND BUS	SEC 5 GROUND BUS	100	50		

REMARKS Cont. on next page.

Submitted By K.CUBBERLEY/M.STANLEY **Equipment Used** 100 AMP DUCTOR, FLUKE 1KVDC MEGGER

Scott Testing, Inc.

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STI-r4

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric	**Date**	2/9/2011 **Page** 4 **Of** 7
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S11-1157.1
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Accp.
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Accp.
Equipment Location	Terminal B	**Air Temperature**	60F
Owner Identification	Switchgear NB	**Relative Humidity**	55%

Nameplate Data

Manufacturer	Siemens	**Design Voltage**	480VAC	**System Voltage**	480/277	**BIL**	NA
Serial #	NA	**Rated Current**	4000A	**Style**	WL	**Age**	2009
Model	NA	**SC Withstand**	150KA	**Cat #**	NA	**ID #**	SA

 # Breakers 7 **# Relays** 0 **# Meters** 8 **# Vert Sect** 7 **# Cubicles** 19

Other Info CONTAINS 1 FUTURE CELL

Inspection Report

Breaker Operation	Good	**Covers/Glass**	Good	**Annunciator**	Not Applicable
Equipment Access	Good	**Cell Condition**	Good	**Panel Meters**	Good
Control Switches	Good	**Hinged Doors**	Good	**Panel Lights**	Good
Swgr Grounds	Good	**Bus Supports**	Good	**Cables**	Good
Paint Condition	Good	**Space Heaters**	Good	**Shutters**	Good
Connections	Good	**Tracking Signs**	Not Applicable	**Interlocks**	Not Applicable
Control Wiring	Good	**Cleanliness**	Good	**Insulation**	Good
Control Relays	Good	**Lubrication**	Good	**Test Stand**	Not Applicable
"83" Transfer	Not Applicable	**Ground Truck**	Not Applicable	**Maint Tools**	Not Applicable

Other Inspections CONTROL POWER WAS APPLIED AND ALL FUNCTIONS VERIFIED.

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd
See previous page.					

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
ATS Load Buss Duct Conn.	B2 Bottom Stabs	100	29	27	24
ATS Load Buss Duct Conn.	ATS-2 Line side stabs	100	23	24	24
ATS Load Buss Duct Conn.	NB Line side stabs	100	26	30	31

REMARKS Cont. on next page.

Submitted By K.CUBBERLEY/M.STANLEY **Equipment Used** 100 AMP DUCTOR, FLUKE 1KVDC MEGGER

Scott Testing, Inc.

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STI-r4

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric	**Date** 2/9/2011	**Page** 5 **Of** 7
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S11-1157.1
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Accp.
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Accp.
Equipment Location	Terminal B	**Air Temperature**	60F
Owner Identification	Switchgear NB	**Relative Humidity**	55%

Nameplate Data

Manufacturer	Siemens	**Design Voltage**	480VAC	**System Voltage**	480/277	**BIL**	NA
Serial #	NA	**Rated Current**	4000A	**Style**	WL	**Age**	2009
Model	NA	**SC Withstand**	150KA	**Cat #**	NA	**ID #**	SA

# Breakers	7	**# Relays**	0	**# Meters**	8	**# Vert Sect**	7	**# Cubicles**	19

Other Info CONTAINS 1 FUTURE CELL

Inspection Report

Breaker Operation	Good	**Covers/Glass**	Good	**Annunciator**	Not Applicable
Equipment Access	Good	**Cell Condition**	Good	**Panel Meters**	Good
Control Switches	Good	**Hinged Doors**	Good	**Panel Lights**	Good
Swgr Grounds	Good	**Bus Supports**	Good	**Cables**	Good
Paint Condition	Good	**Space Heaters**	Good	**Shutters**	Good
Connections	Good	**Tracking Signs**	Not Applicable	**Interlocks**	Not Applicable
Control Wiring	Good	**Cleanliness**	Good	**Insulation**	Good
Control Relays	Good	**Lubrication**	Good	**Test Stand**	Not Applicable
"83" Transfer	Not Applicable	**Ground Truck**	Not Applicable	**Maint Tools**	Not Applicable

Other Inspections CONTROL POWER WAS APPLIED AND ALL FUNCTIONS VERIFIED.

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd
See previous page.					

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
SEC 1 GROUND BUS	SEC 6 GROUND BUS	100	56		
SEC 1 GROUND BUS	SEC 7 GROUND BUS	100	70		
SEC 1 GROUND BUS	Ground Bar on wall of Sub Stati	100	1243		

REMARKS Cont. on next page.

Submitted By K.CUBBERLEY/M.STANLEY **Equipment Used** 100 AMP DUCTOR, FLUKE 1KVDC MEGGER

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STI-r4

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric	Date	2/9/2011 Page 6 Of 7
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S11-1157.1
Owner	Port Authority of New York and New Jersey	Last Inspection Report	Accp.
Owner Address	Newark Airport, Newark, NJ	Last Inspection Date	Accp.
Equipment Location	Terminal B	Air Temperature	60F
Owner Identification	Switchgear NB	Relative Humidity	55%

Nameplate Data

Manufacturer	Siemens	Design Voltage	480VAC	System Voltage	480/277	BIL	NA
Serial #	NA	Rated Current	4000A	Style	WL	Age	2009
Model	NA	SC Withstand	150KA	Cat #	NA	ID #	SA

# Breakers	# Relays	# Meters	# Vert Sect	# Cubicles
7	0	8	7	19

Other Info: CONTAINS 1 FUTURE CELL

Inspection Report

Breaker Operation	Good	Covers/Glass	Good	Annunciator	Not Applicable
Equipment Access	Good	Cell Condition	Good	Panel Meters	Good
Control Switches	Good	Hinged Doors	Good	Panel Lights	Good
Swgr Grounds	Good	Bus Supports	Good	Cables	Good
Paint Condition	Good	Space Heaters	Good	Shutters	Good
Connections	Good	Tracking Signs	Not Applicable	Interlocks	Not Applicable
Control Wiring	Good	Cleanliness	Good	Insulation	Good
Control Relays	Good	Lubrication	Good	Test Stand	Not Applicable
"83" Transfer	Not Applicable	Ground Truck	Not Applicable	Maint Tools	Not Applicable

Other Inspections: CONTROL POWER WAS APPLIED AND ALL FUNCTIONS VERIFIED.

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd
See previous page.					

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
SEC 1 NEUTRAL BUS	SEC 2 NEUTRAL BUS	100	27		
SEC 1 NEUTRAL BUS	SEC 3 NEUTRAL BUS	100	39		
SEC 1 NEUTRAL BUS	SEC 4 NEUTRAL BUS	100	43		
SEC 1 NEUTRAL BUS	SEC 5 NEUTRAL BUS	100	50		

REMARKS: Neutral bus link removed in section 1 rear cabinet.Cont. on next page.

Submitted By: K.CUBBERLEY/M.STANLEY

Equipment Used: 100 AMP DUCTOR, FLUKE 1KVDC MEGGER

Scott Testing, Inc.

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STI-r4

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric	**Date** 2/9/2011	**Page** 7 **Of** 7
Customer Address	601 New Brunswick Ave, Rahway, NJ	**Project Number**	S11-1157:1
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Accp.
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Accp.
Equipment Location	Terminal B	**Air Temperature**	60F
Owner Identification	Switchgear NB	**Relative Humidity**	55%

Nameplate Data

Manufacturer	Siemens	**Design Voltage**	480VAC	**System Voltage**	480/277	**BIL**	NA
Serial #	NA	**Rated Current**	4000A	**Style**	WL	**Age**	2009
Model	NA	**SC Withstand**	150KA	**Cat #**	NA	**ID #**	SA

 # Breakers 7 **# Relays** 0 **# Meters** 8 **# Vert Sect** 7 **# Cubicles** 19

Other Info CONTAINS 1 FUTURE CELL

Inspection Report

Breaker Operation	Good	**Covers/Glass**	Good	**Annunciator**	Not Applicable
Equipment Access	Good	**Cell Condition**	Good	**Panel Meters**	Good
Control Switches	Good	**Hinged Doors**	Good	**Panel Lights**	Good
Swgr Grounds	Good	**Bus Supports**	Good	**Cables**	Good
Paint Condition	Good	**Space Heaters**	Good	**Shutters**	Good
Connections	Good	**Tracking Signs**	Not Applicable	**Interlocks**	Not Applicable
Control Wiring	Good	**Cleanliness**	Good	**Insulation**	Good
Control Relays	Good	**Lubrication**	Good	**Test Stand**	Not Applicable
"83" Transfer	Not Applicable	**Ground Truck**	Not Applicable	**Maint Tools**	Not Applicable

Other Inspections CONTROL POWER WAS APPLIED AND ALL FUNCTIONS VERIFIED:

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd
See previous page.					

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
SEC 1 NEUTRAL BUS	SEC 6 NEUTRAL BUS	100	85		
SEC 1 NEUTRAL BUS	SEC 7 NEUTRAL BUS	100	90		
		100			
		100			

REMARKS Neutral bus link removed in section 1 rear cabinet.Cont. on next page.

Submitted By K.CUBBERLEY/M.STANLEY **Equipment Used** 100 AMP DUCTOR, FLUKE 1KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
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IC-r4

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date**	2/9/2011 **Page** 14 **Of** 14
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S11-1157.1
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Accp.
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Accp.
Equipment Location	Terminal B Switchgear NB	**Air Temperature**	55F
Owner Identification	ATS 2 - PM Voltage Function	**Relative Humidity**	55%

Instrument Data

Owner ID	ATS 2 - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A105-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Volts	75 Volts	100 Volts	120 Volts				
As Found	200.2	300.1	399.7	480.0				
As Left	200.2	300.1	399.7	480.0				

REMARKS

Instrument Data

Owner ID	ATS 2- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A105-11	**Type**	9350	**Basic Range**	0-120VAC	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	125 Vac				
As Found	200.1	300.1	400.0	480				
As Left	200.1	300.1	400.0	480				

REMARKS

Instrument Data

Owner ID	ATS 2- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	120Vac
Function	Voltage Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A105-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	120 Vac				
As Found	200.2	300.1	399.9	480.0				
As Left	200.2	300.1	399.9	480.0				

REMARKS

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
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IC-r4

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date**	2/9/2011	**Page**	3 **Of** 14
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S11-1157.1		
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Accp.		
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Accp.		
Equipment Location	Terminal B Switchgear NB	**Air Temperature**	55F		
Owner Identification	ATS Life Safety - PM Ammeter Function	**Relative Humidity**	55%		

Instrument Data

Owner ID	ATS Life Safety - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	600:5
Serial #	SE-0808A111-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	120.5	240.7	360.6	480.9	601.3			
As Left	120.5	240.7	360.6	480.9	601.3			

REMARKS

Instrument Data

Owner ID	ATS Life Safety - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	600:5
Serial #	SE-0808A111-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	120.4	240.6	360.1	480.5	600.9			
As Left	120.4	240.6	360.1	480.5	600.9			

REMARKS

Instrument Data

Owner ID	ATS Life Safety - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	600:5
Serial #	SE-0808A111-11	**Type**	9350	**Basic Range**	0-5a	**Calib Watts**	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	120.2	240.3	360.3	480.2	601.4			
As Left	120.2	240.3	360.3	480.2	601.4			

REMARKS

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

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IC-r4

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date**	2/9/2011 **Page** 4 **Of** 14
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S11-1157.1
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Accp.
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Accp.
Equipment Location	Terminal B Switchgear NB	**Air Temperature**	55F
Owner Identification	ATS Life Safety - PM Voltage Function	**Relative Humidity**	55%

Instrument Data

Owner ID	ATS Life Safety - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A111-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Volts	75 Volts	100 Volts	120 Volts				
As Found	200.2	300.1	398.7	480.2				
As Left	200.2	300.1	398.7	480.2				

REMARKS

Instrument Data

Owner ID	ATS Life Safety- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A111-11	**Type**	9350	**Basic Range**	0-120VAC	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	125 Vac				
As Found	200.1	300.1	398.7	480.2				
As Left	200.1	300.1	398.7	480.2				

REMARKS

Instrument Data

Owner ID	ATS Life S[illegible] PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	120Vac
Function	Voltage Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A111-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	120 Vac				
As Found	200.2	300.1	398.9	480.2				
As Left	200.2	300.1	398.9	480.2				

REMARKS

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

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IC-r4

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date**	2/9/2011 **Page** 13 **Of** 14
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S11-1157.1
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Accp.
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Accp.
Equipment Location	Terminal B Switchgear NB	**Air Temperature**	55F
Owner Identification	ATS-2- PM Ammeter Function	**Relative Humidity**	55%

Instrument Data

Owner ID	ATS 2 - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	600:5
Serial #	SE-0808A105-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	120.5	240.7	360.6	480.9	601.3			
As Left	120.5	240.7	360.6	480.9	601.3			

REMARKS

Instrument Data

Owner ID	ATS 2 - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	600:5
Serial #	SE-0808A105-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	120.4	240.6	360.1	480.5	600.9			
As Left	120.4	240.6	360.1	480.5	600.9			

REMARKS

Instrument Data

Owner ID	ATS 2 - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	600:5
Serial #	SE-0808A105-11	**Type**	9350	**Basic Range**	0-5a	**Calib Watts**	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	120.2	240.3	360.3	480.2	601.4			
As Left	120.2	240.3	360.3	480.2	601.4			

REMARKS

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

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IC-Y4

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date** 2/9/2011	**Page** 2 **Of** 14
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S11-1157.1
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Accp.
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Accp.
Equipment Location	Terminal B Switchgear NB	**Air Temperature**	55F
Owner Identification	Main B reaker - PM Voltage Function	**Relative Humidity**	55%

Instrument Data

Owner ID	Main Breaker - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A107-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Volts	75 Volts	100 Volts	120 Volts				
As Found	200.2	300.1	399.7	478.0				
As Left	200.2	300.1	399.7	478.0				

REMARKS

Instrument Data

Owner ID	Main Breaaker - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A107-11	**Type**	9350	**Basic Range**	0-120VAC	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	125 Vac				
As Found	200.1	300.1	400.0	478.9				
As Left	200.1	300.1	400.0	478.9				

REMARKS

Instrument Data

Owner ID	Main Breaker - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	120Vac
Function	Voltage Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A107-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	120 Vac				
As Found	200.2	300.1	399.9	478.9				
As Left	200.2	300.1	399.9	478.9				

REMARKS

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

IC-14

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date**	2/9/2011	**Page**	1 **Of** 14
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S11-1157.1		
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Accp.		
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Accp.		
Equipment Location	Terminal B Switchgear NB	**Air Temperature**	55F		
Owner Identification	Main Breaker - PM Ammeter Function	**Relative Humidity**	55%		

Instrument Data

Owner ID	Main Breaker - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	4000:5
Serial #	SE-0808A107-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	801.6	1606	2407	3214	4013			
As Left	801.6	1606	2407	3214	4013			

REMARKS

Instrument Data

Owner ID	Main Breaaker - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	4000:5
Serial #	SE-0808A107-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	801.7	1605	2406	3212	4011			
As Left	801.7	1605	2406	3212	4011			

REMARKS

Instrument Data

Owner ID	Main Breaker - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	4000:5
Serial #	SE-0808A107-11	**Type**	9350	**Basic Range**	0-5a	**Calib Watts**	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	801.7	1605	2401	3211	4012			
As Left	801.7	1605	2401	3211	4012			

REMARKS

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

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IC-14

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date** 2/9/2011	**Page** 7 **Of** 14
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S11-1157.1
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Accp.
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Accp.
Equipment Location	Terminal B Switchgear NB	**Air Temperature**	55F
Owner Identification	PANELBOARD DP-NB- PM Ammeter Function	**Relative Humidity**	55%

Instrument Data

Owner ID	PANELBOARD DP-NB -	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	1200:5
Serial #	SE-0808A110-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	240.5	480.0	721.0	961.7	1200			
As Left	240.5	480.0	721.0	961.7	1200			

REMARKS

Instrument Data

Owner ID	PANELBOARD DP-NB -	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	1200:5
Serial #	SE-0808A110-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	240.6	480.1	721.1	961.5	1200			
As Left	240.6	480.1	721.1	961.5	1200			

REMARKS

Instrument Data

Owner ID	PANELBOARD DP-NB -	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	1200:5
Serial #	SE-0808A110-11	**Type**	9350	**Basic Range**	0-5a	**Calib Watts**	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	240.4	480.0	720.8	960.1	1202			
As Left	240.4	480.0	720.8	960.1	1202			

REMARKS

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

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1698 Fifth Street Ewing, New Jersey 08638
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IC-r4

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date** 2/9/2011	**Page** 9 **Of** 14
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S11-1157.1
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Accp.
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Accp.
Equipment Location	Terminal B Switchgear NB	**Air Temperature**	55F.
Owner Identification	PANELBOARD DP-NB- PM Voltage Function	**Relative Humidity**	55%

Instrument Data

Owner ID	PANELBOARD DP-NB -	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A110-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Volts	75 Volts	100 Volts	120 Volts				
As Found	200.2	300.1	399.7	480.0				
As Left	200.2	300.1	399.7	480.0				

REMARKS

Instrument Data

Owner ID	PANELBOARD DP-NB-	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A110-11	**Type**	9350	**Basic Range**	0-120VAC	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	125 Vac				
As Found	200.1	300.1	400.0	480				
As Left	200.1	300.1	400.0	480				

REMARKS

Instrument Data

Owner ID	PANELBOARD DP-NB-	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	120Vac
Function	Voltage Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A110-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	120 Vac				
As Found	200.2	300.1	399.9	480.0				
As Left	200.2	300.1	399.9	480.0				

REMARKS

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

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IC-r4

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date** 2/9/2011	**Page** 12 **Of** 14
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S11-1157.1
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Accp.
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Accp.
Equipment Location	Terminal B Switchgear NB	**Air Temperature**	55F
Owner Identification	SPARE- PM Ammeter Function	**Relative Humidity**	55%

Instrument Data

Owner ID	SPARE - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	600:5
Serial #	SE-0808A088-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	120.5	240.7	360.6	480.9	601.3			
As Left	120.5	240.7	360.6	480.9	601.3			

REMARKS

Instrument Data

Owner ID	SPARE - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	600:5
Serial #	SE-0808A088-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	120.4	240.6	360.1	480.5	600.9			
As Left	120.4	240.6	360.1	480.5	600.9			

REMARKS

Instrument Data

Owner ID	SPARE - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	600:5
Serial #	SE-0808A088-11	**Type**	9350	**Basic Range**	0-5a	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	120.2	240.3	360.3	480.2	601.4			
As Left	120.2	240.3	360.3	480.2	601.4			

REMARKS

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

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IC-r4

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date** 2/9/2011	**Page** 8 **Of** 14
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S11-1157.1
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Accp.
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Accp.
Equipment Location	Terminal B Switchgear NB	**Air Temperature**	55F
Owner Identification	SPARE- PM Voltage Function	**Relative Humidity**	55%

Instrument Data

Owner ID	SPARE - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A088-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA

Other Info

Standard	50 Volts	75 Volts	100 Volts	120 Volts				
As Found	200.2	300.1	399.7	480.0				
As Left	200.2	300.1	399.7	480.0				

REMARKS

Instrument Data

Owner ID	SPARE- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A088-11	**Type**	9350	**Basic Range**	0-120VAC	**Calib Watts**	NA

Other Info

Standard	50 Vac	75 Vac	100 Vac	125 Vac				
As Found	200.1	300.1	400.0	480				
As Left	200.1	300.1	400.0	480				

REMARKS

Instrument Data

Owner ID	SPARE- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	120Vac
Function	Voltage Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A088-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA

Other Info

Standard	50 Vac	75 Vac	100 Vac	120 Vac				
As Found	200.2	300.1	399.9	480.0				
As Left	200.2	300.1	399.9	480.0				

REMARKS

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

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IC-r4

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date**	2/9/2011 **Page** 5 **Of** 14
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S11-1157.1
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Accp.
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Accp.
Equipment Location	Terminal B Switchgear NB	**Air Temperature**	55F
Owner Identification	SWITCHBOARD B2 PM Ammeter Function	**Relative Humidity**	55%

Instrument Data

Owner ID	SWITCHBOARD B2 PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	3200:5
Serial #	SE-0807A124-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	640.9	1282	1923	2565	3206			
As Left	640.9	1282	1923	2565	3206			

REMARKS

Instrument Data

Owner ID	SWITCHBOARD B2 PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	3200:5
Serial #	SE-0807A124-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	640.4	1282	1922	2561	3206			
As Left	640.4	1282	1922	2561	3206			

REMARKS

Instrument Data

Owner ID	SWITCHBOARD B2 PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	3200:5
Serial #	SE-0807A124-11	**Type**	9350	**Basic Range**	0-5a	**Calib Watts**	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	640.4	1281.1	1921	2561	3206			
As Left	640.4	1281.1	1921	2561	3206			

REMARKS

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

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IC-14

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date**	2/9/2011	**Page**	6 **Of** 14
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S11-1157:1		
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Accp.		
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Accp.		
Equipment Location	Terminal B Switchgear NB	**Air Temperature**	55F		
Owner Identification	SWITCHBOARD B2- PM Voltage Function	**Relative Humidity**	55%		

Instrument Data

Owner ID	SWITCHBOARD B2- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0807A124-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Volts	75 Volts	100 Volts	120 Volts				
As Found	200.2	300.1	399.7	480.0				
As Left	200.2	300.1	399.7	480.0				

REMARKS

Instrument Data

Owner ID	SWITCHBOARD B2- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0807A124-11	**Type**	9350	**Basic Range**	0-120VAC	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	125 Vac				
As Found	200.1	300.1	400.0	480				
As Left	200.1	300.1	400.0	480				

REMARKS

Instrument Data

Owner ID	SWITCHBOARD B2- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	120Vac
Function	Voltage Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0807A124-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	120 Vac				
As Found	200.2	300.1	399.9	480.0				
As Left	200.2	300.1	399.9	480.0				

REMARKS

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

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IC-r4

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date** 2/9/2011	**Page** 10 **Of** 14
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S11-1157.1
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Accp.
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Accp.
Equipment Location	Terminal B Switchgear NB	**Air Temperature**	55F
Owner Identification	SWITCHBOARD NB-3 PM Ammeter Function	**Relative Humidity**	55%

Instrument Data

Owner ID	SWITCHBOARD NB-3 P	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	1200:5
Serial #	SE-0808A113-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	240.4	481.4	721.3	962.3	1202			
As Left	240.4	481.4	721.3	962.3	1202			

REMARKS

Instrument Data

Owner ID	SWITCHBOARD NB-3 P	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	1200:5
Serial #	SE-0808A113-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	240.4	481	721.1	961.7	1202			
As Left	240.4	481	721.1	961.7	1202			

REMARKS

Instrument Data

Owner ID	SWITCHBOARD NB-3 P	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	1200:5
Serial #	SE-0808A113-11	**Type**	9350	**Basic Range**	0-5a	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	240.3	481.3	720.3	961.1	1201			
As Left	240.3	481.3	720.3	961.1	1201			

REMARKS

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

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IC-r4

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date**	2/9/2011 **Page** 11 **Of** 14
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S11-1157.1
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Accp.
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Accp.
Equipment Location	Terminal B Switchgear NB	**Air Temperature**	55F
Owner Identification	SWITCHBOARD NB-3 PM Voltage Function.	**Relative Humidity**	55%

Instrument Data

Owner ID	SWITCHBOARD NB-3	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A113-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Volts	75 Volts	100 Volts	120 Volts				
As Found	200.2	300.1	399.2	479.1				
As Left	200.2	300.1	399.2	479.1				

REMARKS

Instrument Data

Owner ID	SWITCHBOARD NB-3	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A113-11	**Type**	9350	**Basic Range**	0-120VAC	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	125 Vac				
As Found	200.1	300.1	398.2	479.1				
As Left	200.1	300.1	398.2	479.1				

REMARKS

Instrument Data

Owner ID	SWITCHBOARD NB-3	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	120Vac
Function	Voltage Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A113-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	120 Vac				
As Found	200.2	300.1	399.2	479.1				
As Left	200.2	300.1	399.2	479.1				

REMARKS

Additional Comment

Submitted By K CUBBERLEY **Equipment Used** 302074

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CT-14

CURRENT TRANSFORMER REPORT

Customer	SM Electric	**Date** 2/8/2011	**Page** 7 **Of** 7
Customer Address	601 New Brunswick Ave. Rahway ,NJ	**Project Number**	S11-1157.1
Owner	Port Authority of New York & New Jersey	**Last Inspection Report**	Accp.
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Accp.
Equipment Location	Switchgear NB	**Air Temperature**	60F
Owner Identification	ATS 2	**Relative Humidity**	55%

Nameplate Data

Manufacturer	Siemens	**VA Rating**	NA	**Type**	NA	**Class**	NA	**Other**	NA
Ratio	600:5 AMPS (120:1)	**Rated KV**	NA	**Cat #**	NA	**S/N**	NA		

Excitation Test

Applied Test Voltage------>		27	28	29	30	31	32	33	34	35	36
CT Identification	A	0.1985	0.2542	0.3342	0.4745	0.7426	1.2205	SAT			
CT Identification	B	0.1866	0.2334	0.3053	0.4157	0.6061	0.9528	1.6651	SAT		
CT Identification	C	0.1927	0.2357	0.2997	0.4148	0.6203	0.9789	1.6921	SAT		

Additional Test Data

	RATIO TEST			POLARITY	INSULATION INTEGRITY
CT Identification	**Primary Volts**	**Secondary Volts**	**Measured Ratio**	**Check**	**Test Value:** 1KVDC
A	0.2571	31.00	120.575651497472	GOOD	4000
B	0.2578	31.00	120.248254460822	GOOD	4000
C	0.2585	31.01	119.961315280464	GOOD	4000

Results In megohms

CT Load/Wiring Check

Connection Config		**Phase Verification**	GOOD
Connected Devices	SIEMENS 9350 ION METER		
Wired Per Drawing #			
Other Checks			

Load Side Measured Burden		
CT ID		
CT ID		
CT ID		

Visual Inspection

Mounting	Not Applicable	**Insulating Bushings**	Not Applicable	**Shorting Block**	Good	**Case/Tank**	Good
Connections	Good	**Single Point Ground**	Good	**Sec Wire Size**	10AWG		
Other							

REMARKS Unable to visually inspect CT's due to mounting behind red board insulators. Ratio verified against drawings. CT's tested satisfactory. Wiring verified to meter connections.

Submitted By K.CUBBERLEY **Equipment Used** 302146, FLUKE 1 KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

CT-r4

CURRENT TRANSFORMER REPORT

Customer	SM Electric	**Date**	2/8/2011 **Page** 1 **Of** 7
Customer Address	601 New Brunswick Ave. Rahway ,NJ	**Project Number**	S11-1157.1
Owner	Port Authority of New York & New Jersey	**Last Inspection Report**	Accp.
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Accp.
Equipment Location	Switchgear NB	**Air Temperature**	60F
Owner Identification	ATS Life Safety	**Relative Humidity**	55%

Nameplate Data

Manufacturer	Siemens	**VA Rating**	NA	**Type**	NA	**Class**	NA	**Other**	NA
Ratio	600:5 AMPS (120:1)	**Rated KV**	NA	**Cat #**	NA	**S/N**	NA		

Excitation Test

Applied Test Voltage------>		27	28	29	30	31	32	33	34	35	36
CT Identification	A	0.1901	0.2371	0.3142	0.4944	0.6553	1.0456	SAT			
CT Identification	B	0.1841	0.2365	0.3084	0.4368	0.7111	1.0669	SAT			
CT Identification	C	0.1554	0.1908	0.2558	0.3315	0.4767	0.7368	1.4152	SAT		

Additional Test Data

	RATIO TEST			POLARITY	INSULATION INTEGRITY
CT Identification	**Primary Volts**	**Secondary Volts**	**Measured Ratio**	**Check**	**Test Value:** 1KVDC
A	0.2620	31.01	118.358778625954	GOOD	4000
B	0.2616	31.01	118.539755351682	GOOD	4000
C	0.2623	31.01	118.223408311094	GOOD	4000

Results In megohms

CT Load/Wiring Check

Connection Config		**Phase Verification**	GOOD	**Load Side Measured Burden**	
Connected Devices	SIEMENS 9350 ION METER			**CT ID**	
Wired Per Drawing #				**CT ID**	
Other Checks				**CT ID**	

Visual Inspections

Mounting	Not Applicable	**Insulating Bushings**	Not Applicable	**Shorting Block**	Good	**Case/Tank**	Good
Connections	Good.	**Single Point Ground**	Good	**Sec Wire Size**	10AWG		
Other							

REMARKS Unable to visually inspect CT's due to mounting behind red board insulators. Ratio verified against drawings. CT's tested satisfactory. Wiring verified to meter connections.

Submitted By K.CUBBERLEY **Equipment Used** 302146, FLUKE 1 KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

CT-r4

CURRENT TRANSFORMER REPORT

Customer	SM Electric	**Date**	2/8/2011	**Page**	3 **Of** 7
Customer Address	601 New Brunswick Ave. Rahway ,NJ	**Project Number**	S11-1157.1		
Owner	Port Authority of New York & New Jersey	**Last Inspection Report**	Accp.		
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Accp.		
Equipment Location	Switchgear NB	**Air Temperature**	60F		
Owner Identification	DP-NB	**Relative Humidity**	55%		

Nameplate Data

Manufacturer	Siemens	**VA Rating**	NA	**Type**	NA	**Class**	NA	**Other**	NA
Ratio	1200 :5 Amps (240:1)	**Rated KV**	NA	**Cat #**	NA	**S/N**	NA		

Excitation Test

Applied Test Voltage------>		29	30	31	32	33	34	35	36	37	38
CT Identification	A	0.2323	0.3010	0.4132	0.5674	0.8645	1.6557	SAT			
CT Identification	B	0.2183	0.2956	0.3685	0.5543	0.7957	1.4903	SAT			
CT Identification	C	0.233	0.2863	0.3645	0.5265	0.8243	1.6275	SAT			

Additional Test Data

	RATIO TEST			POLARITY	INSULATION INTEGRITY
CT Identification	**Primary Volts**	**Secondary Volts**	**Measured Ratio**	**Check**	**Test Value:** 1KVDC
A	0.1274	30.98	243.171114599686	GOOD	4000
B	0.1281	30.99	241.92037470726	GOOD	4000
C	0.1283	31.00	241.621200311769	GOOD	4000

Results In megohms

CT Load/Wiring Check

Connection Config		**Phase Verification**	GOOD
Connected Devices	SIEMENS 9350 ION METER		
Wired Per Drawing #			
Other Checks			

Load Side Measured Burden		
CT ID		
CT ID		
CT ID		

Visual Inspections

Mounting	Not Applicable	**Insulating Bushings**	Not Applicable	**Shorting Block**	Good	**Case/Tank**	Good
Connections	Good	**Single Point Ground**	Good	**Sec Wire Size**	10AWG		
Other							

REMARKS Unable to visually inspect CT's due to mounting behind red board insulators. Ratio verified against drawings. CT's tested satisfactory. Wiring verfied to meter connection.

Submitted By K.CUBBERLEY **Equipment Used** 302146, FLUKE 1 KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

CT-r4

CURRENT TRANSFORMER REPORT

Customer	SM Electric	**Date** 2/8/2011	**Page** 5 **Of** 7
Customer Address	601 New Brunswick Ave. Rahway ,NJ	**Project Number**	S11-1157.1
Owner	Port Authority of New York & New Jersey	**Last Inspection Report**	Accp.
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Accp.
Equipment Location	Switchgear NB	**Air Temperature**	60F
Owner Identification	Main Breaker	**Relative Humidity**	55%

Nameplate Data

Manufacturer	Siemens	**VA Rating**	NA	**Type**	NA	**Class**	NA	**Other**	NA
Ratio	4000:5 AMPS (800:1)	**Rated KV**	NA	**Cat #**	NA	**S/N**	NA		

Excitation Test

Applied Test Voltage------->		82	83	84	85	86	87	88	89	90	91
CT Identification	A	0.2158	0.244	0.2824	0.3467	0.439	0.568	0.732	1.103	1.6105	SAT
CT Identification	B	0.2516	0.2934	0.355	0.4216	0.5806	0.7834	1.1466	1.806	SAT.	
CT Identification	C	0.2166	0.2588	0.3011	0.3776	0.4814	0.6306	0.8726	1.3016	SAT	

Additional Test Data

	RATIO TEST			POLARITY	INSULATION INTEGRITY
CT Identification	**Primary Volts**	**Secondary Volts**	**Measured Ratio**	**Check**	**Test Value:** 1KVDC
A	0.0867	70.03	807.727797001153	GOOD	4000
B	0.0869	70.04	805.983889528193	GOOD	4000
C	0.0859	69.99	814.784633294528	GOOD	4000

Results in megohms

CT Load/Wiring Check

Connection Config		**Phase Verification**	GOOD
Connected Devices	SIEMENS 9350 ION METER		
Wired Per Drawing #			
Other Checks			

Load Side Measured Burden		
CT ID		
CT ID		
CT ID		

Visual Inspections

Mounting	Not Applicable	**Insulating Bushings**	Not Applicable	**Shorting Block**	Good	**Case/Tank**	Good
Connections	Good	**Single Point Ground**	Good	**Sec Wire Size**	10AWG		
Other							

REMARKS Unable to visually inspect CT's due to mounting behind red board insulators. Ratio verified against drawings. Wiring verified to meter connections.

Submitted By K.CUBBERLEY **Equipment Used** 302146, FLUKE 1 KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

CT-14

CURRENT TRANSFORMER REPORT

Customer	SM Electric	**Date**	2/8/2011	**Page**	6 Of 7
Customer Address	601 New Brunswick Ave. Rahway ,NJ	**Project Number**	S11-1157.1		
Owner	Port Authority of New York & New Jersey	**Last Inspection Report**	Accp.		
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Accp.		
Equipment Location	Switchgear NB	**Air Temperature**	60F		
Owner Identification	SPARE	**Relative Humidity**	55%		

Nameplate Data

Manufacturer	Siemens	**VA Rating**	NA	**Type**	NA	**Class**	NA	**Other**	NA
Ratio	600:5 AMPS (120:1)	**Rated KV**	NA	**Cat #**	NA	**S/N**	NA		

Excitation Test

Applied Test Voltage------->		27	28	29	30	31	32	33	34	35	36
CT Identification	A	0.1603	0.2084	0.2896	0.4135	0.655	1.1137	SAT			
CT Identification	B	0.1982	0.2385	0.3044	0.3944	0.5668	0.8700	1.4559	SAT		
CT Identification	C	0.1759	0.2181	0.2997	0.433	0.6417	1.1006	SAT			

Additional Test Data

	RATIO TEST			POLARITY	INSULATION INTEGRITY
CT Identification	**Primary Volts**	**Secondary Volts**	**Measured Ratio**	**Check**	**Test Value:** 1KVDC
A	0.2637	31.00	117.557830868411	GOOD	4000
B	0.2642	31.07	117.600302800908	GOOD	4000
C	0.2661	31.01	116.535137166479	GOOD	4000

Results In megohms

CT Load/Wiring Check

Connection Config		**Phase Verification**	GOOD	**Load Side Measured Burden**	
Connected Devices	SIEMENS 9350 ION METER			**CT ID**	
Wired Per Drawing #				**CT ID**	
Other Checks				**CT ID**	

Visual Inspections

Mounting	Not Applicable	**Insulating Bushings**	Not Applicable	**Shorting Block**	Good	**Case/Tank**	Good
Connections	Good	**Single Point Ground**	Good	**Sec Wire Size**	10AWG		
Other							

REMARKS Unable to visually inspect CT's due to mounting behind red board insulators. Ratio verified against drawings. CT's tested satisfactory. Wiring verified to meter connections.

Submitted By K.CUBBERLEY **Equipment Used** 302146, FLUKE 1 KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

CT-r4

CURRENT TRANSFORMER REPORT

Customer	SM Electric	**Date** 2/8/2011	**Page** 2 **Of** 7
Customer Address	601 New Brunswick Ave. Rahway ,NJ	**Project Number**	S11-1157.1
Owner	Port Authority of New York & New Jersey	**Last Inspection Report**	Accp.
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Accp.
Equipment Location	Switchgear NB	**Air Temperature**	60F
Owner Identification	SWITCHBOARD B2	**Relative Humidity**	55%

Nameplate Data

Manufacturer	Siemens	**VA Rating**	NA	**Type**	NA	**Class**	NA	**Other**	NA
Ratio	3200 :5 Amps (640:1)	**Rated KV**	NA	**Cat #**	NA	**S/N**	NA		

Excitation Test

Applied Test Voltage------>		72	73	74	75	76	77	78	79	80	81
CT Identification	A	0.3765	0.5188	0.7203	1.0512	1.7078	SAT				
CT Identification	B	0.3845	0.5044	0.7095	1.0822	1.7199	SAT				
CT Identification	C	0.7421	1.1221	1.9081	SAT						

Additional Test Data

	RATIO TEST			POLARITY	INSULATION INTEGRITY
CT Identification	**Primary Volts**	**Secondary Volts**	**Measured Ratio**	**Check**	**Test Value:** 1KVDC
A	0.1121	72.00	642.28367528992	GOOD	4000
B	0.1118	72.02	644.186046511628	GOOD	4000
C	0.1111	71.99	647.974797479748	GOOD	4000

Results In megohms

CT Load/Wiring Check

Connection Config		**Phase Verification**	GOOD	**Load Side Measured Burden**	
Connected Devices	SIEMENS 9350 ION METER			**CT ID**	
Wired Per Drawing #				**CT ID**	
Other Checks				**CT ID**	

Visual Inspections

Mounting	Not Applicable	**Insulating Bushings**	Not Applicable	**Shorting Block**	Good	**Case/Tank**	Good
Connections	Good	**Single Point Ground**	Good	**Sec Wire Size**	10AWG		
Other							

REMARKS Unable to visually inspect CT's due to mounting behind red board insulators. Ratio verified against drawings. CT's tested satisfactory Measured ratio incorrect to drawing specs.

Submitted By K.CUBBERLEY **Equipment Used** 302146, FLUKE 1 KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

CT-r4

CURRENT TRANSFORMER REPORT

Customer	SM Electric	**Date** 2/8/2011	**Page** 4 **Of** 7
Customer Address	601 New Brunswick Ave. Rahway ,NJ	**Project Number**	S11-1157.1
Owner	Port Authority of New York & New Jersey	**Last Inspection Report**	Accp.
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Accp.
Equipment Location	Switchgear NB	**Air Temperature**	60F
Owner Identification	SWITCHBOARD NB-3	**Relative Humidity**	55%

Nameplate Data

Manufacturer	Siemens	**VA Rating**	NA	**Type**	NA	**Class**	NA	**Other**	NA
Ratio	1200:5 AMPS (240:1)	**Rated KV**	NA	**Cat #**	NA	**S/N**	NA		

Excitation Test

Applied Test Voltage------->		28	29	30	31	32	33	34	35	36	37
CT Identification	A	0.2033	0.2538	0.3234	0.4332	0.6404	1.1101	SAT			
CT Identification	B	0.2002	0.2436	0.3106	0.4198	0.5742	0.8675	1.6554	SAT		
CT Identification	C	0.2086	0.2592	0.3245	0.4186	0.5790	0.8712	1.755	SAT		

Additional Test Data

	RATIO TEST			POLARITY	INSULATION INTEGRITY
CT Identification	**Primary Volts**	**Secondary Volts**	**Measured Ratio**	**Check**	**Test Value:** 1KVDC
A	0.1405	33.03	235.08896797153	GOOD	4000
B	0.1404	33.01	235.11396011396	GOOD	4000
C	0.1398	32.99	235.979971387697	GOOD	4000

Results In megohms

CT Load/Wiring Check

Connection Config		**Phase Verification**	GOOD
Connected Devices	SIEMENS 9350 ION METER		
Wired Per Drawing #			
Other Checks			

Load Side Measured Burden		
CT ID		
CT ID		
CT ID		

Visual Inspections

Mounting	Not Applicable	**Insulating Bushings**	Not Applicable	**Shorting Block**	Good	**Case/Tank**	Good
Connections	Good	**Single Point Ground**	Good	**Sec Wire Size**	10AWG		
Other							

REMARKS Unable to visually inspect CT's due to mounting behind red board insulators. Ratio verified against drawings. CT's tested satisfactory. Wiring verified to meter connections.

Submitted By K.CUBBERLEY **Equipment Used** 302146, FLUKE 1 KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

BT-14

PT Test Form

Customer	SM Electric	**Date** 2/9/2011	**Page** 1 **Of** 1
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S11-1157.1
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Accp.
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Accp.
Equipment Location	Termianl B	**Air Temperature**	40F
Owner Identification	Switchgear NB	**Relative Humidity**	60%

Nameplate Data

Manufacture Instrument Transformers Inc. **Cat #** 460-480 **S/N** NA

Other Info HV=480 LV=120. 10KV BIL. 0.6KV INSUL CLASS

Test Data

Trans. I.D.	Conn. Phase	1min Meg @1KVDC	Measured Ratio		
01VT1	A	H=4000/L=4000	4:1		
01VT2	B	H=4000/L=4000	4:1		
01VT3	C	H=4000/L=4000	4:1		
01VT4	A	H=4000/L=4000	4:1		
01VT5	B	H=4000/L=4000	4:1		
01VT6	C	H=4000/L=4000	4:1		
04VT1	A	H=4000/L=4000	4:1		
04VT2	B	H=4000/L=4000	4:1		
04VT3	C	H=4000/L=4000	4:1		
01CPT1 (3KVA)	A-B	H=4000/L=4000	4:1		

REMARKS

Submitted By K. Cubberley **Equipment Used**

Lochard, Daniel

From: Winkler, Eric [E.Winkler@vrhcorp.com]
Sent: Friday, December 10, 2010 12:08 PM
To: Lochard, Daniel; Nunez, Daniel; Johnson, Caesar
Subject: Fw: Siemens Recertification Report Switchgear SA
Attachments: Siemens Recertification Report Switchgear SA.pdf

---

From: Russ Elliott <russ.elliott@smelectric.com>
To: Winkler, Eric
Sent: Fri Dec 10 12:06:18 2010
Subject: Siemens Recertification Report Switchgear SA

Eric,

See attached recertification report for Switchgear SA.

Thank you,

Russ Elliott
S.M. Electric Co., Inc.
at Newark Airport

Phone: 1-973-622-1470
Fax: 1-973-622-1471
Cell: 1-732-904-2354

S.M. ELECTRIC COMPANY, INC.

601 NEW BRUNSWICK AVE. P.O. BOX 1144 RAHWAY, NEW JERSEY 07065-1144

LICENSE/PERMIT #191 MEMBER N.E.C.A. PHONE: 732-388-3540

FAX NUMBERS: GENERAL/CONSTRUCTION/PURCHASING: 732-388-3052 ESTIMATING: 732-381-6390

TRANSMITTAL C1260X-TR-264

TO: VRH Construction Corp.
320 Grand Ave.
Engelwood, NJ 07631-4355

ATTN: Eric Winkler

DATE: December 10, 2010
PROJECT: PANY/NJ-EWR-264.003
Lower Level Expan. &
Vertical Circ.
EST/JOB #: C1260X

TRANSMITTING BY: [ ] E-MAIL [ ] FED EX [x] HAND DELIVERY

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COPIES	PAGES	DESCRIPTION
5		Siemens Re-certification Report for Switchgear SA Consisting
		of the Following:
	1	Cover Letter
	4	WL Electronic Trip Unit Inspection at Newark Airport (EWR)
	2	Inspection and Testing Report for Switchgear SA
	1	Switchgear and Switchboard Assemblies Checklist
	1	Low Voltage Circuit Breaker Test Report - ATS Life Safety
	1	Low Voltage Circuit Breaker Test Report - PMDP
	1	Low Voltage Circuit Breaker Test Report - DPSA
	1	Low Voltage Circuit Breaker Test Report - DPSB
	1	Low Voltage Circuit Breaker Test Report - Main Breaker
	1	Switchgear Test Report
	2	Primary Bus Test Report
5	4	200A Molded Case Circuit Breaker Test Reports
5		4000A WL Circuit Breaker Test Report for:
	1	Switchgear NB Main CB - S/N 4001281002028
	1	Switchgear SB Main CB - S/N 4001281007014
	1	Switchgear SA Main CB - S/N 4001281007016
	1	Switchboard EMDS Branch CB ATS-NA - S/N 4001281211031

Note: Upon receipt of this transmittal, please fax a signed copy to 973-622-1471

VERY TRULY YOURS,

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S.M. ELECTRIC COMPANY, INC.

RECEIVED: _____

BY _____ R. Elliott

Russ Elliott (732) 904-2354

SIEMENS Industry

To: Don Sapanara
SM Electric

December 7, 2010

From: Allan Worthy

CC: Doris Schornstein
Barry Powell
Ernie Braunschweig

Subject: Newark Airport Substation SA LVS Warranty Certification
(Siemens S.O.# 86095 Item R30 – SAP # 3001295712 -3496)

Effective today (12/7/2010), the factory warranty for the Newark Airport Terminal B Substation SA low voltage switchgear supplied by Siemens Industry, Inc. is reinstated and with the purchase of the warranty extension previously consummated, will remain in effect until 12/7/2014.

The inspection, testing and refurbishment of the Substation SA low voltage switchgear was successfully completed and the results of the inspection and testing are detailed in a separate report that will accompany this letter.

The terms and conditions of the reinstated and extended factory warranty are the same as those detailed in the original warranty documentation.

Regards

Allan Worthy
Product Manager
Low Voltage Switchgear

Siemens Industry, Inc
5400 Triangle Parkway
Norcross, GA 30092
USA
Tel.: (770)326-2000
www.usa.siemens.com

SIEMENS

To: Don Sapanara
S. M. Electric

November 4, 2010

From: Keith Flowers
Program Manager
Siemens Industry, Inc.

CC: Shelby Nelms
Quality Manager
Siemens Industry, Inc.

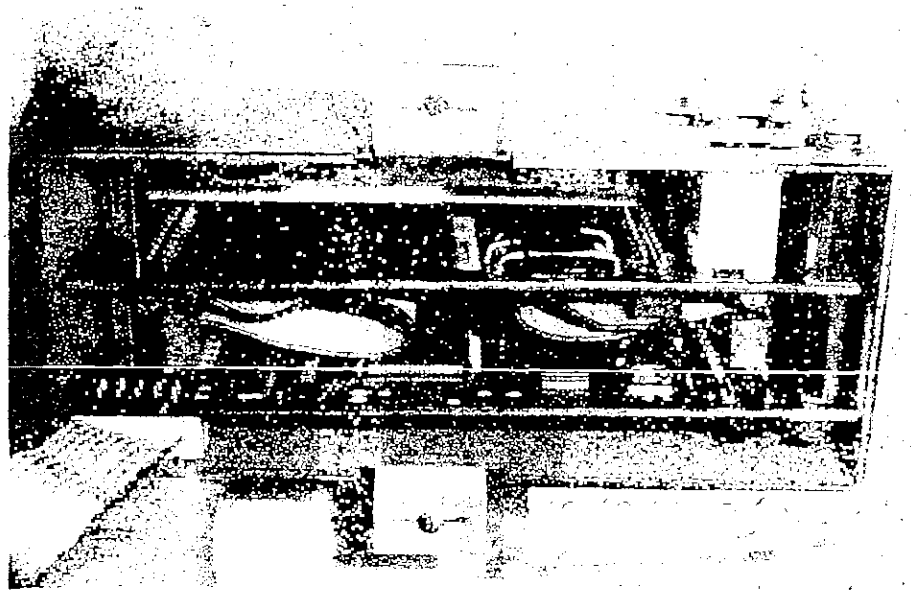
Subject: **WL Electronic Trip Unit Inspection at Newark Airport (EWR)**

On Thursday November 4, 2010, I conducted a visual inspection of four Siemens type WL electronic trip units at Terminal B of the Newark International Airport. The visual inspection was witnessed by the following individuals:

Russ Elliott, S.M. Electric
Mike Cito, Siemens Industry
Dan Lochard, EWR Port Authority
Don Sapanara, S. M. Electric
Keith Flowers, Siemens Industry
Herman Ret, EWR Port Authority

The first electronic trip unit inspected was model number WLETU776MP, serial number 774341015366. The outer case exhibited no signs of corrosion. This electronic trip unit featured an externally connected metering module, which was removed, and visually inspected. There were no signs of corrosion on the circuit boards or the connector pins.

Figure 1 Metering Module Interior



The circuit board assemblies were also removed from the electronic trip unit. Likewise, there were no signs of corrosion on the electronic trip unit's circuit boards.

Figure 2 Rear Cover Removed

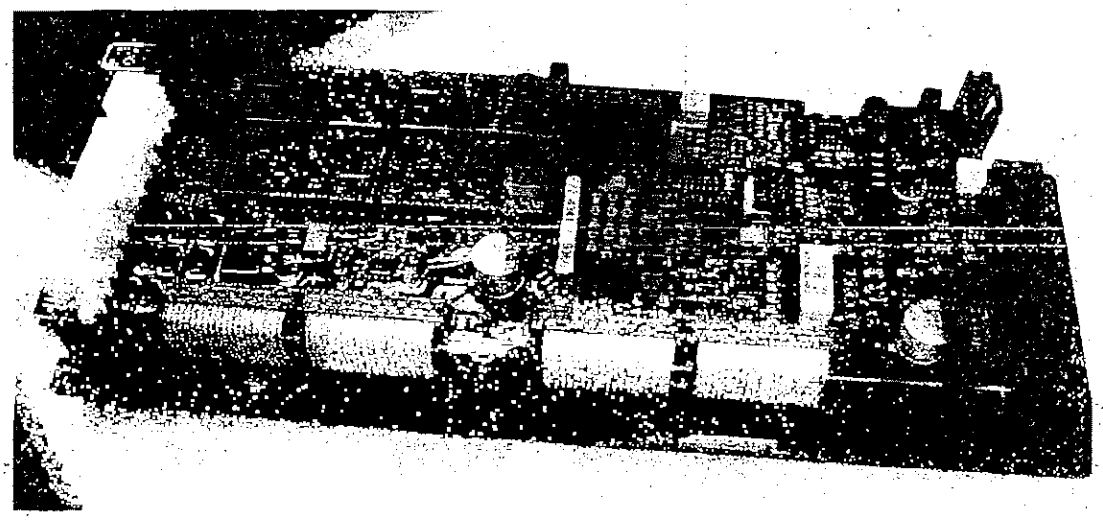


Figure 3 Internal Circuitry

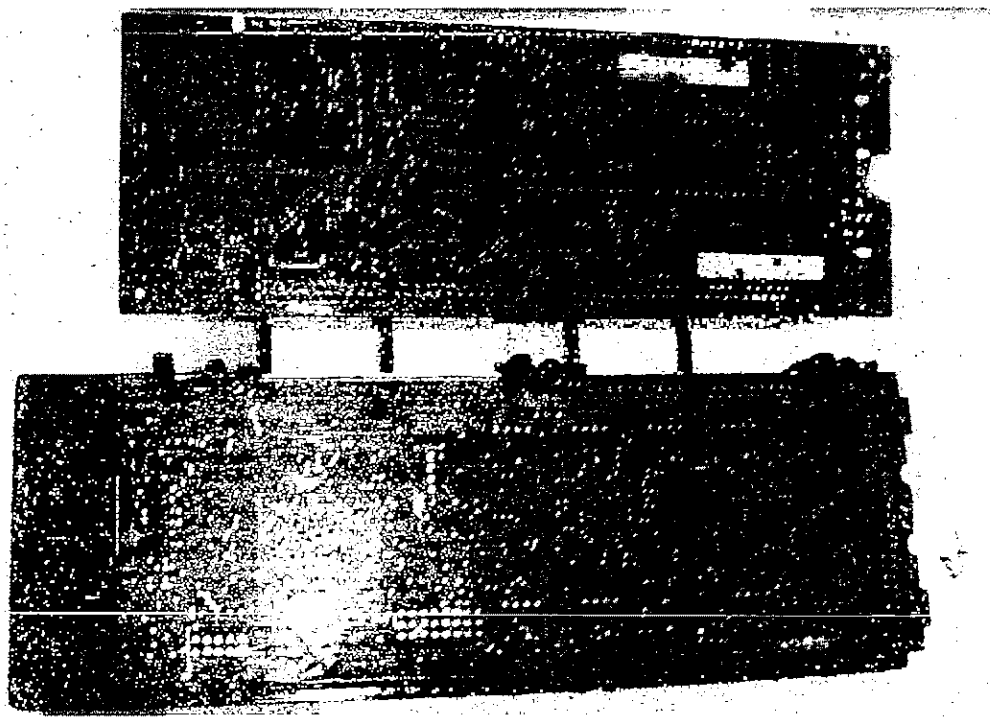


Figure 4 Internal Circuitry (opposite sides of boards shown in Figure 3)

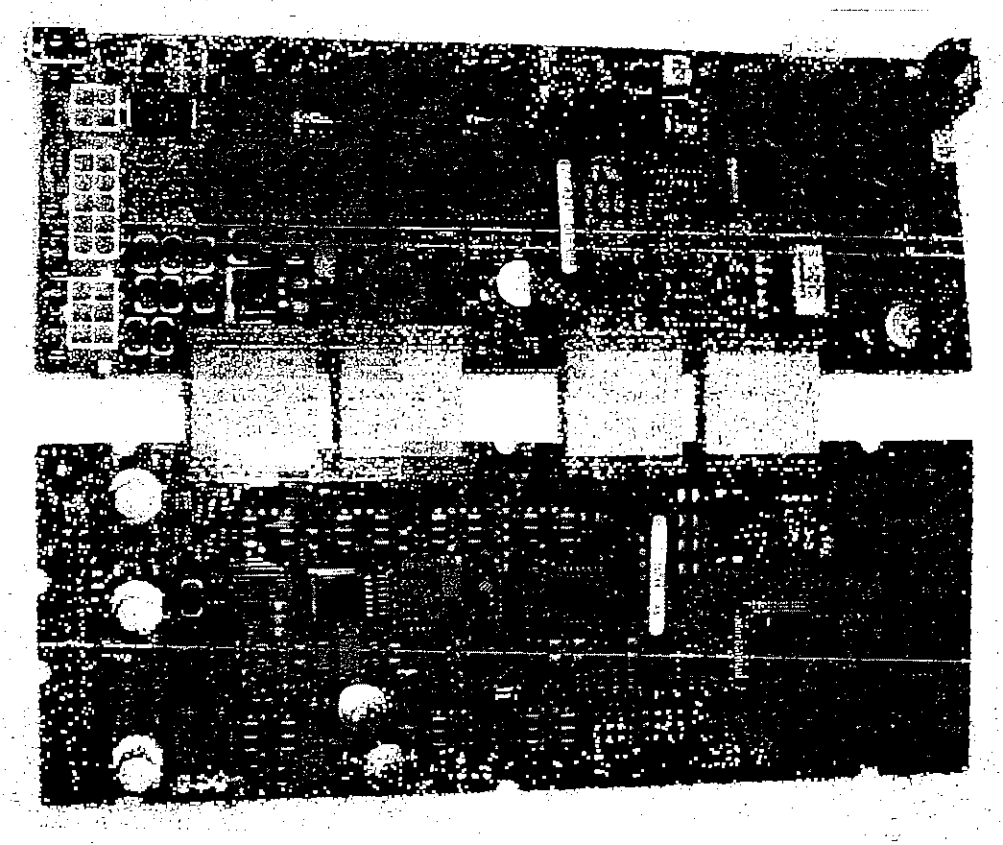
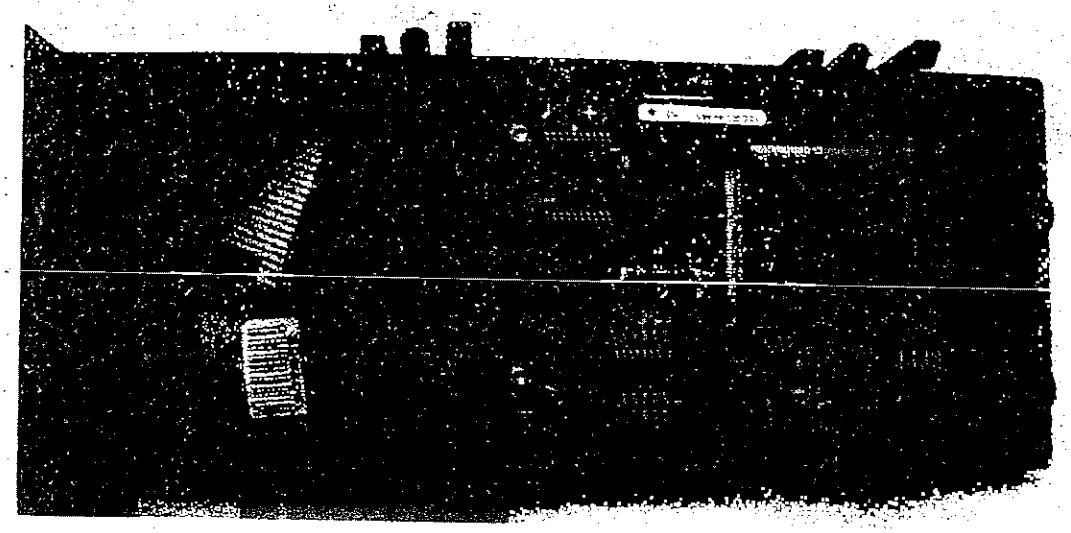


Figure 5 Display Module



The second electronic trip unit inspected was model number WLETU776MP, serial number 774341015358. The outer case exhibited no signs of corrosion. This electronic trip unit featured an externally connected metering module, which was removed, and visually inspected. There were no signs of corrosion on the circuit boards or the connector pins. The circuit board assemblies were also removed from the electronic trip unit. Likewise, there were no signs of corrosion on the electronic trip unit's circuit boards or connector pins.

The third electronic trip unit inspected was model number WLETU776MP, serial number 774341015361. The outer case exhibited no signs of corrosion. This electronic trip unit featured an externally connected metering module, which was removed, and visually inspected. There were no signs of corrosion on the circuit boards or the connector pins. The circuit board assemblies were also removed from the electronic trip unit. Likewise, there were no signs of corrosion on the electronic trip unit's circuit boards or connector pins.

The fourth (and final) electronic trip unit inspected was model number WLETU776, serial number 774341014768. The outer case exhibited no signs of corrosion. The circuit board assemblies were also removed from the electronic trip unit. Likewise, there were no signs of corrosion on the electronic trip unit's circuit boards or connector pins.

Summary

All of the Siemens type WL electronic trip units that were inspected were visually free of any form of corrosion.

Regards,

Karl Flum

Siemens Industry, Inc.
Industry Solutions Division (IS Division)
Industrial Service and Technologies (INBU)
100 Technology Drive
Alpharetta, GA 30005

Tel: (781) 389-5618
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Ralph.Walkowicz@siemens.com

CUSTOMER:	SM Electric	**SII JOB NUMBER:**	5200224524
PLANT:	Newark Airport Terminal B	**WRITTEN BY:**	Ralph Walkowicz
CUSTOMER PO:		**DATE REPORTED:**	December 03, 2010
SEA NO:	3001295712-3496	**PLANT SUPERVISOR:**	Russell Elliot
DESCRIPTION:	Newark Airport / Siemens inspection and recertification procedure.		

PURPOSE

Inspection and testing of Siemens Switchboard "SA" for recertification.

PERSON CONTACTED

Russell Elliot : Project Engineer

EQUIPMENT IDENTIFICATION

Siemens "SA" switch board, 3 Phase , 4 wire, 150 ka, 480 volt , 4000 amp/ So# 3001295712

AS FOUND

The equipment was found assembled and de-energized. The equipment had been in storage for some time and was found to have some discoloration of the exposed bus work.

SUMMARY

The purpose of this report is to document the findings of the inspections and the corrective action that was taken to achieve recertification standards.

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ACTION TAKEN:

Arrived on site to Inspect and test the equipment.

(1) Visually inspected each section bus bar connections.
(2) Visually inspected each breaker's main and secondary contacts.
(3) Visually inspected each breaker's finger cluster.
(4) Visually inspected each component for signs of corrosion or rust.
(5) Visually inspected and tested each breaker.
(6) Verified manual and electrical operation of the breakers.
(7) Tested each main bus insulation integrity with a 1kvdc megger
(8) Tested bus connection with 100 amp DLRO.
(9) Verified breaker status lights and electrical operation with temporary power.
(10) Documented test results (see attached field data sheets) and noted any discrepancies.

Discrepancies found:

(1) Splice plates bus bars for bus duct connections were unacceptable

Action Taken:

(1) Splice plates were removed and sent out for re-plating.
(2) Re-plated splice plates were reinstalled and inspected.
(3) Re-plated splice plates were tested and accepted.
(4) Observed torque of bus connections that had been removed for megger testing.

SUGGESTIVE CORRECTIVE ACTIONS:

1) None at this time.

REMARKS:

Switchboard "SA" at the Newark Airport was inspected/tested and at this time is considered to be acceptable for continued service.

Any comments and/or questions regarding this report can be made by contacting me via my contact information above.

END OF REPORT

S

Technical Support Program

Schedule 2.1

Siemens SO No: 86095R30

Switchgear and Switchboard Assemblies

Visual and Mechanical Inspection

- ☒ Compare equipment nameplate data with latest one-line diagram when available.
- ☒ Inspect physical, electrical, and mechanical condition including evidence of moisture or corona.
- ☒ Verify appropriate anchorage, required area clearances, Physical damage, and correct alignment.
- ☒ Verify that fuse and/or circuit breaker sizes and types correspond to drawings and coordination study as well as to the circuit breaker's address for microprocessor-communication packages.
- ☒ Verify that current and voltage (potential) transformer ratios correspond to drawings.
- ☒ Inspect all bus connections for high resistance using a low-resistance ohmmeter.
- ☒ Inspect insulators for evidence of physical damage or contaminated surfaces
- ☒ Verify correct barrier and shutter installation and operation

Electrical Tests

- ☒ Perform resistance measurements through all bus joints with a low-resistance ohmmeter.
- ☒ Perform insulation-resistance tests on each bus section, phase-to-phase and phase-to-ground for one minute.

Lubrication

- ☒ Verify appropriate contact lubricant on moving current-carrying parts.
- ☒ Verify appropriate lubrication on moving and sliding surfaces.
- ☒ Exercise all active components.
- ☒ Inspect all mechanical indicating devices for correct operation.
- ☒ Verify that filters are in place and/or vents are clear.
- ☒ Inspect control power transformers for physical damage, cracked insulation, broken leads, tightness of connections, defective wiring, and overall general condition.

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LOW VOLTAGE CIRCUIT BREAKER TEST REPORT

Customer	SM Electric	Location	Newark Airport Terminal B		
Substation	SA	Feeder/Cubicle	ATS-Life Safety	Unique ID	

Nameplate Data

Manufacturer	Siemens	Charging Motor / Solenoid Voltage:	120 volt ac	Trip Unit: Type	ETU776
Type / Model	WLF2A308			Style/Model	NA
Bolted - or- Draw-out	Draw-out	Close Coil Voltage:	120 volt ac	Plug Rating	500 amp
Shop Order/Serial Number	ID# 40012801001000	Trip Coil Voltage:	120 volt ac	Sensor Rating/Tap	
Frame Size/Rating	800 amp			Timing Curve/Plot	NA
Interrupting Rating	200 ka	UV Device	No	Limiter: Type	NA
Voltage Rating	508 volt			Manuf.	NA
		Test Position [Y/N]	Y	Rating	NA

Trip Unit Settings

	As Found	As Left		As Found	As Left
Long Delay PU	500 amp	500 amp	Long Time Delay	2 sec	2 sec
Short Delay PU	3000 amp	3000 amp	Short Time Delay	100 ms	100 ms
Ground Fault PU	300 amp	300 amp	Ground Fault Delay	300 ms	200 ms
Instantaneous PU	200000	200000	Other	NA	NA

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	NA

Inspection

Main Contact Condition./Align.	A	Control Wiring	A
Arcing Contact Condition./Align.	A	Primary Fingers	A
Arc Chute Condition	A	Frame Condition	A
Open Close Indicator	A	Secondary Contacts	A
Lubrication	A	Breaker Cleanliness	A
Mechanical Condition	A	Manual Close and Trip	A
Insulation	A	Electrical Close and Trip	A
Control Aux. And Interlocks	A	Rack and D/O Mech.	A

CODE LEGEND
A= Like New Condition
B= Good Condition
C= Poor Condition Requires Correction
D= Corrections Made
E= Unacceptable Condition Do Not Use!
R= Reconditioned
NA= Not Applicable

Electrical Tests

☐ Primary Injection ☒ Secondary Injection

Function	(Test) Settings		Good	Fail						
LDPU	1200 amp		Yes							
LTD	2 sec		Yes							
SDPU	4800 amp		Yes							
STD	100 ms		Yes							
INSTPU	2000000		Yes							
GFPU	900 amp		Yes							
GFD	200 ms		Yes							

NPU = NO PICKUP; NT = NO TRIP; NTD = NO TIME DEL

Insulation Resistance (in GIG-Ohms) @ 1k VDC

As Found						As Left					
A-G	100	A-B	100	A-A	100	A-G	100	A-B	100	A-A	100
B-G	100	B-C	100	B-B	100	B-G	100	B-C	100	B-B	100
C-G	100	C-A	100	C-C	100	C-G	100	C-A	100	C-C	100

Contact Resistance (Microhms)

As Found		As Left	
A	49	A	49
B	52	B	52
C	44	C	44

Comments

Satisfactory for Continued Service	Yes	Requires Repair	NO	Repairs Made During Maintenance	Yes

Fuse readings:
Phase A = 20 micro-ohms Phase B = 20 micro-ohms Phase C = 19 micro-ohms

Job No	5200-224524	Tested By	Ralph Walkowicz	Date Tested	11/30/10	ID#	

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LOW VOLTAGE CIRCUIT BREAKER TEST REPORT

Customer	SM Electric	Location	Newark Airport Terminal B		
Substation	SA	Feeder/Cubicle	PMDP	Unique ID	

Nameplate Data

Manufacturer	Siemens	Charging Motor / Solenoid Voltage:	120 volt ac	Trip Unit: Type	ETU776
Type / Model	WLF2A320	Close Coil Voltage:	120 volt ac	Style/Model	NA
Bolted - or- Draw-out	Draw-out	Trip Coil Voltage:	120 volt ac	Plug Rating	2000 amp
Shop Order/Serial Number	ID# 4001281001018			Sensor Rating/Tap	2000 amp
Frame Size/Rating	2000 amp			Timing Curve/Plot	NA
Interrupting Rating	200 ka	UV Device	No	Limiter: Type	NA
Voltage Rating	508 volt			Manuf.	NA
		Test Position [Y/N]	Y	Rating	NA

Trip Unit Settings

	As Found	As Left		As Found	As Left
Long Delay PU	2000 amp	2000 amp	Long Time Delay	2 sec	2 sec
Short Delay PU	6000 amp	6000 amp	Short Time Delay	100 ms	100 ms
Ground Fault PU	900 amp	900 amp	Ground Fault Delay	200 ms	200 ms
Instantaneous PU	200000	200000	Other	NA	NA

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	NA

Inspection

Main Contact Condition./Align.	A	Control Wiring	A
Arcing Contact Condition./Align.	A	Primary Fingers	A
Arc Chute Condition	A	Frame Condition	A
Open Close Indicator	A	Secondary Contacts	A
Lubrication	A	Breaker Cleanliness	A
Mechanical Condition	A	Manual Close and Trip	A
Insulation	A	Electrical Close and Trip	A
Control Aux. And Interlocks	A	Rack and D/O Mech.	A

CODE LEGEND
A= Like New Condition
B= Good Condition
C= Poor Condition Requires Correction
D= Corrections Made
E= Unacceptable Condition Do Not Use!
R= Reconditioned
NA= Not Applicable

Electrical Tests

☐ Primary Injection ☒ Secondary Injection

Function	(Test) Settings		Good	Fail						
LDPU	2000 amp		Yes							
LTD	2 sec		Yes							
SDPU	6000 amp		Yes							
STD	100 ms		Yes							
INSTPU	2000000		Yes							
GFPU	900 amp		Yes							
GFD	200 ms		Yes							

NPU = NO PICKUP; NT = NO TRIP; NTD = NO TIME DEL

Insulation Resistance (In GIG-Ohms) @ 1k VDC											
As Found						As Left					
A-G	100	A-B	100	A-A	100	A-G	100	A-B	100	A-A	100
B-G	100	B-C	100	B-B	100	B-G	100	B-C	100	B-B	100
C-G	100	C-A	100	C-C	100	C-G	100	C-A	100	C-C	100

Contact Resistance (Microhms)			
As Found		As Left	
A	42	A	42
B	32	B	32
C	40	C	40

Comments

Satisfactory for Continued Service	Yes	Requires Repair	NO	Repairs Made During Maintenance	Yes

Fuse readings:
Phase A = 20 micro-ohms Phase B = 19 micro-ohms Phase C = 23 micro-ohms

Job No	5200-224524	Tested By	Ralph Walkowicz	Date Tested	11/30/10	ID#	

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LOW VOLTAGE CIRCUIT BREAKER TEST REPORT

Customer	SM Electric	Location	Newark Airport Terminal B		
Substation	SA	Feeder/Cubicle	DPSA	Unique ID	

Nameplate Data

Manufacturer	Siemens	Charging Motor / Solenoid Voltage:	120 volt ac	Trip Unit: Type	ETU776
Type / Model	WLF2A316	Close Coil Voltage:	120 volt ac	Style/Model	NA
Bolted - or- Draw-out	Draw-out	Trip Coil Voltage:	120 volt ac	Plug Rating	1200 amp
Shop Order/Serial Number	ID# 4001280930037			Sensor Rating/Tap	
Frame Size/Rating	1600 amp			Timing Curve/Plot	NA
Interrupting Rating	200 ka	UV Device	No	Limiter: Type	NA
Voltage Rating	508 volt			Manuf.	NA
		Test Position [Y/N]	Y	Rating	NA

Trip Unit Settings

	As Found	As Left		As Found	As Left
Long Delay PU	1200 amp	1200 amp	Long Time Delay	2 sec	2 sec
Short Delay PU	4800 amp	4800 amp	Short Time Delay	100 ms	100 ms
Ground Fault PU	900 amp	900 amp	Ground Fault Delay	200 ms	200 ms
Instantaneous PU	200000	200000	Other	NA	NA

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	NA

Inspection

Main Contact Condition./Align.	A	Control Wiring	A
Arcing Contact Condition./Align.	A	Primary Fingers	A
Arc Chute Condition	A	Frame Condition	A
Open Close Indicator	A	Secondary Contacts	A
Lubrication	A	Breaker Cleanliness	A
Mechanical Condition	A	Manual Close and Trip	A
Insulation	A	Electrical Close and Trip	A
Control Aux. And Interlocks	A	Rack and D/O Mech.	A

CODE LEGEND
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C= Poor Condition Requires Correction
D= Corrections Made
E= Unacceptable Condition Do Not Use!
R= Reconditioned
NA= Not Applicable

Electrical Tests

☐ Primary Injection ☒ Secondary Injection

Function	(Test) Settings		Good	Fail						
LDPU	1200 amp		Yes							
LTD	2 sec		Yes							
SDPU	4800 amp		Yes							
STD	100 ms		Yes							
INSTPU	2000000		Yes							
GFPU	900 amp		Yes							
GFD	200 ms		Yes							

NPU = NO PICKUP; NT = NO TRIP; NTD = NO TIME DEL

Insulation Resistance (In GIG-Ohms) @ 1k VDC

As Found						As Left					
A-G	100	A-B	100	A-A	100	A-G	100	A-B	100	A-A	100
B-G	100	B-C	100	B-B	100	B-G	100	B-C	100	B-B	100
C-G	100	C-A	100	C-C	100	C-G	100	C-A	100	C-C	100

Contact Resistance (Microhms)

As Found		As Left	
A	36	A	36
B	49	B	49
C	48	C	48

Comments

Satisfactory for Continued Service	Yes	Requires Repair	NO	Repairs Made During Maintenance	Yes

Fuse readings:
Phase A = 21 micro-ohms Phase B = 20 micro-ohms Phase C = 20 micro-ohms

Job No	5200-224524	Tested By	Ralph Walkowicz	Date Tested	11/30/10	ID#	

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LOW VOLTAGE CIRCUIT BREAKER TEST REPORT

Customer	SM Electric	Location	Newark Airport Terminal B		
Substation	SA	Feeder/Cubicle	DP-SB	Unique ID	

Nameplate Data

Manufacturer	Siemens	Charging Motor / Solenoid Voltage:	120 volt ac	Trip Unit: Type	ETU776
Type / Model	WLF2A316	Close Coil Voltage:	120 volt ac	Style/Model	NA
Bolted - or- Draw-out	Draw-out	Trip Coil Voltage:	120 volt ac	Plug Rating	1200 amp
Shop Order/Serial Number	ID# 4001280930032			Sensor Rating/Tap	
Frame Size/Rating	1600 amp			Timing Curve/Plot	NA
Interrupting Rating	200 ka	UV Device	No	Limiter: Type	NA
Voltage Rating	508 volt			Manuf.	NA
		Test Position [Y/N]	Y	Rating	NA

Trip Unit Settings

	As Found	As Left		As Found	As Left
Long Delay PU	1200 amp	1200 amp	Long Time Delay	2 sec	2 sec
Short Delay PU	4800 amp	4800 amp	Short Time Delay	100 ms	100 ms
Ground Fault PU	900 amp	900 amp	Ground Fault Delay	200 ms	200 ms
Instantaneous PU	200000	200000	Other	NA	NA

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	NA

Inspection

Main Contact Condition./Align.	A	Control Wiring	A
Arcing Contact Condition./Align.	A	Primary Fingers	A
Arc Chute Condition	A	Frame Condition	A
Open Close Indicator	A	Secondary Contacts	A
Lubrication	A	Breaker Cleanliness	A
Mechanical Condition	A	Manual Close and Trip	A
Insulation	A	Electrical Close and Trip	A
Control Aux. And Interlocks	A	Rack and D/O Mech.	A

CODE LEGEND
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D= Corrections Made
E= Unacceptable Condition Do Not Use!
R= Reconditioned
NA= Not Applicable

Electrical Tests

☐ Primary Injection ☒ Secondary Injection

Function	(Test) Settings		Good	Fail						
LDPU	1200 amp		Yes							
LTD	2 sec		Yes							
SDPU	4800 amp		Yes							
STD	100 ms		Yes							
INSTPU	2000000		Yes							
GFPU	900 amp		Yes							
GFD	200 ms		Yes							

NPU = NO PICKUP; NT = NO TRIP; NTD = NO TIME DEL

Insulation Resistance (in GIG-Ohms) @ 1k VDC											
As Found						As Left					
A-G	100	A-B	100	A-A	100	A-G	100	A-B	100	A-A	100
B-G	100	B-C	100	B-B	100	B-G	100	B-C	100	B-B	100
C-G	100	C-A	100	C-C	100	C-G	100	C-A	100	C-C	100

Contact Resistance (Microhms)			
As Found		As Left	
A	39	A	39
B	38	B	38
C	38	C	38

Comments

Satisfactory for Continued Service	Yes	Requires Repair	NO	Repairs Made During Maintenance	Yes

Fuse readings:
Phase A = 20 micro-ohms Phase B = 20 micro-ohms Phase C = 19 micro-ohms

Job No	5200-224524	Tested By	Ralph Walkowicz	Date Tested	11/30/10	ID#	

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LOW VOLTAGE CIRCUIT BREAKER TEST REPORT

Customer	SM Electric	Location	Newark Airport Terminal B		
Substation	SA	Feeder/Cubicle	Main breaker	Unique ID	

Nameplate Data

Manufacturer	Siemens	Charging Motor / Solenoid Voltage:	120 volt ac	Trip Unit: Type	ETU776
Type / Model	WLM3A340	Close Coil Voltage:	120 volt ac	Style/Model	NA
Bolted - or- Draw-out	Draw-out	Trip Coil Voltage:	120 volt ac	Plug Rating	4000 amp
Shop Order/Serial Number	ID# 4001281007016			Sensor Rating/Tap	4000 amp
Frame Size/Rating	4000 amp			Timing Curve/Plot	NA
Interrupting Rating	150 ka	UV Device	No	Limiter: Type	NA
Voltage Rating	508 volt			Manuf.	NA
		Test Position [Y/N]	Y	Rating	NA

Trip Unit Settings

	As Found	As Left		As Found	As Left
Long Delay PU	1600 amp	4000 amp	Long Time Delay	2 sec	2 sec
Short Delay PU	5000 amp	8000 amp	Short Time Delay	20 ms	300 ms
Ground Fault PU	400 amp	1200 amp	Ground Fault Delay	100 ms	300 ms
Instantaneous PU	150000	150000	Other	NA	NA

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	NA

Inspection

Main Contact Condition./Align.	A	Control Wiring	A
Arcing Contact Condition./Align.	A	Primary Fingers	A
Arc Chute Condition	A	Frame Condition	A
Open Close Indicator	A	Secondary Contacts	A
Lubrication	A	Breaker Cleanliness	A
Mechanical Condition	A	Manual Close and Trip	A
Insulation	A	Electrical Close and Trip	A
Control Aux. And Interlocks	A	Rack and D/O Mech.	A

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D= Corrections Made
E= Unacceptable Condition Do Not Use!
R= Reconditioned
NA= Not Applicable

Electrical Tests

☐ Primary Injection ☒ Secondary Injection

Function	(Test) Settings		Good	Fail						
LDPU	4000 amp		Yes							
LTD	2 sec		Yes							
SDPU	8000 amp		Yes							
STD	300 ms		Yes							
INSTPU	1500000		Yes							
GFPU	1200 amp		Yes							
GFD	300 ms		Yes							

NPU = NO PICKUP; NT = NO TRIP; NTD = NO TIME DEL

Insulation Resistance (in GIG-Ohms) @	1k	VDC									
As Found						As Left					
A-G	100	A-B	100	A-A	100	A-G	100	A-B	100	A-A	100
B-G	100	B-C	100	B-B	100	B-G	100	B-C	100	B-B	100
C-G	100	C-A	100	C-C	100	C-G	100	C-A	100	C-C	100

Contact Resistance (Microhms)			
As Found		As Left	
A	109	A	13
B	56	B	16
C	111	C	11

Comments

Satisfactory for Continued Service	Yes	Requires Repair	NO	Repairs Made During Maintenance	Yes

* New trip unit installed in this breaker.

Job No	5200-224524	Tested By	Ralph Walkowicz	Date Tested	11/29/10	ID#	

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SWITCHGEAR TEST REPORT

Customer:	SM Electric	**Location:**	Newark Airport		
Substation:	SA	**Switchgear Designation:**	SA	**Unique ID:**	

Nameplate Data

Manufacturer:	Siemens	**Type:**	3 phase, 4 wire
Serial No.:	SO# 3001295712	**Current Rating:**	4000 amp
Voltage Rating:	480 volt	**Bus Fault Rating:**	150 ka

Inspection

Cell Heaters:	B	**Key Interlocks:**	NA
Meter & Control Switches:	B	**Pilot Light:**	B
Wiring:	B	**Terminal Blocks:**	B
Fuse & Fuse Blocks:	B	**Stationary Contact Bottles:**	NA
Ground Bus:	B	**Tracking / Corona:**	B
Bus Supports:	B	**Joint Insulation:**	B
Terminations:	B	**General Hardware:**	B
Paint – Inside & Outside:	B	**PT / CPT Compartment**	B

CODE LEGEND
A= Like New Condition
B= Good Condition
C= Poor Condition Requires Correction
D= Corrections Made
E= Unacceptable Condition Do Not Use!
NA= Not Applicable

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean / Dirty	clean
Wet / Damp / Dry	dry
Temp (Degree C)	
Relative Humidity (%)	

Electrical Tests

Insulation Resistance

Readings in Mega-Ohms @ 1k VDC

A-B	100 Gig ohms	B-C	100 Gig ohms	C-A	100 Gig ohms
A-G	100 Gig ohms	B-G	100 Gig ohms	C-G	100 Gig ohms

Ductor Test

Readings in micro-ohms @ 100amps

Section 1	Section 2	Section 3	Section 4	Section 5	Section 1- 5
A-A =170	A-A =87	A-A =123	A-A =47	A-A =35	
B-B =157	B-B =110	B-B =114	B-B =71	B-B =39	
C-C =165	C-C =112	C-C =104	C-C =57	C-C =36	
N-N =38	N-N =19	N-N =18	N-N =61	N-N =51	N-N =81

COMMENTS:

Section # 1 reading : From the bus duct through the splice plate connections and two breakers to the load side of a feeder breaker.
Section #1 neutral reading : From the bus duct through the splice plate connections to the lower rear horizontal neutral bus.
Section #2 readings : From the bus duct through the splice plate connections and one breaker to the load side of a feeder breaker.
Section #2 neutral reading : From the bus duct through the splice plate connections to the lower rear horizontal neutral bus.
Section #3 readings : From the bus duct through the splice plate connections and one breaker to the load side of a feeder breaker.
Section #3 neutral reading : From the bus duct through the splice plate connections to the lower rear horizontal neutral bus.
Section #4 readings : From the load side on Main breaker in section #4 to the bus duct connection in section #3.
Section #4 neutral reading : From the horizontal neutral bus in section #4 to the Bus duct neutral connection in section #3.
Section #5 readings : From the bus duct through the spice plate and one breaker to the horizontal bus in section #4.
(Readings were lowered on this test by cleaning the breaker's main contacts)
Section #5 neutral reading : From the bus duct connection to the horizontal rear neutral bus in section #4.

Section #1-#5 neutral reading: From the rear horizontal neutral bus in section #1 to the bus duct neutral connection in section #5.

Spice plates for bus duct connections were re-plated and are in good condition.

Satisfactory for Continued Service	Yes	**Requires Repair**	No	**Repairs Made During Maintenance**			
Job No:	5200-	**Tested By:**	Ralph Walkowicz	**Date Tested**	11/19/10	**ID #**	

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PRIMARY BUS TEST REPORT

Customer	SM electric	**Location**	Newark Airport Terminal B		
Substation	SA	**Feeder/Cubicle**	Main breaker / Section #2,#1	**Unique ID**	

Nameplate Data

Manufacturer	Siemens	**Voltage Rating**	480 volt
Type / Style	3 phase, 4 wire	**Current Rating**	4000 amp
YR / Serial Number	SO # 3001295712	**Interrupting Rating**	150 ka
IB Number			

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	

Electrical Tests

Insulation Resistance (in Gig-Ohms) @ 1000 VDC			
As Found			
A-G	100	A-B	100
B-G	100	B-C	100
C-G	100	C-A	100

Comments

Satisfactory for Continued Service	Yes	**Requires Repair**	NO	**Repairs Made During Maintenance**	NA

Note: Exposed bus joints were inspected in each section for proper connection and cross checked with a 100 amp DLRO.

Job No	5200-224524	**Tested By**	Ralph Walkowicz	**Date Tested**	11/29/10	**ID#**	

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PRIMARY BUS TEST REPORT

Customer	SM electric	**Location**	Newark Airport Terminal B		
Substation	SA	**Feeder/Cubicle**	Main breaker / Section #5,#4,#3	**Unique ID**	

Nameplate Data

Manufacturer	Siemens	**Voltage Rating**	480 volt
Type / Style	3 phase, 4 wire	**Current Rating**	4000 amp
YR / Serial Number	SO # 3001295712	**Interrupting Rating**	150 ka
IB Number			

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	

Electrical Tests

Insulation Resistance (in Gig-Ohms) @ 1000 VDC			
As Found			
A-G	7.0	A-B	20
B-G	10	B-C	18
C-G	5	C-A	15

Comments

Satisfactory for Continued Service	Yes	**Requires Repair**	NO	**Repairs Made During Maintenance**	NA

Note: Exposed bus joints were inspected in each section for proper connections and cross checked with a 100 amp DLRO.

Job No	5200-224524	**Tested By**	Ralph Walkowicz	**Date Tested**	11/29/10	**ID#**	

182 Forbes Road
Braintree, Ma. 02184

Siemens Industry, Inc.

RGA Information — *Report Number: 123601*

GA Number 392587 Date Report Created 11/16/2010 Eval Completed: 11/15/2010

Customer S M ELECTRIC CO INC Account Number 30058138

Catalog/MLFB Number SCJD69200NGT Serial Number 043008

Customer Comments: Breakers from orig so# 3001295712/9073455/86095. Tested and returned to customer. Reports required

Tests Performed for Evaluation

Thermal 200%
☐ Conforming ☐ Non-Conforming ☑ N/A

Thermal 110% Hold-In
☐ Conforming ☐ Non-Conforming ☑ N/A

Instantaneous Trip
○ UL Instant.
○ IEC Instant.
◉ Not Appl.

Thermal 135%
☐ Conforming ☐ Non-Conforming ☑ N/A

Thermal 100% Temperature
☐ Conforming ☐ Non-Conforming ☑ N/A

Electrical - Continuity Check
☑ Conforming ☐ Non-Conforming ☐ N/A

Mechanical Evaluation
☑ Conforming ☐ Non-Conforming ☐ N/A

Evaluation Findings

☑ Unable to duplicate reported issue ☐ Able to duplicate reported issue

☐ Field related issue
- ☐ Cosmetic
- ☐ Handling
- ☐ Loose Connection
- ☐ Stripped Screw
- ☐ Environment
- ☐ Other

☐ Assembly related issue
- ☐ Cosmetic
- ☐ Incorrect Assembly Components
- ☐ Missing Assembly Components
- ☐ Incorrect Assembly
- ☐ Label Error
- ☐ Other

☐ Electrical related issue
- ☐ Thermal Calibration
  - ◉ 200% LP Cal
  - ○ 200% CP Cal
  - ○ 200% RP Cal
  - ○ 135% Cal
  - ○ Hold-In
- ☐ Continuity Issue
- ☐ Instantaneous Calibration
  - UL ◉ LP ◉ CP ◉ RP
  - IEC ◉ LP_CP ◉ LP_RP ○ CP_RP
- ☐ Millivolt Issue
- ☐ Defective Electrical Component
- ☐ Damaged Component - Arcing
- ☐ Other

☐ Mechanical related issue
- ☐ Handle Related
- ☐ Internal Mechanism Related
- ☐ Interlock Related
- ☐ Latch Related
- ☐ Other

☐ Shipping Handling related issue

Comments:
This breaker conforms to testing. No credit is suggested for this breaker returned on rejected RGA E582-392587.

gineering Rep. Paulus Mary (Digitally signed by Paulus Mary, DN: cn=Paulus Mary, sn=Paulus, givenName=Mary, o=Siemens, serialNumber=Z0007ABD, Date: 2010.11.22 13:20:32 -08'00')

Production Rep. Myers Fred (Digitally signed by Myers Fred, DN: cn=Myers Fred, sn=Myers, givenName=Fred, o=Siemens, serialNumber=Z0007EXB)

Quality Rep. [signature]

Target Market Representative If required...

Form F830.5-3

SIEMENS

RGA Testing Data Sheet - Sensitrip Breaker

RGA Number:	Non-RGA E582-392587	**SAP Reference Number:**	N/A
Smpl Number:	1	**RMA Reference Number:**	N/A

Customer Comments: Breakers from orig so# 3001295712/9073455/86095. Tested and returned to customer. Reports required

Catalog Number: SCJD69200NGT Serial Number: 043008

Observations: This breaker conforms to testing.

As-Received Settings

Rated Amperage:	200	A		
Continuous Amps:	100	%	Effective Amps:	200 A
Long Time Delay:	25	s		
Short Time Pickup:	1.5	(x Ir)	Short Time Fixed or I²t?	Fixed
Short Time Delay:	0.05	s		
Instantaneous:	2	(x Ir)		
Ground Fault Pickup:	20	%	Ground Fault Fixed or I²t?	I²t
Ground Fault Delay:	0.1	s	Residual Or Return?	?

Mechanical Testing

Number of ON/OFF Cycles	10+	Push To Trip Button Test	OK
		Continuity Test	OK

Long Time Testing (TS-31 Test Set)

	LP	CP	RP	
Trip Time	437.781	409.918	409.058	s
OK or NC?	OK	OK	OK	

Short Time set at 10 to prevent nuisance tripping at as-received setting.

Short Time Testing (TS-31 Test Set)

	LP	CP	RP	
Trip Time	0.073	0.073	0.073	s
OK or NC?	OK	OK	OK	

Instantaneous Testing (TS-31 Test Set)

	LP	CP	RP	
Trip Time	0.038	0.036	0.037	s
OK or NC?	OK	OK	OK	

Ground Fault Testing (TS-31 Test Set)

	LP	CP	RP	
Trip Time	0.280	0.334	0.280	s
OK or NC?	OK	OK	OK	

SIEMENS

RGA Testing Data Sheet - Sensitrip Breaker

200% Single Pole Thermal Testing (UL)

	LP	CP	RP		
Trip Time	0:04:38	0:04:09	0:04:00	Maximum	0:05:52
mV Reading	N/A	N/A	N/A		N/A

110% Thermal - Wired In Series (UL Equivalent)

Test Time	N/A	Minimum	3:00:00

135% Thermal - Wired In Series (UL)

Test Time	N/A	Maximum	2:00:00

300% Single Pole Thermal Testing (NEMA Standard AB4)

	LP	CP	RP		
Trip Time	N/A	N/A	N/A	Maximum	N/A
mV Reading	N/A	N/A	N/A		N/A

Instantaneous Testing (NEMA Standard AB4)

	HI Setting			LO Setting		
	LP	CP	RP	LP	CP	RP
Reading 1	N/A	N/A	N/A	N/A	N/A	N/A
Reading 2	N/A	N/A	N/A	N/A	N/A	N/A
Reading 3	N/A	N/A	N/A	N/A	N/A	N/A
Average	N/A	N/A	N/A	N/A	N/A	N/A

HI Setting Target Value	N/A	LO Setting Target Value	N/A
NEMA Standard AB4 +40% of HI Target Value	N/A	NEMA Standard AB4 +40% of LO Target Value	N/A
NEMA Standard AB4 -30% of HI Target Value	N/A	NEMA Standard AB4 -30% of LO Target Value	N/A

Note1: 200% testing was performed with the Short Time and Instantaneouse dials each set at 10.

Note2: A hardwired check of Ground Fault functionality was performed on the right pole - OK.

Siemens Industry, Inc.

RGA Information — *Report Number: 123601*

GA Number 392587 Date Report Created 11/16/2010 Eval Completed: 11/15/2010

Customer S M ELECTRIC CO INC Account Number 30058138

Catalog/MLFB Number SCJD69200NGT Serial Number 040108

Customer Comments: Breakers from orig so# 3001295712/9073455/86095. Tested and returned to customer. Reports required

Tests Performed for Evaluation

Thermal 200%	Thermal 110% Hold-In	Instantaneous Trip
☐ Conforming ☐ Non-Conforming ☑ N/A	☐ Conforming ☐ Non-Conforming ☑ N/A	○ UL Instant.
Thermal 135%	Thermal 100% Temperature	○ IEC Instant.
☐ Conforming ☐ Non-Conforming ☑ N/A	☐ Conforming ☐ Non-Conforming ☑ N/A	◉ Not Appl.
Electrical - Continuity Check	Mechanical Evaluation	
☐ Conforming ☐ Non-Conforming ☑ N/A	☐ Conforming ☑ Non-Conforming ☐ N/A	

Evaluation Findings

☐ Unable to duplicate reported issue ☐ Able to duplicate reported issue

☐ Field related issue
- ☐ Cosmetic
- ☐ Handling
- ☐ Loose Connection
- ☐ Stripped Screw
- ☐ Environment
- ☐ Other

☐ Electrical related issue
- ☐ Thermal Calibration
  - ○ 200% LP Cal
  - ○ 200% CP Cal
  - ○ 200% RP Cal
  - ○ 135% Cal
  - ○ Hold-In
- ☐ Continuity Issue
- ☐ Instantaneous Calibration
  - UL ○ LP ○ CP ○ RP
  - IEC ○ LP_CP ○ LP_RP ○ CP_RP
- ☐ Millivolt Issue
- ☐ Defective Electrical Component
- ☐ Damaged Component - Arcing
- ☐ Other

☐ Assembly related issue
- ☐ Cosmetic
- ☐ Incorrect Assembly Components
- ☐ Missing Assembly Components
- ☐ Incorrect Assembly
- ☐ Label Error
- ☐ Other

☑ Mechanical related issue
- ☐ Handle Related
- ☐ Internal Mechanism Related
- ☐ Interlock Related
- ☐ Latch Related
- ☑ Other

☐ Shipping Handling related issue

Comments:
Instances of sliplatch occurred during testing. The mag latch component did not reset. Credit is suggested for this breaker, returned on rejected RGA E582-392587.

gineering Rep. Paulus Mary (Digitally signed by Paulus Mary, DN: cn=Paulus Mary, ou=Paulus, givenName=Mary, o=Siemens, serialNumber=[illegible], Date: 2010.11.22 15:26:18 -06'00')

Production Rep. Myers Fred (Digitally signed by Myers Fred, DN: cn=Myers Fred, ou=Myers, givenName=Fred, o=Siemens, serialNumber=Z0007EX8)

Quality Rep.

Target Market Representative If required...

Form F8.30.5-3

SIEMENS
Ft. Worth, TX ModCenter

WL Low Voltage Power Circuit Breaker Certified Test Report

Catalog #:	M3A340ZYGCXG8CN		
Breaker Type:	ANSI (UL1066) Drawout Circuit Breaker		
CBID:	004001281002028	PS: 3	Frame Rating: 4000
Base Frame ID:	000491280211130	Interupt Cap.:	150 kA
Trip Unit ID:	000774341015358	ETU776, GF-Alarm and Trip	
Test Station:	MC13 :	Rating Plug:	4000
Test Date:	11/17/2010		

Production Order: 9100999093
Sold To: MONARCH ELECTRIC CO INC
ONE DODGE DR
30028917
WEST CALDWELL, NJ 07006

Ship To: MONARCH ELECTRIC CO INC
%NEWARK LIBERTY AIRPORT
30028917
NEWARK, NJ 07114

☑ Identity Test Performed - Incl. Programming, Labeling, Catalog Order Check

☑ Mechanical Accessory Tests Performed - Incl. Manual Mechanism Charging, Anti-Pumping, Trip/Close Solenoids, UVR, Motor, Aux. Switch Bell Alarms etc. (as per installed)

☑ Dielectric / Hi-Pot Tests Performed - Incl. @2.65kv: Open x A,B,C; Closed: AB, BC, AC, AG, BG, CG
@1.80 kV: Accessories to Ground
@1.20 kV: Motor connection to Ground

Primary Injection Test	Settings (ETU Initial settings / Test Current etc.; See Note 3)	Results A	Results B	Results C	Results *	Acceptable Range Min	Acceptable Range Max
Long Time Pickup (A)	IR(xIn): 0.4 Inj A: 1600 tR(s): 5.5	1706				1600	1760
Long Time Delay (S)	Test Current: 4800	19.2				17.6	22
Short Time Pickup (A)	Isd(xIn): 1.3 Inj A: 5000 Tsd(s): 0.02		5312			5000	6000
Short Time Delay (S)	Tsd(s): 0.4 Test Current: 6250		0.455			0.43	0.48
Instantaneous Pickup (A)	Ii(xIn): 1.5 Inj A: 6000			6613		6000	7200
Ground Fault Pickup (A)	Trip: B Alarm: B Tg(s): 0.1				668	600	720
Neutral Delay (S)	tR(s): 2 IN(xIn): ON / IN = 0.5 x In Inj A: 2000 Test Current: 4000				15.7	14.4	18

UVR Drop-out Voltage: 0

Notes:
1. This WL Low Voltage Power Circuit Breaker was tested in accordance with ANSI/IEEE C37.50-1989
2. The above tests were carried out according to controlled Siemens-Ft. Worth test inspection plans and standards on calibrated equipment. This process and documentation is controlled and audited by UL in accordance with ISO9001:2008. Certification available upon request.
3. All delay test settings are the same as for the preceding pickup test unless otherwise noted.
4. All WL Circuit Breaker ETUs are set to factory default safety settings prior to shipment. [Lowest Pickups, Shortest Delays, N-protection off, Memory Off, GF=sumI]
5. The above product identification information [ETU, Catalog Number etc.] is accurate as of the test date. Any changes to this configuration are not covered by the above test results.
6. For product support, please contact your sales representative or customer service at: chrystelle.williams@siemens.com
7. DNT indicates 'Did Not Test' and represents a test not applicable to this configured breaker.

Shelby D. Nelms
Quality Manager, Siemens - Ft. Worth ModCenter

SIEMENS

Ft. Worth, TX ModCenter

WL Low Voltage Power Circuit Breaker Certified Test Report

Catalog #:	M3A340ZYGCXG8CN		
Breaker Type:	ANSI (UL1066) Drawout Circuit Breaker		
CBID:	004001281007014	FS: 3	Frame Rating: 4000
Base Frame ID:	000491280423138	Interupt Cap.:	150 kA
Trip Unit ID:	000774341015366	ETU776, GF-Alarm and Trip	
Test Station:	MC13:	Rating Plug:	4000
Test Date:	11/17/2010		

Production Order: 9101011164

Sold To: MONARCH ELECTRIC CO INC
ONE DODGE DR
30028917
WEST CALDWELL, NJ 07006

Ship To: MONARCH ELECTRIC CO INC
%NEWARK LIBERTY AIRPORT
30028917
NEWARK, NJ 07114

☑ Identity Test Performed - Incl. Programming, Labeling, Catalog Order Check

☑ Mechanical Accessory Tests Performed - Incl. Manual Mechanism Charging, Anti-Pumping, Trip/Close Solenoids, UVR, Motor, Aux. Switch Bell Alarms etc. (as per installed)

☑ Dielectric / Hi-Pot Tests Performed - Incl. @2.65kv: Open x A,B,C; Closed: AB, BC, AC, AG, BG, CG
@1.80 kV: Accessories to Ground
@1.20 kV: Motor connection to Ground

Primary Injection Test	Settings (ETU Initial settings / Test Current etc.; See Note 3)	Results A	Results B	Results C	Results *	Acceptable Range Min	Acceptable Range Max
Long Time Pickup (A)	IR(xIn): 0.4 Inj A: 1600 tR(s): 5.5	1686				1600	1760
Long Time Delay (S)	Test Current: 4800	19.3				17.6	22
Short Time Pickup (A)	Isd(xIn): 1.3 Inj A: 5000 Tsd(s): 0.02		5385			5000	6000
Short Time Delay (S)	Tsd(s): 0.4 Test Current: 6250		0.458			0.43	0.48
Instantaneous Pickup (A)	Ii(xIn): 1.5 Inj A: 6000			6346		6000	7200
Ground Fault Pickup (A)	Trip: B Alarm: B Tg(s): 0.1				661	600	720
Neutral Delay (S)	tR(s): 2 IN(xIn): ON / IN = 0.5 x In Inj A: 2000 Test Current: 4000				15.7	14.4	18

UVR Drop-out Voltage: 0

Notes:
1. This WL Low Voltage Power Circuit Breaker was tested in accordance with ANSI/IEEE C37.50-1989
2. The above tests were carried out according to controlled Siemens-Ft. Worth test inspection plans and standards on calibrated equipment. This process and documentation is controlled and audited by UL in accordance with ISO9001:2008. Certification available upon request.
3. All delay test settings are the same as for the preceding pickup test unless otherwise noted.
4. All WL Circuit Breaker ETUs are set to factory default safety settings prior to shipment. [Lowest Pickups, Shortest Delays, N-protection off, Memory Off, GF=sumI]
5. The above product identification information [ETU, Catalog Number etc.] is accurate as of the test date. Any changes to this configuration are not covered by the above test results.
6. For product support, please contact your sales representative or customer service at: chrystelle.williams@siemens.com
7. DNT indicates 'Did Not Test' and represents a test not applicable to this configured breaker.

Shelby D. Nelms

Shelby D. Nelms
Quality Manager, Siemens - Ft. Worth ModCenter

SIEMENS

Ft. Worth, TX ModCenter

WL Low Voltage Power Circuit Breaker Certified Test Report

Catalog #:	M3A340ZYGCXG8CN		
Breaker Type:	ANSI (UL1066) Drawout Circuit Breaker		
CBID:	004001281007016	FS: 3	Frame Rating: 4000
Base Frame ID:	000491280423142	Interupt Cap.:	150 kA
Trip Unit ID:	000774341015361	ETU776, GF-Alarm and Trip	
Test Station:	MC13:	Rating Plug:	4000
Test Date:	11/17/2010		

Production Order: 9101011165

Sold To: MONARCH ELECTRIC CO INC
ONE DODGE DR
30028917
WEST CALDWELL, NJ 07006

Ship To: MONARCH ELECTRIC CO INC
%NEWARK LIBERTY AIRPORT
30028917
NEWARK, NJ 07114

- [x] Identity Test Performed - Incl. Programming, Labeling, Catalog Order Check
- [x] Mechanical Accessory Tests Performed - Incl. Manual Mechanism Charging, Anti-Pumping, Trip/Close Solenoids, UVR, Motor, Aux. Switch Bell Alarms etc. (as per installed)
- [x] Dielectric / Hi-Pot Tests Performed - Incl. @2.65kv: Open x A,B,C; Closed: AB, BC, AC, AG, BG, CG
  @1.80 kV: Accessories to Ground
  @1.20 kV: Motor connection to Ground

Primary Injection Test	Settings (ETU Initial settings / Test Current etc.; See Note 3)	Results A	Results B	Results C	Results *	Acceptable Range Min	Acceptable Range Max
Long Time Pickup (A)	IR(xIn): 0.4 Inj A: 1600 tR(s): 5.5	1689				1600	1760
Long Time Delay (S)	Test Current: 4800	17.9				17.6	22
Short Time Pickup (A)	Isd(xIn): 1.3 Inj A: 5000 Tsd(s): 0.02		5420			5000	6000
Short Time Delay (S)	Tsd(s): 0.4 Test Current: 6250		0.456			0.43	0.48
Instantaneous Pickup (A)	I(xIn): 1.5 Inj A: 6000			6354		6000	7200
Ground Fault Pickup (A)	Trip: B Alarm: B Tg(s): 0.1				673	600	720
Neutral Delay (S)	tR(s): 2 IN(xIn): ON / IN = 0.5 x In Inj A: 2000 Test Current: 4000				15.9	14.4	18

UVR Drop-out Voltage: 0

Notes:
1. This WL Low Voltage Power Circuit Breaker was tested in accordance with ANSI/IEEE C37.50-1989
2. The above tests were carried out according to controlled Siemens-Ft. Worth test inspection plans and standards on calibrated equipment. This process and documentation is controlled and audited by UL in accordance with ISO9001:2008. Certification available upon request.
3. All delay test settings are the same as for the preceding pickup test unless otherwise noted.
4. All WL Circuit Breaker ETUs are set to factory default safety settings prior to shipment. [Lowest Pickups, Shortest Delays, N-protection off, Memory Off, GF=sumI]
5. The above product identification information [ETU, Catalog Number etc.] is accurate as of the test date. Any changes to this configuration are not covered by the above test results.
6. For product support, please contact your sales representative or customer service at: chrystelle.williams@siemens.com
7. DNT indicates 'Did Not Test' and represents a test not applicable to this configured breaker.

Shelby D. Nelms

Shelby D. Nelms
Quality Manager, Siemens - Ft. Worth ModCenter

SIEMENS

Ft. Worth, TX ModCenter

WL Low Voltage Power Circuit Breaker Certified Test Report

Catalog #:	C3F340ZYXXXXXN		
Breaker Type:	UL489 Fixed Mounted Breaker		
CBID:	004001281211031	FS: 3	Frame Rating: 4000
Base Frame ID:	000491250829088	Interupt Cap.:	150 kA
Trip Unit ID:	000774341014768	ETU776, GF-Alarm and Trip	
Test Station:	MC13:	Rating Plug:	4000
Test Date:	11/17/2010		

Production Order: 9101273996

Sold To: MONARCH ELECTRIC CO INC
ONE DODGE DR
30028917
WEST CALDWELL, NJ 07006

Ship To: MONARCH ELECTRIC CO INC
%NEWARK LIBERTY AIRPORT
30028917
NEWARK, NJ 07114

- [x] Identity Test Performed - Incl. Programming, Labeling, Catalog Order Check
- [x] Mechanical Accessory Tests Performed - Incl. Manual Mechanism Charging, Anti-Pumping, Trip/Close Solenoids, UVR, Motor, Aux. Switch Bell Alarms etc. (as per installed)
- [x] Dielectric / Hi-Pot Tests Performed - Incl. @2.65kv: Open x A,B,C; Closed: AB, BC, AC, AG, BG, CG
  @1.80 kV: Accessories to Ground
  @1.20 kV: Motor connection to Ground

Primary Injection Test	Settings (ETU Initial settings / Test Current etc.; See Note 3)	Results A	Results B	Results C	Results *	Acceptable Range Min	Acceptable Range Max
Long Time Pickup (A)	IR(xIn): 0.4 Inj A: 1600 tR(s): 5.5	1680				1600	1760
Long Time Delay (S)	Test Current: 4800	18.9				17.6	22
Short Time Pickup (A)	Isd(xIn): 1.3 Inj A: 5000 Tsd(s): 0.02		5554			5000	6000
Short Time Delay (S)	Tsd(s): 0.4 Test Current: 6250		0.457			0.43	0.48
Instantaneous Pickup (A)	I(xIn): 1.5 Inj A: 6000			6507		6000	7200
Ground Fault Pickup (A)	Trip: B Alarm: B Tg(s): 0.1				676	600	720
Neutral Delay (S)	tR(s): 2 IN(xIn): ON / IN = 0.5 x In Inj A: 2000 Test Current: 4000				16.7	14.4	18

UVR Drop-out Voltage: 0

Notes:
1. This WL Low Voltage Power Circuit Breaker was tested in accordance with ANSI/IEEE C37.50-1989
2. The above tests were carried out according to controlled Siemens-Ft. Worth test inspection plans and standards on calibrated equipment. This process and documentation is controlled and audited by UL in accordance with ISO9001:2008. Certification available upon request.
3. All delay test settings are the same as for the preceding pickup test unless otherwise noted.
4. All WL Circuit Breaker ETUs are set to factory default safety settings prior to shipment. [Lowest Pickups, Shortest Delays, N-protection off, Memory Off, GF=sumI]
5. The above product identification information [ETU, Catalog Number etc.] is accurate as of the test date. Any changes to this configuration are not covered by the above test results.
6. For product support, please contact your sales representative or customer service at: chrystelle.williams@siemens.com
7. DNT indicates 'Did Not Test' and represents a test not applicable to this configured breaker.

Shelby D. Nelms

Shelby D. Nelms
Quality Manager, Siemens - Ft. Worth ModCenter

SIEMENS Industry, Inc.
Ft. Worth ModCenter

Date Printed:
11/23/2010 7:49 AM

Lochard, Daniel

From: Winkler, Eric [E.Winkler@vrhcorp.com]
Sent: Tuesday, November 30, 2010 7:34 AM
To: Lochard, Daniel; Leonardo, Raul
Subject: Fw: EWR 264.003 - Siemens Recertification of Switchgear SA

From: Don Sapanara <don.sapanara@smelectric.com>
To: Winkler, Eric
Cc: Konen, Jeff; Al Fosbenner <afosbenner@matrixservice.com>; Pete Cheche III <pvc3@smelectric.com>; Russ Elliott <russ.elliott@smelectric.com>
Sent: Tue Nov 30 07:33:50 2010
Subject: RE: EWR 264.003 - Siemens Recertification of Switchgear SA

Eric,

As I stated below, 3rd party testing was performed on Switchgear SA in April and all items tested passed.

The purpose of the testing included in the recertification process was to address Daniels's concerns in Items 1-6 below.

The connections Daniel is referring to in Item 7 were removed to allow Siemens to test the equipment without backfeeding the bus duct and will be replaced today.

No further third party testing will be performed prior to our submission of the recertification report and request for a final PA inspection.

Don Sapanara

From: Winkler, Eric [mailto:E.Winkler@vrhcorp.com]
Sent: Monday, November 29, 2010 6:19 PM
To: Don Sapanara; Russ Elliott
Subject: Fw: EWR 264.003 - Siemens Recertification of Switchgear SA

From: Lochard, Daniel <dlochard@panynj.gov>
To: Winkler, Eric
Cc: Leonardo, Raul <leonardr@panynj.gov>
Sent: Mon Nov 29 17:41:38 2010
Subject: RE: EWR 264.003 - Siemens Recertification of Switchgear SA

Eric,

The 3rd Party testing was performed last April.
But, the following has occurred since then.

1. Bus bars have been removed, replaced or resurfaced.
2. Bus flanges were re-plated by an unknown company.
3. Bus bar joints have been unbolted and put back together.
4. Bolts have been re-torqued.
5. Circuit breaker compartments and chutes have been opened.
6. An Electronic Trip Unit (ETU) has been removed and replaced.
7. Bus bar pieces in sections 3 & 4 still need to be re-connected.

Siemens will certify that their product meets the specifications.
3rd Party testing will validate the manufacturer's claim.
3rd Party testing will also verify that all disassembled parts have been re-assembled properly by the contractor.

Proceed with the independent 3rd Party testing, as per contract.

Daniel

From: Winkler, Eric [mailto:E.Winkler@vrhcorp.com]
Sent: Monday, November 29, 2010 4:27 PM
To: Lochard, Daniel
Subject: Fw: EWR 264.003 - Siemens Recertification of Switchgear SA

From: Don Sapanara <don.sapanara@smelectric.com>
To: Winkler, Eric
Cc: Russ Elliott <russ.elliott@smelectric.com>
Sent: Mon Nov 29 16:26:26 2010
Subject: Re: EWR 264.003 - Siemens Recertification of Switchgear SA

Eric,

The third party breaker testing was performed last April. The third party thermographic testing cannot be performed until after energization and the gear is under load.

Siemens has performed all other required testing.

Don Sapanara

From: Winkler, Eric <E.Winkler@vrhcorp.com>
To: Russ Elliott; Don Sapanara
Sent: Mon Nov 29 15:13:24 2010
Subject: Fw: EWR 264.003 - Siemens Recertification of Switchgear SA

From: Lochard, Daniel <dlochard@panynj.gov>
To: Winkler, Eric
Cc: Leonardo, Raul <leonardr@panynj.gov>
Sent: Mon Nov 29 16:13:01 2010
Subject: EWR 264.003 - Siemens Recertification of Switchgear SA

Eric,

As per my earlier conversation with the Siemens Technician, testing of Switchgear SA will be completed tomorrow.

When will the 3rd Party Testing begin for Switchgear SA?

This needs to occur shortly, if we are to keep the PSE&G shutdown dates that have been tentatively scheduled.

Daniel

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Lochard, Daniel

From: Winkler, Eric [E.Winkler@vrhcorp.com]
Sent: Monday, November 29, 2010 5:29 PM
To: Lochard, Daniel
Cc: Leonardo, Raul
Subject: Re: EWR 264.003 - Siemens Recertification of Switchgear SA

Yes

From: Lochard, Daniel <dlochard@panynj.gov>
To: Winkler, Eric
Cc: Leonardo, Raul <leonardr@panynj.gov>
Sent: Mon Nov 29 16:52:50 2010
Subject: RE: EWR 264.003 - Siemens Recertification of Switchgear SA

Eric,

You forwarded the e-mail.
But, are you in agreement with his Don's statement?

Daniel

From: Winkler, Eric [mailto:E.Winkler@vrhcorp.com]
Sent: Monday, November 29, 2010 4:27 PM
To: Lochard, Daniel
Subject: Fw: EWR 264.003 - Siemens Recertification of Switchgear SA

From: Don Sapanara <don.sapanara@smelectric.com>
To: Winkler, Eric
Cc: Russ Elliott <russ.elliott@smelectric.com>
Sent: Mon Nov 29 16:26:26 2010
Subject: Re: EWR 264.003 - Siemens Recertification of Switchgear SA

Eric,

The third party breaker testing was performed last April. The third party thermographic testing cannot be performed until after energization and the gear is under load.

Siemens has performed all other required testing.

Don Sapanara

From: Winkler, Eric <E.Winkler@vrhcorp.com>
To: Russ Elliott; Don Sapanara
Sent: Mon Nov 29 15:13:24 2010
Subject: Fw: EWR 264.003 - Siemens Recertification of Switchgear SA

From: Lochard, Daniel <dlochard@panynj.gov>
To: Winkler, Eric
Cc: Leonardo, Raul <leonardr@panynj.gov>
Sent: Mon Nov 29 16:13:01 2010
Subject: EWR 264.003 - Siemens Recertification of Switchgear SA

Eric,

As per my earlier conversation with the Siemens Technician, testing of Switchgear SA will be completed tomorrow.

When will the 3rd Party Testing begin for Switchgear SA?

This needs to occur shortly, if we are to keep the PSE&G shutdown dates that have been tentatively scheduled.

Daniel

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Lochard, Daniel

From: Winkler, Eric [E.Winkler@vrhcorp.com]
Sent: Monday, November 29, 2010 4:27 PM
To: Lochard, Daniel
Subject: Fw: EWR 264.003 - Siemens Recertification of Switchgear SA

From: Don Sapanara <don.sapanara@smelectric.com>
To: Winkler, Eric
Cc: Russ Elliott <russ.elliott@smelectric.com>
Sent: Mon Nov 29 16:26:26 2010
Subject: Re: EWR 264.003 - Siemens Recertification of Switchgear SA

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Siemens has performed all other required testing.

Don Sapanara

From: Winkler, Eric <E.Winkler@vrhcorp.com>
To: Russ Elliott; Don Sapanara
Sent: Mon Nov 29 15:13:24 2010
Subject: Fw: EWR 264.003 - Siemens Recertification of Switchgear SA

From: Lochard, Daniel <dlochard@panynj.gov>
To: Winkler, Eric
Cc: Leonardo, Raul <leonardr@panynj.gov>
Sent: Mon Nov 29 16:13:01 2010
Subject: EWR 264.003 - Siemens Recertification of Switchgear SA

Eric,

As per my earlier conversation with the Siemens Technician, testing of Switchgear SA will be completed tomorrow.

When will the 3rd Party Testing begin for Switchgear SA?

This needs to occur shortly, if we are to keep the PSE&G shutdown dates that have been tentatively scheduled.

Daniel

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Lochard, Daniel

From: Winkler, Eric [E.Winkler@vrhcorp.com]
Sent: Monday, November 08, 2010 8:44 AM
To: Lochard, Daniel
Subject: Fw: EWr 264.003 - Siemens recertification Process

From: Russ Elliott <russ.elliott@smelectric.com>
To: Winkler, Eric
Cc: Don Sapanara <don.sapanara@smelectric.com>
Sent: Mon Nov 08 08:08:18 2010
Subject: RE: EWr 264.003 - Siemens recertification Process

Eric,

As stated in the 2 week look ahead meeting this past Friday, Siemens will not be on site until Thursday at the earliest. We will keep you informed as to when Siemens returns to the site.

Thank you,

Russ Elliott
S.M. Electric Co., Inc.
at Newark Airport

Phone: 1-973-622-1470
Fax: 1-973-622-1471
Cell: 1-732-904-2354

From: Winkler, Eric [mailto:E.Winkler@vrhcorp.com]
Sent: Monday, November 08, 2010 7:57 AM
To: Russ Elliott
Subject: Fw: EWr 264.003 - Siemens recertification Process

From: Lochard, Daniel <dlochard@panynj.gov>
To: Winkler, Eric
Cc: Leonardo, Raul <leonardr@panynj.gov>
Sent: Mon Nov 08 07:54:40 2010
Subject: EWr 264.003 - Siemens recertification Process

Eric,

Please confirm what time Siemens will be on site today.

Where will he begin?

The 2-Week Look-Ahead schedule listed Switchgear NB, Switchgear SA and North Generator.

Daniel

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Lochard, Daniel

From: Winkler, Eric [E.Winkler@vrhcorp.com]
Sent: Wednesday, November 03, 2010 11:21 AM
To: Lochard, Daniel; Leonardo, Raul
Subject: Fw: Destructive Testing of Molded Case Circuit Breakers

---

From: Russ Elliott <russ.elliott@smelectric.com>
To: Winkler, Eric
Cc: Don Sapanara <don.sapanara@smelectric.com>; Lochard, Daniel <dlochard@panynj.gov>
Sent: Wed Nov 03 11:19:59 2010
Subject: Destructive Testing of Molded Case Circuit Breakers

Eric,

Regarding the conversation during today's progress meeting, the molded case circuit breakers will not be destructively tested as stated in the meeting. They will be returned to Siemens for factory retesting and recertification, as stated in Siemens recertification letter, Item 13.

Thank you,

Russ Elliott
S.M. Electric Co., Inc.
at Newark Airport

Phone: 1-973-622-1470
Fax: 1-973-622-1471
Cell: 1-732-904-2354

Lochard, Daniel

From: Winkler, Eric [E.Winkler@vrhcorp.com]
Sent: Wednesday, November 03, 2010 11:17 AM
To: Leonardo, Raul; Lochard, Daniel
Subject: Fw: Siemens ETU Testing

From: Russ Elliott <russ.elliott@smelectric.com>
To: Winkler, Eric
Cc: Don Sapanara <don.sapanara@smelectric.com>; Lochard, Daniel <dlochard@panynj.gov>
Sent: Wed Nov 03 11:13:13 2010
Subject: Siemens ETU Testing

Eric,

Keith Flowers, a Siemens factory representative, will be here on Thursday, November 4th, to test the four electronic trip units. The testing will begin at approximately 8:30am in the vicinity of our foremen's area in the unfinished space at the south end of Terminal B.

Thank you,

Russ Elliott
S.M. Electric Co., Inc.
at Newark Airport

Phone: 1-973-622-1470
Fax: 1-973-622-1471
Cell: 1-732-904-2354

Lochard, Daniel

From: Winkler, Eric [E.Winkler@vrhcorp.com]
Sent: Tuesday, November 02, 2010 2:55 PM
To: Lochard, Daniel
Subject: FW: Siemens Letter Regarding Belleville Washer Reuse
Attachments: C1260X-TR-263.pdf; C1260X-TR-263 Belleville Washer Reuse.pdf

Eric Winkler
Project Manager

1 Terminal B Short Term Parking Lot
Construction Trailer
Newark Liberty International Airport
Newark, NJ 07114
Phone: 973-824-2520
Fax: 973-824-2561 Mobile: 201-481-6901
www.vrhcorp.com

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From: Russ Elliott [mailto:russ.elliott@smelectric.com]
Sent: Tuesday, November 02, 2010 2:12 PM
To: Winkler, Eric
Cc: Don Sapanara
Subject: Siemens Letter Regarding Belleville Washer Reuse

Eric,

See attached files regarding the above subject matter.

Thank you,

Russ Elliott
S.M. Electric Co., Inc.
at Newark Airport

Phone: 1-973-622-1470
Fax: 1-973-622-1471
Cell: 1-732-904-2354

SIEMENS

November 1, 2010

S.M. Electric
Attn: Russ Elliott
Newark Airport
Terminal B Modernization

RE: Belleville Washer Reuse

Russ,

The factory has advised that the Belleville washers used on the Siemens Low Voltage Switchgear and Switchboards are reusable as long as they still have the ability to compress. They must be torqued to Siemens specification as listed in the instruction manuals.

Sincerely

Doris Schornstein
Siemens Industry, Inc.
Project Management

S.M. ELECTRIC COMPANY, INC.

601 NEW BRUNSWICK AVE. P.O. BOX 1144 RAHWAY, NEW JERSEY 07065-1144

LICENSE/PERMIT #191 MEMBER N.E.C.A. PHONE: 732-388-3540

FAX NUMBERS: GENERAL/CONSTRUCTION/PURCHASING: 732-388-3052 ESTIMATING: 732-381-6390

TRANSMITTAL C1260X-TR-263

TO: VRH Construction Corp.
320 Grand Ave.
Engelwood, NJ 07631-4355

ATTN: Eric Winkler

DATE: November 2, 2010
PROJECT: PANY/NJ-EWR-264.003
Lower Level Expan. &
Vertical Circ.
EST/JOB #: C1260X

TRANSMITTING BY: [X] E-MAIL [ ] FED EX [ ] HAND DELIVERY

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1		Siemens letter regarding reuse of Belleville washers

Note: Upon receipt of this transmittal, please fax a signed copy to 973-622-1471

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S.M. ELECTRIC COMPANY, INC.

RECEIVED: _____

BY R. Elliott
Russ Elliott (732) 904-2354

Lochard, Daniel

From: Winkler, Eric [E.Winkler@vrhcorp.com]
Sent: Tuesday, October 26, 2010 7:31 AM
To: Lochard, Daniel
Subject: RE: Siemens Recertification

No, The 2-week shows them coming back next week. I believe he will submit 1 report at the end.

Eric Winkler
Project Manager

1 Terminal B Short Term Parking Lot
Construction Trailer
Newark Liberty International Airport
Newark, NJ 07114
Phone: 973-824-2520
Fax: 973-824-2561 Mobile: 201-481-6901
www.vrhcorp.com

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From: Lochard, Daniel [mailto:dlochard@panynj.gov]
Sent: Tuesday, October 26, 2010 7:22 AM
To: Winkler, Eric
Subject: Siemens Recertification

Eric,

Will Siemens be on site today?

Will they submit a report anytime soon, for the inspections that have been performed so far.

Daniel

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Lochard, Daniel

From: Winkler, Eric [E.Winkler@vrhcorp.com]
Sent: Tuesday, October 19, 2010 3:23 PM
To: Leonardo, Raul; Lochard, Daniel
Subject: Fw: Switchboard NA Main Breaker Siemens Service Report
Attachments: C1260X-TR-262.pdf

From: Russ Elliott <russ.elliott@smelectric.com>
To: Winkler, Eric
Cc: Don Sapanara <don.sapanara@smelectric.com>
Sent: Tue Oct 19 14:24:39 2010
Subject: Switchboard NA Main Breaker Siemens Service Report

Eric,

Please see attached transmittal with associated document.

Thank you,

Russ Elliott
S.M. Electric Co., Inc.
at Newark Airport

Phone: 1-973-622-1470
Fax: 1-973-622-1471
Cell: 1-732-904-2354

S.M. ELECTRIC COMPANY, INC.

601 NEW BRUNSWICK AVE. P.O. BOX 1144 RAHWAY, NEW JERSEY 07065-1144

LICENSE/PERMIT #191 MEMBER N.E.C.A. PHONE: 732-388-3540

FAX NUMBERS: GENERAL/CONSTRUCTION/PURCHASING: 732-388-3052 ESTIMATING: 732-381-6390

TRANSMITTAL C1260X-TR-262

TO: VRH Construction Corp.
320 Grand Ave.
Engelwood, NJ 07631-4355

ATTN: Eric Winkler

DATE: October 19, 2010
PROJECT: PANY/NJ-EWR-264.003
Lower Level Expan. &
Vertical Circ.
EST/JOB #: C1260X

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[ ] FOR REVIEW AND COMMENT [ ] OTHER ____

[ ] **FOR BIDS DUE:** ____

COPIES	NUMBER	DESCRIPTION
1		Siemens service report on main circuit breaker in Switchgear NA

Note: Upon receipt of this transmittal, please fax a signed copy to 973-622-1471

VERY TRULY YOURS,

KINDLY RETURN ____ COPIES OF EACH

S.M. ELECTRIC COMPANY, INC.

RECEIVED: ____

BY R. Elliott
Russ Elliott (732) 904-2354

SIEMENS

FIELD SERVICE REPORT

Daytime Number (412) 778-5427 • Fax (412) 778-5505

(800) 241-4453
24 HOUR SERVICE

CUSTOMER ORDER NO.	SIEMENS TECH. SERVICES JOB #	WORK DESCRIPTION
4708126 0-501		
CUSTOMER		
PLANT LOCATION: Newark Airport / Newark NJ Terminal B		Board NA
CUSTOMER CONTACT	PHONE #	

DATE	NAME	TOTAL MAN HOURS	MAN HOUR BREAKDOWN / CHARGE TO CONTRACT: STR.TIME	OV. TIME	DBL TIME	TIME OUT	DELAY TIME	TRVL TIME	COMMENTS
		1	2	3	4	5	6	7	8
10/15	Ralph Walkowicz			4				½	Technical
									Assistance
									on Main
									Breaker in
									NA Board.
	TOTALS (FOR SHEET)								

COVER FOLLOWING POINTS ON EACH JOB AND NUMBER PARAGRAPHS EXACTLY AS SHOWN

1. PURPOSE OF VISIT	2. APPARATUS IDENTIFICATION	3. TIME IN SERVICE & APPLICATION	4. AS FOUND CONDITIONS	5. ACTION TAKEN	6. TEST DATA	7. STATUS OF JOB/OTHER WORK NECESSARY	8. REMARKS/ MATERIAL TO BE ORDERED

1.) The purpose of this service work was to give technical support for a main 4000 type breaker.
2.) Siemens main breaker in NA Board, ID # 4001281002026
3.) This breaker has been in service [illegible] 9 months.
4.) This breaker was de-energized and removed from the cell. The breaker was cleaned & tested and [illegible] back in [illegible] service.
5.) We observed that when the breaker was re-energized the audible sound was heard only when the test [illegible] loads were applied. There was no indication [illegible] of a breaker problem.

JOB STATUS

Job Complete? ☒ YES ☐ NO

Is additional report time required? ☐ YES ☒ NO

MINIMUM BILLING
A minimum billing of four hours will be made for services performed in 1 - 4 hours.

CUSTOMER REPORT TIME APPROVAL

Note: Unless otherwise specified, report time will be billed at published rates.

AUTHORIZED BY (CUSTOMER REPRESENTATIVE)	PERFORMED BY (SIEMENS REPRESENTATIVE)
NAME (PRINT) Russ Elliott	NAME (PRINT) Ralph Walkowicz
SIGNATURE [signature]	SIGNATURE [signature]
DATE 10-15-10	DATE 10/15/10

WHITE - JOB FILE CANARY - CUSTOMER PINK - BILLING MANILA - EXTRA WOM 0069-2

REVISED 10/02

Lochard, Daniel

From: Winkler, Eric [E.Winkler@vrhcorp.com]
Sent: Monday, October 18, 2010 8:09 AM
To: Lochard, Daniel
Subject: Re: EWR 264.003 - Switchgear Recertification

No

From: Lochard, Daniel <dlochard@panynj.gov>
To: Winkler, Eric
Cc: Leonardo, Raul <leonardr@panynj.gov>
Sent: Mon Oct 18 08:07:06 2010
Subject: EWR 264.003 - Switchgear Recertification

Eric,

Let me know if Siemens will be on site today for the recertification.

Daniel

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Lochard, Daniel

From: Winkler, Eric [E.Winkler@vrhcorp.com]
Sent: Tuesday, October 12, 2010 7:25 AM
To: Lochard, Daniel
Cc: Leonardo, Raul
Subject: RE: Siemens re certification

Nothing because you weren't in. He's in my office now getting a ID. He will start his inspection for the recertification.

Eric Winkler
Project Manager

VRH Construction Corp.
1 Terminal B Short Term Parking Lot
Construction Trailer
Newark Liberty International Airport
Newark, NJ 07114
Phone: 973-824-2520
Fax: 973-824-2561 Mobile: 201-481-6901 www.vrhcorp.com

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-----Original Message-----
From: Lochard, Daniel [mailto:dlochard@panynj.gov]
Sent: Tuesday, October 12, 2010 7:24 AM
To: Winkler, Eric
Cc: Leonardo, Raul
Subject: RE: Siemens re certification

Eric,

That was a really late notice.
What was the purpose of the visit?
What did they do?

Daniel

-----Original Message-----
From: Winkler, Eric [mailto:E.Winkler@vrhcorp.com]
Sent: Friday, October 08, 2010 4:22 PM
To: Leonardo, Raul; Lochard, Daniel
Subject: Siemens re certification

Sorry for the short notice. Siemens will be here on Monday. Eric

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Lochard, Daniel

From: Winkler, Eric [E.Winkler@vrhcorp.com]
Sent: Monday, September 27, 2010 8:54 AM
To: Lochard, Daniel
Cc: Pierce, Ed; Bayne, Terrance; Leonardo, Raul
Subject: RE: EWR 264.003 - Siemens Recertification
Attachments: Attachment 10 - Cool Amp.pdf

Dan, See the attached, which was previously transmitted as part Siemens letter date June 30th. The Siemens letter also addresses that S.M will apply the product. I will forward a recertification schedule shortly.

Eric Winkler
Project Manager

1 Terminal B Short Term Parking Lot
Construction Trailer
Newark Liberty International Airport
Newark, NJ 07114
Phone: 973-824-2520
Fax: 973-824-2561 Mobile: 201-481-6901
www.vrhcorp.com

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From: Lochard, Daniel [mailto:dlochard@panynj.gov]
Sent: Monday, September 27, 2010 8:38 AM
To: Winkler, Eric
Cc: Pierce, Ed; Bayne, Terrance; Leonardo, Raul
Subject: EWR 264.003 - Siemens Recertification

Eric,

The following issues need to be addressed and/or scheduled, as per the Siemens Recertification letter of August 26, 2010.

1 Note #3 - Provide the product information sheet for Cool-Amp Silver Coating. Provide Siemens' authorization to apply the product to the electrical field connections.

2 Note #4 – Provide the dates for the inspection of the WL circuit breaker compartments, so that PANYNJ may have a representative at the inspection.

3 Note #5 - Provide the dates for the inspection of the bus bar bolted sections, so that PANYNJ may have a representative at the inspection.

4 Note #7 – Same as Notes #4 & #5 above.

5 Note #9 – Provide dates so that PANYNJ may have a representative witness the testing.

6 Note #10 - Provide the dates for the inspection of the WL circuit breakers, so that PANYNJ may have a representative at the inspection.

7 Note #12 – Ensure that this 'destructive inspection' is performed on site, so that PANYNJ may have a representative.

8 Note #14 – Provide paperwork for the certified, third party testing company that will be used.

Daniel

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COOL-AMP Conductor Lube COMPANY SINCE 1944

15834 Upper Boones Ferry Road, Lake Oswego, Oregon 97035-4066 (503)624-6426 www.cool-amp.com

COOL-AMP #1233-500 PRODUCT INFORMATION SHEET

COOL-AMP is an odorless, water soluble, white powder used to apply a protective coating of Silver metal on copper or low-alloy brass and bronze substrates. The process is *electroless* and deposits an adherent coating typically 40 – 70 micro-inches in thickness by rubbing the moistened powder onto the cleaned part. There is no significant variation in thickness with the number of applications. It is an *electrochemical* process in which the very surface of the copper is displaced as the silver deposits.

Benefits of COOL-AMP Silver coating

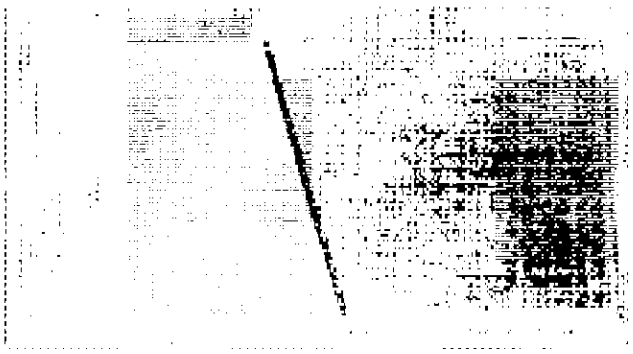
Applying a Silver coating provides a protective barrier to inhibit corrosion of the base copper. Copper oxidizes in air, creating a high resistance oxide film over the surface of the conductor. Silver brings an additional benefit: It has the lowest resistivity of all metals at room temperature. Silver is very resistant to oxidation in air so exposure to oxygen does not degrade electrical performance. By maintaining a stable resistivity over time, the silver coating significantly increases the useful life and efficiency of the connection.

Material	Resistivity, 10^{-8} Ohm•m
Silver	1.629
Copper	1.725
Gold	2.271
Aluminum	2.733
Zinc	6.06
Tin	11.5

Thermal conductivity of silver is 4.29 W/m-K.

Increases in *contact resistance* caused by oxide or other corrosion films on electrical contacts are well known. Tests exposing Silver and Copper contacts to N_2-O_2-SO_2-S_8-H_2O have shown Silver contacts to have superior performance.

Coated samples heat treated for two hours at 150 °C in air have shown the Silver-to-Copper bond passes ASTM B 571 in 45° modified Bend Test.



Procedures for applying COOL-AMP

Good bonding of the silver coating requires the metal substrate be completely free of any corrosion or oily films. Parts should be cleaned by wet-sanding with a fine-grit paper and distilled water and then rinsed with fresh distilled water.

In cases of oily residues, strong detergents, *e.g.*, those for automatic dish washers, may be required, prior to wet-sanding the surfaces. Heavy build-up of solid films may be removed with stainless steel, fine-wire brushes.

The cleaned part is now ready to be Silver coated. Use a wet/moist soft cloth to rub portions of the dry COOL-AMP onto the part, until a continuous, bright Silver surface has formed. Rinse the Silver with distilled water to remove all of the powder. After drying, the part is ready for service.

One pound of COOL-AMP will Silver coat 6000 in^2 or ~42 ft^2 of substrate.

Guidelines for using COOL-AMP

Recommended for use on parts made of copper or low-alloy brasses and bronzes. Use on moving parts will result in wear by friction or scratching.

COOL-AMP Registrations: NSN #6850-00-561-0349, NAIC CODE #325998 and SIC CODE #2899.

Lochard, Daniel

From: Winkler, Eric [E.Winkler@vrhcorp.com]
Sent: Friday, September 17, 2010 7:42 AM
To: Lochard, Daniel
Subject: Fw: Switchgear Recertification Work

From: Don Sapanara <don.sapanara@smelectric.com>
To: Winkler, Eric
Cc: Russ Elliott <russ.elliott@smelectric.com>
Sent: Fri Sep 17 07:41:09 2010
Subject: RE: Switchgear Recertification Work

Eric,

EMDS-N (Emergency Main Distribution Switchboard) contains four WL breakers; (2) 4,000A, (1) 600A and (1) 500A, none of which are a main breaker. The main breaker is in the Emergency Main Service Switchboard and is not a WL breaker.

Please identify a WL for EMDS-N to send out.

Don Sapanara

From: Winkler, Eric [mailto:E.Winkler@vrhcorp.com]
Sent: Thursday, September 16, 2010 2:28 PM
To: Russ Elliott; Don Sapanara
Subject: Fw: Switchgear Recertification Work

From: Lochard, Daniel <dlochard@panynj.gov>
To: Winkler, Eric
Cc: Leonardo, Raul <leonardr@panynj.gov>; Ret, Herman <hret@panynj.gov>; Johnson, Caesar <cjohnson@panynj.gov>
Sent: Thu Sep 16 14:21:32 2010
Subject: RE: Switchgear Recertification Work

Eric,

As per Item #2 below, the following six (6) circuits breakers have been selected.

WL Circuit Breakers (4)
The main circuit breaker for each switchgear (SA, SB, NB & EMDS-North).

Molded Case Circuit Breaker (2)
Switchboard B1 – Top 200A Spare in Section 2 of 5
Switchboard B2 – Top 200A Spare in Section 6 of 6

Daniel

From: Winkler, Eric [mailto:E.Winkler@vrhcorp.com]
Sent: Friday, September 10, 2010 1:36 PM
To: Lochard, Daniel; Leonardo, Raul
Subject: Fw: Switchgear Recertification Work

From: Don Sapanara <don.sapanara@smelectric.com>
To: Winkler, Eric
Cc: Russ Elliott <russ.elliott@smelectric.com>; Konen, Jeff; Al Fosbenner <afosbenner@matrixservice.com>
Sent: Fri Sep 10 12:46:01 2010
Subject: Switchgear Recertification Work

Eric,

1. We informed Port Authority in our bi-weekly meeting that we would like to begin the Recertification Process on Switchgear NB on Monday 9/13/10. We will begin with the alcohol wipe down.

2. Please have Port Authority identify the four WL breakers (one from each of the four switchgear line ups to be recertified) and the two molded case breakers (one from B1 and one from B2) that they would like to have Siemens factory test. The trip units from the four WL breakers will be used for the on site destructive test. Once the breakers have been chosen, we will make arrangements with Siemens for the testing.

3. We will forward a two week look ahead for our remaining work to you later today. We provided a spreadsheet and P3 schedule of our remaining work to Jeff this morning. Not all the activities shown on the P3 schedule are reflected in the two week look ahead, as some of the open activities in the schedule are items that were already started and are now riding the data date.

Don Sapanara
Project Manager

S.M. Electric Co., Inc.
601 New Brunswick Ave.
Rahway, NJ 07065

Main Office:
Phone 732-388-3540
Fax 732-388-3052

ConocoPhillips Site:
Phone 908-523-5508
Fax 908-523-5143

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From: Winkler, Eric [E.Winkler@vrhcorp.com]
Sent: Thursday, September 16, 2010 2:36 PM
To: Lochard, Daniel
Subject: Fw: Switchgear Recertification Work

From: Don Sapanara <don.sapanara@smelectric.com>
To: Winkler, Eric
Cc: Russ Elliott <russ.elliott@smelectric.com>
Sent: Thu Sep 16 14:34:51 2010
Subject: RE: Switchgear Recertification Work

Eric,

Siemens will provide boxes and the WL breakers will be shipped to Texas. We are waiting for clarification from Siemens as to how the molded case will be handled. Siemens wants to return them to Texas fore testing and recertification. PA wanted to do a destructive test on site. I'm waiting for an answer from Siemens to see if the molded case can be non-destructively inspected by PA on site and then returned to Texas for full testing and recertification.

Don Sapanara

From: Winkler, Eric [mailto:E.Winkler@vrhcorp.com]
Sent: Thursday, September 16, 2010 2:28 PM
To: Russ Elliott; Don Sapanara
Subject: Fw: Switchgear Recertification Work

From: Lochard, Daniel <dlochard@panynj.gov>
To: Winkler, Eric
Cc: Leonardo, Raul <leonardr@panynj.gov>; Ret, Herman <hret@panynj.gov>; Johnson, Caesar <cjohnson@panynj.gov>
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ConocoPhillips Site:
Phone 908-523-5508
Fax 908-523-5143

ard, Daniel

m:	Winkler, Eric [E.Winkler@vrhcorp.com]
t:	Wednesday, September 01, 2010 7:01 AM
:	Lochard, Daniel
c:	Pierce, Ed; Leonardo, Raul; Podesta, Charles; Melendez, Juan; Russ Elliott; Don Sapanara; Bayne, Terrance
Subject:	RE: EWR 264.003 - North Generator Delivery

OK Angelo and Edwin.

Eric Winkler
Project Manager

1 Terminal B Short Term Parking Lot
Construction Trailer
Newark Liberty International Airport
Newark, NJ 07114
Phone: 973-824-2520
Fax: 973-824-2561 Mobile: 201-481-6901
www.vrhcorp.com

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From: Lochard, Daniel [mailto:dlochard@panynj.gov]
Sent: Tuesday, August 31, 2010 12:01 PM
To: Winkler, Eric
Cc: Pierce, Ed; Leonardo, Raul; Podesta, Charles; Melendez, Juan; Russ Elliott; Don Sapanara; Bayne, Terrance
Subject: EWR 264.003 - North Generator Delivery

Eric,

The Thursday night Building 125 parking lot and road closure are planned.

As per our earlier conversation with the rigger, the delivery will be at 9:00 PM.

The parking lot and road closure will be for 9:00 PM – 5:00 AM.

Bulletins will be sent and PAPD will be notified.

VRH must follow the MPT plan on contract drawing MT112.

Provide plastic delineator drums, signs and Flag Men.

Let us know who the Flag Men will be by tomorrow afternoon.

s,

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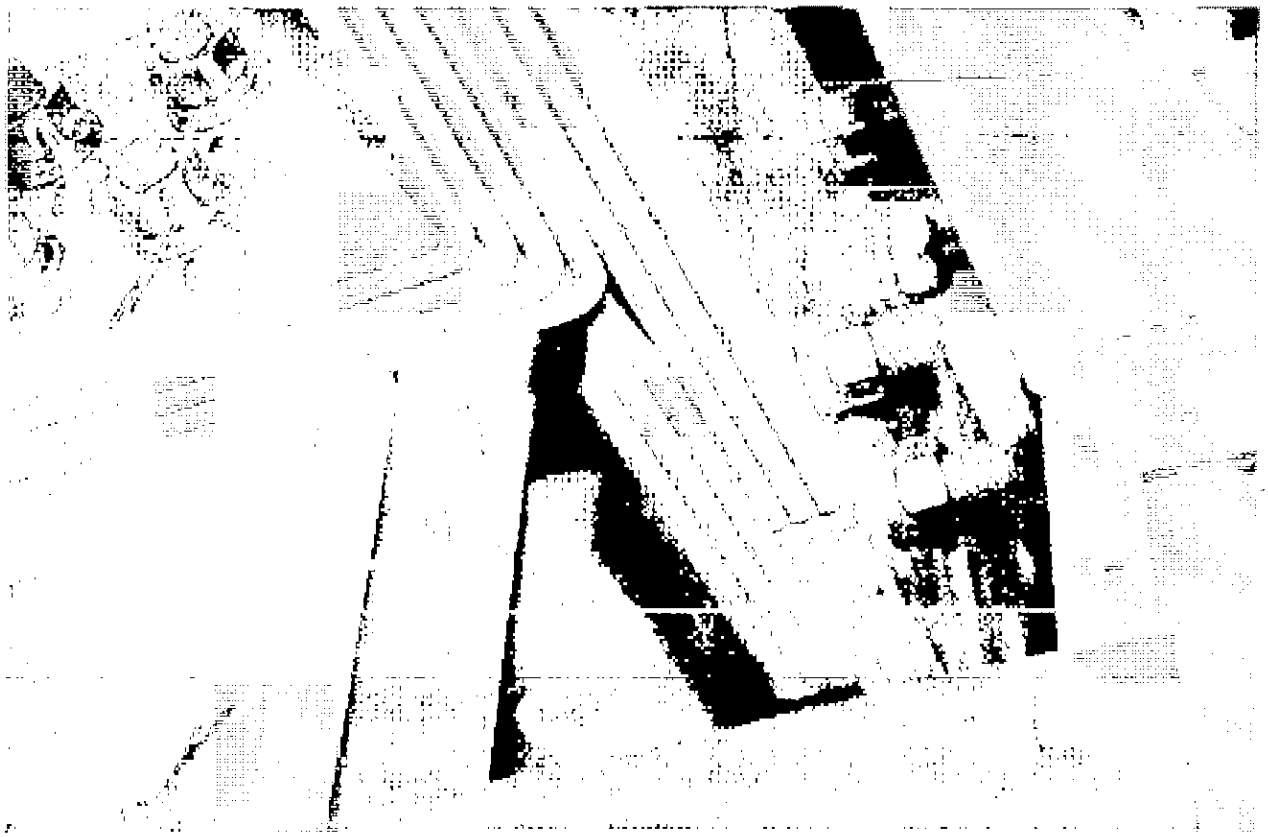
Site Investigation- Corrosion of Copper Bus bars in Switchgear NB- EWR Terminal B-1
June 14, 2011

Observations

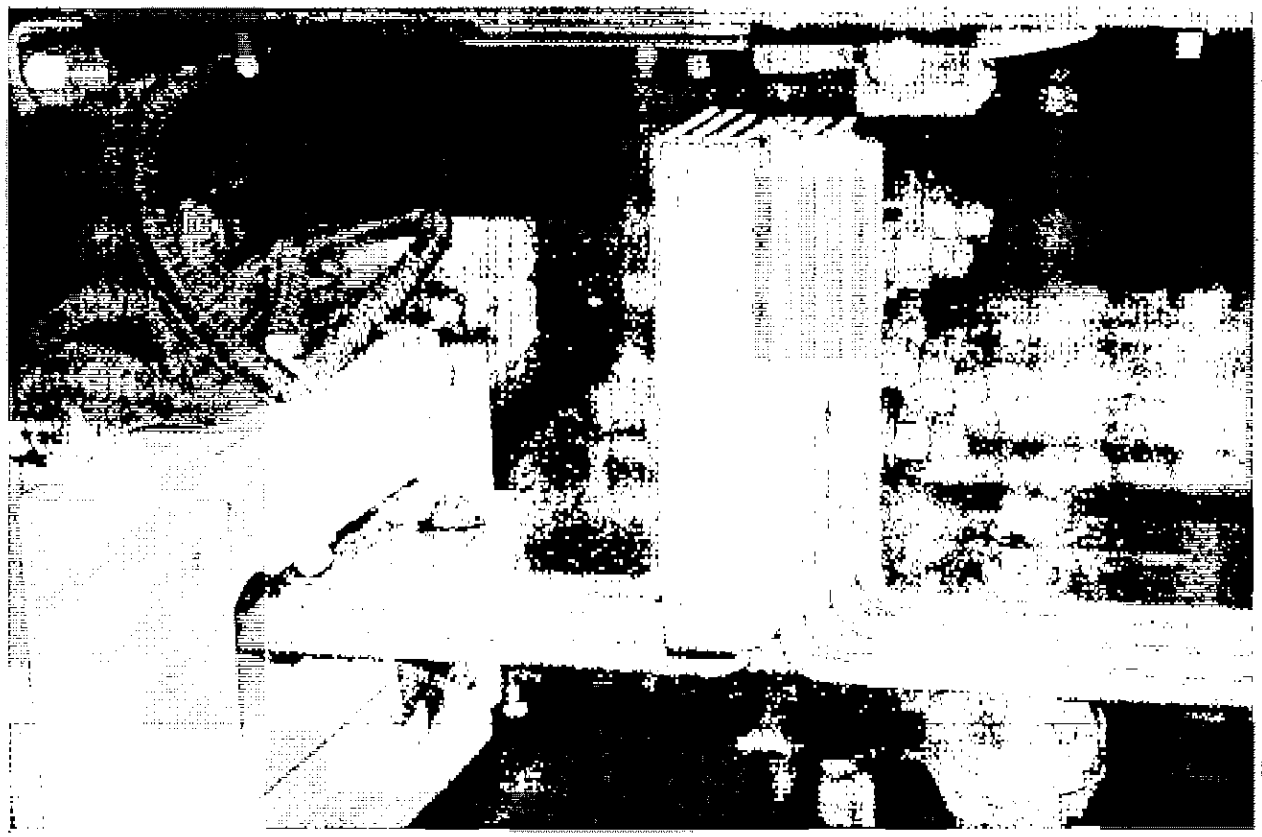
1. Switchgear NB (south end) - condition of bus bars generally good, some residual staining from loss of silver plating. Plating is still evident around bolted connections.

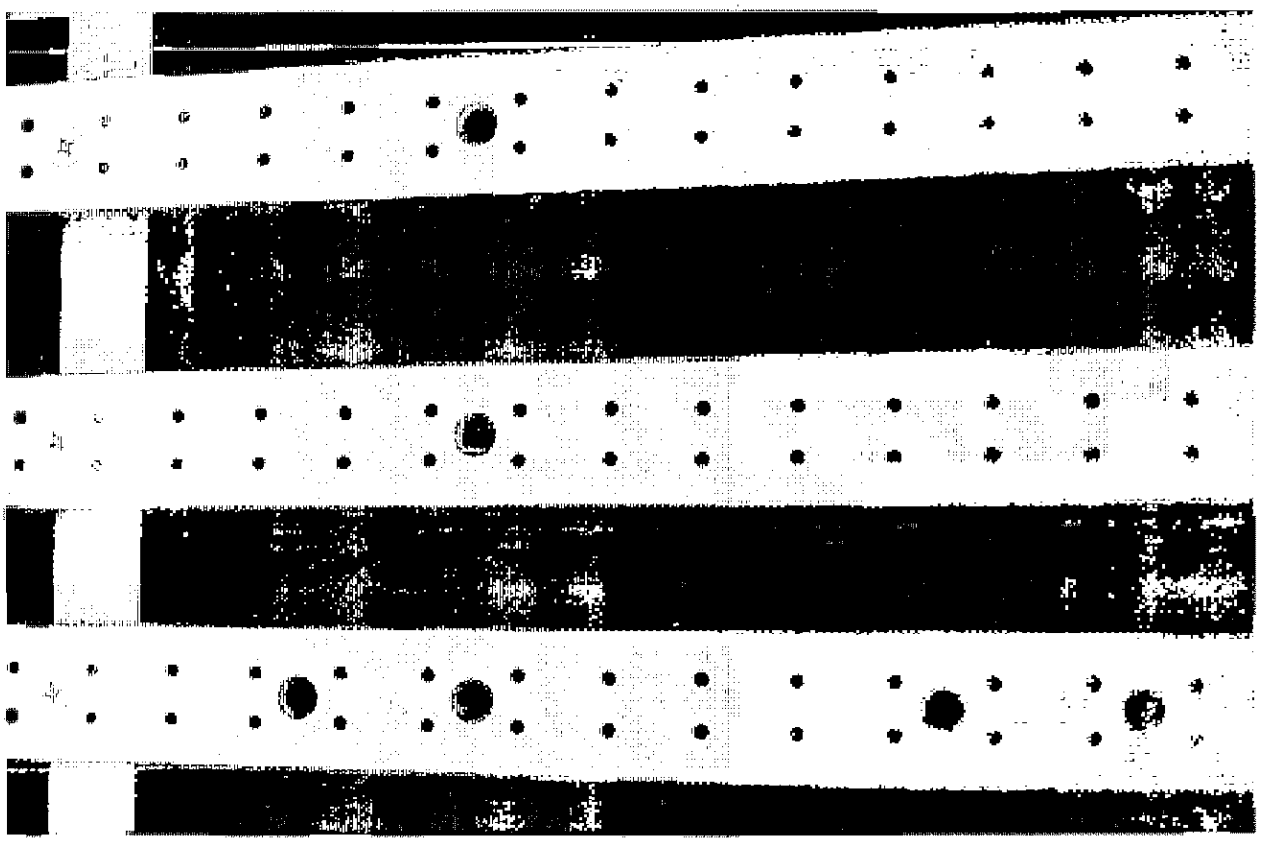
2. On horizontal bus bars between adjacent cabinets, joints and link bars show greenish scale on edges. Condition of interior (contacting) surfaces is not known.

3. Most significant observation is appearance of a very localized scale-like green deposit, which appears to be the result of a residue left when attempts were made to clean the bus bars. Is this deposit the result of a cleaning chemical/compound used to clean the oxidation originally observed, from the bars?



4. Another significant finding- Bus bars inside the Switchboard B2 cabinets are pristine- no evidence of loss of plating, no corrosion products. What was different about the storage of this equipment compared to NB?





5. Additional observation- conduits enter Switchgear NB cabinets from bottom, up from crawl space below- Is there an atmosphere containing moisture, and contaminants that is coming through the conduits? Note that the sealing the conduits is not necessarily effective due to gaps. Also note the corrosion of the bottom of the enclosure surrounding the conduit entrance.

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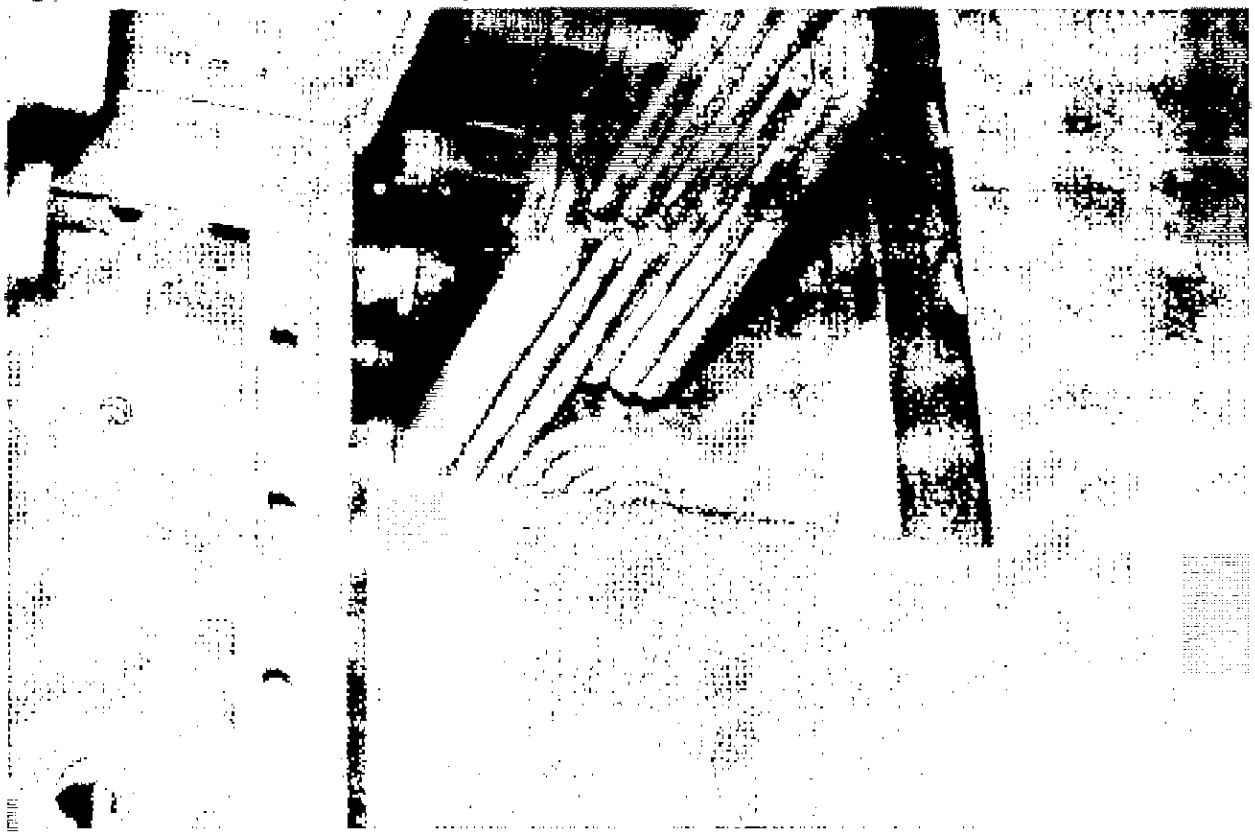

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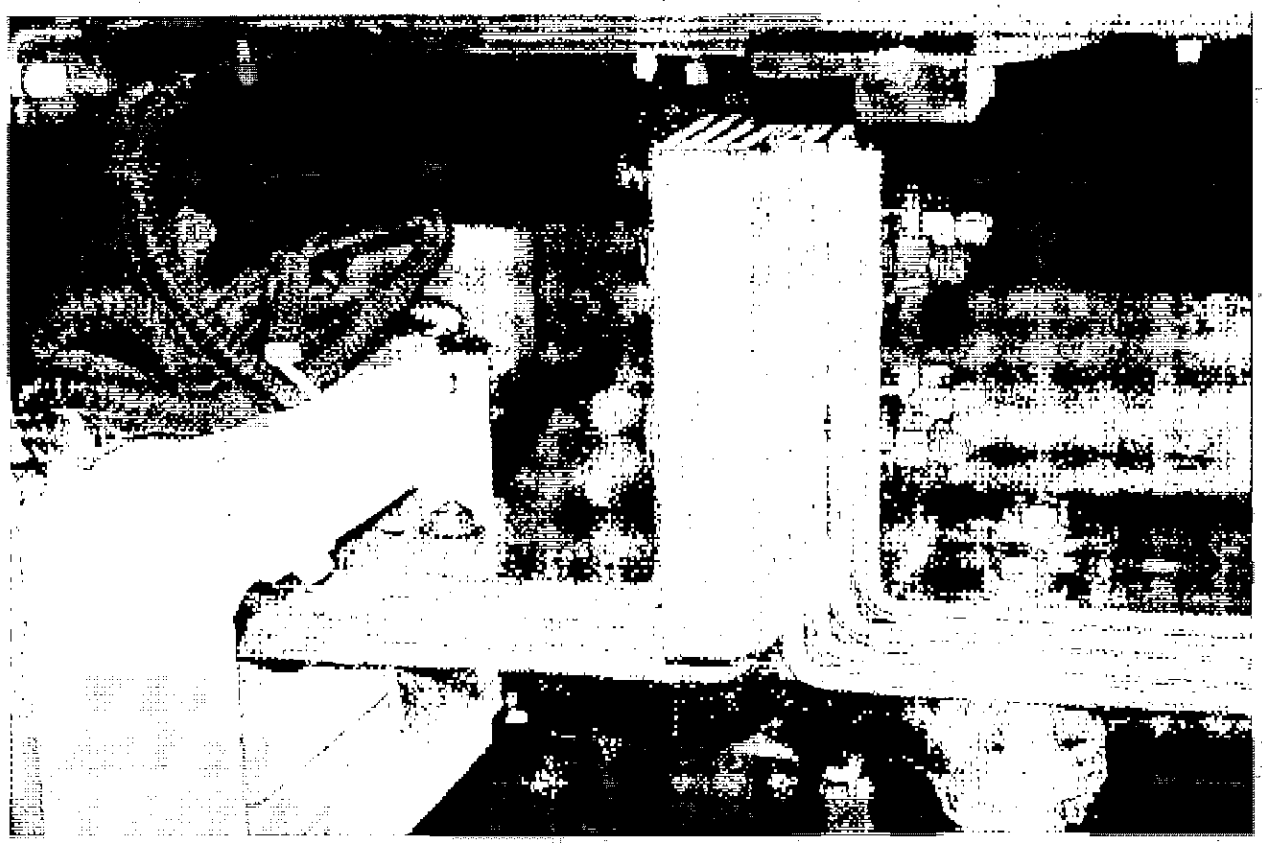

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[redacted]

Ret, Herman

From: Eric_Williams@URSCorp.com
Sent: Tuesday, March 15, 2011 2:18 PM
To: Wallace, Michael
Cc: Haldipur, Ajit; Hegarty, Brian; Johnson, Caesar; Lochard, Daniel; Nunez, Daniel; Radics, Frank; Ret, Herman; Heitmann, James; Rakhlin, Michael; Simeonidis, Nicholas; Mukherjee, Somnath; Pat_Spina@URSCorp.com; Michael_Collins@URSCorp.com
Subject: Re: Fw: EWR-264.003, Switchgear SA Test Reports
Attachments: DOC110304.pdf; Switchgear SA Retest Submittal Memo.docx

We have reviewed the attached responses of VRH, SM and Siemens regarding the resistance test values of Switchgear SA and offer the following:

1. The switchgear drawing, provided by Scott Testing, detailing the test points along the switchgear bus to which the various test reports used to obtain resistance readings was very helpful in understanding the different resistance values recorded by the associated testing reports.

2. The matrix indicating the data obtained from the various tests, at the test points, was also helpful.

3. Based on the matrix, where there were common test points amongst the four (4) testing reports, the resistance values were close to one another. Sometimes, the resistance values recorded by the last test, performed by Scott Testing, were lower.

4. Scott Testing's letter and SM's letter explained that because there was no consistency in the bus points to use for testing resistance, current used to perform the test and testing equipment, a side-by-side comparison of the multiple test reports is difficult to perform. However; each test report values obtained from the tests were acceptable. Although our review did not question the validity of the test results, the different values compared to the previous tests was questioned. The Scott Testing Report appeared to produce higher resistance values. Since Switchgear SA experienced the bus discoloration, our concern was with the apparent degradation of the overall performance of the switchgear. Based on the matrix, we **accept** the explanation provided by Scott testing regarding the different resistant values of the various test reports.

5. Our review of the Scott Testing report also questioned the increase in time for the LT Delay of circuit breakers DP-SA and DP-DB. This was not addressed in the responses provided by VRH, SM and Siemens.

Based our acceptance of the VRH, SM and Siemens explanation regarding the resistance values, we recommend the Scott Test Report submittal can be processed as **"Approved as Noted - Resubmit"**. The report should be resubmitted with the corrections indicated in my memo to PANYNJ (see attached) and the letters from VRH, SM and Siemens regarding the resistance test values of Switchgear SA.

Please indicate if you concur and provide direction as to how you wish URS to proceed.

Thank you.

Eric C. Williams, PE
Chief Electrical Engineer
URS Corporation
The Woolworth Building
233 Broadway - Suite 2300
New York, NY 10279-2399
Tel. (212) 268-5030

Direct Line: (212) 946-8261
Fax: (212) 268-5032
E-Mail: eric_williams@urscorp.com
web: http://www.urscorp.com

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"Wallace, Michael" <mcwallac@panynj.gov>

03/04/2011 11:10 AM

To "Rakhlin, Michael" <mrakhlin@panynj.gov>, "Haldipur, Ajit" <ahaldipur@panynj.gov>, "Mukherjee, Somnath" <smukherj@panynj.gov>, "Ret, Herman" <hret@panynj.gov>, <Eric_Williams@URScorp.com>

cc "Radics, Frank" <fradics@panynj.gov>, "Heitmann, James" <JHeitmann@panynj.gov>, "Hegarty, Brian" <bhegarty@panynj.gov>, "Simeonidis, Nicholas" <nsimeonidis@panynj.gov>, "Johnson, Caesar" <cjohnson@panynj.gov>, "Lochard, Daniel" <dlochard@panynj.gov>, "Nunez, Daniel" <dnunez@panynj.gov>

Subject Fw: EWR-264.003, Switchgear SA Test Reports

Attached please find a response from VRH, SM and Siemens with regards to the resistance issue.

Please review and advise if their response is acceptable or if we should convene a meeting to finalize.

Michael C. Wallace, P.E. LEED AP
Senior Resident Engineer-EWR-CTA. ---
Sent from my BlackBerry Wireless Device

From: Palleija, Irene
To: Wallace, Michael
Sent: Fri Mar 04 09:13:23 2011
Subject: EWR-264.003, Switchgear SA Test Reports

<<DOC110304.pdf>>

Irene M. Palleija Colangelo

Contract Specialist

Construction Management Division, EWR

The Port Authority of New York & New Jersey

Newark Liberty International Airport

70 Brewster Road

Newark, NJ 07114

Tel: (973) 622-0800, Ext. 239

Fax:(973) 622-7222

Email: ipalleija@panynj.gov

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PRINTOUTS.

March 3, 2011

VRH Construction Corp.
320 Grand Ave.
Englewood, NJ 07631-4355

Attention: Mr. Eric Winkler

Reference: EWR-264.003
Terminal B Modernization – Lower Level Expansion & Vertical Circulation
S.M. Electric Letter No. C1260X SM-LTR048
Switchgear SA Test Reports

Dear Mr. Winkler,

S.M. Electric is in receipt of the two e-mails regarding the Switchgear SA test reports from Mike Wallace of Port Authority, which were forwarded to us by VRH on February 18, 2011 and February 23, 2011. We have reviewed the correspondence from Port Authority and offer our comments on their interpretation of the test results in question.

Electrical testing was performed on four separate occasions for Switchgear SA; April 2010 by North Central Electric, June 2010 by Scott Testing, November 2010 by Siemens, and again in December 2010 by Scott Testing. We contacted the three testing companies used and asked them to provide their analysis of the test results, as they are the experts in the field of electrical testing. All three came back with the same response; there are too many variables for a side by side comparison of the test results and that each set of test results, on their own, were acceptable. In order to perform a side by side comparison of the test results, the test equipment, test amperage, temperature, humidity and test points would all have to be the same for each test performed. Some of the tests were done on bus only and some were read through the breakers. What they considered to be more important was that the test values between phases were consistent within each test.

Since Scott Testing was on site twice to test Switchgear SA, we asked them to provide a more detailed analysis of the four sets of test results. In their letter of March 2, 2011, Scott Testing has provided a one line diagram of Switchboard SA and plotted the test points used by each contractor for each set of tests. They then developed a spreadsheet based on these test points and the results of each set of tests. Reviewing the data in this manner allows for a more accurate comparison of the test results and shows that the test results have remained consistent throughout the testing. In some cases, the readings have gone down. Any differences noted between the North Central Electric tests in April 2010 and the Scott Testing tests of June 2010 would have to be attributed to the variables noted above, as there were no physical changes to the Switchgear or work performed within this two month period between tests. These tests were also prior to the Siemens recertification process. S.M. Electric and our three testing subcontractors all agree that the resistance test results for Switchgear SA are acceptable.

Also in their February 23, 2011 e-mail, Port Authority makes the assumption that "the resistance trending indicates a premature failure of this product." Trending cannot be established from the test information provided. In order to compile data for trending, all of the parameters for testing would have to be consistent for each test. At a minimum, the test equipment, test amperage, temperature, humidity and accurately marked test points on the bus bar would need to be identical for each battery of tests. Port Authority does not have a procedure or specification in place requiring the level of accuracy required to track data for trending purposes.

In regard to the other items mentioned in Port Authority's e-mail of February 23, 2011:

Item No. 1: The CT for breaker DP-SA is scheduled to be replaced and tested by Siemens on March 10, 2011. Testing of the new CT will also be performed Scott Testing within the week following installation.

Item No. 3: The values for contact resistance for P-MDP were missed by Scott Testing during the December testing. This breaker will be retested at the same time that Scott Testing is on site to test the CT in Item No. 1. Scott Testing is in the process of reviewing the inconsistencies in their test report to determine if there are incorrect settings on Switchgear SA or if there were typographical errors in their report. We will contact you as soon as we have the results of their review.

If we may be of any further assistance in this matter, please do not hesitate to call.

Very truly yours,

S.M. ELECTRIC COMPANY, INC.

Don Sapanara
Project Manager

Attachments: Letter from Scott Testing, dated 3/2/2011 (5 pages)
E-mail from North Central Electric, dated 2/24/2011 (2 pages)
E-mail from Siemens, dated 2/21/2011 (1 page)
E-mail from Scott Testing, dated 2/18/2011 (1 page)
E-mail from VRH/PA, dated 2/23/2011 (2 pages)
E-mail from VRH/PA, dated 2/18/2011 (1 page)
North Central Electric Test Report, dated 4/7/2010 (1 page)
Scott Testing Report, dated 6/14/2010 (5 pages)
Siemens Test Report, dated 11/19/2010 (1 page)
Scott Testing Report, dated 12/16/2010 (33 pages)

cc: Jeff Konen – VRH Construction Corp.
Peter V. Cheche III – S.M. Electric Co., Inc.
Al Fosbenner – Matrix Service Industrial Contractors, Inc.
Alex Volterano - Matrix Service Industrial Contractors, Inc.

File: C1260X SM-LTR048

Scott Testing

1698 Fifth Street • Ewing, NJ • 08638 • Tel 609 882 2400 • Fax 609 882 5660

March 2, 2011

SM Electric
601 New Brunswick Avenue
Rahway, NJ 07065-1144

Attention: Don Sapanara

Reference: Perform review of test data for bus resistances of Switchgear "SA"
***STI* Project #:** S11-1157.2

Mr. Sapanara,

The test data reviewed was obtained on four different dates, by three testing organizations. The purpose of this review was to determine the repeatability of the bus resistance readings obtained over the test period.

In the several cases where the test points were determined to be similar from one test period to another, the test results appear to be comparable and consistent.

The problem however is that up to this time there has not been clearly defined test points or test current specified so the ability to fully evaluate this data is limited.

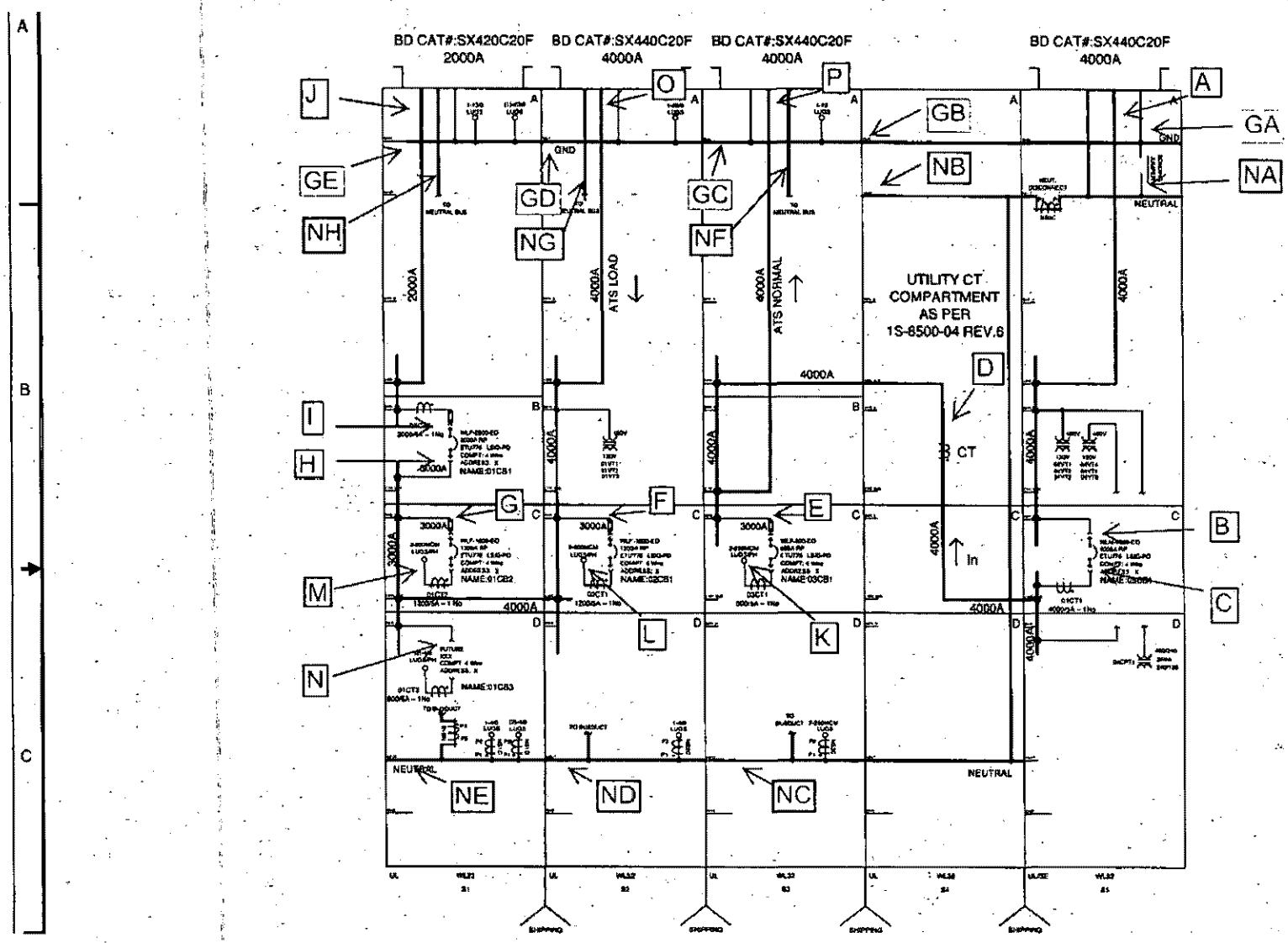
The test results obtained to date by Scott Testing are acceptable.

Enclosed with this report is a drawing detailing the proposed test points along with the test matrix. It is suggested that future tests be performed according to this procedure, at a test current of 100 amps.

Sincerely,

Russell Sorbello
Field Service Technician
Scott Testing, Inc.

Switchgear "SA"--Test Points



0000FFScott Testing, Inc

Date of Test	——>	4/7/2010	6/10/2010	11/19/2010	12/16/2010						
Tested By	——>	NC	STI	SIEMENS	STI						
Bus Temp F	——>	75	82		60						
Test Amps DC	——>		10	100	100						
Test Points	PHASE										
A-B	A				9						
	B				9						
	C				11						
A-C	A			35*							
	B			39*							
	C			36*							
A-D	A		160								
	B		140								
	C		153								
C-D	A	26	21		23						
	B	21	20		24						
	C	24	26		24						
C-E	A	37	66		70						
	B	37	42		61						
	C	39	40		68						
D-P	A			47							
	B			71							
	C			57							
E-F	A				90						
	B				96						
	C				99						
F-G	A		46		29						
	B		49		27						
	C		50		24						

Comments *On 11/19/2010 Siemens cleaned the main breaker contacts to lower the resistance readings.

0000FFScott Testing, Inc

Date of Test	→	4/7/2010	6/10/2010	11/19/2010	12/16/2010						
Tested By	→	NC	STI	SIEMENS	STI						
Bus Temp F	→	75	82		60						
Test Amps DC	→		10	100	100						
Test Points	PHASE										
F-H	A	30	40		23						
	B	32	56		24						
	C	36	61		24						
H-J	A										
	B										
	C										
I-J	A				4						
	B				7						
	C				6						
J-M	A			170							
	B			157							
	C			165							
O-L	A		86	87							
	B		91	110							
	C		95	112							
P-K	A			123							
	B			114							
	C			104							

Comments *On 11/19/2010 Siemens cleaned the main breaker contacts to lower the resistance readings.

0000FFScott Testing, Inc

Date of Test	→	4/7/2010	6/10/2010	11/19/2010	12/16/2010						
Tested By	→	NC	STI	SIEMENS	STI						
Bus Temp F	→	75	82		60						
Test Amps DC	→		10	100	100						
Test Points	PHASE										
NA-NB	N	20	38	51	40						
NA-NC	N	39	56		56						
NA-ND	N		62		78						
NA-NE	N		70	81	85						
NE-NH	N			38							
ND-NG	N			19							
NC-NF	N			18							
NB-NF	N			61							
ND-NE	N	34									
GA-GB	G		17		27						
GA-GC	G		38		39						
GA-GD	G		42		43						
GA-GE	G		44		50						

Comments *On 11/19/2010 Siemens cleaned the main breaker contacts to lower the resistance readings.

Don Sapanara

From: Josten, Harry [harry.josten@siemens.com]
Sent: Monday, February 21, 2011 3:42 PM
To: Russ Elliott; Schornstein, Doris V
Cc: Walkowicz, Ralph; Don Sapanara; Cito, Michael
Subject: RE: Newark Airport Recertification.

Russ,

I have reviewed the four reports. Each of the four reports gave measurements of bus resistance. Each report seemed to use different measurement points so it is not very useful to compare measurements from one report to measurements on another. However, on any given report the measurements were fairly consistent from one phase to another which is normal. None of the measurements appeared to be unusual.

I don't see anything unusual or alarming.

Regards,

Harry W. Josten
Switchgear Development Manager
Siemens SI BT LV
501 Fountain Parkway
Grand Prairie, Texas 75050
Phone: 817-652-6601
Email: harry.josten@siemens.com

-----Original Message-----
From: Russ Elliott [mailto:russ.elliott@smelectric.com]
Sent: Monday, February 21, 2011 7:15 AM
To: Josten, Harry; Schornstein, Doris V
Cc: Walkowicz, Ralph; Don Sapanara; Cito, Michael
Subject: RE: Newark Airport Recertification.

Harry,

I don't think that Doris forwarded the test reports to you. When you get a chance, can you review the 4 different reports and let us know what your conclusions are based on the resistive path readings?

Thank you,

Russ Elliott

S.M. Electric Co., Inc.

at Newark Airport

Phone: 1-973-622-1470

Fax: 1-973-622-1471

Cell: 1-732-904-2354

Don Sapanara

From: Russell Sorbello [rsorbello@scotttesting.com]
Sent: Friday, February 18, 2011 3:31 PM
To: Russ Elliott; rsorbello@scotttesting.com
Cc: Don Sapanara
Subject: RE: Resistive Path Readings

Russ,

Several things will cause this.

1) How much of a difference are we talking about. +/- 10% deviation is not that much. Tempurature differences can account for this.

2) The points where the test leads are attached will make a difference.

3) The amount of current each test set puts out will effect the results. Some sets put out 10A, some put out 100A or 200A.

Can you email me the results so I can review.

Original Message ---------- Russ,

Can you provide a briefing for me as to why there would be three different microOhm readings on the same bus from three different testing companies?

Thank you,

Russ Elliott

S.M. Electric Co., Inc.

at Newark Airport

Phone: 1-973-622-1470

Fax: 1-973-622-1471

Cell: 1-732-904-2354

Don Sapanara

From: NCETEST@aol.com

Sent: Thursday, February 24, 2011 12:28 PM

To: Don Sapanara

Subject: Re: Switchgear SA Resistive PAth Readings

Don,

Short Version,

Certain Megger's will read up to 4000 Meg ohms, Others will read up to 100,000 Meg ohms at 1 KVDC Test! All readings were acceptable from Scott NCE and Siemens!

Contact Resistance: The test were all done different but all yielded acceptable results. Values differed depending on length and what was included in test such as breakers etc. Everyone tested it different! The fact is that in comparison between phases and length's of bus and number of joints all readings compared!

In a message dated 2/24/2011 7:52:22 A.M. Eastern Standard Time, don.sapanara@smelectric.com writes:

> Bob,
>
> The full story of the switchgear at Newark Airport is much too long to explain in an e-mail. The short version is that we had NCE test Switchgear SA in April 2010. In an attempt to appease Port Authority, we had Scott Testing retest the bus in June of 2010. As part of the recertification and extended warranty process, Siemens tested the gear in December 2010. Since Siemens performed work on the gear, PA felt the prior 3rd Party testing performed by NCE was no longer valid and wanted 3rd Party testing performed again to validate Siemens' results. Scott Testing performed a fourth test on the gear in December 2010. The gear passed all four sets of tests.
>
> PA is now questioning why the four sets of test results don't match. The readings in the last test performed by Scott are higher than the initial test performed by NCE. PA has rejected the gear again because they feel it is trending towards failure. We have asked each of the companies involved to look at the test results and give us their professional opinion as to why the results have varied. Can you take a look at the attached results and let us know your findings? We will probably have to follow this up with a conference call with Port Authority.
>
> Thanks,
>
> Don Sapanara
>
> Project Manager

S.M. Electric Co., Inc.

601 New Brunswick Ave.

Rahway, NJ 07065

Main Office:

Phone 732-388-3540

Fax 732-388-3052

ConocoPhillips Site:

Phone 908-523-5508

Fax 908-523-5143

Thanks,

Bob Messina
North Central Electric Inc.
69 Midway Ave
Langhorne,PA 19047
Office 215.945.7632
Fax 215-945-6362
ncetest@aol.com
Web: ncetest.com
Cell 215-852-9432

Don Sapanara

From: Konen, Jeff [J.Konen@vrhcorp.com]
Sent: Wednesday, February 23, 2011 1:21 PM
To: Winkler, Eric; Al Fosbenner; Don Sapanara
Subject: Fw: SA

----- Original Message -----
From: Wallace, Michael <mcwallac@panynj.gov>
To: Konen, Jeff
Sent: Wed Feb 23 13:17:19 2011
Subject: RE: SA

Jeff - Below is an "unofficial" copy of URS' comments for your discussions with SM & Siemens. The resistance values are of the most concern.

Mike

We are in receipt of the testing report for the South Substation Switchgear SA, as submitted by Scott Testing, via the electrical contractor - SM Electric. It is enclosed for reference. Upon review, we offer the following comments and concerns:

1. As indicated on the "Equipment Comment and Deficiency Report", the CT for breaker DP-SA is incorrect. Contractor shall provide correct CT in accordance with the contract documents.
2. Regarding the "Switch Inspection Report" section, although the report's conclusion is that the results are acceptable, contractor shall provide explanation as to why some of the conducting path resistance values are almost double the values of the first test, performed by North Central Electric and submitted as VRH Submittal No 16335-149.

As an example, the "Conducting Path Resistance" from the main breaker (section 1) to section 3 is 70 microhms for Phase A, 61 microhms for Phase B and 68 microhms for Phase C; but, from the test report submitted by North Central Electric, the bus resistances were 37, 41 and 37.

Another example is the resistance values from section 4 to section 5, this report indicates values of 90 for Phase A, 96 for Phase B and 99 for Phase c, but the North Central Electric report indicated values of 30, 32 and 34.

Another example is the resistance values for the neutral buses. The report have values for section 1 to section 2 of 40 microhms ,and section 1 to section 3 of 56 microhms; but, from the North Central Electric report the values showed 20 and 39.

Attached is a copy of the North Central Electric Report for reference.
3. Regarding the "Low Voltage Circuit Breaker Report", the following make the following corrections/revisions:

- Sheet 1 of 5 - Main Breaker, the IC rating is 200KA, not 100KA.
- Sheet 2 of 5 - ATS Life Safety, the IC rating is 200KA, not 100KA.
- Sheet 2 of 5 - ATS Life Safety, correct the current values of the "long time" settings. The device has a 500A trip but the values indicated for the long time pick-up are 4000A.
- Sheet 2 of 5 - ATS Life Safety, correct the instantaneous set point and pick up to indicate "OFF" and "NA".
- Sheet 3 of 5 - DP-SA, correct the frame size to indicate 1600A and not 1200A.
- Sheet 3 of 5 - DP-SA, the IC rating is 200KA, not 100KA.
- Sheet 3 of 5 - DP-SA, explain why the results of the LT Delay are more than 4 times longer than the values from the North Central Electric tests. The report indicates values of 26.34; but, the North Central Electric report has values of 6.3.

- Sheet 3 of 5 – DP-SA, correct the instantaneous set point and pick up to indicate "OFF" and "NA".
- Sheet 4 of 5 – DP-SB, the IC rating is 200KA, not 100KA.
- Sheet 4 of 5 – DP-SB, correct the current values of the "long time" settings. The device has a 1200A trip but the values indicated for the long time pick-up are 500A.
- Sheet 4 of 5 – DP-SB, explain why the results of the LT Delay are more than 4 times longer than the values from the North Central Electric tests. The report indicates values of 23.16; but, the North Central Electric report has values of 5.8.
- Sheet 5 of 5 – P-MDP, the IC rating is 200KA, not 100KA.
- Sheet 5 of 5 – P-MDP, indicate the values of the contact resistance of each phase.
- Sheet 5 of 5 – P-MDP, change the value of the "Ground Fault Set Amps" from "D" to "900".

Based on the review comments above concerning the higher resistance values and the longer pick-up times, and considering the bus refurbishment of the switchgear by Siemens due to the bus discolorations, we are unable to accept the test report at this time. We request that information/explanations be provided by Siemens and/or Scott Testing addressing the issues above and the report be resubmitted.

-----Original Message-----
From: Konen, Jeff [mailto:J.Konen@vrhcorp.com]
Sent: Friday, February 18, 2011 4:42 PM
To: Wallace, Michael; Konen, Jeff
Subject: SA

Mike

Got your voice mail regarding SA, home sick today will be on it on Monday

NOTICE: THIS E-MAIL AND ANY ATTACHMENTS CONTAIN INFORMATION FROM THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY AND AFFILIATES. IF YOU BELIEVE YOU HAVE RECEIVED THIS E-MAIL IN ERROR, PLEASE NOTIFY THE SENDER IMMEDIATELY, PERMANENTLY DELETE THIS E-MAIL (ALONG WITH ANY ATTACHMENTS), AND DESTROY ANY PRINTOUTS.

Don Sapanara

From: Winkler, Eric [E.Winkler@vrhcorp.com]
Sent: Friday, February 18, 2011 2:04 PM
To: Don Sapanara; Russ Elliott; Al Fosbenner; Konen, Jeff
Subject: Fw: EWR 264.003 - Switch gear SA
Al, Please address immediately. Thank you Eric

From: Wallace, Michael <mcwallac@panynj.gov>
To: Winkler, Eric; Konen, Jeff
Cc: Nunez, Daniel <dnunez@panynj.gov>; Lochard, Daniel <dlochard@panynj.gov>; Hegarty, Brian <bhegarty@panynj.gov>
Sent: Fri Feb 18 14:00:32 2011
Subject: EWR 264.003 - Switchgear SA

Gents,

In meeting with URS and Facility staff today, their initial review of the 3rd Party Testing Report from Scott Testing for Switchgear SA indicates that the resistance has increased three-fold from the initial readings taken when Switchgear SA was first installed. Without additional information/explanation from Siemens and/or Scott Testing as to the root cause of this increase, the Testing report will be disapproved and the PA will not accept Switchgear SA because the resistance trending indicates a premature failure of this product.

Please speak to Siemens and Scott Testing and advise of everyone's earliest ability to meet and discuss. Next week would be preferable as to not continue to delay the South Substation work.

Michael C. Wallace, P.E. LEED AP

Senior Resident Engineer

Newark Liberty International Airport - CTA

(973) 622-0800 x 251(Building 125)

(973) 622-0172 FAX

(973) 390-5519 Cell

E-mail: mcwallac@panynj.gov

NOTICE: THIS E-MAIL AND ANY ATTACHMENTS CONTAIN INFORMATION FROM THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY AND AFFILIATES. IF YOU BELIEVE YOU HAVE RECEIVED THIS E-MAIL IN ERROR, PLEASE NOTIFY THE SENDER IMMEDIATELY, PERMANENTLY DELETE THIS E-MAIL (ALONG WITH ANY ATTACHMENTS), AND DESTROY ANY PRINTOUTS.

North Central Electric

69 Midway Avenue, Langhorne, Pa. 19047
Telephone: 215 - 945 - 7632

SWITCHGEAR TEST REPORT

Customer	SM Electric	**Date**	4-7-2010	**Page** 1	**Of** 1
Address	601 New Brunswick Ave Rahway, N.J.	**Project Number**	3610		
Owner	NY/NJ Port Authority	**Last Inspection Report**	ACCEPTANCE		
Address	Newark Liberty International Airport	**Last Inspection Date**	ACCEPTANCE		
Equipment Location	South Substation	**Air Temperature**	75 DEG. F		
Owner Identification	Switchgear SA	**Relative Humidity**	30%		

Nameplate Data Siemens / Switchboard Type WL / 480 / 277 3 Phase 4 wire / 4000 Amp / 5 Sections / 150 KA

Bus Resistance Section 1 - Section 2 A=26 B=21 C=24 N=20 Section 1 - Section 3 A=37 B=41 C=37 N=39

Section 4 - Section 5 A=30 B=32 C=35 N=34

All results are Micro Ohms.

Discoloring of bus was noticed but did not affect electrical connections or test results.

Electrical Tests Insulation Resistance Tested at 1000 V DC for 1 min.

A Phase to Ground (B&C&N Phase to ground) : 4000+ Meg Ohms

B Phase to Ground (A&C&N Phase to ground) : 4000+ Meg Ohms

C Phase to Ground (A&B&N Phase to ground) : 4000+ Meg Ohms

Neutral to Ground (A&B&C Phase to ground) : 4000+ Meg Ohms

General Notes Visual inspection for physical damage performed (ok).

Verified breaker sizes per contract drawings (ok).

Visual inspection for Insulation damage performed (ok).

All breakers manually and electricaly operated and exercised(see note below).

Verified proper "rack in rack out of breakers (ok. see note of main breaker).

Inspected mechanical indicating devices(ok).

Verified heater operation.

Verified meter operation.

Verified indicating lights (open Close Trip).

REMARKS Equipment used Fluke 1kv megger Model 1520 cal 9-09, Biddle Ductor model DLROCal 1-10 SN 49939 Doble 2250

Submitted By B. Poland **Equipment Used**

Scott Testing

1698 Fifth Street • Ewing, NJ • 08638 • Tel 609 882 2400 • Fax 609 882 5660

June 14, 2010

SM Electric Company, Inc.
601 New Brunswick Avenue
Rahway NJ 07065

Attention: Russ Elliott
Reference: Continuity testing and (1) LV Switchgear "SA" Newark Liberty Airport

STI Project #: S10-1157.1

Dear Mr. Elliott,

The services that you requested at the above referenced facility have been completed and two (2) copies of the report are enclosed for your reference and records.

All testing and maintenance procedures are in accordance with **NETA** (InterNational Electrical Testing Association) and manufacturer's specifications.

Please refer to the attached results for additional information.

We appreciate this opportunity to have been of service to you and look forward to supporting you with your future electrical testing and maintenance needs.

Please feel free to contact us if you have any questions or need anything additional.

Sincerely,

Mark Stanley
Field Service Technician
Scott Testing, Inc.

Scott Testing, Inc.

1698 Fifth Avenue Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

STH-1

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric, Inc.	Date	6/10/2010 Page 1 Of 4
Customer Address	601 New Brunswick Ave, Rahway, NJ	Project Number	S10-1157.1
Owner	Newark Airport	Last Inspection Report	
Owner Address	Terminal B	Last Inspection Date	
Equipment Location	Terminal B Main Electrical Substation	Air Temperature	82 F
Owner Identification	Substation "SA"	Relative Humidity	74%

Nameplate Data

Manufacturer	Siemens	Design Voltage	600 VAC	System Voltage	480 VAC	BIL	
Serial #	* N/A	Rated Current	4000	Style		Age	10/08
Model	N/A	SC Withstand	150 K	Cat #		ID #	

# Breakers	# Relays	# Meters	# Vert Sect	# Cubicles
5	0	6	5	6

Other Info *S.O. # 3001295712

Inspection Report

Breaker Operation	Not Applicable	Covers/Glass	Good	Annunciator	Not Applicable
Equipment Access	Good	Cell Condition	Good	Panel Meters	Not Applicable
Control Switches	Not Applicable	Hinged Doors	Good	Panel Lights	Not Applicable
Swgr Grounds	Good	Bus Supports	Good	Cables	Not Applicable
Paint Condition	Good	Space Heaters	Not Applicable	Shutters	Good
Connections	Good	Tracking Signs	None	Interlocks	Not Applicable
Control Wiring	Not Applicable	Cleanliness	Good	Insulation	Good
Control Relays	Not Applicable	Lubrication	Not Applicable	Test Stand	Not Applicable
"83" Transfer	Not Applicable	Ground Truck	Not Applicable	Maint Tools	Not Applicable

Other Inspections

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
Load of Main Sec. 1	Sec. 2 Metering	10	21	20	26
Load of Main Sec. 1	Sec. 3 ATS Life Safety	10	66	42	40
Line Side of ATS Em.	DP-SA through C.B.	10	86	91	95
Sec. 4	Sec. 5 P-MDP		40	56	61

REMARKS Line side of main bus duct not complete in ceiling feeding "SA".

Submitted By M. Stanley **Equipment Used** DLRO 302140

Scott Testing, Inc.

1698 Fifth Avenue Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

STH-1

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric, Inc.	Date	6/10/2010 Page 2 Of 4
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.1
Owner	Newark Airport	Last Inspection Report	
Owner Address	Terminal B	Last Inspection Date	
Equipment Location	Terminal B Main Electrical Substation	Air Temperature	82 F
Owner Identification	Substation "SA"	Relative Humidity	74%

Nameplate Data

Manufacturer	Siemens	Design Voltage	600 VAC	System Voltage	480 VAC	BIL	
Serial #	* N/A	Rated Current	4000	Style		Age	10/08
Model	N/A	SC Withstand	150 K	Cat #		ID #	

Breakers 5 # Relays 0 # Meters 6 # Vert Sect 5 # Cubicles 6

Other Info *S.O. # 3001295712

Inspection Report

Breaker Operation	Not Applicable	Covers/Glass	Good	Annunciator	Not Applicable
Equipment Access	Good	Cell Condition	Good	Panel Meters	Not Applicable
Control Switches	Not Applicable	Hinged Doors	Good	Panel Lights	Not Applicable
Swgr Grounds	Good	Bus Supports	Good	Cables	Not Applicable
Paint Condition	Good	Space Heaters	Not Applicable	Shutters	Good
Connections		Tracking Signs	None	Interlocks	
Control Wiring	Not Applicable	Cleanliness	Good	Insulation	
Control Relays	Not Applicable	Lubrication	Not Applicable	Test Stand	
"83" Transfer	Not Applicable	Ground Truck	Not Applicable	Maint Tools	

Other Inspections

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
Sec. 4	Sec. 5 DP-SB	10	46	49	50
Line Side Main	Sec. 2	10	160	140	153

REMARKS Through main breaker to Sec. 2. A phase: 160 B phase: 140 C phase: 153.

Submitted By M. Stanley Equipment Used DLRO 302140

Scott Testing, Inc.

1698 Fifth Avenue Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

STI-r1

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric, Inc.	Date	6/10/2010 Page 3 Of 4
Customer Address	601 New Brunswick Ave, Rahway, NJ	Project Number	S10-1157.1
Owner	Newark Airport	Last Inspection Report	
Owner Address	Terminal B	Last Inspection Date	
Equipment Location	Terminal B Main Electrical Substation	Air Temperature	82 F
Owner Identification	Substation "SA" (Ground Bus)	Relative Humidity	74%

Nameplate Data

Manufacturer	Siemens	Design Voltage	600 VAC	System Voltage	480 VAC	BIL	
Serial #	* N/A	Rated Current	4000	Style		Age	10/08
Model	N/A	SC Withstand	150 K	Cat #		ID #	

# Breakers	# Relays	# Meters	# Vert Sect	# Cubicles
5	0	6	5	6

Other Info *S.O. # 3001295712

Inspection Report

Breaker Operation	Not Applicable	Covers/Glass	Good	Annunciator	Not Applicable
Equipment Access	Good	Cell Condition	Good	Panel Meters	Not Applicable
Control Switches	Not Applicable	Hinged Doors	Good	Panel Lights	Not Applicable
Swgr Grounds	Good	Bus Supports	Good	Cables	Not Applicable
Paint Condition	Good	Space Heaters	Not Applicable	Shutters	Good
Connections		Tracking Signs	None	Interlocks	
Control Wiring	Not Applicable	Cleanliness	Good	Insulation	
Control Relays	Not Applicable	Lubrication	Not Applicable	Test Stand	
"83" Transfer	Not Applicable	Ground Truck	Not Applicable	Maint Tools	

Other Inspections

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
Sec. 1 Ground Bus	Sec. 2	10	17 Neutral		
	Sec. 3	10	38 Neutral		
	Sec. 4	10	42 Neutral		
	Sec. 5	10	44 Neutral		

REMARKS Test results are acceptable.

Submitted By M. Stanley

Equipment Used DLRO 302140

Scott Testing, Inc.

1698 Fifth Avenue Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

STI-01

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric, Inc.	**Date**	6/10/2010 **Page** 4 **Of** 4
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.1
Owner	Newark Airport	**Last Inspection Report**	
Owner Address	Terminal B	**Last Inspection Date**	
Equipment Location	Terminal B Main Electrical Substation	**Air Temperature**	82 F
Owner Identification	Substation "SA" (Neutral Bus)	**Relative Humidity**	74%

Nameplate Data

Manufacturer	Siemens	**Design Voltage**	600 VAC	**System Voltage**	480 VAC	**BIL**	
Serial #	* N/A	**Rated Current**	4000	**Style**		**Age**	10/08
Model	N/A	**SC Withstand**	150 K	**Cat #**		**ID #**	

 # Breakers 5 **# Relays** 0 **# Meters** 6 **# Vert Sect** 5 **# Cubicles** 6

Other Info *S.O. # 3001295712

Inspection Report

Breaker Operation	Not Applicable	**Covers/Glass**	Good	**Annunciator**	Not Applicable
Equipment Access	Good	**Cell Condition**	Good	**Panel Meters**	Not Applicable
Control Switches	Not Applicable	**Hinged Doors**	Good	**Panel Lights**	Not Applicable
Swgr Grounds	Good	**Bus Supports**	Good	**Cables**	Not Applicable
Paint Condition	Good	**Space Heaters**	Not Applicable	**Shutters**	Not Applicable
Connections	Good	**Tracking Signs**	None	**Interlocks**	Not Applicable
Control Wiring	Not Applicable	**Cleanliness**	Good	**Insulation**	Good
Control Relays	Not Applicable	**Lubrication**	Not Applicable	**Test Stand**	Not Applicable
"83" Transfer	Not Applicable	**Ground Truck**	Not Applicable	**Maint Tools**	Not Applicable

Other Inspections

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
Sec. 1 Neutral Bus	Sec. 2	10	38 Neutral		
	Sec. 3	10	56 Neutral		
	Sec. 4	10	62 Neutral		
	Sec. 5	10	70 Neutral		

REMARKS Test results are acceptable.

Submitted By M. Stanley **Equipment Used** DLRO 302140

S

Siemens Industrial Services

A business of
Siemens Energy and Automation, Inc.

SWITCHGEAR TEST REPORT

Customer:	SM Electric	**Location:**	Newark Airport		
Substation:	SA	**Switchgear Designation:**	SA	**Unique ID:**	

Nameplate Data

Manufacturer:	Siemens	**Type:**	3 phase, 4 wire
Serial No.:	SO# 3001295712	**Current Rating:**	4000 amp
Voltage Rating:	480 volt	**Bus Fault Rating:**	150 ka

Inspection

Cell Heaters:	B	**Key Interlocks:**	NA
Meter & Control Switches:	B	**Pilot Light:**	B
Wiring:	B	**Terminal Blocks:**	B
Fuse & Fuse Blocks:	B	**Stationary Contact Bottles:**	NA
Ground Bus:	B	**Tracking / Corona:**	B
Bus Supports:	B	**Joint Insulation:**	B
Terminations:	B	**General Hardware:**	B
Paint – Inside & Outside:	B	**PT / CPT Compartment**	B

CODE LEGEND
A= Like New Condition
B= Good Condition
C= Poor Condition Requires Correction
D= Corrections Made
E= Unacceptable Condition Do Not Use!
NA= Not Applicable

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean / Dirty	clean
Wet / Damp / Dry	dry
Temp (Degree C)	
Relative Humidity (%)	

Electrical Tests

Insulation Resistance

Readings in Mega-Ohms @ 1k VDC

A-B	100 Gig ohms	B-C	100 Gig ohms	C-A	100 Gig ohms
A-G	100 Gig ohms	B-G	100 Gig ohms	C-G	100 Gig ohms

Ductor Test

Readings in micro-ohms @ 100amps

Section 1	Section 2	Section 3	Section 4	Section 5	Section 1- 5
A-A =170	A-A =87	A-A =123	A-A =47	A-A =35	
B-B =157	B-B =110	B-B =114	B-B =71	B-B =39	
C-C =165	C-C =112	C-C =104	C-C =57	C-C =36	
N-N =38	N-N =19	N-N =18	N-N =61	N-N =51	N-N =81

COMMENTS:

Section # 1 reading : From the bus duct through the splice plate connections and two breakers to the load side of a feeder breaker.
Section #1 neutral reading : From the bus duct through the splice plate connections to the lower rear horizontal neutral bus.
Section #2 readings : From the bus duct through the splice plate connections and one breaker to the load side of a feeder breaker.
Section #2 neutral reading : From the bus duct through the splice plate connections to the lower rear horizontal neutral bus.
Section #3 readings : From the bus duct through the splice plate connections and one breaker to the load side of a feeder breaker.
Section #3 neutral reading : From the bus duct through the splice plate connections to the lower rear horizontal neutral bus.
Section #4 readings : From the load side on Main breaker in section #4 to the bus duct connection in section #3.
Section #4 neutral reading : From the horizontal neutral bus in section #4 to the Bus duct neutral connection in section #3.
Section #5 readings : From the bus duct through the spice plate and one breaker to the horizontal bus in section #4.
(Readings were lowered on this test by cleaning the breaker's main contacts)
Section #5 neutral reading : From the bus duct connection to the horizontal rear neutral bus in section #4.

Section #1-#5 neutral reading: From the rear horizontal neutral bus in section #1 to the bus duct neutral connection in section #5.

Spice plates for bus duct connections were re-plated and are in good condition.

Satisfactory for Continued Service	Yes	**Requires Repair**	No	**Repairs Made During Maintenance**			
Job No:	5200-	**Tested By:**	Ralph Walkowicz	**Date Tested**	11/19/10	**ID #**	

182 Forbes Road
Braintree, Ma. 02184

Scott Testing

1698 Fifth Street • Ewing, NJ • 08638 • Tel 609 882 2400 • Fax 609 882 5660

December 16, 2010

SM Electric Company, Inc.
601 New Brunswick Ave.
Rahway, NJ 07065

Attention: Russ Elliot

Reference: Acceptance testing of Switchgear SA and associated equipment.

STI Project #: S10-1157.2

Dear Mr. Elliot,

The services that you requested at the above referenced facility have been completed and two (2) copies of the report are enclosed for your reference and records. All testing was performed to conform to NETA and manufacturer standards and procedures.

The equipment tested satisfactory. Please see our equipment deficiency form for any repairs or corrections that were made during our testing.

We appreciate this opportunity to have been of service to you and look forward to supporting you with your future electrical testing and maintenance needs.

Please feel free to contact us if you have any questions or need anything additional.

Sincerely,
Kevin Cubberley
Field Service Technician
Scott Testing, Inc.

Scott Testing

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Test Procedures

Switchgear Inspection
The front and back compartments of the switchgear enclosure were opened, cleaned and inspected. Proper shutter operation was verified in all compartments. Primary receivers were cleaned and lubricated. Cable support, spacing and tightness of connections were verified. Proper heater operation was verified. No visible signs of tracking were observed. Control switches, instrumentation and indicator lights were checked for proper operation. The bus was megger tested at 1 kV DC. Bus connection resistance was measured using a 100 Amp ductor.

Instrumentation Transformers (Current and Voltage Type)
The access covers were removed and the enclosures were cleaned, and inspected as needed. The outer casings were inspected for signs of tracking or damage. The spacers, insulators and supports were checked. Nameplate data was recorded. The primary and secondary windings were isolated for testing. Tests performed included polarity checks, turns ratio, and insulation integrity. Cable and Bus connections were re-attached and tightened to correct torque levels

Meters
The meters were tested at all major scale values. Tests were conducted using field standards whose calibration is traceable to the United States Institute of Standards and Technology (NIST). All results were found to be within the meters designed accuracy. The meter leads were checked for tightness.

Low Voltage Breakers
Each breaker was removed from the cubicle, cleaned and inspected for damage. The mechanism was cleaned and lubricated as needed. The main and arcing contacts were cleaned and inspected for signs of pitting, correct alignment and closing sequence. Contact resistance values were measured. The protective trip device operation was verified by primary injection. Insulation integrity was verified using a 1kV DC megger. The breaker cubicle was cleaned along with the line and load side stabs. New grease was applied to both the cubicle and breaker primary stabs and fingers. All breakers were racked in and out to verify correct racking operation.

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EED-

EQUIPMENT COMMENTS AND DEFICIENCY REPORT

Customer	SM Electric	**Date** 12/15/2010	**Page** 1 **Of** 1
Customer Address	601 Newq Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Expansion	**Air Temperature**	65F
Owner Identification	Switchgear SA	**Relative Humidity**	60%

1 Ground fault plug for Breaker ATS-Life Safety was found to be defective, causing breaker to lose all protective functions. Replaced with spare plug and re-tested.	*Replaced With Spare Unit*
2 CT was found to be incorrect for Breaker DP-SA 9350 power meter. Print spec is 1200:5A. As found was 3200:5A.	*Recommend Engineer Review*
3 CT ratio for DP-SA 9350 Power meter was changed to match the installed 3200:5A CTt as per customer direction.	*Repaired As Left*

Submitted By	Kevin Cubberley	**Title**	Field Technician
		Date	12/15/2010
Reviewed By	Russell Sorbello	**Title**	Project Manager
		Date	12/16/2010

Switch Inspection Report

SM Electric

S10-1157.2

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STr-ef

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric	**Date** 12/16/2010	**Page** 1 **Of** 4
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B	**Air Temperature**	60F
Owner Identification	Switchgear SA	**Relative Humidity**	55%

Nameplate Data

Manufacturer	Siemens	**Design Voltage**	480VAC	**System Voltage**	480/277	**BIL**	NA
Serial #	NA	**Rated Current**	4000A	**Style**	WL	**Age**	2009
Model	NA	**SC Withstand**	150KA	**Cat #**	NA	**ID #**	SA

 # Breakers 5 **# Relays** 0 **# Meters** 6 **# Vert Sect** 5 **# Cubicles** 16

Other Info CONTAINS 1 FUTURE CELL

Inspection Report

Breaker Operation	Good	**Covers/Glass**	Good	**Annunciator**	Not Applicable
Equipment Access	Good	**Cell Condition**	Good	**Panel Meters**	Good
Control Switches	Good	**Hinged Doors**	Good	**Panel Lights**	Good
Swgr Grounds	Good	**Bus Supports**	Good	**Cables**	Good
Paint Condition	Good	**Space Heaters**	Good	**Shutters**	Good
Connections	Good	**Tracking Signs**	Not Applicable	**Interlocks**	Not Applicable
Control Wiring	Good	**Cleanliness**	Good	**Insulation**	Good
Control Relays	Good	**Lubrication**	Good	**Test Stand**	Not Applicable
"83" Transfer	Not Applicable	**Ground Truck**	Not Applicable	**Maint Tools**	Not Applicable

Other Inspections CONTROL POWER WAS APPLIED AND ALL FUNCTIONS VERIFIED.

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd
SERVICE ENTRANCE BUS	GROUND W/ 2 OPPOSING PH	1.0	4000	4000	4000
LOAD SIDE MAIN BREAKER B	GROUND W/ 2 OPPOSING PH	1.0	4000	4000	4000
ATS LIFE SAFETY BUSS DUC	GROUND W/ 2 OPPOSING PH	1.0	2400	2000	2000
ATS LOAD MAIN BUSS	GROUND W/ 2 OPPOSING PH	1.0	1500	1450	1485

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
Service entrance bus conn.	Main Breaker line side stabs	100	9	9	11
Main breaker load side stabs	Sec. 2 Metering	100	23	24	24
Main breaker load side stabs	Sec. 3 ATS/Life Safety line side	100	70	61	68
ATS/ Life Safety Line side stabs	DP-SA Line Side Stabs (inc. duc	100	90	96	99

REMARKS Cont. on next page.All results are acceptable.

Submitted By K.CUBBERLEY/M.STANLEY **Equipment Used** 100 AMP DUCTOR, FLUKE 1KVDC MEGGER

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SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric	Date	12/16/2010	Page	2 Of 4
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2		
Owner	Port Authority of New York and New Jersey	Last Inspection Report	Acceptance		
Owner Address	Newark Airport, Newark, NJ	Last Inspection Date	Acceptance		
Equipment Location	Terminal B	Air Temperature	60F		
Owner Identification	Switchgear SA	Relative Humidity	55%		

Nameplate Data

Manufacturer	Siemens	Design Voltage	480VAC	System Voltage	480/277	BIL	NA
Serial #	NA	Rated Current	4000A	Style	WL	Age	2009
Model	NA	SC Withstand	150KA	Cat #	NA	ID #	SA

# Breakers	5	# Relays	0	# Meters	6	# Vert Sect	5	# Cubicles	16

Other Info: CONTAINS 1 FUTURE CELL

Inspection Report

Breaker Operation	Good	Covers/Glass	Good	Annunciator	Not Applicable
Equipment Access	Good	Cell Condition	Good	Panel Meters	Good
Control Switches	Good	Hinged Doors	Good	Panel Lights	Good
Swgr Grounds	Good	Bus Supports	Good	Cables	Good
Paint Condition	Good	Space Heaters	Good	Shutters	Good
Connections	Good	Tracking Signs	Not Applicable	Interlocks	Not Applicable
Control Wiring	Good	Cleanliness	Good	Insulation	Good
Control Relays	Good	Lubrication	Good	Test Stand	Not Applicable
"83" Transfer	Not Applicable	Ground Truck	Not Applicable	Maint Tools	Not Applicable

Other Inspections: CONTROL POWER WAS APPLIED AND ALL FUNCTIONS VERIFIED.

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd
See previous page.					

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
DP-SA Line side stabs	DP-SB line side Stabs	100	29	27	24
DP-SA Line side stabs	P-MDP line side stabs	100	23	24	24
P-MDP load side stabs	P-MDP bus duct connections	100	4	7	6

REMARKS: Cont. on next page. All results are acceptable.

Submitted By: K.CUBBERLEY/M.STANLEY

Equipment Used: 100 AMP DUCTOR, FLUKE 1KVDC MEGGER

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SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric	Date 12/16/2010	Page 3 Of 4
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2
Owner	Port Authority of New York and New Jersey	Last Inspection Report	Acceptance
Owner Address	Newark Airport, Newark, NJ	Last Inspection Date	Acceptance
Equipment Location	Terminal B	Air Temperature	60F
Owner Identification	Switchgear SA	Relative Humidity	55%

Nameplate Data

Manufacturer	Siemens	Design Voltage	480VAC	System Voltage	460/277	BIL	NA
Serial #	NA	Rated Current	4000A	Style	WL	Age	2009
Model	NA	SC Withstand	150KA	Cat #	NA	ID #	SA

Breakers 5 # Relays 0 # Meters 6 # Vert Sect 5 # Cubicles 16

Other Info CONTAINS 1 FUTURE CELL

Inspection Report

Breaker Operation	Good	Covers/Glass	Good	Annunciator	Not Applicable
Equipment Access	Good	Cell Condition	Good	Panel Meters	Good
Control Switches	Good	Hinged Doors	Good	Panel Lights	Good
Swgr Grounds	Good	Bus Supports	Good	Cables	Good
Paint Condition	Good	Space Heaters	Good	Shutters	Good
Connections	Good	Tracking Signs	Not Applicable	Interlocks	Not Applicable
Control Wiring	Good	Cleanliness	Good	Insulation	Good
Control Relays	Good	Lubrication	Good	Test Stand	Not Applicable
"83" Transfer	Not Applicable	Ground Truck	Not Applicable	Maint Tools	Not Applicable

Other Inspections CONTROL POWER WAS APPLIED AND ALL FUNCTIONS VERIFIED.

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd
See previous page.					

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
SEC 1 GROUND BUS	SEC 2 GROUND BUS	100	27		
SEC 1 GROUND BUS	SEC 3 GROUND BUS	100	39		
SEC 1 GROUND BUS	SEC 4 GROUND BUS	100	43		
SEC 1 GROUND BUS	SEC 5 GROUND BUS	100	50		

REMARKS Cont. on next page. All results are acceptable.

Submitted By K.CUBBERLEY/M.STANLEY Equipment Used 100 AMP DUCTOR, FLUKE 1KVDC MEGGER

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STI-4

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric	Date	12/16/2010 Page 4 Of 4
Customer Address	601 New Brunswick Ave, Rahway, NJ	Project Number	S10-1157.2
Owner	Port Authority of New York and New Jersey	Last Inspection Report	Acceptance
Owner Address	Newark Airport, Newark, NJ	Last Inspection Date	Acceptance
Equipment Location	Terminal B	Air Temperature	60F
Owner Identification	Switchgear SA	Relative Humidity	55%

Nameplate Data

Manufacturer	Siemens	Design Voltage	480VAC	System Voltage	480/277	BIL	NA
Serial #	NA	Rated Current	4000A	Style	WL	Age	2009
Model	NA	SC Withstand	150KA	Cat #	NA	ID #	SA

# Breakers	# Relays	# Meters	# Vert Sect	# Cubicles
5	0	6	5	16

Other Info: CONTAINS 1 FUTURE CELL

Inspection Report

Breaker Operation	Good	Covers/Glass	Good	Annunciator	Not Applicable
Equipment Access	Good	Cell Condition	Good	Panel Meters	Good
Control Switches	Good	Hinged Doors	Good	Panel Lights	Good
Swgr Grounds	Good	Bus Supports	Good	Cables	Good
Paint Condition	Good	Space Heaters	Good	Shutters	Good
Connections	Good	Tracking Signs	Not Applicable	Interlocks	Not Applicable
Control Wiring	Good	Cleanliness	Good	Insulation	Good
Control Relays	Good	Lubrication	Good	Test Stand	Not Applicable
"83" Transfer	Not Applicable	Ground Truck	Not Applicable	Maint Tools	Not Applicable

Other Inspections: CONTROL POWER WAS APPLIED AND ALL FUNCTIONS VERIFIED.

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd
See previous page.					

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
SEC 1 NEUTRAL BUS	SEC 2 NEUTRAL BUS	100	40		
SEC 1 NEUTRAL BUS	SEC 3 NEUTRAL BUS	100	56		
SEC 1 NEUTRAL BUS	SEC 4 NEUTRAL BUS	100	78		
SEC 1 NEUTRAL BUS	SEC 5 NEUTRAL BUS	100	85		

REMARKS: Cont. on next page. All results are acceptable.

Submitted By: K.CUBBERLEY/M.STANLEY

Equipment Used: 100 AMP DUCTOR, FLUKE 1KVDC MEGGER

Low Voltage Circuit Breaker Report

SM Electric
S10-1157.2

Scott Testing, Inc.

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LVCB-r4

LOW VOLTAGE CIRCUIT BREAKER REPORT

Customer	SM Electric	Date	12/13/2010	Page 2	Of 5
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2		
Owner	Newark Airport	Last Inspection Report	Acceptance		
Owner Address	Newark, NJ	Last Inspection Date	Acceptance		
Equipment Location	Terminal B Switchgear SA	Air Temperature	50F		
Owner Identification	ATS LIFE SAFETY	Relative Humidity	75%		

Nameplate Data		Trip Unit Data		Trip Unit Range		Inspection	
Bkr Mfg	Siemens	Trip Unit Mfg	Siemens	LT PU	0.4-1.0 x Ir	Contacts	Good
Bkr Type	WLF2A380	Type	ETU776	LTD Band	2-30 sec @ 6 x Ir	Stabs	Good
Frame Size	800A	Rating	500A	ST PU	1.25xIn - 0.8x IC	Cubicle	Good
Voltage	635VAC MAX	Trip Unit S/N	NA	STD Band	0.08-4 sec, OFF	Arc Chute	Good
IC Rating	100KA	Cat Number	NA	GF PU	A-E (400-1200A)	Operation	Good
Bkr S/N	4001281001000	Curve	NA	GFD Band	0.1-0.5 SEC	Mechanism	Good
Instr Bk	CBIM02000-0204	Plug Rating	500A	Instant	NA	Heaters	Not Applicable
Other	NA	Sensor CTR	NA	Other	NA	Other	Not Applicable

Long Time (Note: All trip time in seconds

LT PU Set @ 1x In
LT Set Amps 500
LT PU Amps 500
LT Delay @ 300 %= 1500 Amps
I^2T Out x In LT Delay Set 2.0

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
4000	4000	4000	4000	4000	4000
4000	4000	4000	4000	4000	4000
5.929	5.929	5.929	5.929	5.929	5.929

LT Curve Range

Short Time (Note: All trip time in seconds

ST Set Amps 6x
ST PU Amps 3000
ST Delay @ 150 %= 4500 Amps
I^2T Out x In ST Delay Set 0.1

A	B	C	A	B	C
3000	3000	3000	3000	3000	3000
3000	3000	3000	3000	3000	3000
0.144	0.144	0.144	0.144	0.144	0.144

ST Curve Range

Ground Fault (Note: All trip time in seconds

GF Set Amps B
GF PU Amps 300
GF Delay @ 150 %= 450 Amps
I^2T Out x In GF Delay Set 0.2

A	B	C	A	B	C
300	300	300	300	300	300
300	300	300	300	300	300
0.249	0.236	0.244	0.249	0.236	0.244

GF Curve Range

Instantaneous (Note: All trip time in seconds

Inst Set Amps 200KA
Inst PU Amps 200KA
Inst Delay @ NA %= NA Amps

A	B	C	A	B	C
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Contact Resistance (Results in microhms)

A Phase 28
B Phase 34
C Phase 29

Insulation Resistance (results in megohms) Test Value: 1KVDC

A Phase to B/C/ Gnd 4000
B Phase to A/C/ Gnd 4000
C Phase to A/B/ Gnd 4000

A Phase (Line to Load) 4000
B Phase (Line to Load) 4000
C Phase (Line to Load) 4000

REMARKS BREAKER TESTED SATISFACTORY. FUSE INFO: FARRAZ SHAWMUT. CLASS L. CAT # A4BY3000-SEA-3. 3000A. 200KA IC. FUSE RES: A:8 B:9 C:12. Neutral CT circuit and trip verified by primary current injection.

Submitted By K CUBBERLEY/ M. STANLEY **Equipment Used** 302266,302146; FLUKE 1KVDC MEGGER

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LVCB-rt

LOW VOLTAGE CIRCUIT BREAKER REPORT

Customer	SM Electric	Date 12/13/2010	Page 3 Of 5
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2
Owner	Newark Airport	Last Inspection Report	Acceptance
Owner Address	Newark, NJ	Last Inspection Date	Acceptance
Equipment Location	Terminal B Switchgear SA	Air Temperature	50F
Owner Identification	DP-SA	Relative Humidity	75%

Nameplate Data		Trip Unit Data		Trip Unit Range		Inspection	
Bkr Mfg	Siemens	Trip Unit Mfg	Siemens	LT PU	0.4-1.0 x Ir	Contacts	Good
Bkr Type	WLF2A316	Type	ETU776	LTD Band	2-30 sec @ 6 x Ir	Stabs	Good
Frame Size	1200A	Rating	1200A	ST PU	1.25xIn - 0.8x IC	Cubicle	Good
Voltage	635VAC MAX	Trip Unit S/N	NA	STD Band	0.08-4 sec, OFF	Arc Chute	Good
IC Rating	100KA	Cat Number	NA	GF PU	A-E (400-1200A)	Operation	Good
Bkr S/N	4001280930037	Curve	NA	GFD Band	0.1-0.5 SEC	Mechanism	Good
Instr Bk	CBIM02000-0204	Plug Rating	1200A	Instant	NA	Heaters	Not Applicable
Other	NA	Sensor CTR	NA	Other	NA	Other	Not Applicable

Long Time (Note: All trip time in seconds

LT PU Set @ 1x In
LT Set Amps 1200
LT PU Amps 1200
LT Delay @ 300 %= 3600 Amps
I^2T Out In X LT Delay Set 2.0

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
1200	1200	1200	1200	1200	1200
1200	1200	1200	1200	1200	1200
26.34	26.43	25.99	26.34	26.43	25.99

LT Curve Range

Short Time (Note: All trip time in seconds

ST Set Amps 4X
ST PU Amps 4800
ST Delay @ 150 %= 7200 Amps
I^2T Out x In ST Delay Set 0.1

A	B	C	A	B	C
4800	4800	4800	4800	4800	4800
4800	4800	4800	4800	4800	4800
0.144	0.144	0.144	0.144	0.144	0.144

ST Curve Range

Ground Fault (Note: All trip time in seconds

GF Set Amps D
GF PU Amps 900
GF Delay @ 150 %= 1350 Amps
I^2T Out x In GF Delay Set 0.2

A	B	C	A	B	C
900	900	900	900	900	900
900	900	900	900	900	900
0.342	0.342	0.342	0.342	0.342	0.342

GF Curve Range

Instantaneous (Note: All trip time in seconds

Inst Set Amps 200KA
Inst PU Amps 200KA
Inst Delay @ NA %= NA Amps

A	B	C	A	B	C
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Contact Resistance (Results in microhms)

A Phase 28
B Phase 34
C Phase 29

Insulation Resistance (results in megohms) Test Value: 1KVDC

A Phase to B/C/ Gnd 4000
B Phase to A/C/ Gnd 4000
C Phase to A/B/ Gnd 4000

A Phase (Line to Load) 4000
B Phase (Line to Load) 4000
C Phase (Line to Load) 4000

REMARKS BREAKER TESTED SATISFACTORY. FUSE INFO: FARRAZ SHAWMUT. CLASS L. CAT # A4BY3000-SEA-3. 3000A. 200KA IC: FUSE RES: A:8 B:9 C:12. Ground Fault plug found to be faulty. Replaced with spare unit and re-tested. Neutral CT circuit and trip verified by primary current injection.

Submitted By K.CUBBERLEY/ M. STANLEY **Equipment Used** 302266,302146, FLUKE 1KVDC MEGGER

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Telephone: 609-882-2400 Fax: 609-882-5660

LVCB-4

LOW VOLTAGE CIRCUIT BREAKER REPORT

Customer	SM Electric	Date	12/13/2010 Page 4 Of 5
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2
Owner	Newark Airport	Last Inspection Report	Acceptance
Owner Address	Newark, NJ	Last Inspection Date	Acceptance
Equipment Location	Terminal B Switchgear SA	Air Temperature	50F
Owner Identification	DP-SB	Relative Humidity	75%

Nameplate Data		Trip Unit Data		Trip Unit Range		Inspection	
Bkr Mfg	Siemens	Trip Unit Mfg	Siemens	LT PU	0.4-1.0 x Ir	Contacts	Good
Bkr Type	WLM3A340	Type	ETU776	LTD Band	2-30 sec @ 6 x Ir	Stabs	Good
Frame Size	1600A	Rating	1200A	ST PU	1.25xIn - 0.8x IC	Cubicle	Good
Voltage	635VAC MAX	Trip Unit S/N	NA	STD Band	0.08-4 sec, OFF	Arc Chute	Good
IC Rating	100KA	Cat Number	NA	GF PU	A-E (100A-1200A)	Operation	Good
Bkr S/N	4001280930032	Curve	NA	GFD Band	0.1-0.5 SEC	Mechanism	Good
Instr Bk	CBIM02000-0204	Plug Rating	1200A	Instant	NA	Heaters	Not Applicable
Other	NA	Sensor CTR	NA	Other	NA	Other	Not Applicable

Long Time (Note: All trip time in seconds

LT PU Set @ 1x In
LT Set Amps 1200
LT PU Amps 1200
LT Delay @ 300 %= 3600 Amps
I^2T Out In x LT Delay Set 2.0

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
500	500	500	500	500	500
500	500	500	500	500	500
23.16	24.13	22.19	23.16	24.13	22.19

LT Curve Range

Short Time (Note: All trip time in seconds

ST Set Amps 4X
ST PU Amps 4800
ST Delay @ 150 %= 6200 Amps
I^2T Out x In ST Delay Set 0.1

A	B	C	A	B	C
4800	4800	4800	4800	4800	4800
4800	4800	4800	4800	4800	4800
0.144	0.143	0.140	0.144	0.143	0.140

ST Curve Range

Ground Fault (Note: All trip time in seconds

GF Set Amps D
GF PU Amps 900
GF Delay @ 150 %= 1350 Amps
I^2T Out x In GF Delay Set 0.2

A	B	C	A	B	C
900	900	900	900	900	900
900	900	900	900	900	900
0.246	0.246	0.246	0.246	0.246	0.246

GF Curve Range

Instantaneous (Note: All trip time in seconds

Inst Set Amps OFF
Inst PU Amps OFF
Inst Delay @ NA %= NA Amps

A	B	C	A	B	C
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Contact Resistance (Results in microhms)

A Phase 43
B Phase 48
C Phase 49

Insulation Resistance (results in megohms) Test Value: 1KVDC

A Phase to B/C/ Gnd 4000
B Phase to A/C/ Gnd 4000
C Phase to A/B/ Gnd 4000

A Phase (Line to Load) 4000
B Phase (Line to Load) 4000
C Phase (Line to Load) 4000

REMARKS BREAKER TESTED SATISFACTORY. FUSE INFO: FARRAZ SHAWMUT. CLASS L. CAT # A4BY3000-SEA-3. 3000A. 200KA IC. FUSE RES IN MICROHMS: A: 28 B: 39 C: 32 Neutral CT circuit and trip verified by primary current injection.

Submitted By K.CUBBERLEY/ M. STANLEY **Equipment Used** 302266, 302146, FLUKE 1KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

LVCB-14

LOW VOLTAGE CIRCUIT BREAKER REPORT

Customer	SM Electric	Date	12/13/2010	Page 1	Of 5
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2		
Owner	Newark Airport	Last Inspection Report	Acceptance		
Owner Address	Newark, NJ	Last Inspection Date	Acceptance		
Equipment Location	Terminal B Switchgear SA	Air Temperature	50F		
Owner Identification	Main Breaker	Relative Humidity	75%		

Nameplate Data		Trip Unit Data		Trip Unit Range		Inspection	
Bkr Mfg	Siemens	Trip Unit Mfg	Siemens	LT PU	0.4-1.0 x Ir	Contacts	Good
Bkr Type	WLM3A340	Type	ETU776	LTD Band	2-30 sec @ 6 x Ir	Stabs	Good
Frame Size	4000A	Rating	4000A	ST PU	1.25xIn - 0.8x IC	Cubicle	Good
Voltage	635VAC MAX	Trip Unit S/N	NA	STD Band	0.08-4 sec, OFF	Arc Chute	Good
IC Rating	100KA	Cat Number	NA	GF PU	A-E (400-1200A)	Operation	Good
Bkr S/N	4001281007016	Curve	NA	GFD Band	0.1-0.5 SEC	Mechanism	Good
Instr Bk	CBIM02000-0204	Plug Rating	4000A	Instant	NA	Heaters	Not Applicable
Other	NA	Sensor CTR	NA	Other	NA	Other	Not Applicable

Long Time (Note: All trip time in seconds

LT PU Set @ 1x In
LT Set Amps 4000
LT PU Amps 4000
LT Delay @ 300 %= 12000 Amps
I^2T Out x In LT Delay Set 2.0

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
4000	4000	4000	4000	4000	4000
4000	4000	4000	4000	4000	4000
4.865	4.732	4.764	4.865	4.732	4.764

LT Curve Range

Short Time (Note: All trip time in seconds

ST Set Amps 2
ST PU Amps 8000
ST Delay @ 150 %= 12000 Amps
I^2T Out x In ST Delay Set 0.3

A	B	C	A	B	C
8000	8000	8000	8000	8000	8000
8000	8000	8000	8000	8000	8000
0.348	0.346	0.348	0.348	0.346	0.348

ST Curve Range

Ground Fault (Note: All trip time in seconds

GF Set Amps E
GF PU Amps 1200
GF Delay @ 150 %= 1800 Amps
I^2T Out x In GF Delay Set 0.3

A	B	C	A	B	C
1200	1200	1200	1200	1200	1200
1200	1200	1200	1200	1200	1200
0.342	0.342	0.342	0.342	0.342	0.342

GF Curve Range

Instantaneous (Note: All trip time in seconds

Inst Set Amps NA
Inst PU Amps NA
Inst Delay @ NA %= NA Amps

A	B	C	A	B	C
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Contact Resistance *(Results in microhms)*

A Phase 13
B Phase 19
C Phase 16

Insulation Resistance *(results in megohms)* Test Value: 1KVDC

A Phase to B/C/ Gnd 4000
B Phase to A/C/ Gnd 4000
C Phase to A/B/ Gnd 4000

A Phase (Line to Load) 4000
B Phase (Line to Load) 4000
C Phase (Line to Load) 4000

REMARKS BREAKER TESTED SATISFACTORY. Neutral CT circuit and trip verified by primary current injection.

Submitted By K.CUBBERLEY/ M. STANLEY

Equipment Used 302266, 302146, FLUKE 1 KVDC MEGGER

Scott Testing, Inc.

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LVCB-4

LOW VOLTAGE CIRCUIT BREAKER REPORT

Customer	SM Electric	Date	12/13/2010
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2
Owner	Newark Airport	Last Inspection Report	Acceptance
Owner Address	Newark, NJ	Last Inspection Date	Acceptance
Equipment Location	Terminal B Switchgear SA	Air Temperature	50F
Owner Identification	P-MDP	Relative Humidity	75%

Nameplate Data		Trip Unit Data		Trip Unit Range		Inspection	
Bkr Mfg	Siemens	Trip Unit Mfg	Siemens	LT PU	0.4-1.0 x Ir	Contacts	Good
Bkr Type	WLF2A320	Type	ETU776	LTD Band	2-30 sec @ 6 x Ir	Stabs	Good
Frame Size	2000A	Rating	2000A	ST PU	1.25xIn - 0.8x IC	Cubicle	Good
Voltage	635VAC MAX	Trip Unit S/N	NA	STD Band	0.08-4 sec, OFF	Arc Chute	Good
IC Rating	100KA	Cat Number	NA	GF PU	A-E (100A-1200A)	Operation	Good
Bkr S/N	4001281001018	Curve	NA	GFD Band	0.1-0.5 SEC	Mechanism	Good
Instr Bk	CBIM02000-0204	Plug Rating	2000A	Instant	NA	Heaters	Not Applicable
Other	NA	Sensor CTR	NA	Other	NA	Other	Not Applicable

Long Time (Note: All trip time in seconds

LT PU Set @ 1x In
LT Set Amps 2000
LT PU Amps 2000
LT Delay @ 300 %= 6000 Amps
I^2T Out In X LT Delay Set 2.0

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
2000	2000	2000	2000	2000	2000
2000	2000	2000	2000	2000	2000
6.775	6.542	7.001	6.775	6.542	7.001

LT Curve Range

Short Time (Note: All trip time in seconds

ST Set Amps 3X
ST PU Amps 6000
ST Delay @ 150 %= 9000 Amps
I^2T Out x In ST Delay Set 0.1 SEC

A	B	C	A	B	C
6000	6000	6000	6000	6000	6000
6000	6000	6000	6000	6000	6000
0.132	0.143	0.111	0.132	0.143	0.111

ST Curve Range

Ground Fault (Note: All trip time in seconds

GF Set Amps D
GF PU Amps 900
GF Delay @ 150 %= 1350 Amps
I^2T Out x In GF Delay Set 0.2

A	B	C	A	B	C
900	900	900	900	900	900
900	900	900	900	900	900
0.241	0.241	0.241	0.241	0.241	0.241

GF Curve Range

Instantaneous (Note: All trip time in seconds

Inst Set Amps OFF
Inst PU Amps OFF
Inst Delay @ NA %= NA Amps

A	B	C	A	B	C
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Contact Resistance (Results in microhms)

A Phase
B Phase
C Phase

Insulation Resistance (results in megohms) Test Value: 1KVDC

A Phase to B/C/ Gnd	4000	A Phase (Line to Load)	4000
B Phase to A/C/ Gnd	4000	B Phase (Line to Load)	4000
C Phase to A/B/ Gnd	4000	C Phase (Line to Load)	4000

REMARKS BREAKER TESTED SATISFACTORY. FUSE INFO: FARRAZ SHAWMUT. CLASS L. CAT # A4BY3000-SEA-3. 3000A. 200KA IC. FUSE RES. IN MICROHMS: A: 12 B:14 C:11 Neutral CT circuit and trip verified by primary current injection.

Submitted By K.CUBBERLEY/ M. STANLEY **Equipment Used** 302266,302146, FLUKE 1KVDC MEGGER

Current Transformer Report

SM Electric

R10-1157.2

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

CT-H

CURRENT TRANSFORMER REPORT

Customer	SM Electric	**Date** 12/15/2010	**Page** 1 **Of** 5
Customer Address	601 New Brunswick Ave. Rahway ,NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York & New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Acceptance
Equipment Location	Switchgear SA	**Air Temperature**	60F
Owner Identification	ATS Life Safety	**Relative Humidity**	55%

Nameplate Data

Manufacturer	Siemens	**VA Rating**	NA	**Type**	NA	**Class**	NA	**Other**	NA
Ratio	500:5 AMPS	**Rated KV**	NA	**Cat #**	NA	**S/N**	NA		

Excitation Test

Applied Test Voltage——>		24	24.5	25	25.5	26	26.5	27	27.5	28	28.5
CT Identification	A	0.3580	0.3970	04423	0.5037	0.5798	0.6909	0.8680	1.1996	1.7171	SAT
CT Identification	B	0.2526	0.2800	0.3268	0.3881	0.4912	0.6198	0.8078	1.1497	1.8645	SAT
CT Identification	C	0.2277	0.2543	0.2849	0.3230	0.3730	0.4268	0.5217	0.6547	0.8696	1.3737

Additional Test Data

	RATIO TEST			POLARITY	INSULATION INTEGRITY
CT Identification	**Primary Volts**	**Secondary Volts**	**Measured Ratio**	**Check**	**Test Value:** 1KVDC
A	0.2490	25.01	100.441767068273	GOOD	4000
B	0.2494	25.00	100.240577385726	GOOD	4000
C	0.2490	25.00	100.401606425703	GOOD	4000

Results in megohms

CT Load/Wiring Check

Connection Config		**Phase Verification**	GOOD	Load Side Measured Burden	
Connected Devices	SIEMENS 9350 ION METER			CT ID	
Wired Per Drawing #				CT ID	
Other Checks				CT ID	

Visual Inspections

Mounting	Not Applicable	**Insulating Bushings**	Not Applicable	**Shorting Block**	Good	**Case/Tank**	Good
Connections	Good	**Single Point Ground**	Good	**Sec Wire Size**	10AWG		
Other							

REMARKS Unable to visually inspect CT's due to mounting behind red board insulators. Ratio verified against drawings. CT's tested satisfactory. Wiring verified to meter connections.

Submitted By K.CUBBERLEY **Equipment Used** 302146, FLUKE 1 KVDC MEGGER

Scott Testing, Inc.

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CT-r4

CURRENT TRANSFORMER REPORT

Customer	SM Electric	**Date** 12/15/2010	**Page** 2 Of 5
Customer Address	601 New Brunswick Ave. Rahway ,NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York & New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Acceptance
Equipment Location	Switchgear SA	**Air Temperature**	60F
Owner Identification	DP-SA	**Relative Humidity**	55%

Nameplate Data

Manufacturer	Siemens	**VA Rating**	NA	**Type**	NA	**Class**	NA	**Other**	NA
Ratio	3200 :5 Amps (640:1)	**Rated KV**	NA	**Cat #**	NA	**S/N**	NA		

Excitation Test

Applied Test Voltage——>		47.5	48	48.5	49	49.5	50	50.5	51	51.5	52
CT Identification	A	0.4072	0.4668	0.5358	0.6430	0.8166	1.0627	1.5343	SAT	SAT	SAT
CT Identification	B	0.5496	0.6446	0.8264	1.0902	1.6078	SAT	SAT	SAT	SAT	SAT
CT Identification	C	0.5187	0.6380	0.7476	1.0046	1.4002	SAT	SAT	SAT	SAT	SAT

Additional Test Data

	RATIO TEST			POLARITY	INSULATION INTEGRITY
CT Identification	**Primary Volts**	**Secondary Volts**	**Measured Ratio**	**Check**	**Test Value:** 1KVDC
A	0.0390	25.01	641.282051282051	GOOD	4000
B	0.0389	25.00	642.6735218509	GOOD	4000
C	0.0390	25.01	641.282051282051	GOOD	4000

Results In megohms

CT Load/Wiring Check

Connection Config		**Phase Verification** GOOD	Load Side Measured Burden	
Connected Devices	SIEMENS 9350 ION METER		**CT ID**	
Wired Per Drawing #			**CT ID**	
Other Checks			**CT ID**	

Visual Inspections

Mounting	Not Applicable	**Insulating Bushings**	Not Applicable	**Shorting Block**	Good	**Case/Tank**	Good
Connections	Good	**Single Point Ground**	Good	**Sec Wire Size**	10AWG		
Other							

REMARKS Unable to visually inspect CT's due to mounting behind red board insulators. Ratio verified against drawings. CT's tested satisfactory Measured ratio incorrect to drawing specs.

Submitted By K.CUBBERLEY **Equipment Used** 302146, FLUKE 1 KVDC MEGGER

Scott Testing, Inc.

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CT-46

CURRENT TRANSFORMER REPORT

Customer	SM Electric	Date	12/15/2010 Page 3 Of 5
Customer Address	601 New Brunswick Ave. Rahway ,NJ	Project Number	S10-1157.2
Owner	Port Authority of New York & New Jersey	Last Inspection Report	Acceptance
Owner Address	Newark Airport, Newark, NJ	Last Inspection Date	Acceptance
Equipment Location	Switchgear SA	Air Temperature	60F
Owner Identification	DP-SB	Relative Humidity	55%

Nameplate Data

Manufacturer	Siemens	VA Rating	NA	Type	NA	Class	NA	Other	NA
Ratio	1200 :5 Amps (240:1)	Rated KV	NA	Cat #	NA	S/N	NA		

Excitation Test

Applied Test Voltage---->		31.5	32	32.5	33	33.5	34	34.5	35	35.5	36
CT Identification	A	0.4290	0.4986	0.6244	0.7678	1.2085	1.477	SAT	SAT	SAT	SAT
CT Identification	B	0.8059	0.9433	1.1431	1.480	SAT	SAT	SAT	SAT	SAT	SAT
CT Identification	C	0.4178	0.4968	0.6179	0.7548	0.9717	1.3178	SAT	SAT	SAT	SAT

Additional Test Data

	RATIO TEST			POLARITY	INSULATION INTEGRITY
CT Identification	Primary Volts	Secondary Volts	Measured Ratio	Check	Test Value: 1KVDC
A	0.1040	25.00	240.384615384615	GOOD	4000
B	0.1036	25.00	241.312741312741	GOOD	4000
C	0.1038	25.00	240.847784200385	GOOD	4000

Results In megohms

CT Load/Wiring Check

Connection Config		Phase Verification	GOOD
Connected Devices	SIEMENS 9350 ION METER		
Wired Per Drawing #			
Other Checks			

Load Side Measured Burden		
CT ID		
CT ID		
CT ID		

Visual Inspections

Mounting	Not Applicable	Insulating Bushings	Not Applicable	Shorting Block	Good	Case/Tank	Good
Connections	Good	Single Point Ground	Good	Sec Wire Size	10AWG		
Other							

REMARKS Unable to visually inspect CT's due to mounting behind red board insulators. Ratio verified against drawings. CT's tested satisfactory. Wiring verfied to meter connection.

Submitted By K.CUBBERLEY **Equipment Used** 302146, FLUKE 1 KVDC MEGGER

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CT-rr

CURRENT TRANSFORMER REPORT

Customer	SM Electric	**Date**	12/15/2010 **Page** 5 **Of** 5
Customer Address	601 New Brunswick Ave. Rahway ,NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York & New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Acceptance
Equipment Location	Switchgear SA	**Air Temperature**	60F
Owner Identification	Main Breaker	**Relative Humidity**	55%

Nameplate Data

Manufacturer	Siemens	**VA Rating**	NA	**Type**	NA	**Class**	NA	**Other**	NA
Ratio	4000:5 AMPS (800:1)	**Rated KV**	NA	**Cat #**	NA	**S/N**	NA		

Excitation Test

Applied Test Voltage——>		86	88	89	89.5	90	90.5	91	91.5	92	92.5
CT Identification	A	0.8493	0.997	1.1925	1.4751	1.8621	SAT	SAT	SAT	SAT	SAT
CT Identification	B	1.367	1.745	SAT	SAT	SAT	SAT	SAT	SAT	SAT	SAT
CT Identification	C	0.5590	0.5790	0.6676	0.717	0.9370	1.0952	1.3278	1.7491	SAT	SAT

Additional Test Data

	RATIO TEST			POLARITY	INSULATION INTEGRITY
CT Identification	**Primary Volts**	**Secondary Volts**	**Measured Ratio**	**Check**	**Test Value:** 1KVDC
A	0.0624	50.00	801.282051282051	GOOD	4000
B	0.0622	50.00	803.858520900322	GOOD	4000
C	0.0622	50.00	803.858520900322	GOOD	4000

Results In megohms

CT Load/Wiring Check

Connection Config		**Phase Verification**	GOOD	**Load Side Measured Burden**	
Connected Devices	SIEMENS 9350 ION METER			**CT ID**	
Wired Per Drawing #				**CT ID**	
Other Checks				**CT ID**	

Visual Inspections

Mounting	Not Applicable	**Insulating Bushings**	Not Applicable	**Shorting Block**	Good	**Case/Tank**	Good
Connections	Good	**Single Point Ground**	Good	**Sec Wire Size**	10AWG		
Other							

REMARKS Unable to visually inspect CT's due to mounting behind red board insulators. Ratio verified against drawings. Wiring verified to meter connections.

Submitted By K.CUBBERLEY **Equipment Used** 302146, FLUKE 1 KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

CT-44

CURRENT TRANSFORMER REPORT

Customer	SM Electric	**Date**	12/15/2010 **Page** 4 **Of** 5
Customer Address	601 New Brunswick Ave. Rahway ,NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York & New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Acceptance
Equipment Location	Switchgear SA	**Air Temperature**	60F
Owner Identification	SWITCHBOARD P-MDP	**Relative Humidity**	55%

Nameplate Data

Manufacturer	Siemens	**VA Rating**	NA	**Type**	NA	**Class**	NA	**Other**	NA
Ratio	2000:5 AMPS (400:1)	**Rated KV**	NA	**Cat #**	NA	**S/N**	NA		

Excitation Test

Applied Test Voltage——>		49	49.5	50	50.5	51	51.5	52	52.5	53	53.5
CT Identification	A	0.3302	0.4037	0.5209	0.6903	0.9600	1.3346	1.9507	SAT	SAT	SAT
CT Identification	B	0.1556	0.1894	0.227	0.2904	0.3579	0.4680	0.698	1.2600	1.6736	SAT
CT Identification	C	0.2725	0.3448	0.3448	0.4255	0.5451	0.7001	0.9332	1.2700	1.7736	SAT

Additional Test Data

	RATIO TEST			POLARITY	INSULATION INTEGRITY
CT Identification	**Primary Volts**	**Secondary Volts**	**Measured Ratio**	**Check**	**Test Value:** 1KVDC
A	0.1239	50.00	403.551251008878	GOOD	4000
B	0.1246	49.99	401.203852327448	GOOD	4000
C	0.1247	50.03	401.202886928629	GOOD	4000

Results In megohms

CT Load/Wiring Check

Connection Config		**Phase Verification** GOOD	Load Side Measured Burden
Connected Devices	SIEMENS 9350 ION METER		CT ID
Wired Per Drawing #			CT ID
Other Checks			CT ID

Visual Inspections

Mounting	Not Applicable	**Insulating Bushings**	Not Applicable	**Shorting Block**	Good	**Case/Tank**	Good
Connections	Good	**Single Point Ground**	Good	**Sec Wire Size**	10AWG		
Other							

REMARKS Unable to visually inspect CT's due to mounting behind red board insulators. Ratio verified against drawings. CT's tested satisfactory. Wiring verified to meter connections.

Submitted By K.CUBBERLEY **Equipment Used** 302146, FLUKE 1 KVDC MEGGER

Instrument Calibration Report

SM Electric
S10-1157.2

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
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INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date** 12/16/2010	**Page** 6 Of 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	DP-SA - PM Voltage Function	**Relative Humidity**	55%

Instrument Data

Owner ID	DP-SA - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A465-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA

Other Info

Standard	50 Volts	75 Volts	100 Volts	125 Volts				
As Found	200.2	300.1	399.7	480.0				
As Left	200.2	300.1	399.7	480.0				

REMARKS All results are acceptable.

Instrument Data

Owner ID	DP-SA- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A465-11	**Type**	9350	**Basic Range**	0-120VAC	**Calib Watts**	NA

Other Info

Standard	50 Vac	75 Vac	100 Vac	125 Vac				
As Found	200.1	300.1	400.0	480				
As Left	200.1	300.1	400.0	480				

REMARKS All results are acceptable.

Instrument Data

Owner ID	DP-SA - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	120Vac
Function	Voltage Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A465-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA

Other Info

Standard	50 Vac	75 Vac	100 Vac	120 Vac				
As Found	200.2	300.1	399.9	480.0				
As Left	200.2	300.1	399.9	480.0				

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date** 12/16/2010	**Page** 10 **Of** 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	DP-SB - PM Voltage Function	**Relative Humidity**	55%

Instrument Data

Owner ID	DP-SB - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A309-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA

Other Info

Standard	50 Volts	75 Volts	100 Volts	125 Volts				
As Found	200.2	300.1	399.7	480.0				
As Left	200.2	300.1	399.7	480.0				

REMARKS All results are acceptable.

Instrument Data

Owner ID	DP-SB- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A309-11	**Type**	9350	**Basic Range**	0-120VAC	**Calib Watts**	NA

Other Info

Standard	50 Vac	75 Vac	100 Vac	125 Vac				
As Found	200.1	300.1	400.0	480				
As Left	200.1	300.1	400.0	480				

REMARKS All results are acceptable.

Instrument Data

Owner ID	DP-SB- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	120Vac
Function	Voltage Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A309-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA

Other Info

Standard	50 Vac	75 Vac	100 Vac	120 Vac		
As Found	200.2	300.1	399.9	480.0		
As Left	200.2	300.1	399.9	480.0		

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date**	12/16/2010 **Page** 9 **Of** 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	DP-SB PM Ammeter Function	**Relative Humidity**	55%

Instrument Data

Owner ID	DP-SB - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	1200:5
Serial #	SE-0808A309-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	240.5	481.2	721.6	961.8	1203			
As Left	240.5	481.2	721.6	961.8	1203			

REMARKS All results are acceptable.

Instrument Data

Owner ID	DP-SB - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	1200:5
Serial #	SE-0808A309-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp	
As Found	240.5	481.1	721.1	961.4	1201.1	
As Left	240.5	481.1	721.1	961.4	1201.1	

REMARKS All results are acceptable.

Instrument Data

Owner ID	DP-SB - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	1200:5
Serial #	SE-0808A309-11	**Type**	9350	**Basic Range**	0-5a	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp		
As Found	240.8	481.1	721.1	961.7	1202		
As Left	240.8	481.1	721.1	961.7	1202		

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date** 12/16/2010	**Page** 1 Of 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	Main B reaker - PM Ammeter Function	**Relative Humidity**	55%

Instrument Data

Owner ID	Main Breaker - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	4000:5
Serial #	SE-0808A097-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	801.7	1603	2404	3205	4005			
As Left	801.7	1603	2404	3205	4005			

REMARKS All results are acceptable.

Instrument Data

Owner ID	Main Breaaker - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	4000:5
Serial #	SE-0808A097-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	801.7	1603	2404	3205	4004			
As Left	801.7	1603	2404	3205	4004			

REMARKS All results are acceptable.

Instrument Data

Owner ID	Main Breaker - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	4000:5
Serial #	SE-0808A097-11	**Type**	9350	**Basic Range**	0-5a	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	801.7	1603	2403	3205	4005			
As Left	801.7	1603	2403	3205	4005			

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date**	12/16/2010 **Page** 2 **Of** 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	Main B reaker - PM Voltage Function	**Relative Humidity**	55%

Instrument Data

Owner ID	Main Breaker - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A097-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA

Other Info

Standard	50 Volts	75 Volts	100 Volts	125 Volts				
As Found	200.2	300.1	399.7	480.0				
As Left	200.2	300.1	399.7	480.0				

REMARKS All results are acceptable.

Instrument Data

Owner ID	Main Breaaker - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A097-11	**Type**	9350	**Basic Range**	0-120VAC	**Calib Watts**	NA

Other Info

Standard	50 Vac	75 Vac	100 Vac	125 Vac				
As Found	200.1	300.1	400.0	480				
As Left	200.1	300.1	400.0	480				

REMARKS All results are acceptable.

Instrument Data

Owner ID	Main Breaker - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	120Vac
Function	Voltage Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A097-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA

Other Info

Standard	50 Vac	75 Vac	100 Vac	120 Vac				
As Found	200.2	300.1	399.9	480.0				
As Left	200.2	300.1	399.9	480.0				

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

IC-14

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date**	12/16/2010 **Page** 8 **Of** 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	P-MDP - PM Voltage Function	**Relative Humidity**	55%

Instrument Data

Owner ID	P-MDP - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A351-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Volts	75 Volts	100 Volts	125 Volts				
As Found	200.2	300.1	399.7	480.0				
As Left	200.2	300.1	399.7	480.0				

REMARKS All results are acceptable.

Instrument Data

Owner ID	P-MDP- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A351-11	**Type**	9350	**Basic Range**	0-120VAC	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	125 Vac				
As Found	200.1	300.1	400.0	480				
As Left	200.1	300.1	400.0	480				

REMARKS All results are acceptable.

Instrument Data

Owner ID	P-MDP- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	120Vac
Function	Voltage Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A351-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	120 Vac		
As Found	200.2	300.1	399.9	480.0		
As Left	200.2	300.1	399.9	480.0		

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

IC-14

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date**	12/16/2010 **Page** 3 **Of** 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	ATS Life Safety - PM Ammeter Function	**Relative Humidity**	55%

Instrument Data

Owner ID	ATS Life Safety - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	1200:5
Serial #	SE-0808A089-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp
As Found	240.3	480.3	720.8	960.5	1202
As Left	240.3	480.3	720.8	960.5	1202

REMARKS All results are acceptable.

Instrument Data

Owner ID	ATS Life Safety - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	1200:5
Serial #	SE-0808A089-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp
As Found	240.3	480.3	720.7	961.1	1202
As Left	240.3	480.3	720.7	961.1	1202

REMARKS All results are acceptable.

Instrument Data

Owner ID	ATS Life Safety - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	1200:5
Serial #	SE-0808A089-11	**Type**	9350	**Basic Range**	0-5a	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp
As Found	240.2	480.6	720.9	961.3	1202
As Left	240.2	480.6	720.9	961.3	1202

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	Date 12/16/2010	Page 4 Of 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2
Owner	Port Authority of New York and New Jersey	Last Inspection Report	Accp.
Owner Address	Newark Airport, Newark ,NJ	Last Inspection Date	Acceptance
Equipment Location	Terminal B Switchgear SA	Air Temperature	55F
Owner Identification	ATS Life Safety - PM Voltage Function	Relative Humidity	55%

Instrument Data

Owner ID	ATS Life Safety - PM	Model	9350	Manufacturer	Siemens	PT Ratio	4:1
Function	Voltage Metering A Phas	Cat #	9350V283	Full Scale	Variable	CT Ratio	NA
Serial #	SE-0808A089-11	Type	9350	Basic Range	0-120Vac	Calib Watts	NA
Other Info							

Standard	50 Volts	75 Volts	100 Volts	125 Volts				
As Found	200.2	300.1	399.7	480.0				
As Left	200.2	300.1	399.7	480.0				

REMARKS All results are acceptable.

Instrument Data

Owner ID	ATS Life Safety- PM	Model	9350	Manufacturer	Siemens	PT Ratio	4:1
Function	Voltage Metering B Phas	Cat #	9350V283	Full Scale	Variable	CT Ratio	NA
Serial #	SE-0808A089-11	Type	9350	Basic Range	0-120VAC	Calib Watts	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	125 Vac				
As Found	200.1	300.1	400.0	480				
As Left	200.1	300.1	400.0	480				

REMARKS All results are acceptable.

Instrument Data

Owner ID	ATS Life Safety - PM	Model	9350	Manufacturer	Siemens	PT Ratio	120Vac
Function	Voltage Metering C Phas	Cat #	9350V283	Full Scale	Variable	CT Ratio	NA
Serial #	SE-0808A089-11	Type	9350	Basic Range	0-120Vac	Calib Watts	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	120 Vac				
As Found	200.2	300.1	399.9	480.0				
As Left	200.2	300.1	399.9	480.0				

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY

Equipment Used 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date**	12/16/2010	**Page**	5 Of 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2		
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance		
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance		
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F		
Owner Identification	DP-SA - PM Ammeter Function	**Relative Humidity**	55%		

Instrument Data

Owner ID	DP-SA - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	3200:5
Serial #	SE-0808A465-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp
As Found	640.9	1282	1923	2565	3202
As Left	640.9	1282	1923	2565	3202

REMARKS CT PRIMARY CHANGED FROM PRINT SPEC TO MATCH INSTALLED CT AS PER CUSTOMER REQUEST. All results are acceptable.

Instrument Data

Owner ID	ATS Life Safety - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	3200:5
Serial #	SE-0808A465-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp
As Found	640.4	1282	1922	2561	3202
As Left	640.4	1282	1922	2561	3202

REMARKS CT PRIMARY CHANGED FROM PRINT SPEC TO MATCH INSTALLED CT AS PER CUSTOMER REQUEST. All results are acceptable.

Instrument Data

Owner ID	ATS Life Safety - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	3200:5
Serial #	SE-0808A465-11	**Type**	9350	**Basic Range**	0-5a	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp
As Found	640.4	1281.1	1921	2561	3205
As Left	640.4	1281.1	1921	2561	3205

REMARKS CT PRIMARY CHANGED FROM PRINT SPEC TO MATCH INSTALLED CT AS PER CUSTOMER REQUEST. All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date** 12/16/2010	**Page** 7 **Of** 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	P-MDP- PM Ammeter Function	**Relative Humidity**	55%

Instrument Data

Owner ID	P-MDP - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	2000:5
Serial #	SE-0808A351-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp		
As Found	400.5	801.2	1201	1602	2002		
As Left	400.5	801.2	1201	1602	2002		

REMARKS All results are acceptable.

Instrument Data

Owner ID	P-MDP - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	2000:5
Serial #	SE-0808A351-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp		
As Found	400.6	802.3	1202	1600	2002		
As Left	400.6	802.3	1202	1600	2002		

REMARKS All results are acceptable.

Instrument Data

Owner ID	P-MDP - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	2000:5
Serial #	SE-0808A351-11	**Type**	9350	**Basic Range**	0-5a	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp	
As Found	400.5	802.6	1202	1603	2001	
As Left	400.5	802.6	1202	1603	2001	

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Potential Transformer Report

SM Electric

S10-1157.2

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

BT-44

PT Test Form

Customer	SM Electric	**Date** 12/16/2010	**Page** 1 **Of** 1
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Acceptance
Equipment Location	Termiani B	**Air Temperature**	40F
Owner Identification	Switchgear SA	**Relative Humidity**	60%

Nameplate Data

Manufacture Instrument Transformers Inc. **Cat #** 460-480 **S/N** NA

Other Info HV=480 LV=120, 10KV BIL, 0.6KV INSUL CLASS

Test Data

Trans. I.D.	Conn. Phase	1min Meg @ 1KVDC	Measured Ratio
01VT1	A	H=4000/L=4000	4:1
01VT2	B	H=4000/L=4000	4:1
01VT3	C	H=4000/L=4000	4:1
04VT1	A	H=4000/L=4000	4:1
04VT2	B	H=4000/L=4000	4:1
04VT3	C	H=4000/L=4000	4:1
04VT4	A	H=4000/L=4000	4:1
04VT5	B	H=4000/L=4000	4:1
04VT6	C	H=4000/L=4000	4:1
04CPT1 (3KVA)	A-B	H=4000/L=4000	4:1

REMARKS All test results are acceptable.

Submitted By K. Cubberley **Equipment Used** 1 KVDC Megger, Fluke

URS Memorandum

Date: February 22, 2011

To: Caesar Johnson – PANYNJ

From: Eric C. Williams

Subject: **EWR Terminal B – Lower Level Expansion: South Substation Switchgear SA Third Party Test Results Submittal – Review Comments**

We are in receipt of the testing report for the South Substation Switchgear SA, as submitted by Scott Testing, via the electrical contractor – SM Electric. It is enclosed for reference. Upon review, we offer the following comments and concerns:

1. As indicated on the "Equipment Comment and Deficiency Report", the CT for breaker DP-SA is incorrect. Contractor shall provide correct CT in accordance with the contract documents.
2. Regarding the "Switch Inspection Report" section, although the report's conclusion is that the results are acceptable, contractor shall provide explanation as to why some of the conducting path resistance values are almost double the values of the first test, performed by North Central Electric and submitted as VRH Submittal No 16335-149.

   As an example, the "Conducting Path Resistance" from the main breaker (section 1) to section 3 is 70 microhms for Phase A, 61 microhms for Phase B and 68 microhms for Phase C; but, from the test report submitted by North Central Electric, the bus resistances were 37, 41 and 37.

   Another example is the resistance values from section 4 to section 5, this report indicates values of 90 for Phase A, 96 for Phase B and 99 for Phase c, but the North Central Electric report indicated values of 30, 32 and 34.

   Another example is the resistance values for the neutral buses. The report have values for section 1 to section 2 of 40 microhms ,and section 1 to section 3 of 56 microhms; but, from the North Central Electric report the values showed 20 and 39.

   Attached is a copy of the North Central Electric Report for reference.
3. Regarding the "Low Voltage Circuit Breaker Report", the following make the following corrections/revisions:
   - Sheet 1 of 5 – Main Breaker, the IC rating is 200KA, not 100KA.
   - Sheet 2 of 5 – ATS Life Safety, the IC rating is 200KA, not 100KA.
   - Sheet 2 of 5 – ATS Life Safety, correct the current values of the "long time" settings. The device has a 500A trip but the values indicated for the long time pick-up are 4000A.
   - Sheet 2 of 5 – ATS Life Safety, correct the instantaneous set point and pick up to indicate "OFF" and "NA".

- Sheet 3 of 5 – DP-SA, correct the frame size to indicate 1600A and not 1200A.
- Sheet 3 of 5 – DP-SA, the IC rating is 200KA, not 100KA.
- Sheet 3 of 5 – DP-SA, explain why the results of the LT Delay are more than 4 times longer than the values from the North Central Electric tests. The report indicates values of 26.34; but, the North Central Electric report has values of 6.3.
- Sheet 3 of 5 – DP-SA, correct the instantaneous set point and pick up to indicate "OFF" and "NA".
- Sheet 4 of 5 – DP-SB, the IC rating is 200KA, not 100KA.
- Sheet 4 of 5 – DP-SB, correct the current values of the "long time" settings. The device has a 1200A trip but the values indicated for the long time pick-up are 500A.
- Sheet 4 of 5 – DP-SB, explain why the results of the LT Delay are more than 4 times longer than the values from the North Central Electric tests. The report indicates values of 23.16; but, the North Central Electric report has values of 5.8.
- Sheet 5 of 5 – P-MDP, the IC rating is 200KA, not 100KA.
- Sheet 5 of 5 – P-MDP, indicate the values of the contact resistance of each phase.
- Sheet 5 of 5 – P-MDP, change the value of the "Ground Fault Set Amps" from "D" to "900".

Based on the review comments above concerning the higher resistance values and the longer pick-up times, and considering the bus refurbishment of the switchgear by Siemens due to the bus discolorations, we are unable to accept the test report at this time. We request that information/explanations be provided by Siemens and/or Scott Testing addressing the issues above and the report be resubmitted.

Thank you.

cc: Nicholas Simeonidis – PANYNJ
James Heitman – PANYNJ
Ajit Haldipur – PANYNJ

Ret, Herman

From: Wallace, Michael
Sent: Friday, March 04, 2011 11:11 AM
To: Rakhlin, Michael; Haldipur, Ajit; Mukherjee, Somnath; Ret, Herman; 'Eric_Williams@URScorp.com'
Cc: Radics, Frank; Heitmann, James; Hegarty, Brian; Simeonidis, Nicholas; Johnson, Caesar; Lochard, Daniel; Nunez, Daniel
Subject: Fw: EWR-264.003, Switchgear SA Test Reports
Attachments: DOC110304.pdf

Attached please find a response from VRH, SM and Siemens with regards to the resistance issue.

Please review and advise if their response is acceptable or if we should convene a meeting to finalize.

Michael C. Wallace, P.E. LEED AP
Senior Resident Engineer-EWR-CTA. —
Sent from my BlackBerry Wireless Device

From: Palleija, Irene
To: Wallace, Michael
Sent: Fri Mar 04 09:13:23 2011
Subject: EWR-264.003, Switchgear SA Test Reports

<<DOC110304.pdf>>

Irene M. Palleija Colangelo

Contract Specialist

Construction Management Division, EWR

The Port Authority of New York & New Jersey

Newark Liberty International Airport

70 Brewster Road

Newark, NJ 07114

Tel: (973) 622-0800, Ext. 239

Fax:(973) 622-7222

Email: ipalleija@panyni.gov

March 3, 2011

VRH Construction Corp.
320 Grand Ave.
Englewood, NJ 07631-4355

Attention: Mr. Eric Winkler

Reference: EWR-264.003
Terminal B Modernization – Lower Level Expansion & Vertical Circulation
S.M. Electric Letter No. C1260X SM-LTR048
Switchgear SA Test Reports

Dear Mr. Winkler,

S.M. Electric is in receipt of the two e-mails regarding the Switchgear SA test reports from Mike Wallace of Port Authority, which were forwarded to us by VRH on February 18, 2011 and February 23, 2011. We have reviewed the correspondence from Port Authority and offer our comments on their interpretation of the test results in question.

Electrical testing was performed on four separate occasions for Switchgear SA; April 2010 by North Central Electric, June 2010 by Scott Testing, November 2010 by Siemens, and again in December 2010 by Scott Testing. We contacted the three testing companies used and asked them to provide their analysis of the test results, as they are the experts in the field of electrical testing. All three came back with the same response; there are too many variables for a side by side comparison of the test results and that each set of test results, on their own, were acceptable. In order to perform a side by side comparison of the test results, the test equipment, test amperage, temperature, humidity and test points would all have to be the same for each test performed. Some of the tests were done on bus only and some were read through the breakers. What they considered to be more important was that the test values between phases were consistent within each test.

Since Scott Testing was on site twice to test Switchgear SA, we asked them to provide a more detailed analysis of the four sets of test results. In their letter of March 2, 2011, Scott Testing has provided a one line diagram of Switchboard SA and plotted the test points used by each contractor for each set of tests. They then developed a spreadsheet based on these test points and the results of each set of tests. Reviewing the data in this manner allows for a more accurate comparison of the test results and shows that the test results have remained consistent throughout the testing. In some cases, the readings have gone down. Any differences noted between the North Central Electric tests in April 2010 and the Scott Testing tests of June 2010 would have to be attributed to the variables noted above, as there were no physical changes to the Switchgear or work performed within this two month period between tests. These tests were also prior to the Siemens recertification process. S.M. Electric and our three testing subcontractors all agree that the resistance test results for Switchgear SA are acceptable.

Also in their February 23, 2011 e-mail, Port Authority makes the assumption that "the resistance trending indicates a premature failure of this product." Trending cannot be established from the test information provided. In order to compile data for trending, all of the parameters for testing would have to be consistent for each test. At a minimum, the test equipment, test amperage, temperature, humidity and accurately marked test points on the bus bar would need to be identical for each battery of tests. Port Authority does not have a procedure or specification in place requiring the level of accuracy required to track data for trending purposes.

In regard to the other items mentioned in Port Authority's e-mail of February 23, 2011:

Item No. 1: The CT for breaker DP-SA is scheduled to be replaced and tested by Siemens on March 10, 2011. Testing of the new CT will also be performed Scott Testing within the week following installation.

Item No. 3: The values for contact resistance for P-MDP were missed by Scott Testing during the December testing. This breaker will be retested at the same time that Scott Testing is on site to test the CT in Item No. 1. Scott Testing is in the process of reviewing the inconsistencies in their test report to determine if there are incorrect settings on Switchgear SA or if there were typographical errors in their report. We will contact you as soon as we have the results of their review.

If we may be of any further assistance in this matter, please do not hesitate to call.

Very truly yours,

S.M. ELECTRIC COMPANY, INC.

Don Sapanara
Project Manager

Attachments: Letter from Scott Testing, dated 3/2/2011 (5 pages)
E-mail from North Central Electric, dated 2/24/2011 (2 pages)
E-mail from Siemens, dated 2/21/2011 (1 page)
E-mail from Scott Testing, dated 2/18/2011 (1 page)
E-mail from VRH/PA, dated 2/23/2011 (2 pages)
E-mail from VRH/PA, dated 2/18/2011 (1 page)
North Central Electric Test Report, dated 4/7/2010 (1 page)
Scott Testing Report, dated 6/14/2010 (5 pages)
Siemens Test Report, dated 11/19/2010 (1 page)
Scott Testing Report, dated 12/16/2010 (33 pages)

cc: Jeff Konen – VRH Construction Corp.
Peter V. Cheche III – S.M. Electric Co., Inc.
Al Fosbenner – Matrix Service Industrial Contractors, Inc.
Alex Volterano - Matrix Service Industrial Contractors, Inc.

File: C1260X SM-LTR048

Scott Testing

1698 Fifth Street • Ewing, NJ • 08638 • Tel 609 882 2400 • Fax 609 882 5660

March 2, 2011

SM Electric
601 New Brunswick Avenue
Rahway, NJ 07065-1144

Attention: Don Sapanara

Reference: Perform review of test data for bus resistances of Switchgear "SA"
***STI* Project #:** S11-1157.2

Mr. Sapanara,

The test data reviewed was obtained on four different dates, by three testing organizations. The purpose of this review was to determine the repeatability of the bus resistance readings obtained over the test period.

In the several cases where the test points were determined to be similar from one test period to another, the test results appear to be comparable and consistent.

The problem however is that up to this time there has not been clearly defined test points or test current specified so the ability to fully evaluate this data is limited.

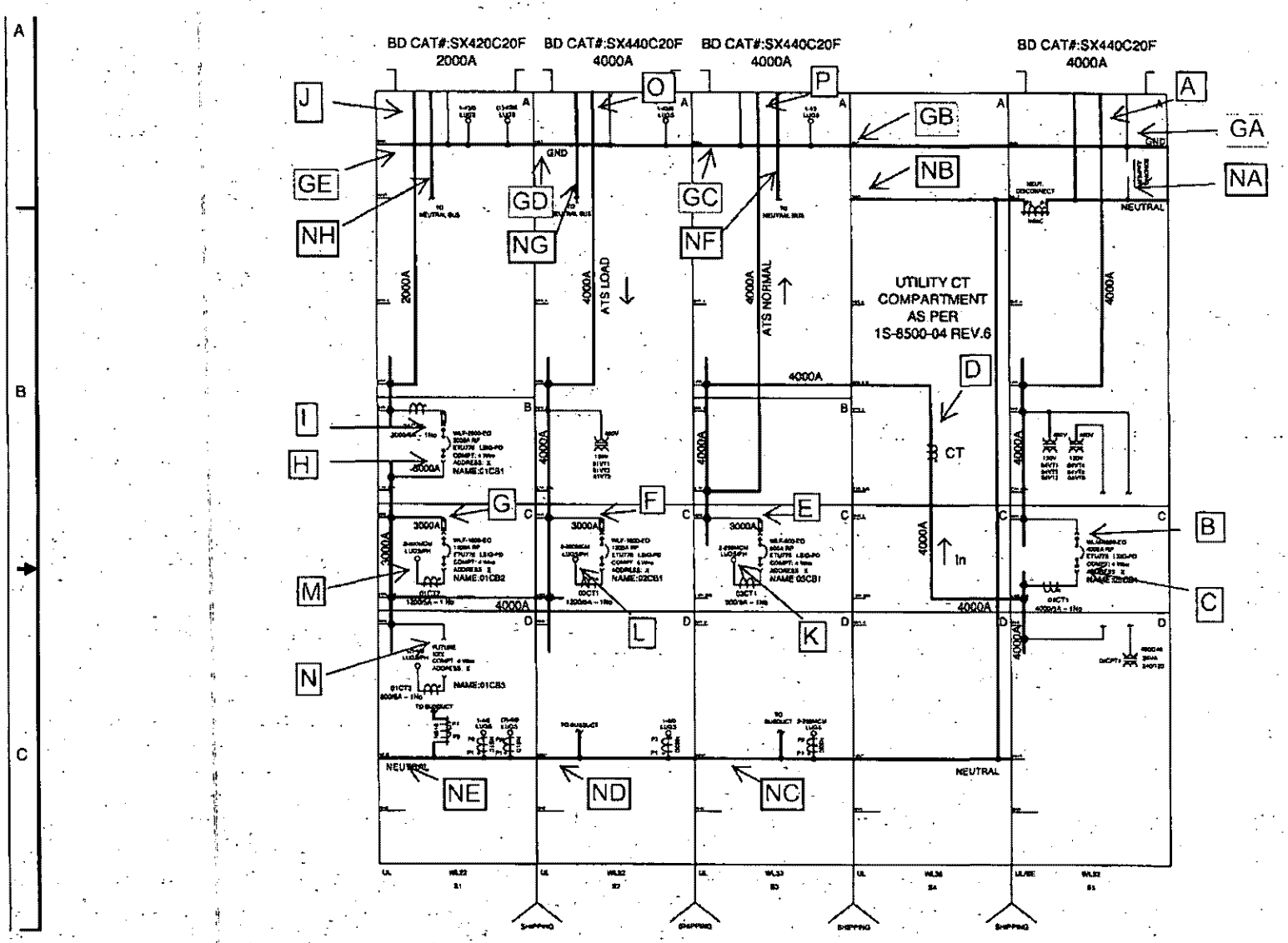
The test results obtained to date by Scott Testing are acceptable.

Enclosed with this report is a drawing detailing the proposed test points along with the test matrix. It is suggested that future tests be performed according to this procedure, at a test current of 100 amps.

Sincerely,

Russell Sorbello
Field Service Technician
Scott Testing, Inc.

Switchgear "SA"--Test Points



0000FFScott Testing, Inc

Date of Test	——>	4/7/2010	6/10/2010	11/19/2010	12/16/2010						
Tested By	——>	NC	STI	SIEMENS	STI						
Bus Temp F	——>	75	82		60						
Test Amps DC	——>		10	100	100						
Test Points	PHASE										
A-B	A				9						
	B				9						
	C				11						
A-C	A			35*							
	B			39*							
	C			36*							
A-D	A		160								
	B		140								
	C		153								
C-D	A	26	21		23						
	B	21	20		24						
	C	24	26		24						
C-E	A	37	66		70						
	B	37	42		61						
	C	39	40		68						
D-P	A			47							
	B			71							
	C			57							
E-F	A				90						
	B				96						
	C				99						
F-G	A		46		29						
	B		49		27						
	C		50		24						

Comments *On 11/19/2010 Siemens cleaned the main breaker contacts to lower the resistance readings.

0000FFScott Testing, Inc

Date of Test	→	4/7/2010	6/10/2010	11/19/2010	12/16/2010						
Tested By	→	NC	ST	SIEMENS	ST						
Bus Temp F	→	75	82	[illegible]	60						
Test Amps DC	→		10	100	100						
Test Points	PHASE										
F-H	A	30	40		23						
	B	32	56		24						
	C	36	61		24						
H-J	A										
	B										
	C										
I-J	A				4						
	B				7						
	C				6						
J-M	A			170							
	B			157							
	C			165							
O-L	A		86	87							
	B		91	110							
	C		95	112							
P-K	A			123							
	B			114							
	C			104							

Comments *On 11/19/2010 Siemens cleaned the main breaker contacts to lower the resistance readings.

0000FFScott Testing, Inc

Date of Test	——>	4/7/2010	6/10/2010	11/19/2010	12/16/2010						
Tested By	——>	NC	STI	SIEMENS	STI						
Bus Temp F	——>	75	82		60						
Test Amps DC	——>		10	100	100						
Test Points	PHASE										
NA-NB	N	20	38	51	40						
NA-NC	N	39	56		56						
NA-ND	N		62		78						
NA-NE	N		70	81	85						
NE-NH	N			38							
ND-NG	N			19							
NC-NF	N			18							
NB-NF	N			61							
ND-NE	N	34									
GA-GB	G		17		27						
GA-GC	G		38		39						
GA-GD	G		42		43						
GA-GE	G		44		50						

Comments *On 11/19/2010 Siemens cleaned the main breaker contacts to lower the resistance readings.

Don Sapanara

From: Josten, Harry [harry.josten@siemens.com]
Sent: Monday, February 21, 2011 3:42 PM
To: Russ Elliott; Schornstein, Doris V
Cc: Walkowicz, Ralph; Don Sapanara; Cito, Michael
Subject: RE: Newark Airport Recertification.

Russ,

I have reviewed the four reports. Each of the four reports gave measurements of bus resistance. Each report seemed to use different measurement points so it is not very useful to compare measurements from one report to measurements on another. However, on any given report the measurements were fairly consistent from one phase to another which is normal. None of the measurements appeared to be unusual.

I don't see anything unusual or alarming.

Regards,

Harry W. Josten
Switchgear Development Manager
Siemens SI BT LV
501 Fountain Parkway
Grand Prairie, Texas 75050
Phone: 817-652-6601
Email: harry.josten@siemens.com

-----Original Message-----
From: Russ Elliott [mailto:russ.elliott@smelectric.com]
Sent: Monday, February 21, 2011 7:15 AM
To: Josten, Harry; Schornstein, Doris V
Cc: Walkowicz, Ralph; Don Sapanara; Cito, Michael
Subject: RE: Newark Airport Recertification.

Harry,

I don't think that Doris forwarded the test reports to you. When you get a chance, can you review the 4 different reports and let us know what your conclusions are based on the resistive path readings?

Thank you,

Russ Elliott

S.M. Electric Co., Inc.

at Newark Airport

Phone: 1-973-622-1470

Fax: 1-973-622-1471

Cell: 1-732-904-2354

Don Sapanara

From: Russell Sorbello [rsorbello@scotttesting.com]
Sent: Friday, February 18, 2011 3:31 PM
To: Russ Elliott; rsorbello@scotttesting.com
Cc: Don Sapanara
Subject: RE: Resistive Path Readings

Russ,

Several things will cause this.

1)How much of a difference are we talking about. +/- 10% deviation is not that much. Tempurature differences can account for this.

2) The points where the test leads are attached will make a difference.

3) The amount of current each test set puts out will effect the results. Some sets put out 10A, some put out 100A or 200A.

Can you email me the results so I can review.

Original Message ---------- Russ,

Can you provide a briefing for me as to why there would be three different microOhm readings on the same bus from three different testing companies?

Thank you,

Russ Elliott

S.M. Electric Co., Inc.

at Newark Airport

Phone: 1-973-622-1470

Fax: 1-973-622-1471

Cell: 1-732-904-2354

Don Sapanara

From: NCETEST@aol.com

Sent: Thursday, February 24, 2011 12:28 PM

To: Don Sapanara

Subject: Re: Switchgear SA Resistive PAth Readings

Don,

Short Version,

Certain Megger's will read up to 4000 Meg ohms, Others will read up to 100,000 Meg ohms at 1 KVDC Test! All readings were acceptable from Scott NCE and Siemens!

Contact Resistance: The test were all done different but all yielded acceptable results. Values differed depending on length and what was included in test such as breakers etc. Everyone tested it different! The fact is that in comparison between phases and length's of bus and number of joints all readings compared!

In a message dated 2/24/2011 7:52:22 A.M. Eastern Standard Time, don.sapanara@smelectric.com writes:

> Bob,
>
> The full story of the switchgear at Newark Airport is much too long to explain in an e-mail. The short version is that we had NCE test Switchgear SA in April 2010. In an attempt to appease Port Authority, we had Scott Testing retest the bus in June of 2010. As part of the recertification and extended warranty process, Siemens tested the gear in December 2010. Since Siemens performed work on the gear, PA felt the prior 3rd Party testing performed by NCE was no longer valid and wanted 3rd Party testing performed again to validate Siemens' results. Scott Testing performed a fourth test on the gear in December 2010. The gear passed all four sets of tests.
>
> PA is now questioning why the four sets of test results don't match. The readings in the last test performed by Scott are higher than the initial test performed by NCE. PA has rejected the gear again because they feel it is trending towards failure. We have asked each of the companies involved to look at the test results and give us their professional opinion as to why the results have varied. Can you take a look at the attached results and let us know your findings? We will probably have to follow this up with a conference call with Port Authority.
>
> Thanks,
>
> Don Sapanara
>
> Project Manager

S.M. Electric Co., Inc.

601 New Brunswick Ave.

Rahway, NJ 07065

Main Office:

Phone 732-388-3540

Fax 732-388-3052

ConocoPhillips Site:

Phone 908-523-5508

Fax 908-523-5143

Thanks,

Bob Messina
North Central Electric Inc.
69 Midway Ave
Langhorne,PA 19047
Office 215.945.7632
Fax 215-945-6362
ncetest@aol.com
Web: ncetest.com
Cell 215-852-9432

Don Sapanara

From: Konen, Jeff [J.Konen@vrhcorp.com]
Sent: Wednesday, February 23, 2011 1:21 PM
To: Winkler, Eric; Al Fosbenner; Don Sapanara
Subject: Fw: SA

----- Original Message -----
From: Wallace, Michael <mcwallac@panynj.gov>
To: Konen, Jeff
Sent: Wed Feb 23 13:17:19 2011
Subject: RE: SA

Jeff - Below is an "unofficial" copy of URS' comments for your discussions with SM & Siemens. The resistance values are of the most concern.

Mike

We are in receipt of the testing report for the South Substation Switchgear SA, as submitted by Scott Testing, via the electrical contractor – SM Electric. It is enclosed for reference. Upon review, we offer the following comments and concerns:

1. As indicated on the "Equipment Comment and Deficiency Report", the CT for breaker DP-SA is incorrect. Contractor shall provide correct CT in accordance with the contract documents.
2. Regarding the "Switch Inspection Report" section, although the report's conclusion is that the results are acceptable, contractor shall provide explanation as to why some of the conducting path resistance values are almost double the values of the first test, performed by North Central Electric and submitted as VRH Submittal No 16335-149.

As an example, the "Conducting Path Resistance" from the main breaker (section 1) to section 3 is 70 microhms for Phase A, 61 microhms for Phase B and 68 microhms for Phase C; but, from the test report submitted by North Central Electric, the bus resistances were 37, 41 and 37.

Another example is the resistance values from section 4 to section 5, this report indicates values of 90 for Phase A, 96 for Phase B and 99 for Phase c, but the North Central Electric report indicated values of 30, 32 and 34.

Another example is the resistance values for the neutral buses. The report have values for section 1 to section 2 of 40 microhms ,and section 1 to section 3 of 56 microhms; but, from the North Central Electric report the values showed 20 and 39.

Attached is a copy of the North Central Electric Report for reference.
3. Regarding the "Low Voltage Circuit Breaker Report", the following make the following corrections/revisions:

- Sheet 1 of 5 – Main Breaker, the IC rating is 200KA, not 100KA.
- Sheet 2 of 5 – ATS Life Safety, the IC rating is 200KA, not 100KA.
- Sheet 2 of 5 – ATS Life Safety, correct the current values of the "long time" settings. The device has a 500A trip but the values indicated for the long time pick-up are 4000A.
- Sheet 2 of 5 – ATS Life Safety, correct the instantaneous set point and pick up to indicate "OFF" and "NA".
- Sheet 3 of 5 – DP-SA, correct the frame size to indicate 1600A and not 1200A.
- Sheet 3 of 5 – DP-SA, the IC rating is 200KA, not 100KA.
- Sheet 3 of 5 – DP-SA, explain why the results of the LT Delay are more than 4 times longer than the values from the North Central Electric tests. The report indicates values of 26.34; but, the North Central Electric report has values of 6.3.

- Sheet 3 of 5 – DP-SA, correct the instantaneous set point and pick up to indicate "OFF" and "NA".
- Sheet 4 of 5 – DP-SB, the IC rating is 200KA, not 100KA.
- Sheet 4 of 5 – DP-SB, correct the current values of the "long time" settings. The device has a 1200A trip but the values indicated for the long time pick-up are 500A.
- Sheet 4 of 5 – DP-SB, explain why the results of the LT Delay are more than 4 times longer than the values from the North Central Electric tests. The report indicates values of 23.16; but, the North Central Electric report has values of 5.8.
- Sheet 5 of 5 – P-MDP, the IC rating is 200KA, not 100KA.
- Sheet 5 of 5 – P-MDP, indicate the values of the contact resistance of each phase.
- Sheet 5 of 5 – P-MDP, change the value of the "Ground Fault Set Amps" from "D" to "900".

Based on the review comments above concerning the higher resistance values and the longer pick-up times, and considering the bus refurbishment of the switchgear by Siemens due to the bus discolorations, we are unable to accept the test report at this time. We request that information/explanations be provided by Siemens and/or Scott Testing addressing the issues above and the report be resubmitted.

-----Original Message-----
From: Konen, Jeff [mailto:J.Konen@vrhcorp.com]
Sent: Friday, February 18, 2011 4:42 PM
To: Wallace, Michael; Konen, Jeff
Subject: SA

Mike

Got your voice mail regarding SA, home sick today will be on it on Monday

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Don Sapanara

From: Winkler, Eric [E.Winkler@vrhcorp.com]
Sent: Friday, February 18, 2011 2:04 PM
To: Don Sapanara; Russ Elliott; Al Fosbenner; Konen, Jeff
Subject: Fw: EWR 264.003 - Switch gear SA
Al, Please address immediately. Thank you Eric

From: Wallace, Michael <mcwallac@panynj.gov>
To: Winkler, Eric; Konen, Jeff
Cc: Nunez, Daniel <dnunez@panynj.gov>; Lochard, Daniel <dlochard@panynj.gov>; Hegarty, Brian <bhegarty@panynj.gov>
Sent: Fri Feb 18 14:00:32 2011
Subject: EWR 264.003 - Switchgear SA

Gents,

In meeting with URS and Facility staff today, their initial review of the 3rd Party Testing Report from Scott Testing for Switchgear SA indicates that the resistance has increased three-fold from the initial readings taken when Switchgear SA was first installed. Without additional information/explanation from Siemens and/or Scott Testing as to the root cause of this increase, the Testing report will be disapproved and the PA will not accept Switchgear SA because the resistance trending indicates a premature failure of this product.

Please speak to Siemens and Scott Testing and advise of everyone's earliest ability to meet and discuss. Next week would be preferable as to not continue to delay the South Substation work.

Michael C. Wallace, P.E. LEED AP

Senior Resident Engineer

Newark Liberty International Airport - CTA

(973) 622-0800 x 251(Building 125)

(973) 622-0172 FAX

(973) 390-5519 Cell

E-mail: mcwallac@panynj.gov

NOTICE: THIS E-MAIL AND ANY ATTACHMENTS CONTAIN INFORMATION FROM THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY AND AFFILIATES. IF YOU BELIEVE YOU HAVE RECEIVED THIS E-MAIL IN ERROR, PLEASE NOTIFY THE SENDER IMMEDIATELY, PERMANENTLY DELETE THIS E-MAIL (ALONG WITH ANY ATTACHMENTS), AND DESTROY ANY PRINTOUTS.

North Central Electric

69 Midway Avenue, Langhorne, Pa. 19047
Telephone: 215 - 945 - 7632

SWITCHGEAR TEST REPORT

Customer	SM Electric	**Date**	4-7-2010	**Page** 1	**Of** 1
Address	601 New Brunswick Ave Rahway, N.J.	**Project Number**	3610		
Owner	NY/NJ Port Authority	**Last Inspection Report**	ACCEPTANCE		
Address	Newark Liberty International Airport	**Last Inspection Date**	ACCEPTANCE		
Equipment Location	South Substation	**Air Temperature**	75 DEG. F		
Owner Identification	Switchgear SA	**Relative Humidity**	30%		

Nameplate Data Siemens / Switchboard Type WL / 480 / 277 3 Phase 4 wire / 4000 Amp / 5 Sections / 150 KA

Bus Resistance Section 1 - Section 2 A=26 B=21 C=24 N=20 Section 1 - Section 3 A=37 B=41 C=37 N=39

Section 4 - Section 5 A=30 B=32 C=35 N=34

All results are Micro Ohms.

Discoloring of bus was noticed but did not affect electrical connections or test results.

Electrical Tests Insulation Resistance Tested at 1000 V DC for 1 min.

A Phase to Ground (B&C&N Phase to ground) : 4000+ Meg Ohms

B Phase to Ground (A&C&N Phase to ground) : 4000+ Meg Ohms

C Phase to Ground (A&B&N Phase to ground) : 4000+ Meg Ohms

Neutral to Ground (A&B&C Phase to ground) : 4000+ Meg Ohms

General Notes Visual inspection for physical damage performed (ok).

Verified breaker sizes per contract drawings (ok).

Visual inspection for Insulation damage performed (ok).

All breakers manually and electricaly operated and exercised(see note below).

Verified proper "rack in rack out of breakers (ok. see note of main breaker).

Inspected mechanical indicating devices(ok).

Verified heater operation.

Verified meter operation.

Verified indicating lights (open Close Trip).

REMARKS Equipment used Fluke 1kv megger Model 1520 cal 9-09, Biddle Ductor model DLROCal 1-10 SN 49939 Doble 2250

Submitted By B. Poland

Equipment Used

Scott Testing

1698 Fifth Street • Ewing, NJ • 08638 • Tel 609 882 2400 • Fax 609 882 5660

June 14, 2010

SM Electric Company, Inc.
601 New Brunswick Avenue
Rahway NJ 07065

Attention: Russ Elliott
Reference: Continuity testing and (1) LV Switchgear "SA" Newark Liberty Airport

STI Project #: S10-1157.1

Dear Mr. Elliott,

The services that you requested at the above referenced facility have been completed and two (2) copies of the report are enclosed for your reference and records.

All testing and maintenance procedures are in accordance with **NETA** (InterNational Electrical Testing Association) and manufacturer's specifications.

Please refer to the attached results for additional information.

We appreciate this opportunity to have been of service to you and look forward to supporting you with your future electrical testing and maintenance needs.

Please feel free to contact us if you have any questions or need anything additional.

Sincerely,

Mark Stanley
Field Service Technician
Scott Testing, Inc.

Scott Testing, Inc.

1698 Fifth Avenue Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

STI-1

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric, Inc.	**Date**	6/10/2010 **Page** 1 **Of** 4
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.1
Owner	Newark Airport	**Last Inspection Report**	
Owner Address	Terminal B	**Last Inspection Date**	
Equipment Location	Terminal B Main Electrical Substation	**Air Temperature**	82 F
Owner Identification	Substation "SA"	**Relative Humidity**	74%

Nameplate Data

Manufacturer	Siemens	**Design Voltage**	600 VAC	**System Voltage**	480 VAC	**BIL**	
Serial #	* N/A	**Rated Current**	4000	**Style**		**Age**	10/08
Model	N/A	**SC Withstand**	150 K	**Cat #**		**ID #**	

 # Breakers 5 **# Relays** 0 **# Meters** 6 **# Vert Sect** 5 **# Cubicles** 6

Other Info *S.O. # 3001295712

Inspection Report

Breaker Operation	Not Applicable	**Covers/Glass**	Good	**Annunciator**	Not Applicable
Equipment Access	Good	**Cell Condition**	Good	**Panel Meters**	Not Applicable
Control Switches	Not Applicable	**Hinged Doors**	Good	**Panel Lights**	Not Applicable
Swgr Grounds	Good	**Bus Supports**	Good	**Cables**	Not Applicable
Paint Condition	Good	**Space Heaters**	Not Applicable	**Shutters**	Good
Connections	Good	**Tracking Signs**	None	**Interlocks**	Not Applicable
Control Wiring	Not Applicable	**Cleanliness**	Good	**Insulation**	Good
Control Relays	Not Applicable	**Lubrication**	Not Applicable	**Test Stand**	Not Applicable
"83" Transfer	Not Applicable	**Ground Truck**	Not Applicable	**Maint Tools**	Not Applicable

Other Inspections

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
Load of Main Sec. 1	Sec. 2 Metering	10	21	20	26
Load of Main Sec. 1	Sec. 3 ATS Life Safety	10	66	42	40
Line Side of ATS Em.	DP-SA through C.B.	10	86	91	95
Sec. 4	Sec. 5 P-MDP		40	56	61

REMARKS *Line side of main bus duct not complete in ceiling feeding "SA".*

Submitted By M. Stanley **Equipment Used** DLRO 302140

Scott Testing, Inc.

1698 Fifth Avenue Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric, Inc.	Date	6/10/2010 Page 2 Of 4
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.1
Owner	Newark Airport	Last Inspection Report	
Owner Address	Terminal B	Last Inspection Date	
Equipment Location	Terminal B Main Electrical Substation	Air Temperature	82 F
Owner Identification	Substation "SA"	Relative Humidity	74%

Nameplate Data

Manufacturer	Siemens	Design Voltage	600 VAC	System Voltage	480 VAC	BIL	
Serial #	* N/A	Rated Current	4000	Style		Age	10/08
Model	N/A	SC Withstand	150 K	Cat #		ID #	

Breakers 5 # Relays 0 # Meters 6 # Vert Sect 5 # Cubicles 6

Other Info *S.O. # 3001295712

Inspection Report

Breaker Operation	Not Applicable	Covers/Glass	Good	Annunciator	Not Applicable
Equipment Access	Good	Cell Condition	Good	Panel Meters	Not Applicable
Control Switches	Not Applicable	Hinged Doors	Good	Panel Lights	Not Applicable
Swgr Grounds	Good	Bus Supports	Good	Cables	Not Applicable
Paint Condition	Good	Space Heaters	Not Applicable	Shutters	Good
Connections		Tracking Signs	None	Interlocks	
Control Wiring	Not Applicable	Cleanliness	Good	Insulation	
Control Relays	Not Applicable	Lubrication	Not Applicable	Test Stand	
"83" Transfer	Not Applicable	Ground Truck	Not Applicable	Maint Tools	

Other Inspections

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
Sec. 4	Sec. 5 DP-SB	10	46	49	50
Line Side Main	Sec. 2	10	160	140	153

REMARKS Through main breaker to Sec. 2. A phase: 160 B phase: 140 C phase: 153.

Submitted By M. Stanley **Equipment Used** DLRO 302140

Scott Testing, Inc.

1698 Fifth Avenue Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

STI-r1

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric, Inc.	Date	6/10/2010 Page 3 Of 4
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.1
Owner	Newark Airport	Last Inspection Report	
Owner Address	Terminal B	Last Inspection Date	
Equipment Location	Terminal B Main Electrical Substation	Air Temperature	82 F
Owner Identification	Substation "SA" (Ground Bus)	Relative Humidity	74%

Nameplate Data

Manufacturer	Siemens	Design Voltage	600 VAC	System Voltage	480 VAC	BIL	
Serial #	* N/A	Rated Current	4000	Style		Age	10/08
Model	N/A	SC Withstand	150 K	Cat #		ID #	

Breakers 5 # Relays 0 # Meters 6 # Vert Sect 5 # Cubicles 6

Other Info *S.O. # 3001295712

Inspection Report

Breaker Operation	Not Applicable	Covers/Glass	Good	Annunciator	Not Applicable
Equipment Access	Good	Cell Condition	Good	Panel Meters	Not Applicable
Control Switches	Not Applicable	Hinged Doors	Good	Panel Lights	Not Applicable
Swgr Grounds	Good	Bus Supports	Good	Cables	Not Applicable
Paint Condition	Good	Space Heaters	Not Applicable	Shutters	Good
Connections		Tracking Signs	None	Interlocks	
Control Wiring	Not Applicable	Cleanliness	Good	Insulation	
Control Relays	Not Applicable	Lubrication	Not Applicable	Test Stand	
"83" Transfer	Not Applicable	Ground Truck	Not Applicable	Maint Tools	

Other Inspections

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
Sec. 1 Ground Bus	Sec. 2	10	17 Neutral		
	Sec. 3	10	38 Neutral		
	Sec. 4	10	42 Neutral		
	Sec. 5	10	44 Neutral		

REMARKS Test results are acceptable.

Submitted By M. Stanley Equipment Used DLRO 302140

Scott Testing, Inc.

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Telephone: 609-882-2400 Fax: 609-882-5660

STI-01

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric, Inc.	**Date**	6/10/2010 **Page** 4 **Of** 4
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.1
Owner	Newark Airport	**Last Inspection Report**	
Owner Address	Terminal B	**Last Inspection Date**	
Equipment Location	Terminal B Main Electrical Substation	**Air Temperature**	82 F
Owner Identification	Substation "SA" (Neutral Bus)	**Relative Humidity**	74%

Nameplate Data

Manufacturer	Siemens	**Design Voltage**	600 VAC	**System Voltage**	480 VAC	**BIL**	
Serial #	* N/A	**Rated Current**	4000	**Style**		**Age**	10/08
Model	N/A	**SC Withstand**	150 K	**Cat #**		**ID #**	

 # Breakers 5 **# Relays** 0 **# Meters** 6 **# Vert Sect** 5 **# Cubicles** 6

Other Info *S.O. # 3001295712

Inspection Report

Breaker Operation	Not Applicable	**Covers/Glass**	Good	**Annunciator**	Not Applicable
Equipment Access	Good	**Cell Condition**	Good	**Panel Meters**	Not Applicable
Control Switches	Not Applicable	**Hinged Doors**	Good	**Panel Lights**	Not Applicable
Swgr Grounds	Good	**Bus Supports**	Good	**Cables**	Not Applicable
Paint Condition	Good	**Space Heaters**	Not Applicable	**Shutters**	Not Applicable
Connections	Good	**Tracking Signs**	None	**Interlocks**	Not Applicable
Control Wiring	Not Applicable	**Cleanliness**	Good	**Insulation**	Good
Control Relays	Not Applicable	**Lubrication**	Not Applicable	**Test Stand**	Not Applicable
"83" Transfer	Not Applicable	**Ground Truck**	Not Applicable	**Maint Tools**	Not Applicable

Other Inspections

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
Sec. 1 Neutral Bus	Sec. 2	10	38 Neutral		
	Sec. 3	10	56 Neutral		
	Sec. 4	10	62 Neutral		
	Sec. 5	10	70 Neutral		

REMARKS Test results are acceptable.

Submitted By M. Stanley **Equipment Used** DLRO 302140

S

Siemens Industrial Services

A business of
Siemens Energy and Automation, Inc.

SWITCHGEAR TEST REPORT

Customer:	SM Electric	**Location:**	Newark Airport		
Substation:	SA	**Switchgear Designation:**	SA	**Unique ID:**	

Nameplate Data

Manufacturer:	Siemens	**Type:**	3 phase, 4 wire
Serial No.:	SO# 3001295712	**Current Rating:**	4000 amp
Voltage Rating:	480 volt	**Bus Fault Rating:**	150 ka

Inspection

Cell Heaters:	B	**Key Interlocks:**	NA
Meter & Control Switches:	B	**Pilot Light:**	B
Wiring:	B	**Terminal Blocks:**	B
Fuse & Fuse Blocks:	B	**Stationary Contact Bottles:**	NA
Ground Bus:	B	**Tracking / Corona:**	B
Bus Supports:	B	**Joint Insulation:**	B
Terminations:	B	**General Hardware:**	B
Paint – Inside & Outside:	B	**PT / CPT Compartment**	B

CODE LEGEND
A= Like New Condition
B= Good Condition
C= Poor Condition Requires Correction
D= Corrections Made
E= Unacceptable Condition Do Not Use!
NA= Not Applicable

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean / Dirty	clean
Wet / Damp / Dry	dry
Temp (Degree C)	
Relative Humidity (%)	

Electrical Tests

Insulation Resistance

Readings in Mega-Ohms @ 1k VDC

A-B	100 Gig ohms	B-C	100 Gig ohms	C-A	100 Gig ohms
A-G	100 Gig ohms	B-G	100 Gig ohms	C-G	100 Gig ohms

Ductor Test

Readings in micro-ohms @ 100amps

Section 1	Section 2	Section 3	Section 4	Section 5	Section 1- 5
A-A =170	A-A =87	A-A =123	A-A =47	A-A =35	
B-B =157	B-B =110	B-B =114	B-B =71	B-B =39	
C-C =165	C-C =112	C-C =104	C-C =57	C-C =36	
N-N =38	N-N =19	N-N =18	N-N =61	N-N =51	N-N =81

COMMENTS:

Section # 1 reading : From the bus duct through the splice plate connections and two breakers to the load side of a feeder breaker.
Section #1 neutral reading : From the bus duct through the splice plate connections to the lower rear horizontal neutral bus.
Section #2 readings : From the bus duct through the splice plate connections and one breaker to the load side of a feeder breaker.
Section #2 neutral reading : From the bus duct through the splice plate connections to the lower rear horizontal neutral bus.
Section #3 readings : From the bus duct through the splice plate connections and one breaker to the load side of a feeder breaker.
Section #3 neutral reading : From the bus duct through the splice plate connections to the lower rear horizontal neutral bus.
Section #4 readings : From the load side on Main breaker in section #4 to the bus duct connection in section #3.
Section #4 neutral reading : From the horizontal neutral bus in section #4 to the Bus duct neutral connection in section #3.
Section #5 readings : From the bus duct through the spice plate and one breaker to the horizontal bus in section #4.
(Readings were lowered on this test by cleaning the breaker's main contacts)
Section #5 neutral reading : From the bus duct connection to the horizontal rear neutral bus in section #4.

Section #1-#5 neutral reading: From the rear horizontal neutral bus in section #1 to the bus duct neutral connection in section #5.

Spice plates for bus duct connections were re-plated and are in good condition.

Satisfactory for Continued Service	Yes	**Requires Repair**	No	**Repairs Made During Maintenance**			
Job No:	5200-	**Tested By:**	Ralph Walkowicz	**Date Tested**	11/19/10	**ID #**	

182 Forbes Road
Braintree, Ma. 02184

Scott Testing

1698 Fifth Street • Ewing, NJ • 08638 • Tel 609 882 2400 • Fax 609 882 5660

December 16, 2010

SM Electric Company, Inc.
601 New Brunswick Ave.
Rahway, NJ 07065

Attention: Russ Elliot

Reference: Acceptance testing of Switchgear SA and associated equipment.

STI Project #: S10-1157.2

Dear Mr. Elliot,

The services that you requested at the above referenced facility have been completed and two (2) copies of the report are enclosed for your reference and records. All testing was performed to conform to NETA and manufacturer standards and procedures.

The equipment tested satisfactory. Please see our equipment deficiency form for any repairs or corrections that were made during our testing.

We appreciate this opportunity to have been of service to you and look forward to supporting you with your future electrical testing and maintenance needs.

Please feel free to contact us if you have any questions or need anything additional.

Sincerely,
Kevin Cubberley
Field Service Technician
Scott Testing, Inc.

Scott Testing

1698 Fifth Street • Ewing, NJ • 08638 • Tel 609 882 2400 • Fax 609 882 5660

Test Procedures

Switchgear Inspection
The front and back compartments of the switchgear enclosure were opened, cleaned and inspected. Proper shutter operation was verified in all compartments. Primary receivers were cleaned and lubricated. Cable support, spacing and tightness of connections were verified. Proper heater operation was verified. No visible signs of tracking were observed. Control switches, instrumentation and indicator lights were checked for proper operation. The bus was megger tested at 1 kV DC. Bus connection resistance was measured using a 100 Amp ductor.

Instrumentation Transformers (Current and Voltage Type)
The access covers were removed and the enclosures were cleaned, and inspected as needed. The outer casings were inspected for signs of tracking or damage. The spacers, insulators and supports were checked. Nameplate data was recorded. The primary and secondary windings were isolated for testing. Tests performed included polarity checks, turns ratio, and insulation integrity. Cable and Bus connections were re-attached and tightened to correct torque levels

Meters
The meters were tested at all major scale values. Tests were conducted using field standards whose calibration is traceable to the United States Institute of Standards and Technology (NIST). All results were found to be within the meters designed accuracy. The meter leads were checked for tightness.

Low Voltage Breakers
Each breaker was removed from the cubicle, cleaned and inspected for damage. The mechanism was cleaned and lubricated as needed. The main and arcing contacts were cleaned and inspected for signs of pitting, correct alignment and closing sequence. Contact resistance values were measured. The protective trip device operation was verified by primary injection. Insulation integrity was verified using a 1kV DC megger. The breaker cubicle was cleaned along with the line and load side stabs. New grease was applied to both the cubicle and breaker primary stabs and fingers. All breakers were racked in and out to verify correct racking operation.

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
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EEO-44

EQUIPMENT COMMENTS AND DEFICIENCY REPORT

Customer	SM Electric	**Date** 12/15/2010	**Page** 1 **Of** 1
Customer Address	601 Newq Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Expansion	**Air Temperature**	65F
Owner Identification	Switchgear SA	**Relative Humidity**	60%

1 Ground fault plug for Breaker ATS-Life Safety was found to be defective, causing breaker to lose all protective functions. Replaced with spare plug and re-tested.	*Replaced With Spare Unit*
2 CT was found to be incorrect for Breaker DP-SA 9350 power meter. Print spec is 1200:5A. As found was 3200:5A.	*Recommend Engineer Review*
3 CT ratio for DP-SA 9350 Power meter was changed to match the installed 3200:5A CTt as per customer direction.	*Repaired As Left*

Submitted By	Kevin Cubberley	**Title**	Field Technician
		Date	12/15/2010
Reviewed By	Russell Sorbello	**Title**	Project Manager
		Date	12/16/2010

Switch Inspection Report

SM Electric

S10-1157.2

Scott Testing, Inc.

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STPM

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric	**Date** 12/16/2010	**Page** 1 **Of** 4
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B	**Air Temperature**	60F
Owner Identification	Switchgear SA	**Relative Humidity**	55%

Nameplate Data

Manufacturer	Siemens	**Design Voltage**	480VAC	**System Voltage**	480/277	**BIL**	NA
Serial #	NA	**Rated Current**	4000A	**Style**	WL	**Age**	2009
Model	NA	**SC Withstand**	150KA	**Cat #**	NA	**ID #**	SA

 # Breakers 5 **# Relays** 0 **# Meters** 6 **# Vert Sect** 5 **# Cubicles** 16

Other Info CONTAINS 1 FUTURE CELL

Inspection Report

Breaker Operation	Good	**Covers/Glass**	Good	**Annunciator**	Not Applicable
Equipment Access	Good	**Cell Condition**	Good	**Panel Meters**	Good
Control Switches	Good	**Hinged Doors**	Good	**Panel Lights**	Good
Swgr Grounds	Good	**Bus Supports**	Good	**Cables**	Good
Paint Condition	Good	**Space Heaters**	Good	**Shutters**	Good
Connections	Good	**Tracking Signs**	Not Applicable	**Interlocks**	Not Applicable
Control Wiring	Good	**Cleanliness**	Good	**Insulation**	Good
Control Relays	Good	**Lubrication**	Good	**Test Stand**	Not Applicable
"83" Transfer	Not Applicable	**Ground Truck**	Not Applicable	**Maint Tools**	Not Applicable

Other Inspections CONTROL POWER WAS APPLIED AND ALL FUNCTIONS VERIFIED.

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd
SERVICE ENTRANCE BUS	GROUND W/ 2 OPPOSING PH	1.0	4000	4000	4000
LOAD SIDE MAIN BREAKER B	GROUND W/ 2 OPPOSING PH	1.0	4000	4000	4000
ATS LIFE SAFETY BUSS DUC	GROUND W/ 2 OPPOSING PH	1.0	2400	2000	2000
ATS LOAD MAIN BUSS	GROUND W/ 2 OPPOSING PH	1.0	1500	1450	1485

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
Service entrance bus conn.	Main Breaker line side stabs	100	9	9	11
Main breaker load side stabs	Sec. 2 Metering	100	23	24	24
Main breaker load side stabs	Sec. 3 ATS/Life Safety line side	100	70	61	68
ATS/ Life Safety Line side stabs	DP-SA Line Side Stabs (inc. duc	100	90	96	99

REMARKS Cont. on next page.All results are acceptable.

Submitted By K.CUBBERLEY/M.STANLEY **Equipment Used** 100 AMP DUCTOR, FLUKE 1KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric	Date	12/16/2010 Page 2 Of 4
Customer Address	601 New Brunswick Ave, Rahway, NJ	Project Number	S10-1157 2
Owner	Port Authority of New York and New Jersey	Last Inspection Report	Acceptance
Owner Address	Newark Airport, Newark, NJ	Last Inspection Date	Acceptance
Equipment Location	Terminal B	Air Temperature	60F
Owner Identification	Switchgear SA	Relative Humidity	55%

Nameplate Data

Manufacturer	Siemens	Design Voltage	480VAC	System Voltage	480/277	BIL	NA
Serial #	NA	Rated Current	4000A	Style	WL	Age	2009
Model	NA	SC Withstand	150KA	Cat #	NA	ID #	SA

# Breakers	# Relays	# Meters	# Vert Sect	# Cubicles
5	0	6	5	16

Other Info: CONTAINS 1 FUTURE CELL

Inspection Report

Breaker Operation	Good	Covers/Glass	Good	Annunciator	Not Applicable
Equipment Access	Good	Cell Condition	Good	Panel Meters	Good
Control Switches	Good	Hinged Doors	Good	Panel Lights	Good
Swgr Grounds	Good	Bus Supports	Good	Cables	Good
Paint Condition	Good	Space Heaters	Good	Shutters	Good
Connections	Good	Tracking Signs	Not Applicable	Interlocks	Not Applicable
Control Wiring	Good	Cleanliness	Good	Insulation	Good
Control Relays	Good	Lubrication	Good	Test Stand	Not Applicable
"83" Transfer	Not Applicable	Ground Truck	Not Applicable	Maint Tools	Not Applicable

Other Inspections: CONTROL POWER WAS APPLIED AND ALL FUNCTIONS VERIFIED.

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd
See previous page.					

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
DP-SA Line side stabs	DP-SB line side Stabs	100	29	27	24
DP-SA Line side stabs	P-MDP line side stabs	100	23	24	24
P-MDP load side stabs	P-MDP bus duct connections	100	4	7	6

REMARKS: Cont. on next page. All results are acceptable.

Submitted By: K.CUBBERLEY/M.STANLEY

Equipment Used: 100 AMP DUCTOR, FLUKE 1KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
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SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric	Date 12/16/2010	Page 3 Of 4
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2
Owner	Port Authority of New York and New Jersey	Last Inspection Report	Acceptance
Owner Address	Newark Airport, Newark, NJ	Last Inspection Date	Acceptance
Equipment Location	Terminal B	Air Temperature	60F
Owner Identification	Switchgear SA	Relative Humidity	55%

Nameplate Data

Manufacturer	Siemens	Design Voltage	480VAC	System Voltage	480/277	BIL	NA
Serial #	NA	Rated Current	4000A	Style	WL	Age	2009
Model	NA	SC Withstand	150KA	Cat #	NA	ID #	SA

Breakers 5 # Relays 0 # Meters 6 # Vert Sect 5 # Cubicles 16

Other Info CONTAINS 1 FUTURE CELL

Inspection Report

Breaker Operation	Good	Covers/Glass	Good	Annunciator	Not Applicable
Equipment Access	Good	Cell Condition	Good	Panel Meters	Good
Control Switches	Good	Hinged Doors	Good	Panel Lights	Good
Swgr Grounds	Good	Bus Supports	Good	Cables	Good
Paint Condition	Good	Space Heaters	Good	Shutters	Good
Connections	Good	Tracking Signs	Not Applicable	Interlocks	Not Applicable
Control Wiring	Good	Cleanliness	Good	Insulation	Good
Control Relays	Good	Lubrication	Good	Test Stand	Not Applicable
"83" Transfer	Not Applicable	Ground Truck	Not Applicable	Maint Tools	Not Applicable

Other Inspections CONTROL POWER WAS APPLIED AND ALL FUNCTIONS VERIFIED.

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd
See previous page.					

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
SEC 1 GROUND BUS	SEC 2 GROUND BUS	100	27		
SEC 1 GROUND BUS	SEC 3 GROUND BUS	100	39		
SEC 1 GROUND BUS	SEC 4 GROUND BUS	100	43		
SEC 1 GROUND BUS	SEC 5 GROUND BUS	100	50		

REMARKS Cont. on next page. All results are acceptable.

Submitted By K.CUBBERLEY/M.STANLEY Equipment Used 100 AMP DUCTOR, FLUKE 1KVDC MEGGER

Scott Testing, Inc.

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SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric	Date	12/16/2010 Page 4 Of 4
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2
Owner	Port Authority of New York and New Jersey	Last Inspection Report	Acceptance
Owner Address	Newark Airport, Newark, NJ	Last Inspection Date	Acceptance
Equipment Location	Terminal B	Air Temperature	60F
Owner Identification	Switchgear SA	Relative Humidity	55%

Nameplate Data

Manufacturer	Siemens	Design Voltage	480VAC	System Voltage	480/277	BIL	NA
Serial #	NA	Rated Current	4000A	Style	WL	Age	2009
Model	NA	SC Withstand	150KA	Cat #	NA	ID #	SA

# Breakers	# Relays	# Meters	# Vert Sect	# Cubicles
5	0	6	5	16

Other Info: CONTAINS 1 FUTURE CELL

Inspection Report

Breaker Operation	Good	Covers/Glass	Good	Annunciator	Not Applicable
Equipment Access	Good	Cell Condition	Good	Panel Meters	Good
Control Switches	Good	Hinged Doors	Good	Panel Lights	Good
Swgr Grounds	Good	Bus Supports	Good	Cables	Good
Paint Condition	Good	Space Heaters	Good	Shutters	Good
Connections	Good	Tracking Signs	Not Applicable	Interlocks	Not Applicable
Control Wiring	Good	Cleanliness	Good	Insulation	Good
Control Relays	Good	Lubrication	Good	Test Stand	Not Applicable
"83" Transfer	Not Applicable	Ground Truck	Not Applicable	Maint Tools	Not Applicable

Other Inspections: CONTROL POWER WAS APPLIED AND ALL FUNCTIONS VERIFIED.

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd
See previous page.					

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
SEC 1 NEUTRAL BUS	SEC 2 NEUTRAL BUS	100	40		
SEC 1 NEUTRAL BUS	SEC 3 NEUTRAL BUS	100	56		
SEC 1 NEUTRAL BUS	SEC 4 NEUTRAL BUS	100	78		
SEC 1 NEUTRAL BUS	SEC 5 NEUTRAL BUS	100	85		

REMARKS: Cont. on next page. All results are acceptable.

Submitted By: K.CUBBERLEY/M.STANLEY

Equipment Used: 100 AMP DUCTOR, FLUKE 1KVDC MEGGER

Low Voltage Circuit Breaker Report

SM Electric
S10-1157.2

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

LVCB-H

LOW VOLTAGE CIRCUIT BREAKER REPORT

Customer	SM Electric	Date	12/13/2010	Page 2	Of 5
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2		
Owner	Newark Airport	Last Inspection Report	Acceptance		
Owner Address	Newark, NJ	Last Inspection Date	Acceptance		
Equipment Location	Terminal B Switchgear SA	Air Temperature	50F		
Owner Identification	ATS LIFE SAFETY	Relative Humidity	75%		

Nameplate Data		Trip Unit Data		Trip Unit Range		Inspection	
Bkr Mfg	Siemens	Trip Unit Mfg	Siemens	LT PU	0.4-1.0 x Ir	Contacts	Good
Bkr Type	WLF2A380	Type	ETU776	LTD Band	2-30 sec @ 6 x Ir	Stabs	Good
Frame Size	800A	Rating	500A	ST PU	1.25xIn - 0.8x IC	Cubicle	Good
Voltage	635VAC MAX	Trip Unit S/N	NA	STD Band	0.08-4 sec, OFF	Arc Chute	Good
IC Rating	100KA	Cat Number	NA	GF PU	A-E (400-1200A)	Operation	Good
Bkr S/N	4001281001000	Curve	NA	GFD Band	0.1-0.5 SEC	Mechanism	Good
Instr Bk	CBIM02000-0204	Plug Rating	500A	Instant	NA	Heaters	Not Applicable
Other	NA	Sensor CTR	NA	Other	NA	Other	Not Applicable

Long Time (Note: All trip time in seconds

LT PU Set @ 1x In
LT Set Amps 500
LT PU Amps 500
LT Delay @ 300 %= 1500 Amps
I^2T Out x In LT Delay Set 2.0

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
4000	4000	4000	4000	4000	4000
4000	4000	4000	4000	4000	4000
5.929	5.929	5.929	5.929	5.929	5.929

LT Curve Range

Short Time (Note: All trip time in seconds

ST Set Amps 6x
ST PU Amps 3000
ST Delay @ 150 %= 4500 Amps
I^2T Out x In ST Delay Set 0.1

A	B	C	A	B	C
3000	3000	3000	3000	3000	3000
3000	3000	3000	3000	3000	3000
0.144	0.144	0.144	0.144	0.144	0.144

ST Curve Range

Ground Fault (Note: All trip time in seconds

GF Set Amps 8
GF PU Amps 300
GF Delay @ 150 %= 450 Amps
I^2T Out x In GF Delay Set 0.2

A	B	C	A	B	C
300	300	300	300	300	300
300	300	300	300	300	300
0.249	0.236	0.244	0.249	0.236	0.244

GF Curve Range

Instantaneous (Note: All trip time in seconds

Inst Set Amps 200KA
Inst PU Amps 200KA
Inst Delay @ NA %= NA Amps

A	B	C	A	B	C
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Contact Resistance (Results in microhms)

A Phase 28
B Phase 34
C Phase 29

Insulation Resistance (results in megohms) Test Value: 1KVDC

A Phase to B/C/ Gnd 4000
B Phase to A/C/ Gnd 4000
C Phase to A/B/ Gnd 4000

A Phase (Line to Load) 4000
B Phase (Line to Load) 4000
C Phase (Line to Load) 4000

REMARKS BREAKER TESTED SATISFACTORY. FUSE INFO: FARRAZ SHAWMUT. CLASS L. CAT # A4BY3000-SEA-3. 3000A. 200KA IC. FUSE RES: A:8 B:9 C:12. Neutral CT circuit and trip verified by primary current injection.

Submitted By K.CUBBERLEY/ M. STANLEY **Equipment Used** 302266,302146, FLUKE 1KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

LVCB-r4

LOW VOLTAGE CIRCUIT BREAKER REPORT

Customer	SM Electric	Date	12/13/2010	Page 3	Of 5
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2		
Owner	Newark Airport	Last Inspection Report	Acceptance		
Owner Address	Newark, NJ	Last Inspection Date	Acceptance		
Equipment Location	Terminal B Switchgear SA	Air Temperature	50F		
Owner Identification	DP-SA	Relative Humidity	75%		

Nameplate Data		Trip Unit Data		Trip Unit Range		Inspection	
Bkr Mfg	Siemens	Trip Unit Mfg	Siemens	LT PU	0.4-1.0 x Ir	Contacts	Good
Bkr Type	WLF2A316	Type	ETU776	LTD Band	2-30 sec @ 6 x Ir	Stabs	Good
Frame Size	1200A	Rating	1200A	ST PU	1.25xIn - 0.8x IC	Cubicle	Good
Voltage	635VAC MAX	Trip Unit S/N	NA	STD Band	0.08-4 sec, OFF	Arc Chute	Good
IC Rating	100KA	Cat Number	NA	GF PU	A-E (400-1200A)	Operation	Good
Bkr S/N	4001280930037	Curve	NA	GFD Band	0.1-0.5 SEC	Mechanism	Good
Instr Bk	CBIM02000-0204	Plug Rating	1200A	Instant	NA	Heaters	Not Applicable
Other	NA	Sensor CTR	NA	Other	NA	Other	Not Applicable

Long Time (Note: All trip time in seconds

LT PU Set @ 1x In
LT Set Amps 1200
LT PU Amps 1200
LT Delay @ 300 %= 3600 Amps
I^2T Out In X LT Delay Set 2.0

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
1200	1200	1200	1200	1200	1200
1200	1200	1200	1200	1200	1200
26.34	26.43	25.99	26.34	26.43	25.99

LT Curve Range

Short Time (Note: All trip time in seconds

ST Set Amps 4X
ST PU Amps 4800
ST Delay @ 150 %= 7200 Amps
I^2T Out x In ST Delay Set 0.1

A	B	C	A	B	C
4800	4800	4800	4800	4800	4800
4800	4800	4800	4800	4800	4800
0.144	0.144	0.144	0.144	0.144	0.144

ST Curve Range

Ground Fault (Note: All trip time in seconds

GF Set Amps D
GF PU Amps 900
GF Delay @ 150 %= 1350 Amps
I^2T Out x In GF Delay Set 0.2

A	B	C	A	B	C
900	900	900	900	900	900
900	900	900	900	900	900
0.342	0.342	0.342	0.342	0.342	0.342

GF Curve Range

Instantaneous (Note: All trip time in seconds

Inst Set Amps 200KA
Inst PU Amps 200KA
Inst Delay @ NA %= NA Amps

A	B	C	A	B	C
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Contact Resistance (Results in microhms)

A Phase 28
B Phase 34
C Phase 29

Insulation Resistance (results in megohms) Test Value: 1KVDC

A Phase to B/C/ Gnd 4000
B Phase to A/C/ Gnd 4000
C Phase to A/B/ Gnd 4000

A Phase (Line to Load) 4000
B Phase (Line to Load) 4000
C Phase (Line to Load) 4000

REMARKS BREAKER TESTED SATISFACTORY. FUSE INFO: FARRAZ SHAWMUT. CLASS L. CAT # A4BY3000-SEA-3. 3000A. 200KA IC. FUSE RES: A:8 B:9 C:12. Ground Fault plug found to be faulty. Replaced with spare unit and re-tested. Neutral CT circuit and trip verified by primary current injection.

Submitted By K.CUBBERLEY/ M. STANLEY **Equipment Used** 302266,302146, FLUKE 1KVDC MEGGER

Scott Testing, Inc.

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Telephone: 609-882-2400 Fax: 609-882-5660

LVCB-r4

LOW VOLTAGE CIRCUIT BREAKER REPORT

Customer	SM Electric	Date	12/13/2010	Page 4	Of 5
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2		
Owner	Newark Airport	Last Inspection Report	Acceptance		
Owner Address	Newark, NJ	Last Inspection Date	Acceptance		
Equipment Location	Terminal B Switchgear SA	Air Temperature	50F		
Owner Identification	DP-SB	Relative Humidity	75%		

Nameplate Data		Trip Unit Data		Trip Unit Range		Inspection	
Bkr Mfg	Siemens	Trip Unit Mfg	Siemens	LT PU	0.4-1.0 x Ir	Contacts	Good
Bkr Type	WLM3A340	Type	ETU776	LTD Band	2-30 sec @ 6 x Ir	Stabs	Good
Frame Size	1600A	Rating	1200A	ST PU	1.25xIn - 0.8x IC	Cubicle	Good
Voltage	635VAC MAX	Trip Unit S/N	NA	STD Band	0.08-4 sec, OFF	Arc Chute	Good
IC Rating	100KA	Cat Number	NA	GF PU	A-E (100A-1200A)	Operation	Good
Bkr S/N	4001280930032	Curve	NA	GFD Band	0.1-0.5 SEC	Mechanism	Good
Instr Bk	CBIM02000-0204	Plug Rating	1200A	Instant	NA	Heaters	Not Applicable
Other	NA	Sensor CTR	NA	Other	NA	Other	Not Applicable

Long Time (Note: All trip time in seconds

LT PU Set @ 1x In
LT Set Amps 1200
LT PU Amps 1200
LT Delay @ 300 %= 3600 Amps
I^2T Out In x LT Delay Set 2.0

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
500	500	500	500	500	500
500	500	500	500	500	500
23.16	24.13	22.19	23.16	24.13	22.19

LT Curve Range

Short Time (Note: All trip time in seconds

ST Set Amps 4X
ST PU Amps 4800
ST Delay @ 150 %= 6200 Amps
I^2T Out x In ST Delay Set 0.1

A	B	C	A	B	C
4800	4800	4800	4800	4800	4800
4800	4800	4800	4800	4800	4800
0.144	0.143	0.140	0.144	0.143	0.140

ST Curve Range

Ground Fault (Note: All trip time in seconds

GF Set Amps D
GF PU Amps 900
GF Delay @ 150 %= 1350 Amps
I^2T Out x In GF Delay Set 0.2

A	B	C	A	B	C
900	900	900	900	900	900
900	900	900	900	900	900
0.246	0.246	0.246	0.246	0.246	0.246

GF Curve Range

Instantaneous (Note: All trip time in seconds

Inst Set Amps OFF
Inst PU Amps OFF
Inst Delay @ NA %= NA Amps

A	B	C	A	B	C
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Contact Resistance (Results in microhms)

A Phase 43
B Phase 48
C Phase 49

Insulation Resistance (results in megohms) Test Value: 1KVDC

A Phase to B/C/ Gnd 4000
B Phase to A/C/ Gnd 4000
C Phase to A/B/ Gnd 4000

A Phase (Line to Load) 4000
B Phase (Line to Load) 4000
C Phase (Line to Load) 4000

REMARKS BREAKER TESTED SATISFACTORY. FUSE INFO: FARRAZ SHAWMUT. CLASS L. CAT # A4BY3000-SEA-3. 3000A. 200KA IC. FUSE RES IN MICROHMS: A: 28 B: 39 C: 32 Neutral CT circuit and trip verified by primary current injection.

Submitted By K.CUBBERLEY/ M. STANLEY **Equipment Used** 302266, 302146, FLUKE 1KVDC MEGGER

Scott Testing, Inc.

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LVCB-44

LOW VOLTAGE CIRCUIT BREAKER REPORT

Customer	SM Electric	Date	12/13/2010	Page 1	Of 5
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2		
Owner	Newark Airport	Last Inspection Report	Acceptance		
Owner Address	Newark, NJ	Last Inspection Date	Acceptance		
Equipment Location	Terminal B Switchgear SA	Air Temperature	50F		
Owner Identification	Main Breaker	Relative Humidity	75%		

Nameplate Data		Trip Unit Data		Trip Unit Range		Inspection	
Bkr Mfg	Siemens	Trip Unit Mfg	Siemens	LT PU	0.4-1.0 x Ir	Contacts	Good
Bkr Type	WLM3A340	Type	ETU776	LTD Band	2-30 sec @ 6 x Ir	Stabs	Good
Frame Size	4000A	Rating	4000A	ST PU	1.25xIn - 0.8x IC	Cubicle	Good
Voltage	635VAC MAX	Trip Unit S/N	NA	STD Band	0.08-4 sec, OFF	Arc Chute	Good
IC Rating	100KA	Cat Number	NA	GF PU	A-E (400-1200A)	Operation	Good
Bkr S/N	4001281007016	Curve	NA	GFD Band	0.1-0.5 SEC	Mechanism	Good
Instr Bk	CBIM02000-0204	Plug Rating	4000A	Instant	NA	Heaters	Not Applicable
Other	NA	Sensor CTR	NA	Other	NA	Other	Not Applicable

Long Time (Note: All trip time in seconds

LT PU Set @ 1x In
LT Set Amps 4000
LT PU Amps 4000
LT Delay @ 300 %= 12000 Amps
I^2T Out x In LT Delay Set 2.0

	AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
LT PU Set	4000	4000	4000	4000	4000	4000
LT Set Amps	4000	4000	4000	4000	4000	4000
LT Delay	4.865	4.732	4.764	4.865	4.732	4.764

LT Curve Range

Short Time (Note: All trip time in seconds

ST Set Amps 2
ST PU Amps 8000
ST Delay @ 150 %= 12000 Amps
I^2T Out x In ST Delay Set 0.3

	A	B	C	A	B	C
ST PU Set	8000	8000	8000	8000	8000	8000
ST Set Amps	8000	8000	8000	8000	8000	8000
ST Delay	0.348	0.346	0.348	0.348	0.346	0.348

ST Curve Range

Ground Fault (Note: All trip time in seconds

GF Set Amps E
GF PU Amps 1200
GF Delay @ 150 %= 1800 Amps
I^2T Out x In GF Delay Set 0.3

	A	B	C	A	B	C
GF PU Set	1200	1200	1200	1200	1200	1200
GF Set Amps	1200	1200	1200	1200	1200	1200
GF Delay	0.342	0.342	0.342	0.342	0.342	0.342

GF Curve Range

Instantaneous (Note: All trip time in seconds

Inst Set Amps NA
Inst PU Amps NA
Inst Delay @ NA %= NA Amps

	A	B	C	A	B	C
Inst PU Set	NA	NA	NA	NA	NA	NA
Inst Set Amps	NA	NA	NA	NA	NA	NA
Inst Delay	NA	NA	NA	NA	NA	NA

Contact Resistance (Results in microhms)

A Phase	13
B Phase	19
C Phase	16

Insulation Resistance (results in megohms) Test Value: 1KVDC

A Phase to B/C/ Gnd	4000	A Phase (Line to Load)	4000
B Phase to A/C/ Gnd	4000	B Phase (Line to Load)	4000
C Phase to A/B/ Gnd	4000	C Phase (Line to Load)	4000

REMARKS BREAKER TESTED SATISFACTORY. Neutral CT circuit and trip verified by primary current injection.

Submitted By K.CUBBERLEY/ M. STANLEY **Equipment Used** 302266, 302146, FLUKE 1 KVDC MEGGER

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LVCB-H

LOW VOLTAGE CIRCUIT BREAKER REPORT

Customer	SM Electric	Date	12/13/2010	Page	5 Of 5
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2		
Owner	Newark Airport	Last Inspection Report	Acceptance		
Owner Address	Newark, NJ	Last Inspection Date	Acceptance		
Equipment Location	Terminal B Switchgear SA	Air Temperature	50F		
Owner Identification	P-MDP	Relative Humidity	75%		

Nameplate Data		Trip Unit Data		Trip Unit Range		Inspection	
Bkr Mfg	Siemens	Trip Unit Mfg	Siemens	LT PU	0.4-1.0 x Ir	Contacts	Good
Bkr Type	WLF2A320	Type	ETU776	LTD Band	2-30 sec @ 6 x Ir	Stabs	Good
Frame Size	2000A	Rating	2000A	ST PU	1.25xIn - 0.8x IC	Cubicle	Good
Voltage	635VAC MAX	Trip Unit S/N	NA	STD Band	0.08-4 sec, OFF	Arc Chute	Good
IC Rating	100KA	Cat Number	NA	GF PU	A-E (100A-1200A)	Operation	Good
Bkr S/N	4001281001018	Curve	NA	GFD Band	0.1-0.5 SEC	Mechanism	Good
Instr Bk	CBIM02000-0204	Plug Rating	2000A	Instant	NA	Heaters	Not Applicable
Other	NA	Sensor CTR	NA	Other	NA	Other	Not Applicable

Long Time (Note: All trip time in seconds

LT PU Set @ 1x In
LT Set Amps 2000
LT PU Amps 2000
LT Delay @ 300 %= 6000 Amps
I^2T Out In X LT Delay Set 2.0

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
2000	2000	2000	2000	2000	2000
2000	2000	2000	2000	2000	2000
6.775	6.542	7.001	6.775	6.542	7.001

LT Curve Range

Short Time (Note: All trip time in seconds

ST Set Amps 3X
ST PU Amps 6000
ST Delay @ 150 %= 9000 Amps
I^2T Out x In ST Delay Set 0.1 SEC

A	B	C	A	B	C
6000	6000	6000	6000	6000	6000
6000	6000	6000	6000	6000	6000
0.132	0.143	0.111	0.132	0.143	0.111

ST Curve Range

Ground Fault (Note: All trip time in seconds

GF Set Amps D
GF PU Amps 900
GF Delay @ 150 %= 1350 Amps
I^2T Out x In GF Delay Set 0.2

A	B	C	A	B	C
900	900	900	900	900	900
900	900	900	900	900	900
0.241	0.241	0.241	0.241	0.241	0.241

GF Curve Range

Instantaneous (Note: All trip time in seconds

Inst Set Amps OFF
Inst PU Amps OFF
Inst Delay @ NA %= NA Amps

A	B	C	A	B	C
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Contact Resistance (Results in microhms)

A Phase
B Phase
C Phase

Insulation Resistance (results in megohms) Test Value: 1KVDC

A Phase to B/C/ Gnd	4000	A Phase (Line to Load)	4000
B Phase to A/C/ Gnd	4000	B Phase (Line to Load)	4000
C Phase to A/B/ Gnd	4000	C Phase (Line to Load)	4000

REMARKS BREAKER TESTED SATISFACTORY. FUSE INFO: FARRAZ SHAWMUT. CLASS L. CAT # A4BY3000-SEA-3. 3000A. 200KA IC. FUSE RES. IN MICROHMS: A: 12 B:14 C:11 Neutral CT circuit and trip verified by primary current injection.

Submitted By K.CUBBERLEY/ M. STANLEY **Equipment Used** 302266,302146, FLUKE 1KVDC MEGGER

Current Transformer Report

SM Electric

R10-1157.2

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
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CT-44

CURRENT TRANSFORMER REPORT

Customer	SM Electric	**Date**	12/15/2010 **Page** 1 **Of** 5
Customer Address	601 New Brunswick Ave. Rahway ,NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York & New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Acceptance
Equipment Location	Switchgear SA	**Air Temperature**	60F
Owner Identification	ATS Life Safety	**Relative Humidity**	55%

Nameplate Data

Manufacturer	Siemens	**VA Rating**	NA	**Type**	NA	**Class**	NA	**Other**	NA
Ratio	500:5 AMPS	**Rated KV**	NA	**Cat #**	NA	**S/N**	NA		

Excitation Test

Applied Test Voltage——>		24	24.5	25	25.5	26	26.5	27	27.5	28	28.5
CT Identification	A	0.3580	0.3970	04423	0.5037	0.5798	0.6909	0.8680	1.1996	1.7171	SAT
CT Identification	B	0.2526	0.2800	0.3268	0.3881	0.4912	0.6198	0.8078	1.1497	1.8645	SAT
CT Identification	C	0.2277	0.2543	0.2849	0.3230	0.3730	0.4268	0.5217	0.6547	0.8696	1.3737

Additional Test Data

	RATIO TEST			POLARITY	INSULATION INTEGRITY
CT Identification	**Primary Volts**	**Secondary Volts**	**Measured Ratio**	**Check**	**Test Value:** 1KVDC
A	0.2490	25.01	100.441767068273	GOOD	4000
B	0.2494	25.00	100.240577385726	GOOD	4000
C	0.2490	25.00	100.401606425703	GOOD	4000

Results In megohms

CT Load/Wiring Check

Connection Config **Phase Verification** GOOD

Connected Devices SIEMENS 9350 ION METER

Wired Per Drawing #

Other Checks

Load Side Measured Burden		
CT ID		
CT ID		
CT ID		

Visual Inspections

Mounting	Not Applicable	**Insulating Bushings**	Not Applicable	**Shorting Block**	Good	**Case/Tank**	Good
Connections	Good	**Single Point Ground**	Good	**Sec Wire Size**	10AWG		
Other							

REMARKS Unable to visually inspect CT's due to mounting behind red board insulators. Ratio verified against drawings. CT's tested satisfactory. Wiring verified to meter connections.

Submitted By K.CUBBERLEY **Equipment Used** 302146, FLUKE 1 KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

CT-r4

CURRENT TRANSFORMER REPORT

Customer	SM Electric	Date	12/15/2010 Page 2 Of 5
Customer Address	601 New Brunswick Ave. Rahway ,NJ	Project Number	S10-1157.2
Owner	Port Authority of New York & New Jersey	Last Inspection Report	Acceptance
Owner Address	Newark Airport, Newark, NJ	Last Inspection Date	Acceptance
Equipment Location	Switchgear SA	Air Temperature	60F
Owner Identification	DP-SA	Relative Humidity	55%

Nameplate Data

Manufacturer	Siemens	VA Rating	NA	Type	NA	Class	NA	Other	NA
Ratio	3200 :5 Amps (640:1)	Rated KV	NA	Cat #	NA	S/N	NA		

Excitation Test

Applied Test Voltage ——>		47.5	48	48.5	49	49.5	50	50.5	51	51.5	52
CT Identification	A	0.4072	0.4668	0.5358	0.6430	0.8166	1.0627	1.5343	SAT	SAT	SAT
CT Identification	B	0.5496	0.6446	0.8264	1.0902	1.6078	SAT	SAT	SAT	SAT	SAT
CT Identification	C	0.5187	0.6380	0.7476	1.0046	1.4002	SAT	SAT	SAT	SAT	SAT

Additional Test Data

	RATIO TEST			POLARITY	INSULATION INTEGRITY
CT Identification	Primary Volts	Secondary Volts	Measured Ratio	Check	Test Value: 1KVDC
A	0.0390	25.01	641.282051282051	GOOD	4000
B	0.0389	25.00	642.6735218509	GOOD	4000
C	0.0390	25.01	641.282051282051	GOOD	4000

Results In megohms

CT Load/Wiring Check

Connection Config		Phase Verification	GOOD	Load Side Measured Burden
Connected Devices	SIEMENS 9350 ION METER			CT ID
Wired Per Drawing #				CT ID
Other Checks				CT ID

Visual Inspections

Mounting	Not Applicable	Insulating Bushings	Not Applicable	Shorting Block	Good	Case/Tank	Good
Connections	Good	Single Point Ground	Good	Sec Wire Size	10AWG		
Other							

REMARKS Unable to visually inspect CT's due to mounting behind red board insulators. Ratio verified against drawings. CT's tested satisfactory Measured ratio incorrect to drawing specs.

Submitted By K.CUBBERLEY **Equipment Used** 302146, FLUKE 1 KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
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CT-4

CURRENT TRANSFORMER REPORT

Customer	SM Electric	**Date**	12/15/2010 **Page** 3 **Of** 5
Customer Address	601 New Brunswick Ave. Rahway ,NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York & New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Acceptance
Equipment Location	Switchgear SA	**Air Temperature**	60F
Owner Identification	DP-SB	**Relative Humidity**	55%

Nameplate Data

Manufacturer	Siemens	**VA Rating**	NA	**Type**	NA	**Class**	NA	**Other**	NA
Ratio	1200 :5 Amps (240:1)	**Rated KV**	NA	**Cat #**	NA	**S/N**	NA		

Excitation Test

Applied Test Voltage——>		31.5	32	32.5	33	33.5	34	34.5	35	35.5	36
CT Identification	A	0.4290	0.4986	0.6244	0.7678	1.2085	1.477	SAT	SAT	SAT	SAT
CT Identification	B	0.8059	0.9433	1.1431	1.480	SAT	SAT	SAT	SAT	SAT	SAT
CT Identification	C	0.4178	0.4968	0.6179	0.7548	0.9717	1.3178	SAT	SAT	SAT	SAT

Additional Test Data

	RATIO TEST			POLARITY	INSULATION INTEGRITY
CT Identification	**Primary Volts**	**Secondary Volts**	**Measured Ratio**	**Check**	**Test Value:** 1KVDC
A	0.1040	25.00	240.384615384615	GOOD	4000
B	0.1036	25.00	241.312741312741	GOOD	4000
C	0.1038	25.00	240.847784200385	GOOD	4000

Results in megohms

CT Load/Wiring Check

Connection Config

Phase Verification GOOD

Connected Devices SIEMENS 9350 ION METER

Wired Per Drawing #

Other Checks

Load Side Measured Burden		
CT ID		
CT ID		
CT ID		

Visual Inspections

Mounting	Not Applicable	**Insulating Bushings**	Not Applicable	**Shorting Block**	Good	**Case/Tank**	Good
Connections	Good	**Single Point Ground**	Good	**Sec Wire Size**	10AWG		
Other							

REMARKS Unable to visually inspect CT's due to mounting behind red board insulators. Ratio verified against drawings. CT's tested satisfactory. Wiring verfied to meter connection.

Submitted By K.CUBBERLEY **Equipment Used** 302146; FLUKE 1 KVDC MEGGER

Scott Testing, Inc.

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CT-rs

CURRENT TRANSFORMER REPORT

Customer	SM Electric	**Date** 12/15/2010	**Page** 5 **Of** 5
Customer Address	601 New Brunswick Ave. Rahway ,NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York & New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Acceptance
Equipment Location	Switchgear SA	**Air Temperature**	60F
Owner Identification	Main Breaker	**Relative Humidity**	55%

Nameplate Data

Manufacturer	Siemens	**VA Rating**	NA	**Type**	NA	**Class**	NA	**Other**	NA
Ratio	4000:5 AMPS (800:1)	**Rated KV**	NA	**Cat #**	NA	**S/N**	NA		

Excitation Test

Applied Test Voltage——>		86	88	89	89.5	90	90.5	91	91.5	92	92.5
CT Identification	A	0.8493	0.997	1.1925	1.4751	1.8621	SAT	SAT	SAT	SAT	SAT
CT Identification	B	1.367	1.745	SAT	SAT	SAT	SAT	SAT	SAT	SAT	SAT
CT Identification	C	0.5590	0.5790	0.6676	0.717	0.9370	1.0952	1.3278	1.7491	SAT	SAT

Additional Test Data

	RATIO TEST			POLARITY	INSULATION INTEGRITY
CT Identification	**Primary Volts**	**Secondary Volts**	**Measured Ratio**	**Check**	**Test Value:** 1KVDC
A	0.0624	50.00	801.282051282051	GOOD	4000
B	0.0622	50.00	803.858520900322	GOOD	4000
C	0.0622	50.00	803.858520900322	GOOD	4000

Results In megohms

CT Load/Wiring Check

Connection Config		**Phase Verification**	GOOD	Load Side Measured Burden	
Connected Devices	SIEMENS 9350 ION METER			**CT ID**	
Wired Per Drawing #				**CT ID**	
Other Checks				**CT ID**	

Visual Inspections

Mounting	Not Applicable	**Insulating Bushings**	Not Applicable	**Shorting Block**	Good	**Case/Tank**	Good
Connections	Good	***Single Point Ground***	Good	***Sec Wire Size***	10AWG		
Other							

REMARKS Unable to visually inspect CT's due to mounting behind red board insulators. Ratio verified against drawings. Wiring verified to meter connections.

Submitted By K.CUBBERLEY **Equipment Used** 302146, FLUKE 1 KVDC MEGGER

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CT-H

CURRENT TRANSFORMER REPORT

Customer	SM Electric	**Date**	12/15/2010 **Page** 4 **Of** 5
Customer Address	601 New Brunswick Ave. Rahway ,NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York & New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Acceptance
Equipment Location	Switchgear SA	**Air Temperature**	60F
Owner Identification	SWITCHBOARD P-MDP	**Relative Humidity**	55%

Nameplate Data

Manufacturer	Siemens	**VA Rating**	NA	**Type**	NA	**Class**	NA	**Other**	NA
Ratio	2000:5 AMPS (400:1)	**Rated KV**	NA	**Cat #**	NA	**S/N**	NA		

Excitation Test

Applied Test Voltage——>		49	49.5	50	50.5	51	51.5	52	52.5	53	53.5
CT Identification	A	0.3302	0.4037	0.5209	0.6903	0.9600	1.3346	1.9507	SAT	SAT	SAT
CT Identification	B	0.1556	0.1894	0.227	0.2904	0.3579	0.4680	0.698	1.2600	1.6736	SAT
CT Identification	C	0.2725	0.3448	0.3448	0.4255	0.5451	0.7001	0.9332	1.2700	1.7736	SAT

Additional Test Data

	RATIO TEST			POLARITY	INSULATION INTEGRITY
CT Identification	**Primary Volts**	**Secondary Volts**	**Measured Ratio**	**Check**	**Test Value:** 1KVDC
A	0.1239	50.00	403.551251008878	GOOD	4000
B	0.1246	49.99	401.203852327448	GOOD	4000
C	0.1247	50.03	401.202886928629	GOOD	4000

Results In megohms

CT Load/Wiring Check

Connection Config **Phase Verification** GOOD

Connected Devices SIEMENS 9350 ION METER

Wired Per Drawing #

Other Checks

Load Side Measured Burden	
CT ID	
CT ID	
CT ID	

Visual Inspections

Mounting	Not Applicable	**Insulating Bushings**	Not Applicable	**Shorting Block**	Good	**Case/Tank**	Good
Connections	Good	**Single Point Ground**	Good	**Sec Wire Size**	10AWG		
Other							

REMARKS Unable to visually inspect CT's due to mounting behind red board insulators. Ratio verified against drawings. CT's tested satisfactory. Wiring verified to meter connections.

Submitted By K.CUBBERLEY **Equipment Used** 302146, FLUKE 1 KVDC MEGGER

Instrument Calibration Report

SM Electric
S10-1157.2

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date** 12/16/2010	**Page** 6 **Of** 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	DP-SA - PM Voltage Function	**Relative Humidity**	55%

Instrument Data

Owner ID	DP-SA - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A465-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA

Other Info

Standard	50 Volts	75 Volts	100 Volts	125 Volts				
As Found	200.2	300.1	399.7	480.0				
As Left	200.2	300.1	399.7	480.0				

REMARKS All results are acceptable.

Instrument Data

Owner ID	DP-SA- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A465-11	**Type**	9350	**Basic Range**	0-120VAC	**Calib Watts**	NA

Other Info

Standard	50 Vac	75 Vac	100 Vac	125 Vac				
As Found	200.1	300.1	400.0	480				
As Left	200.1	300.1	400.0	480				

REMARKS All results are acceptable.

Instrument Data

Owner ID	DP-SA - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	120Vac
Function	Voltage Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A465-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA

Other Info

Standard	50 Vac	75 Vac	100 Vac	120 Vac				
As Found	200.2	300.1	399.9	480.0				
As Left	200.2	300.1	399.9	480.0				

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date** 12/16/2010	**Page** 10 **Of** 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	DP-SB - PM Voltage Function	**Relative Humidity**	55%

Instrument Data

Owner ID	DP-SB - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A309-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA

Other Info

Standard	50 Volts	75 Volts	100 Volts	125 Volts				
As Found	200.2	300.1	399.7	480.0				
As Left	200.2	300.1	399.7	480.0				

REMARKS All results are acceptable.

Instrument Data

Owner ID	DP-SB- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A309-11	**Type**	9350	**Basic Range**	0-120VAC	**Calib Watts**	NA

Other Info

Standard	50 Vac	75 Vac	100 Vac	125 Vac				
As Found	200.1	300.1	400.0	480				
As Left	200.1	300.1	400.0	480				

REMARKS All results are acceptable.

Instrument Data

Owner ID	DP-SB- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	120Vac
Function	Voltage Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A309-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA

Other Info

Standard	50 Vac	75 Vac	100 Vac	120 Vac		
As Found	200.2	300.1	399.9	480.0		
As Left	200.2	300.1	399.9	480.0		

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

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INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date**	12/16/2010 **Page** 9 **Of** 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	DP-SB PM Ammeter Function	**Relative Humidity**	55%

Instrument Data

Owner ID	DP-SB - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	1200:5
Serial #	SE-0808A309-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	240.5	481.2	721.6	961.8	1203			
As Left	240.5	481.2	721.6	961.8	1203			

REMARKS All results are acceptable.

Instrument Data

Owner ID	DP-SB - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	1200:5
Serial #	SE-0808A309-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp	
As Found	240.5	481.1	721.1	961.4	1201.1	
As Left	240.5	481.1	721.1	961.4	1201.1	

REMARKS All results are acceptable.

Instrument Data

Owner ID	DP-SB - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	1200:5
Serial #	SE-0808A309-11	**Type**	9350	**Basic Range**	0-5a	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp		
As Found	240.8	481.1	721.1	961.7	1202		
As Left	240.8	481.1	721.1	961.7	1202		

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
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INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date** 12/16/2010	**Page** 1 Of 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	Main B reaker - PM Ammeter Function	**Relative Humidity**	55%

Instrument Data

Owner ID	Main Breaker - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	4000:5
Serial #	SE-0808A097-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	801.7	1603	2404	3205	4005			
As Left	801.7	1603	2404	3205	4005			

REMARKS All results are acceptable.

Instrument Data

Owner ID	Main Breaaker - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	4000:5
Serial #	SE-0808A097-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	801.7	1603	2404	3205	4004			
As Left	801.7	1603	2404	3205	4004			

REMARKS All results are acceptable.

Instrument Data

Owner ID	Main Breaker - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	4000:5
Serial #	SE-0808A097-11	**Type**	9350	**Basic Range**	0-5a	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp		
As Found	801.7	1603	2403	3205	4005		
As Left	801.7	1603	2403	3205	4005		

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	Date	12/16/2010 Page 2 Of 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2
Owner	Port Authority of New York and New Jersey	Last Inspection Report	Acceptance
Owner Address	Newark Airport, Newark ,NJ	Last Inspection Date	Acceptance
Equipment Location	Terminal B Switchgear SA	Air Temperature	55F
Owner Identification	Main B reaker - PM Voltage Function	Relative Humidity	55%

Instrument Data

Owner ID	Main Breaker - PM	Model	9350	Manufacturer	Siemens	PT Ratio	4:1
Function	Voltage Metering A Phas	Cat #	9350V283	Full Scale	Variable	CT Ratio	NA
Serial #	SE-0808A097-11	Type	9350	Basic Range	0-120Vac	Calib Watts	NA

Other Info

Standard	50 Volts	75 Volts	100 Volts	125 Volts				
As Found	200.2	300.1	399.7	480.0				
As Left	200.2	300.1	399.7	480.0				

REMARKS All results are acceptable.

Instrument Data

Owner ID	Main Breaaker - PM	Model	9350	Manufacturer	Siemens	PT Ratio	4:1
Function	Voltage Metering B Phas	Cat #	9350V283	Full Scale	Variable	CT Ratio	NA
Serial #	SE-0808A097-11	Type	9350	Basic Range	0-120VAC	Calib Watts	NA

Other Info

Standard	50 Vac	75 Vac	100 Vac	125 Vac				
As Found	200.1	300.1	400.0	480				
As Left	200.1	300.1	400.0	480				

REMARKS All results are acceptable.

Instrument Data

Owner ID	Main Breaker - PM	Model	9350	Manufacturer	Siemens	PT Ratio	120Vac
Function	Voltage Metering C Phas	Cat #	9350V283	Full Scale	Variable	CT Ratio	NA
Serial #	SE-0808A097-11	Type	9350	Basic Range	0-120Vac	Calib Watts	NA

Other Info

Standard	50 Vac	75 Vac	100 Vac	120 Vac				
As Found	200.2	300.1	399.9	480.0				
As Left	200.2	300.1	399.9	480.0				

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY Equipment Used 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
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INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date**	12/16/2010 **Page** 8 **Of** 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	P-MDP - PM Voltage Function	**Relative Humidity**	55%

Instrument Data

Owner ID	P-MDP - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A351-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Volts	75 Volts	100 Volts	125 Volts				
As Found	200.2	300.1	399.7	480.0				
As Left	200.2	300.1	399.7	480.0				

REMARKS All results are acceptable.

Instrument Data

Owner ID	P-MDP- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A351-11	**Type**	9350	**Basic Range**	0-120VAC	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	125 Vac				
As Found	200.1	300.1	400.0	480				
As Left	200.1	300.1	400.0	480				

REMARKS All results are acceptable.

Instrument Data

Owner ID	P-MDP- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	120Vac
Function	Voltage Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A351-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	120 Vac				
As Found	200.2	300.1	399.9	480.0				
As Left	200.2	300.1	399.9	480.0				

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	Date	12/16/2010	Page	3 Of 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2		
Owner	Port Authority of New York and New Jersey	Last Inspection Report	Acceptance		
Owner Address	Newark Airport, Newark ,NJ	Last Inspection Date	Acceptance		
Equipment Location	Terminal B Switchgear SA	Air Temperature	55F		
Owner Identification	ATS Life Safety - PM Ammeter Function	Relative Humidity	55%		

Instrument Data

Owner ID	ATS Life Safety - PM	Model	9350	Manufacturer	Siemens	PT Ratio	NA
Function	Current Metering A Phas	Cat #	9350V283	Full Scale	Variable	CT Ratio	1200:5
Serial #	SE-0808A089-11	Type	9350	Basic Range	0-5A	Calib Watts	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp
As Found	240.3	480.3	720.8	960.5	1202
As Left	240.3	480.3	720.8	960.5	1202

REMARKS All results are acceptable.

Instrument Data

Owner ID	ATS Life Safety - PM	Model	9350	Manufacturer	Siemens	PT Ratio	NA
Function	Current Metering B Phas	Cat #	9350V283	Full Scale	Variable	CT Ratio	1200:5
Serial #	SE-0808A089-11	Type	9350	Basic Range	0-5A	Calib Watts	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp
As Found	240.3	480.3	720.7	961.1	1202
As Left	240.3	480.3	720.7	961.1	1202

REMARKS All results are acceptable.

Instrument Data

Owner ID	ATS Life Safety - PM	Model	9350	Manufacturer	Siemens	PT Ratio	NA
Function	Current Metering C Phas	Cat #	9350V283	Full Scale	Variable	CT Ratio	1200:5
Serial #	SE-0808A089-11	Type	9350	Basic Range	0-5a	Calib Watts	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp
As Found	240.2	480.6	720.9	961.3	1202
As Left	240.2	480.6	720.9	961.3	1202

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY Equipment Used 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date** 12/16/2010	**Page** 4 **Of** 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Accp.
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	ATS Life Safety - PM Voltage Function	**Relative Humidity**	55%

Instrument Data

Owner ID	ATS Life Safety - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A089-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Volts	75 Volts	100 Volts	125 Volts				
As Found	200.2	300.1	399.7	480.0				
As Left	200.2	300.1	399.7	480.0				

REMARKS All results are acceptable.

Instrument Data

Owner ID	ATS Life Safety- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A089-11	**Type**	9350	**Basic Range**	0-120VAC	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	125 Vac				
As Found	200.1	300.1	400.0	480				
As Left	200.1	300.1	400.0	480				

REMARKS All results are acceptable.

Instrument Data

Owner ID	ATS Life Safety - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	120Vac
Function	Voltage Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A089-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	120 Vac				
As Found	200.2	300.1	399.9	480.0				
As Left	200.2	300.1	399.9	480.0				

REMARKS All results are acceptable

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
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INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date**	12/16/2010 **Page** 5 Of 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	DP-SA - PM Ammeter Function	**Relative Humidity**	55%

Instrument Data

Owner ID	DP-SA - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	3200:5
Serial #	SE-0808A465-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp
As Found	640.9	1282	1923	2565	3202
As Left	640.9	1282	1923	2565	3202

REMARKS CT PRIMARY CHANGED FROM PRINT SPEC TO MATCH INSTALLED CT AS PER CUSTOMER REQUEST. All results are acceptable

Instrument Data

Owner ID	ATS Life Safety - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	3200:5
Serial #	SE-0808A465-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp
As Found	640.4	1282	1922	2561	3202
As Left	640.4	1282	1922	2561	3202

REMARKS CT PRIMARY CHANGED FROM PRINT SPEC TO MATCH INSTALLED CT AS PER CUSTOMER REQUEST. All results are acceptable.

Instrument Data

Owner ID	ATS Life Safety - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	3200:5
Serial #	SE-0808A465-11	**Type**	9350	**Basic Range**	0-5a	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp
As Found	640.4	1281.1	1921	2561	3205
As Left	640.4	1281.1	1921	2561	3205

REMARKS CT PRIMARY CHANGED FROM PRINT SPEC TO MATCH INSTALLED CT AS PER CUSTOMER REQUEST. All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date** 12/16/2010	**Page** 7 Of 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	P-MDP- PM Ammeter Function	**Relative Humidity**	55%

Instrument Data

Owner ID	P-MDP - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	2000:5
Serial #	SE-0808A351-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp		
As Found	400.5	801.2	1201	1602	2002		
As Left	400.5	801.2	1201	1602	2002		

REMARKS All results are acceptable.

Instrument Data

Owner ID	P-MDP - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	2000:5
Serial #	SE-0808A351-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp		
As Found	400.6	802.3	1202	1600	2002		
As Left	400.6	802.3	1202	1600	2002		

REMARKS All results are acceptable.

Instrument Data

Owner ID	P-MDP - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	2000:5
Serial #	SE-0808A351-11	**Type**	9350	**Basic Range**	0-5a	**Calib Watts**	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp	
As Found	400.5	802.6	1202	1603	2001	
As Left	400.5	802.6	1202	1603	2001	

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Potential Transformer Report

SM Electric

S10-1157.2

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

ST-M

PT Test Form

Customer	SM Electric	**Date** 12/16/2010	**Page** 1 **Of** 1
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Acceptance
Equipment Location	Termianl B	**Air Temperature**	40F
Owner Identification	Switchgear SA	**Relative Humidity**	60%

Nameplate Data

Manufacture Instrument Transformers Inc. **Cat #** 460-480 **S/N** NA

Other Info HV=480 LV=120. 10KV BIL. 0.6KV INSUL CLASS

Test Data

Trans. I.D.	Conn. Phase	1min Meg @1KVDC	Measured Ratio
01VT1	A	H=4000/L=4000	4:1
01VT2	B	H=4000/L=4000	4:1
01VT3	C	H=4000/L=4000	4:1
04VT1	A	H=4000/L=4000	4:1
04VT2	B	H=4000/L=4000	4:1
04VT3	C	H=4000/L=4000	4:1
04VT4	A	H=4000/L=4000	4:1
04VT5	B	H=4000/L=4000	4:1
04VT6	C	H=4000/L=4000	4:1
04CPT1 (3KVA)	A-B	H=4000/L=4000	4:1

REMARKS All test results are acceptable.

Submitted By K. Cubberley **Equipment Used** 1 KVDC Megger, Fluke

March 3, 2011

VRH Construction Corp.
320 Grand Ave.
Englewood, NJ 07631-4355

Attention: Mr. Eric Winkler

Reference: EWR-264.003
Terminal B Modernization – Lower Level Expansion & Vertical Circulation
S.M. Electric Letter No. C1260X SM-LTR048
Switchgear SA Test Reports

Dear Mr. Winkler,

S.M. Electric is in receipt of the two e-mails regarding the Switchgear SA test reports from Mike Wallace of Port Authority, which were forwarded to us by VRH on February 18, 2011 and February 23, 2011. We have reviewed the correspondence from Port Authority and offer our comments on their interpretation of the test results in question.

Electrical testing was performed on four separate occasions for Switchgear SA; April 2010 by North Central Electric, June 2010 by Scott Testing, November 2010 by Siemens, and again in December 2010 by Scott Testing. We contacted the three testing companies used and asked them to provide their analysis of the test results, as they are the experts in the field of electrical testing. All three came back with the same response; there are too many variables for a side by side comparison of the test results and that each set of test results, on their own, were acceptable. In order to perform a side by side comparison of the test results, the test equipment, test amperage, temperature, humidity and test points would all have to be the same for each test performed. Some of the tests were done on bus only and some were read through the breakers. What they considered to be more important was that the test values between phases were consistent within each test.

Since Scott Testing was on site twice to test Switchgear SA, we asked them to provide a more detailed analysis of the four sets of test results. In their letter of March 2, 2011, Scott Testing has provided a one line diagram of Switchboard SA and plotted the test points used by each contractor for each set of tests. They then developed a spreadsheet based on these test points and the results of each set of tests. Reviewing the data in this manner allows for a more accurate comparison of the test results and shows that the test results have remained consistent throughout the testing. In some cases, the readings have gone down. Any differences noted between the North Central Electric tests in April 2010 and the Scott Testing tests of June 2010 would have to be attributed to the variables noted above, as there were no physical changes to the Switchgear or work performed within this two month period between tests. These tests were also prior to the Siemens recertification process. S.M. Electric and our three testing subcontractors all agree that the resistance test results for Switchgear SA are acceptable.

Also in their February 23, 2011 e-mail, Port Authority makes the assumption that "the resistance trending indicates a premature failure of this product." Trending cannot be established from the test information provided. In order to compile data for trending, all of the parameters for testing would have to be consistent for each test. At a minimum, the test equipment, test amperage, temperature, humidity and accurately marked test points on the bus bar would need to be identical for each battery of tests. Port Authority does not have a procedure or specification in place requiring the level of accuracy required to track data for trending purposes.

In regard to the other items mentioned in Port Authority's e-mail of February 23, 2011:

Item No. 1: The CT for breaker DP-SA is scheduled to be replaced and tested by Siemens on March 10, 2011. Testing of the new CT will also be performed Scott Testing within the week following installation.

Item No. 3: The values for contact resistance for P-MDP were missed by Scott Testing during the December testing. This breaker will be retested at the same time that Scott Testing is on site to test the CT in Item No. 1. Scott Testing is in the process of reviewing the inconsistencies in their test report to determine if there are incorrect settings on Switchgear SA or if there were typographical errors in their report. We will contact you as soon as we have the results of their review.

If we may be of any further assistance in this matter, please do not hesitate to call.

Very truly yours,

S.M. ELECTRIC COMPANY, INC.

Don Sapanara
Project Manager

Attachments: Letter from Scott Testing, dated 3/2/2011 (5 pages)
E-mail from North Central Electric, dated 2/24/2011 (2 pages)
E-mail from Siemens, dated 2/21/2011 (1 page)
E-mail from Scott Testing, dated 2/18/2011 (1 page)
E-mail from VRH/PA, dated 2/23/2011 (2 pages)
E-mail from VRH/PA, dated 2/18/2011 (1 page)
North Central Electric Test Report, dated 4/7/2010 (1 page)
Scott Testing Report, dated 6/14/2010 (5 pages)
Siemens Test Report, dated 11/19/2010 (1 page)
Scott Testing Report, dated 12/16/2010 (33 pages)

cc: Jeff Konen – VRH Construction Corp.
Peter V. Cheche III – S.M. Electric Co., Inc.
Al Fosbenner – Matrix Service Industrial Contractors, Inc.
Alex Volterano - Matrix Service Industrial Contractors, Inc.

File: C1260X SM-LTR048

Scott Testing

1698 Fifth Street • Ewing, NJ • 08638 • Tel 609 882 2400 • Fax 609 882 5660

March 2, 2011

SM Electric
601 New Brunswick Avenue
Rahway, NJ 07065-1144

Attention: Don Sapanara

Reference: Perform review of test data for bus resistances of Switchgear "SA"
***STI* Project #:** S11-1157.2

Mr. Sapanara,

The test data reviewed was obtained on four different dates, by three testing organizations. The purpose of this review was to determine the repeatability of the bus resistance readings obtained over the test period.

In the several cases where the test points were determined to be similar from one test period to another, the test results appear to be comparable and consistent.

The problem however is that up to this time there has not been clearly defined test points or test current specified so the ability to fully evaluate this data is limited.

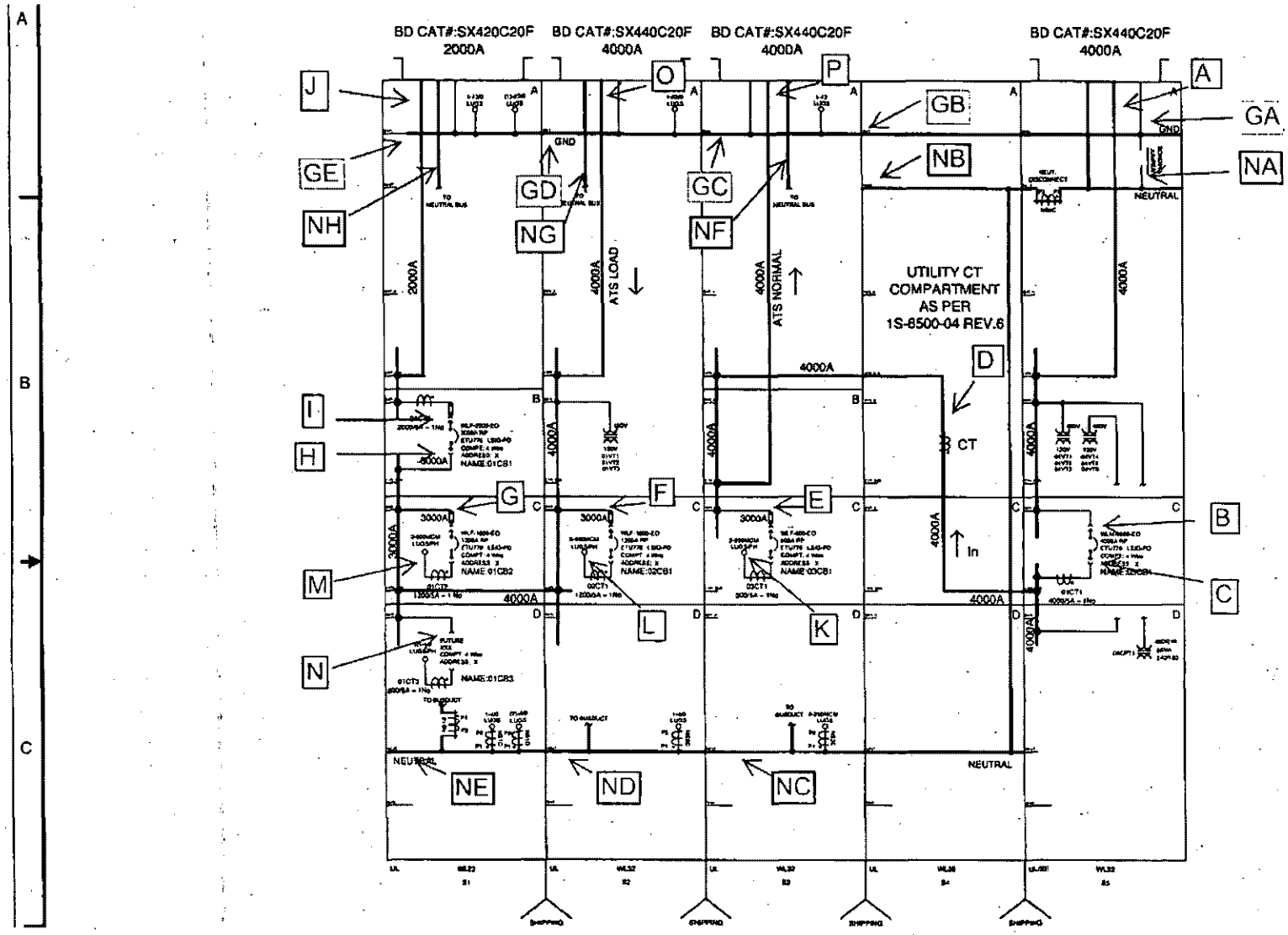
The test results obtained to date by Scott Testing are acceptable.

Enclosed with this report is a drawing detailing the proposed test points along with the test matrix. It is suggested that future tests be performed according to this procedure, at a test current of 100 amps.

Sincerely,

Russell Sorbello
Field Service Technician
Scott Testing, Inc.

Switchgear "SA"--Test Points



0000FFScott Testing, Inc

Date of Test	——>	4/7/2010	6/10/2010	11/19/2010	12/16/2010						
Tested By	——>	NC	STI	SIEMENS	STI						
Bus Temp F	——>	75	87		60						
Test Amps DC	——>		10	100	100						
Test Points	PHASE										
A-B	A				9						
	B				9						
	C				11						
A-C	A			35*							
	B			39*							
	C			36*							
A-D	A		160								
	B		140								
	C		153								
C-D	A	26	21		23						
	B	21	20		24						
	C	24	26		24						
C-E	A	37	66		70						
	B	37	42		61						
	C	39	40		68						
D-P	A			47							
	B			71							
	C			57							
E-F	A				90						
	B				96						
	C				99						
F-G	A		46		29						
	B		49		27						
	C		50		24						

Comments *On 11/19/2010 Siemens cleaned the main breaker contacts to lower the resistance readings.

0000FFScott Testing, Inc

Date of Test	→	4/7/2010	6/10/2010	11/19/2010	12/16/2010						
Tested By	→	NC	STI	SIEMENS	STI						
Bus Temp F	→	75	82		60						
Test Amps DC	→		10	100	100						
Test Points	PHASE										
F-H	A	30	40		23						
	B	32	56		24						
	C	36	61		24						
H-J	A										
	B										
	C										
I-J	A				4						
	B				7						
	C				6						
J-M	A			170							
	B			157							
	C			165							
O-L	A		86	87							
	B		91	110							
	C		95	112							
P-K	A			123							
	B			114							
	C			104							

Comments *On 11/19/2010 Siemens cleaned the main breaker contacts to lower the resistance readings.

0000FFScott Testing, Inc

Date of Test	→	4/7/2010	6/10/2010	11/19/2010	12/16/2010						
Tested By	→	NC	STI	SIEMENS	STI						
Bus Temp F	→	75	82		60						
Test Amps DC	→		10	100	100						
Test Points	PHASE										
NA-NB	N	20	38	51	40						
NA-NC	N	39	56		56						
NA-ND	N		62		78						
NA-NE	N		70	81	85						
NE-NH	N			38							
ND-NG	N			19							
NC-NF	N			18							
NB-NF	N			61							
ND-NE	N	34									
GA-GB	G		17		27						
GA-GC	G		38		39						
GA-GD	G		42		43						
GA-GE	G		44		50						

Comments *On 11/19/2010 Siemens cleaned the main breaker contacts to lower the resistance readings.

Don Sapanara

From: Josten, Harry [harry.josten@siemens.com]
Sent: Monday, February 21, 2011 3:42 PM
To: Russ Elliott; Schornstein, Doris V
Cc: Walkowicz, Ralph; Don Sapanara; Cito, Michael
Subject: RE: Newark Airport Recertification.

Russ,

I have reviewed the four reports. Each of the four reports gave measurements of bus resistance. Each report seemed to use different measurement points so it is not very useful to compare measurements from one report to measurements on another. However, on any given report the measurements were fairly consistent from one phase to another which is normal. None of the measurements appeared to be unusual.

I don't see anything unusual or alarming.

Regards,

Harry W. Josten
Switchgear Development Manager
Siemens SI BT LV
501 Fountain Parkway
Grand Prairie, Texas 75050
Phone: 817-652-6601
Email: harry.josten@siemens.com

-----Original Message-----
From: Russ Elliott [mailto:russ.elliott@smelectric.com]
Sent: Monday, February 21, 2011 7:15 AM
To: Josten, Harry; Schornstein, Doris V
Cc: Walkowicz, Ralph; Don Sapanara; Cito, Michael
Subject: RE: Newark Airport Recertification.

Harry,

I don't think that Doris forwarded the test reports to you. When you get a chance, can you review the 4 different reports and let us know what your conclusions are based on the resistive path readings?

Thank you,

Russ Elliott

S.M. Electric Co., Inc.

at Newark Airport

Phone: 1-973-622-1470

Fax: 1-973-622-1471

Cell: 1-732-904-2354

Don Sapanara

From: Russell Sorbello [rsorbello@scotttesting.com]
Sent: Friday, February 18, 2011 3:31 PM
To: Russ Elliott; rsorbello@scotttesting.com
Cc: Don Sapanara
Subject: RE: Resistive Path Readings

Russ,

Several things will cause this.

1) How much of a difference are we talking about. +/- 10% deviation is not that much. Tempurature differences can account for this.

2) The points where the test leads are attached will make a difference.

3) The amount of current each test set puts out will effect the results. ! Some sets put out 10A, some put out 100A or 200A.

Can you email me the results so I can review.

Original Message ---------- Russ,

Can you provide a briefing for me as to why there would be three different microOhm readings on the same bus from three different testing companies?

Thank you,

Russ Elliott

S.M. Electric Co., Inc.

at Newark Airport

Phone: 1-973-622-1470

Fax: 1-973-622-1471

Cell: 1-732-904-2354

Don Sapanara

From: NCETEST@aol.com

Sent: Thursday, February 24, 2011 12:28 PM

To: Don Sapanara

Subject: Re: Switchgear SA Resistive PAth Readings

Don,

Short Version,

Certain Megger's will read up to 4000 Meg ohms, Others will read up to 100,000 Meg ohms at 1 KVDC Test! All readings were acceptable from Scott NCE and Siemens!

Contact Resistance: The test were all done different but all yielded acceptable results. Values differed depending on length and what was included in test such as breakers etc. Everyone tested it different! The fact is that in comparison between phases and length's of bus and number of joints all readings compared!

In a message dated 2/24/2011 7:52:22 A.M. Eastern Standard Time, don.sapanara@smelectric.com writes:

> Bob,
>
> The full story of the switchgear at Newark Airport is much too long to explain in an e-mail. The short version is that we had NCE test Switchgear SA in April 2010. In an attempt to appease Port Authority, we had Scott Testing retest the bus in June of 2010. As part of the recertification and extended warranty process, Siemens tested the gear in December 2010. Since Siemens performed work on the gear, PA felt the prior 3rd Party testing performed by NCE was no longer valid and wanted 3rd Party testing performed again to validate Siemens' results. Scott Testing performed a fourth test on the gear in December 2010. The gear passed all four sets of tests.
>
> PA is now questioning why the four sets of test results don't match. The readings in the last test performed by Scott are higher than the initial test performed by NCE. PA has rejected the gear again because they feel it is trending towards failure. We have asked each of the companies involved to look at the test results and give us their professional opinion as to why the results have varied. Can you take a look at the attached results and let us know your findings? We will probably have to follow this up with a conference call with Port Authority.
>
> Thanks,
>
> Don Sapanara
>
> Project Manager

S.M. Electric Co., Inc.

601 New Brunswick Ave.

Rahway, NJ 07065

Main Office:

Phone 732-388-3540

Fax 732-388-3052

ConocoPhillips Site:

Phone 908-523-5508

Fax 908-523-5143

Thanks,

Bob Messina
North Central Electric Inc.
69 Midway Ave
Langhorne,PA 19047
Office 215.945.7632
Fax 215-945-6362
ncetest@aol.com
Web: ncetest.com
Cell 215-852-9432

Don Sapanara

From: Konen, Jeff [J.Konen@vrhcorp.com]
Sent: Wednesday, February 23, 2011 1:21 PM
To: Winkler, Eric; Al Fosbenner; Don Sapanara
Subject: Fw: SA

----- Original Message -----
From: Wallace, Michael <mcwallac@panynj.gov>
To: Konen, Jeff
Sent: Wed Feb 23 13:17:19 2011
Subject: RE: SA

Jeff - Below is an "unofficial" copy of URS' comments for your discussions with SM & Siemens. The resistance values are of the most concern.

Mike

We are in receipt of the testing report for the South Substation Switchgear SA, as submitted by Scott Testing, via the electrical contractor – SM Electric. It is enclosed for reference. Upon review, we offer the following comments and concerns:

1. As indicated on the "Equipment Comment and Deficiency Report", the CT for breaker DP-SA is incorrect. Contractor shall provide correct CT in accordance with the contract documents.
2. Regarding the "Switch Inspection Report" section, although the report's conclusion is that the results are acceptable, contractor shall provide explanation as to why some of the conducting path resistance values are almost double the values of the first test, performed by North Central Electric and submitted as VRH Submittal No 16335-149.

As an example, the "Conducting Path Resistance" from the main breaker (section 1) to section 3 is 70 microhms for Phase A, 61 microhms for Phase B and 68 microhms for Phase C; but, from the test report submitted by North Central Electric, the bus resistances were 37, 41 and 37.

Another example is the resistance values from section 4 to section 5, this report indicates values of 90 for Phase A, 96 for Phase B and 99 for Phase c, but the North Central Electric report indicated values of 30, 32 and 34.

Another example is the resistance values for the neutral buses. The report have values for section 1 to section 2 of 40 microhms ,and section 1 to section 3 of 56 microhms; but, from the North Central Electric report the values showed 20 and 39.

Attached is a copy of the North Central Electric Report for reference.
3. Regarding the "Low Voltage Circuit Breaker Report", the following make the following corrections/revisions:

- Sheet 1 of 5 – Main Breaker, the IC rating is 200KA, not 100KA.
- Sheet 2 of 5 – ATS Life Safety, the IC rating is 200KA, not 100KA.
- Sheet 2 of 5 – ATS Life Safety, correct the current values of the "long time" settings. The device has a 500A trip but the values indicated for the long time pick-up are 4000A.
- Sheet 2 of 5 – ATS Life Safety, correct the instantaneous set point and pick up to indicate "OFF" and "NA".
- Sheet 3 of 5 – DP-SA, correct the frame size to indicate 1600A and not 1200A.
- Sheet 3 of 5 – DP-SA, the IC rating is 200KA, not 100KA.
- Sheet 3 of 5 – DP-SA, explain why the results of the LT Delay are more than 4 times longer than the values from the North Central Electric tests. The report indicates values of 26.34; but, the North Central Electric report has values of 6.3.

- Sheet 3 of 5 – DP-SA, correct the instantaneous set point and pick up to indicate "OFF" and "NA".
- Sheet 4 of 5 – DP-SB, the IC rating is 200KA, not 100KA.
- Sheet 4 of 5 – DP-SB, correct the current values of the "long time" settings. The device has a 1200A trip but the values indicated for the long time pick-up are 500A.
- Sheet 4 of 5 – DP-SB, explain why the results of the LT Delay are more than 4 times longer than the values from the North Central Electric tests. The report indicates values of 23.16; but, the North Central Electric report has values of 5.8.
- Sheet 5 of 5 – P-MDP, the IC rating is 200KA, not 100KA.
- Sheet 5 of 5 – P-MDP, indicate the values of the contact resistance of each phase.
- Sheet 5 of 5 – P-MDP, change the value of the "Ground Fault Set Amps" from "D" to "900".

Based on the review comments above concerning the higher resistance values and the longer pick-up times, and considering the bus refurbishment of the switchgear by Siemens due to the bus discolorations, we are unable to accept the test report at this time. We request that information/explanations be provided by Siemens and/or Scott Testing addressing the issues above and the report be resubmitted.

-----Original Message-----
From: Konen, Jeff [mailto:J.Konen@vrhcorp.com]
Sent: Friday, February 18, 2011 4:42 PM
To: Wallace, Michael; Konen, Jeff
Subject: SA

Mike

Got your voice mail regarding SA, home sick today will be on it on Monday

NOTICE: THIS E-MAIL AND ANY ATTACHMENTS CONTAIN INFORMATION FROM THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY AND AFFILIATES. IF YOU BELIEVE YOU HAVE RECEIVED THIS E-MAIL IN ERROR, PLEASE NOTIFY THE SENDER IMMEDIATELY, PERMANENTLY DELETE THIS E-MAIL (ALONG WITH ANY ATTACHMENTS), AND DESTROY ANY PRINTOUTS.

Don Sapanara

From: Winkler, Eric [E.Winkler@vrhcorp.com]
Sent: Friday, February 18, 2011 2:04 PM
To: Don Sapanara; Russ Elliott; Al Fosbenner; Konen, Jeff
Subject: Fw: EWR 264.003 - Switch gear SA
Al, Please address immediately. Thank you Eric

From: Wallace, Michael <mcwallac@panynj.gov>
To: Winkler, Eric; Konen, Jeff
Cc: Nunez, Daniel <dnunez@panynj.gov>; Lochard, Daniel <dlochard@panynj.gov>; Hegarty, Brian <bhegarty@panynj.gov>
Sent: Fri Feb 18 14:00:32 2011
Subject: EWR 264.003 - Switchgear SA

Gents,

In meeting with URS and Facility staff today, their initial review of the 3rd Party Testing Report from Scott Testing for Switchgear SA indicates that the resistance has increased three-fold from the initial readings taken when Switchgear SA was first installed. Without additional information/explanation from Siemens and/or Scott Testing as to the root cause of this increase, the Testing report will be disapproved and the PA will not accept Switchgear SA because the resistance trending indicates a premature failure of this product.

Please speak to Siemens and Scott Testing and advise of everyone's earliest ability to meet and discuss. Next week would be preferable as to not continue to delay the South Substation work.

Michael C. Wallace, P.E. LEED AP

Senior Resident Engineer

Newark Liberty International Airport - CTA

(973) 622-0800 x 251(Building 125)

(973) 622-0172 FAX

(973) 390-5519 Cell

E-mail: mcwallac@panynj.gov

NOTICE: THIS E-MAIL AND ANY ATTACHMENTS CONTAIN INFORMATION FROM THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY AND AFFILIATES. IF YOU BELIEVE YOU HAVE RECEIVED THIS E-MAIL IN ERROR, PLEASE NOTIFY THE SENDER IMMEDIATELY, PERMANENTLY DELETE THIS E-MAIL (ALONG WITH ANY ATTACHMENTS), AND DESTROY ANY PRINTOUTS.

North Central Electric

69 Midway Avenue, Langhorne, Pa. 19047
Telephone: 215 - 945 - 7632

SWITCHGEAR TEST REPORT

Customer	SM Electric	**Date**	4-7-2010	**Page** 1	**Of** 1
Address	601 New Brunswick Ave Rahway, N.J.	**Project Number**	3610		
Owner	NY/NJ Port Authority	**Last Inspection Report**	ACCEPTANCE		
Address	Newark Liberty International Airport	**Last Inspection Date**	ACCEPTANCE		
Equipment Location	South Substation	**Air Temperature**	75 DEG. F		
Owner Identification	Switchgear SA	**Relative Humidity**	30%		

Nameplate Data Siemens / Switchboard Type WL / 480 / 277 3 Phase 4 wire / 4000 Amp / 5 Sections / 150 KA

Bus Resistance Section 1 - Section 2 A=26 B=21 C=24 N=20 Section 1 - Section 3 A=37 B=41 C=37 N=39

Section 4 - Section 5 A=30 B=32 C=35 N=34

All results are Micro Ohms.

Discoloring of bus was noticed but did not affect electrical connections or test results.

Electrical Tests Insulation Resistance Tested at 1000 V DC for 1 min.

A Phase to Ground (B&C&N Phase to ground) : 4000+ Meg Ohms

B Phase to Ground (A&C&N Phase to ground) : 4000+ Meg Ohms

C Phase to Ground (A&B&N Phase to ground) : 4000+ Meg Ohms

Neutral to Ground (A&B&C Phase to ground) : 4000+ Meg Ohms

General Notes Visual inspection for physical damage performed (ok).

Verified breaker sizes per contract drawings (ok).

Visual inspection for Insulation damage performed (ok).

All breakers manually and electricaly operated and exercised(see note below).

Verified proper "rack in rack out of breakers (ok. see note of main breaker).

Inspected mechanical indicating devices(ok).

Verified heater operation.

Verified meter operation.

Verified indicating lights (open Close Trip).

REMARKS Equipment used Fluke 1kv megger Model 1520 cal 9-09, Biddle Ductor model DLROCal 1-10 SN 49939 Doble 2250

Submitted By B. Poland **Equipment Used**

Scott Testing

1698 Fifth Street • Ewing, NJ • 08638 • Tel 609 882 2400 • Fax 609 882 5660

June 14, 2010

SM Electric Company, Inc.
601 New Brunswick Avenue
Rahway NJ 07065

Attention: Russ Elliott
Reference: Continuity testing and (1) LV Switchgear "SA" Newark Liberty Airport

STI Project #: S10-1157.1

Dear Mr. Elliott,

The services that you requested at the above referenced facility have been completed and two (2) copies of the report are enclosed for your reference and records.

All testing and maintenance procedures are in accordance with **NETA** (InterNational Electrical Testing Association) and manufacturer's specifications.

Please refer to the attached results for additional information.

We appreciate this opportunity to have been of service to you and look forward to supporting you with your future electrical testing and maintenance needs.

Please feel free to contact us if you have any questions or need anything additional.

Sincerely,

Mark Stanley
Field Service Technician
Scott Testing, Inc.

Scott Testing, Inc.

1698 Fifth Avenue Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric, Inc.	Date	6/10/2010 Page 1 Of 4
Customer Address	601 New Brunswick Ave., Rahway, NJ	Project Number	S10-1157.1
Owner	Newark Airport	Last Inspection Report	
Owner Address	Terminal B	Last Inspection Date	
Equipment Location	Terminal B Main Electrical Substation	Air Temperature	82 F
Owner Identification	Substation "SA"	Relative Humidity	74%

Nameplate Data

Manufacturer	Siemens	Design Voltage	600 VAC	System Voltage	480 VAC	BIL	
Serial #	* N/A	Rated Current	4000	Style		Age	10/08
Model	N/A	SC Withstand	150 K	Cat #		ID #	

Breakers 5 # Relays 0 # Meters 6 # Vert Sect 5 # Cubicles 6

Other Info *S.O. # 3001295712

Inspection Report

Breaker Operation	Not Applicable	Covers/Glass	Good	Annunciator	Not Applicable
Equipment Access	Good	Cell Condition	Good	Panel Meters	Not Applicable
Control Switches	Not Applicable	Hinged Doors	Good	Panel Lights	Not Applicable
Swgr Grounds	Good	Bus Supports	Good	Cables	Not Applicable
Paint Condition	Good	Space Heaters	Not Applicable	Shutters	Good
Connections	Good	Tracking Signs	None	Interlocks	Not Applicable
Control Wiring	Not Applicable	Cleanliness	Good	Insulation	Good
Control Relays	Not Applicable	Lubrication	Not Applicable	Test Stand	Not Applicable
"83" Transfer	Not Applicable	Ground Truck	Not Applicable	Maint Tools	Not Applicable

Other Inspections

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
Load of Main Sec. 1	Sec. 2 Metering	10	21	20	26
Load of Main Sec. 1	Sec. 3 ATS Life Safety	10	66	42	40
Line Side of ATS Em.	DP-SA through C.B.	10	86	91	95
Sec. 4	Sec. 5 P-MDP		40	56	61

REMARKS Line side of main bus duct not complete in ceiling feeding "SA".

Submitted By M. Stanley Equipment Used DLRO 302140

Scott Testing, Inc.

1698 Fifth Avenue Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric, Inc.	Date 6/10/2010	Page 2 Of 4
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.1
Owner	Newark Airport	Last Inspection Report	
Owner Address	Terminal B	Last Inspection Date	
Equipment Location	Terminal B Main Electrical Substation	Air Temperature	82 F
Owner Identification	Substation "SA"	Relative Humidity	74%

Nameplate Data

Manufacturer	Siemens	Design Voltage	600 VAC	System Voltage	480 VAC	BIL	
Serial #	* N/A	Rated Current	4000	Style		Age	10/08
Model	N/A	SC Withstand	150 K	Cat #		ID #	

Breakers 5 # Relays 0 # Meters 6 # Vert Sect 5 # Cubicles 6

Other Info *S.O. # 3001295712

Inspection Report

Breaker Operation	Not Applicable	Covers/Glass	Good	Annunciator	Not Applicable
Equipment Access	Good	Cell Condition	Good	Panel Meters	Not Applicable
Control Switches	Not Applicable	Hinged Doors	Good	Panel Lights	Not Applicable
Swgr Grounds	Good	Bus Supports	Good	Cables	Not Applicable
Paint Condition	Good	Space Heaters	Not Applicable	Shutters	Good
Connections		Tracking Signs	None	Interlocks	
Control Wiring	Not Applicable	Cleanliness	Good	Insulation	
Control Relays	Not Applicable	Lubrication	Not Applicable	Test Stand	
"83" Transfer	Not Applicable	Ground Truck	Not Applicable	Maint Tools	

Other Inspections

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
Sec. 4	Sec. 5 DP-SB	10	46	49	50
Line Side Main	Sec. 2	10	160	140	153

REMARKS Through main breaker to Sec. 2. A phase: 160 B phase: 140 C phase: 153.

Submitted By M. Stanley Equipment Used DLRO 302140

Scott Testing, Inc.

1698 Fifth Avenue Ewing, New Jersey 08638
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STI-r1

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric, Inc.	Date	6/10/2010 Page 3 Of 4
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.1
Owner	Newark Airport	Last Inspection Report	
Owner Address	Terminal B	Last Inspection Date	
Equipment Location	Terminal B Main Electrical Substation	Air Temperature	82 F
Owner Identification	Substation "SA" (Ground Bus)	Relative Humidity	74%

Nameplate Data

Manufacturer	Siemens	Design Voltage	600 VAC	System Voltage	480 VAC	BIL	
Serial #	* N/A	Rated Current	4000	Style		Age	10/08
Model	N/A	SC Withstand	150 K	Cat #		ID #	

# Breakers	# Relays	# Meters	# Vert Sect	# Cubicles
5	0	6	5	6

Other Info *S.O. # 3001295712

Inspection Report

Breaker Operation	Not Applicable	Covers/Glass	Good	Annunciator	Not Applicable
Equipment Access	Good	Cell Condition	Good	Panel Meters	Not Applicable
Control Switches	Not Applicable	Hinged Doors	Good	Panel Lights	Not Applicable
Swgr Grounds	Good	Bus Supports	Good	Cables	Not Applicable
Paint Condition	Good	Space Heaters	Not Applicable	Shutters	Good
Connections		Tracking Signs	None	Interlocks	
Control Wiring	Not Applicable	Cleanliness	Good	Insulation	
Control Relays	Not Applicable	Lubrication	Not Applicable	Test Stand	
"83" Transfer	Not Applicable	Ground Truck	Not Applicable	Maint Tools	

Other Inspections

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
Sec. 1 Ground Bus	Sec. 2	10	17 Neutral		
	Sec. 3	10	38 Neutral		
	Sec. 4	10	42 Neutral		
	Sec. 5	10	44 Neutral		

REMARKS Test results are acceptable.

Submitted By M. Stanley

Equipment Used DLRO 302140

Scott Testing, Inc.

1698 Fifth Avenue Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

STI-01

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric, Inc.	Date	6/10/2010 Page 4 Of 4
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.1
Owner	Newark Airport	Last Inspection Report	
Owner Address	Terminal B	Last Inspection Date	
Equipment Location	Terminal B Main Electrical Substation	Air Temperature	82 F
Owner Identification	Substation "SA" (Neutral Bus)	Relative Humidity	74%

Nameplate Data

Manufacturer	Siemens	Design Voltage	600 VAC	System Voltage	480 VAC	BIL	
Serial #	* N/A	Rated Current	4000	Style		Age	10/08
Model	N/A	SC Withstand	150 K	Cat #		ID #	

Breakers 5 # Relays 0 # Meters 6 # Vert Sect 5 # Cubicles 6

Other Info *S.O. # 3001295712

Inspection Report

Breaker Operation	Not Applicable	Covers/Glass	Good	Annunciator	Not Applicable
Equipment Access	Good	Cell Condition	Good	Panel Meters	Not Applicable
Control Switches	Not Applicable	Hinged Doors	Good	Panel Lights	Not Applicable
Swgr Grounds	Good	Bus Supports	Good	Cables	Not Applicable
Paint Condition	Good	Space Heaters	Not Applicable	Shutters	Not Applicable
Connections	Good	Tracking Signs	None	Interlocks	Not Applicable
Control Wiring	Not Applicable	Cleanliness	Good	Insulation	Good
Control Relays	Not Applicable	Lubrication	Not Applicable	Test Stand	Not Applicable
"83" Transfer	Not Applicable	Ground Truck	Not Applicable	Maint Tools	Not Applicable

Other Inspections

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
Sec. 1 Neutral Bus	Sec. 2	10	38 Neutral		
	Sec. 3	10	56 Neutral		
	Sec. 4	10	62 Neutral		
	Sec. 5	10	70 Neutral		

REMARKS Test results are acceptable.

Submitted By M. Stanley **Equipment Used** DLRO 302140

S

Siemens Industrial Services

A business of
Siemens Energy and Automation, Inc.

SWITCHGEAR TEST REPORT

Customer:	SM Electric	Location:	Newark Airport		
Substation:	SA	Switchgear Designation:	SA	Unique ID:	

Nameplate Data

Manufacturer:	Siemens	Type:	3 phase, 4 wire
Serial No.:	SO# 3001295712	Current Rating:	4000 amp
Voltage Rating:	480 volt	Bus Fault Rating:	150 ka

Inspection

Cell Heaters:	B	Key Interlocks:	NA
Meter & Control Switches:	B	Pilot Light:	B
Wiring:	B	Terminal Blocks:	B
Fuse & Fuse Blocks:	B	Stationary Contact Bottles:	NA
Ground Bus:	B	Tracking / Corona:	B
Bus Supports:	B	Joint Insulation:	B
Terminations:	B	General Hardware:	B
Paint – Inside & Outside:	B	PT / CPT Compartment	B

CODE LEGEND
A= Like New Condition
B= Good Condition
C= Poor Condition Requires Correction
D= Corrections Made
E= Unacceptable Condition Do Not Use!
NA= Not Applicable

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean / Dirty	clean
Wet / Damp / Dry	dry
Temp (Degree C)	
Relative Humidity (%)	

Electrical Tests

Insulation Resistance

Readings in Mega-Ohms @ 1k VDC

A-B	100 Gig ohms	B-C	100 Gig ohms	C-A	100 Gig ohms
A-G	100 Gig ohms	B-G	100 Gig ohms	C-G	100 Gig ohms

Ductor Test

Readings in micro-ohms @ 100amps

Section 1	Section 2	Section 3	Section 4	Section 5	Section 1- 5
A-A =170	A-A =87	A-A =123	A-A =47	A-A =35	
B-B =157	B-B =110	B-B =114	B-B =71	B-B =39	
C-C =165	C-C =112	C-C =104	C-C =57	C-C =36	
N-N =38	N-N =19	N-N =18	N-N =61	N-N =51	N-N =81

COMMENTS:

Section # 1 reading : From the bus duct through the splice plate connections and two breakers to the load side of a feeder breaker.
Section #1 neutral reading : From the bus duct through the splice plate connections to the lower rear horizontal neutral bus.
Section #2 readings : From the bus duct through the splice plate connections and one breaker to the load side of a feeder breaker.
Section #2 neutral reading : From the bus duct through the splice plate connections to the lower rear horizontal neutral bus.
Section #3 readings : From the bus duct through the splice plate connections and one breaker to the load side of a feeder breaker.
Section #3 neutral reading : From the bus duct through the splice plate connections to the lower rear horizontal neutral bus.
Section #4 readings : From the load side on Main breaker in section #4 to the bus duct connection in section #3.
Section #4 neutral reading : From the horizontal neutral bus in section #4 to the Bus duct neutral connection in section #3.
Section #5 readings : From the bus duct through the spice plate and one breaker to the horizontal bus in section #4.
(Readings were lowered on this test by cleaning the breaker's main contacts)
Section #5 neutral reading : From the bus duct connection to the horizontal rear neutral bus in section #4.

Section #1-#5 neutral reading: From the rear horizontal neutral bus in section #1 to the bus duct neutral connection in section #5.

Spice plates for bus duct connections were re-plated and are in good condition.

Satisfactory for Continued Service	Yes	Requires Repair	No	Repairs Made During Maintenance			
Job No:	5200-	Tested By:	Ralph Walkowicz	Date Tested	11/19/10	ID #	

182 Forbes Road
Braintree, Ma. 02184

Scott Testing

1698 Fifth Street • Ewing, NJ • 08638 • Tel 609 882 2400 • Fax 609 882 5660

December 16, 2010

SM Electric Company, Inc.
601 New Brunswick Ave.
Rahway, NJ 07065

Attention: Russ Elliot

Reference: Acceptance testing of Switchgear SA and associated equipment.

STI Project #: S10-1157.2

Dear Mr. Elliot,

The services that you requested at the above referenced facility have been completed and two (2) copies of the report are enclosed for your reference and records. All testing was performed to conform to NETA and manufacturer standards and procedures.

The equipment tested satisfactory. Please see our equipment deficiency form for any repairs or corrections that were made during our testing.

We appreciate this opportunity to have been of service to you and look forward to supporting you with your future electrical testing and maintenance needs.

Please feel free to contact us if you have any questions or need anything additional.

Sincerely,
Kevin Cubberley
Field Service Technician
Scott Testing, Inc.

Scott Testing

1698 Fifth Street • Ewing, NJ • 08638 • Tel 609 882 2400 • Fax 609 882 5660

Test Procedures

Switchgear Inspection
The front and back compartments of the switchgear enclosure were opened, cleaned and inspected. Proper shutter operation was verified in all compartments. Primary receivers were cleaned and lubricated. Cable support, spacing and tightness of connections were verified. Proper heater operation was verified. No visible signs of tracking were observed. Control switches, instrumentation and indicator lights were checked for proper operation. The bus was megger tested at 1 kV DC. Bus connection resistance was measured using a 100 Amp ductor.

Instrumentation Transformers (Current and Voltage Type)
The access covers were removed and the enclosures were cleaned, and inspected as needed. The outer casings were inspected for signs of tracking or damage. The spacers, insulators and supports were checked. Nameplate data was recorded. The primary and secondary windings were isolated for testing. Tests performed included polarity checks, turns ratio, and insulation integrity. Cable and Bus connections were re-attached and tightened to correct torque levels

Meters
The meters were tested at all major scale values. Tests were conducted using field standards whose calibration is traceable to the United States Institute of Standards and Technology (NIST). All results were found to be within the meters designed accuracy. The meter leads were checked for tightness.

Low Voltage Breakers
Each breaker was removed from the cubicle, cleaned and inspected for damage. The mechanism was cleaned and lubricated as needed. The main and arcing contacts were cleaned and inspected for signs of pitting, correct alignment and closing sequence. Contact resistance values were measured. The protective trip device operation was verified by primary injection. Insulation integrity was verified using a 1kV DC megger. The breaker cubicle was cleaned along with the line and load side stabs. New grease was applied to both the cubicle and breaker primary stabs and fingers. All breakers were racked in and out to verify correct racking operation.

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
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EED-14

EQUIPMENT COMMENTS AND DEFICIENCY REPORT

Customer	SM Electric	**Date** 12/15/2010	**Page** 1 **Of** 1
Customer Address	601 Newq Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Expansion	**Air Temperature**	65F
Owner Identification	Switchgear SA	**Relative Humidity**	60%

1	Ground fault plug for Breaker ATS-Life Safety was found to be defective, causing breaker to lose all protective functions. Replaced with spare plug and re-tested.	*Replaced With Spare Unit*
2	CT was found to be incorrect for Breaker DP-SA 9350 power meter. Print spec is 1200:5A. As found was 3200:5A.	*Recommend Engineer Review*
3	CT ratio for DP-SA 9350 Power meter was changed to match the installed 3200:5A CTt as per customer direction.	*Repaired As Left*

Submitted By	Kevin Cubberley	**Title**	Field Technician
		Date	12/15/2010
Reviewed By	Russell Sorbello	**Title**	Project Manager
		Date	12/16/2010

Switch Inspection Report

SM Electric

S10-1157.2

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

STI-99

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric	**Date** 12/16/2010	**Page** 1 **Of** 4
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B	**Air Temperature**	60F
Owner Identification	Switchgear SA	**Relative Humidity**	55%

Nameplate Data

Manufacturer	Siemens	**Design Voltage**	480VAC	**System Voltage**	480/277	**BIL**	NA
Serial #	NA	**Rated Current**	4000A	**Style**	WL	**Age**	2009
Model	NA	**SC Withstand**	150KA	**Cat #**	NA	**ID #**	SA

 # Breakers 5 **# Relays** 0 **# Meters** 6 **# Vert Sect** 5 **# Cubicles** 16

Other Info CONTAINS 1 FUTURE CELL

Inspection Report

Breaker Operation	Good	**Covers/Glass**	Good	**Annunciator**	Not Applicable
Equipment Access	Good	**Cell Condition**	Good	**Panel Meters**	Good
Control Switches	Good	**Hinged Doors**	Good	**Panel Lights**	Good
Swgr Grounds	Good	**Bus Supports**	Good	**Cables**	Good
Paint Condition	Good	**Space Heaters**	Good	**Shutters**	Good
Connections	Good	**Tracking Signs**	Not Applicable	**Interlocks**	Not Applicable
Control Wiring	Good	**Cleanliness**	Good	**Insulation**	Good
Control Relays	Good	**Lubrication**	Good	**Test Stand**	Not Applicable
"83" Transfer	Not Applicable	**Ground Truck**	Not Applicable	**Maint Tools**	Not Applicable

Other Inspections CONTROL POWER WAS APPLIED AND ALL FUNCTIONS VERIFIED.

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd
SERVICE ENTRANCE BUS	GROUND W/ 2 OPPOSING PH	1.0	4000	4000	4000
LOAD SIDE MAIN BREAKER B	GROUND W/ 2 OPPOSING PH	1.0	4000	4000	4000
ATS LIFE SAFETY BUSS DUC	GROUND W/ 2 OPPOSING PH	1.0	2400	2000	2000
ATS LOAD MAIN BUSS	GROUND W/ 2 OPPOSING PH	1.0	1500	1450	1485

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
Service entrance bus conn.	Main Breaker line side stabs	100	9	9	11
Main breaker load side stabs	Sec. 2 Metering	100	23	24	24
Main breaker load side stabs	Sec. 3 ATS/Life Safety line side	100	70	61	68
ATS/ Life Safety Line side stabs	DP-SA Line Side Stabs (inc. duc	100	90	96	99

REMARKS Cont. on next page.All results are acceptable.

Submitted By K.CUBBERLEY/M.STANLEY **Equipment Used** 100 AMP DUCTOR, FLUKE 1KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric	Date	12/16/2010 Page 2 Of 4
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2
Owner	Port Authority of New York and New Jersey	Last Inspection Report	Acceptance
Owner Address	Newark Airport, Newark, NJ	Last Inspection Date	Acceptance
Equipment Location	Terminal B	Air Temperature	60F
Owner Identification	Switchgear SA	Relative Humidity	55%

Nameplate Data

Manufacturer	Siemens	Design Voltage	480VAC	System Voltage	480/277	BIL	NA
Serial #	NA	Rated Current	4000A	Style	WL	Age	2009
Model	NA	SC Withstand	150KA	Cat #	NA	ID #	SA
# Breakers	5	# Relays	0	# Meters	6	# Vert Sect	5	# Cubicles	16

Other Info: CONTAINS 1 FUTURE CELL

Inspection Report

Breaker Operation	Good	Covers/Glass	Good	Annunciator	Not Applicable
Equipment Access	Good	Cell Condition	Good	Panel Meters	Good
Control Switches	Good	Hinged Doors	Good	Panel Lights	Good
Swgr Grounds	Good	Bus Supports	Good	Cables	Good
Paint Condition	Good	Space Heaters	Good	Shutters	Good
Connections	Good	Tracking Signs	Not Applicable	Interlocks	Not Applicable
Control Wiring	Good	Cleanliness	Good	Insulation	Good
Control Relays	Good	Lubrication	Good	Test Stand	Not Applicable
"83" Transfer	Not Applicable	Ground Truck	Not Applicable	Maint Tools	Not Applicable

Other Inspections: CONTROL POWER WAS APPLIED AND ALL FUNCTIONS VERIFIED.

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd
See previous page.					

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
DP-SA Line side stabs	DP-SB line side Stabs	100	29	27	24
DP-SA Line side stabs	P-MDP line side stabs	100	23	24	24
P-MDP load side stabs	P-MDP bus duct connections	100	4	7	6

REMARKS: Cont. on next page. All results are acceptable.

Submitted By: K.CUBBERLEY/M.STANLEY

Equipment Used: 100 AMP DUCTOR, FLUKE 1KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
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SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric	Date 12/16/2010	Page 3 Of 4
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2
Owner	Port Authority of New York and New Jersey	Last Inspection Report	Acceptance
Owner Address	Newark Airport, Newark, NJ	Last Inspection Date	Acceptance
Equipment Location	Terminal B	Air Temperature	60F
Owner Identification	Switchgear SA	Relative Humidity	55%

Nameplate Data

Manufacturer	Siemens	Design Voltage	480VAC	System Voltage	480/277	BIL	NA
Serial #	NA	Rated Current	4000A	Style	WL	Age	2009
Model	NA	SC Withstand	150KA	Cat #	NA	ID #	SA

Breakers 5 # Relays 0 # Meters 6 # Vert Sect 5 # Cubicles 16

Other Info CONTAINS 1 FUTURE CELL

Inspection Report

Breaker Operation	Good	Covers/Glass	Good	Annunciator	Not Applicable
Equipment Access	Good	Cell Condition	Good	Panel Meters	Good
Control Switches	Good	Hinged Doors	Good	Panel Lights	Good
Swgr Grounds	Good	Bus Supports	Good	Cables	Good
Paint Condition	Good	Space Heaters	Good	Shutters	Good
Connections	Good	Tracking Signs	Not Applicable	Interlocks	Not Applicable
Control Wiring	Good	Cleanliness	Good	Insulation	Good
Control Relays	Good	Lubrication	Good	Test Stand	Not Applicable
"83" Transfer	Not Applicable	Ground Truck	Not Applicable	Maint Tools	Not Applicable

Other Inspections CONTROL POWER WAS APPLIED AND ALL FUNCTIONS VERIFIED.

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd
See previous page.					

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
SEC 1 GROUND BUS	SEC 2 GROUND BUS	100	27		
SEC 1 GROUND BUS	SEC 3 GROUND BUS	100	39		
SEC 1 GROUND BUS	SEC 4 GROUND BUS	100	43		
SEC 1 GROUND BUS	SEC 5 GROUND BUS	100	50		

REMARKS Cont. on next page. All results are acceptable.

Submitted By K.CUBBERLEY/M.STANLEY Equipment Used 100 AMP DUCTOR, FLUKE 1KVDC MEGGER

Scott Testing, Inc.

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SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric	Date	12/16/2010 Page 4 Of 4
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2
Owner	Port Authority of New York and New Jersey	Last Inspection Report	Acceptance
Owner Address	Newark Airport, Newark, NJ	Last Inspection Date	Acceptance
Equipment Location	Terminal B	Air Temperature	60F
Owner Identification	Switchgear SA	Relative Humidity	55%

Nameplate Data

Manufacturer	Siemens	Design Voltage	480VAC	System Voltage	480/277	BIL	NA
Serial #	NA	Rated Current	4000A	Style	WL	Age	2009
Model	NA	SC Withstand	150KA	Cat #	NA	ID #	SA

# Breakers	# Relays	# Meters	# Vert Sect	# Cubicles
5	0	6	5	16

Other Info: CONTAINS 1 FUTURE CELL

Inspection Report

Breaker Operation	Good	Covers/Glass	Good	Annunciator	Not Applicable
Equipment Access	Good	Cell Condition	Good	Panel Meters	Good
Control Switches	Good	Hinged Doors	Good	Panel Lights	Good
Swgr Grounds	Good	Bus Supports	Good	Cables	Good
Paint Condition	Good	Space Heaters	Good	Shutters	Good
Connections	Good	Tracking Signs	Not Applicable	Interlocks	Not Applicable
Control Wiring	Good	Cleanliness	Good	Insulation	Good
Control Relays	Good	Lubrication	Good	Test Stand	Not Applicable
"83" Transfer	Not Applicable	Ground Truck	Not Applicable	Maint Tools	Not Applicable

Other Inspections: CONTROL POWER WAS APPLIED AND ALL FUNCTIONS VERIFIED.

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd
See previous page.					

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
SEC 1 NEUTRAL BUS	SEC 2 NEUTRAL BUS	100	40		
SEC 1 NEUTRAL BUS	SEC 3 NEUTRAL BUS	100	56		
SEC 1 NEUTRAL BUS	SEC 4 NEUTRAL BUS	100	78		
SEC 1 NEUTRAL BUS	SEC 5 NEUTRAL BUS	100	85		

REMARKS: Cont. on next page. All results are acceptable.

Submitted By: K.CUBBERLEY/M.STANLEY

Equipment Used: 100 AMP DUCTOR, FLUKE 1KVDC MEGGER

Low Voltage Circuit Breaker Report

SM Electric
S10-1157.2

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

LVCB-r4

LOW VOLTAGE CIRCUIT BREAKER REPORT

Customer	SM Electric	Date	12/13/2010	Page 2	Of 5
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2		
Owner	Newark Airport	Last Inspection Report	Acceptance		
Owner Address	Newark, NJ	Last Inspection Date	Acceptance		
Equipment Location	Terminal B Switchgear SA	Air Temperature	50F		
Owner Identification	ATS LIFE SAFETY	Relative Humidity	75%		

Nameplate Data		Trip Unit Data		Trip Unit Range		Inspection	
Bkr Mfg	Siemens	Trip Unit Mfg	Siemens	LT PU	0.4-1.0 x Ir	Contacts	Good
Bkr Type	WLF2A380	Type	ETU776	LTD Band	2-30 sec @ 6 x Ir	Stabs	Good
Frame Size	800A	Rating	500A	ST PU	1.25xIn - 0.8x IC	Cubicle	Good
Voltage	635VAC MAX	Trip Unit S/N	NA	STD Band	0.08-4 sec, OFF	Arc Chute	Good
IC Rating	100KA	Cat Number	NA	GF PU	A-E (400-1200A)	Operation	Good
Bkr S/N	4001281001000	Curve	NA	GFD Band	0.1-0.5 SEC	Mechanism	Good
Instr Bk	CBIM02000-0204	Plug Rating	500A	Instant	NA	Heaters	Not Applicable
Other	NA	Sensor CTR	NA	Other	NA	Other	Not Applicable

Long Time (Note: All trip time in seconds

LT PU Set @ 1x In
LT Set Amps 500
LT PU Amps 500
LT Delay @ 300 %= 1500 Amps
I^2T Out x In LT Delay Set 2.0

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
4000	4000	4000	4000	4000	4000
4000	4000	4000	4000	4000	4000
5.929	5.929	5.929	5.929	5.929	5.929

LT Curve Range

Short Time (Note: All trip time in seconds

ST Set Amps 6x
ST PU Amps 3000
ST Delay @ 150 %= 4500 Amps
I^2T Out x In ST Delay Set 0.1

A	B	C	A	B	C
3000	3000	3000	3000	3000	3000
3000	3000	3000	3000	3000	3000
0.144	0.144	0.144	0.144	0.144	0.144

ST Curve Range

Ground Fault (Note: All trip time in seconds

GF Set Amps B
GF PU Amps 300
GF Delay @ 150 %= 450 Amps
I^2T Out x In GF Delay Set 0.2

A	B	C	A	B	C
300	300	300	300	300	300
300	300	300	300	300	300
0.249	0.236	0.244	0.249	0.236	0.244

GF Curve Range

Instantaneous (Note: All trip time in seconds

Inst Set Amps 200KA
Inst PU Amps 200KA
Inst Delay @ NA %= NA Amps

A	B	C	A	B	C
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Contact Resistance (Results in microhms)

A Phase 28
B Phase 34
C Phase 29

Insulation Resistance (results in megohms) Test Value: 1KVDC

A Phase to B/C/ Gnd 4000
B Phase to A/C/ Gnd 4000
C Phase to A/B/ Gnd 4000

A Phase (Line to Load) 4000
B Phase (Line to Load) 4000
C Phase (Line to Load) 4000

REMARKS BREAKER TESTED SATISFACTORY. FUSE INFO: FARRAZ SHAWMUT. CLASS L. CAT # A4BY3000-SEA-3. 3000A. 200KA IC. FUSE RES: A:8 B:9 C:12. Neutral CT circuit and trip verified by primary current injection.

Submitted By K.CUBBERLEY/ M. STANLEY **Equipment Used** 302266,302146, FLUKE 1KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

LVCB-r4

LOW VOLTAGE CIRCUIT BREAKER REPORT

Customer	SM Electric	Date	12/13/2010 Page 3 Of 5
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2
Owner	Newark Airport	Last Inspection Report	Acceptance
Owner Address	Newark, NJ	Last Inspection Date	Acceptance
Equipment Location	Terminal B Switchgear SA	Air Temperature	50F
Owner Identification	DP-SA	Relative Humidity	75%

Nameplate Data		Trip Unit Data		Trip Unit Range		Inspection	
Bkr Mfg	Siemens	Trip Unit Mfg	Siemens	LT PU	0.4-1.0 x Ir	Contacts	Good
Bkr Type	WLF2A316	Type	ETU776	LTD Band	2-30 sec @ 6 x Ir	Stabs	Good
Frame Size	1200A	Rating	1200A	ST PU	1.25xIn - 0.8x IC	Cubicle	Good
Voltage	635VAC MAX	Trip Unit S/N	NA	STD Band	0.08-4 sec, OFF	Arc Chute	Good
IC Rating	100KA	Cat Number	NA	GF PU	A-E (400-1200A)	Operation	Good
Bkr S/N	4001280930037	Curve	NA	GFD Band	0.1-0.5 SEC	Mechanism	Good
Instr Bk	CBIM02000-0204	Plug Rating	1200A	Instant	NA	Heaters	Not Applicable
Other	NA	Sensor CTR	NA	Other	NA	Other	Not Applicable

Long Time (Note: All trip time in seconds

LT PU Set @ 1x In
LT Set Amps 1200
LT PU Amps 1200
LT Delay @ 300 %= 3600 Amps
I^2T Out In X LT Delay Set 2.0

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
1200	1200	1200	1200	1200	1200
1200	1200	1200	1200	1200	1200
26.34	26.43	25.99	26.34	26.43	25.99

LT Curve Range

Short Time (Note: All trip time in seconds

ST Set Amps 4X
ST PU Amps 4800
ST Delay @ 150 %= 7200 Amps
I^2T Out x In ST Delay Set 0.1

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
4800	4800	4800	4800	4800	4800
4800	4800	4800	4800	4800	4800
0.144	0.144	0.144	0.144	0.144	0.144

ST Curve Range

Ground Fault (Note: All trip time in seconds

GF Set Amps D
GF PU Amps 900
GF Delay @ 150 %= 1350 Amps
I^2T Out x In GF Delay Set 0.2

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
900	900	900	900	900	900
900	900	900	900	900	900
0.342	0.342	0.342	0.342	0.342	0.342

GF Curve Range

Instantaneous (Note: All trip time in seconds

Inst Set Amps 200KA
Inst PU Amps 200KA
Inst Delay @ NA %= NA Amps

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Contact Resistance (Results in microhms)

A Phase 28
B Phase 34
C Phase 29

Insulation Resistance (results in megohms) Test Value: 1KVDC

A Phase to B/C/ Gnd 4000
B Phase to A/C/ Gnd 4000
C Phase to A/B/ Gnd 4000
A Phase (Line to Load) 4000
B Phase (Line to Load) 4000
C Phase (Line to Load) 4000

REMARKS BREAKER TESTED SATISFACTORY. FUSE INFO: FARRAZ SHAWMUT. CLASS L. CAT # A4BY3000-SEA-3. 3000A. 200KA IC. FUSE RES: A:8 B:9 C:12. Ground Fault plug found to be faulty. Replaced with spare unit and re-tested. Neutral CT circuit and trip verified by primary current injection.

Submitted By K.CUBBERLEY/ M. STANLEY **Equipment Used** 302266,302146, FLUKE 1KVDC MEGGER

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LVCB-44

LOW VOLTAGE CIRCUIT BREAKER REPORT

Customer	SM Electric	Date	12/13/2010	Page 4	Of 5
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2		
Owner	Newark Airport	Last Inspection Report	Acceptance		
Owner Address	Newark, NJ	Last Inspection Date	Acceptance		
Equipment Location	Terminal B Switchgear SA	Air Temperature	50F		
Owner Identification	DP-SB	Relative Humidity	75%		

Nameplate Data		Trip Unit Data		Trip Unit Range		Inspection	
Bkr Mfg	Siemens	Trip Unit Mfg	Siemens	LT PU	0.4-1.0 x Ir	Contacts	Good
Bkr Type	WLM3A340	Type	ETU776	LTD Band	2-30 sec @ 6 x Ir	Stabs	Good
Frame Size	1600A	Rating	1200A	ST PU	1.25xIn - 0.8x IC	Cubicle	Good
Voltage	635VAC MAX	Trip Unit S/N	NA	STD Band	0.08-4 sec, OFF	Arc Chute	Good
IC Rating	100KA	Cat Number	NA	GF PU	A-E (100A-1200A)	Operation	Good
Bkr S/N	4001280930032	Curve	NA	GFD Band	0.1-0.5 SEC	Mechanism	Good
Instr Bk	CBIM02000-0204	Plug Rating	1200A	Instant	NA	Heaters	Not Applicable
Other	NA	Sensor CTR	NA	Other	NA	Other	Not Applicable

Long Time (Note: All trip time in seconds

LT PU Set @ 1x In
LT Set Amps 1200
LT PU Amps 1200
LT Delay @ 300 %= 3600 Amps
I^2T Out In x LT Delay Set 2.0

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
500	500	500	500	500	500
500	500	500	500	500	500
23.16	24.13	22.19	23.16	24.13	22.19

LT Curve Range

Short Time (Note: All trip time in seconds

ST Set Amps 4X
ST PU Amps 4800
ST Delay @ 150 %= 6200 Amps
I^2T Out x In ST Delay Set 0.1

A	B	C	A	B	C
4800	4800	4800	4800	4800	4800
4800	4800	4800	4800	4800	4800
0.144	0.143	0.140	0.144	0.143	0.140

ST Curve Range

Ground Fault (Note: All trip time in seconds

GF Set Amps D
GF PU Amps 900
GF Delay @ 150 %= 1350 Amps
I^2T Out x In GF Delay Set 0.2

A	B	C	A	B	C
900	900	900	900	900	900
900	900	900	900	900	900
0.246	0.246	0.246	0.246	0.246	0.246

GF Curve Range

Instantaneous (Note: All trip time in seconds

Inst Set Amps OFF
Inst PU Amps OFF
Inst Delay @ NA %= NA Amps

A	B	C	A	B	C
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Contact Resistance *(Results in microhms)*

A Phase 43
B Phase 48
C Phase 49

Insulation Resistance *(results in megohms)* Test Value: 1KVDC

A Phase to B/C/ Gnd 4000
B Phase to A/C/ Gnd 4000
C Phase to A/B/ Gnd 4000

A Phase (Line to Load) 4000
B Phase (Line to Load) 4000
C Phase (Line to Load) 4000

REMARKS BREAKER TESTED SATISFACTORY. FUSE INFO: FARRAZ SHAWMUT. CLASS L. CAT # A4BY3000-SEA-3. 3000A. 200KA IC. FUSE RES IN MICROHMS: A: 28 B: 39 C: 32 Neutral CT circuit and trip verified by primary current injection.

Submitted By K.CUBBERLEY/ M. STANLEY **Equipment Used** 302266, 302146, FLUKE 1KVDC MEGGER

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LVCB-r4

LOW VOLTAGE CIRCUIT BREAKER REPORT

Customer	SM Electric	Date	12/13/2010	Page 1	Of 5
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2		
Owner	Newark Airport	Last Inspection Report	Acceptance		
Owner Address	Newark, NJ	Last Inspection Date	Acceptance		
Equipment Location	Terminal B Switchgear SA	Air Temperature	50F		
Owner Identification	Main Breaker	Relative Humidity	75%		

Nameplate Data		Trip Unit Data		Trip Unit Range		Inspection	
Bkr Mfg	Siemens	Trip Unit Mfg	Siemens	LT PU	0.4-1.0 x Ir	Contacts	Good
Bkr Type	WLM3A340	Type	ETU776	LTD Band	2-30 sec @ 6 x Ir	Stabs	Good
Frame Size	4000A	Rating	4000A	ST PU	1.25xIn - 0.8x IC	Cubicle	Good
Voltage	635VAC MAX	Trip Unit S/N	NA	STD Band	0.08-4 sec, OFF	Arc Chute	Good
IC Rating	100KA	Cat Number	NA	GF PU	A-E (400-1200A)	Operation	Good
Bkr S/N	4001281007016	Curve	NA	GFD Band	0.1-0.5 SEC	Mechanism	Good
Instr Bk	CBIM02000-0204	Plug Rating	4000A	Instant	NA	Heaters	Not Applicable
Other	NA	Sensor CTR	NA	Other	NA	Other	Not Applicable

Long Time (Note: All trip time in seconds

LT PU Set @ 1x In
LT Set Amps 4000
LT PU Amps 4000
LT Delay @ 300 %= 12000 Amps
I^2T Out x In LT Delay Set 2.0

	AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
LT PU Set	4000	4000	4000	4000	4000	4000
LT Set Amps	4000	4000	4000	4000	4000	4000
LT Delay	4.865	4.732	4.764	4.865	4.732	4.764

LT Curve Range

Short Time (Note: All trip time in seconds

ST Set Amps 2
ST PU Amps 8000
ST Delay @ 150 %= 12000 Amps
I^2T Out x In ST Delay Set 0.3

	A	B	C	A	B	C
ST Set Amps	8000	8000	8000	8000	8000	8000
ST PU Amps	8000	8000	8000	8000	8000	8000
ST Delay	0.348	0.346	0.348	0.348	0.346	0.348

ST Curve Range

Ground Fault (Note: All trip time in seconds

GF Set Amps E
GF PU Amps 1200
GF Delay @ 150 %= 1800 Amps
I^2T Out x In GF Delay Set 0.3

	A	B	C	A	B	C
GF Set Amps	1200	1200	1200	1200	1200	1200
GF PU Amps	1200	1200	1200	1200	1200	1200
GF Delay	0.342	0.342	0.342	0.342	0.342	0.342

GF Curve Range

Instantaneous (Note: All trip time in seconds

Inst Set Amps NA
Inst PU Amps NA
Inst Delay @ NA %= NA Amps

	A	B	C	A	B	C
Inst Set Amps	NA	NA	NA	NA	NA	NA
Inst PU Amps	NA	NA	NA	NA	NA	NA
Inst Delay	NA	NA	NA	NA	NA	NA

Contact Resistance *(Results in microhms)*

A Phase	13
B Phase	19
C Phase	16

Insulation Resistance *(results in megohms)* Test Value: 1KVDC

A Phase to B/C/ Gnd	4000	A Phase (Line to Load)	4000
B Phase to A/C/ Gnd	4000	B Phase (Line to Load)	4000
C Phase to A/B/ Gnd	4000	C Phase (Line to Load)	4000

REMARKS BREAKER TESTED SATISFACTORY. Neutral CT circuit and trip verified by primary current injection.

Submitted By K.CUBBERLEY/ M. STANLEY **Equipment Used** 302266, 302146, FLUKE 1 KVDC MEGGER

Scott Testing, Inc.

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LVCB-H

LOW VOLTAGE CIRCUIT BREAKER REPORT

Customer	SM Electric	Date	12/13/2010	Page 5	Of 5
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2		
Owner	Newark Airport	Last Inspection Report	Acceptance		
Owner Address	Newark, NJ	Last Inspection Date	Acceptance		
Equipment Location	Terminal B Switchgear SA	Air Temperature	50F		
Owner Identification	P-MDP	Relative Humidity	75%		

Nameplate Data		Trip Unit Data		Trip Unit Range		Inspection	
Bkr Mfg	Siemens	Trip Unit Mfg	Siemens	LT PU	0.4-1.0 x Ir	Contacts	Good
Bkr Type	WLF2A320	Type	ETU776	LTD Band	2-30 sec @ 6 x Ir	Stabs	Good
Frame Size	2000A	Rating	2000A	ST PU	1.25xIn - 0.8x IC	Cubicle	Good
Voltage	635VAC MAX	Trip Unit S/N	NA	STD Band	0.08-4 sec, OFF	Arc Chute	Good
IC Rating	100KA	Cat Number	NA	GF PU	A-E (100A-1200A)	Operation	Good
Bkr S/N	4001281001018	Curve	NA	GFD Band	0.1-0.5 SEC	Mechanism	Good
Instr Bk	CBIM02000-0204	Plug Rating	2000A	Instant	NA	Heaters	Not Applicable
Other	NA	Sensor CTR	NA	Other	NA	Other	Not Applicable

Long Time (Note: All trip time in seconds

LT PU Set @ 1x In
LT Set Amps 2000
LT PU Amps 2000
LT Delay @ 300 %= 6000 Amps
I^2T Out In X LT Delay Set 2.0

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
2000	2000	2000	2000	2000	2000
2000	2000	2000	2000	2000	2000
6.775	6.542	7.001	6.775	6.542	7.001

LT Curve Range

Short Time (Note: All trip time in seconds

ST Set Amps 3X
ST PU Amps 6000
ST Delay @ 150 %= 9000 Amps
I^2T Out x In ST Delay Set 0.1 SEC

A	B	C	A	B	C
6000	6000	6000	6000	6000	6000
6000	6000	6000	6000	6000	6000
0.132	0.143	0.111	0.132	0.143	0.111

ST Curve Range

Ground Fault (Note: All trip time in seconds

GF Set Amps D
GF PU Amps 900
GF Delay @ 150 %= 1350 Amps
I^2T Out x In GF Delay Set 0.2

A	B	C	A	B	C
900	900	900	900	900	900
900	900	900	900	900	900
0.241	0.241	0.241	0.241	0.241	0.241

GF Curve Range

Instantaneous (Note: All trip time in seconds

Inst Set Amps OFF
Inst PU Amps OFF
Inst Delay @ NA %= NA Amps

A	B	C	A	B	C
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Contact Resistance (Results in microhms)

A Phase
B Phase
C Phase

Insulation Resistance (results in megohms) Test Value: 1KVDC

A Phase to B/C/ Gnd	4000	A Phase (Line to Load)	4000
B Phase to A/C/ Gnd	4000	B Phase (Line to Load)	4000
C Phase to A/B/ Gnd	4000	C Phase (Line to Load)	4000

REMARKS BREAKER TESTED SATISFACTORY. FUSE INFO: FARRAZ SHAWMUT. CLASS L. CAT # A4BY3000-SEA-3. 3000A. 200KA IC. FUSE RES. IN MICROHMS: A: 12 B:14 C:11 Neutral CT circuit and trip verified by primary current injection.

Submitted By K.CUBBERLEY/ M. STANLEY **Equipment Used** 302266,302146, FLUKE 1KVDC MEGGER

Current Transformer Report

SM Electric
R10-1157.2

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

CT-44

CURRENT TRANSFORMER REPORT

Customer	SM Electric	Date	12/15/2010	Page	1 Of 5
Customer Address	601 New Brunswick Ave. Rahway ,NJ	Project Number	S10-1157.2		
Owner	Port Authority of New York & New Jersey	Last Inspection Report	Acceptance		
Owner Address	Newark Airport, Newark, NJ	Last Inspection Date	Acceptance		
Equipment Location	Switchgear SA	Air Temperature	60F		
Owner Identification	ATS Life Safety	Relative Humidity	55%		

Nameplate Data

Manufacturer	Siemens	VA Rating	NA	Type	NA	Class	NA	Other	NA
Ratio	500:5 AMPS	Rated KV	NA	Cat #	NA	S/N	NA		

Excitation Test

Applied Test Voltage——>		24	24.5	25	25.5	26	26.5	27	27.5	28	28.5
CT Identification	A	0.3580	0.3970	04423	0.5037	0.5798	0.6909	0.8680	1.1996	1.7171	SAT
CT Identification	B	0.2526	0.2800	0.3268	0.3881	0.4912	0.6198	0.8078	1.1497	1.8645	SAT
CT Identification	C	0.2277	0.2543	0.2849	0.3230	0.3730	0.4268	0.5217	0.6547	0.8696	1.3737

Additional Test Data

	RATIO TEST			POLARITY	INSULATION INTEGRITY
CT Identification	Primary Volts	Secondary Volts	Measured Ratio	Check	Test Value: 1KVDC
A	0.2490	25.01	100.441767068273	GOOD	4000
B	0.2494	25.00	100.240577385726	GOOD	4000
C	0.2490	25.00	100.401606425703	GOOD	4000

Results In megohms

CT Load/Wiring Check

Connection Config		Phase Verification	GOOD
Connected Devices	SIEMENS 9350 ION METER		
Wired Per Drawing #			
Other Checks			

Load Side Measured Burden		
CT ID		
CT ID		
CT ID		

Visual Inspections

Mounting	Not Applicable	Insulating Bushings	Not Applicable	Shorting Block	Good	Case/Tank	Good
Connections	Good	Single Point Ground	Good	Sec Wire Size	10AWG		
Other							

REMARKS Unable to visually inspect CT's due to mounting behind red board insulators. Ratio verified against drawings. CT's tested satisfactory. Wiring verified to meter connections.

Submitted By K.CUBBERLEY **Equipment Used** 302146, FLUKE 1 KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
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CT-r4

CURRENT TRANSFORMER REPORT

Customer	SM Electric	**Date** 12/15/2010	**Page** 2 Of 5
Customer Address	601 New Brunswick Ave. Rahway ,NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York & New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Acceptance
Equipment Location	Switchgear SA	**Air Temperature**	60F
Owner Identification	DP-SA	**Relative Humidity**	55%

Nameplate Data

Manufacturer	Siemens	**VA Rating**	NA	**Type**	NA	**Class**	NA	**Other**	NA
Ratio	3200 :5 Amps (640:1)	**Rated KV**	NA	**Cat #**	NA	**S/N**	NA		

Excitation Test

Applied Test Voltage——>		47.5	48	48.5	49	49.5	50	50.5	51	51.5	52
CT Identification	A	0.4072	0.4668	0.5358	0.6430	0.8166	1.0627	1.5343	SAT	SAT	SAT
CT Identification	B	0.5496	0.6446	0.8264	1.0902	1.6078	SAT	SAT	SAT	SAT	SAT
CT Identification	C	0.5187	0.6380	0.7476	1.0046	1.4002	SAT	SAT	SAT	SAT	SAT

Additional Test Data

	RATIO TEST			POLARITY	INSULATION INTEGRITY
CT Identification	**Primary Volts**	**Secondary Volts**	**Measured Ratio**	**Check**	**Test Value:** 1KVDC
A	0.0390	25.01	641.282051282051	GOOD	4000
B	0.0389	25.00	642.6735218509	GOOD	4000
C	0.0390	25.01	641.282051282051	GOOD	4000

Results In megohms

CT Load/Wiring Check

Connection Config		**Phase Verification** GOOD	**Load Side Measured Burden**	
Connected Devices	SIEMENS 9350 ION METER		**CT ID**	
Wired Per Drawing #			**CT ID**	
Other Checks			**CT ID**	

Visual Inspections

Mounting	Not Applicable	**Insulating Bushings**	Not Applicable	**Shorting Block**	Good	**Case/Tank**	Good
Connections	Good	**Single Point Ground**	Good	**Sec Wire Size**	10AWG		
Other							

REMARKS Unable to visually inspect CT's due to mounting behind red board insulators. Ratio verified against drawings. CT's tested satisfactory Measured ratio incorrect to drawing specs.

Submitted By K.CUBBERLEY **Equipment Used** 302146, FLUKE 1 KVDC MEGGER

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CT-4

CURRENT TRANSFORMER REPORT

Customer	SM Electric	Date	12/15/2010 Page 3 Of 5
Customer Address	601 New Brunswick Ave. Rahway ,NJ	Project Number	S10-1157.2
Owner	Port Authority of New York & New Jersey	Last Inspection Report	Acceptance
Owner Address	Newark Airport, Newark, NJ	Last Inspection Date	Acceptance
Equipment Location	Switchgear SA	Air Temperature	60F
Owner Identification	DP-SB	Relative Humidity	55%

Nameplate Data

Manufacturer	Siemens	VA Rating	NA	Type	NA	Class	NA	Other	NA
Ratio	1200 :5 Amps (240:1)	Rated KV	NA	Cat #	NA	S/N	NA		

Excitation Test

Applied Test Voltage---->		31.5	32	32.5	33	33.5	34	34.5	35	35.5	36
CT Identification	A	0.4290	0.4986	0.6244	0.7678	1.2085	1.477	SAT	SAT	SAT	SAT
CT Identification	B	0.8059	0.9433	1.1431	1.480	SAT	SAT	SAT	SAT	SAT	SAT
CT Identification	C	0.4178	0.4968	0.6179	0.7548	0.9717	1.3178	SAT	SAT	SAT	SAT

Additional Test Data

	RATIO TEST			POLARITY	INSULATION INTEGRITY
CT Identification	Primary Volts	Secondary Volts	Measured Ratio	Check	Test Value: 1KVDC
A	0.1040	25.00	240.384615384615	GOOD	4000
B	0.1036	25.00	241.312741312741	GOOD	4000
C	0.1038	25.00	240.847784200385	GOOD	4000

Results In megohms

CT Load/Wiring Check

Connection Config		Phase Verification	GOOD
Connected Devices	SIEMENS 9350 ION METER		
Wired Per Drawing #			
Other Checks			

Load Side Measured Burden		
CT ID		
CT ID		
CT ID		

Visual Inspections

Mounting	Not Applicable	Insulating Bushings	Not Applicable	Shorting Block	Good	Case/Tank	Good
Connections	Good	Single Point Ground	Good	Sec Wire Size	10AWG		
Other							

REMARKS *Unable to visually inspect CT's due to mounting behind red board insulators. Ratio verified against drawings. CT's tested satisfactory. Wiring verfied to meter connection.*

Submitted By K.CUBBERLEY **Equipment Used** 302146, FLUKE 1 KVDC MEGGER

Scott Testing, Inc.

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Telephone: 609-882-2400 Fax: 609-882-5660

CT-14

CURRENT TRANSFORMER REPORT

Customer	SM Electric	**Date** 12/15/2010	**Page** 5 **Of** 5
Customer Address	601 New Brunswick Ave. Rahway ,NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York & New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Acceptance
Equipment Location	Switchgear SA	**Air Temperature**	60F
Owner Identification	Main Breaker	**Relative Humidity**	55%

Nameplate Data

Manufacturer	Siemens	**VA Rating**	NA	**Type**	NA	**Class**	NA	**Other**	NA
Ratio	4000:5 AMPS (800:1)	**Rated KV**	NA	**Cat #**	NA	**S/N**	NA		

Excitation Test

Applied Test Voltage----->		86	88	89	89.5	90	90.5	91	91.5	92	92.5
CT Identification	A	0.8493	0.997	1.1925	1.4751	1.8621	SAT	SAT	SAT	SAT	SAT
CT Identification	B	1.367	1.745	SAT	SAT	SAT	SAT	SAT	SAT	SAT	SAT
CT Identification	C	0.5590	0.5790	0.6676	0.717	0.9370	1.0952	1.3278	1.7491	SAT	SAT

Additional Test Data

	RATIO TEST			POLARITY	INSULATION INTEGRITY
CT Identification	**Primary Volts**	**Secondary Volts**	**Measured Ratio**	**Check**	**Test Value:** 1KVDC
A	0.0624	50.00	801.282051282051	GOOD	4000
B	0.0622	50.00	803.858520900322	GOOD	4000
C	0.0622	50.00	803.858520900322	GOOD	4000

Results In megohms

CT Load/Wiring Check

Connection Config		**Phase Verification**	GOOD
Connected Devices	SIEMENS 9350 ION METER		
Wired Per Drawing #			
Other Checks			

Load Side Measured Burden		
CT ID		
CT ID		
CT ID		

Visual Inspections

Mounting	Not Applicable	**Insulating Bushings**	Not Applicable	**Shorting Block**	Good	**Case/Tank**	Good
Connections	Good	**Single Point Ground**	Good	**Sec Wire Size**	10AWG		
Other							

REMARKS Unable to visually inspect CT's due to mounting behind red board insulators. Ratio verified against drawings. Wiring verified to meter connections.

Submitted By K.CUBBERLEY **Equipment Used** 302146, FLUKE 1 KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

CT-H

CURRENT TRANSFORMER REPORT

Customer	SM Electric	**Date**	12/15/2010 **Page** 4 **Of** 5
Customer Address	601 New Brunswick Ave. Rahway ,NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York & New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Acceptance
Equipment Location	Switchgear SA	**Air Temperature**	60F
Owner Identification	SWITCHBOARD P-MDP	**Relative Humidity**	55%

Nameplate Data

Manufacturer	Siemens	**VA Rating**	NA	**Type**	NA	**Class**	NA	**Other**	NA
Ratio	2000:5 AMPS (400:1)	**Rated KV**	NA	**Cat #**	NA	**S/N**	NA		

Excitation Test

Applied Test Voltage——>		49	49.5	50	50.5	51	51.5	52	52.5	53	53.5
CT Identification	A	0.3302	0.4037	0.5209	0.6903	0.9600	1.3346	1.9507	SAT	SAT	SAT
CT Identification	B	0.1556	0.1894	0.227	0.2904	0.3579	0.4680	0.698	1.2600	1.6736	SAT
CT Identification	C	0.2725	0.3448	0.3448	0.4255	0.5451	0.7001	0.9332	1.2700	1.7736	SAT

Additional Test Data

	RATIO TEST			POLARITY	INSULATION INTEGRITY
CT Identification	**Primary Volts**	**Secondary Volts**	**Measured Ratio**	**Check**	**Test Value:** 1KVDC
A	0.1239	50.00	403.551251008878	GOOD	4000
B	0.1246	49.99	401.203852327448	GOOD	4000
C	0.1247	50.03	401.202886928629	GOOD	4000

Results in megohms

CT Load/Wiring Check

Connection Config		**Phase Verification**	GOOD
Connected Devices	SIEMENS 9350 ION METER		
Wired Per Drawing #			
Other Checks			

Load Side Measured Burden	
CT ID	
CT ID	
CT ID	

Visual Inspections

Mounting	Not Applicable	**Insulating Bushings**	Not Applicable	**Shorting Block**	Good	**Case/Tank**	Good
Connections	Good	**Single Point Ground**	Good	**Sec Wire Size**	10AWG		
Other							

REMARKS Unable to visually inspect CT's due to mounting behind red board insulators. Ratio verified against drawings. CT's tested satisfactory. Wiring verified to meter connections.

Submitted By K.CUBBERLEY **Equipment Used** 302146, FLUKE 1 KVDC MEGGER

Instrument Calibration Report

SM Electric

S10-1157.2

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

IC-44

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date**	12/16/2010 **Page** 6 **Of** 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	DP-SA - PM Voltage Function	**Relative Humidity**	55%

Instrument Data

Owner ID	DP-SA - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A465-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA

Other Info

Standard	50 Volts	75 Volts	100 Volts	125 Volts				
As Found	200.2	300.1	399.7	480.0				
As Left	200.2	300.1	399.7	480.0				

REMARKS All results are acceptable.

Instrument Data

Owner ID	DP-SA- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A465-11	**Type**	9350	**Basic Range**	0-120VAC	**Calib Watts**	NA

Other Info

Standard	50 Vac	75 Vac	100 Vac	125 Vac				
As Found	200.1	300.1	400.0	480				
As Left	200.1	300.1	400.0	480				

REMARKS All results are acceptable.

Instrument Data

Owner ID	DP-SA - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	120Vac
Function	Voltage Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A465-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA

Other Info

Standard	50 Vac	75 Vac	100 Vac	120 Vac				
As Found	200.2	300.1	399.9	480.0				
As Left	200.2	300.1	399.9	480.0				

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date** 12/16/2010	**Page** 10 **Of** 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	DP-SB - PM Voltage Function	**Relative Humidity**	55%

Instrument Data

Owner ID	DP-SB - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A309-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA

Other Info

Standard	50 Volts	75 Volts	100 Volts	125 Volts			
As Found	200.2	300.1	399.7	480.0			
As Left	200.2	300.1	399.7	480.0			

REMARKS All results are acceptable.

Instrument Data

Owner ID	DP-SB- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A309-11	**Type**	9350	**Basic Range**	0-120VAC	**Calib Watts**	NA

Other Info

Standard	50 Vac	75 Vac	100 Vac	125 Vac				
As Found	200.1	300.1	400.0	480				
As Left	200.1	300.1	400.0	480				

REMARKS All results are acceptable.

Instrument Data

Owner ID	DP-SB- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	120Vac
Function	Voltage Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A309-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA

Other Info

Standard	50 Vac	75 Vac	100 Vac	120 Vac		
As Found	200.2	300.1	399.9	480.0		
As Left	200.2	300.1	399.9	480.0		

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	Date	12/16/2010 Page 9 Of 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2
Owner	Port Authority of New York and New Jersey	Last Inspection Report	Acceptance
Owner Address	Newark Airport, Newark ,NJ	Last Inspection Date	Acceptance
Equipment Location	Terminal B Switchgear SA	Air Temperature	55F
Owner Identification	DP-SB PM Ammeter Function	Relative Humidity	55%

Instrument Data

Owner ID	DP-SB - PM	Model	9350	Manufacturer	Siemens	PT Ratio	NA
Function	Current Metering A Phas	Cat #	9350V283	Full Scale	Variable	CT Ratio	1200:5
Serial #	SE-0808A309-11	Type	9350	Basic Range	0-5A	Calib Watts	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	240.5	481.2	721.6	961.8	1203			
As Left	240.5	481.2	721.6	961.8	1203			

REMARKS All results are acceptable.

Instrument Data

Owner ID	DP-SB - PM	Model	9350	Manufacturer	Siemens	PT Ratio	NA
Function	Current Metering B Phas	Cat #	9350V283	Full Scale	Variable	CT Ratio	1200:5
Serial #	SE-0808A309-11	Type	9350	Basic Range	0-5A	Calib Watts	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp	
As Found	240.5	481.1	721.1	961.4	1201.1	
As Left	240.5	481.1	721.1	961.4	1201.1	

REMARKS All results are acceptable.

Instrument Data

Owner ID	DP-SB - PM	Model	9350	Manufacturer	Siemens	PT Ratio	NA
Function	Current Metering C Phas	Cat #	9350V283	Full Scale	Variable	CT Ratio	1200:5
Serial #	SE-0808A309-11	Type	9350	Basic Range	0-5a	Calib Watts	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp		
As Found	240.8	481.1	721.1	961.7	1202		
As Left	240.8	481.1	721.1	961.7	1202		

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY Equipment Used 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date** 12/16/2010	**Page** 1 Of 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	Main B reaker - PM Ammeter Function	**Relative Humidity**	55%

Instrument Data

Owner ID	Main Breaker - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	4000:5
Serial #	SE-0808A097-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	801.7	1603	2404	3205	4005			
As Left	801.7	1603	2404	3205	4005			

REMARKS All results are acceptable.

Instrument Data

Owner ID	Main Breaaker - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	4000:5
Serial #	SE-0808A097-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	801.7	1603	2404	3205	4004			
As Left	801.7	1603	2404	3205	4004			

REMARKS All results are acceptable.

Instrument Data

Owner ID	Main Breaker - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	4000:5
Serial #	SE-0808A097-11	**Type**	9350	**Basic Range**	0-5a	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp		
As Found	801.7	1603	2403	3205	4005		
As Left	801.7	1603	2403	3205	4005		

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street . Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date**	12/16/2010 **Page** 2 **Of** 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	Main B reaker - PM Voltage Function	**Relative Humidity**	55%

Instrument Data

Owner ID	Main Breaker - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A097-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA

Other Info

Standard	50 Volts	75 Volts	100 Volts	125 Volts				
As Found	200.2	300.1	399.7	480.0				
As Left	200.2	300.1	399.7	480.0				

REMARKS All results are acceptable.

Instrument Data

Owner ID	Main Breaaker - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A097-11	**Type**	9350	**Basic Range**	0-120VAC	**Calib Watts**	NA

Other Info

Standard	50 Vac	75 Vac	100 Vac	125 Vac				
As Found	200.1	300.1	400.0	480				
As Left	200.1	300.1	400.0	480				

REMARKS *All results are acceptable.*

Instrument Data

Owner ID	Main Breaker - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	120Vac
Function	Voltage Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A097-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA

Other Info

Standard	50 Vac	75 Vac	100 Vac	120 Vac				
As Found	200.2	300.1	399.9	480.0				
As Left	200.2	300.1	399.9	480.0				

REMARKS *All results are acceptable.*

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date**	12/16/2010 **Page** 8 **Of** 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	P-MDP - PM Voltage Function	**Relative Humidity**	55%

Instrument Data

Owner ID	P-MDP - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A351-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Volts	75 Volts	100 Volts	125 Volts				
As Found	200.2	300.1	399.7	480.0				
As Left	200.2	300.1	399.7	480.0				

REMARKS All results are acceptable.

Instrument Data

Owner ID	P-MDP- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A351-11	**Type**	9350	**Basic Range**	0-120VAC	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	125 Vac				
As Found	200.1	300.1	400.0	480				
As Left	200.1	300.1	400.0	480				

REMARKS All results are acceptable.

Instrument Data

Owner ID	P-MDP- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	120Vac
Function	Voltage Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A351-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	120 Vac		
As Found	200.2	300.1	399.9	480.0		
As Left	200.2	300.1	399.9	480.0		

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
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INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date**	12/16/2010 **Page** 3 **Of** 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	ATS Life Safety - PM Ammeter Function	**Relative Humidity**	55%

Instrument Data

Owner ID	ATS Life Safety - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	1200:5
Serial #	SE-0808A089-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp		
As Found	240.3	480.3	720.8	960.5	1202		
As Left	240.3	480.3	720.8	960.5	1202		

REMARKS All results are acceptable.

Instrument Data

Owner ID	ATS Life Safety - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	1200:5
Serial #	SE-0808A089-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp		
As Found	240.3	480.3	720.7	961.1	1202		
As Left	240.3	480.3	720.7	961.1	1202		

REMARKS All results are acceptable.

Instrument Data

Owner ID	ATS Life Safety - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	1200:5
Serial #	SE-0808A089-11	**Type**	9350	**Basic Range**	0-5a	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp		
As Found	240.2	480.6	720.9	961.3	1202		
As Left	240.2	480.6	720.9	961.3	1202		

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
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INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date** 12/16/2010	**Page** 4 Of 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Accp.
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	ATS Life Safety - PM Voltage Function	**Relative Humidity**	55%

Instrument Data

Owner ID	ATS Life Safety - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A089-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA

Other Info

Standard	50 Volts	75 Volts	100 Volts	125 Volts				
As Found	200.2	300.1	399.7	480.0				
As Left	200.2	300.1	399.7	480.0				

REMARKS All results are acceptable.

Instrument Data

Owner ID	ATS Life Safety- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A089-11	**Type**	9350	**Basic Range**	0-120VAC	**Calib Watts**	NA

Other Info

Standard	50 Vac	75 Vac	100 Vac	125 Vac				
As Found	200.1	300.1	400.0	480				
As Left	200.1	300.1	400.0	480				

REMARKS All results are acceptable.

Instrument Data

Owner ID	ATS Life Safety - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	120Vac
Function	Voltage Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A089-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA

Other Info

Standard	50 Vac	75 Vac	100 Vac	120 Vac				
As Found	200.2	300.1	399.9	480.0				
As Left	200.2	300.1	399.9	480.0				

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	Date	12/16/2010 Page 5 Of 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2
Owner	Port Authority of New York and New Jersey	Last Inspection Report	Acceptance
Owner Address	Newark Airport, Newark ,NJ	Last Inspection Date	Acceptance
Equipment Location	Terminal B Switchgear SA	Air Temperature	55F
Owner Identification	DP-SA - PM Ammeter Function	Relative Humidity	55%

Instrument Data

Owner ID	DP-SA - PM	Model	9350	Manufacturer	Siemens	PT Ratio	NA
Function	Current Metering A Phas	Cat #	9350V283	Full Scale	Variable	CT Ratio	3200:5
Serial #	SE-0808A465-11	Type	9350	Basic Range	0-5A	Calib Watts	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp
As Found	640.9	1282	1923	2565	3202
As Left	640.9	1282	1923	2565	3202

REMARKS CT PRIMARY CHANGED FROM PRINT SPEC TO MATCH INSTALLED CT AS PER CUSTOMER REQUEST. All results are acceptable.

Instrument Data

Owner ID	ATS Life Safety - PM	Model	9350	Manufacturer	Siemens	PT Ratio	NA
Function	Current Metering B Phas	Cat #	9350V283	Full Scale	Variable	CT Ratio	3200:5
Serial #	SE-0808A465-11	Type	9350	Basic Range	0-5A	Calib Watts	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp
As Found	640.4	1282	1922	2561	3202
As Left	640.4	1282	1922	2561	3202

REMARKS CT PRIMARY CHANGED FROM PRINT SPEC TO MATCH INSTALLED CT AS PER CUSTOMER REQUEST. All results are acceptable.

Instrument Data

Owner ID	ATS Life Safety - PM	Model	9350	Manufacturer	Siemens	PT Ratio	NA
Function	Current Metering C Phas	Cat #	9350V283	Full Scale	Variable	CT Ratio	3200:5
Serial #	SE-0808A465-11	Type	9350	Basic Range	0-5a	Calib Watts	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp
As Found	640.4	1281.1	1921	2561	3205
As Left	640.4	1281.1	1921	2561	3205

REMARKS CT PRIMARY CHANGED FROM PRINT SPEC TO MATCH INSTALLED CT AS PER CUSTOMER REQUEST. All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY Equipment Used 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date** 12/16/2010	**Page** 7 **Of** 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	P-MDP- PM Ammeter Function	**Relative Humidity**	55%

Instrument Data

Owner ID	P-MDP - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	2000:5
Serial #	SE-0808A351-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp		
As Found	400.5	801.2	1201	1602	2002		
As Left	400.5	801.2	1201	1602	2002		

REMARKS All results are acceptable.

Instrument Data

Owner ID	P-MDP - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	2000:5
Serial #	SE-0808A351-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp		
As Found	400.6	802.3	1202	1600	2002		
As Left	400.6	802.3	1202	1600	2002		

REMARKS All results are acceptable.

Instrument Data

Owner ID	P-MDP - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	2000:5
Serial #	SE-0808A351-11	**Type**	9350	**Basic Range**	0-5a	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp		
As Found	400.5	802.6	1202	1603	2001		
As Left	400.5	802.6	1202	1603	2001		

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Potential Transformer Report

SM Electric

S10-1157.2

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

ST-14

PT Test Form

Customer	SM Electric	**Date** 12/16/2010	**Page** 1 **Of** 1
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Acceptance
Equipment Location	Termiant B	**Air Temperature**	40F
Owner Identification	Switchgear SA	**Relative Humidity**	60%

Nameplate Data

Manufacture Instrument Transformers Inc. **Cat #** 460-480 **S/N** NA

Other Info HV=480 LV=120. 10KV BIL. 0.6KV INSUL CLASS

Test Data

Trans. I.D.	Conn Phase	1min Meg @1KVDC	Measured Ratio
01VT1	A	H=4000/L=4000	4:1
01VT2	B	H=4000/L=4000	4:1
01VT3	C	H=4000/L=4000	4:1
04VT1	A	H=4000/L=4000	4:1
04VT2	B	H=4000/L=4000	4:1
04VT3	C	H=4000/L=4000	4:1
04VT4	A	H=4000/L=4000	4:1
04VT5	B	H=4000/L=4000	4:1
04VT6	C	H=4000/L=4000	4:1
04CPT1 (3KVA)	A-B	H=4000/L=4000	4:1

REMARKS All test results are acceptable.

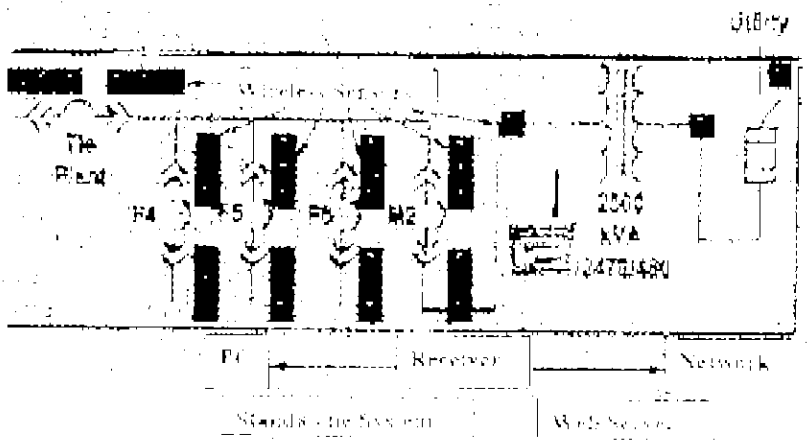
Submitted By K. Cubberley **Equipment Used** 1 KVDC Megger, Fluke

Wireless Temperature Monitoring System

Application Notes and Installation Manual

0180IB0801R12/09

Retain for future use.



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SQUARE D

HAZARD CATEGORIES AND SPECIAL SYMBOLS

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service or maintain it. The following special messages may appear throughout this bulletin or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of either symbol to a "Danger" or "Warning" safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, **will result** in death or serious injury.

⚠ WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, **can result** in death or serious injury.

CAUTION

CAUTION, used without the safety alert symbol, indicates a potentially hazardous situation which, if not avoided, **can result** in property damage.

Provides additional information to clarify or simplify a procedure.

PLEASE NOTE

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

FCC NOTICE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. This Class A digital apparatus complies with Canadian ICES-003.

FCC RADIO FREQUENCY INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna;
- Increase the separation between the equipment and receiver;
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

NOTE: Consult the dealer or an experienced radio/TV technician for help.

TABLE OF CONTENTS

SECTION 1	SAFETY PRECAUTIONS
SECTION 2	RECEIVING, HANDLING AND STORAGE
SECTION 3	APPLICATION NOTES AND SPECIFICATION
SECTION 4	WTMS INSTALLATION
SECTION 5	VALIDATION TESTS FOR WTMS PARTS AND PERFORMANCE
SECTION 6	REFERENCES

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SECTION 1

SAFETY PRECAUTIONS

In this section:

This section contains important safety precautions that must be followed before attempting to install, service, or maintain electrical equipment. Carefully read and follow the safety precautions outlined below

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- The hardware of Wireless Temperature Monitoring System, the sensors, may be installed only on completely de-energized and removed out-of-service electrical equipment, such as circuit breakers or switches. To de-energize apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E
- Only qualified personnel familiar with electrical equipment are to perform work described in this set of instructions.
- Perform such work only after reading and understanding all of the instructions contained in this manual.
- The circuit breaker must be in the open (O) position.
- All circuit breaker springs must be discharged.
- Switchgear primary conductors should be grounded.
- Handle this equipment carefully and install, operate and maintain it correctly in order for it to function properly. Neglecting fundamental installation and maintenance requirements may lead to personal injury as well as damage to electrical or other properly.
- Carefully inspect your work area and remove any tools and objects left inside the equipment.
- All instructions in this manual are written with the assumption that the customer has taken these measures before performing the installation of wireless sensors inside electrical equipment.

Failure to follow this instruction will result in death or serious injury.

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SECTION 2

RECEIVING

Upon receipt, check the packing list against the equipment received to ensure the order and shipment are complete. Claims for shortages or errors must be made in writing to Schneider Electric within 60 days after delivery. Failure to give such notice will constitute unqualified acceptance and a waiver of all such claims by the purchaser.

Immediately inspect the equipment for any damage which may have occurred in transit. If damage is found or suspected, file a claim with the carrier immediately and notify Schneider Electric. Delivery of equipment to a carrier at any of the Schneider Electric plants or other shipping points constitutes delivery to the purchaser regardless of freight payment and title. All risk of loss or damage pass to purchaser at that time.

For details concerning claims for equipment shortages and other errors, refer to Schneider Electric "Terms and Conditions of Sale."

HANDLING

Use care when handling the wireless temperature monitoring hardware.

STORAGE

When the parts are not in use keep them in a clean, dry, heated corrosion-free area where it is protected from damage. When the monitoring system hardware is stored for prolonged periods, inspect it regularly for overall condition.

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SECTION 3

APPLICATION NOTES AND SPECIFICATIONS

3.1. System Description

The Wireless Temperature Monitoring system (WTMS) monitors temperatures of the surfaces of energized electrical equipment (see Section 6, Ref [1], Product Specifications 16090-10).
The system consists of three components:

- Sensors (wireless transmitters)
- Receivers (signal receiving units)
- Software (processing, alarming and reporting software)

Square D High Temperature Sensors are designed to actively measure the temperature of the strategically important points on metal or insulating surfaces of current carrying parts. The sensor design allows measuring the temperature in wide range, from 0 to 150° C. The Receiver receives the RF signals from the sensors with temperature, time stamp and identification information from the sensors and relays this information to PC.

Software processes the sensor information and records it into a textual log file. Two versions of software are available: one providing the system working in standalone mode (TempAssure), another in conjunction with power monitoring system.

The system is developed in collaboration with Freshloc Technologies. The Square D High Temperature Sensor is proprietary property of Schneider Electric.

3.2. How WTMS Works

WTMS is quickly and easily installed in any facility by deploying multiple sensors in positions throughout energized equipment to continuously monitor surface temperature. The sensors transmit a packet every three minutes, or, if the temperature is increasing fast, every minute.

The packet is picked up by a near Receiver/Repeater. Receivers have a typical range of 100 feet with sensors mounted in equipment and up to 500 feet if there are no obstructions. The Receiver (antenna) is centrally installed in the switchgear room (a single Receiver can receive information from 100 sensors).

Depending on number of the sensors in the system and the size of facility, a series of the Receivers can be connected in daisy chain. Once the data is picked up by the receiver the data is placed on the Receiver network. The Receiver network uses standard category 5 Ethernet Cable to daisy chain the Receivers supplying power and a way to communicate back to the PC. Another option is to transfer the data to PC via multiple ethernet ports.

A PC installed at the facility or the existing facility network is used. In standalone mode of WTMS, the TempAssure Software is installed on a local PC and sensing parameters are set (WTMS allows adjusting alert conditions to Customer specific needs). Temperature information may be reviewed by the Customer or by Square D Engineering Support (see Section 6, Ref [2], Product Specifications 16090-11- WTMS Consulting Services) via modem or Internet. Alerts or reports can be sent to the customer in numerous ways such as by cell phone, two-way pager, or email. Web monitoring is also an option.

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3.3. System Features

Easy Installation - Installation of software and Receiver is simple. Sit the Receiver in a safe area or mount it to a clean flat surface using a strong adhesive. The software is also easy to install.

Monitoring - Software allows you to monitor the temperature readings from all active sensors.

Long Range - Antenna receives sensor signals up to 100 feet (30 meters) away.

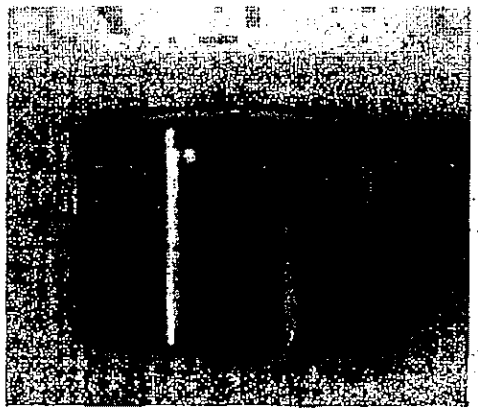
Population - The system can monitor unlimited number of sensors without interfering with one another or loss of identification.

Supervision - The System receives transmissions every 5-10 minutes depending on thermal condition, so you can respond quickly to any problems.

3.4. Square D High Temp Sensors Features

The Sensors are all-in-one temperature sensors and identification tags (Fig 1). The Sensors detect ambient temperature and continuously send radio frequency information to the Receiver. The device transmits the information it has collected using a low power RF transmission. The Sensors are calibrated accordingly to application to give accurate temperature readings.

Figure 1: Wireless Square D High Temperature Sensor



Low Cost Installation - The sensors are wireless and can be placed almost anywhere by using a high temperature adhesive.

Operation - In direct contact with the surface.

Long Battery Life - Sensors last up to 5 years on a High Temperature 3V lithium battery.

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3.4.1 Application Sensors

Wireless sensors can be applied to any type of new or used LV and MV electrical equipment such as switchgear, circuit breakers, capacitor banks, transformers, motors, busways and cables. The sensors can be also used on HV and EHV electrical equipment.
The sensors can be applied for measuring temperature of any strategically important points inside energized apparatus, such as stationary contacts, finger clusters, stabs, bolted connections, as well as any other important locations where temperature should be controlled. The number of points to monitor inside the unit is not limited. It is considered important to install the sensors on each phase of the apparatus both on load and line side. Sometimes it is possible to detect a problem based on lesser number of the sensors, for example only on load side, but this decision should be made based on design and application features. The only limitation is applying the sensors would be the dimension of the space available at the point of interest, which should be not less than 1.5 x 1.5 x 1.5 inch^3 (4 x 4 x 4 cm^3). The sensors can be attached to either metallic or insulating surfaces and in any position using installation technique and adhesives recommended in section 4.1.1.

Examples of sensor installation points are shown in Fig. 2 for LV and MV circuit breakers. Fig. 3 and Fig. 4 show positions of the sensors on the stabs buses and cable connections inside LV switchgear, and MV switchgear, as well as suggested positions of the sensors for measuring temperature of ambient air inside the cells.

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Figure 2: Wireless temperatures sensors on finger clusters of LV and MV Circuit Breakers.

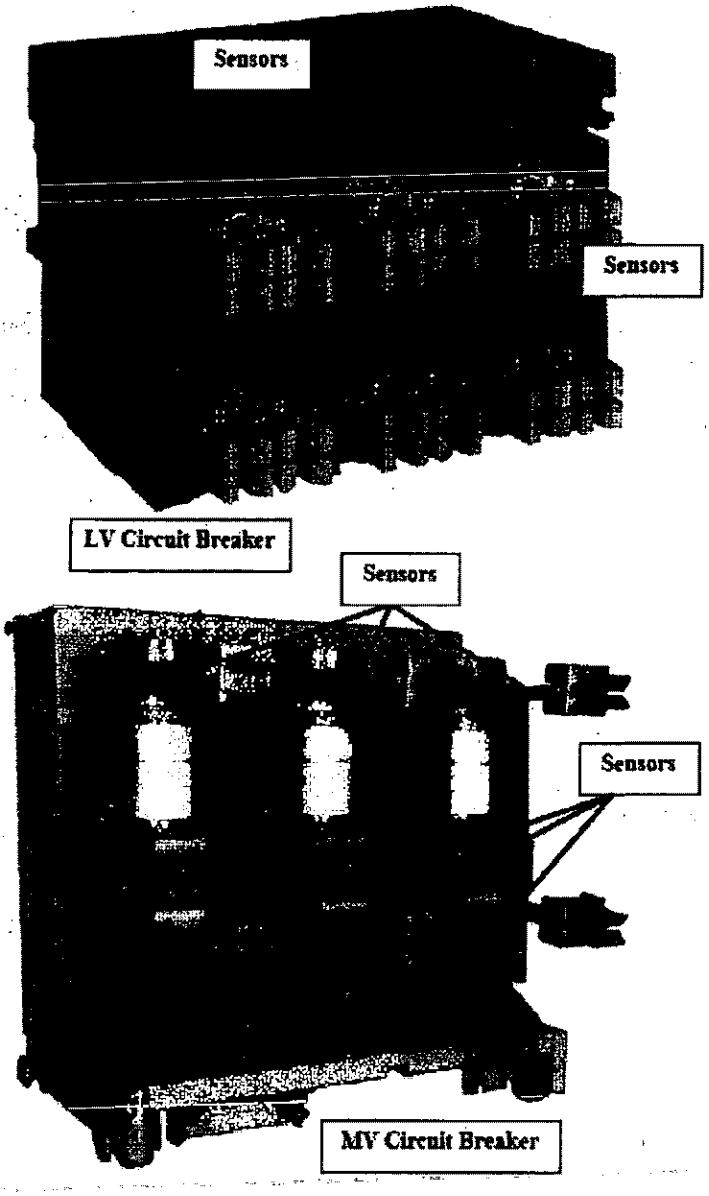

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Figure 3: Wireless temperature sensors on buses and bolted cable connections inside LV switchgear.

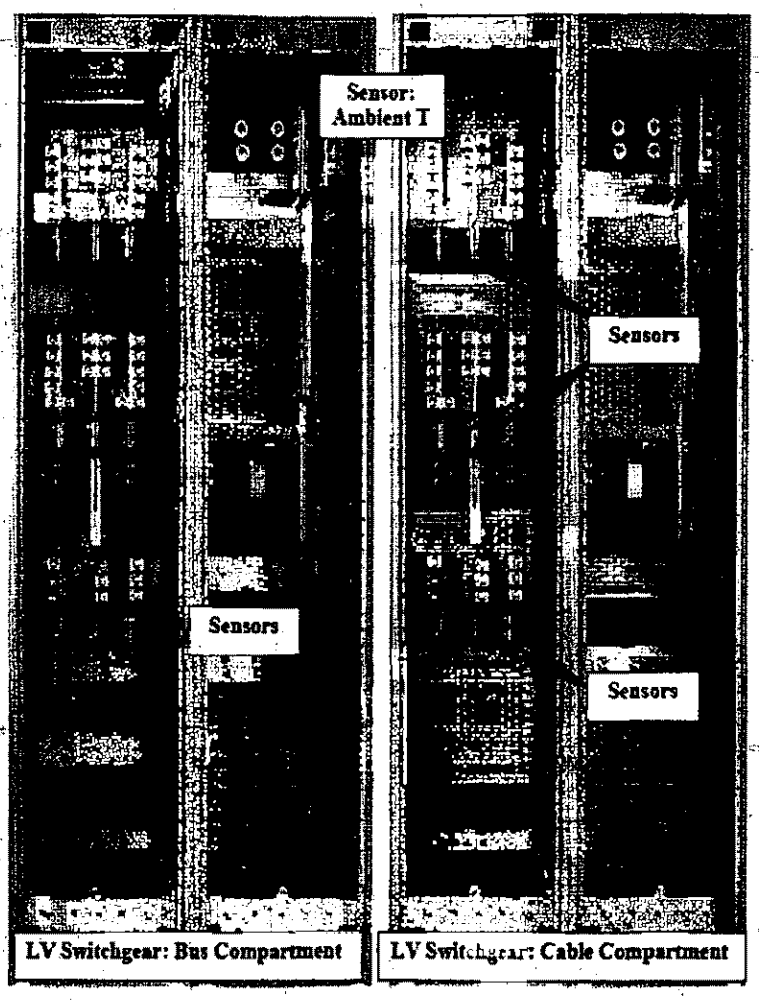

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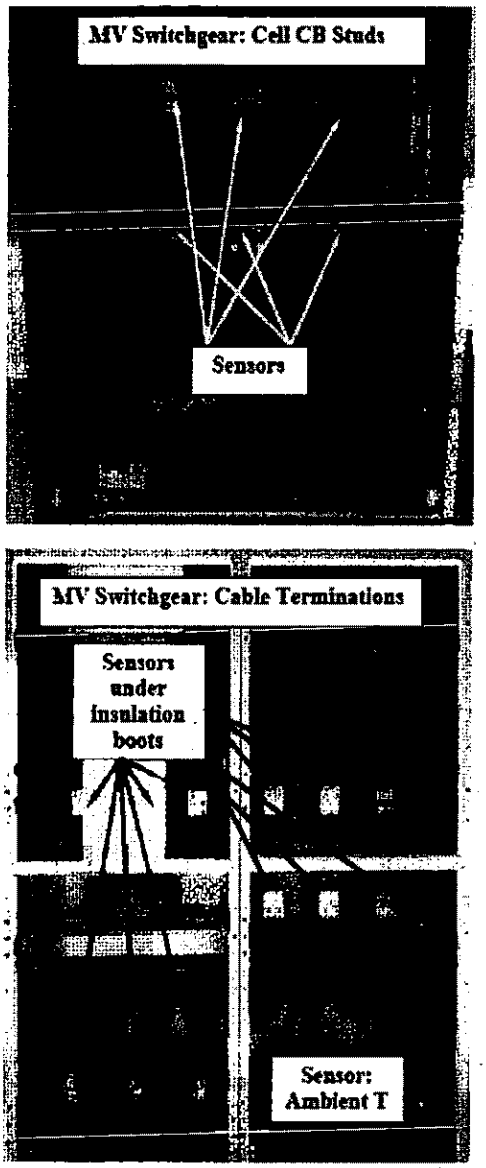
Figure 4: **Wireless temperature sensors on stabs and bolted cable connections inside MV switchgear.**



3.5. Sensor Specifications

Type: Sensor and Radio Frequency Transmitter .

Physical Dimensions: Sensor casing: D=1.5 in. (40 mm), H =1 in. (25 mm)

Weight: < 20 g (0.7oz.)
Enclosure: Non-conductive, High T and UL rated, waterproofed for humid and corrosive environment

Operating Temperature: Low: 0° C (32° F); High: 150° C (300° F)

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Transmission Range: 100 ft. (sensors installed in switchgear), 500 ft. (open air).

Mounting Location: On flat clean surface using High T adhesive

Transmission Frequency: Transmittance intervals change based on the rate of the temperature change. Signal is picked up by receiver, typically once every 5-10 minutes.

Battery: High T 3V lithium battery, easily replaceable in the field

3.6. WTMS Receiver Features

The WTMS monitors all Sensors, actively measuring temperatures in a selected area. The Receiver constantly monitors and listens for strobe transmissions. The receiver determines if the signal it hears from the strobe is valid or if it is noise to be filtered out.

The receiver will mark the transmissions with the proper packet and send it via a network to a computer for processing.

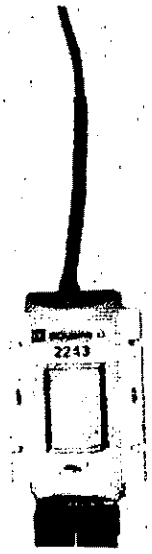
There are two different types of unit, one receiving single-band RF transmissions and another using spread spectrum technology.

3.6.1 Single-band Receiver

The Single-band Receiver (Fig.5) receives RF single-band transmissions and sends them via RS-485 to a local PC. The RS-485 structure allows for transmissions of long distances, which permits the use of multiple Receivers to be connected, in series, for large coverage areas.

Power can be supplied to the Receiver in two ways: by using either the power transformer supplied with the Receiver or via the RS-485 Bus using the B&B RS-485 to RS-232 converter for Receivers mounted in area that do not have any power sources.

Figure 5: Single-band Receiver



Single-band Receiver specifications are given in Section 3.7.1.

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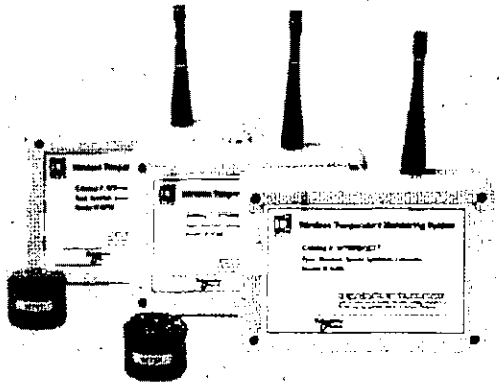
3.6.2. SST Receiver

The SST Receiver is using Spread Spectrum Technology. It is available in three different versions (Fig.6), plus a repeater version.

- Serial SST Receiver is connected to a local PC via RS-485 using the same connection kit as a single-band receiver. Both types of serial Receivers can be connected to a local PC via local network using Ethernet Serial Server.
- SST Receiver with wired Ethernet Connection (802.3).
- Wireless Extension SST Receiver, which provides wireless transmission of the RF signals to any wired SST Receiver thus doubling the distance between the transmitters and receiving units.
- Ethernet SST Receiver with Modbus TCP communication protocol.

Either the Serial or 802.3 Ethernet type of wired Receiver accepts temperature and identification information from the Strobe Sensors and relays the information to the TempAssure Software (see section 4.2), which displays the activity of all wireless Sensors and logs their temperature readings into a text file for future reference and analysis. A diagnostic screen allows the user to monitor the system for any problems in the sensory network.

Figure 6: SST Receivers: Serial, Wired Ethernet, and Wireless/Extension versions.



SST Receiver specifications are given in Section 3.7.2.

3.7. Receiver Specifications

3.7.1 Single-band Receiver Specifications

Type: Single-band RF receiver

Physical Dimensions: 5.25in. x 2.5in. x 1in. (13.3cm x 6.4cm x 2.5cm)

Weight: 1/2lb. (230g)

Detection: Internal 1/4 wave monopole antenna, 92 dbm sensitivity minimum, 105dbm sensitivity typical. Min: 100 ft. Max 500 ft.

Connections/Communications: RJ-45/RS-485 link to computer. 57,600 baud, no parity, 8 bits, one stop bit, asynchronous link to computer

Power Requirements: 5VDC minimum @25 milliamps

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Mounting Location: Hanging on the pole, or attached to a flat, clean surface using adhesive.

Operating Temperature: 10°C to 40°C (50°F to 104°F)
Accessories: Square D High Temp Sensors

Bus Adapter Kit: Connection Kit - RS232 to RS485 Converter; RJ45 to DB25F Converter; 7ft. CAT5 RJ45 Cord; 485PS - Power Supply

Bus Protocol: Proprietary

Certifications: Part 15 FCC approved

3.7.2 Spread Spectrum Receiver Specifications

Type: Spread Spectrum Receiver (SST Receiver)

Frequency Range: 902-928MHz

Physical Dimensions: 6in. x 4in. x 1.25in. (15cm x 10.2cm x 3.2cm)

Weight: 1/2lb.

Minimum Reception Range: Omni-directional 300ft. line-of-site. Range reduced by obstructions.

Connection/Communications:

- *Serial SST Receiver:* RJ-45/RS-485 link to computer. 115,200 baud, no parity, 8 bits, one stop bit, asynchronous link to computer.
- *Ethernet SST Receiver:* RJ45 Power (2.1mm)

Power Requirements: 6VDC, 500 mA

Mounting Location: Hanging on the pole, or attached to a flat, clean surface using adhesive

Operating Temperature: -28°C to 85°C (-18°F to 185°F)

Accessories: Square D High Temp Sensors.

Bus Adapter Kit: *Serial SST Receiver:* Connection Kit - RS232 TO RS485 Converter; 7ft. CATS RJ45 Cord; and 485PS - Power Supply

Bus Protocol:

- *Serial SST Receiver:* Proprietary
- *Ethernet SST Receiver (802.3):* Proprietary
- Ethernet SST Receiver (Modbus): Modbus® TCP

Certifications: Part 15 FCC approved, CE certified

3.7.3 Ethernet SST Modbus® Receiver Connectivity

Ethernet SST Receiver with Modbus® TCP Protocol is equipped with an additional port, which allows using it as a Serial SST Receiver. This function is provided to facilitate WTMS setup preparatory procedure. This option could be utilized in optimization of sensing and receiving units' positions, while using a simple standalone version of the system software. This version may be also used prior to WTMS integrations into a customized monitoring system.

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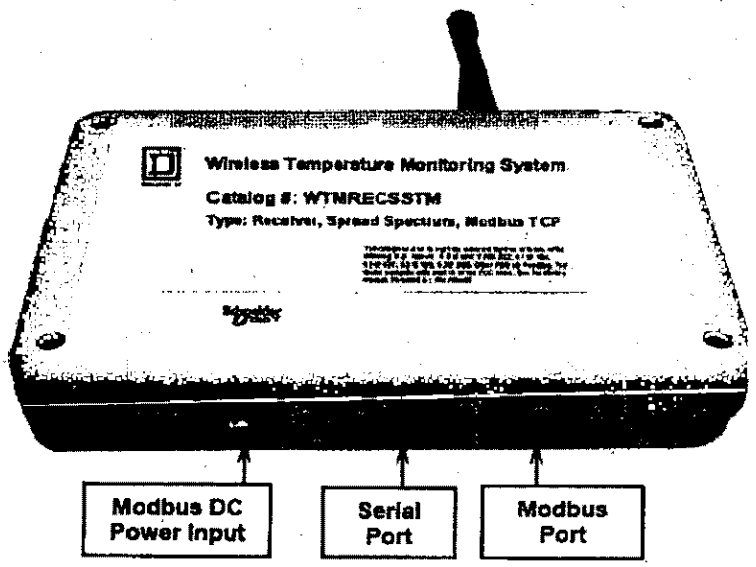
In Fig. 7, position of the ports for Ethernet cable and DC power input for utilization of the Modbus® module are shown. The third port is designated for connecting the Receiver to PC via connection kit (shown in Fig.11) directly or using an optional Ethernet Serial Server. The use of Serial module would require a connection kit and TempAssure software installed on local PC. When the Serial module is utilized, the receiver will be powered via a power supply that is included in the connection kit (the power input on the receiver will not be utilized).

Figure 7: Positions of the Parts on the Ethernet SST Receiver with Modbus® TCP.



CAUTION

HAZARD OF EQUIPMENT DAMAGE

- Wireless Temperature Monitoring for use with Low Voltage and Medium Voltage electrical equipment.

Failure to follow this instruction can result in equipment damage and void the warranty.

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⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Install and remove Wireless Sensors only on de-energized equipment and removed out of service electrical equipment. To remove or take out of service any circuit breaker or switch refer to OEM manual for these devices.
- To de-energize electrical equipment apply appropriate personal protective equipment (PPE) and follow safe work practices. See NFPA 70E.

Failure to follow to follow these instructions will result in death or serious injury

SECTION 4

WTMS INSTALLATION

4.1. Installation of Temperature Monitoring Hardware

Hardware of Wireless Temperature Monitoring System consists of the set of temperature monitoring devices (wireless temperature sensors), signal receiving devices (Receivers) and connecting kit for connecting the Receiver to PC and supplying power to the Receiver.

4.1.1. Installation of the sensors

Use the following procedure to attach wireless sensor to the part for which the temperature is to be measured. The sensor can be installed on any flat surface made of metallic materials. The sensor cannot be installed on any movable contacts or lubricated areas.

Surface preparation note: If sensors are installed on metallic surfaces on current carrying part, on insulation, or on compartment doors, the surface should be cleaned from any dust, particulate matter and moisture with a clean dry cloth. If needed use a mild cleaner to remove grease or dirt from the surface.

Adhesives:

1. RTV Silicone Adhesive (requires about 24 hours curing at room temperature).
2. Instant adhesive ("super glue") should hold the sensor in place long enough for the silicon to cure. It is rated for about 125°C (~260°F), so the bus bar should be kept below this temperature during the curing process.

The application procedure should be as follows:

Different views of the sensor are shown in Fig.8. It is pictured from the top (left) and from the bottom (right), and the sensor case is shown in the center. For installation, the units should be disassembled by removing the lid and the sensor assembly (Fig.8) from the case. The case should be glued onto the equipment surface with the bottom facing the surface. After the sensor case is attached to the surface, the sensor assembly should be inserted into the case with the copper enclosure getting into the opening in the case bottom and the lid should be snapped in to close the case.

1. Apply a ring of silicone in the area between the outer edge of the small elevated ring located at the opening in the case center and the edge of

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case. The silicone ring should be about 2.5mm wide, enough to seep around the case outside edges when applied (Fig.10, left)

2. Apply four drops of "super glue" equidistantly on the surface of small elevated ring in the center to the case (Fig.9, right). As soon as the case is pressed to the surface, the glue will spread and cover ~100% of the ring surface area.
3. Attach the case bottom in the position on the surface of the part for which the temperature is to be measured as soon as possible to avoid an early hardening of the instant glue. Press the sensor to the surface for 2 minutes, after which it is safe to leave the case for the next 24 hours to let the silicone cure. Super glue is strong enough to hold the weight of the sensor in any position.
4. Make sure the silicone seeps around the edge of the sensor to prevent airflow. After the cure is complete, the RTV silicone adhesive takes over.

Figure 8: The sensor: the top of the sensor with RFID label seen through the transparent lid and the label attached to the side of the case (left), the empty case of the sensor bottom up (center), the bottom of the assembled sensor with the sensing element in copper enclosure inserted into the opening in the bottom of the case (right).

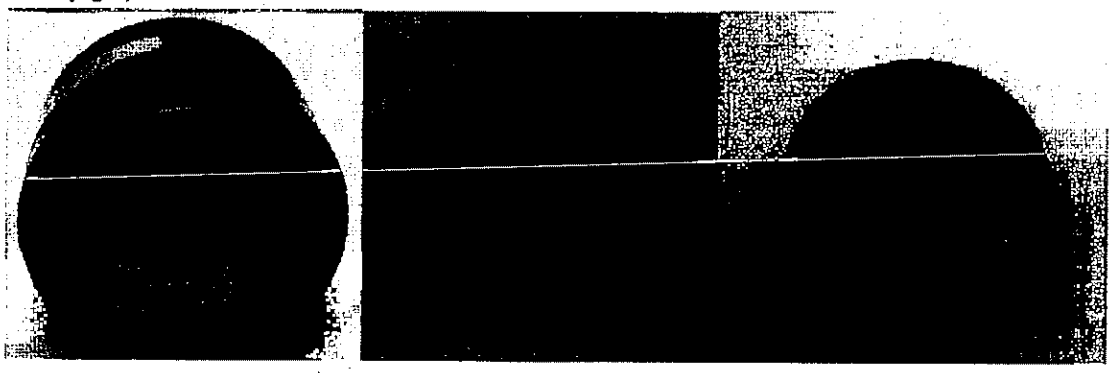

Figure 9: Sensor assembly with sensing element within copper enclosure.

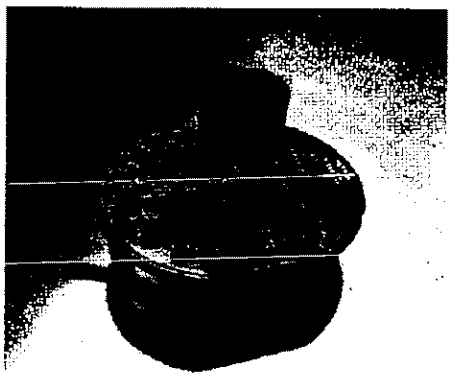

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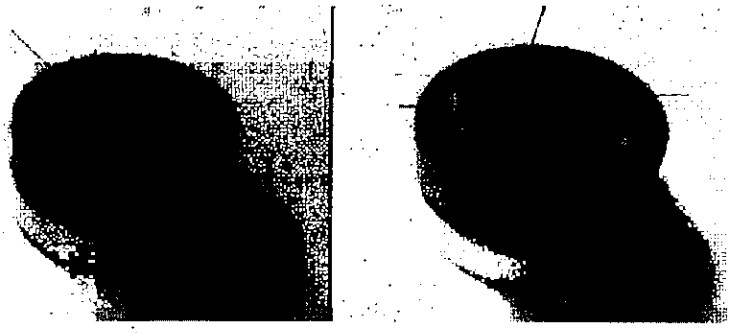
Figure 10: RTV Adhesive ring on the bottom of the case (left); drops of super glue on the inner elevated ring (right).



4.1.2. Installation of the Receiver

Finding the best location for the Receivers:

The key factor in a successful install, is finding the best possible location for the Receiver. The plant walk-through will provide best opportunity to search for a location based on the sensor array. Place readers in open areas to receive as many signals as possible. Here are a few guidelines to help when placing the Receiver:

- **Install the Receiver as high as possible**
- **Position the Receiver in a central location**

Place the Receiver as close to the center of the location as possible to maximize the reception of the antenna. If a central location is unavailable, look for the best possible sit in relationship to the sensors.

- **Keep the Receiver away from interference.**

The receiver is designed to work in noisy environments but it is hindered if placed near (within 5 feet) the following devices:

  — Florescent Lighting Fixtures
  — Computers and Monitors
  — TV's and Radios
  — Large Metal Objects
  — Telephone and Network (Ethernet) equipment
  — Other items that may block or absorb RF signals which may cause blind spots to Receivers, such as thick concrete walls, air-conditioning units.

- **Use at least one Extension Receiver**

Suggested mounting methods for Receivers: the Receivers should be mounted with a minimum of 1 in. separation from flat surfaces such as walls, rafters, etc. Steel walls and rafters especially require separation to get good reception.

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4.1. 3. Assembly of Connection Kit (Receiver to PC connection)
Parts in Connection Kit:

1. DB25M-DB9F converter
2. RS-232 to RS-485 B&B converter
3. RJ45-DB25F converter
4. Transformer 120 VAC to 12 VDC
5. RJ45 cable (CAT5)

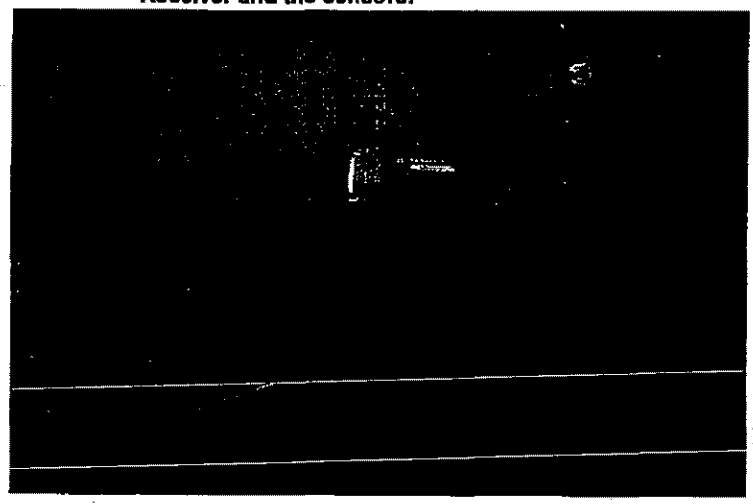
Assembly of Connection Kit

1. Attach the 9-pin connector of the DB25M-DB9F converter to com port 1 (9-pin) on the back of the computer. If PC does not have 9-pin port use one of USB ports with USB to RS-232 DB9 converter (not included).

2. Attach another end of DB25M-DB9F converter to the RS232 side of the B&B converter. Connect the RJ45-DB25F converter to the RS485 end of the B&B adapter. Connect the Receiver to RJ45-DB25F converter with RJ45 cable (use any of two lines on the bottom of the Receiver).

Assembled WTMS is shown in Fig. 11. If PC is located at significant distance from the Receiver, use as long as needed RJ45 cord to connect the Receiver to RJ45-DB25F converter. Otherwise use the cable included in the kit.
To energize the Receiver, connect the pin of power supply (transformer 120 VAC to 12 VDC) into the side of the RS485-RS232 B&B converter and plug transformer into power jack. As soon as connection is made, the LEDs towards the bottom of chassis of the Receiver begin flashing signalizing that the unit receives RF signals from the sensors.

Figure 11: Long Range Connection Kit with the Serial Single-band Receiver and the sensors.



4.2. Installation of Software for Standalone WTMS

4.2.1. TempAssure Installation

The data from temperature monitoring system are transferred from the sensors via the Receiver to TempAssure database. Standalone WTM System is working with TempAssure Software. It is installed by using TempAssure Soft-

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ware on CD. The installation is supported by Installation Wizard. The software and log file will be saved on PC hard drive in the folder C:/Freshloc. For technical support on downloading and installation TempAssure Software WinNT/2000/XP contact Square D Services Engineering.

4.2.2. TempAssure Software Setup

When TempAssure launches, the window shown in Fig.12 will appear. If the computer cable is plugged into Com 1 it will show "Serial Port 1". If you need to change your com port and choose information to review, click on the Options Tab. You will now see the screen shown in Fig. 13.

Figure 12: TempAssure main screen

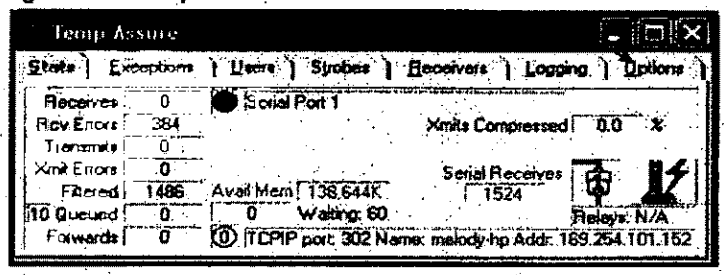
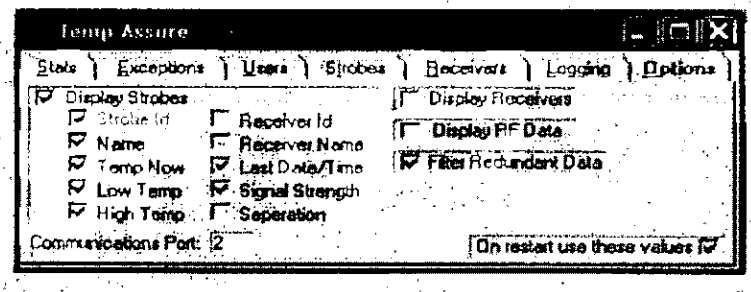


Figure 13: "Option" Tab



To change the com port:

(1) Type in the com port number in the box next to Communications Port, and press enter.
(2) Click the box next to **On restart use these values** to place a checkmark.
(3) Click on the **X** to close TAssure.
(4) Restart TAssure

Receiver(s) Setup. You will now be back at the main TAssure screen (**Stats**). A blinking green dot means your Receiver is connected and working. Once you start seeing numbers under **Serial Receives**, you know you are receiving data. Now that you know that everything is working, click on the **Receivers** Tab (Fig.14). If the "Auto Adds" is checked all receiving units will be automatically added.

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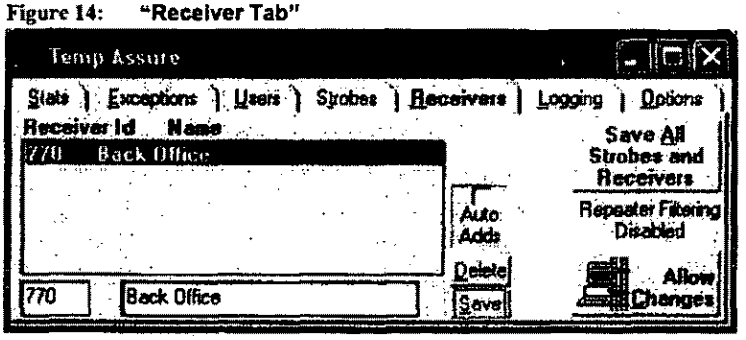
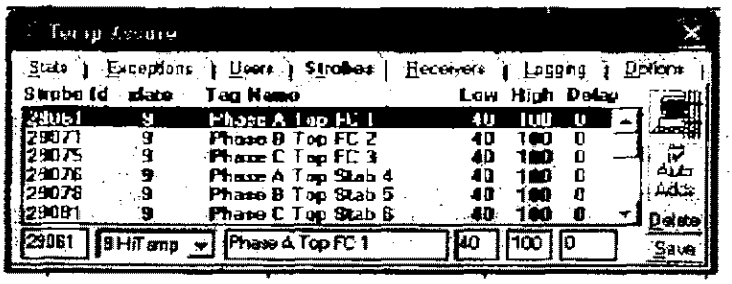
Figure 14: "Receiver Tab"



This is where you type in the numbers of the receiver(s) you have:
(1) In the first box, type in the number (ID) of your receiver or choose one of it is automatically added.
(2) In the second box, type in a name for your receiver (i.e. control room, etc.).
(3) Click Save.
(4) Repeat for additional Receivers.
Note: You must type a name for the receiver in order to run Local Reports (discussed later in this document).

Strobe(s) setup: Click on the **Strobes** tab (Fig.15).

Figure 15: "Strobe" Tab



You will need to input the strobe ID's on this screen in order to view the temperatures of your strobes.
(1) In the first box, enter in the number of your strobe (RFID) or click on the strobe automatically added.
(2) The second box "xlate" is a pull down menu, select **9 HiTemp.**
(3) In the third box "Tag Name," enter in exact location this strobe will be placed.
(4) In the fourth box "Low", enter in the **low alert temperature.** For high temperature application this value may be as high as maximum ambient temperature according to electrical standards (40 degree C).
(5) In the fifth box "High", enter in the high alert temperature. For example, it is an electrical contact, and you would not want it to go above 100 degree C, then you enter in 100 in this box.
(6) The sixth box is "Delay." You may enter in a time interval for a sensor to alert. The value needs to be entered in seconds. For example, if you set a delay of 0 seconds, and your contact temperature rises up to 100 degree C, the line with the sensor in this location would turn red on the strobe display

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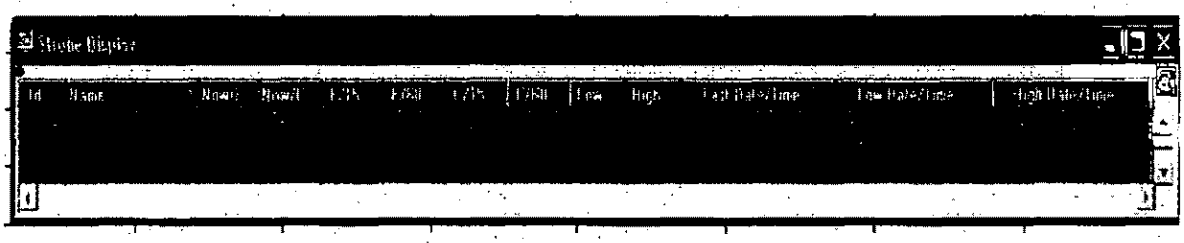
screen.
(7) Click "Save." You should now see your strobes on both the TempAssure strobe window and on the strobe display screen.

Strobe Display utility (Fig. 16) displays which sensors are installed and in which locations, and all other information chosen in Option Tab, such as Temperatures in Fahrenheit or Celsius degree, average temperatures for 15 or 60 minutes, the time stamp of last measurements, and so on.

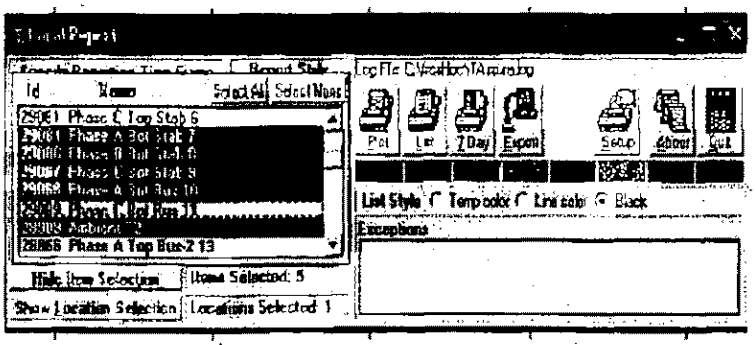
Figure 16: Strobe Display Utility



4.2.3 TempAssure Reporting Software

The data collected by WTMS may be view and analyzed using TAssure Local Report Program. LocalRpt is a reporting tool used with the TAssure program to print a report and graph changes in strobe temperature. LocalRpt also supports graphing of multiple Strobes for easy comparisons between strobes. The Local Report requires that Sensors and Receivers have names. Make sure that this has been done before starting Local Report. The first step in using the reporting program is to select the sensor locations for the report. Click on the Show Item selection button (Fig. 17). This will display a list of sensor locations (items) to choose from. LocalRpt automatically selects all of the items on the list by default. If you donít want all items included on the report, click on the Select None button and choose the specific items. When making your selection you may select multiple strobes by holding down the *Ctrl* key and clicking on each item. Then click on the Hide Item Selection Button.

Figure 17: Local Report: choosing the sensors for display



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The next step is selecting the time frame for the report (Fig.18). Use the Date/Time markers to select the starting and ending point. To increase or decrease the Date/Time use the arrow buttons next to the Date/Time you wish to change.

Figure 18: Local Report: selecting time frame

To run a report for an allotted number of days you may click the *Days* button and Input a value in the *Report for Last ___ Days* Blank.

The report is now ready to be created. Select the type of report to use. Select the *List* button and LocalRpt will gather a list of strobe entries and display them in a report format. To create a graph select the *Plot* button and LocalRpt will create a line graph from the data recorded in the TAssure.log file. Listed below are examples of the two types of reports. Shown in Fig. 19 is an example of the *Plot* type report, it creates a graph of the temperature for chosen strobes.

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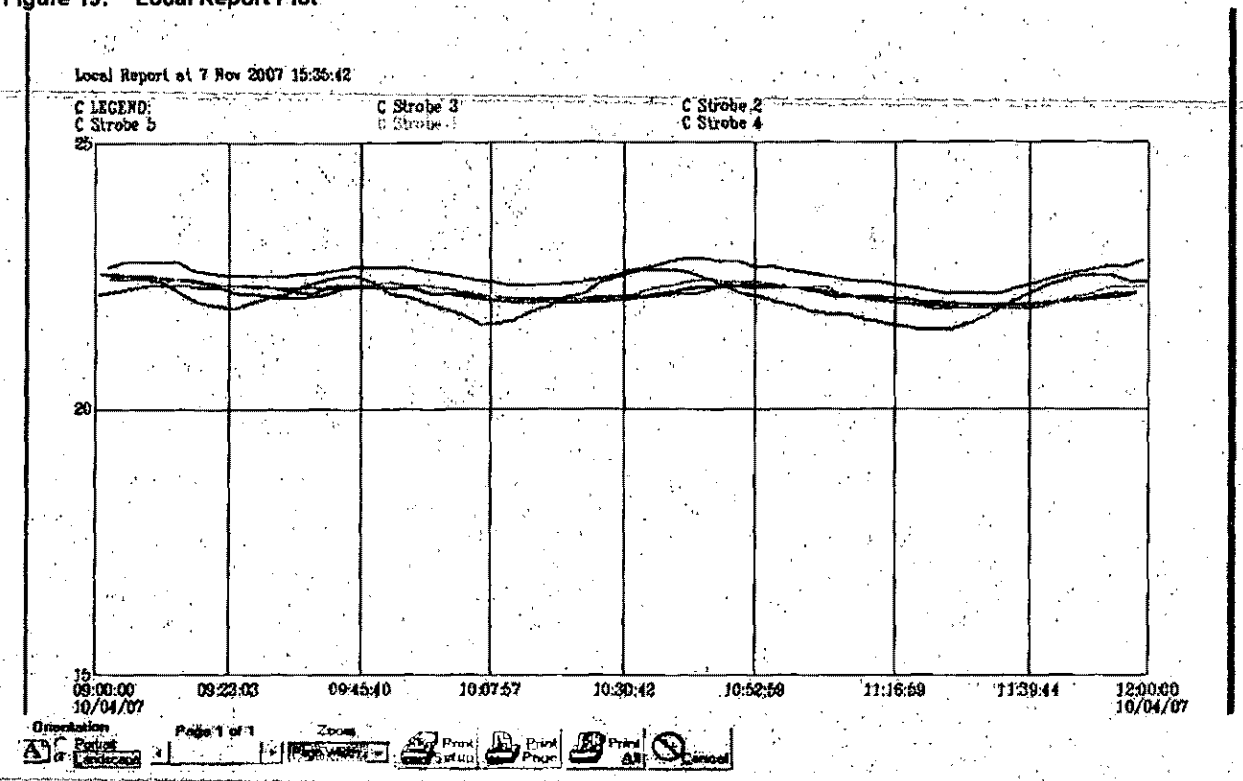
Figure 19: Local Report Plot



The data may be listed if the option "List" is chosen, then the data may be averaged for any selected time period and presented in tabular format. The data may be exported into text file, which is easily converted into Excel format for further analysis.

4.3. SCADA Software Integration

Most Supervisory Control and Data Acquisition (SCADA) and other monitoring software package have a Modbus driver either "built-in" or available as an option. In order to connect the Wireless Temperature monitoring system via Modbus to a software package, the Modbus TCP WTMS receiver will need to be utilized. The following steps should be followed to establish communications with the receiver and create a device tag within the SCADA software.

1. The WTMS receiver will need a static IP address. The unit comes preset with a default of 192.168.0.100.
   a. To configure the IP on the receiver, put your computer on the same subnet as the receiver (via the IP configuration of your PC). **Important:** Write down your settings before making the change. (Fig.20)
   b. Change the IP information on the receiver to work with your network, by going to the receiver website and clicking "Edit" under network settings. (See screen capture below) The website is located at http://<IP address of the reciever>, and can only be reached if your computer is on the same subnet as the device.

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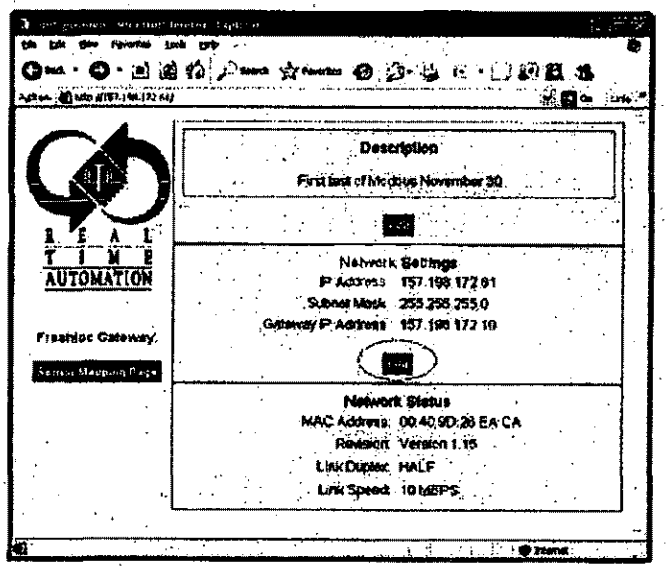
c. Change your PC IP settings back to the original settings you documented in step (a).

Figure 20:



2. The receiver has a range of registers that store the information for each sensor. The range starts at register 3801 and goes until 19800, with 20 registers allocated to each sensor.

Determine the sensor information that is stored at a specific register range by going to the Sensor Mapping Page from the link on the main page of the receiver. The table will only show entries for discovered sensors up to a maximum of 800 entries.

A sample mapping page is displayed in the screen capture below (Fig.21). The sensors are assigned a range by the receiver, as it detects them. The first range of 290 registers is referred to as Table 1, and so forth.

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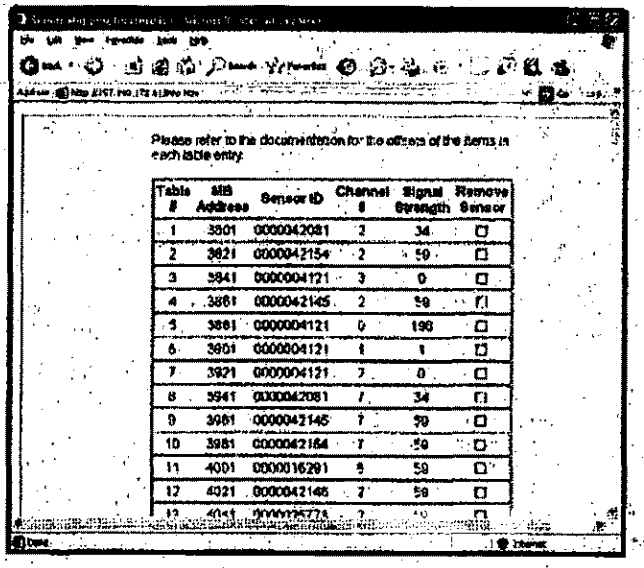
Figure 21:



Please refer to the documentation for the offsets of the items in each table entry.

Table #	MB Address	Sensor ID	Channel #	Signal Strength	Remove Sensor
1	3801	0000042081	2	34	☐
2	3821	0000042154	2	59	☐
3	3841	0000004121	3	0	☐
4	3861	0000042145	2	59	☐
5	3881	0000004121	0	198	☐
6	3901	0000004121	1	1	☐
7	3921	0000004121	7	0	☐
8	3941	0000042081	7	34	☐
9	3961	0000042145	7	59	☐
10	3981	0000042154	7	59	☐
11	4001	0000016201	5	59	☐
12	4021	0000042145	7	59	☐
13	4041	[illegible]	[illegible]	[illegible]	☐

Following is a list of useful quantities and their offsets within the range of registers assigned to each sensor:

Quantity	Offset
Sensor ID (two registers)	1 and 2
Celsius Reading in Hundredths of degree C	4
Fahrenheit Reading in Hundredths of degree F	14

Example:

To read the temperature in Celsius for Sensor ID 42154 displayed in the above diagram, you would send a ModBus read request to address 157.198.172.61, specifying the 3825 (3821 + 4), as the register number from which to read.

In the response packet you will get the temperature in hundreths of a degree Celsius. So if the temperature is 25 degrees Celsius you will get a ModBus response with the number 2500.

3. Clear the current sensor table by writing one to Modbus address 50000. This will also clear the flash tables.
4. Acquire sensor channels.
5. When all channels have been acquired (verify the sensor mapping as described in Step 2), write the sensor directory to flash by writing the value "2" to Modbus address 50001.

   NOTE: the flash write operation could take up to a minute depending on the number of channels acquired, so leave the unit powered up.
6. Setup the Modbus application to reference the sensor table locations acquired above.

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4.4. Modbus Specifications for WTMS Modbus TCP Receiver

A. Configuration - The TCP/IP Address, Subnet Mask and Default Gateway Address can all be addressed over the Modbus TCP network starting at Modbus location 60,000 for 12 registers. Each octet is a separate word. These parameters can also be configured via the configuration web page located at http://192.168.0.100/index.htm. The web page also allows an application name to be programmed into the device.

B. A maximum of 800 Sensor ID packets (Sensor ID/Channel) can be addresses through the Modbus Server Interface at device id1. Only sensor packets starting with 0x02 0x01 are decoded; all others are ignored

C. Modbus TCP Data Space Mapping

Table 1:

Modbus Address Holding Register	
1- 2	Sensor ID for table 1
3	Channel # for table 1
4	Reserved
5 - 6	Sensor ID for table 2
7	Channel # for table 2
8	Reserved
3113 - 3120	Sensor ID/Channel for table 800
3201 - 3250	Status Bit array
3251 - 3800	Reserved
3801 - 3830	Sensor Data Packet (table 800)
50000 (Write 1)	Clear Sensor Tables (a write of any value
50001 (Write 2)	Write Current Sensor Directory (a write of any value)
50002 - 50003 (read)	Master Tick count - reset when power cycled
60000	IP Address MSB
60001	IP Address
60002	IP Address
60003	IP Address LSB
60004	Subnet Mask MSB
60005	Subnet Mask
60006	Subnet Mask
60007	Subnet Mask LSB
60008	Gateway Address MSB
60009	Gateway Address
60010	Gateway Address
60011	Gateway Address LSB

D. Status Data starting at 3201 is a set of registers that provide packet arrival status. Each bit of the status data registers maps to a Sensor ID/channel combination. There are 800 bits (1 per Sensor ID/Channel Packet) in this structure (50 Modbus words). The bit will be set to a 1 to indicate that the table entry has data.

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Status Bits:

First word of status (3201) 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

table entry 16 ----------^

table entry 15 ----------^

table entry 14 ----------^

table entry 1 ----------^

Second word of status (3202) 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

table entry 17 ----------^

E. Sensor Data Packet Mapping (starting at Word 3801)
   1. Offset 0: SS Channel
   2. Offset 1: Sensor ISD (Two Words)
   3. Offset 3: Channel and Type
   4. Offset 4: Measurement (Celsius)
   5. Offset 5: Reserved
   6. Offset 6: Sequence Count
   7. Offset 7: Signal Strength
   8. Offset 8: Pre-correction
   9. Offset 9: Post-correction
   10. Offset 10: SSTID (2 Words)
   11. Offset 12: Delta Tick Count (2 Words)
   12. Offset 14: Measurement (Fahrenheit)
   13. Offset 15: Reserved (Four Words)

F. Sensor Data Packets are filled in the order that packets arrive. A Sensor ID/Channel block is assigned to a Sensor ID when the first packet for that Sensor ID is received.

G. Diagnostic packets are stored identically to Sensor ID packets.

H. Time Stamping - 100 msec tick count resolution measured from power on. This tick count is a double word. It resets on power on and rollover.

I. Diagnostics - If the Default Gateway IP Address has a non-zero value, diagnostic information will be broadcast in a UDP packet on port 45000. This packet will show the serial data received and the calculated checksum of the packet.

J. The Sensor Directory mapping will be saved to non-volatile flash memory when a value of <u>two</u> is written to the Modbus register 50001. This information will be restored when the Gateway powers up.

K. Temperature decoding - All temperatures for sensors are shown on Channel 12 and are two byte signed words. The values represent the temperature measured at the time received by the gateway (minus time to transmit which is well under 1 second). The measurement is a signed value in 100ths of a degree centigrade and the range is in excess of 150C.

L. Clear Sensor Tables - A write of <u>one</u> to Modbus address 50000 will clear the stored data tables (and write the directory to flash).

M. Write Sensor Directory - A write of two to Modbus 50001 will write the stored sensor directory to flash.

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SECTION 5

VALIDATION TESTS FOR WTMS PARTS AND PERFORMANCE

Square D Services designed and arranged a set of validation tests at independent laboratories, and provided required documentation for the tests. Below is a listing of test providers and description of the tests' goals and results. Complete reports of all test listed are available upon request.

Testing Providers:

- **Square D Services Engineering**
- **Square D RF Laboratory**
- **Freshloc Technologies**
- **Independent Testing Services:**
  - Met Laboratories
  - Underwriters Laboratories
  - FCC
  - Nemco USA

5.1. Validation Tests provided by Square D Engineering Services

5.1.1. Calibration Technique for Square S High Temp Sensors (direct thermal contact with the surface)

Square D Engineering developed a new calibration technique providing sensor calibration in the conditions adequate to the system application. All sensors are calibrated within the oven with stabilized ambient temperature with the sensors installed on the surface of metal bus, which temperature is changing within the range of T from 0°C to 150°C and controlled with TCs.

5.1.2. Testing of Adhesion Quality of Silicone RTV as HT adhesive

Two different properties of high temperature adhesive have been tested to approve an adhesive for using it for attachment of wireless temperature sensors in energized electrical equipment: (1) chemical inertness at high temperatures towards metallic and insulating surfaces, and (2) an ability to hold the sensors in vertical or upside down position for the period in service. Testing of Silicon RTV sealant at high temperature proved that the product provides a good adhesion and is chemically inert towards the surface to which the sensors may be attached. This adhesive leaves no residue on metal surfaces of the bus or insulation after the sensors have been removed. Additional testing was provided by Freshloc technologies on Silicone adhesive strength. The preferred adhesive was placed on a test bus bar and allowed to cure for 24 hours. The bus bar was then heated to approximately 150°C for two hours. At the end of two hours, the adhesive was tested to tolerate a load of up to 20 lbs. The bond strength measure proved that the silicone adhesive is sufficient to hold the weight of the sensor in vertical or upside down configuations.

5.1.3. Influence of High Voltage on Sensors Performance Signal Transmittance Test setup

The measurements have been conducted using HiPot Set providing high voltage on the metal part using a Step-up VT that allows raising the voltage

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up to 100 kV. Step-up VT is a source of corona by itself. Several Square D High Temp sensors were positioned on piece of copper bus bar, which was connected to Step-up transformer with the cable. The voltage has been raised from 5 kV to 50 kV and held for 10 minutes at each voltage. At the last stage of the test the voltage has been raised to 25 kV and was hold at this value for one hour. During the test the receiver was in close proximity to the Step-up transformer at the distance about 5 feet. During the runs with 50 kV applied to bus bar corona occurred, which produced very strong sound. Multiple sensors have been located close to energized piece of bus bar to determine if their functions as well as performance of Receiver are affected by HV corona.

Test Results
The effect of high Voltage and Corona in close proximity to the wireless sensors has been found insignificant.

5.2. WTMS Validation Tests Provided by Testing Services

The following tests (Table 2) have been provided by Met Laboratories, Underwriters Laboratories in Northbrook, IL and RF Laboratory of Square D in Raleigh, NC. and Nemco USA, Inc. Test reports are available upon request. FCC certification report has been received from Freshloc Technologies.

Table 2:

No.	Test	Standard, Level	Test Lab	Comments, Results
1	UL Test / installation Category	UL 3111-1, IEC 61010-1, UL 61010B-1 and IEC/EN1010 Level III	**UL Lab Northbrook**	Completed, Passed
2	Vibration Test	IEC61010-1 PMO SEP1001	**Met Lab**	Completed, Passed
3	Drop Test	PMO SEP 1002	**Met Lab**	Completed, Passed
4	EMC Tests	FCC Part 15, Class A/CE Heavy Industrial/Radiated/Conducted	**FCC**	Certified
5	EMI Tests	IEC 6100-4-4, Level 3; 4-3; 4-3; 4-8 4-2, level 3; 4-5 level 4	**Square D RF Lab**	Completed, Passed
6	EMI Tests (European Standards for CE Mark), Receivers	ETSI EN 300 220-3 V1.1.1 (2000-09); ETSI EN 301 489-1 V1.4.1 (2002-08); ETSI EN 301 489-17 V1.2.1 (2002-08); IEC 60950-1/EN 60950-1	**Nemco USA, Inc.**	Completed, Passed
7	EMI Tests (European Standards for CE Mark), Sensors	ETSI EN 301 489-1 V1.4.1 (2002-08); ETSI EN 301 489-17 V1.2.1 (2002-08); IEC 60950-1/EN 60950-1	**Nemco USA, Inc.**	Completed, Passed

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SECTION 6

REFERENCES

1. "Technical Specification for Wireless Temperature Monitoring System," Square D Technical Library, Specification Number: 16090-10 (26 01 20.14). Product Name: Wireless Temperature Monitoring System [On-Line]. Available:
http://ecatalog.squared.com/pubs/Electrical%20Distribution/26%2001%2020.14.doc

2. "Technical Specification for Wireless Temperature Monitoring System - Consulting Services," Square D Technical Library, Specification Number: 16090-11 (26 01 20.15). Product Name:
WTMS - Consulting Services [On-Line]. Available:
http://ecatalog.squared.com/pubs/Electrical%20Distribution/26%2001%2020.15.doc

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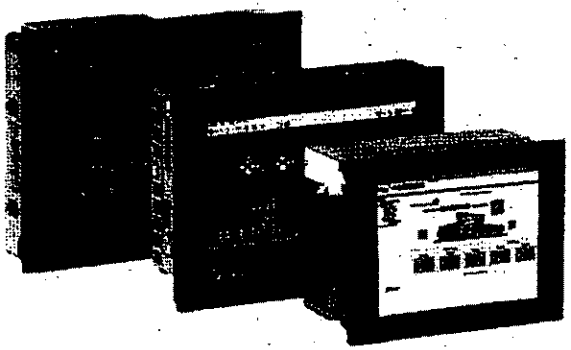
Magelis Compact iPC

General purpose

Heavy duty

Universal industrial PC



Magelis Compact iPCs are universal industrial PCs with a PCI slot, an optional DVD reader, and a slim build that easily integrates into automation equipment. They can accommodate hard disks with a large capacity, or Flash disks with no rotating parts for more demanding applications. They offer (IP65) protection and their touch screens (8.4", 12", and 15") are the same sizes as the rest of the Magelis range. It also has Intel Celeron M processors (Pentium M), two Ethernet ports (one of which supports very high speeds), and exceptional openness with Windows XP Pro operating system. They have UL 508 certification for automation equipment and UL certification for hazardous locations.

Magelis Compact iPCs support Vijeo Designer applications (demonstration version can be expanded to unlimited version) and can be used in tandem with the Vijeo Citect SCADA supervisor.

HDD 80/160/250 GB* General purpose

Flash disk 15GB Heavy duty

8.4" - 12" 15" Touch screens

Vijeo Designer

Vijeo™Citect™

* 250 GB coming soon

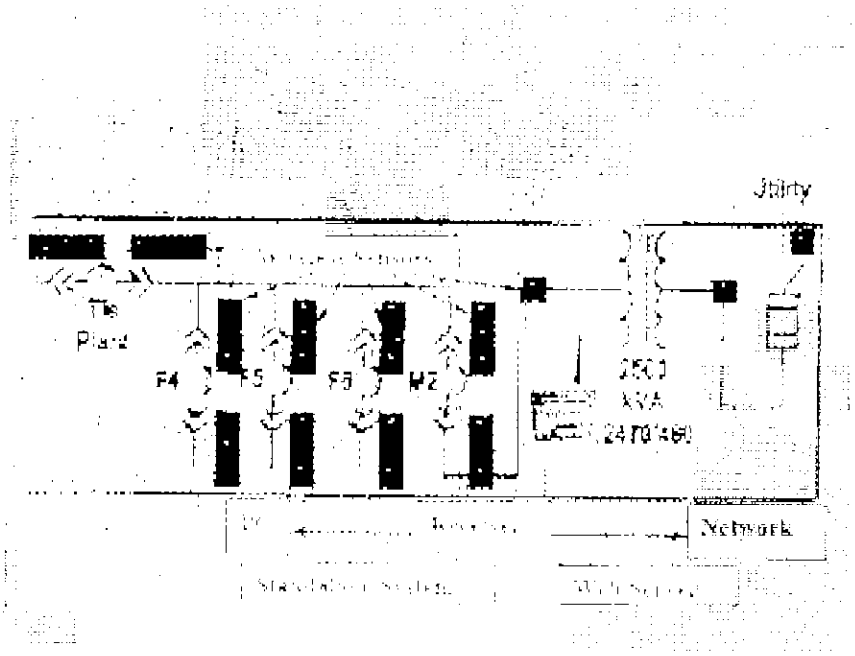
Windows XP Professional

Wireless Temperature Monitoring System

Application Notes and Installation Manual

0180IB0801R12/09

Retain for future use.



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SQUARE D

HAZARD CATEGORIES AND SPECIAL SYMBOLS

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service or maintain it. The following special messages may appear throughout this bulletin or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of either symbol to a "Danger" or "Warning" safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, **will result** in death or serious injury.

⚠ WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, **can result** in death or serious injury.

CAUTION

CAUTION, used without the safety alert symbol, indicates a potentially hazardous situation which, if not avoided, **can result** in property damage.

Provides additional information to clarify or simplify a procedure.

PLEASE NOTE

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

FCC NOTICE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. This Class A digital apparatus complies with Canadian ICES-003.

FCC RADIO FREQUENCY INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna;
- Increase the separation between the equipment and receiver;
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

NOTE: Consult the dealer or an experienced radio/TV technician for help.

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SECTION 2	RECEIVING, HANDLING AND STORAGE
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SECTION 4	WTMS INSTALLATION
SECTION 5	VALIDATION TESTS FOR WTMS PARTS AND PERFORMANCE
SECTION 6	REFERENCES

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SECTION 1

SAFETY PRECAUTIONS

In this section:

This section contains important safety precautions that must be followed before attempting to install, service, or maintain electrical equipment. Carefully read and follow the safety precautions outlined below

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- The hardware of Wireless Temperature Monitoring System, the sensors, may be installed only on completely de-energized and removed out-of-service electrical equipment, such as circuit breakers or switches. To de-energize apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E
- Only qualified personnel familiar with electrical equipment are to perform work described in this set of instructions.
- Perform such work only after reading and understanding all of the instructions contained in this manual.
- The circuit breaker must be in the open (O) position.
- All circuit breaker springs must be discharged.
- Switchgear primary conductors should be grounded.
- Handle this equipment carefully and install, operate and maintain it correctly in order for it to function properly. Neglecting fundamental installation and maintenance requirements may lead to personal injury as well as damage to electrical or other property.
- Carefully inspect your work area and remove any tools and objects left inside the equipment.
- All instructions in this manual are written with the assumption that the customer has taken these measures before performing the installation of wireless sensors inside electrical equipment.

Failure to follow this instruction will result in death or serious injury.

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SECTION 2

RECEIVING

Upon receipt, check the packing list against the equipment received to ensure the order and shipment are complete. Claims for shortages or errors must be made in writing to Schneider Electric within 60 days after delivery. Failure to give such notice will constitute unqualified acceptance and a waiver of all such claims by the purchaser.

Immediately inspect the equipment for any damage which may have occurred in transit. If damage is found or suspected, file a claim with the carrier immediately and notify Schneider Electric. Delivery of equipment to a carrier at any of the Schneider Electric plants or other shipping points constitutes delivery to the purchaser regardless of freight payment and title. All risk of loss or damage pass to purchaser at that time.

For details concerning claims for equipment shortages and other errors, refer to Schneider Electric "Terms and Conditions of Sale."

HANDLING

Use care when handling the wireless temperature monitoring hardware.

STORAGE

When the parts are not in use keep them in a clean, dry, heated corrosion-free area where it is protected from damage. When the monitoring system hardware is stored for prolonged periods, inspect it regularly for overall condition.

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SECTION 3

APPLICATION NOTES AND SPECIFICATIONS

3.1. System Description

The Wireless Temperature Monitoring system (WTMS) monitors temperatures of the surfaces of energized electrical equipment (see Section 6, Ref [1], Product Specifications 16090-10).
The system consists of three components:

- Sensors (wireless transmitters)
- Receivers (signal receiving units)
- Software (processing, alarming and reporting software)

Square D High Temperature Sensors are designed to actively measure the temperature of the strategically important points on metal or insulating surfaces of current carrying parts. The sensor design allows measuring the temperature in wide range, from 0 to 150° C. The Receiver receives the RF signals from the sensors with temperature, time stamp and identification information from the sensors and relays this information to PC.

Software processes the sensor information and records it into a textual log file. Two versions of software are available: one providing the system working in standalone mode (TempAssure), another in conjunction with power monitoring system.

The system is developed in collaboration with Freshloc Technologies. The Square D High Temperature Sensor is proprietary property of Schneider Electric.

3.2. How WTMS Works

WTMS is quickly and easily installed in any facility by deploying multiple sensors in positions throughout energized equipment to continuously monitor surface temperature. The sensors transmit a packet every three minutes, or, if the temperature is increasing fast, every minute.

The packet is picked up by a near Receiver/Repeater. Receivers have a typical range of 100 feet with sensors mounted in equipment and up to 500 feet if there are no obstructions. The Receiver (antenna) is centrally installed in the switchgear room (a single Receiver can receive information from 100 sensors).

Depending on number of the sensors in the system and the size of facility, a series of the Receivers can be connected in daisy chain. Once the data is picked up by the receiver the data is placed on the Receiver network. The Receiver network uses standard category 5 Ethernet Cable to daisy chain the Receivers supplying power and a way to communicate back to the PC. Another option is to transfer the data to PC via multiple ethernet ports.

A PC installed at the facility or the existing facility network is used. In standalone mode of WTMS, the TempAssure Software is installed on a local PC and sensing parameters are set (WTMS allows adjusting alert conditions to Customer specific needs). Temperature information may be reviewed by the Customer or by Square D Engineering Support (see Section 6, Ref [2], Product Specifications 16090-11- WTMS Consulting Services) via modem or Internet. Alerts or reports can be sent to the customer in numerous ways such as by cell phone, two-way pager, or email. Web monitoring is also an option.

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3.3. System Features

Easy Installation - Installation of software and Receiver is simple. Sit the Receiver in a safe area or mount it to a clean flat surface using a strong adhesive. The software is also easy to install.

Monitoring - Software allows you to monitor the temperature readings from all active sensors.

Long Range - Antenna receives sensor signals up to 100 feet (30 meters) away.

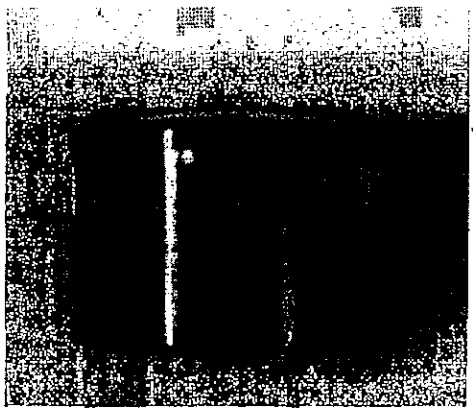
Population - The system can monitor unlimited number of sensors without interfering with one another or loss of identification.

Supervision - The System receives transmissions every 5-10 minutes depending on thermal condition, so you can respond quickly to any problems.

3.4. Square D High Temp Sensors Features

The Sensors are all-in-one temperature sensors and identification tags (Fig 1). The Sensors detect ambient temperature and continuously send radio frequency information to the Receiver. The device transmits the information it has collected using a low power RF transmission. The Sensors are calibrated accordingly to application to give accurate temperature readings.

Figure 1: Wireless Square D High Temperature Sensor



Low Cost Installation - The sensors are wireless and can be placed almost anywhere by using a high temperature adhesive.

Operation - In direct contact with the surface.

Long Battery Life - Sensors last up to 5 years on a High Temperature 3V lithium battery.

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3.4.1 Application Sensors

Wireless sensors can be applied to any type of new or used LV and MV electrical equipment such as switchgear, circuit breakers, capacitor banks, transformers, motors, busways and cables. The sensors can be also used on HV and EHV electrical equipment.
The sensors can be applied for measuring temperature of any strategically important points inside energized apparatus, such as stationary contacts, finger clusters, stabs, bolted connections, as well as any other important locations where temperature should be controlled. The number of points to monitor inside the unit is not limited. It is considered important to install the sensors on each phase of the apparatus both on load and line side. Sometimes it is possible to detect a problem based on lesser number of the sensors, for example only on load side, but this decision should be made based on design and application features. The only limitation is applying the sensors would be the dimension of the space available at the point of interest, which should be not less than 1.5 x 1.5 x 1.5 inch^3 (4 x 4 x 4 cm^3). The sensors can be attached to either metallic or insulating surfaces and in any position using installation technique and adhesives recommended in section 4.1.1.

Examples of sensor installation points are shown in Fig. 2 for LV and MV circuit breakers. Fig. 3 and Fig. 4 show positions of the sensors on the stabs buses and cable connections inside LV switchgear, and MV switchgear, as well as suggested positions of the sensors for measuring temperature of ambient air inside the cells.

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Figure 2: Wireless temperatures sensors on finger clusters of LV and MV Circuit Breakers.

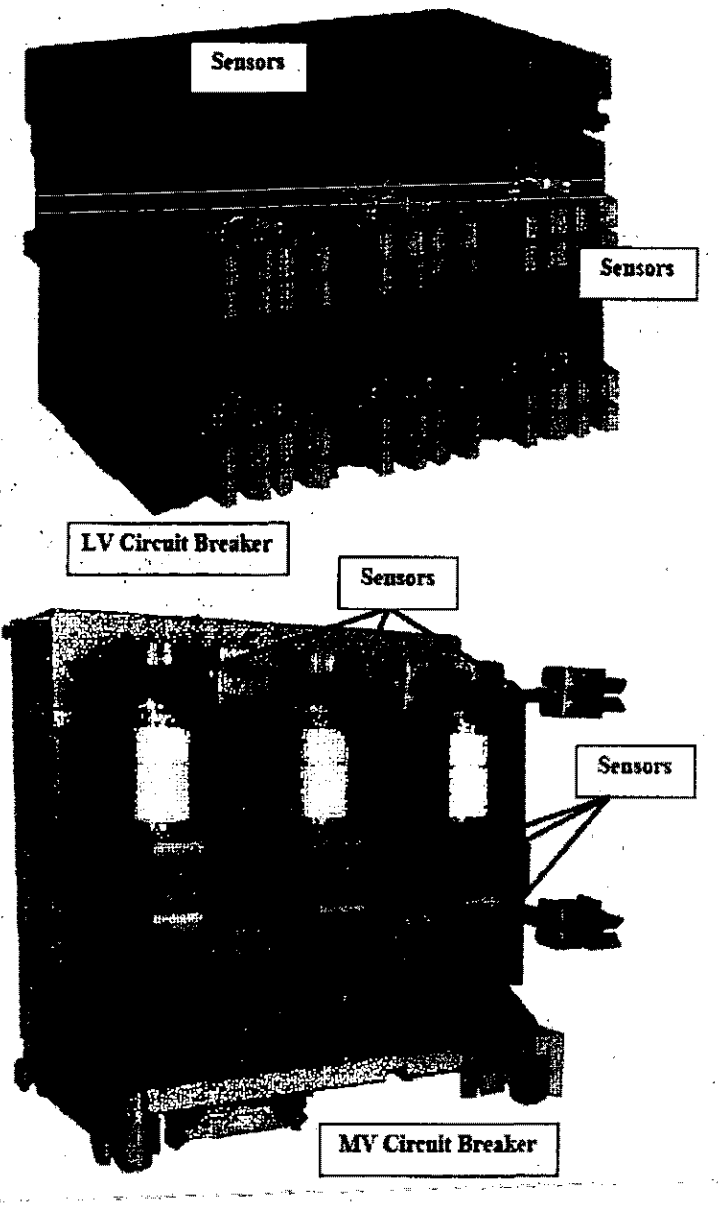

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Figure 3: **Wireless temperature sensors on buses and bolted cable connections inside LV switchgear.**

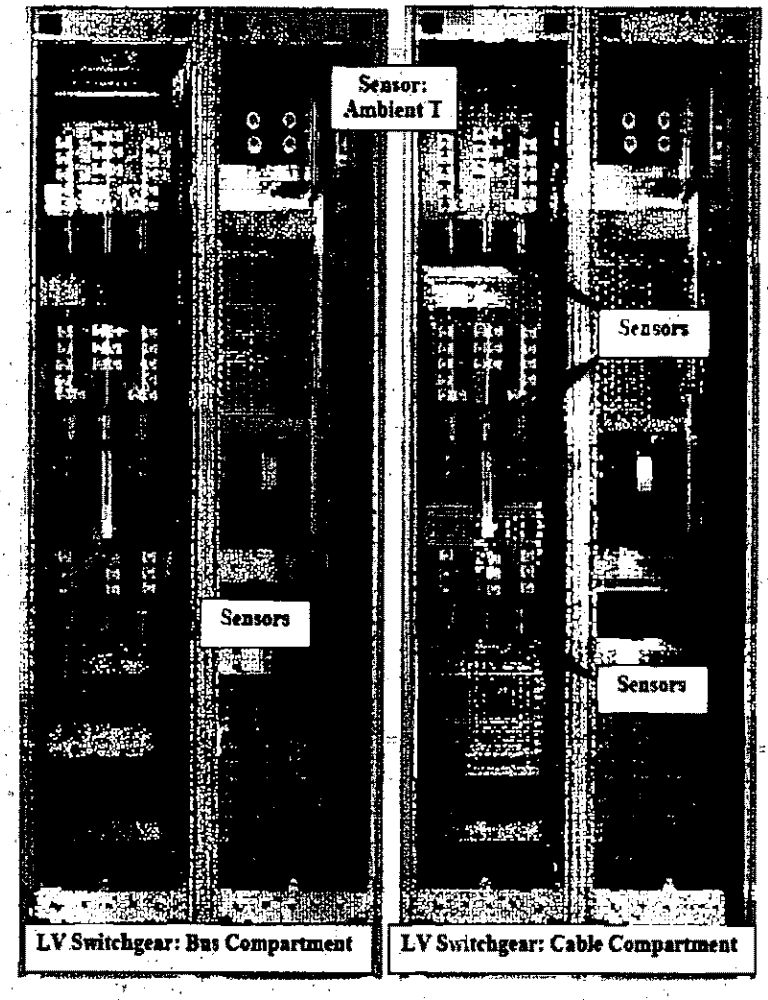

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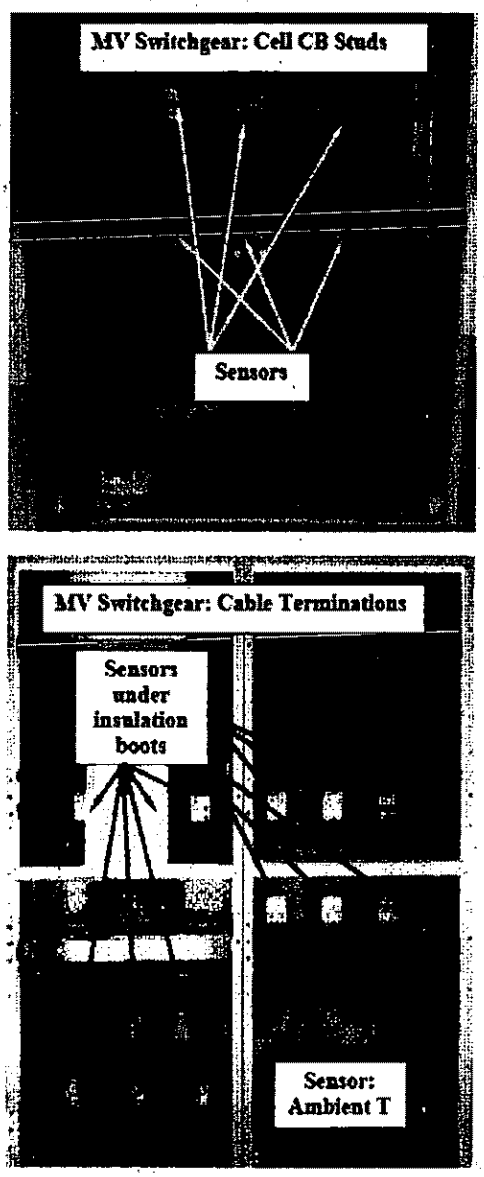
Figure 4: **Wireless temperature sensors on stabs and bolted cable connections inside MV switchgear.**



3.5. Sensor Specifications

Type: Sensor and Radio Frequency Transmitter .

Physical Dimensions: Sensor casing: D=1.5 in. (40 mm), H =1 in. (25 mm)

Weight: < 20 g (0.7oz.)
Enclosure: Non-conductive, High T and UL rated, waterproofed for humid and corrosive environment

Operating Temperature: Low: 0° C (32° F); High: 150° C (300° F)

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Transmission Range: 100 ft. (sensors installed in switchgear), 500 ft. (open air).

Mounting Location: On flat clean surface using High T adhesive

Transmission Frequency: Transmittance intervals change based on the rate of the temperature change. Signal is picked up by receiver, typically once every 5-10 minutes.

Battery: High T 3V lithium battery, easily replaceable in the field

3.6. WTMS Receiver Features

The WTMS monitors all Sensors, actively measuring temperatures in a selected area. The Receiver constantly monitors and listens for strobe transmissions. The receiver determines if the signal it hears from the strobe is valid or if it is noise to be filtered out.

The receiver will mark the transmissions with the proper packet and send it via a network to a computer for processing.

There are two different types of unit, one receiving single-band RF transmissions and another using spread spectrum technology.

3.6.1 Single-band Receiver

The Single-band Receiver (Fig.5) receives RF single-band transmissions and sends them via RS-485 to a local PC. The RS-485 structure allows for transmissions of long distances, which permits the use of multiple Receivers to be connected, in series, for large coverage areas.

Power can be supplied to the Receiver in two ways: by using either the power transformer supplied with the Receiver or via the RS-485 Bus using the B&B RS-485 to RS-232 converter for Receivers mounted in area that do not have any power sources.

Figure 5: Single-band Receiver

Single-band Receiver specifications are given in Section 3.7.1.

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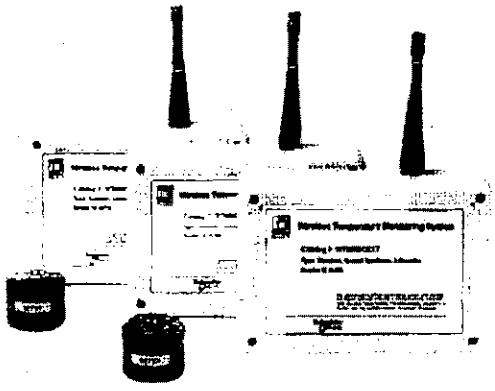
3.6.2. SST Receiver

The SST Receiver is using Spread Spectrum Technology. It is available in three different versions (Fig.6), plus a repeater version.

- Serial SST Receiver is connected to a local PC via RS-485 using the same connection kit as a single-band receiver. Both types of serial Receivers can be connected to a local PC via local network using Ethernet Serial Server.
- SST Receiver with wired Ethernet Connection (802.3).
- Wireless Extension SST Receiver, which provides wireless transmission of the RF signals to any wired SST Receiver thus doubling the distance between the transmitters and receiving units.
- Ethernet SST Receiver with Modbus TCP communication protocol.

Either the Serial or 802.3 Ethernet type of wired Receiver accepts temperature and identification information from the Strobe Sensors and relays the information to the TempAssure Software (see section 4.2), which displays the activity of all wireless Sensors and logs their temperature readings into a text file for future reference and analysis. A diagnostic screen allows the user to monitor the system for any problems in the sensory network. .

Figure 6: SST Receivers: Serial, Wired Ethernet, and Wireless/Extension versions.



SST Receiver specifications are given in Section 3.7.2.

3.7. Receiver Specifications

3.7.1 Single-band Receiver Specifications

Type: Single-band RF receiver

Physical Dimensions: 5.25in. x 2.5in. x 1in. (13.3cm x 6.4cm x 2.5cm)

Weight: 1/2lb. (230g)

Detection: Internal 1/4 wave monopole antenna, 92 dbm sensitivity minimum, 105dbm sensitivity typical. Min: 100 ft. Max 500 ft.

Connections/Communications: RJ-45/RS-485 link to computer. 57,600 baud, no parity, 8 bits, one stop bit, asynchronous link to computer

Power Requirements: 5VDC minimum @25 milliamps

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Mounting Location: Hanging on the pole, or attached to a flat, clean surface using adhesive.

Operating Temperature: 10°C to 40°C (50°F to 104°F)
Accessories: Square D High Temp Sensors

Bus Adapter Kit: Connection Kit - RS232 to RS485 Converter; RJ45 to DB25F Converter; 7ft. CAT5 RJ45 Cord; 485PS - Power Supply

Bus Protocol: Proprietary

Certifications: Part 15 FCC approved

3.7.2 Spread Spectrum Receiver Specifications

Type: Spread Spectrum Receiver (SST Receiver)

Frequency Range: 902-928MHz

Physical Dimensions: 6in. x 4in. x 1.25in. (15cm x 10.2cm x 3.2cm)

Weight: 1/2lb.

Minimum Reception Range: Omni-directional 300ft. line-of-site. Range reduced by obstructions.

Connection/Communications:

- *Serial SST Receiver:* RJ-45/RS-485 link to computer. 115,200 baud, no parity, 8 bits, one stop bit, asynchronous link to computer.
- *Ethernet SST Receiver:* RJ45 Power (2.1mm)

Power Requirements: 6VDC, 500 mA

Mounting Location: Hanging on the pole, or attached to a flat, clean surface using adhesive

Operating Temperature: -28°C to 85°C (-18°F to 185°F)

Accessories: Square D High Temp Sensors.

Bus Adapter Kit: *Serial SST Receiver:* Connection Kit - RS232 TO RS485 Converter; 7ft. CATS RJ45 Cord; and 485PS - Power Supply

Bus Protocol:

- *Serial SST Receiver:* Proprietary
- *Ethernet SST Receiver (802.3):* Proprietary
- Ethernet SST Receiver (Modbus): Modbus® TCP

Certifications: Part 15 FCC approved, CE certified

3.7.3 Ethernet SST Modbus® Receiver Connectivity

Ethernet SST Receiver with Modbus® TCP Protocol is equipped with an additional port, which allows using it as a Serial SST Receiver. This function is provided to facilitate WTMS setup preparatory procedure. This option could be utilized in optimization of sensing and receiving units' positions, while using a simple standalone version of the system software. This version may be also used prior to WTMS integrations into a customized monitoring system.

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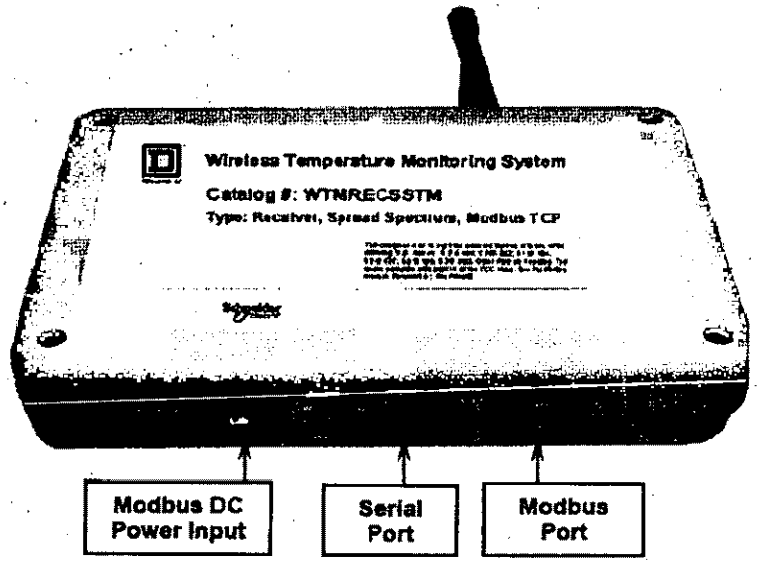
In Fig. 7, position of the ports for Ethernet cable and DC power input for utilization of the Modbus® module are shown. The third port is designated for connecting the Receiver to PC via connection kit (shown in Fig.11) directly or using an optional Ethernet Serial Server. The use of Serial module would require a connection kit and TempAssure software installed on local PC. When the Serial module is utilized, the receiver will be powered via a power supply that is included in the connection kit (the power input on the receiver will not be utilized).

Figure 7: Positions of the Parts on the Ethernet SST Receiver with Modbus® TCP.



CAUTION

HAZARD OF EQUIPMENT DAMAGE

- Wireless Temperature Monitoring for use with Low Voltage and Medium Voltage electrical equipment.

Failure to follow this instruction can result in equipment damage and void the warranty.

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⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Install and remove Wireless Sensors only on de-energized equipment and removed out of service electrical equipment. To remove or take out of service any circuit breaker or switch refer to OEM manual for these devices.
- To de-energize electrical equipment apply appropriate personal protective equipment (PPE) and follow safe work practices. See NFPA 70E.

Failure to follow to follow these instructions will result in death or serious injury

SECTION 4

WTMS INSTALLATION

4.1. Installation of Temperature Monitoring Hardware

Hardware of Wireless Temperature Monitoring System consists of the set of temperature monitoring devices (wireless temperature sensors), signal receiving devices (Receivers) and connecting kit for connecting the Receiver to PC and supplying power to the Receiver.

4.1.1. Installation of the sensors

Use the following procedure to attach wireless sensor to the part for which the temperature is to be measured. The sensor can be installed on any flat surface made of metallic materials. The sensor cannot be installed on any movable contacts or lubricated areas.

Surface preparation note: If sensors are installed on metallic surfaces on current carrying part, on insulation, or on compartment doors, the surface should be cleaned from any dust, particulate matter and moisture with a clean dry cloth. If needed use a mild cleaner to remove grease or dirt from the surface.

Adhesives:

1. RTV Silicone Adhesive (requires about 24 hours curing at room temperature).
2. Instant adhesive ("super glue") should hold the sensor in place long enough for the silicon to cure. It is rated for about 125°C (~260°F), so the bus bar should be kept below this temperature during the curing process.

The application procedure should be as follows:

Different views of the sensor are shown in Fig.8. It is pictured from the top (left) and from the bottom (right), and the sensor case is shown in the center. For installation, the units should be disassembled by removing the lid and the sensor assembly (Fig.8) from the case. The case should be glued onto the equipment surface with the bottom facing the surface. After the sensor case is attached to the surface, the sensor assembly should be inserted into the case with the copper enclosure getting into the opening in the case bottom and the lid should be snapped in to close the case.

1. Apply a ring of silicone in the area between the outer edge of the small elevated ring located at the opening in the case center and the edge of

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Eric Winkler
Project Manager

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Construction Trailer
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www.vrhcorp.com

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From: Don Sapanara [mailto:don.sapanara@smelectric.com]
Sent: Tuesday, November 16, 2010 1:50 PM
To: Winkler, Eric
Cc: Konen, Jeff; Al Fosbenner; Pete Cheche III; Russ Elliott
Subject: Switchgear SA Schedule

Eric,

Our schedule for completing Switchgear SA is attached. We have a commitment from Siemens to meet our testing and recertification dates. I'm waiting for a firm commitment from them on meeting the final report dates.

Don Sapanara
Project Manager

S.M. Electric Co., Inc.
601 New Brunswick Ave.
Rahway, NJ 07065

Main Office:
Phone 732-388-3540
Fax 732-388-3052

ConocoPhillips Site:
Phone 908-523-5508
Fax 908-523-5143

[redacted]

From: Winkler, Eric [mailto:E.Winkler@vrhcorp.com]
Sent: Tuesday, November 16, 2010 3:44 PM
To: Leonardo, Raul; Lochard, Daniel
Subject: FW: Switchgear SA Schedule

Ret, Herman

From: Lochard, Daniel
Sent: Wednesday, December 08, 2010 4:57 PM
To: Ret, Herman
Cc: LaMarca, Thomas; Nunez, Daniel
Subject: EWR 264,003 - 3rd Party Testing

Good afternoon Herman,

Be advised that Scott Testing will not begin testing of Switchgear SA tomorrow (Thursday) as previously scheduled.
Their Sub-contractor Approval Request is not finalized.
They are tentatively scheduled for Friday, December 10, 2010.

I'll give you an update tomorrow.

daniel

SIEMENS

Ft. Worth, TX ModCenter

WL Low Voltage Power Circuit Breaker Certified Test Report

Catalog #:	C3F340ZYXXXXXXN		
Breaker Type:	UL489 Fixed Mounted Breaker		
CBID:	004001281211031	FS: 3	Frame Rating: 4000
Base Frame ID:	000491250829088	Interupt Cap.:	150 kA
Trip Unit ID:	000774341014768	ETU776, GF-Alarm and Trip	
Test Station:	MC13:	Rating Plug:	4000

Test Date: 11/17/2010

Production Order: 9101273996

Sold To: MONARCH ELECTRIC CO INC
ONE DODGE DR
30028917
WEST CALDWELL, NJ 07006

Ship To: MONARCH ELECTRIC CO INC
%NEWARK LIBERTY AIRPORT
30028917
NEWARK, NJ 07114

☑ Identify Test Performed - Incl. Programming, Labeling, Catalog Order Check

☑ Mechanical Accessory Tests Performed - Incl. Manual Mechanism Charging, Anti-Pumping, Trip/Close Solenoids, UVR, Motor, Aux. Switch Bell Alarms etc. (as per installed)

☑ Dielectric / Hi-Pot Tests Performed - Incl. @2.65kv: Open x A,B,C; Closed: AB, BC, AC, AG, BG, CG
@1.80 kV: Accessories to Ground
@1.20 kV: Motor connection to Ground

Primary Injection Test	Settings *ETU Initial settings / Test Current etc.: See Note 3*	Results A	B	C	*	Acceptable Range Min	Max
Long Time Pickup (A)	IR(xIn): 0.4 Inj A: 1600 tR(s): 5.5	1680				1600	1760
Long Time Delay (S)	Test Current: 4800	18.9				17.6	22
Short Time Pickup (A)	Isd(xIn): 1.3 Inj A: 5000 Tsd(s): 0.02		5554			5000	6000
Short Time Delay (S)	Tsd(s): 0.4 Test Current: 6250		0.457			0.43	0.48
Instantaneous Pickup (A)	Ii(xIn): 1.5 Inj A: 6000			6507		6000	7200
Ground Fault Pickup (A)	Trip: B Alarm: B Tg(s): 0.1				676	600	720
Neutral Delay (S)	tR(s): 2 IN(xIn): ON / IN = 0.5 x In Inj A: 2000 Test Current: 4000				16.7	14.4	18

UVR Drop-out Voltage: 0

Notes:
1. This WL Low Voltage Power Circuit Breaker was tested in accordance with ANSI/IEEE C37.50-1989
2. The above tests were carried out according to controlled Siemens-Ft. Worth test inspection plans and standards on calibrated equipment. This process and documentation is controlled and audited by UL in accordance with ISO9001:2008. Certification available upon request.
3. All delay test settings are the same as for the preceding pickup test unless otherwise noted.
4. All WL Circuit Breaker ETUs are set to factory default safety settings prior to shipment. [Lowest Pickups, Shortest Delays, N-protection off, Memory Off, GF=sumI]
5. The above product identification information [ETU, Catalog Number etc.] is accurate as of the test date. Any changes to this configuration are not covered by the above test results.
6. For product support, please contact your sales representative or customer service at: chrystelle.williams@siemens.com
7. DNT indicates 'Did Not Test' and represents a test not applicable to this configured breaker.

Shelby D. Nelms

Shelby D. Nelms
Quality Manager, Siemens - Ft. Worth ModCenter

SIEMENS

Ft. Worth, TX ModCenter

WL Low Voltage Power Circuit Breaker Certified Test Report

Catalog #:	M3A340ZYGCXG8CN		
Breaker Type:	ANSI (UL1066) Drawout Circuit Breaker		
CBID:	004001281007016	FS: 3	Frame Rating: 4000
Base Frame ID:	000491280423142	Interupt Cap.:	150 kA
Trip Unit ID:	000774341015361	ETU776, GF-Alarm and Trip	
Test Station:	MC13:	Rating Plug:	4000
Test Date:	11/17/2010		

Production Order: 9101011165

Sold To: MONARCH ELECTRIC CO INC
ONE DODGE DR
30028917
WEST CALDWELL, NJ 07006

Ship To: MONARCH ELECTRIC CO INC
%NEWARK LIBERTY AIRPORT
30028917
NEWARK, NJ 07114

☑ Identify Test Performed - Incl. Programming, Labeling, Catalog Order Check

☑ Mechanical Accessory Tests Performed - Incl. Manual Mechanism Charging, Anti-Pumping, Trip/Close Solenoids, UVR, Motor, Aux. Switch Bell Alarms etc. (as per installed)

☑ Dielectric / Hi-Pot Tests Performed - Incl. @2.65kv: Open x A,B,C; Closed: AB, BC, AC, AG, BG, CG
@1.80 kV: Accessories to Ground
@1.20 kV: Motor connection to Ground

Primary Injection Test	Settings *ETU Initial settings / Test Current etc.; See Note 3*	Results A	B	C	*	Acceptable Range Min	Max
Long Time Pickup (A)	IR(xIn): 0.4 Inj A: 1600 tR(s): 5.5	1689				1600	1760
Long Time Delay (S)	Test Current: 4800	17.9				17.6	22
Short Time Pickup (A)	Isd(xIn): 1.3 Inj A: 5000 Tsd(s): 0.02		5420			5000	6000
Short Time Delay (S)	Tsd(s): 0.4 Test Current: 6250		0.456			0.43	0.48
Instantaneous Pickup (A)	I(xIn): 1.5 Inj A: 6000			6354		6000	7200
Ground Fault Pickup (A)	Trip: B Alarm: B Tg(s): 0.1				673	600	720
Neutral Delay (S)	tR(s): 2 IN(xIn): ON / IN = 0.5 x In Inj A: 2000 Test Current: 4000				15.9	14.4	18

UVR Drop-out Voltage: 0

Notes:
1. This WL Low Voltage Power Circuit Breaker was tested in accordance with ANSI/IEEE C37.50-1989
2. The above tests were carried out according to controlled Siemens-Ft. Worth test inspection plans and standards on calibrated equipment. This process and documentation is controlled and audited by UL in accordance with ISO9001:2008. Certification available upon request.
3. All delay test settings are the same as for the preceding pickup test unless otherwise noted.
4. All WL Circuit Breaker ETUs are set to factory default safety settings prior to shipment. [Lowest Pickups, Shortest Delays, N-protection off, Memory Off, GF=sum1]
5. The above product identification information [ETU, Catalog Number etc.] is accurate as of the test date. Any changes to this configuration are not covered by the above test results.
6. For product support, please contact your sales representative or customer service at: chrystelle.williams@siemens.com
7. DNT indicates 'Did Not Test' and represents a test not applicable to this configured breaker.

Shelby D. Nelms

Shelby D. Nelms
Quality Manager, Siemens - Ft. Worth ModCenter

SIEMENS

Ft. Worth, TX ModCenter

WL Low Voltage Power Circuit Breaker Certified Test Report

Catalog #:	M3A340ZYGCXG8CN		
Breaker Type:	ANSI (UL1066) Drawout Circuit Breaker		
CBID:	004001281007014	FS: 3	Frame Rating: 4000
Base Frame ID:	000491280423138	Interupt Cap.:	150 kA
Trip Unit ID:	000774341015366	ETU776, GF-Alarm and Trip	
Test Station:	MC13 :	Rating Plug:	4000
Test Date:	11/17/2010		

Production Order: 9101011164

Sold To: MONARCH ELECTRIC CO INC
ONE DODGE DR
30028917
WEST CALDWELL, NJ 07006

Ship To: MONARCH ELECTRIC CO INC
%NEWARK LIBERTY AIRPORT
30028917
NEWARK, NJ 07114

☑ Identity Test Performed - Incl. Programming, Labeling, Catalog Order Check

☑ Mechanical Accessory Tests Performed - Incl. Manual Mechanism Charging, Anti-Pumping, Trip/Close Solenoids, UVR, Motor, Aux. Switch Bell Alarms etc. (as per installed)

☑ Dielectric / Hi-Pot Tests Performed - Incl. @2.65kv: Open x A,B,C; Closed: AB, BC, AC, AG, BG, CG
@1.80 kV: Accessories to Ground
@1.20 kV: Motor connection to Ground

Primary Injection Test	Settings ETU Initial settings / Test Current etc.; See Note 3	Results A	B	C	*	Acceptable Range Min	Max
Long Time Pickup (A)	IR(xIn): 0.4 Inj A: 1600 tR(s): 5.5	1686				1600	1760
Long Time Delay (S)	Test Current: 4800	19.3				17.6	22
Short Time Pickup (A)	Isd(xIn): 1.3 Inj A: 5000 Tsd(s): 0.02		5385			5000	6000
Short Time Delay (S)	Tsd(s): 0.4 Test Current: 6250		0.458			0.43	0.48
Instantaneous Pickup (A)	Ii(xIn): 1.5 Inj A: 6000			6346		6000	7200
Ground Fault Pickup (A)	Trip: B Alarm: B Tg(s): 0.1				661	600	720
Neutral Delay (S)	tR(s): 2 IN(xIn): ON / IN = 0.5 x In Inj A: 2000 Test Current: 4000				15.7	14.4	18

UVR Drop-out Voltage: 0

Notes:
1. This WL Low Voltage Power Circuit Breaker was tested in accordance with ANSI/IEEE C37.50-1989
2. The above tests were carried out according to controlled Siemens-Ft. Worth test inspection plans and standards on calibrated equipment. This process and documentation is controlled and audited by UL in accordance with ISO9001:2008. Certification available upon request.
3. All delay test settings are the same as for the preceding pickup test unless otherwise noted.
4. All WL Circuit Breaker ETUs are set to factory default safety settings prior to shipment. [Lowest Pickups, Shortest Delays, N-protection off, Memory Off, GF=sumI]
5. The above product identification information [ETU, Catalog Number etc.] is accurate as of the test date. Any changes to this configuration are not covered by the above test results.
6. For product support, please contact your sales representative or customer service at: chrystelle.williams@siemens.com
7. DNT indicates 'Did Not Test' and represents a test not applicable to this configured breaker.

Shelby D. Nelms

Shelby D. Nelms
Quality Manager, Siemens - Ft. Worth ModCenter

SIEMENS Industry, Inc.
Ft. Worth ModCenter

Date Printed:
11/23/2010 7:48 AM

SIEMENS
Ft. Worth, TX ModCenter

WL Low Voltage Power Circuit Breaker Certified Test Report

Catalog #:	M3A340ZYGCXG8CN		
Breaker Type:	ANSI (UL1066) Drawout Circuit Breaker		
CBID:	004001281002028	FS: 3	Frame Rating: 4000
Base Frame ID:	000491280211130	Interupt Cap.:	150 kA
Trip Unit ID:	000774341015358	ETU776, GF-Alarm and Trip	
Test Station:	MC13:	Rating Plug:	4000
Test Date:	11/17/2010		

Production Order: 9100999093
Sold To: MONARCH ELECTRIC CO INC
ONE DODGE DR
30028917
WEST CALDWELL, NJ 07006

Ship To: MONARCH ELECTRIC CO INC
%NEWARK LIBERTY AIRPORT
30028917
NEWARK, NJ 07114

☑ Identity Test Performed - Incl. Programming, Labeling, Catalog Order Check

☑ Mechanical Accessory Tests Performed - Incl. Manual Mechanism Charging, Anti-Pumping, Trip/Close Solenoids, UVR, Motor, Aux. Switch Bell Alarms etc. (as per installed)

☑ Dielectric / Hi-Pot Tests Performed - Incl. @2.65kv: Open x A,B,C; Closed: AB, BC, AC, AG, BG, CG
@1.80 kV: Accessories to Ground
@1.20 kV: Motor connection to Ground

Primary Injection Test	Settings (ETU Initial settings / Test Current etc.; See Note 3)	Results A	Results B	Results C	Results *	Acceptable Range Min	Acceptable Range Max
Long Time Pickup (A)	IR(xIn): 0.4 Inj A: 1600 tR(s): 5.5	1706				1600	1760
Long Time Delay (S)	Test Current: 4800	19.2				17.6	22
Short Time Pickup (A)	Isd(xIn): 1.3 Inj A: 5000 Tsd(s): 0.02		5312			5000	6000
Short Time Delay (S)	Tsd(s): 0.4 Test Current: 6250		0.455			0.43	0.48
Instantaneous Pickup (A)	I(xIn): 1.5 Inj A: 6000			6613		6000	7200
Ground Fault Pickup (A)	Trip: B Alarm: B Tg(s): 0.1				668	600	720
Neutral Delay (S)	tR(s): 2 IN(xIn): ON / IN = 0.5 x In Inj A: 2000 Test Current: 4000				15.7	14.4	18

UVR Drop-out Voltage: 0

Notes:
1. This WL Low Voltage Power Circuit Breaker was tested in accordance with ANSI/IEEE C37.50-1989
2. The above tests were carried out according to controlled Siemens-Ft. Worth test inspection plans and standards on calibrated equipment. This process and documentation is controlled and audited by UL in accordance with ISO9001:2008. Certification available upon request.
3. All delay test settings are the same as for the preceding pickup test unless otherwise noted.
4. All WL Circuit Breaker ETUs are set to factory default safety settings prior to shipment. [Lowest Pickups, Shortest Delays, N-protection off, Memory Off, GF=sumI]
5. The above product identification information [ETU, Catalog Number etc.] is accurate as of the test date. Any changes to this configuration are not covered by the above test results.
6. For product support, please contact your sales representative or customer service at: chrystelle.williams@siemens.com
7. DNT indicates 'Did Not Test' and represents a test not applicable to this configured breaker.

Shelby D. Nelms
Quality Manager, Siemens - Ft. Worth ModCenter

Siemens Industry, Inc.

RGA Information — *Report Number: 123601*

GA Number 392587 Date Report Created 11/16/2010 Eval Completed: 11/15/2010

Customer S M ELECTRIC CO INC Account Number 30058138

Catalog/MLFB Number SCJD69200NGT Serial Number 040108

Customer Comments: Breakers from orig so# 3001295712/9073455/86095. Tested and returned to customer. Reports required

Tests Performed for Evaluation

Thermal 200%	Thermal 110% Hold-In	Instantaneous Trip
☐ Conforming ☐ Non-Conforming ☑ N/A	☐ Conforming ☐ Non-Conforming ☑ N/A	○ UL Instant.
Thermal 135%	Thermal 100% Temperature	○ IEC Instant.
☐ Conforming ☐ Non-Conforming ☑ N/A	☐ Conforming ☐ Non-Conforming ☑ N/A	◉ Not Appl.
Electrical - Continuity Check	Mechanical Evaluation	
☐ Conforming ☐ Non-Conforming ☑ N/A	☐ Conforming ☑ Non-Conforming ☐ N/A	

Evaluation Findings

☐ Unable to duplicate reported issue ☐ Able to duplicate reported issue

☐ Field related issue
- ☐ Cosmetic
- ☐ Handling
- ☐ Loose Connection
- ☐ Stripped Screw
- ☐ Environment
- ☐ Other

☐ Assembly related issue
- ☐ Cosmetic
- ☐ Incorrect Assembly Components
- ☐ Missing Assembly Components
- ☐ Incorrect Assembly
- ☐ Label Error
- ☐ Other

☐ Electrical related issue
- ☐ Thermal Calibration
  - ⊗ 200% LP Cal
  - ⊗ 200% CP Cal
  - ⊗ 200% RP Cal
  - ⊗ 135% Cal
  - ⊗ Hold-In
- ☐ Continuity Issue
- ☐ Instantaneous Calibration
  - UL ⊗ LP ⊗ CP ⊗ RP
  - IEC ⊗ LP_CP ⊗ LP_RP ⊗ CP_RP
- ☐ Millivolt Issue
- ☐ Defective Electrical Component
- ☐ Damaged Component - Arcing
- ☐ Other

☑ Mechanical related issue
- ☐ Handle Related
- ☐ Internal Mechanism Related
- ☐ Interlock Related
- ☐ Latch Related
- ☑ Other

☐ Shipping Handling related issue

Comments:

Instances of sliplatch occurred during testing. The mag latch component did not reset. Credit is suggested for this breaker, returned on rejected RGA E582-392587.

gineering Rep. Paulus Mary (Digitally signed by Paulus Mary, DN: cn=Paulus Mary, sn=Paulus, givenName=Mary, o=Siemens, serialNumber=Z0003A9D, Date: 2010.11.22 13:26:30 -06'00')

Production Rep. Myers Fred (Digitally signed by Myers Fred, DN: cn=Myers Fred, sn=Myers, givenName=Fred, o=Siemens, serialNumber=Z0007EX8)

Quality Rep.

Target Market Representative If required...

Form F830.5-3

SIEMENS

RGA Testing Data Sheet - Sensitrip Breaker

200% Single Pole Thermal Testing (UL)

	LP	CP	RP		
Trip Time	0:04:38	0:04:09	0:04:00	Maximum	0:05:52
mV Reading	N/A	N/A	N/A		N/A

110% Thermal - Wired In Series (UL Equivalent)

Test Time	N/A	Minimum	3:00:00

135% Thermal - Wired In Series (UL)

Test Time	N/A	Maximum	2:00:00

300% Single Pole Thermal Testing (NEMA Standard AB4)

	LP	CP	RP		
Trip Time	N/A	N/A	N/A	Maximum	N/A
mV Reading	N/A	N/A	N/A		N/A

Instantaneous Testing (NEMA Standard AB4)

	HI Setting			LO Setting		
	LP	CP	RP	LP	CP	RP
Reading 1	N/A	N/A	N/A	N/A	N/A	N/A
Reading 2	N/A	N/A	N/A	N/A	N/A	N/A
Reading 3	N/A	N/A	N/A	N/A	N/A	N/A
Average	N/A	N/A	N/A	N/A	N/A	N/A

HI Setting Target Value	N/A	LO Setting Target Value	N/A
NEMA Standard AB4 +40% of HI Target Value	N/A	NEMA Standard AB4 +40% of LO Target Value	N/A
NEMA Standard AB4 -30% of HI Target Value	N/A	NEMA Standard AB4 -30% of LO Target Value	N/A

Note1: 200% testing was performed with the Short Time and Instantaneouse dials each set at 10.

Note2: A hardwired check of Ground Fault functionality was performed on the right pole - OK.

SIEMENS

RGA Testing Data Sheet - Sensitrip Breaker

RGA Number:	Non-RGA E582-392587	**SAP Reference Number:**	N/A
Smpl Number:	1	**RMA Reference Number:**	N/A

Customer Comments: Breakers from orig so# 3001295712/9073455/86095. Tested and returned to customer. Reports required

Catalog Number: SCJD69200NGT Serial Number: 043008

Observations: This breaker conforms to testing.

As-Received Settings

Rated Amperage:	200	A		
Continuous Amps:	100	%	Effective Amps:	200 A
Long Time Delay:	25	s		
Short Time Pickup:	1.5	(x Ir)	Short Time Fixed or I²t?	Fixed
Short Time Delay:	0.05	s		
Instantaneous:	2	(x Ir)		
Ground Fault Pickup:	20	%	Ground Fault Fixed or I²t?	I²t
Ground Fault Delay:	0.1	s	Residual Or Return?	?

Mechanical Testing

Number of ON/OFF Cycles	10+	Push To Trip Button Test	OK
		Continuity Test	OK

Long Time Testing (TS-31 Test Set)

	LP	CP	RP	
Trip Time	437.781	409.918	409.058	s
OK or NC?	OK	OK	OK	

Short Time set at 10 to prevent nuisance tripping at as-received setting.

Short Time Testing (TS-31 Test Set)

	LP	CP	RP	
Trip Time	0.073	0.073	0.073	s
OK or NC?	OK	OK	OK	

Instantaneous Testing (TS-31 Test Set)

	LP	CP	RP	
Trip Time	0.038	0.036	0.037	s
OK or NC?	OK	OK	OK	

Ground Fault Testing (TS-31 Test Set)

	LP	CP	RP	
Trip Time	0.280	0.334	0.280	s
OK or NC?	OK	OK	OK	

Siemens Industry, Inc.

RGA Information — *Report Number: 123601*

GA Number 392587 Date Report Created 11/16/2010 Eval Completed: 11/15/2010

Customer S M ELECTRIC CO INC Account Number 30058138

Catalog/MLFB Number SCJD69200NGT Serial Number 043008

Customer Comments: Breakers from orig so# 3001295712/9073455/86095. Tested and returned to customer. Reports required

Tests Performed for Evaluation

Thermal 200%	Thermal 110% Hold-In	Instantaneous Trip
☐ Conforming ☐ Non-Conforming ☑ N/A	☐ Conforming ☐ Non-Conforming ☑ N/A	○ UL Instant.
Thermal 135%	Thermal 100% Temperature	○ IEC Instant.
☐ Conforming ☐ Non-Conforming ☑ N/A	☐ Conforming ☐ Non-Conforming ☑ N/A	◉ Not Appl.
Electrical - Continuity Check	Mechanical Evaluation	
☑ Conforming ☐ Non-Conforming ☐ N/A	☑ Conforming ☐ Non-Conforming ☐ N/A	

Evaluation Findings

☑ Unable to duplicate reported issue ☐ Able to duplicate reported issue

☐ Field related issue
- ☐ Cosmetic
- ☐ Handling
- ☐ Loose Connection
- ☐ Stripped Screw
- ☐ Environment
- ☐ Other

☐ Electrical related issue
- ☐ Thermal Calibration
  - ◎ 200% LP Cal
  - ◎ 200% CP Cal
  - ◎ 200% RP Cal
  - ◎ 135% Cal
  - ◎ Hold-In
- ☐ Continuity Issue
- ☐ Instantaneous Calibration
  - UL: ◎ LP ◎ CP ◎ RP
  - IEC: ◎ LP_CP ◎ LP_RP ◎ CP_RP
- ☐ Millivolt Issue
- ☐ Defective Electrical Component
- ☐ Damaged Component - Arcing
- ☐ Other

☐ Assembly related issue
- ☐ Cosmetic
- ☐ Incorrect Assembly Components
- ☐ Missing Assembly Components
- ☐ Incorrect Assembly
- ☐ Label Error
- ☐ Other

☐ Mechanical related issue
- ☐ Handle Related
- ☐ Internal Mechanism Related
- ☐ Interlock Related
- ☐ Latch Related
- ☐ Other

☐ Shipping Handling related issue

Comments:
This breaker conforms to testing. No credit is suggested for this breaker returned on rejected RGA E582-392587.

gineering Rep. Paulus Mary — Production Rep. Myers Fred

Quality Rep. — Target Market Representative: If required...

Form FB30.5-3

SIEMENS

Siemens Industrial Services

A business of
Siemens Energy and Automation, Inc.

PRIMARY BUS TEST REPORT

Customer	SM electric	Location	Newark Airport Terminal B		
Substation	SA	Feeder/Cubicle	Main breaker / Section #5,#4,#3	Unique ID	

Nameplate Data

Manufacturer	Siemens	Voltage Rating	480 volt
Type / Style	3 phase, 4 wire	Current Rating	4000 amp
YR / Serial Number	SO # 3001295712	Interrupting Rating	150 ka
IB Number			

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	

Electrical Tests

Insulation Resistance (In Gig-Ohms) @ 1000 VDC			
As Found			
A-G	7.0	A-B	20
B-G	10	B-C	18
C-G	5	C-A	15

Comments

Satisfactory for Continued Service	Yes	Requires Repair	NO	Repairs Made During Maintenance	NA

Note: Exposed bus joints were inspected in each section for proper connections and cross checked with a 100 amp DLRO.

Job No	5200-224524	Tested By	Ralph Walkowicz	Date Tested	11/29/10	ID#	

182 Forbes Road
Braintree, Ma. 02184

SIEMENS

Siemens Industrial Services

A business of
Siemens Energy and Automation, Inc.

PRIMARY BUS TEST REPORT

Customer	SM electric	**Location**	Newark Airport Terminal B		
Substation	SA	**Feeder/Cubicle**	Main breaker / Section #2,#1	**Unique ID**	

Nameplate Data

Manufacturer	Siemens	**Voltage Rating**	480 volt
Type / Style	3 phase, 4 wire	**Current Rating**	4000 amp
YR / Serial Number	SO # 3001295712	**Interrupting Rating**	150 ka
IB Number			

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	

Electrical Tests

Insulation Resistance (in Gig-Ohms) @ 1000 VDC			
As Found			
A-G	100	A-B	100
B-G	100	B-C	100
C-G	100	C-A	100

Comments

Satisfactory for Continued Service	Yes	**Requires Repair**	NO	**Repairs Made During Maintenance**	NA

Note: Exposed bus joints were inspected in each section for proper connection and cross checked with a 100 amp DLRO.

Job No	5200-224524	**Tested By**	Ralph Walkowicz	**Date Tested**	11/29/10	**ID#**	

162 Forbes Road
Braintree, Ma. 02184

SIEMENS

Siemens Industrial Services

A business of
Siemens Energy and Automation, Inc.

SWITCHGEAR TEST REPORT

Customer:	SM Electric	**Location:**	Newark Airport		
Substation:	SA	**Switchgear Designation:**	SA	**Unique ID:**	

Nameplate Data

Manufacturer:	Siemens	**Type:**	3 phase, 4 wire
Serial No.:	SO# 3001295712	**Current Rating:**	4000 amp
Voltage Rating:	480 volt	**Bus Fault Rating:**	150 ka

Inspection

Cell Heaters:	B	**Key Interlocks:**	NA
Meter & Control Switches:	B	**Pilot Light:**	B
Wiring:	B	**Terminal Blocks:**	B
Fuse & Fuse Blocks:	B	**Stationary Contact Bottles:**	NA
Ground Bus:	B	**Tracking / Corona:**	B
Bus Supports:	B	**Joint Insulation:**	B
Terminations:	B	**General Hardware:**	B
Paint – Inside & Outside:	B	**PT / CPT Compartment**	B

CODE LEGEND
A= Like New Condition
B= Good Condition
C= Poor Condition Requires Correction
D= Corrections Made
E= Unacceptable Condition Do Not Use!
NA= Not Applicable

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean / Dirty	clean
Wet / Damp / Dry	dry
Temp (Degree C)	
Relative Humidity (%)	

Electrical Tests

Insulation Resistance

Readings in Mega-Ohms @ 1k VDC

A-B	100 Gig ohms	B-C	100 Gig ohms	C-A	100 Gig ohms
A-G	100 Gig ohms	B-G	100 Gig ohms	C-G	100 Gig ohms

Ductor Test

Readings in micro-ohms @ 100amps

Section 1	Section 2	Section 3	Section 4	Section 5	Section 1- 5
A-A =170	A-A =87	A-A =123	A-A =47	A-A =35	
B-B =157	B-B =110	B-B =114	B-B =71	B-B =39	
C-C =165	C-C =112	C-C =104	C-C =57	C-C =36	
N-N =38	N-N =19	N-N =16	N-N =61	N-N =51	N-N =81

COMMENTS:

Section # 1 reading : From the bus duct through the splice plate connections and two breakers to the load side of a feeder breaker.
Section #1 neutral reading : From the bus duct through the splice plate connections to the lower rear horizontal neutral bus.
Section #2 readings : From the bus duct through the splice plate connections and one breaker to the load side of a feeder breaker.
Section #2 neutral reading : From the bus duct through the splice plate connections to the lower rear horizontal neutral bus.
Section #3 readings : From the bus duct through the splice plate connections and one breaker to the load side of a feeder breaker.
Section #3 neutral reading : From the bus duct through the splice plate connections to the lower rear horizontal neutral bus.
Section #4 readings : From the load side on Main breaker in section #4 to the bus duct connection in section #3.
Section #4 neutral reading : From the horizontal neutral bus in section #4 to the Bus duct neutral connection in section #3.
Section #5 readings : From the bus duct through the spice plate and one breaker to the horizontal bus in section #4.
(Readings were lowered on this test by cleaning the breaker's main contacts)
Section #5 neutral reading : From the bus duct connection to the horizontal rear neutral bus in section #4.

Section #1-#5 neutral reading: From the rear horizontal neutral bus in section #1 to the bus duct neutral connection in section #5.

Spice plates for bus duct connections were re-plated and are in good condition.

Satisfactory for Continued Service	Yes	**Requires Repair**	No	**Repairs Made During Maintenance**			
Job No:	5200-	**Tested By:**	Ralph Walkowicz	**Date Tested**	11/19/10	**ID #**	

182 Forbes Road
Braintree, Ma. 02184

SIEMENS

Siemens Industrial Services

A business of
Siemens Energy and Automation, Inc.

LOW VOLTAGE CIRCUIT BREAKER TEST REPORT

Customer	SM Electric	Location	Newark Airport Terminal B		
Substation	SA	Feeder/Cubicle	Main breaker	Unique ID	

Nameplate Data

Manufacturer	Siemens	Charging Motor / Solenoid Voltage:	120 volt ac	Trip Unit: Type	ETU776
Type / Model	WLM3A340			Style/Model	NA
Bolted - or- Draw-out	Draw-out	Close Coil Voltage:	120 volt ac	Plug Rating	4000 amp
Shop Order/Serial Number	ID# 4001281007016	Trip Coil Voltage:	120 volt ac	Sensor Rating/Tap	4000 amp
Frame Size/Rating	4000 amp			Timing Curve/Plot	NA
Interrupting Rating	150 ka	UV Device	No	Limiter: Type	NA
Voltage Rating	508 volt			Manuf.	NA
		Test Position [Y/N]	Y	Rating	NA

Trip Unit Settings

	As Found	As Left		As Found	As Left
Long Delay PU	1600 amp	4000 amp	Long Time Delay	2 sec	2 sec
Short Delay PU	5000 amp	8000 amp	Short Time Delay	20 ms	300 ms
Ground Fault PU	400 amp	1200 amp	Ground Fault Delay	100 ms	300 ms
Instantaneous PU	150000	150000	Other	NA	NA

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	NA

Inspection

Main Contact Condition./Align.	A	Control Wiring	A
Arcing Contact Condition./Align.	A	Primary Fingers	A
Arc Chute Condition	A	Frame Condition	A
Open Close Indicator	A	Secondary Contacts	A
Lubrication	A	Breaker Cleanliness	A
Mechanical Condition	A	Manual Close and Trip	A
Insulation	A	Electrical Close and Trip	A
Control Aux. And Interlocks	A	Rack and O/O Mech.	A

CODE LEGEND
A= Like New Condition
B= Good Condition
C= Poor Condition Requires Correction
D= Corrections Made
E= Unacceptable Condition Do Not Use!
R= Reconditioned
NA= Not Applicable

Electrical Tests

☐ Primary Injection ☒ Secondary Injection

Function	(Test) Settings		Good	Fail						
LDPU	4000 amp		Yes							
LTD	2 sec		Yes							
SDPU	8000 amp		Yes							
STD	300 ms		Yes							
INSTPU	1500000		Yes							
GFPU	1200 amp		Yes							
GFD	300 ms		Yes							

NPU = NO PICKUP; NT = NO TRIP; NTD = NO TIME DEL

Insulation Resistance (in GIG-Ohms) @						1k				VDC	
As Found						As Left					
A-G	100	A-B	100	A-A	100	A-G	100	A-B	100	A-A	100
B-G	100	B-C	100	B-B	100	B-G	100	B-C	100	B-B	100
C-G	100	C-A	100	C-C	100	C-G	100	C-A	100	C-C	100

Contact Resistance (Microhms)			
As Found		As Left	
A	109	A	13
B	56	B	16
C	111	C	11

Comments

Satisfactory for Continued Service	Yes	Requires Repair	NO	Repairs Made During Maintenance	Yes

* New trip unit installed in this breaker.

Job No	5200-224524	Tested By	Ralph Walkowicz	Date Tested	11/29/10	ID#	

182 Forbes Road
Braintree, MA. 02184

SIEMENS

Siemens Industrial Services
A business of
Siemens Energy and Automation, Inc.

LOW VOLTAGE CIRCUIT BREAKER TEST REPORT

Customer	SM Electric	Location	Newark Airport Terminal B		
Substation	SA	Feeder/Cubicle	DP-SB	Unique ID	

Nameplate Data

Manufacturer	Siemens	Charging Motor / Solenoid Voltage:	120 volt ac	Trip Unit: Type	ETU776
Type / Model	WLF2A316	Close Coil Voltage:	120 volt ac	Style/Model	NA
Bolted - or- Draw-out	Draw-out	Trip Coil Voltage:	120 volt ac	Plug Rating	1200 amp
Shop Order/Serial Number	ID# 4001280930032			Sensor Rating/Tap	
Frame Size/Rating	1600 amp			Timing Curve/Plot	NA
Interrupting Rating	200 ka	UV Device	No	Limiter: Type	NA
Voltage Rating	508 volt			Manuf.	NA
		Test Position [Y/N]	Y	Rating	NA

Trip Unit Settings

	As Found	As Left		As Found	As Left
Long Delay PU	1200 amp	1200 amp	Long Time Delay	2 sec	2 sec
Short Delay PU	4800 amp	4800 amp	Short Time Delay	100 ms	100 ms
Ground Fault PU	900 amp	900 amp	Ground Fault Delay	200 ms	200 ms
Instantaneous PU	200000	200000	Other	NA	NA

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	NA

Inspection

Main Contact Condition./Align.	A	Control Wiring	A
Arcing Contact Condition./Align.	A	Primary Fingers	A
Arc Chute Condition	A	Frame Condition	A
Open Close Indicator	A	Secondary Contacts	A
Lubrication	A	Breaker Cleanliness	A
Mechanical Condition	A	Manual Close and Trip	A
Insulation	A	Electrical Close and Trip	A
Control Aux. And Interlocks	A	Rack and D/O Mech.	A

CODE LEGEND
A= Like New Condition
B= Good Condition
C= Poor Condition Requires Correction
D= Corrections Made
E= Unacceptable Condition Do Not Use!
R= Reconditioned
NA= Not Applicable

Electrical Tests

☐ Primary Injection ☒ Secondary Injection

Function	(Test) Settings		Good	Fail						
LDPU	1200 amp		Yes							
LTD	2 sec		Yes							
SDPU	4800 amp		Yes							
STD	100 ms		Yes							
INSTPU	2000000		Yes							
GFPU	900 amp		Yes							
GFD	200 ms		Yes							

NPU = NO PICKUP; NT = NO TRIP; NTD = NO TIME DEL

Insulation Resistance (in GIG-Ohms) @ 1k VDC

As Found						As Left					
A-G	100	A-B	100	A-A	100	A-G	100	A-B	100	A-A	100
B-G	100	B-C	100	B-B	100	B-G	100	B-C	100	B-B	100
C-G	100	C-A	100	C-C	100	C-G	100	C-A	100	C-C	100

Contact Resistance (Microhms)

As Found		As Left	
A	39	A	39
B	38	B	38
C	38	C	38

Comments

Satisfactory for Continued Service	Yes	Requires Repair	NO	Repairs Made During Maintenance	Yes

Fuse readings:
Phase A = 20 micro-ohms Phase B = 20 micro-ohms Phase C = 19 micro-ohms

Job No	5200-224524	Tested By	Ralph Walkowicz	Date Tested	11/30/10	ID#	

182 Forbes Road
Braintree, MA. 02184

SIEMENS

Siemens Industrial Services

A business of
Siemens Energy and Automation, Inc.

LOW VOLTAGE CIRCUIT BREAKER TEST REPORT

Customer	SM Electric	Location	Newark Airport Terminal B		
Substation	SA	Feeder/Cubicle	DPSA	Unique ID	

Nameplate Data

Manufacturer	Siemens	Charging Motor / Solenoid Voltage:	120 volt ac	Trip Unit: Type	ETU776
Type / Model	WLF2A316	Close Coil Voltage:	120 volt ac	Style/Model	NA
Bolted - or- Draw-out	Draw-out	Trip Coil Voltage:	120 volt ac	Plug Rating	1200 amp
Shop Order/Serial Number	ID# 4001280930037			Sensor Rating/Tap	
Frame Size/Rating	1600 amp			Timing Curve/Plot	NA
Interrupting Rating	200 ka	UV Device	No	Limiter: Type	NA
Voltage Rating	508 volt			Manuf.	NA
		Test Position [Y/N]	Y	Rating	NA

Trip Unit Settings

	As Found	As Left		As Found	As Left
Long Delay PU	1200 amp	1200 amp	Long Time Delay	2 sec	2 sec
Short Delay PU	4800 amp	4800 amp	Short Time Delay	100 ms	100 ms
Ground Fault PU	900 amp	900 amp	Ground Fault Delay	200 ms	200 ms
Instantaneous PU	200000	200000	Other	NA	NA

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	NA

Inspection

Main Contact Condition./Align.	A	Control Wiring	A
Arcing Contact Condition./Align.	A	Primary Fingers	A
Arc Chute Condition	A	Frame Condition	A
Open Close Indicator	A	Secondary Contacts	A
Lubrication	A	Breaker Cleanliness	A
Mechanical Condition	A	Manual Close and Trip	A
Insulation	A	Electrical Close and Trip	A
Control Aux. And Interlocks	A	Rack and D/O Mech.	A

CODE LEGEND
A= Like New Condition
B= Good Condition
C= Poor Condition Requires Correction
D= Corrections Made
E= Unacceptable Condition Do Not Use!
R= Reconditioned
NA= Not Applicable

Electrical Tests

☐ Primary Injection ☒ Secondary Injection

Function	(Test) Settings		Good	Fail						
LDPU	1200 amp		Yes							
LTD	2 sec		Yes							
SDPU	4800 amp		Yes							
STD	100 ms		Yes							
INSTPU	2000000		Yes							
GFPU	900 amp		Yes							
GFD	200 ms		Yes							

NPU = NO PICKUP; NT = NO TRIP; NTD = NO TIME DEL

Insulation Resistance (In GIG-Ohms) @ 1k VDC

As Found						As Left					
A-G	100	A-B	100	A-A	100	A-G	100	A-B	100	A-A	100
B-G	100	B-C	100	B-B	100	B-G	100	B-C	100	B-B	100
C-G	100	C-A	100	C-C	100	C-G	100	C-A	100	C-C	100

Contact Resistance (Microhms)

As Found		As Left	
A	36	A	36
B	49	B	49
C	48	C	48

Comments

Satisfactory for Continued Service	Yes	Requires Repair	NO	Repairs Made During Maintenance	Yes

Fuse readings:
Phase A = 21 micro-ohms Phase B = 20 micro-ohms Phase C = 20 micro-ohms

Job No	5200-224524	Tested By	Ralph Walkowicz	Date Tested	11/30/10	ID#	

182 Forbes Road
Braintree, MA. 02184

SIEMENS

Siemens Industrial Services

A business of
Siemens Energy and Automation, Inc.

LOW VOLTAGE CIRCUIT BREAKER TEST REPORT

Customer	SM Electric	Location	Newark Airport Terminal B		
Substation	SA	Feeder/Cubicle	PMDP	Unique ID	

Nameplate Data

Manufacturer	Siemens	Charging Motor / Solenoid Voltage:	120 volt ac	Trip Unit: Type	ETU776
Type / Model	WLF2A320	Close Coil Voltage:	120 volt ac	Style/Model	NA
Bolted - or- Draw-out	Draw-out	Trip Coil Voltage:	120 volt ac	Plug Rating	2000 amp
Shop Order/Serial Number	ID# 4001281001018			Sensor Rating/Tap	2000 amp
Frame Size/Rating	2000 amp			Timing Curve/Plot	NA
Interrupting Rating	200 ka	UV Device	No	Limiter: Type	NA
Voltage Rating	508 volt			Manuf.	NA
		Test Position [Y/N]	Y	Rating	NA

Trip Unit Settings

	As Found	As Left		As Found	As Left
Long Delay PU	2000 amp	2000 amp	Long Time Delay	2 sec	2 sec
Short Delay PU	6000 amp	6000 amp	Short Time Delay	100 ms	100 ms
Ground Fault PU	900 amp	900 amp	Ground Fault Delay	200 ms	200 ms
Instantaneous PU	200000	200000	Other	NA	NA

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	NA

Inspection

Main Contact Condition./Align.	A	Control Wiring	A
Arcing Contact Condition./Align.	A	Primary Fingers	A
Arc Chute Condition	A	Frame Condition	A
Open Close Indicator	A	Secondary Contacts	A
Lubrication	A	Breaker Cleanliness	A
Mechanical Condition	A	Manual Close and Trip	A
Insulation	A	Electrical Close and Trip	A
Control Aux. And Interlocks	A	Rack and D/O Mech.	A

CODE LEGEND
A= Like New Condition
B= Good Condition
C= Poor Condition Requires Correction
D= Corrections Made
E= Unacceptable Condition Do Not Use!
R= Reconditioned
NA= Not Applicable

Electrical Tests

☐ Primary Injection ☒ Secondary Injection

Function	(Test) Settings		Good	Fail						
LDPU	2000 amp		Yes							
LTD	2 sec		Yes							
SDPU	6000 amp		Yes							
STD	100 ms		Yes							
INSTPU	2000000		Yes							
GFPU	900 amp		Yes							
GFD	200 ms		Yes							

NPU = NO PICKUP; NT = NO TRIP; NTD = NO TIME DEL

Insulation Resistance (In GIG-Ohms) @ 1k VDC

As Found						As Left					
A-G	100	A-B	100	A-A	100	A-G	100	A-B	100	A-A	100
B-G	100	B-C	100	B-B	100	B-G	100	B-C	100	B-B	100
C-G	100	C-A	100	C-C	100	C-G	100	C-A	100	C-C	100

Contact Resistance (Microhms)

As Found		As Left	
A	42	A	42
B	32	B	32
C	40	C	40

Comments

Satisfactory for Continued Service	Yes	Requires Repair	NO	Repairs Made During Maintenance	Yes

Fuse readings:
Phase A = 20 micro-ohms Phase B = 19 micro-ohms Phase C = 23 micro-ohms

Job No	5200-224524	Tested By	Ralph Walkowicz	Date Tested	11/30/10	ID#	

182 Forbes Road
Braintree, MA. 02184

SIEMENS

Siemens Industrial Services

A business of
Siemens Energy and Automation, Inc.

LOW VOLTAGE CIRCUIT BREAKER TEST REPORT

Customer	SM Electric	Location	Newark Airport Terminal B		
Substation	SA	Feeder/Cubicle	ATS-Life Safety	Unique ID	

Nameplate Data

Manufacturer	Siemens	Charging Motor / Solenoid Voltage:	120 volt ac	Trip Unit: Type	ETU776
Type / Model	WLF2A308	Close Coil Voltage:	120 volt ac	Style/Model	NA
Bolted - or- Draw-out	Draw-out	Trip Coil Voltage:	120 volt ac	Plug Rating	500 amp
Shop Order/Serial Number	ID# 40012801001000			Sensor Rating/Tap	
Frame Size/Rating	800 amp			Timing Curve/Plot	NA
Interrupting Rating	200 ka	UV Device	No	Limiter: Type	NA
Voltage Rating	508 volt			Manuf.	NA
		Test Position [Y/N]	Y	Rating	NA

Trip Unit Settings

	As Found	As Left		As Found	As Left
Long Delay PU	500 amp	500 amp	Long Time Delay	2 sec	2 sec
Short Delay PU	3000 amp	3000 amp	Short Time Delay	100 ms	100 ms
Ground Fault PU	300 amp	300 amp	Ground Fault Delay	300 ms	200 ms
Instantaneous PU	200000	200000	Other	NA	NA

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	NA

Inspection

Main Contact Condition./Align.	A	Control Wiring	A
Arcing Contact Condition./Align.	A	Primary Fingers	A
Arc Chute Condition	A	Frame Condition	A
Open Close Indicator	A	Secondary Contacts	A
Lubrication	A	Breaker Cleanliness	A
Mechanical Condition	A	Manual Close and Trip	A
Insulation	A	Electrical Close and Trip	A
Control Aux. And Interlocks	A	Rack and D/O Mech.	A

CODE LEGEND
A= Like New Condition
B= Good Condition
C= Poor Condition Requires Correction
D= Corrections Made
E= Unacceptable Condition Do Not Use!
R= Reconditioned
NA= Not Applicable

Electrical Tests

☐ Primary Injection ☒ Secondary Injection

Function	(Test) Settings		Good	Fail						
LDPU	1200 amp		Yes							
LTD	2 sec		Yes							
SDPU	4800 amp		Yes							
STD	100 ms		Yes							
INSTPU	2000000		Yes							
GFPU	900 amp		Yes							
GFD	200 ms		Yes							

NPU = NO PICKUP; NT = NO TRIP; NTD = NO TIME DEL.

Insulation Resistance (in GIG-Ohms) @ 1k VDC											
As Found						As Left					
A-G	100	A-B	100	A-A	100	A-G	100	A-B	100	A-A	100
B-G	100	B-C	100	B-B	100	B-G	100	B-C	100	B-B	100
C-G	100	C-A	100	C-C	100	C-G	100	C-A	100	C-C	100

Contact Resistance (Microhms)			
As Found		As Left	
A	49	A	49
B	52	B	52
C	44	C	44

Comments

Satisfactory for Continued Service	Yes	Requires Repair	NO	Repairs Made During Maintenance	Yes

Fuse readings:
Phase A = 20 micro-ohms Phase B = 20 micro-ohms Phase C = 19 micro-ohms

Job No	5200-224524	Tested By	Ralph Walkowicz	Date Tested	11/30/10	ID#	

182 Forbes Road
Braintree, MA. 02184

S

Technical Support Program

Schedule 2.1

Siemens SO No: 86095R30

Switchgear and Switchboard Assemblies

Visual and Mechanical Inspection

- ☒ Compare equipment nameplate data with latest one-line diagram when available.
- ☒ Inspect physical, electrical, and mechanical condition including evidence of moisture or corona.
- ☒ Verify appropriate anchorage, required area clearances, Physical damage, and correct alignment.
- ☒ Verify that fuse and/or circuit breaker sizes and types correspond to drawings and coordination study as well as to the circuit breaker's address for microprocessor-communication packages.
- ☒ Verify that current and voltage (potential) transformer ratios correspond to drawings.
- ☒ Inspect all bus connections for high resistance using a low-resistance ohmmeter.
- ☒ Inspect insulators for evidence of physical damage or contaminated surfaces
- ☒ Verify correct barrier and shutter installation and operation

Electrical Tests

- ☒ Perform resistance measurements through all bus joints with a low-resistance ohmmeter.
- ☒ Perform insulation-resistance tests on each bus section, phase-to-phase and phase-to-ground for one minute.

Lubrication

- ☒ Verify appropriate contact lubricant on moving current-carrying parts.
- ☒ Verify appropriate lubrication on moving and sliding surfaces.
- ☒ Exercise all active components.
- ☒ Inspect all mechanical indicating devices for correct operation.
- ☒ Verify that filters are in place and/or vents are clear.
- ☒ Inspect control power transformers for physical damage, cracked insulation, broken leads, tightness of connections, defective wiring, and overall general condition.

*** Premium Services**

Siemens Industry, Inc.
Industry Solutions Division (IS Division)
Industrial Service and Technologies (INBU)
100 Technology Drive
Alpharetta, GA 30005

Tel: (781) 389-5618
Fax: (781) 380-1330
Ralph.Walkowicz@siemens.com

ACTION TAKEN:

Arrived on site to Inspect and test the equipment.

(1) Visually inspected each section bus bar connections.
(2) Visually inspected each breaker's main and secondary contacts.
(3) Visually inspected each breaker's finger cluster.
(4) Visually inspected each component for signs of corrosion or rust.
(5) Visually inspected and tested each breaker.
(6) Verified manual and electrical operation of the breakers.
(7) Tested each main bus insulation integrity with a 1kvdc megger
(8) Tested bus connection with 100 amp DLRO.
(9) Verified breaker status lights and electrical operation with temporary power.
(10) Documented test results (see attached field data sheets) and noted any discrepancies.

Discrepancies found:

(1) Splice plates bus bars for bus duct connections were unacceptable

Action Taken:

(1) Splice plates were removed and sent out for re-plating.
(2) Re-plated splice plates were reinstalled and inspected.
(3) Re-plated splice plates were tested and accepted.
(4) Observed torque of bus connections that had been removed for megger testing.

SUGGESTIVE CORRECTIVE ACTIONS:

1) None at this time.

REMARKS:

Switchboard "SA" at the Newark Airport was inspected/tested and at this time is considered to be acceptable for continued service.

Any comments and/or questions regarding this report can be made by contacting me via my contact information above.

END OF REPORT

Siemens Industry, Inc.
Industry Solutions Division (IS Division)
Industrial Service and Technologies (INBU)
100 Technology Drive
Alpharetta, GA 30005

Tel: (781) 389-5618
Fax: (781) 380-1330
Ralph.Walkowicz@siemens.com

CUSTOMER:	SM Electric	**SII JOB NUMBER:**	5200224524
PLANT:	Newark Airport Terminal B	**WRITTEN BY:**	Ralph Walkowicz
CUSTOMER PO:		**DATE REPORTED:**	December 03, 2010
SEA NO:	3001295712-3496	**PLANT SUPERVISOR:**	Russell Elliot
DESCRIPTION:	Newark Airport / Siemens inspection and recertification procedure.		

PURPOSE

Inspection and testing of Siemens Switchboard "SA" for recertification.

PERSON CONTACTED

Russell Elliot : Project Engineer

EQUIPMENT IDENTIFICATION

Siemens "SA" switch board, 3 Phase , 4 wire, 150 ka, 480 volt , 4000 amp/ So# 3001295712

AS FOUND

The equipment was found assembled and de-energized. The equipment had been in storage for some time and was found to have some discoloration of the exposed bus work.

SUMMARY

The purpose of this report is to document the findings of the inspections and the corrective action that was taken to achieve recertification standards.

The second electronic trip unit inspected was model number WLETU776MP, serial number 774341015358. The outer case exhibited no signs of corrosion. This electronic trip unit featured an externally connected metering module, which was removed, and visually inspected. There were no signs of corrosion on the circuit boards or the connector pins. The circuit board assemblies were also removed from the electronic trip unit. Likewise, there were no signs of corrosion on the electronic trip unit's circuit boards or connector pins.

The third electronic trip unit inspected was model number WLETU776MP, serial number 774341015361. The outer case exhibited no signs of corrosion. This electronic trip unit featured an externally connected metering module, which was removed, and visually inspected. There were no signs of corrosion on the circuit boards or the connector pins. The circuit board assemblies were also removed from the electronic trip unit. Likewise, there were no signs of corrosion on the electronic trip unit's circuit boards or connector pins.

The fourth (and final) electronic trip unit inspected was model number WLETU776, serial number 774341014768. The outer case exhibited no signs of corrosion. The circuit board assemblies were also removed from the electronic trip unit. Likewise, there were no signs of corrosion on the electronic trip unit's circuit boards or connector pins.

Summary

All of the Siemens type WL electronic trip units that were inspected were visually free of any form of corrosion.

Regards,

Figure 4 Internal Circuitry (opposite sides of boards shown in Figure 3)

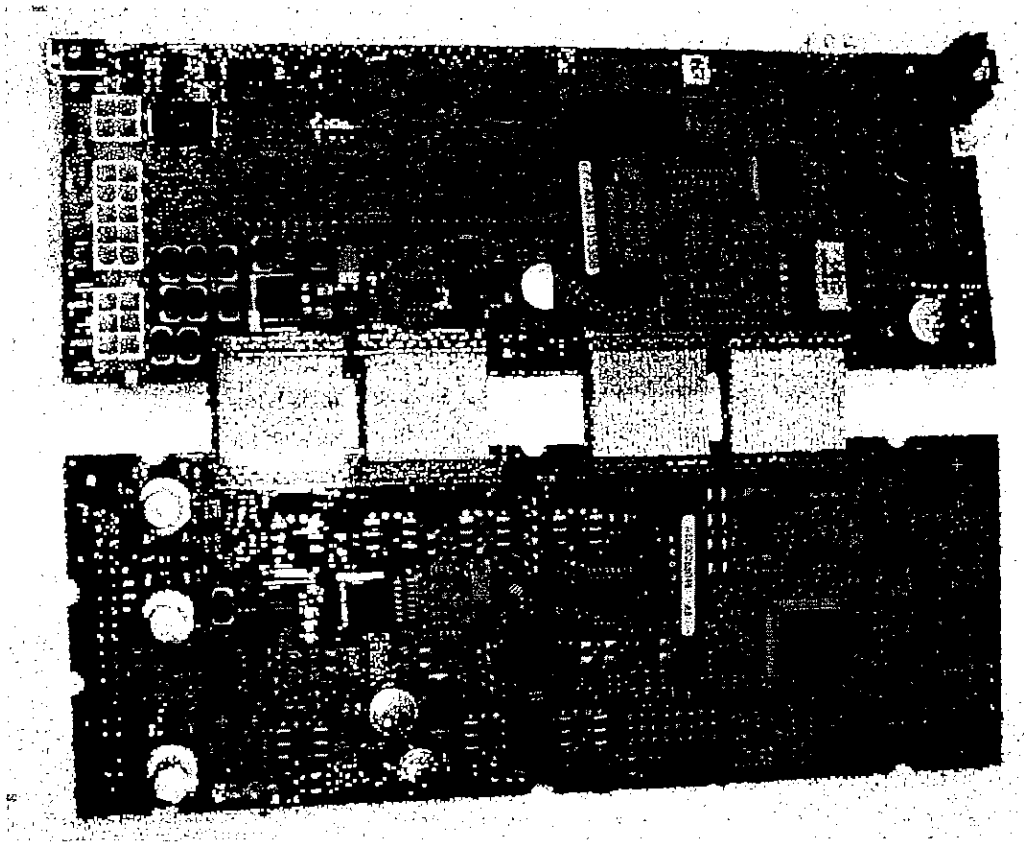


Figure 5 Display Module

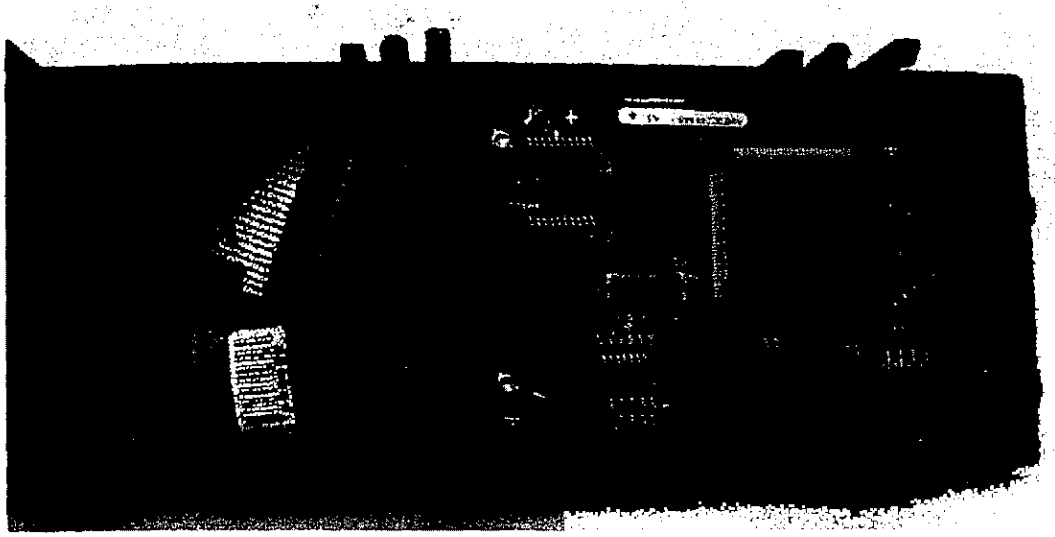


Figure 2 Rear Cover Removed

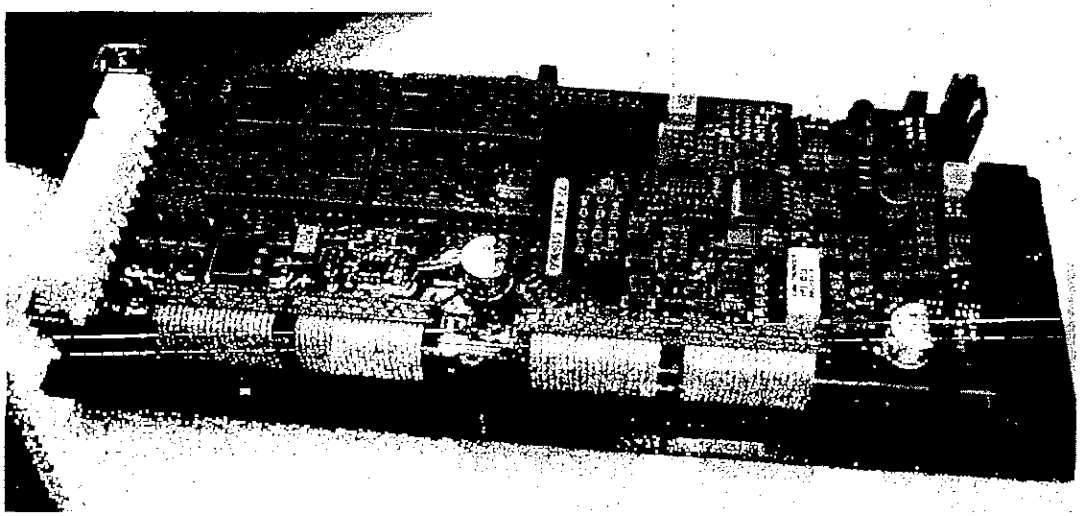
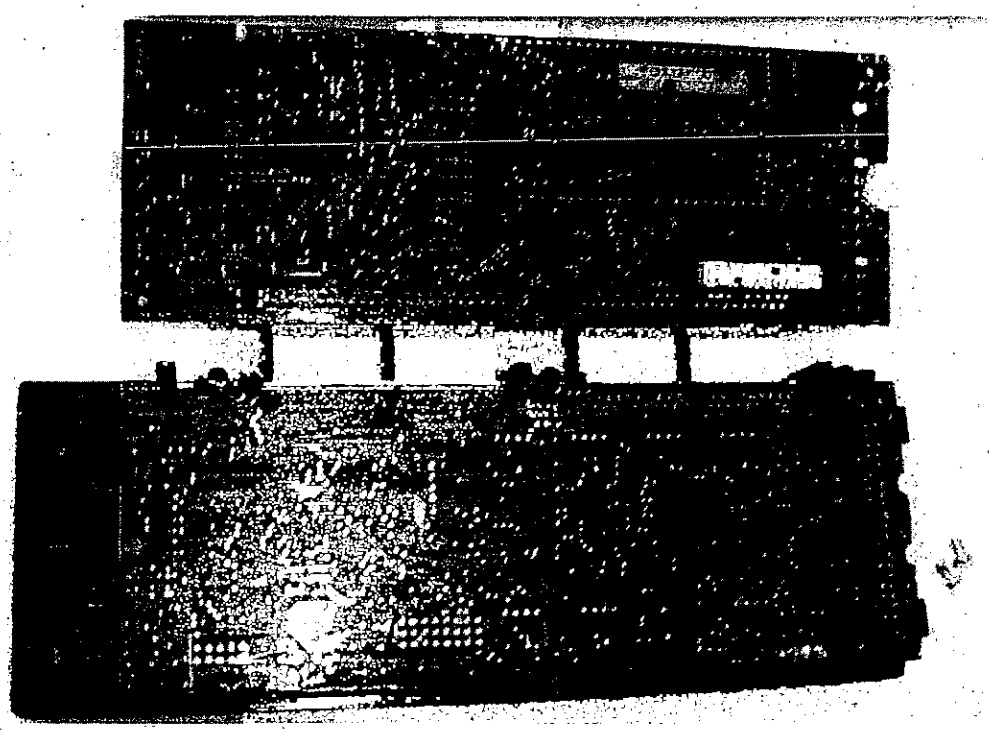


Figure 3 Internal Circuitry



SIEMENS

To: Don Sapanara
S. M. Electric

November 4, 2010

From: Keith Flowers
Program Manager
Siemens Industry, Inc.

CC: Shelby Nelms
Quality Manager
Siemens Industry, Inc.

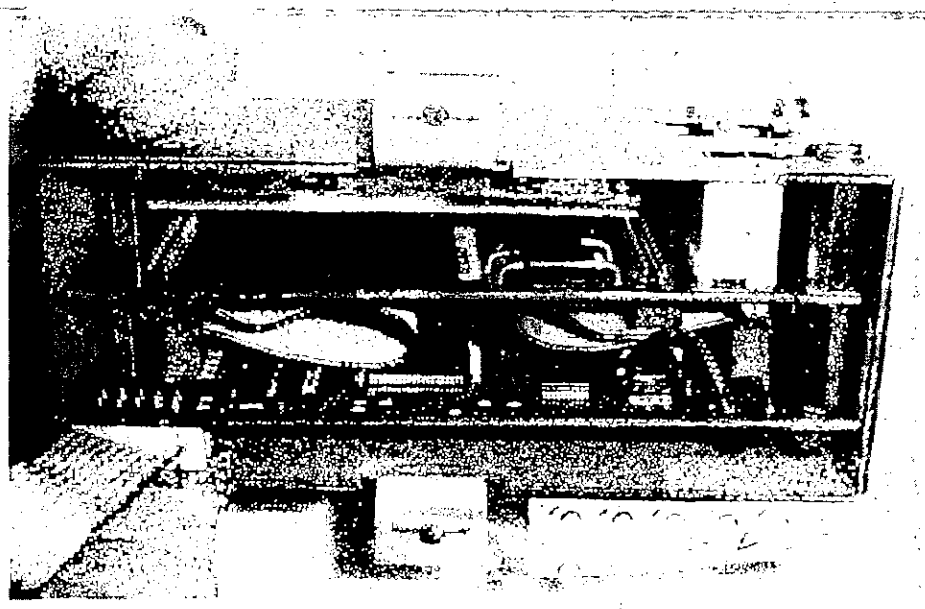
Subject: **WL Electronic Trip Unit Inspection at Newark Airport (EWR)**

On Thursday November 4, 2010, I conducted a visual inspection of four Siemens type WL electronic trip units at Terminal B of the Newark International Airport. The visual inspection was witnessed by the following individuals:

Russ Elliott, S.M. Electric
Mike Cito, Siemens Industry
Dan Lochard, EWR Port Authority
Don Sapanara, S. M. Electric
Keith Flowers, Siemens Industry
Herman Ret, EWR Port Authority

The first electronic trip unit inspected was model number WLETU776MP, serial number 774341015366. The outer case exhibited no signs of corrosion. This electronic trip unit featured an externally connected metering module, which was removed, and visually inspected. There were no signs of corrosion on the circuit boards or the connector pins.

Figure 1 Metering Module Interior



The circuit board assemblies were also removed from the electronic trip unit. Likewise, there were no signs of corrosion on the electronic trip unit's circuit boards.

SIEMENS Industry

To: Don Sapanara
SM Electric

December 7, 2010

From: Allan Worthy

CC: Doris Schornstein
Barry Powell
Ernie Braunschweig

Subject: Newark Airport Substation SA LVS Warranty Certification
(Siemens S.O.# 86095 Item R30 – SAP # 3001295712 -3496)

Effective today (12/7/2010), the factory warranty for the Newark Airport Terminal B Substation SA low voltage switchgear supplied by Siemens Industry, Inc. is reinstated and with the purchase of the warranty extension previously consummated, will remain in effect until 12/7/2014.

The inspection, testing and refurbishment of the Substation SA low voltage switchgear was successfully completed and the results of the inspection and testing are detailed in a separate report that will accompany this letter.

The terms and conditions of the reinstated and extended factory warranty are the same as those detailed in the original warranty documentation.

Regards

Allan Worthy
Product Manager
Low Voltage Switchgear

Siemens Industry, Inc
5400 Triangle Parkway
Norcross, GA 30092
USA
Tel.: (770)326-2000
www.usa.siemens.com

S.M. ELECTRIC COMPANY, INC.

601 NEW BRUNSWICK AVE. P.O. BOX 1144 RAHWAY, NEW JERSEY 07065-1144

LICENSE/PERMIT #191 MEMBER N.E.C.A. PHONE: 732-388-3540

FAX NUMBERS: GENERAL/CONSTRUCTION/PURCHASING: 732-388-3052 ESTIMATING: 732-381-6390

TRANSMITTAL C1260X-TR-264

TO: VRH Construction Corp.
320 Grand Ave.
Engelwood, NJ 07631-4355

ATTN: Eric Winkler

DATE: December 10, 2010
PROJECT: PANY/NJ-EWR-264.003
Lower Level Expan. &
Vertical Circ.
EST/JOB #: C1260X

TRANSMITTING BY: [ ] E-MAIL [ ] FED EX [x] HAND DELIVERY

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COPIES	PAGES	DESCRIPTION
5		Siemens Re-certification Report for Switchgear SA Consisting
		of the Following:
	1	Cover Letter
	4	WL Electronic Trip Unit Inspection at Newark Airport (EWR)
	2	Inspection and Testing Report for Switchgear SA
	1	Switchgear and Switchboard Assemblies Checklist
	1	Low Voltage Circuit Breaker Test Report - ATS Life Safety
	1	Low Voltage Circuit Breaker Test Report - PMDP
	1	Low Voltage Circuit Breaker Test Report - DPSA
	1	Low Voltage Circuit Breaker Test Report - DPSB
	1	Low Voltage Circuit Breaker Test Report - Main Breaker
	1	Switchgear Test Report
	2	Primary Bus Test Report
5	4	200A Molded Case Circuit Breaker Test Reports
5		4000A WL Circuit Breaker Test Report for:
	1	Switchgear NB Main CB - S/N 4001281002028
	1	Switchgear SB Main CB - S/N 4001281007014
	1	Switchgear SA Main CB - S/N 4001281007016
	1	Switchboard EMDS Branch CB ATS-NA - S/N 4001281211031

Note: Upon receipt of this transmittal, please fax a signed copy to 973-622-1471

VERY TRULY YOURS,

KINDLY RETURN ____ COPIES OF EACH

S.M. ELECTRIC COMPANY, INC.

RECEIVED: ____

BY ____ R. Elliott

Russ Elliott (732) 904-2354

SIEMENS

Ft. Worth, TX ModCenter

WL Low Voltage Power Circuit Breaker Certified Test Report

Catalog #:	C3F340ZYXXXXXN		
Breaker Type:	UL489 Fixed Mounted Breaker		
CBID:	004001281211031	FS: 3	Frame Rating: 4000
Base Frame ID:	000491250829088	Interupt Cap.:	150 kA
Trip Unit ID:	000774341014768	ETU776, GF-Alarm and Trip	
Test Station:	MC13:	Rating Plug:	4000
Test Date:	11/17/2010		

Production Order: 9101273996

Sold To: MONARCH ELECTRIC CO INC
ONE DODGE DR
30028917
WEST CALDWELL, NJ 07006

Ship To: MONARCH ELECTRIC CO INC
%NEWARK LIBERTY AIRPORT
30028917
NEWARK, NJ 07114

☑ Identity Test Performed - Incl. Programming, Labeling, Catalog Order Check

☑ Mechanical Accessory Tests Performed - Incl. Manual Mechanism Charging, Anti-Pumping, Trip/Close Solenoids, UVR, Motor, Aux. Switch Bell Alarms etc. (as per installed)

☑ Dielectric / Hi-Pot Tests Performed - Incl. @2.65kv: Open x A,B,C; Closed: AB, BC, AC, AG, BG, CG
@1.80 kV: Accessories to Ground
@1.20 kV: Motor connection to Ground

Primary Injection Test	Settings (ETU Initial settings / Test Current etc.; See Note 3)	Results A	Results B	Results C	Results *	Acceptable Range Min	Acceptable Range Max
Long Time Pickup (A)	IR(xIn): 0.4 Inj A: 1600 tR(s): 5.5	1680				1600	1760
Long Time Delay (S)	Test Current: 4800	18.9				17.6	22
Short Time Pickup (A)	Isd(xIn): 1.3 Inj A: 5000 Tsd(s): 0.02		5554			5000	6000
Short Time Delay (S)	Tsd(s): 0.4 Test Current: 6250		0.457			0.43	0.48
Instantaneous Pickup (A)	I(xIn): 1.5 Inj A: 6000			6507		6000	7200
Ground Fault Pickup (A)	Trip: B Alarm: B Tg(s): 0.1				676	600	720
Neutral Delay (S)	tR(s): 2 IN(xIn): ON / IN = 0.5 x In Inj A: 2000 Test Current: 4000				16.7	14.4	18

UVR Drop-out Voltage: 0

Notes:
1. This WL Low Voltage Power Circuit Breaker was tested in accordance with ANSI/IEEE C37.50-1989
2. The above tests were carried out according to controlled Siemens-Ft. Worth test inspection plans and standards on calibrated equipment. This process and documentation is controlled and audited by UL in accordance with ISO9001:2008. Certification available upon request.
3. All delay test settings are the same as for the preceding pickup test unless otherwise noted.
4. All WL Circuit Breaker ETUs are set to factory default safety settings prior to shipment. [Lowest Pickups, Shortest Delays, N-protection off, Memory Off, GF=sumI]
5. The above product identification information [ETU, Catalog Number etc.] is accurate as of the test date. Any changes to this configuration are not covered by the above test results.
6. For product support, please contact your sales representative or customer service at: chrystelle.williams@siemens.com
7. DNT indicates 'Did Not Test' and represents a test not applicable to this configured breaker.

Shelby D. Nelms

Shelby D. Nelms
Quality Manager, Siemens - Ft. Worth ModCenter

SIEMENS
Ft. Worth, TX ModCenter

WL Low Voltage Power Circuit Breaker Certified Test Report

Catalog #:	M3A340ZYGCXG8CN		
Breaker Type:	ANSI (UL1066) Drawout Circuit Breaker		
CBID:	004001281007016	FS: 3	Frame Rating: 4000
Base Frame ID:	000491280423142	Interupt Cap.:	150 kA
Trip Unit ID:	000774341015361	ETU776, GF-Alarm and Trip	
Test Station:	MC13:	Rating Plug:	4000
Test Date:	11/17/2010		

Production Order: 9101011165
Sold To: MONARCH ELECTRIC CO INC
ONE DODGE DR
30028917
WEST CALDWELL, NJ 07006

Ship To: MONARCH ELECTRIC CO INC
%NEWARK LIBERTY AIRPORT
30028917
NEWARK, NJ 07114

- [x] Identity Test Performed - Incl. Programming, Labeling, Catalog Order Check
- [x] Mechanical Accessory Tests Performed - Incl. Manual Mechanism Charging, Anti-Pumping, Trip/Close Solenoids, UVR, Motor, Aux. Switch Bell Alarms etc. (as per installed)
- [x] Dielectric / Hi-Pot Tests Performed - Incl. @2.65kv: Open x A,B,C; Closed: AB, BC, AC, AG, BG, CG
  @1.80 kV: Accessories to Ground
  @1.20 kV: Motor connection to Ground

Primary Injection Test	Settings *ETU Initial settings / Test Current etc.; See Note 3*	Results A	B	C	*	Acceptable Range Min	Max
Long Time Pickup (A)	IR(xIn): 0.4 Inj A: 1600 tR(s): 5.5	1689				1600	1760
Long Time Delay (S)	Test Current: 4800	17.9				17.6	22
Short Time Pickup (A)	Isd(xIn): 1.3 Inj A: 5000 Tsd(s): 0.02		5420			5000	6000
Short Time Delay (S)	Tsd(s): 0.4 Test Current: 6250		0.456			0.43	0.48
Instantaneous Pickup (A)	Ii(xIn): 1.5 Inj A: 6000			6354		6000	7200
Ground Fault Pickup (A)	Trip: B Alarm: B Tg(s): 0.1				673	600	720
Neutral Delay (S)	tR(s): 2 IN(xIn): ON / IN = 0.5 x In Inj A: 2000 Test Current: 4000				15.9	14.4	18

UVR Drop-out Voltage: 0

Notes:
1. This WL Low Voltage Power Circuit Breaker was tested in accordance with ANSI/IEEE C37.50-1989
2. The above tests were carried out according to controlled Siemens-Ft. Worth test inspection plans and standards on calibrated equipment. This process and documentation is controlled and audited by UL in accordance with ISO9001:2008. Certification available upon request.
3. All delay test settings are the same as for the preceding pickup test unless otherwise noted.
4. All WL Circuit Breaker ETUs are set to factory default safety settings prior to shipment. [Lowest Pickups, Shortest Delays, N-protection off, Memory Off, GF=sumI]
5. The above product identification information [ETU, Catalog Number etc.] is accurate as of the test date. Any changes to this configuration are not covered by the above test results.
6. For product support, please contact your sales representative or customer service at: chrystelle.williams@siemens.com
7. DNT indicates 'Did Not Test' and represents a test not applicable to this configured breaker.

Shelby D. Nelms

Shelby D. Nelms
Quality Manager, Siemens - Ft. Worth ModCenter

SIEMENS

Ft. Worth, TX ModCenter

WL Low Voltage Power Circuit Breaker Certified Test Report

Catalog #:	M3A340ZYGCXG8CN		
Breaker Type:	ANSI (UL1066) Drawout Circuit Breaker		
CBID:	004001281007014	FS: 3	Frame Rating: 4000
Base Frame ID:	000491280423138	Interupt Cap.:	150 kA
Trip Unit ID:	000774341015366	ETU776, GF-Alarm and Trip	
Test Station:	MC13:	Rating Plug:	4000
Test Date:	11/17/2010		

Production Order: 9101011164

Sold To: MONARCH ELECTRIC CO INC
ONE DODGE DR
30028917
WEST CALDWELL, NJ 07006

Ship To: MONARCH ELECTRIC CO INC
%NEWARK LIBERTY AIRPORT
30028917
NEWARK, NJ 07114

☑ Identity Test Performed - Incl. Programming, Labeling, Catalog Order Check

☑ Mechanical Accessory Tests Performed - Incl. Manual Mechanism Charging, Anti-Pumping, Trip/Close Solenoids, UVR, Motor, Aux. Switch Bell Alarms etc. (as per installed)

☑ Dielectric / Hi-Pot Tests Performed - Incl. @2.65kv: Open x A,B,C; Closed: AB, BC, AC, AG, BG, CG
@1.80 kV: Accessories to Ground
@1.20 kV: Motor connection to Ground

Primary Injection Test	Settings *ETU Initial settings / Test Current etc.; See Note 3*	Results A	B	C	*	Acceptable Range Min	Max
Long Time Pickup (A)	IR(xIn): 0.4 Inj A: 1600 tR(s): 5.5	1686				1600	1760
Long Time Delay (S)	Test Current: 4800	19.3				17.6	22
Short Time Pickup (A)	Isd(xIn): 1.3 Inj A: 5000 Tsd(s): 0.02		5385			5000	6000
Short Time Delay (S)	Tsd(s): 0.4 Test Current: 6250		0.458			0.43	0.48
Instantaneous Pickup (A)	Ii(xIn): 1.5 Inj A: 6000			6346		6000	7200
Ground Fault Pickup (A)	Trip: B Alarm: B Tg(s): 0.1				661	600	720
Neutral Delay (S)	tR(s): 2 IN(xIn): ON / IN = 0.5 x In Inj A: 2000 Test Current: 4000				15.7	14.4	18

UVR Drop-out Voltage: 0

Notes:
1. This WL Low Voltage Power Circuit Breaker was tested in accordance with ANSI/IEEE C37.50-1989
2. The above tests were carried out according to controlled Siemens-Ft. Worth test inspection plans and standards on calibrated equipment. This process and documentation is controlled and audited by UL in accordance with ISO9001:2008. Certification available upon request.
3. All delay test settings are the same as for the preceding pickup test unless otherwise noted.
4. All WL Circuit Breaker ETUs are set to factory default safety settings prior to shipment. [Lowest Pickups, Shortest Delays, N-protection off, Memory Off, GF=sumI]
5. The above product identification information [ETU, Catalog Number etc.] is accurate as of the test date. Any changes to this configuration are not covered by the above test results.
6. For product support, please contact your sales representative or customer service at: chrystelle.williams@siemens.com
7. DNT indicates 'Did Not Test' and represents a test not applicable to this configured breaker.

Shelby D. Nelms

Shelby D. Nelms
Quality Manager, Siemens - Ft. Worth ModCenter

SIEMENS

Ft. Worth, TX ModCenter

WL Low Voltage Power Circuit Breaker Certified Test Report

Catalog #:	M3A340ZYGCXG8CN		
Breaker Type:	ANSI (UL1066) Drawout Circuit Breaker		
CBID:	004001281002028	FS: 3	Frame Rating: 4000
Base Frame ID:	000491280211130	Interupt Cap.:	150 kA
Trip Unit ID:	000774341015358	ETU776, GF-Alarm and Trip	
Test Station:	MC13:	Rating Plug:	4000
Test Date:	11/17/2010		

Production Order: 9100999093

Sold To: MONARCH ELECTRIC CO INC
ONE DODGE DR
30028917
WEST CALDWELL, NJ 07006

Ship To: MONARCH ELECTRIC CO INC
%NEWARK LIBERTY AIRPORT
30028917
NEWARK, NJ 07114

☑ Identity Test Performed - Incl. Programming, Labeling, Catalog Order Check

☑ Mechanical Accessory Tests Performed - Incl. Manual Mechanism Charging, Anti-Pumping, Trip/Close Solenoids, UVR, Motor, Aux. Switch Bell Alarms etc. (as per installed)

☑ Dielectric / Hi-Pot Tests Performed - Incl. @2.65kv: Open x A,B,C; Closed: AB, BC, AC, AG, BG, CG
@1.80 kV: Accessories to Ground
@1.20 kV: Motor connection to Ground

Primary Injection Test	Settings (ETU Initial settings / Test Current etc.; See Note 3)	Results A	Results B	Results C	Results *	Acceptable Range Min	Acceptable Range Max
Long Time Pickup (A)	IR(xIn): 0.4 Inj A: 1600 tR(s): 5.5	1706				1600	1760
Long Time Delay (S)	Test Current: 4800	19.2				17.6	22
Short Time Pickup (A)	Isd(xIn): 1.3 Inj A: 5000 Tsd(s): 0.02		5312			5000	6000
Short Time Delay (S)	Tsd(s): 0.4 Test Current: 6250		0.455			0.43	0.48
Instantaneous Pickup (A)	Ii(xIn): 1.5 Inj A: 6000			6613		6000	7200
Ground Fault Pickup (A)	Trip: B Alarm: B Tg(s): 0.1				668	600	720
Neutral Delay (S)	tR(s): 2 IN(xIn): ON / IN = 0.5 x In Inj A: 2000 Test Current: 4000				15.7	14.4	18

UVR Drop-out Voltage: 0

Notes:
1. This WL Low Voltage Power Circuit Breaker was tested in accordance with ANSI/IEEE C37.50-1989
2. The above tests were carried out according to controlled Siemens-Ft. Worth test inspection plans and standards on calibrated equipment. This process and documentation is controlled and audited by UL in accordance with ISO9001:2008. Certification available upon request.
3. All delay test settings are the same as for the preceding pickup test unless otherwise noted.
4. All WL Circuit Breaker ETUs are set to factory default safety settings prior to shipment. [Lowest Pickups, Shortest Delays, N-protection off, Memory Off, GF=sumI]
5. The above product identification information [ETU, Catalog Number etc.] is accurate as of the test date. Any changes to this configuration are not covered by the above test results.
6. For product support, please contact your sales representative or customer service at: chrystelle.williams@siemens.com
7. DNT indicates 'Did Not Test' and represents a test not applicable to this configured breaker.

Shelby D. Nelms

Shelby D. Nelms
Quality Manager, Siemens - Ft. Worth ModCenter

Siemens Industry, Inc.

RGA Information — *Report Number: 123601*

GA Number 392587 Date Report Created 11/16/2010 Eval Completed: 11/15/2010

Customer S M ELECTRIC CO INC Account Number 30058138

Catalog/MLFB Number SCJD69200NGT Serial Number 040108

Customer Comments: Breakers from orig so# 3001295712/9073455/86095. Tested and returned to customer. Reports required

Tests Performed for Evaluation

Thermal 200%	Thermal 110% Hold-In	Instantaneous Trip
☐ Conforming ☐ Non-Conforming ☑ N/A	☐ Conforming ☐ Non-Conforming ☑ N/A	○ UL Instant.
Thermal 135%	Thermal 100% Temperature	○ IEC Instant.
☐ Conforming ☐ Non-Conforming ☑ N/A	☐ Conforming ☐ Non-Conforming ☑ N/A	◉ Not Appl.
Electrical - Continuity Check	Mechanical Evaluation	
☐ Conforming ☐ Non-Conforming ☑ N/A	☐ Conforming ☑ Non-Conforming ☐ N/A	

Evaluation Findings

☐ Unable to duplicate reported issue ☐ Able to duplicate reported issue

☐ Field related issue
- ☐ Cosmetic ☐ Handling
- ☐ Loose Connection ☐ Stripped Screw
- ☐ Environment ☐ Other

☐ Electrical related issue
- ☐ Thermal Calibration
  - ⊗ 200% LP Cal
  - ⊗ 200% CP Cal
  - ⊗ 200% RP Cal
  - ⊗ 135% Cal
  - ⊗ Hold-In
- ☐ Continuity Issue
- ☐ Instantaneous Calibration
  - UL ⊗ LP ⊗ CP ⊗ RP
  - IEC ⊗ LP_CP ⊗ LP_RP ⊗ CP_RP
- ☐ Millivolt Issue
- ☐ Defective Electrical Component
- ☐ Damaged Component - Arcing
- ☐ Other

☐ Assembly related issue
- ☐ Cosmetic
- ☐ Incorrect Assembly Components
- ☐ Missing Assembly Components
- ☐ Incorrect Assembly
- ☐ Label Error
- ☐ Other

☑ Mechanical related issue
- ☐ Handle Related
- ☐ Internal Mechanism Related
- ☐ Interlock Related
- ☐ Latch Related
- ☑ Other

☐ Shipping Handling related issue

Comments:
Instances of sliplatch occurred during testing. The mag latch component did not reset. Credit is suggested for this breaker, returned on rejected RGA E582-392587.

gineering Rep. Paulus Mary Digitally signed by Paulus Mary DN: cn=Paulus Mary, c=Paulus, givenName=Mary, o=Siemens, serialNumber=ABR... Date: 2010.11.22 15:26:38 -06'00'

Production Rep. Myers Fred Digitally signed by Myers Fred DN: cn=Myers Fred, c=Myers, givenName=Fred, o=Siemens, serialNumber=Z0007EX8

Quality Rep.

Target Market Representative If required...

Form F830.5-3

SIEMENS

RGA Testing Data Sheet - Sensitrip Breaker

200% Single Pole Thermal Testing (UL)

	LP	CP	RP		
Trip Time	0:04:38	0:04:09	0:04:00	Maximum	0:05:52
mV Reading	N/A	N/A	N/A		N/A

110% Thermal - Wired In Series (UL Equivalent)

Test Time	N/A	Minimum	3:00:00

135% Thermal - Wired In Series (UL)

Test Time	N/A	Maximum	2:00:00

300% Single Pole Thermal Testing (NEMA Standard AB4)

	LP	CP	RP		
Trip Time	N/A	N/A	N/A	Maximum	N/A
mV Reading	N/A	N/A	N/A		N/A

Instantaneous Testing (NEMA Standard AB4)

	HI Setting			LO Setting		
	LP	CP	RP	LP	CP	RP
Reading 1	N/A	N/A	N/A	N/A	N/A	N/A
Reading 2	N/A	N/A	N/A	N/A	N/A	N/A
Reading 3	N/A	N/A	N/A	N/A	N/A	N/A
Average	N/A	N/A	N/A	N/A	N/A	N/A

HI Setting Target Value	N/A	LO Setting Target Value	N/A
NEMA Standard AB4 +40% of HI Target Value	N/A	NEMA Standard AB4 +40% of LO Target Value	N/A
NEMA Standard AB4 -30% of HI Target Value	N/A	NEMA Standard AB4 -30% of LO Target Value	N/A

Note1: 200% testing was performed with the Short Time and Instantaneouse dials each set at 10.

Note2: A hardwired check of Ground Fault functionality was performed on the right pole - OK.

SIEMENS

RGA Testing Data Sheet - Sensitrip Breaker

RGA Number:	Non-RGA E582-392587	**SAP Reference Number:**	N/A
Smpl Number:	1	**RMA Reference Number:**	N/A

Customer Comments: Breakers from orig so# 3001295712/9073455/86095. Tested and returned to customer. Reports required

Catalog Number: SCJD69200NGT Serial Number: 043008

Observations: This breaker conforms to testing.

As-Received Settings

Rated Amperage:	200	A		
Continuous Amps:	100	%	Effective Amps:	200 A
Long Time Delay:	25	s		
Short Time Pickup:	1.5	(x Ir)	Short Time Fixed or I²t?	Fixed
Short Time Delay:	0.05	s		
Instantaneous:	2	(x Ir)		
Ground Fault Pickup:	20	%	Ground Fault Fixed or I²t?	I²t
Ground Fault Delay:	0.1	s	Residual Or Return?	?

Mechanical Testing

Number of ON/OFF Cycles	10+	Push To Trip Button Test	OK
		Continuity Test	OK

Long Time Testing (TS-31 Test Set)

	LP	CP	RP	
Trip Time	437.781	409.918	409.058	s
OK or NC?	OK	OK	OK	

Short Time set at 10 to prevent nuisance tripping at as-received setting.

Short Time Testing (TS-31 Test Set)

	LP	CP	RP	
Trip Time	0.073	0.073	0.073	s
OK or NC?	OK	OK	OK	

Instantaneous Testing (TS-31 Test Set)

	LP	CP	RP	
Trip Time	0.038	0.036	0.037	s
OK or NC?	OK	OK	OK	

Ground Fault Testing (TS-31 Test Set)

	LP	CP	RP	
Trip Time	0.280	0.334	0.280	s
OK or NC?	OK	OK	OK	

Siemens Industry, Inc.

RGA Information — *Report Number: 123601*

GA Number 392587 Date Report Created 11/16/2010 Eval Completed: 11/15/2010

Customer S M ELECTRIC CO INC Account Number 30058138

Catalog/MLFB Number SCJD69200NGT Serial Number 043008

Customer Comments: Breakers from orig so# 3001295712/9073455/86095. Tested and returned to customer. Reports required

Tests Performed for Evaluation

Thermal 200%	Thermal 110% Hold-In	Instantaneous Trip
☐ Conforming ☐ Non-Conforming ☑ N/A	☐ Conforming ☐ Non-Conforming ☑ N/A	○ UL Instant.
Thermal 135%	**Thermal 100% Temperature**	○ IEC Instant.
☐ Conforming ☐ Non-Conforming ☑ N/A	☐ Conforming ☐ Non-Conforming ☑ N/A	◉ Not Appl.
Electrical - Continuity Check	**Mechanical Evaluation**	
☑ Conforming ☐ Non-Conforming ☐ N/A	☑ Conforming ☐ Non-Conforming ☐ N/A	

Evaluation Findings

☑ Unable to duplicate reported issue ☐ Able to duplicate reported issue

☐ Field related issue
- ☐ Cosmetic
- ☐ Handling
- ☐ Loose Connection
- ☐ Stripped Screw
- ☐ Environment
- ☐ Other

☐ Electrical related issue
- ☐ Thermal Calibration
  - ⊗ 200% LP Cal
  - ⊗ 200% CP Cal
  - ⊗ 200% RP Cal
  - ⊗ 135% Cal
  - ⊗ Hold-In
- ☐ Continuity Issue
- ☐ Instantaneous Calibration
  - UL: ⊗ LP ⊗ CP ⊗ RP
  - IEC: ⊗ LP_CP ⊗ LP_RP ⊗ CP_RP
- ☐ Millivolt Issue
- ☐ Defective Electrical Component
- ☐ Damaged Component - Arcing
- ☐ Other

☐ Assembly related issue
- ☐ Cosmetic
- ☐ Incorrect Assembly Components
- ☐ Missing Assembly Components
- ☐ Incorrect Assembly
- ☐ Label Error
- ☐ Other

☐ Mechanical related issue
- ☐ Handle Related
- ☐ Internal Mechanism Related
- ☐ Interlock Related
- ☐ Latch Related
- ☐ Other

☐ Shipping Handling related issue

Comments:
This breaker conforms to testing. No credit is suggested for this breaker returned on rejected RGA E582-392587.

gineering Rep. Paulus Mary (Digitally signed by Paulus Mary, DN: cn=Paulus Mary, sn=Paulus, givenName=Mary, o=Siemens, serialNumber=Z0007ARD, Date: 2010.11.22 13:22:34 -08'00')

Production Rep. Myers Fred (Digitally signed by Myers Fred, DN: cn=Myers Fred, sn=Myers, givenName=Fred, o=Siemens, serialNumber=Z0007EXB)

Quality Rep. [signature]

Target Market Representative If required...

Form FB30.5-3

SIEMENS

Siemens Industrial Services

A business of
Siemens Energy and Automation, Inc.

PRIMARY BUS TEST REPORT

Customer	SM electric	Location	Newark Airport Terminal B		
Substation	SA	Feeder/Cubicle	Main breaker / Section #5,#4,#3	Unique ID	

Nameplate Data

Manufacturer	Siemens	Voltage Rating	480 volt
Type / Style	3 phase, 4 wire	Current Rating	4000 amp
YR / Serial Number	SO # 3001295712	Interrupting Rating	150 ka
IB Number			

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	

Electrical Tests

Insulation Resistance (in Gig-Ohms) @ 1000 VDC			
As Found			
A-G	7.0	A-B	20
B-G	10	B-C	18
C-G	5	C-A	15

Comments

Satisfactory for Continued Service	Yes	Requires Repair	NO	Repairs Made During Maintenance	NA

Note: Exposed bus joints were inspected in each section for proper connections and cross checked with a 100 amp DLRO.

Job No	5200-224524	Tested By	Ralph Walkowicz	Date Tested	11/29/10	ID#	

182 Forbes Road
Braintree, Ma. 02184

SIEMENS

Siemens Industrial Services

A business of
Siemens Energy and Automation, Inc.

PRIMARY BUS TEST REPORT

Customer	SM electric	**Location**	Newark Airport Terminal B		
Substation	SA	**Feeder/Cubicle**	Main breaker / Section #2,#1	**Unique ID**	

Nameplate Data

Manufacturer	Siemens	**Voltage Rating**	480 volt
Type / Style	3 phase, 4 wire	**Current Rating**	4000 amp
YR / Serial Number	SO # 3001295712	**Interrupting Rating**	150 ka
IB Number			

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	

Electrical Tests

Insulation Resistance (in Gig-Ohms) @ 1000 VDC			
As Found			
A-G	100	A-B	100
B-G	100	B-C	100
C-G	100	C-A	100

Comments

Satisfactory for Continued Service	Yes	**Requires Repair**	NO	**Repairs Made During Maintenance**	NA

Note: Exposed bus joints were inspected in each section for proper connection and cross checked with a 100 amp DLRO.

Job No	5200-224524	**Tested By**	Ralph Walkowicz	**Date Tested**	11/29/10	**ID#**	

152 Forbes Road
Braintree, Ma. 02184

SIEMENS

Siemens Industrial Services
A business of
Siemens Energy and Automation, Inc.

SWITCHGEAR TEST REPORT

Customer:	SM Electric	Location:	Newark Airport		
Substation:	SA	Switchgear Designation:	SA	Unique ID:	

Nameplate Data

Manufacturer:	Siemens	Type:	3 phase, 4 wire
Serial No.:	SO# 3001295712	Current Rating:	4000 amp
Voltage Rating:	480 volt	Bus Fault Rating:	150 ka

Inspection

Cell Heaters:	B	Key Interlocks:	NA
Meter & Control Switches:	B	Pilot Light:	B
Wiring:	B	Terminal Blocks:	B
Fuse & Fuse Blocks:	B	Stationary Contact Bottles:	NA
Ground Bus:	B	Tracking / Corona:	B
Bus Supports:	B	Joint Insulation:	B
Terminations:	B	General Hardware:	B
Paint – Inside & Outside:	B	PT / CPT Compartment	B

CODE LEGEND
A= Like New Condition
B= Good Condition
C= Poor Condition Requires Correction
D= Corrections Made
E= Unacceptable Condition Do Not Use!
NA= Not Applicable

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean / Dirty	clean
Wet / Damp / Dry	dry
Temp (Degree C)	
Relative Humidity (%)	

Electrical Tests

Insulation Resistance

Readings in Mega-Ohms @ 1k VDC

A-B	100 Gig ohms	B-C	100 Gig ohms	C-A	100 Gig ohms
A-G	100 Gig ohms	B-G	100 Gig ohms	C-G	100 Gig ohms

Ductor Test

Readings in micro-ohms @ 100amps

Section 1	Section 2	Section 3	Section 4	Section 5	Section 1- 5
A-A =170	A-A =87	A-A =123	A-A =47	A-A =35	
B-B =157	B-B =110	B-B =114	B-B =71	B-B =39	
C-C =165	C-C =112	C-C =104	C-C =57	C-C =36	
N-N =38	N-N =19	N-N =18	N-N =61	N-N =51	N-N =81

COMMENTS:

Section # 1 reading : From the bus duct through the splice plate connections and two breakers to the load side of a feeder breaker.
Section #1 neutral reading : From the bus duct through the splice plate connections to the lower rear horizontal neutral bus.
Section #2 readings : From the bus duct through the splice plate connections and one breaker to the load side of a feeder breaker.
Section #2 neutral reading : From the bus duct through the splice plate connections to the lower rear horizontal neutral bus.
Section #3 readings : From the bus duct through the splice plate connections and one breaker to the load side of a feeder breaker.
Section #3 neutral reading : From the bus duct through the splice plate connections to the lower rear horizontal neutral bus.
Section #4 readings : From the load side on Main breaker in section #4 to the bus duct connection in section #3.
Section #4 neutral reading : From the horizontal neutral bus in section #4 to the Bus duct neutral connection in section #3.
Section #5 readings : From the bus duct through the spice plate and one breaker to the horizontal bus in section #4.
(Readings were lowered on this test by cleaning the breaker's main contacts)
Section #5 neutral reading : From the bus duct connection to the horizontal rear neutral bus in section #4.

Section #1-#5 neutral reading: From the rear horizontal neutral bus in section #1 to the bus duct neutral connection in section #5.

Spice plates for bus duct connections were re-plated and are in good condition.

Satisfactory for Continued Service	Yes	Requires Repair	No	Repairs Made During Maintenance			
Job No:	5200-	Tested By:	Ralph Walkowicz	Date Tested	11/19/10	ID #	

182 Forbes Road
Braintree, Ma. 02184

SIEMENS

Siemens Industrial Services

A business of
Siemens Energy and Automation, Inc.

LOW VOLTAGE CIRCUIT BREAKER TEST REPORT

Customer	SM Electric	Location	Newark Airport Terminal B		
Substation	SA	Feeder/Cubicle	Main breaker	Unique ID	

Nameplate Data

Manufacturer	Siemens	Charging Motor / Solenoid Voltage:	120 volt ac	Trip Unit: Type	ETU776
Type / Model	WLM3A340	Close Coil Voltage:	120 volt ac	Style/Model	NA
Bolted - or- Draw-out	Draw-out	Trip Coil Voltage:	120 volt ac	Plug Rating	4000 amp
Shop Order/Serial Number	ID# 4001281007016			Sensor Rating/Tap	4000 amp
Frame Size/Rating	4000 amp			Timing Curve/Plot	NA
Interrupting Rating	150 ka	UV Device	No	Limiter: Type	NA
Voltage Rating	508 volt			Manuf.	NA
		Test Position [Y/N]	Y	Rating	NA

Trip Unit Settings

	As Found	As Left		As Found	As Left
Long Delay PU	1600 amp	4000 amp	Long Time Delay	2 sec	2 sec
Short Delay PU	5000 amp	8000 amp	Short Time Delay	20 ms	300 ms
Ground Fault PU	400 amp	1200 amp	Ground Fault Delay	100 ms	300 ms
Instantaneous PU	150000	150000	Other	NA	NA

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	NA

Inspection

Main Contact Condition./Align.	A	Control Wiring	A
Arcing Contact Condition./Align.	A	Primary Fingers	A
Arc Chute Condition	A	Frame Condition	A
Open Close Indicator	A	Secondary Contacts	A
Lubrication	A	Breaker Cleanliness	A
Mechanical Condition	A	Manual Close and Trip	A
Insulation	A	Electrical Close and Trip	A
Control Aux. And Interlocks	A	Rack and D/O Mech.	A

CODE LEGEND
A= Like New Condition
B= Good Condition
C= Poor Condition Requires Correction
D= Corrections Made
E= Unacceptable Condition Do Not Use!
R= Reconditioned
NA= Not Applicable

Electrical Tests

☐ Primary Injection ☒ Secondary Injection

Function	(Test) Settings		Good	Fail						
LDPU	4000 amp		Yes							
LTD	2 sec		Yes							
SDPU	8000 amp		Yes							
STD	300 ms		Yes							
INSTPU	1500000		Yes							
GFPU	1200 amp		Yes							
GFD	300 ms		Yes							

NPU = NO PICKUP; NT = NO TRIP; NTD = NO TIME DEL

Insulation Resistance (In GIG-Ohms) @						1k					VDC
As Found						As Left					
A-G	100	A-B	100	A-A	100	A-G	100	A-B	100	A-A	100
B-G	100	B-C	100	B-B	100	B-G	100	B-C	100	B-B	100
C-G	100	C-A	100	C-C	100	C-G	100	C-A	100	C-C	100

Contact Resistance (Microohms)			
As Found		As Left	
A	109	A	13
B	56	B	16
C	111	C	11

Comments

Satisfactory for Continued Service	Yes	Requires Repair	NO	Repairs Made During Maintenance	Yes

* New trip unit installed in this breaker.

Job No	5200-224524	Tested By	Ralph Walkowicz	Date Tested	11/29/10	ID#	

182 Forbes Road
Braintree, MA. 02184

SIEMENS

Siemens Industrial Services
A business of
Siemens Energy and Automation, Inc.

LOW VOLTAGE CIRCUIT BREAKER TEST REPORT

Customer	SM Electric	Location	Newark Airport Terminal B		
Substation	SA	Feeder/Cubicle	DP-SB	Unique ID	

Nameplate Data

Manufacturer	Siemens	Charging Motor / Solenoid Voltage:	120 volt ac	Trip Unit: Type	ETU776
Type / Model	WLF2A316	Close Coil Voltage:	120 volt ac	Style/Model	NA
Bolted - or- Draw-out	Draw-out	Trip Coil Voltage:	120 volt ac	Plug Rating	1200 amp
Shop Order/Serial Number	ID# 4001280930032			Sensor Rating/Tap	
Frame Size/Rating	1600 amp			Timing Curve/Plot	NA
Interrupting Rating	200 ka	UV Device	No	Limiter: Type	NA
Voltage Rating	508 volt			Manuf.	NA
		Test Position [Y/N]	Y	Rating	NA

Trip Unit Settings

	As Found	As Left		As Found	As Left
Long Delay PU	1200 amp	1200 amp	Long Time Delay	2 sec	2 sec
Short Delay PU	4800 amp	4800 amp	Short Time Delay	100 ms	100 ms
Ground Fault PU	900 amp	900 amp	Ground Fault Delay	200 ms	200 ms
Instantaneous PU	200000	200000	Other	NA	NA

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	NA

Inspection

Main Contact Condition./Align.	A	Control Wiring	A
Arcing Contact Condition./Align.	A	Primary Fingers	A
Arc Chute Condition	A	Frame Condition	A
Open Close Indicator	A	Secondary Contacts	A
Lubrication	A	Breaker Cleanliness	A
Mechanical Condition	A	Manual Close and Trip	A
Insulation	A	Electrical Close and Trip	A
Control Aux. And Interlocks	A	Rack and D/O Mech.	A

CODE LEGEND
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D= Corrections Made
E= Unacceptable Condition Do Not Use!
R= Reconditioned
NA= Not Applicable

Electrical Tests

☐ Primary Injection ☒ Secondary Injection

Function	(Test) Settings		Good	Fail						
LDPU	1200 amp		Yes							
LTD	2 sec		Yes							
SDPU	4800 amp		Yes							
STD	100 ms		Yes							
INSTPU	2000000		Yes							
GFPU	900 amp		Yes							
GFD	200 ms		Yes							

NPU = NO PICKUP; NT = NO TRIP; NTD = NO TIME DEL

Insulation Resistance (In GIG-Ohms) @ 1k VDC											
As Found						As Left					
A-G	100	A-B	100	A-A	100	A-G	100	A-B	100	A-A	100
B-G	100	B-C	100	B-B	100	B-G	100	B-C	100	B-B	100
C-G	100	C-A	100	C-C	100	C-G	100	C-A	100	C-C	100

Contact Resistance (Microhms)			
As Found		As Left	
A	39	A	39
B	38	B	38
C	38	C	38

Comments

Satisfactory for Continued Service	Yes	Requires Repair	NO	Repairs Made During Maintenance	Yes

Fuse readings:
Phase A = 20 micro-ohms Phase B = 20 micro-ohms Phase C = 19 micro-ohms

Job No	5200-224624	Tested By	Ralph Walkowicz	Date Tested	11/30/10	ID#	

182 Forbes Road
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SIEMENS

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LOW VOLTAGE CIRCUIT BREAKER TEST REPORT

Customer	SM Electric	Location	Newark Airport Terminal B		
Substation	SA	Feeder/Cubicle	DPSA	Unique ID	

Nameplate Data

Manufacturer	Siemens	Charging Motor / Solenoid Voltage:	120 volt ac	Trip Unit: Type	ETU776
Type / Model	WLF2A316	Close Coil Voltage:	120 volt ac	Style/Model	NA
Bolted - or- Draw-out	Draw-out	Trip Coil Voltage:	120 volt ac	Plug Rating	1200 amp
Shop Order/Serial Number	ID# 4001280930037			Sensor Rating/Tap	
Frame Size/Rating	1600 amp			Timing Curve/Plot	NA
Interrupting Rating	200 ka	UV Device	No	Limiter: Type	NA
Voltage Rating	508 volt			Manuf.	NA
		Test Position [Y/N]	Y	Rating	NA

Trip Unit Settings

	As Found	As Left		As Found	As Left
Long Delay PU	1200 amp	1200 amp	Long Time Delay	2 sec	2 sec
Short Delay PU	4800 amp	4800 amp	Short Time Delay	100 ms	100 ms
Ground Fault PU	900 amp	900 amp	Ground Fault Delay	200 ms	200 ms
Instantaneous PU	200000	200000	Other	NA	NA

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	NA

Inspection

Main Contact Condition./Align.	A	Control Wiring	A
Arcing Contact Condition./Align.	A	Primary Fingers	A
Arc Chute Condition	A	Frame Condition	A
Open Close Indicator	A	Secondary Contacts	A
Lubrication	A	Breaker Cleanliness	A
Mechanical Condition	A	Manual Close and Trip	A
Insulation	A	Electrical Close and Trip	A
Control Aux. And Interlocks	A	Rack and D/O Mech.	A

CODE LEGEND
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B= Good Condition
C= Poor Condition Requires Correction
D= Corrections Made
E= Unacceptable Condition Do Not Use!
R= Reconditioned
NA= Not Applicable

Electrical Tests

☐ Primary Injection ☒ Secondary Injection

Function	(Test) Settings		Good	Fail						
LDPU	1200 amp		Yes							
LTD	2 sec		Yes							
SDPU	4800 amp		Yes							
STD	100 ms		Yes							
INSTPU	2000000		Yes							
GFPU	900 amp		Yes							
GFD	200 ms		Yes							

NPU = NO PICKUP; NT = NO TRIP; NTD = NO TIME DEL

Insulation Resistance (In GIG-Ohms) @ 1k VDC

As Found						As Left					
A-G	100	A-B	100	A-A	100	A-G	100	A-B	100	A-A	100
B-G	100	B-C	100	B-B	100	B-G	100	B-C	100	B-B	100
C-G	100	C-A	100	C-C	100	C-G	100	C-A	100	C-C	100

Contact Resistance (Microhms)

As Found		As Left	
A	36	A	38
B	49	B	49
C	48	C	48

Comments

Satisfactory for Continued Service	Yes	Requires Repair	NO	Repairs Made During Maintenance	Yes

Fuse readings:
Phase A = 21 micro-ohms Phase B = 20 micro-ohms Phase C = 20 micro-ohms

Job No	5200-224524	Tested By	Ralph Walkowicz	Date Tested	11/30/10	ID#	

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SIEMENS

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LOW VOLTAGE CIRCUIT BREAKER TEST REPORT

Customer	SM Electric	Location	Newark Airport Terminal B		
Substation	SA	Feeder/Cubicle	PMDP	Unique ID	

Nameplate Data

Manufacturer	Siemens	Charging Motor / Solenoid Voltage:	120 volt ac	Trip Unit: Type	ETU776
Type / Model	WLF2A320	Close Coil Voltage:	120 volt ac	Style/Model	NA
Bolted - or- Draw-out	Draw-out	Trip Coil Voltage:	120 volt ac	Plug Rating	2000 amp
Shop Order/Serial Number	ID# 4001281001018			Sensor Rating/Tap	2000 amp
Frame Size/Rating	2000 amp			Timing Curve/Plot	NA
Interrupting Rating	200 ka	UV Device	No	Limiter: Type	NA
Voltage Rating	508 volt			Manuf.	NA
		Test Position [Y/N]	Y	Rating	NA

Trip Unit Settings

	As Found	As Left		As Found	As Left
Long Delay PU	2000 amp	2000 amp	Long Time Delay	2 sec	2 sec
Short Delay PU	6000 amp	6000 amp	Short Time Delay	100 ms	100 ms
Ground Fault PU	900 amp	900 amp	Ground Fault Delay	200 ms	200 ms
Instantaneous PU	200000	200000	Other	NA	NA

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	NA

Inspection

Main Contact Condition./Align.	A	Control Wiring	A
Arcing Contact Condition./Align.	A	Primary Fingers	A
Arc Chute Condition	A	Frame Condition	A
Open Close Indicator	A	Secondary Contacts	A
Lubrication	A	Breaker Cleanliness	A
Mechanical Condition	A	Manual Close and Trip	A
Insulation	A	Electrical Close and Trip	A
Control Aux. And Interlocks	A	Rack and D/O Mech.	A

CODE LEGEND
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C= Poor Condition Requires Correction
D= Corrections Made
E= Unacceptable Condition Do Not Use!
R= Reconditioned
NA= Not Applicable

Electrical Tests

☐ Primary Injection ☒ Secondary Injection

Function	(Test) Settings		Good	Fail						
LDPU	2000 amp		Yes							
LTD	2 sec		Yes							
SDPU	6000 amp		Yes							
STD	100 ms		Yes							
INSTPU	2000000		Yes							
GFPU	900 amp		Yes							
GFD	200 ms		Yes							

NPU = NO PICKUP; NT = NO TRIP; NTD = NO TIME DEL

Insulation Resistance (In GIG-Ohms) @ 1k VDC

As Found						As Left					
A-G	100	A-B	100	A-A	100	A-G	100	A-B	100	A-A	100
B-G	100	B-C	100	B-B	100	B-G	100	B-C	100	B-B	100
C-G	100	C-A	100	C-C	100	C-G	100	C-A	100	C-C	100

Contact Resistance (Microhms)

As Found		As Left	
A	42	A	42
B	32	B	32
C	40	C	40

Comments

Satisfactory for Continued Service	Yes	Requires Repair	NO	Repairs Made During Maintenance	Yes

Fuse readings:
Phase A = 20 micro-ohms Phase B = 19 micro-ohms Phase C = 23 micro-ohms

Job No	5200-224524	Tested By	Ralph Walkowicz	Date Tested	11/30/10	ID#	

182 Forbes Road
Braintree, MA. 02184

SIEMENS

Siemens Industrial Services

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LOW VOLTAGE CIRCUIT BREAKER TEST REPORT

Customer	SM Electric	Location	Newark Airport Terminal B		
Substation	SA	Feeder/Cubicle	ATS-Life Safety	Unique ID	

Nameplate Data

Manufacturer	Siemens	Charging Motor / Solenoid Voltage:	120 volt ac	Trip Unit: Type	ETU776
Type / Model	WLF2A308	Close Coil Voltage:	120 volt ac	Style/Model	NA
Bolted - or- Draw-out	Draw-out	Trip Coil Voltage:	120 volt ac	Plug Rating	500 amp
Shop Order/Serial Number	ID# 40012801001000			Sensor Rating/Tap	
Frame Size/Rating	800 amp			Timing Curve/Plot	NA
Interrupting Rating	200 ka	UV Device	No	Limiter: Type	NA
Voltage Rating	508 volt			Manuf.	NA
		Test Position [Y/N]	Y	Rating	NA

Trip Unit Settings

	As Found	As Left		As Found	As Left
Long Delay PU	500 amp	500 amp	Long Time Delay	2 sec	2 sec
Short Delay PU	3000 amp	3000 amp	Short Time Delay	100 ms	100 ms
Ground Fault PU	300 amp	300 amp	Ground Fault Delay	300 ms	200 ms
Instantaneous PU	200000	200000	Other	NA	NA

Environmental Conditions

	Selection
Indoor/Outdoor	Indoor
Clean/Dirty	Clean
Wet/Damp/Dry	Dry
Temp (Degree C)	NA

Inspection

Main Contact Condition./Align.	A	Control Wiring	A
Arcing Contact Condition./Align.	A	Primary Fingers	A
Arc Chute Condition	A	Frame Condition	A
Open Close Indicator	A	Secondary Contacts	A
Lubrication	A	Breaker Cleanliness	A
Mechanical Condition	A	Manual Close and Trip	A
Insulation	A	Electrical Close and Trip	A
Control Aux. And Interlocks	A	Rack and D/O Mech.	A

CODE LEGEND
A= Like New Condition
B= Good Condition
C= Poor Condition Requires Correction
D= Corrections Made
E= Unacceptable Condition Do Not Use!
R= Reconditioned
NA= Not Applicable

Electrical Tests

☐ Primary Injection ☒ Secondary Injection

Function	(Test) Settings		Good	Fail						
LDPU	1200 amp		Yes							
LTD	2 sec		Yes							
SDPU	4800 amp		Yes							
STD	100 ms		Yes							
INSTPU	2000000		Yes							
GFPU	900 amp		Yes							
GFD	200 ms		Yes							

NPU = NO PICKUP; NT = NO TRIP; NTD = NO TIME DEL

Insulation Resistance (in GIG-Ohms) @ 1k VDC											
As Found						As Left					
A-G	100	A-B	100	A-A	100	A-G	100	A-B	100	A-A	100
B-G	100	B-C	100	B-B	100	B-G	100	B-C	100	B-B	100
C-G	100	C-A	100	C-C	100	C-G	100	C-A	100	C-C	100

Contact Resistance (Microhms)			
As Found		As Left	
A	49	A	49
B	52	B	52
C	44	C	44

Comments

Satisfactory for Continued Service	Yes	Requires Repair	NO	Repairs Made During Maintenance	Yes

Fuse readings:
Phase A = 20 micro-ohms Phase B = 20 micro-ohms Phase C = 19 micro-ohms

Job No	5200-224524	Tested By	Ralph Walkowicz	Date Tested	11/30/10	ID#	

182 Forbes Road
Braintree, MA. 02184

S

Technical Support Program

Schedule 2.1

Siemens SO No: 86095R30

Switchgear and Switchboard Assemblies

Visual and Mechanical Inspection

- ☒ Compare equipment nameplate data with latest one-line diagram when available.
- ☒ Inspect physical, electrical, and mechanical condition including evidence of moisture or corona.
- ☒ Verify appropriate anchorage, required area clearances, Physical damage, and correct alignment.
- ☒ Verify that fuse and/or circuit breaker sizes and types correspond to drawings and coordination study as well as to the circuit breaker's address for microprocessor-communication packages.
- ☒ Verify that current and voltage (potential) transformer ratios correspond to drawings.
- ☒ Inspect all bus connections for high resistance using a low-resistance ohmmeter.
- ☒ Inspect insulators for evidence of physical damage or contaminated surfaces
- ☒ Verify correct barrier and shutter installation and operation

Electrical Tests

- ☒ Perform resistance measurements through all bus joints with a low-resistance ohmmeter.
- ☒ Perform insulation-resistance tests on each bus section, phase-to-phase and phase-to-ground for one minute.

Lubrication

- ☒ Verify appropriate contact lubricant on moving current-carrying parts.
- ☒ Verify appropriate lubrication on moving and sliding surfaces.
- ☒ Exercise all active components.
- ☒ Inspect all mechanical indicating devices for correct operation.
- ☒ Verify that filters are in place and/or vents are clear.
- ☒ Inspect control power transformers for physical damage, cracked insulation, broken leads, tightness of connections, defective wiring, and overall general condition.

*** Premium Services**

Siemens Industry, Inc.
Industry Solutions Division (IS Division)
Industrial Service and Technologies (INBU)
100 Technology Drive
Alpharetta, GA 30005

Tel: (781) 389-5618
Fax: (781) 380-1330
Ralph.Walkowicz@siemens.com

ACTION TAKEN:

Arrived on site to Inspect and test the equipment.

(1) Visually inspected each section bus bar connections.
(2) Visually Inspected each breaker's main and secondary contacts.
(3) Visually inspected each breaker's finger cluster.
(4) Visually inspected each component for signs of corrosion or rust.
(5) Visually inspected and tested each breaker.
(6) Verified manual and electrical operation of the breakers.
(7) Tested each main bus insulation integrity with a 1kvdc megger
(8) Tested bus connection with 100 amp DLRO.
(9) Verified breaker status lights and electrical operation with temporary power.
(10) Documented test results (see attached field data sheets) and noted any discrepancies.

Discrepancies found:

(1) Splice plates bus bars for bus duct connections were unacceptable

Action Taken:

(1) Splice plates were removed and sent out for re-plating.
(2) Re-plated splice plates were reinstalled and inspected.
(3) Re-plated splice plates were tested and accepted.
(4) Observed torque of bus connections that had been removed for megger testing.

SUGGESTIVE CORRECTIVE ACTIONS:

1) None at this time.

REMARKS:

Switchboard "SA" at the Newark Airport was inspected/tested and at this time is considered to be acceptable for continued service.

Any comments and/or questions regarding this report can be made by contacting me via my contact information above.

END OF REPORT

Siemens Industry, Inc.
Industry Solutions Division (IS Division)
Industrial Service and Technologies (INBU)
100 Technology Drive
Alpharetta, GA 30005

Tel: (781) 389-5618
Fax: (781) 380-1330
Ralph.Walkowicz@siemens.com

CUSTOMER:	SM Electric	**SII JOB NUMBER:**	5200224524
PLANT:	Newark Airport Terminal B	**WRITTEN BY:**	Ralph Walkowicz
CUSTOMER PO:		**DATE REPORTED:**	December 03, 2010
SEA NO:	3001295712-3496	**PLANT SUPERVISOR:**	Russell Elliot
DESCRIPTION:	Newark Airport / Siemens inspection and recertification procedure.		

PURPOSE

Inspection and testing of Siemens Switchboard "SA" for recertification.

PERSON CONTACTED

Russell Elliot : Project Engineer

EQUIPMENT IDENTIFICATION

Siemens "SA" switch board, 3 Phase , 4 wire, 150 ka, 480 volt , 4000 amp/ So# 3001295712

AS FOUND

The equipment was found assembled and de-energized. The equipment had been in storage for some time and was found to have some discoloration of the exposed bus work.

SUMMARY

The purpose of this report is to document the findings of the Inspections and the corrective action that was taken to achieve recertification standards.

The second electronic trip unit inspected was model number WLETU776MP, serial number 774341015358. The outer case exhibited no signs of corrosion. This electronic trip unit featured an externally connected metering module, which was removed, and visually inspected. There were no signs of corrosion on the circuit boards or the connector pins. The circuit board assemblies were also removed from the electronic trip unit. Likewise, there were no signs of corrosion on the electronic trip unit's circuit boards or connector pins.

The third electronic trip unit inspected was model number WLETU776MP, serial number 774341015361. The outer case exhibited no signs of corrosion. This electronic trip unit featured an externally connected metering module, which was removed, and visually inspected. There were no signs of corrosion on the circuit boards or the connector pins. The circuit board assemblies were also removed from the electronic trip unit. Likewise, there were no signs of corrosion on the electronic trip unit's circuit boards or connector pins.

The fourth (and final) electronic trip unit inspected was model number WLETU776, serial number 774341014768. The outer case exhibited no signs of corrosion. The circuit board assemblies were also removed from the electronic trip unit. Likewise, there were no signs of corrosion on the electronic trip unit's circuit boards or connector pins.

Summary

All of the Siemens type WL electronic trip units that were inspected were visually free of any form of corrosion.

Regards,

Kurt Fl

Figure 4 Internal Circuitry (opposite sides of boards shown in Figure 3)

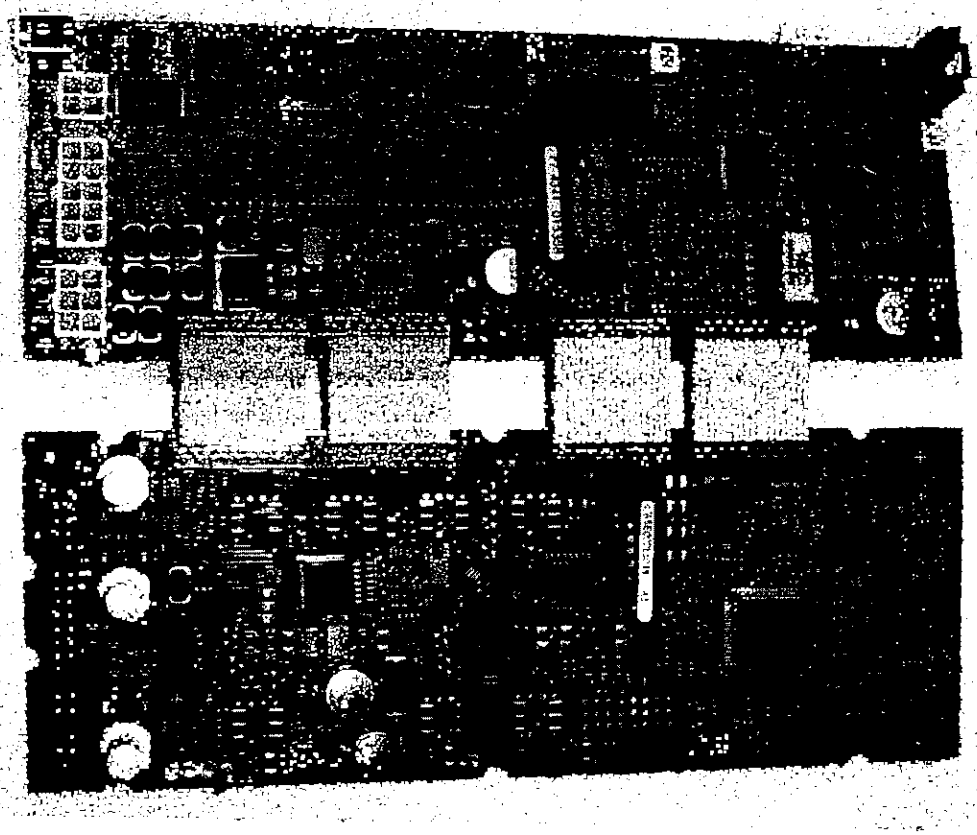


Figure 5 Display Module

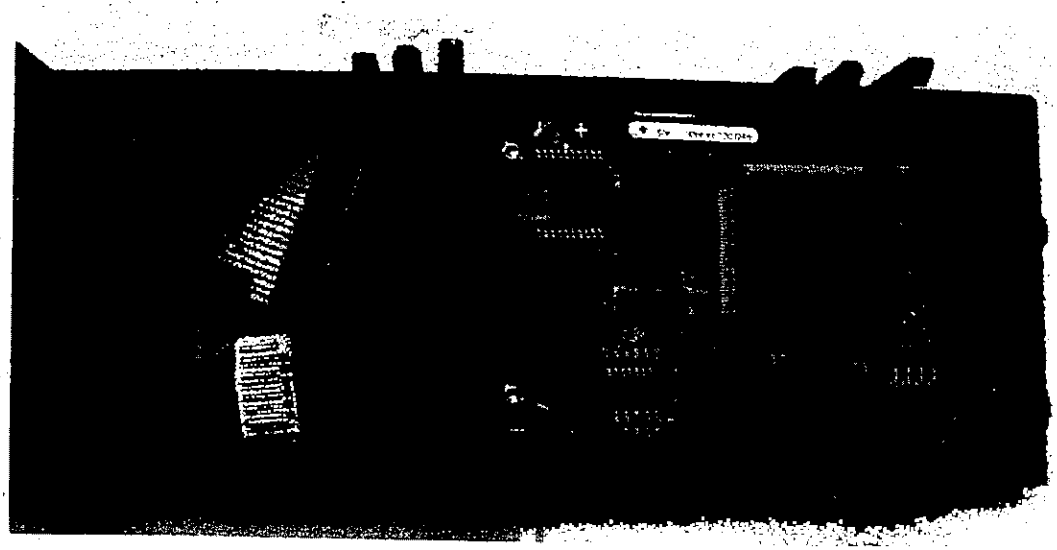


Figure 2 Rear Cover Removed

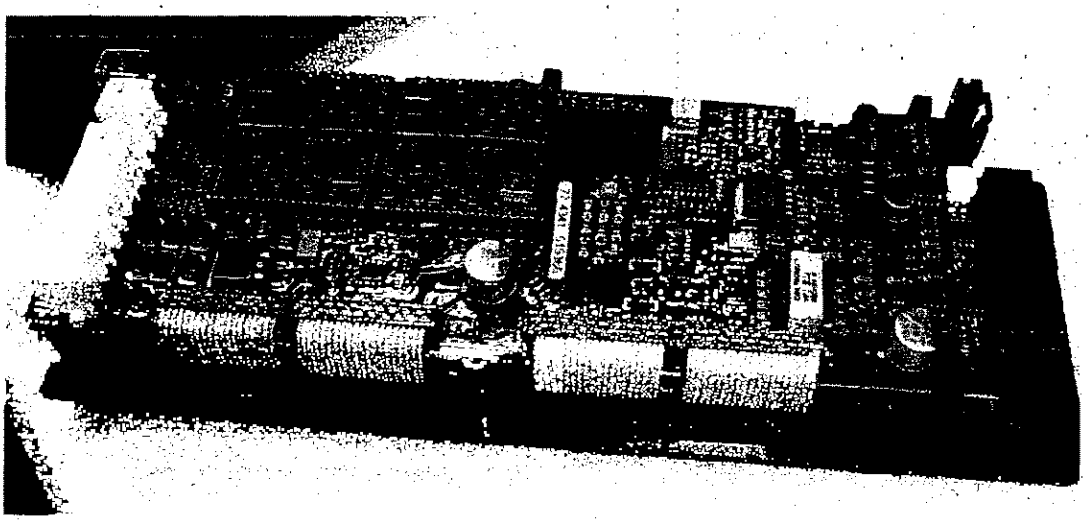


Figure 3 Internal Circuitry

SIEMENS

To: Don Sapanara
S. M. Electric

November 4, 2010

From: Keith Flowers
Program Manager
Siemens Industry, Inc.

CC: Shelby Nelms
Quality Manager
Siemens Industry, Inc.

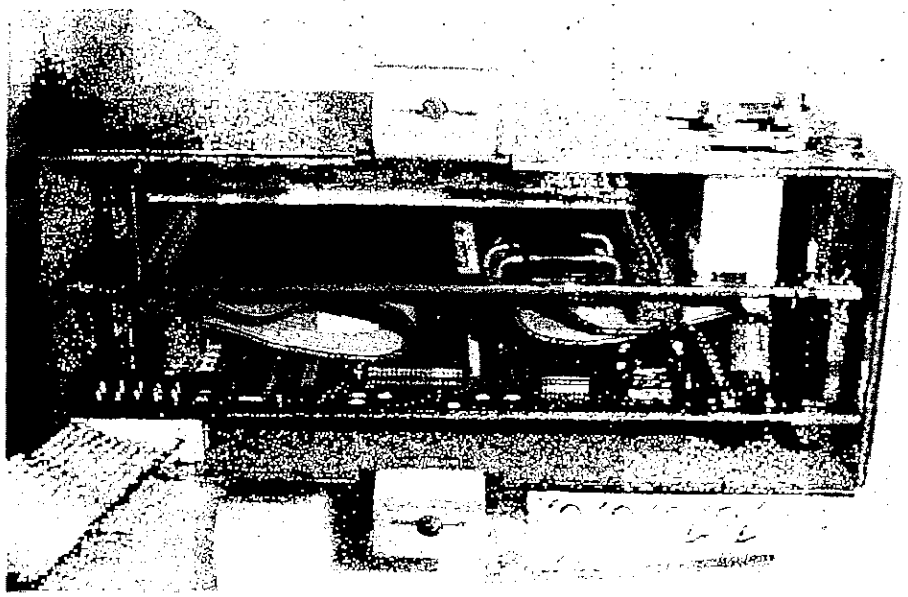
Subject: **WL Electronic Trip Unit Inspection at Newark Airport (EWR)**

On Thursday November 4, 2010, I conducted a visual inspection of four Siemens type WL electronic trip units at Terminal B of the Newark International Airport. The visual inspection was witnessed by the following individuals:

Russ Elliott, S.M. Electric
Mike Cito, Siemens Industry
Dan Lochard, EWR Port Authority
Don Sapanara, S. M. Electric
Keith Flowers, Siemens Industry
Herman Ret, EWR Port Authority

The first electronic trip unit inspected was model number WLETU776MP, serial number 774341015366. The outer case exhibited no signs of corrosion. This electronic trip unit featured an externally connected metering module, which was removed, and visually inspected. There were no signs of corrosion on the circuit boards or the connector pins.

Figure 1 Metering Module Interior



The circuit board assemblies were also removed from the electronic trip unit. Likewise, there were no signs of corrosion on the electronic trip unit's circuit boards.

SIEMENS Industry

To: Don Sapanara
SM Electric

December 7, 2010

From: Allan Worthy

CC: Doris Schornstein
Barry Powell
Ernie Braunschweig

Subject: Newark Airport Substation SA LVS Warranty Certification
(Siemens S.O.# 86095 Item R30 – SAP # 3001295712 -3496)

Effective today (12/7/2010), the factory warranty for the Newark Airport Terminal B Substation SA low voltage switchgear supplied by Siemens Industry, Inc. is reinstated and with the purchase of the warranty extension previously consummated, will remain in effect until 12/7/2014.

The inspection, testing and refurbishment of the Substation SA low voltage switchgear was successfully completed and the results of the inspection and testing are detailed in a separate report that will accompany this letter.

The terms and conditions of the reinstated and extended factory warranty are the same as those detailed in the original warranty documentation.

Regards

Allan Worthy
Product Manager
Low Voltage Switchgear

Siemens Industry, Inc
5400 Triangle Parkway
Norcross, GA 30092
USA
Tel.: (770)326-2000
www.usa.siemens.com

S.M. ELECTRIC COMPANY, INC.

601 NEW BRUNSWICK AVE. P.O. BOX 1144 RAHWAY, NEW JERSEY 07065-1144

LICENSE/PERMIT #191 MEMBER N.E.C.A. PHONE: 732-388-3540

FAX NUMBERS: GENERAL/CONSTRUCTION/PURCHASING: 732-388-3052 ESTIMATING: 732-381-6390

TRANSMITTAL C1260X-TR-264

TO: VRH Construction Corp.
320 Grand Ave.
Engelwood, NJ 07631-4355

ATTN: Eric Winkler

DATE: December 10, 2010
PROJECT: PANY/NJ-EWR-264.003
Lower Level Expan. &
Vertical Circ.
EST/JOB #: C1260X

TRANSMITTING BY: [ ] E-MAIL [ ] FED EX [x] HAND DELIVERY

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COPIES	PAGES	DESCRIPTION
5		Siemens Re-certification Report for Switchgear SA Consisting
		of the Following:
	1	Cover Letter
	4	WL Electronic Trip Unit Inspection at Newark Airport (EWR)
	2	Inspection and Testing Report for Switchgear SA
	1	Switchgear and Switchboard Assemblies Checklist
	1	Low Voltage Circuit Breaker Test Report - ATS Life Safety
	1	Low Voltage Circuit Breaker Test Report - PMDP
	1	Low Voltage Circuit Breaker Test Report - DPSA
	1	Low Voltage Circuit Breaker Test Report - DPSB
	1	Low Voltage Circuit Breaker Test Report - Main Breaker
	1	Switchgear Test Report
	2	Primary Bus Test Report
5	4	200A Molded Case Circuit Breaker Test Reports
5		4000A WL Circuit Breaker Test Report for:
	1	Switchgear NB Main CB - S/N 4001281002028
	1	Switchgear SB Main CB - S/N 4001281007014
	1	Switchgear SA Main CB - S/N 4001281007016
	1	Switchboard EMDS Branch CB ATS-NA - S/N 4001281211031

Note: Upon receipt of this transmittal, please fax a signed copy to 973-622-1471

VERY TRULY YOURS,

KINDLY RETURN ____ COPIES OF EACH

S.M. ELECTRIC COMPANY, INC.

RECEIVED: ____

BY ____ R. Elliott

Russ Elliott (732) 904-2354

Ret, Herman

From: Lochard, Daniel
Sent: Friday, December 10, 2010 1:28 PM
To: Wallace, Michael
Cc: Simeonidis, Nicholas; Rakhlin, Michael; Ret, Herman; McConkey, John; Mukherjee, Somnath; Roytman, Leonid; LaMarca, Thomas; Nunez, Daniel; Johnson, Caesar
Subject: FW: Siemens Recertification Report Switchgear SA
Attachments: Siemens Recertification Report Switchgear SA.pdf

Mike,

Please see the attached Siemens Recertification Report for Switchgear SA.
Independent 3Rd Party testing for Switchgear SA has been tentatively scheduled for Monday, 12/13/10.

Daniel

From: Winkler, Eric [mailto:E.Winkler@vrhcorp.com]
Sent: Friday, December 10, 2010 12:08 PM
To: Lochard, Daniel; Nunez, Daniel; Johnson, Caesar
Subject: Fw: Siemens Recertification Report Switchgear SA

From: Russ Elliott <russ.elliott@smelectric.com>
To: Winkler, Eric
Sent: Fri Dec 10 12:06:18 2010
Subject: Siemens Recertification Report Switchgear SA

Eric,

See attached recertification report for Switchgear SA.

Thank you,

Russ Elliott
S.M. Electric Co., Inc.
at Newark Airport

Phone: 1-973-622-1470
Fax: 1-973-622-1471
Cell: 1-732-904-2354

Ret, Herman

From: Lochard, Daniel
Sent: Friday, December 10, 2010 1:42 PM
To: Rakhlin, Michael
Cc: Simeonidis, Nicholas; Ret, Herman; McConkey, John; Mukherjee, Somnath; Roytman, Leonid; LaMarca, Thomas; Nunez, Daniel; Johnson, Caesar; Wallace, Michael
Subject: RE: Siemens Recertification Report Switchgear SA

I will.

From: Rakhlin, Michael
Sent: Friday, December 10, 2010 1:34 PM
To: Lochard, Daniel; Wallace, Michael
Cc: Simeonidis, Nicholas; Ret, Herman; McConkey, John; Mukherjee, Somnath; Roytman, Leonid; LaMarca, Thomas; Nunez, Daniel; Johnson, Caesar
Subject: RE: Siemens Recertification Report Switchgear SA

Daniel, That's great. Could you, please, take pictures of the bus at that time? Thanks. Michael.

From: Lochard, Daniel
Sent: Friday, December 10, 2010 1:28 PM
To: Wallace, Michael
Cc: Simeonidis, Nicholas; Rakhlin, Michael; Ret, Herman; McConkey, John; Mukherjee, Somnath; Roytman, Leonid; LaMarca, Thomas; Nunez, Daniel; Johnson, Caesar
Subject: FW: Siemens Recertification Report Switchgear SA

Mike,

Please see the attached Siemens Recertification Report for Switchgear SA.
Independent 3Rd Party testing for Switchgear SA has been tentatively scheduled for Monday, 12/13/10.

Daniel

From: Winkler, Eric [mailto:E.Winkler@vrhcorp.com]
Sent: Friday, December 10, 2010 12:08 PM
To: Lochard, Daniel; Nunez, Daniel; Johnson, Caesar
Subject: Fw: Siemens Recertification Report Switchgear SA

From: Russ Elliott <russ.elliott@smelectric.com>
To: Winkler, Eric
Sent: Fri Dec 10 12:06:18 2010
Subject: Siemens Recertification Report Switchgear SA

Eric,

See attached recertification report for Switchgear SA.

Thank you,

Russ Elliott

S.M. Electric Co., Inc.
at Newark Airport

Phone: 1-973-622-1470
Fax: 1-973-622-1471
Cell: 1-732-904-2354

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

BT-F4

PT Test Form

Customer	SM Electric	**Date** 12/16/2010	**Page** 1 **Of** 1
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Acceptance
Equipment Location	Termianl B	**Air Temperature**	40F
Owner Identification	Switchgear SA	**Relative Humidity**	60%

Nameplate Data

Manufacture Instrument Transformers Inc. **Cat #** 460-480 **S/N** NA

Other Info HV=480 LV=120. 10KV BIL. 0.6KV INSUL CLASS

Test Data

Trans. I.D.	Conn. Phase	1min Meg @1KVDC	Measured Ratio		
01VT1	A	H=4000/L=4000	4:1		
01VT2	B	H=4000/L=4000	4:1		
01VT3	C	H=4000/L=4000	4:1		
04VT1	A	H=4000/L=4000	4:1		
04VT2	B	H=4000/L=4000	4:1		
04VT3	C	H=4000/L=4000	4:1		
04VT4	A	H=4000/L=4000	4:1		
04VT5	B	H=4000/L=4000	4:1		
04VT6	C	H=4000/L=4000	4:1		
04CPT1 (3KVA)	A-B	H=4000/L=4000	4:1		

REMARKS All test results are acceptable.

Submitted By K. Cubberley **Equipment Used** 1 KVDC Megger, Fluke

Potential Transformer Report

SM Electric

S10-1157.2

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	Date	12/16/2010	Page 7	Of 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2		
Owner	Port Authority of New York and New Jersey	Last Inspection Report	Acceptance		
Owner Address	Newark Airport, Newark ,NJ	Last Inspection Date	Acceptance		
Equipment Location	Terminal B Switchgear SA	Air Temperature	55F		
Owner Identification	P-MDP- PM Ammeter Function	Relative Humidity	55%		

Instrument Data

Owner ID	P-MDP - PM	Model	9350	Manufacturer	Siemens	PT Ratio	NA
Function	Current Metering A Phas	Cat #	9350V283	Full Scale	Variable	CT Ratio	2000:5
Serial #	SE-0808A351-11	Type	9350	Basic Range	0-5A	Calib Watts	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	400.5	801.2	1201	1602	2002			
As Left	400.5	801.2	1201	1602	2002			

REMARKS All results are acceptable.

Instrument Data

Owner ID	P-MDP - PM	Model	9350	Manufacturer	Siemens	PT Ratio	NA
Function	Current Metering B Phas	Cat #	9350V283	Full Scale	Variable	CT Ratio	2000:5
Serial #	SE-0808A351-11	Type	9350	Basic Range	0-5A	Calib Watts	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	400.6	802.3	1202	1600	2002			
As Left	400.6	802.3	1202	1600	2002			

REMARKS All results are acceptable.

Instrument Data

Owner ID	P-MDP - PM	Model	9350	Manufacturer	Siemens	PT Ratio	NA
Function	Current Metering C Phas	Cat #	9350V283	Full Scale	Variable	CT Ratio	2000:5
Serial #	SE-0808A351-11	Type	9350	Basic Range	0-5a	Calib Watts	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	400.5	802.6	1202	1603	2001			
As Left	400.5	802.6	1202	1603	2001			

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY Equipment Used 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

IC-14

INSTRUMENT CALIBRATION REPORT

Customer	SM.Electric	**Date** 12/16/2010	**Page** 5 **Of** 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	DP-SA - PM Ammeter Function	**Relative Humidity**	55%

Instrument Data

Owner ID	DP-SA - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	3200:5
Serial #	SE-0808A465-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	640.9	1282	1923	2565	3202			
As Left	640.9	1282	1923	2565	3202			

REMARKS CT PRIMARY CHANGED FROM PRINT SPEC TO MATCH INSTALLED CT AS PER CUSTOMER REQUEST. All results are acceptable.

Instrument Data

Owner ID	ATS Life Safety - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	3200:5
Serial #	SE-0808A465-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	640.4	1282	1922	2561	3202			
As Left	640.4	1282	1922	2561	3202			

REMARKS CT PRIMARY CHANGED FROM PRINT SPEC TO MATCH INSTALLED CT AS PER CUSTOMER REQUEST. All results are acceptable.

Instrument Data

Owner ID	ATS Life Safety - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	3200:5
Serial #	SE-0808A465-11	**Type**	9350	**Basic Range**	0-5a	**Calib Watts**	NA

Other Info

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	640.4	1281.1	1921	2561	3205			
As Left	640.4	1281.1	1921	2561	3205			

REMARKS CT PRIMARY CHANGED FROM PRINT SPEC TO MATCH INSTALLED CT AS PER CUSTOMER REQUEST. All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

IC-r4

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date** 12/16/2010	**Page** 4 **Of** 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Accp.
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	ATS Life Safety - PM Voltage Function	**Relative Humidity**	55%

Instrument Data

Owner ID	ATS Life Safety - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A089-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Volts	75 Volts	100 Volts	125 Volts				
As Found	200.2	300.1	399.7	480.0				
As Left	200.2	300.1	399.7	480.0				

REMARKS All results are acceptable.

Instrument Data

Owner ID	ATS Life Safety- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A089-11	**Type**	9350	**Basic Range**	0-120VAC	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	125 Vac				
As Found	200.1	300.1	400.0	480				
As Left	200.1	300.1	400.0	480				

REMARKS All results are acceptable.

Instrument Data

Owner ID	ATS Life Safety - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	120Vac
Function	Voltage Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A089-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	120 Vac				
As Found	200.2	300.1	399.9	480.0				
As Left	200.2	300.1	399.9	480.0				

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

IC-r4

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date**	12/16/2010	**Page**	3 **Of** 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2		
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance		
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance		
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F		
Owner Identification	ATS Life Safety - PM Ammeter Function	**Relative Humidity**	55%		

Instrument Data

Owner ID	ATS Life Safety - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	1200:5
Serial #	SE-0808A089-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	240.3	480.3	720.8	960.5	1202			
As Left	240.3	480.3	720.8	960.5	1202			

REMARKS All results are acceptable.

Instrument Data

Owner ID	ATS Life Safety - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	1200:5
Serial #	SE-0808A089-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	240.3	480.3	720.7	961.1	1202			
As Left	240.3	480.3	720.7	961.1	1202			

REMARKS All results are acceptable.

Instrument Data

Owner ID	ATS Life Safety - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	1200:5
Serial #	SE-0808A089-11	**Type**	9350	**Basic Range**	0-5a	**Calib Watts**	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	240.2	480.6	720.9	961.3	1202			
As Left	240.2	480.6	720.9	961.3	1202			

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

IC-14

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date**	12/16/2010	**Page**	8 **Of** 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2		
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance		
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance		
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F		
Owner Identification	P-MDP - PM Voltage Function	**Relative Humidity**	55%		

Instrument Data

Owner ID	P-MDP - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A351-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Volts	75 Volts	100 Volts	125 Volts				
As Found	200.2	300.1	399.7	480.0				
As Left	200.2	300.1	399.7	480.0				

REMARKS All results are acceptable.

Instrument Data

Owner ID	P-MDP- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A351-11	**Type**	9350	**Basic Range**	0-120VAC	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	125 Vac				
As Found	200.1	300.1	400.0	480				
As Left	200.1	300.1	400.0	480				

REMARKS All results are acceptable.

Instrument Data

Owner ID	P-MDP- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	120Vac
Function	Voltage Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A351-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	120 Vac				
As Found	200.2	300.1	399.9	480.0				
As Left	200.2	300.1	399.9	480.0				

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

IC-H4

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date** 12/16/2010	**Page** 2 **Of** 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	Main B reaker - PM Voltage Function	**Relative Humidity**	55%

Instrument Data

Owner ID	Main Breaker - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A097-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Volts	75 Volts	100 Volts	125 Volts				
As Found	200.2	300.1	399.7	480.0				
As Left	200.2	300.1	399.7	480.0				

REMARKS All results are acceptable.

Instrument Data

Owner ID	Main Breaaker - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A097-11	**Type**	9350	**Basic Range**	0-120VAC	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	125 Vac				
As Found	200.1	300.1	400.0	480				
As Left	200.1	300.1	400.0	480				

REMARKS All results are acceptable.

Instrument Data

Owner ID	Main Breaker - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	120Vac
Function	Voltage Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A097-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	120 Vac				
As Found	200.2	300.1	399.9	480.0				
As Left	200.2	300.1	399.9	480.0				

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

IC-14

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date**	12/16/2010 **Page** 1 **Of** 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	Main B reaker - PM Ammeter Function	**Relative Humidity**	55%

Instrument Data

Owner ID	Main Breaker - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	4000:5
Serial #	SE-0808A097-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	801.7	1603	2404	3205	4005			
As Left	801.7	1603	2404	3205	4005			

REMARKS All results are acceptable.

Instrument Data

Owner ID	Main Breaaker - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	4000:5
Serial #	SE-0808A097-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	801.7	1603	2404	3205	4004			
As Left	801.7	1603	2404	3205	4004			

REMARKS All results are acceptable.

Instrument Data

Owner ID	Main Breaker - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	4000:5
Serial #	SE-0808A097-11	**Type**	9350	**Basic Range**	0-5a	**Calib Watts**	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	801.7	1603	2403	3205	4005			
As Left	801.7	1603	2403	3205	4005			

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date** 12/16/2010	**Page** 9 **Of** 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	DP-SB PM Ammeter Function	**Relative Humidity**	55%

Instrument Data

Owner ID	DP-SB - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	1200:5
Serial #	SE-0808A309-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	240.5	481.2	721.6	961.8	1203			
As Left	240.5	481.2	721.6	961.8	1203			

REMARKS All results are acceptable.

Instrument Data

Owner ID	DP-SB - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	1200:5
Serial #	SE-0808A309-11	**Type**	9350	**Basic Range**	0-5A	**Calib Watts**	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	240.5	481.1	721.1	961.4	1201.1			
As Left	240.5	481.1	721.1	961.4	1201.1			

REMARKS All results are acceptable.

Instrument Data

Owner ID	DP-SB - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	NA
Function	Current Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	1200:5
Serial #	SE-0808A309-11	**Type**	9350	**Basic Range**	0-5a	**Calib Watts**	NA
Other Info							

Standard	1 Amp	2 Amp	3 Amp	4 Amp	5 Amp			
As Found	240.8	481.1	721.1	961.7	1202			
As Left	240.8	481.1	721.1	961.7	1202			

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

IC-r4

INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date**	12/16/2010 **Page** 10 **Of** 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	DP-SB - PM Voltage Function	**Relative Humidity**	55%

Instrument Data

Owner ID	DP-SB - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A309-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Volts	75 Volts	100 Volts	125 Volts				
As Found	200.2	300.1	399.7	480.0				
As Left	200.2	300.1	399.7	480.0				

REMARKS All results are acceptable.

Instrument Data

Owner ID	DP-SB- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A309-11	**Type**	9350	**Basic Range**	0-120VAC	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	125 Vac				
As Found	200.1	300.1	400.0	480				
As Left	200.1	300.1	400.0	480				

REMARKS All results are acceptable.

Instrument Data

Owner ID	DP-SB- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	120Vac
Function	Voltage Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A309-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA
Other Info							

Standard	50 Vac	75 Vac	100 Vac	120 Vac				
As Found	200.2	300.1	399.9	480.0				
As Left	200.2	300.1	399.9	480.0				

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Scott Testing, Inc.

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INSTRUMENT CALIBRATION REPORT

Customer	SM Electric	**Date** 12/16/2010	**Page** 6 **Of** 10
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark ,NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Switchgear SA	**Air Temperature**	55F
Owner Identification	DP-SA - PM Voltage Function	**Relative Humidity**	55%

Instrument Data

Owner ID	DP-SA - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering A Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A465-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA

Other Info

Standard	50 Volts	75 Volts	100 Volts	125 Volts				
As Found	200.2	300.1	399.7	480.0				
As Left	200.2	300.1	399.7	480.0				

REMARKS All results are acceptable.

Instrument Data

Owner ID	DP-SA- PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	4:1
Function	Voltage Metering B Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A465-11	**Type**	9350	**Basic Range**	0-120VAC	**Calib Watts**	NA

Other Info

Standard	50 Vac	75 Vac	100 Vac	125 Vac				
As Found	200.1	300.1	400.0	480				
As Left	200.1	300.1	400.0	480				

REMARKS All results are acceptable.

Instrument Data

Owner ID	DP-SA - PM	**Model**	9350	**Manufacturer**	Siemens	**PT Ratio**	120Vac
Function	Voltage Metering C Phas	**Cat #**	9350V283	**Full Scale**	Variable	**CT Ratio**	NA
Serial #	SE-0808A465-11	**Type**	9350	**Basic Range**	0-120Vac	**Calib Watts**	NA

Other Info

Standard	50 Vac	75 Vac	100 Vac	120 Vac				
As Found	200.2	300.1	399.9	480.0				
As Left	200.2	300.1	399.9	480.0				

REMARKS All results are acceptable.

Additional Comment

Submitted By K.CUBBERLEY **Equipment Used** 302074

Instrument Calibration Report

SM Electric

S10-1157.2

Scott Testing, Inc.

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CT-r4

CURRENT TRANSFORMER REPORT

Customer	SM Electric	**Date**	12/15/2010 **Page** 4 **Of** 5
Customer Address	601 New Brunswick Ave. Rahway ,NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York & New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Acceptance
Equipment Location	Switchgear SA	**Air Temperature**	60F
Owner Identification	SWITCHBOARD P-MDP	**Relative Humidity**	55%

Nameplate Data

Manufacturer	Siemens	**VA Rating**	NA	**Type**	NA	**Class**	NA	**Other**	NA
Ratio	2000:5 AMPS (400:1)	**Rated KV**	NA	**Cat #**	NA	**S/N**	NA		

Excitation Test

Applied Test Voltage------>		49	49.5	50	50.5	51	51.5	52	52.5	53	53.5
CT Identification	A	0.3302	0.4037	0.5209	0.6903	0.9600	1.3346	1.9507	SAT	SAT	SAT
CT Identification	B	0.1556	0.1894	0.227	0.2904	0.3579	0.4680	0.698	1.2600	1.6736	SAT
CT Identification	C	0.2725	0.3448	0.3448	0.4255	0.5451	0.7001	0.9332	1.2700	1.7736	SAT

Additional Test Data

	RATIO TEST			POLARITY	INSULATION INTEGRITY
CT Identification	**Primary Volts**	**Secondary Volts**	**Measured Ratio**	**Check**	**Test Value:** 1KVDC
A	0.1239	50.00	403.551251008878	GOOD	4000
B	0.1246	49.99	401.203852327448	GOOD	4000
C	0.1247	50.03	401.202886928629	GOOD	4000

Results In megohms

CT Load/Wiring Check

Connection Config		**Phase Verification**	GOOD
Connected Devices	SIEMENS 9350 ION METER		
Wired Per Drawing #			
Other Checks			

Load Side Measured Burden		
CT ID		
CT ID		
CT ID		

Visual Inspections

Mounting	Not Applicable	**Insulating Bushings**	Not Applicable	**Shorting Block**	Good	**Case/Tank**	Good
Connections	Good	**Single Point Ground**	Good	**Sec Wire Size**	10AWG		
Other							

REMARKS Unable to visually inspect CT's due to mounting behind red board insulators. Ratio verified against drawings. CT's tested satisfactory. Wiring verified to meter connections.

Submitted By K.CUBBERLEY **Equipment Used** 302146, FLUKE 1 KVDC MEGGER

Scott Testing, Inc.

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CT-r4

CURRENT TRANSFORMER REPORT

Customer	SM Electric	Date	12/15/2010
Customer Address	601 New Brunswick Ave. Rahway ,NJ	Page	5 Of 5
Owner	Port Authority of New York & New Jersey	Project Number	S10-1157.2
Owner Address	Newark Airport, Newark, NJ	Last Inspection Report	Acceptance
Equipment Location	Switchgear SA	Last Inspection Date	Acceptance
Owner Identification	Main Breaker	Air Temperature	60F
		Relative Humidity	55%

Nameplate Data

Manufacturer	Siemens	VA Rating	NA	Type	NA	Class	NA	Other	NA
Ratio	4000:5 AMPS (800:1)	Rated KV	NA	Cat #	NA	S/N	NA		

Excitation Test

Applied Test Voltage------>		86	88	89	89.5	90	90.5	91	91.5	92	92.5
CT Identification	A	0.8493	0.997	1.1925	1.4751	1.8621	SAT	SAT	SAT	SAT	SAT
CT Identification	B	1.367	1.745	SAT	SAT	SAT	SAT	SAT	SAT	SAT	SAT
CT Identification	C	0.5590	0.5790	0.6676	0.717	0.9370	1.0952	1.3278	1.7491	SAT	SAT

Additional Test Data

	RATIO TEST			POLARITY	INSULATION INTEGRITY
CT Identification	Primary Volts	Secondary Volts	Measured Ratio	Check	Test Value: 1KVDC
A	0.0624	50.00	801.282051282051	GOOD	4000
B	0.0622	50.00	803.858520900322	GOOD	4000
C	0.0622	50.00	803.858520900322	GOOD	4000

Results In megohms

CT Load/Wiring Check

Connection Config		Phase Verification	GOOD
Connected Devices	SIEMENS 9350 ION METER		
Wired Per Drawing #			
Other Checks			

Load Side Measured Burden		
CT ID		
CT ID		
CT ID		

Visual Inspections

Mounting	Not Applicable	Insulating Bushings	Not Applicable	Shorting Block	Good	Case/Tank	Good
Connections	Good	Single Point Ground	Good	Sec Wire Size	10AWG		
Other							

REMARKS Unable to visually inspect CT's due to mounting behind red board insulators. Ratio verified against drawings. Wiring verified to meter connections.

Submitted By K.CUBBERLEY **Equipment Used** 302146, FLUKE 1 KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
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CT-4

CURRENT TRANSFORMER REPORT

Customer	SM Electric	Date	12/15/2010	Page	3 Of 5
Customer Address	601 New Brunswick Ave. Rahway ,NJ	Project Number	S10-1157.2		
Owner	Port Authority of New York & New Jersey	Last Inspection Report	Acceptance		
Owner Address	Newark Airport, Newark, NJ	Last Inspection Date	Acceptance		
Equipment Location	Switchgear SA	Air Temperature	60F		
Owner Identification	DP-SB	Relative Humidity	55%		

Nameplate Data

Manufacturer	Siemens	VA Rating	NA	Type	NA	Class	NA	Other	NA
Ratio	1200 :5 Amps (240:1)	Rated KV	NA	Cat #	NA	S/N	NA		

Excitation Test

Applied Test Voltage------>		31.5	32	32.5	33	33.5	34	34.5	35	35.5	36
CT Identification	A	0.4290	0.4986	0.6244	0.7678	1.2085	1.477	SAT	SAT	SAT	SAT
CT Identification	B	0.8059	0.9433	1.1431	1.480	SAT	SAT	SAT	SAT	SAT	SAT
CT Identification	C	0.4178	0.4968	0.6179	0.7548	0.9717	1.3178	SAT	SAT	SAT	SAT

Additional Test Data

	RATIO TEST			POLARITY	INSULATION INTEGRITY
CT Identification	Primary Volts	Secondary Volts	Measured Ratio	Check	Test Value: 1KVDC
A	0.1040	25.00	240.384615384615	GOOD	4000
B	0.1036	25.00	241.312741312741	GOOD	4000
C	0.1038	25.00	240.847784200385	GOOD	4000

Results In megohms

CT Load/Wiring Check

Connection Config		Phase Verification	GOOD	Load Side Measured Burden	
Connected Devices	SIEMENS 9350 ION METER			CT ID	
Wired Per Drawing #				CT ID	
Other Checks				CT ID	

Visual Inspections

Mounting	Not Applicable.	Insulating Bushings	Not Applicable	Shorting Block	Good	Case/Tank	Good
Connections	Good	Single Point Ground	Good	Sec Wire Size	10AWG		
Other							

REMARKS Unable to visually inspect CT's due to mounting behind red board insulators. Ratio verified against drawings. CT's tested satisfactory. Wiring verfied to meter connection.

Submitted By K.CUBBERLEY **Equipment Used** 302146, FLUKE 1 KVDC MEGGER

Scott Testing, Inc.

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CT-14

CURRENT TRANSFORMER REPORT

Customer	SM Electric	Date	12/15/2010	Page	2 Of 5
Customer Address	601 New Brunswick Ave. Rahway ,NJ	Project Number	S10-1157.2		
Owner	Port Authority of New York & New Jersey	Last Inspection Report	Acceptance		
Owner Address	Newark Airport, Newark, NJ	Last Inspection Date	Acceptance		
Equipment Location	Switchgear SA	Air Temperature	60F		
Owner Identification	DP-SA	Relative Humidity	55%		

Nameplate Data

Manufacturer	Siemens	VA Rating	NA	Type	NA	Class	NA	Other	NA
Ratio	3200 :5 Amps (640:1)	Rated KV	NA	Cat #	NA	S/N	NA		

Excitation Test

Applied Test Voltage------->		47.5	48	48.5	49	49.5	50	50.5	51	51.5	52
CT Identification	A	0.4072	0.4668	0.5358	0.6430	0.8166	1.0627	1.5343	SAT	SAT	SAT
CT Identification	B	0.5496	0.6446	0.8264	1.0902	1.6078	SAT	SAT	SAT	SAT	SAT
CT Identification	C	0.5187	0.6380	0.7476	1.0046	1.4002	SAT	SAT	SAT	SAT	SAT

Additional Test Data

	RATIO TEST			POLARITY	INSULATION INTEGRITY
CT Identification	Primary Volts	Secondary Volts	Measured Ratio	Check	Test Value: 1KVDC
A	0.0390	25.01	641.282051282051	GOOD	4000
B	0.0389	25.00	642.6735218509	GOOD	4000
C	0.0390	25.01	641.282051282051	GOOD	4000

Results In megohms

CT Load/Wiring Check

Connection Config		Phase Verification	GOOD
Connected Devices	SIEMENS 9350 ION METER		
Wired Per Drawing #			
Other Checks			

Load Side Measured Burden		
CT ID		
CT ID		
CT ID		

Visual Inspections

Mounting	Not Applicable	Insulating Bushings	Not Applicable	Shorting Block	Good	Case/Tank	Good
Connections	Good	Single Point Ground	Good	Sec Wire Size	10AWG		
Other							

REMARKS Unable to visually inspect CT's due to mounting behind red board insulators. Ratio verified against drawings. CT's tested satisfactory Measured ratio incorrect to drawing specs.

Submitted By K.CUBBERLEY **Equipment Used** 302146, FLUKE 1 KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
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CT-r4

CURRENT TRANSFORMER REPORT

Customer	SM Electric	**Date** 12/15/2010	**Page** 1 **Of** 5
Customer Address	601 New Brunswick Ave. Rahway ,NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York & New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Acceptance
Equipment Location	Switchgear SA	**Air Temperature**	60F
Owner Identification	ATS Life Safety	**Relative Humidity**	55%

Nameplate Data

Manufacturer	Siemens	**VA Rating**	NA	**Type**	NA	**Class**	NA	**Other**	NA
Ratio	500:5 AMPS	**Rated KV**	NA	**Cat #**	NA	**S/N**	NA		

Excitation Test

Applied Test Voltage----->		24	24.5	25	25.5	26	26.5	27	27.5	28	28.5
CT Identification	A	0.3580	0.3970	04423	0.5037	0.5798	0.6909	0.8680	1.1996	1.7171	SAT
CT Identification	B	0.2526	0.2800	0.3268	0.3881	0.4912	0.6198	0.8078	1.1497	1.8645	SAT
CT Identification	C	0.2277	0.2543	0.2849	0.3230	0.3730	0.4268	0.5217	0.6547	0.8696	1.3737

Additional Test Data

	RATIO TEST			POLARITY	INSULATION INTEGRITY
CT Identification	**Primary Volts**	**Secondary Volts**	**Measured Ratio**	**Check**	**Test Value:** 1KVDC
A	0.2490	25.01	100.441767068273	GOOD	4000
B	0.2494	25.00	100.240577385726	GOOD	4000
C	0.2490	25.00	100.401606425703	GOOD	4000

Results In megohms

CT Load/Wiring Check

Connection Config		**Phase Verification**	GOOD	**Load Side Measured Burden**	
Connected Devices	SIEMENS 9350 ION METER			**CT ID**	
Wired Per Drawing #				**CT ID**	
Other Checks				**CT ID**	

Visual Inspections

Mounting	Not Applicable	**Insulating Bushings**	Not Applicable	**Shorting Block**	Good	**Case/Tank**	Good
Connections	Good	**Single Point Ground**	Good	**Sec Wire Size**	10AWG		
Other							

REMARKS Unable to visually inspect CT's due to mounting behind red board insulators. Ratio verified against drawings. CT's tested satisfactory. Wiring verified to meter connections.

Submitted By K.CUBBERLEY **Equipment Used** 302146, FLUKE 1 KVDC MEGGER

Current Transformer Report

SM Electric

R10-1157.2

Scott Testing, Inc.

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LVCB-r4

LOW VOLTAGE CIRCUIT BREAKER REPORT

Customer	SM Electric	Date	12/13/2010	Page 5	Of 5
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2		
Owner	Newark Airport	Last Inspection Report	Acceptance		
Owner Address	Newark, NJ	Last Inspection Date	Acceptance		
Equipment Location	Terminal B Switchgear SA	Air Temperature	50F		
Owner Identification	P-MDP	Relative Humidity	75%		

Nameplate Data		Trip Unit Data		Trip Unit Range		Inspection	
Bkr Mfg	Siemens	Trip Unit Mfg	Siemens	LT PU	0.4-1.0 x Ir	Contacts	Good
Bkr Type	WLF2A320	Type	ETU776	LTD Band	2-30 sec @ 6 x Ir	Stabs	Good
Frame Size	2000A	Rating	2000A	ST PU	1.25xIn - 0.8x IC	Cubicle	Good
Voltage	635VAC MAX	Trip Unit S/N	NA	STD Band	0.08-4 sec, OFF	Arc Chute	Good
IC Rating	100KA	Cat Number	NA	GF PU	A-E (100A-1200A)	Operation	Good
Bkr S/N	4001281001018	Curve	NA	GFD Band	0.1-0.5 SEC	Mechanism	Good
Instr Bk	CBIM02000-0204	Plug Rating	2000A	Instant	NA	Heaters	Not Applicable
Other	NA	Sensor CTR	NA	Other	NA	Other	Not Applicable

Long Time (Note: All trip time in seconds

LT PU Set @ 1x In
LT Set Amps 2000
LT PU Amps 2000
LT Delay @ 300 %= 6000 Amps
I^2T Out In X LT Delay Set 2.0

AS FOUND A	B	C	AS LEFT A	B	C
2000	2000	2000	2000	2000	2000
2000	2000	2000	2000	2000	2000
6.775	6.542	7.001	6.775	6.542	7.001

LT Curve Range

Short Time (Note: All trip time in seconds

ST Set Amps 3X
ST PU Amps 6000
ST Delay @ 150 %= 9000 Amps
I^2T Out x In ST Delay Set 0.1 SEC

A	B	C	A	B	C
6000	6000	6000	6000	6000	6000
6000	6000	6000	6000	6000	6000
0.132	0.143	0.111	0.132	0.143	0.111

ST Curve Range

Ground Fault (Note: All trip time in seconds

GF Set Amps D
GF PU Amps 900
GF Delay @ 150 %= 1350 Amps
I^2T Out x In GF Delay Set 0.2

A	B	C	A	B	C
900	900	900	900	900	900
900	900	900	900	900	900
0.241	0.241	0.241	0.241	0.241	0.241

GF Curve Range

Instantaneous (Note: All trip time in seconds

Inst Set Amps OFF
Inst PU Amps OFF
Inst Delay @ NA %= NA Amps

A	B	C	A	B	C
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Contact Resistance *(Results in microhms)*

A Phase
B Phase
C Phase

Insulation Resistance *(results in megohms)* Test Value: 1KVDC

A Phase to B/C/ Gnd	4000	A Phase (Line to Load)	4000
B Phase to A/C/ Gnd	4000	B Phase (Line to Load)	4000
C Phase to A/B/ Gnd	4000	C Phase (Line to Load)	4000

REMARKS BREAKER TESTED SATISFACTORY. FUSE INFO: FARRAZ SHAWMUT. CLASS L. CAT # A4BY3000-SEA-3. 3000A. 200KA IC. FUSE RES. IN MICROHMS: A: 12 B:14 C:11 Neutral CT circuit and trip verified by primary current injection.

Submitted By K.CUBBERLEY/ M. STANLEY **Equipment Used** 302266,302146, FLUKE 1KVDC MEGGER

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LVCB-r4

LOW VOLTAGE CIRCUIT BREAKER REPORT

Customer	SM Electric	Date	12/13/2010
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2
Owner	Newark Airport	Last Inspection Report	Acceptance
Owner Address	Newark, NJ	Last Inspection Date	Acceptance
Equipment Location	Terminal B Switchgear SA	Air Temperature	50F
Owner Identification	Main Breaker	Relative Humidity	75%

Nameplate Data		Trip Unit Data		Trip Unit Range		Inspection	
Bkr Mfg	Siemens	Trip Unit Mfg	Siemens	LT PU	0.4-1.0 x Ir	Contacts	Good
Bkr Type	WLM3A340	Type	ETU776	LTD Band	2-30 sec @ 6 x Ir	Stabs	Good
Frame Size	4000A	Rating	4000A	ST PU	1.25xIn - 0.8x IC	Cubicle	Good
Voltage	635VAC MAX	Trip Unit S/N	NA	STD Band	0.08-4 sec, OFF	Arc Chute	Good
IC Rating	100KA	Cat Number	NA	GF PU	A-E (400-1200A)	Operation	Good
Bkr S/N	4001281007016	Curve	NA	GFD Band	0.1-0.5 SEC	Mechanism	Good
Instr Bk	CBIM02000-0204	Plug Rating	4000A	Instant	NA	Heaters	Not Applicable
Other	NA	Sensor CTR	NA	Other	NA	Other	Not Applicable

Long Time (Note: All trip time in seconds

LT PU Set @ 1x In
LT Set Amps 4000
LT PU Amps 4000
LT Delay @ 300 %= 12000 Amps
I^2T Out x In LT Delay Set 2.0

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
4000	4000	4000	4000	4000	4000
4000	4000	4000	4000	4000	4000
4.865	4.732	4.764	4.865	4.732	4.764

LT Curve Range

Short Time (Note: All trip time in seconds

ST Set Amps 2
ST PU Amps 8000
ST Delay @ 150 %= 12000 Amps
I^2T Out x In ST Delay Set 0.3

A	B	C	A	B	C
8000	8000	8000	8000	8000	8000
8000	8000	8000	8000	8000	8000
0.348	0.346	0.348	0.348	0.346	0.348

ST Curve Range

Ground Fault (Note: All trip time in seconds

GF Set Amps E
GF PU Amps 1200
GF Delay @ 150 %= 1800 Amps
I^2T Out x In GF Delay Set 0.3

A	B	C	A	B	C
1200	1200	1200	1200	1200	1200
1200	1200	1200	1200	1200	1200
0.342	0.342	0.342	0.342	0.342	0.342

GF Curve Range

Instantaneous (Note: All trip time in seconds

Inst Set Amps NA
Inst PU Amps NA
Inst Delay @ NA %= NA Amps

A	B	C	A	B	C
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Contact Resistance (Results in microhms)

A Phase 13
B Phase 19
C Phase 16

Insulation Resistance (results in megohms) Test Value: 1KVDC

A Phase to B/C/ Gnd 4000
B Phase to A/C/ Gnd 4000
C Phase to A/B/ Gnd 4000

A Phase (Line to Load) 4000
B Phase (Line to Load) 4000
C Phase (Line to Load) 4000

REMARKS BREAKER TESTED SATISFACTORY. Neutral CT circuit and trip verified by primary current injection.

Submitted By K.CUBBERLEY/ M. STANLEY **Equipment Used** 302266, 302146, FLUKE 1 KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
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LVCB-r4

LOW VOLTAGE CIRCUIT BREAKER REPORT

Customer	SM Electric	Date	12/13/2010	Page 4	Of 5
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2		
Owner	Newark Airport	Last Inspection Report	Acceptance		
Owner Address	Newark, NJ	Last Inspection Date	Acceptance		
Equipment Location	Terminal B Switchgear SA	Air Temperature	50F		
Owner Identification	DP-SB	Relative Humidity	75%		

Nameplate Data		Trip Unit Data		Trip Unit Range		Inspection	
Bkr Mfg	Siemens	Trip Unit Mfg	Siemens	LT PU	0.4-1.0 x Ir	Contacts	Good
Bkr Type	WLM3A340	Type	ETU776	LTD Band	2-30 sec @ 6 x Ir	Stabs	Good
Frame Size	1600A	Rating	1200A	ST PU	1.25xIn - 0.8x IC	Cubicle	Good
Voltage	635VAC MAX	Trip Unit S/N	NA	STD Band	0.08-4 sec, OFF	Arc Chute	Good
IC Rating	100KA	Cat Number	NA	GF PU	A-E (100A-1200A)	Operation	Good
Bkr S/N	4001280930032	Curve	NA	GFD Band	0.1-0.5 SEC	Mechanism	Good
Instr Bk	CBIM02000-0204	Plug Rating	1200A	Instant	NA	Heaters	Not Applicable
Other	NA	Sensor CTR	NA	Other	NA	Other	Not Applicable

Long Time (Note: All trip time in seconds

LT PU Set @ 1x In
LT Set Amps 1200
LT PU Amps 1200
LT Delay @ 300 %= 3600 Amps
I^2T Out In x LT Delay Set 2.0

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
500	500	500	500	500	500
500	500	500	500	500	500
23.16	24.13	22.19	23.16	24.13	22.19

LT Curve Range

Short Time (Note: All trip time in seconds

ST Set Amps 4X
ST PU Amps 4800
ST Delay @ 150 %= 6200 Amps
I^2T Out x In ST Delay Set 0.1

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
4800	4800	4800	4800	4800	4800
4800	4800	4800	4800	4800	4800
0.144	0.143	0.140	0.144	0.143	0.140

ST Curve Range

Ground Fault (Note: All trip time in seconds

GF Set Amps D
GF PU Amps 900
GF Delay @ 150 %= 1350 Amps
I^2T Out x In GF Delay Set 0.2

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
900	900	900	900	900	900
900	900	900	900	900	900
0.246	0.246	0.246	0.246	0.246	0.246

GF Curve Range

Instantaneous (Note: All trip time in seconds

Inst Set Amps OFF
Inst PU Amps OFF
Inst Delay @ NA %= NA Amps

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Contact Resistance (Results in microhms)

A Phase 43
B Phase 48
C Phase 49

Insulation Resistance (results in megohms) Test Value: 1KVDC

A Phase to B/C/ Gnd 4000 — A Phase (Line to Load) 4000
B Phase to A/C/ Gnd 4000 — B Phase (Line to Load) 4000
C Phase to A/B/ Gnd 4000 — C Phase (Line to Load) 4000

REMARKS BREAKER TESTED SATISFACTORY. FUSE INFO: FARRAZ SHAWMUT. CLASS L. CAT # A4BY3000-SEA-3. 3000A. 200KA IC. FUSE RES IN MICROHMS: A: 28 B: 39 C: 32 Neutral CT circuit and trip verified by primary current injection.

Submitted By K.CUBBERLEY/ M. STANLEY Equipment Used 302266, 302146, FLUKE 1KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

LVCB-r4

LOW VOLTAGE CIRCUIT BREAKER REPORT

Customer	SM Electric	Date	12/13/2010	Page 3	Of 5
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2		
Owner	Newark Airport	Last Inspection Report	Acceptance		
Owner Address	Newark, NJ	Last Inspection Date	Acceptance		
Equipment Location	Terminal B Switchgear SA	Air Temperature	50F		
Owner Identification	DP-SA	Relative Humidity	75%		

Nameplate Data		Trip Unit Data		Trip Unit Range		Inspection	
Bkr Mfg	Siemens	Trip Unit Mfg	Siemens	LT PU	0.4-1.0 x Ir	Contacts	Good
Bkr Type	WLF2A316	Type	ETU776	LTD Band	2-30 sec @ 6 x Ir	Stabs	Good
Frame Size	1200A	Rating	1200A	ST PU	1.25xIn - 0.8x IC	Cubicle	Good
Voltage	635VAC MAX	Trip Unit S/N	NA	STD Band	0.08-4 sec, OFF	Arc Chute	Good
IC Rating	100KA	Cat Number	NA	GF PU	A-E (400-1200A)	Operation	Good
Bkr S/N	4001280930037	Curve	NA	GFD Band	0.1-0.5 SEC	Mechanism	Good
Instr Bk	CBIM02000-0204	Plug Rating	1200A	Instant	NA	Heaters	Not Applicable
Other	NA.	Sensor CTR	NA	Other	NA	Other	Not Applicable

Long Time (Note: All trip time in seconds

LT PU Set @ 1x In
LT Set Amps 1200
LT PU Amps 1200
LT Delay @ 300 %= 3600 Amps
I^2T Out In X LT Delay Set 2.0

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
1200	1200	1200	1200	1200	1200
1200	1200	1200	1200	1200	1200
26.34	26.43	25.99	26.34	26.43	25.99

LT Curve Range

Short Time (Note: All trip time in seconds

ST Set Amps 4X
ST PU Amps 4800
ST Delay @ 150 %= 7200 Amps
I^2T Out x In ST Delay Set 0.1

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
4800	4800	4800	4800	4800	4800
4800	4800	4800	4800	4800	4800
0.144	0.144	0.144	0.144	0.144	0.144

ST Curve Range

Ground Fault (Note: All trip time in seconds

GF Set Amps D
GF PU Amps 900
GF Delay @ 150 %= 1350 Amps
I^2T Out x In GF Delay Set 0.2

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
900	900	900	900	900	900
900	900	900	900	900	900
0.342	0.342	0.342	0.342	0.342	0.342

GF Curve Range

Instantaneous (Note: All trip time in seconds

Inst Set Amps 200KA
Inst PU Amps 200KA
Inst Delay @ NA %= NA Amps

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Contact Resistance (Results in microhms)

A Phase 28
B Phase 34
C Phase 29

Insulation Resistance (results in megohms) Test Value: 1KVDC

A Phase to B/C/ Gnd 4000
B Phase to A/C/ Gnd 4000
C Phase to A/B/ Gnd 4000

A Phase (Line to Load) 4000
B Phase (Line to Load) 4000
C Phase (Line to Load) 4000

REMARKS BREAKER TESTED SATISFACTORY. FUSE INFO: FARRAZ SHAWMUT. CLASS L. CAT # A4BY3000-SEA-3. 3000A. 200KA IC. FUSE RES: A:8 B:9 C:12. Ground Fault plug found to be faulty. Replaced with spare unit and re-tested. Neutral CT circuit and trip verified by primary current injection.

Submitted By K.CUBBERLEY/ M. STANLEY **Equipment Used** 302266,302146, FLUKE 1KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

LVCB-r4

LOW VOLTAGE CIRCUIT BREAKER REPORT

Customer	SM Electric	Date	12/13/2010	Page 2	Of 5
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2		
Owner	Newark Airport	Last Inspection Report	Acceptance		
Owner Address	Newark, NJ	Last Inspection Date	Acceptance		
Equipment Location	Terminal B Switchgear SA	Air Temperature	50F		
Owner Identification	ATS LIFE SAFETY	Relative Humidity	75%		

Nameplate Data		Trip Unit Data		Trip Unit Range		Inspection	
Bkr Mfg	Siemens	Trip Unit Mfg	Siemens	LT PU	0.4-1.0 x Ir	Contacts	Good
Bkr Type	WLF2A380	Type	ETU776	LTD Band	2-30 sec @ 6 x Ir	Stabs	Good
Frame Size	800A	Rating	500A	ST PU	1.25xIn - 0.8x IC	Cubicle	Good
Voltage	635VAC MAX	Trip Unit S/N	NA	STD Band	0.08-4 sec, OFF	Arc Chute	Good
IC Rating	100KA	Cat Number	NA	GF PU	A-E (400-1200A)	Operation	Good
Bkr S/N	4001281001000	Curve	NA	GFD Band	0.1-0.5 SEC	Mechanism	Good
Instr Bk	CBIM02000-0204	Plug Rating	500A	Instant	NA	Heaters	Not Applicable
Other	NA	Sensor CTR	NA	Other	NA	Other	Not Applicable

Long Time (Note: All trip time in seconds

LT PU Set @ 1x In
LT Set Amps 500
LT PU Amps 500
LT Delay @ 300 %= 1500 Amps
I^2T Out x In LT Delay Set 2.0

AS FOUND A	AS FOUND B	AS FOUND C	AS LEFT A	AS LEFT B	AS LEFT C
4000	4000	4000	4000	4000	4000
4000	4000	4000	4000	4000	4000
5.929	5.929	5.929	5.929	5.929	5.929

LT Curve Range

Short Time (Note: All trip time in seconds

ST Set Amps 6x
ST PU Amps 3000
ST Delay @ 150 %= 4500 Amps
I^2T Out x In ST Delay Set 0.1

A	B	C	A	B	C
3000	3000	3000	3000	3000	3000
3000	3000	3000	3000	3000	3000
0.144	0.144	0.144	0.144	0.144	0.144

ST Curve Range

Ground Fault (Note: All trip time in seconds

GF Set Amps B
GF PU Amps 300
GF Delay @ 150 %= 450 Amps
I^2T Out x In GF Delay Set 0.2

A	B	C	A	B	C
300	300	300	300	300	300
300	300	300	300	300	300
0.249	0.236	0.244	0.249	0.236	0.244

GF Curve Range

Instantaneous (Note: All trip time in seconds

Inst Set Amps 200KA
Inst PU Amps 200KA
Inst Delay @ NA %= NA Amps

A	B	C	A	B	C
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA
NA	NA	NA	NA	NA	NA

Contact Resistance (Results in microhms)

A Phase 28
B Phase 34
C Phase 29

Insulation Resistance (results in megohms) Test Value: 1KVDC

A Phase to B/C/ Gnd 4000
B Phase to A/C/ Gnd 4000
C Phase to A/B/ Gnd 4000

A Phase (Line to Load) 4000
B Phase (Line to Load) 4000
C Phase (Line to Load) 4000

REMARKS BREAKER TESTED SATISFACTORY. FUSE INFO: FARRAZ SHAWMUT. CLASS L. CAT # A4BY3000-SEA-3. 3000A. 200KA IC. FUSE RES: A:8 B:9 C:12. Neutral CT circuit and trip verified by primary current injection.

Submitted By K.CUBBERLEY/ M. STANLEY **Equipment Used** 302266,302146, FLUKE 1KVDC MEGGER

Low Voltage Circuit Breaker Report

SM Electric

S10-1157.2

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

STI-14

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric	**Date** 12/16/2010	**Page** 4 **Of** 4
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B	***Air Temperature***	60F
Owner Identification	Switchgear SA	**Relative Humidity**	55%

Nameplate Data

Manufacturer	Siemens	**Design Voltage**	480VAC	**System Voltage**	480/277	**BIL**	NA
Serial #	NA	**Rated Current**	4000A	**Style**	WL	**Age**	2009
Model	NA	**SC Withstand**	150KA	**Cat #**	NA	**ID #**	SA

# Breakers	5	***# Relays***	0	***# Meters***	6	***# Vert Sect***	5	***# Cubicles***	16

Other Info CONTAINS 1 FUTURE CELL

Inspection Report

Breaker Operation	Good	**Covers/Glass**	Good	**Annunciator**	Not Applicable
Equipment Access	Good	**Cell Condition**	Good	**Panel Meters**	Good
Control Switches	Good	**Hinged Doors**	Good	**Panel Lights**	Good
Swgr Grounds	Good	**Bus Supports**	Good	**Cables**	Good
Paint Condition	Good	**Space Heaters**	Good	**Shutters**	Good
Connections	Good	**Tracking Signs**	Not Applicable	**Interlocks**	Not Applicable
Control Wiring	Good	**Cleanliness**	Good	**Insulation**	Good
Control Relays	Good	**Lubrication**	Good	**Test Stand**	Not Applicable
"83" Transfer	Not Applicable	**Ground Truck**	Not Applicable	**Maint Tools**	Not Applicable

Other Inspections CONTROL POWER WAS APPLIED AND ALL FUNCTIONS VERIFIED.

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd
See previous page.					

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
SEC 1 NEUTRAL BUS	SEC 2 NEUTRAL BUS	100	40		
SEC 1 NEUTRAL BUS	SEC 3 NEUTRAL BUS	100	56		
SEC 1 NEUTRAL BUS	SEC 4 NEUTRAL BUS	100	78		
SEC 1 NEUTRAL BUS	SEC 5 NEUTRAL BUS	100	85		

REMARKS Cont. on next page. All results are acceptable.

Submitted By K.CUBBERLEY/M.STANLEY **Equipment Used** 100 AMP DUCTOR, FLUKE 1KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

STI-r4

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric	Date	12/16/2010	Page 3 Of 4	
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2		
Owner	Port Authority of New York and New Jersey	Last Inspection Report	Acceptance		
Owner Address	Newark Airport, Newark, NJ	Last Inspection Date	Acceptance		
Equipment Location	Terminal B	Air Temperature	60F		
Owner Identification	Switchgear SA	Relative Humidity	55%		

Nameplate Data

Manufacturer	Siemens	Design Voltage	480VAC	System Voltage	480/277	BIL	NA
Serial #	NA	Rated Current	4000A	Style	WL	Age	2009
Model	NA	SC Withstand	150KA	Cat #	NA	ID #	SA

# Breakers	# Relays	# Meters	# Vert Sect	# Cubicles
5	0	6	5	16

Other Info: CONTAINS 1 FUTURE CELL

Inspection Report

Breaker Operation	Good	Covers/Glass	Good	Annunciator	Not Applicable
Equipment Access	Good	Cell Condition	Good	Panel Meters	Good
Control Switches	Good	Hinged Doors	Good	Panel Lights	Good
Swgr Grounds	Good	Bus Supports	Good	Cables	Good
Paint Condition	Good	Space Heaters	Good	Shutters	Good
Connections	Good	Tracking Signs	Not Applicable	Interlocks	Not Applicable
Control Wiring	Good	Cleanliness	Good	Insulation	Good
Control Relays	Good	Lubrication	Good	Test Stand	Not Applicable
"83" Transfer	Not Applicable	Ground Truck	Not Applicable	Maint Tools	Not Applicable

Other Inspections: CONTROL POWER WAS APPLIED AND ALL FUNCTIONS VERIFIED.

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd
See previous page.					

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
SEC 1 GROUND BUS	SEC 2 GROUND BUS	100	27		
SEC 1 GROUND BUS	SEC 3 GROUND BUS	100	39		
SEC 1 GROUND BUS	SEC 4 GROUND BUS	100	43		
SEC 1 GROUND BUS	SEC 5 GROUND BUS	100	50		

REMARKS Cont. on next page. All results are acceptable.

Submitted By K.CUBBERLEY/M.STANLEY **Equipment Used** 100 AMP DUCTOR, FLUKE 1KVDC MEGGER

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
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STI-r4

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric	Date	12/16/2010 Page 2 Of 4
Customer Address	601 New Brunswick Ave. Rahway, NJ	Project Number	S10-1157.2
Owner	Port Authority of New York and New Jersey	Last Inspection Report	Acceptance
Owner Address	Newark Airport, Newark, NJ	Last Inspection Date	Acceptance
Equipment Location	Terminal B	Air Temperature	60F
Owner Identification	Switchgear SA	Relative Humidity	55%

Nameplate Data

Manufacturer	Siemens	Design Voltage	480VAC	System Voltage	480/277	BIL	NA
Serial #	NA	Rated Current	4000A	Style	WL	Age	2009
Model	NA	SC Withstand	150KA	Cat #	NA	ID #	SA

# Breakers	# Relays	# Meters	# Vert Sect	# Cubicles
5	0	6	5	16

Other Info: CONTAINS 1 FUTURE CELL

Inspection Report

Breaker Operation	Good	Covers/Glass	Good	Annunciator	Not Applicable
Equipment Access	Good	Cell Condition	Good	Panel Meters	Good
Control Switches	Good	Hinged Doors	Good	Panel Lights	Good
Swgr Grounds	Good	Bus Supports	Good	Cables	Good
Paint Condition	Good	Space Heaters	Good	Shutters	Good
Connections	Good	Tracking Signs	Not Applicable	Interlocks	Not Applicable
Control Wiring	Good	Cleanliness	Good	Insulation	Good
Control Relays	Good	Lubrication	Good	Test Stand	Not Applicable
"83" Transfer	Not Applicable	Ground Truck	Not Applicable	Maint Tools	Not Applicable

Other Inspections: CONTROL POWER WAS APPLIED AND ALL FUNCTIONS VERIFIED.

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd
See previous page.					

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
DP-SA Line side stabs	DP-SB line side Stabs	100	29	27	24
DP-SA Line side stabs	P-MDP line side stabs	100	23	24	24
P-MDP load side stabs	P-MDP bus duct connections	100	4	7	6

REMARKS: Cont. on next page. All results are acceptable.

Submitted By: K.CUBBERLEY/M.STANLEY

Equipment Used: 100 AMP DUCTOR, FLUKE 1KVDC MEGGER

Scott Testing, Inc.

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STI-14

SWITCHGEAR TEST AND INSPECTION REPORT

Customer	SM Electric	**Date** 12/16/2010	**Page** 1 **Of** 4
Customer Address	601 New Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B	**Air Temperature**	60F
Owner Identification	Switchgear SA	**Relative Humidity**	55%

Nameplate Data

Manufacturer	Siemens	**Design Voltage**	480VAC	**System Voltage**	480/277	**BIL**	NA
Serial #	NA	**Rated Current**	4000A	**Style**	WL	**Age**	2009
Model	NA	**SC Withstand**	150KA	**Cat #**	NA	**ID #**	SA

 # Breakers 5 **# Relays** 0 **# Meters** 6 **# Vert Sect** 5 **# Cubicles** 16

Other Info CONTAINS 1 FUTURE CELL

Inspection Report

Breaker Operation	Good	**Covers/Glass**	Good	**Annunciator**	Not Applicable
Equipment Access	Good	**Cell Condition**	Good	**Panel Meters**	Good
Control Switches	Good	**Hinged Doors**	Good	**Panel Lights**	Good
Swgr Grounds	Good	**Bus Supports**	Good	**Cables**	Good
Paint Condition	Good	**Space Heaters**	Good	**Shutters**	Good
Connections	Good	**Tracking Signs**	Not Applicable	**Interlocks**	Not Applicable
Control Wiring	Good	**Cleanliness**	Good	**Insulation**	Good
Control Relays	Good	**Lubrication**	Good	**Test Stand**	Not Applicable
"83" Transfer	Not Applicable	**Ground Truck**	Not Applicable	**Maint Tools**	Not Applicable

Other Inspections CONTROL POWER WAS APPLIED AND ALL FUNCTIONS VERIFIED.

Test Data

Insulation Integrity Testing — Results In Megohms

From	To	Test KV	"A" to B/C/Grd	"B" to A/C/Grd	"C" to A/B/Grd
SERVICE ENTRANCE BUS	GROUND W/ 2 OPPOSING PH	1.0	4000	4000	4000
LOAD SIDE MAIN BREAKER B	GROUND W/ 2 OPPOSING PH	1.0	4000	4000	4000
ATS LIFE SAFETY BUSS DUC	GROUND W/ 2 OPPOSING PH	1.0	2400	2000	2000
ATS LOAD MAIN BUSS	GROUND W/ 2 OPPOSING PH	1.0	1500	1450	1485

Conducting Path Resistances — Results In Microhms

From	To	Test Amps	A Phase	B Phase	C Phase
Service entrance bus conn.	Main Breaker line side stabs	100	9	9	11
Main breaker load side stabs	Sec. 2 Metering	100	23	24	24
Main breaker load side stabs	Sec. 3 ATS/Life Safety line side	100	70	61	68
ATS/ Life Safety Line side stabs	DP-SA Line Side Stabs (inc. duc	100	90	96	99

REMARKS Cont. on next page.All results are acceptable.

Submitted By K.CUBBERLEY/M.STANLEY **Equipment Used** 100 AMP DUCTOR, FLUKE 1KVDC MEGGER

Switch Inspection Report

SM Electric

S10-1157.2

Scott Testing, Inc.

1698 Fifth Street Ewing, New Jersey 08638
Telephone: 609-882-2400 Fax: 609-882-5660

EED-r4

EQUIPMENT COMMENTS AND DEFICIENCY REPORT

Customer	SM Electric	**Date** 12/15/2010	**Page** 1 **Of** 1
Customer Address	601 Newq Brunswick Ave. Rahway, NJ	**Project Number**	S10-1157.2
Owner	Port Authority of New York and New Jersey	**Last Inspection Report**	Acceptance
Owner Address	Newark Airport, Newark, NJ	**Last Inspection Date**	Acceptance
Equipment Location	Terminal B Expansion	**Air Temperature**	65F
Owner Identification	Switchgear SA	**Relative Humidity**	60%

1	Ground fault plug for Breaker ATS-Life Safety was found to be defective, causing breaker to lose all protective functions. Replaced with spare plug and re-tested.	*Replaced With Spare Unit*
2	CT was found to be incorrect for Breaker DP-SA 9350 power meter. Print spec is 1200:5A. As found was 3200:5A.	*Recommend Engineer Review*
3	CT ratio for DP-SA 9350 Power meter was changed to match the installed 3200:5A CTt as per customer direction.	*Repaired As Left*

Submitted By	Kevin Cubberley	**Title**	Field Technician
		Date	12/15/2010
Reviewed By	Russell Sorbello	**Title**	Project Manager
		Date	12/16/2010

Scott Testing

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Test Procedures

Switchgear Inspection
The front and back compartments of the switchgear enclosure were opened, cleaned and inspected. Proper shutter operation was verified in all compartments. Primary receivers were cleaned and lubricated. Cable support, spacing and tightness of connections were verified. Proper heater operation was verified. No visible signs of tracking were observed. Control switches, instrumentation and indicator lights were checked for proper operation. The bus was megger tested at 1 kV DC. Bus connection resistance was measured using a 100 Amp ductor.

Instrumentation Transformers (Current and Voltage Type)
The access covers were removed and the enclosures were cleaned, and inspected as needed. The outer casings were inspected for signs of tracking or damage. The spacers, insulators and supports were checked. Nameplate data was recorded. The primary and secondary windings were isolated for testing. Tests performed included polarity checks, turns ratio, and insulation integrity. Cable and Bus connections were re-attached and tightened to correct torque levels

Meters
The meters were tested at all major scale values. Tests were conducted using field standards whose calibration is traceable to the United States Institute of Standards and Technology (NIST). All results were found to be within the meters designed accuracy. The meter leads were checked for tightness.

Low Voltage Breakers
Each breaker was removed from the cubicle, cleaned and inspected for damage. The mechanism was cleaned and lubricated as needed. The main and arcing contacts were cleaned and inspected for signs of pitting, correct alignment and closing sequence. Contact resistance values were measured. The protective trip device operation was verified by primary injection. Insulation integrity was verified using a 1kV DC megger. The breaker cubicle was cleaned along with the line and load side stabs. New grease was applied to both the cubicle and breaker primary stabs and fingers. All breakers were racked in and out to verify correct racking operation.

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December 16, 2010

SM Electric Company, Inc.
601 New Brunswick Ave.
Rahway, NJ 07065

Attention: Russ Elliot

Reference: Acceptance testing of Switchgear SA and associated equipment.

STI Project #: S10-1157.2

Dear Mr. Elliot,

The services that you requested at the above referenced facility have been completed and two (2) copies of the report are enclosed for your reference and records. All testing was performed to conform to NETA and manufacturer standards and procedures.

The equipment tested satisfactory. Please see our equipment deficiency form for any repairs or corrections that were made during our testing.

We appreciate this opportunity to have been of service to you and look forward to supporting you with your future electrical testing and maintenance needs.

Please feel free to contact us if you have any questions or need anything additional.

Sincerely,
Kevin Cubberley
Field Service Technician
Scott Testing, Inc.

S.M. ELECTRIC COMPANY, INC.

601 NEW BRUNSWICK AVE. P.O. BOX 1144 RAHWAY, NEW JERSEY 07065-1144
LICENSE/PERMIT #191 MEMBER N.E.C.A. PHONE: 732-388-3540
FAX NUMBERS: GENERAL/CONSTRUCTION/PURCHASING: 732-388-3052 ESTIMATING: 732-381-6390

TRANSMITTAL C1260X-TR-266

TO: VRH Construction Corp.
320 Grand Ave.
Engelwood, NJ 07631-4355

ATTN: Eric Winkler

DATE: December 17, 2010
PROJECT: PANY/NJ-EWR-264.003
Lower Level Expan. &
Vertical Circ.
EST/JOB #: C1260X

TRANSMITTING BY: [ ] E-MAIL [ ] FED EX [x] HAND DELIVERY

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Russ Elliott (732) 904-2354

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FAX NUMBERS: GENERAL/CONSTRUCTION/PURCHASING: 732-388-3052 ESTIMATING: 732-381-6390

TRANSMITTAL C1260X-TR-266

TO: VRH Construction Corp.
320 Grand Ave.
Engelwood, NJ 07631-4355

ATTN: Eric Winkler

DATE: December 17, 2010

PROJECT: PANY/NJ-EWR-264.003
Lower Level Expan. &
Vertical Circ.

EST/JOB #: C1260X

TRANSMITTING BY: [ ] E-MAIL [ ] FED EX [x] HAND DELIVERY

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Russ Elliott (732) 904-2354

Ret, Herman

From: Lochard, Daniel
Sent: Saturday, December 18, 2010 3:38 AM
To: Eric_Williams@URSCorp.com
Cc: Wallace, Michael; Nunez, Daniel; Ret, Herman; LaMarca, Thomas; Johnson, Caesar
Subject: FW: Switchgear SA Scott Testing Report
Attachments: C1260X-TR-266.pdf; Scott Testing Switchgear SA Test Report.pdf

Good morning Eric,

See the attached Scott Testing 3rd Party (Independent) Test Report for Switchgear SA.
Independent testing was performed after Siemens completed the Switchgear SA Recertification procedures.
Please review and advise.

Thanks,

From: Winkler, Eric [mailto:E.Winkler@vrhcorp.com]
Sent: Friday, December 17, 2010 3:08 PM
To: Nunez, Daniel; Lochard, Daniel
Subject: FW: Switchgear SA Scott Testing Report

Eric Winkler
Project Manager

1 Terminal B Short Term Parking Lot
Construction Trailer
Newark Liberty International Airport
Newark, NJ 07114
Phone: 973-824-2520
Fax: 973-824-2561 Mobile: 201-481-6901
www.vrhcorp.com

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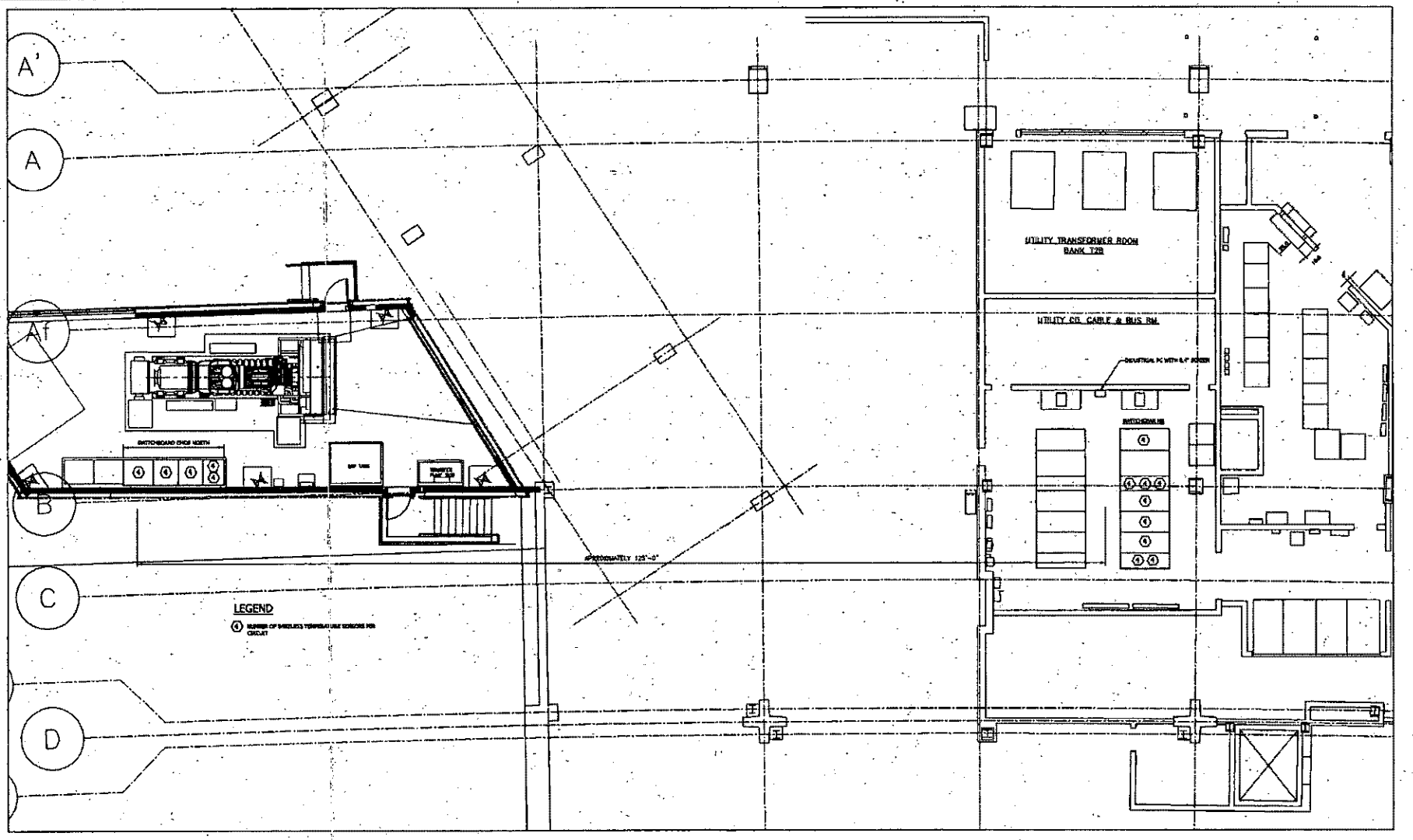
From: Russ Elliott [mailto:russ.elliott@smelectric.com]
Sent: Friday, December 17, 2010 3:04 PM
To: Winkler, Eric
Cc: Don Sapanara
Subject: Switchgear SA Scott Testing Report

Eric,

See attached Scott Testing report for Switchgear SA.

Thank you,



NEWARK LIBERTY INTERNATION AIRPORT
TERMINAL B LOWER LEVEL EXPANSION
EWR-264.003

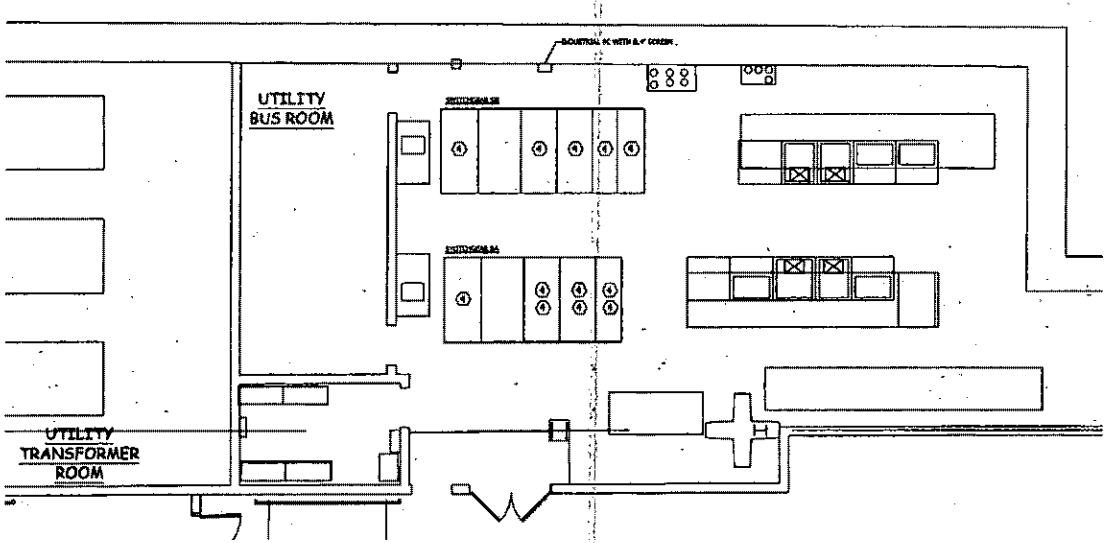
REV NO.	DESCRIPTION	DATE

S.M. Electric Co., INC.
601 New Brunswick Ave
Rahway, NJ 07065

NORTH SUBSTATION
TEMPERATURE MONITORING

DWG NO. 010311A

REV NO. 0



LEGEND

(4) NUMBER OF WIRELESS TEMPERATURE SENSORS PER CIRCUIT

REV NO.	DESCRIPTION	DATE

J.N. Electric Co., INC.
661 New Brunswick Ave
Rahway, NJ 07065

NEWARK LIBERTY INTERNATION AIRPORT
TERMINAL B LOWER LEVEL EXPANSION
EWR-264.003

SOUTH SUBSTATION
TEMPERATURE MONITORING

DWG NO. 010311B

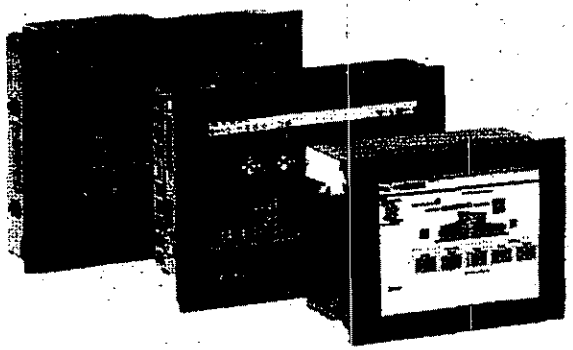
REV NO. 0

Magelis Compact iPC

General purpose

Heavy duty

Universal industrial PC



HDD 80/160/250 GB* General purpose

Flash disk 15GB Heavy duty

Vijeo Designer

Vijeo Citect

8.4" - 12" 15" Touch screens

Magelis Compact iPCs are universal industrial PCs with a PCI slot, an optional DVD reader, and a slim build that easily integrates into automation equipment. They can accommodate hard disks with a large capacity, or Flash disks with no rotating parts for more demanding applications. They offer (IP65) protection and their touch screens (8.4", 12", and 15") are the same sizes as the rest of the Magelis range. It also has Intel Celeron M processors (Pentium M), two Ethernet ports (one of which supports very high speeds), and exceptional openness with Windows XP Pro operating system. They have UL 508 certification for automation equipment and UL certification for hazardous locations.

Magelis Compact iPCs support Vijeo Designer applications (demonstration version can be expanded to unlimited version) and can be used in tandem with the Vijeo Citect SCADA supervisor.

* 250 GB coming soon

Windows XP Professional

SECTION 6

REFERENCES

1. "Technical Specification for Wireless Temperature Monitoring System," Square D Technical Library, Specification Number: 16090-10 (26 01 20.14). Product Name: Wireless Temperature Monitoring System [On-Line]. Available:
http://ecatalog.squared.com/pubs/Electrical%20Distribution/26%2001%2020.14.doc

2. "Technical Specification for Wireless Temperature Monitoring System - Consulting Services," Square D Technical Library, Specification Number: 16090-11 (26 01 20.15). Product Name:
WTMS - Consulting Services [On-Line]. Available:
http://ecatalog.squared.com/pubs/Electrical%20Distribution/26%2001%2020.15.doc

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up to 100 kV. Step-up VT is a source of corona by itself. Several Square D High Temp sensors were positioned on piece of copper bus bar, which was connected to Step-up transformer with the cable. The voltage has been raised from 5 kV to 50 kV and held for 10 minutes at each voltage. At the last stage of the test the voltage has been raised to 25 kV and was hold at this value for one hour. During the test the receiver was in close proximity to the Step-up transformer at the distance about 5 feet. During the runs with 50 kV applied to bus bar corona occurred, which produced very strong sound. Multiple sensors have been located close to energized piece of bus bar to determine if their functions as well as performance of Receiver are affected by HV corona.

Test Results

The effect of high Voltage and Corona in close proximity to the wireless sensors has been found insignificant.

5.2. WTMS Validation Tests Provided by Testing Services

The following tests (Table 2) have been provided by Met Laboratories, Underwriters Laboratories in Northbrook, IL and RF Laboratory of Square D in Raleigh, NC. and Nemco USA, Inc. Test reports are available upon request. FCC certification report has been received from Freshloc Technologies.

Table 2:

No.	Test	Standard, Level	Test Lab	Comments, Results
1	UL Test / installation Category	UL 3111-1, IEC 61010-1, UL 61010B-1 and IEC/EN1010 Level III	**UL Lab Northbrook**	Completed, Passed
2	Vibration Test	IEC61010-1 PMO SEP1001	**Met Lab**	Completed, Passed
3	Drop Test	PMO SEP 1002	**Met Lab**	Completed, Passed
4	EMC Tests	FCC Part 15, Class A/CE Heavy Industrial/Radiated/Conducted	**FCC**	Certified
5	EMI Tests	IEC 6100-4-4, Level 3; 4-3; 4-3; 4-8 4-2, level 3; 4-5 level 4	**Square D RF Lab**	Completed, Passed
6	EMI Tests (European Standards for CE Mark), Receivers	ETSI EN 300 220-3 V1.1.1 (2000-09); ETSI EN 301 489-1 V1.4.1 (2002-08); ETSI EN 301 489-17 V1.2.1 (2002-08); IEC 60950-1/EN 60950-1	**Nemco USA, Inc.**	Completed, Passed
7	EMI Tests (European Standards for CE Mark), Sensors	ETSI EN 301 489-1 V1.4.1 (2002-08); ETSI EN 301 489-17 V1.2.1 (2002-08); IEC 60950-1/EN 60950-1	**Nemco USA, Inc.**	Completed, Passed

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SECTION 5

VALIDATION TESTS FOR WTMS PARTS AND PERFORMANCE

Square D Services designed and arranged a set of validation tests at independent laboratories, and provided required documentation for the tests. Below is a listing of test providers and description of the tests' goals and results. Complete reports of all test listed are available upon request.

Testing Providers:

- **Square D Services Engineering**
- **Square D RF Laboratory**
- **Freshloc Technologies**
- **Independent Testing Services:**
  - — Met Laboratories
  - — Underwriters Laboratories
  - — FCC
  - — Nemco USA

5.1. Validation Tests provided by Square D Engineering Services

5.1.1. Calibration Technique for Square S High Temp Sensors (direct thermal contact with the surface)

Square D Engineering developed a new calibration technique providing sensor calibration in the conditions adequate to the system application. All sensors are calibrated within the oven with stabilized ambient temperature with the sensors installed on the surface of metal bus, which temperature is changing within the range of T from 0°C to 150°C and controlled with TCs.

5.1.2. Testing of Adhesion Quality of Silicone RTV as HT adhesive

Two different properties of high temperature adhesive have been tested to approve an adhesive for using it for attachment of wireless temperature sensors in energized electrical equipment: (1) chemical inertness at high temperatures towards metallic and insulating surfaces, and (2) an ability to hold the sensors in vertical or upside down position for the period in service. Testing of Silicon RTV sealant at high temperature proved that the product provides a good adhesion and is chemically inert towards the surface to which the sensors may be attached. This adhesive leaves no residue on metal surfaces of the bus or insulation after the sensors have been removed. Additional testing was provided by Freshloc technologies on Silicone adhesive strength. The preferred adhesive was placed on a test bus bar and allowed to cure for 24 hours. The bus bar was then heated to approximately 150°C for two hours. At the end of two hours, the adhesive was tested to tolerate a load of up to 20 lbs. The bond strength measure proved that the silicone adhesive is sufficient to hold the weight of the sensor in vertical or upside down configuations.

5.1.3. Influence of High Voltage on Sensors Performance Signal Transmittance Test setup

The measurements have been conducted using HiPot Set providing high voltage on the metal part using a Step-up VT that allows raising the voltage

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Status Bits:

First word of status (3201) 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

table entry 16 ----------^

table entry 15 ----------^

table entry 14 ----------^

table entry 1 ----------^

Second word of status (3202) 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

table entry 17 ----------^

E. Sensor Data Packet Mapping (starting at Word 3801)

1. Offset 0: SS Channel
2. Offset 1: Sensor ISD (Two Words)
3. Offset 3: Channel and Type
4. Offset 4: Measurement (Celsius)
5. Offset 5: Reserved
6. Offset 6: Sequence Count
7. Offset 7: Signal Strength
8. Offset 8: Pre-correction
9. Offset 9: Post-correction
10. Offset 10: SSTID (2 Words)
11. Offset 12: Delta Tick Count (2 Words)
12. Offset 14: Measurement (Fahrenheit)
13. Offset 15: Reserved (Four Words)

F. Sensor Data Packets are filled in the order that packets arrive. A Sensor ID/Channel block is assigned to a Sensor ID when the first packet for that Sensor ID is received.

G. Diagnostic packets are stored identically to Sensor ID packets.

H. Time Stamping - 100 msec tick count resolution measured from power on. This tick count is a double word. It resets on power on and rollover.

I. Diagnostics - If the Default Gateway IP Address has a non-zero value, diagnostic information will be broadcast in a UDP packet on port 45000. This packet will show the serial data received and the calculated checksum of the packet.

J. The Sensor Directory mapping will be saved to non-volatile flash memory when a value of <u>two</u> is written to the Modbus register 50001. This information will be restored when the Gateway powers up.

K. Temperature decoding - All temperatures for sensors are shown on Channel 12 and are two byte signed words. The values represent the temperature measured at the time received by the gateway (minus time to transmit which is well under 1 second). The measurement is a signed value in 100ths of a degree centigrade and the range is in excess of 150C.

L. Clear Sensor Tables - A write of <u>one</u> to Modbus address 50000 will clear the stored data tables (and write the directory to flash).

M. Write Sensor Directory - A write of two to Modbus 50001 will write the stored sensor directory to flash.

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4.4. Modbus Specifications for WTMS Modbus TCP Receiver

A. Configuration - The TCP/IP Address, Subnet Mask and Default Gateway Address can all be addressed over the Modbus TCP network starting at Modbus location 60,000 for 12 registers. Each octet is a separate word. These parameters can also be configured via the configuration web page located at http://192.168.0.100/index.htm. The web page also allows an application name to be programmed into the device.

B. A maximum of 800 Sensor ID packets (Sensor ID/Channel) can be addresses through the Modbus Server Interface at device id1. Only sensor packets starting with 0x02 0x01 are decoded; all others are ignored

C. Modbus TCP Data Space Mapping

Table 1:

Modbus Address Holding Register	
1-2	Sensor ID for table 1
3	Channel # for table 1
4	Reserved
5 - 6	Sensor ID for table 2
7	Channel # for table 2
8	Reserved
3113 - 3120	Sensor ID/Channel for table 800
3201 - 3250	Status Bit array
3251 - 3800	Reserved
3801 - 3830	Sensor Data Packet (table 800)
50000 (Write 1)	Clear Sensor Tables (a write of any value
50001 (Write 2)	Write Current Sensor Directory (a write of any value)
50002 - 50003 (read)	Master Tick count - reset when power cycled
60000	IP Address MSB
60001	IP Address
60002	IP Address
60003	IP Address LSB
60004	Subnet Mask MSB
60005	Subnet Mask
60006	Subnet Mask
60007	Subnet Mask LSB
60008	Gateway Address MSB
60009	Gateway Address
60010	Gateway Address
60011	Gateway Address LSB

D. Status Data starting at 3201 is a set of registers that provide packet arrival status. Each bit of the status data registers maps to a Sensor ID/channel combination. There are 800 bits (1 per Sensor ID/Channel Packet) in this structure (50 Modbus words). The bit will be set to a 1 to indicate that the table entry has data.

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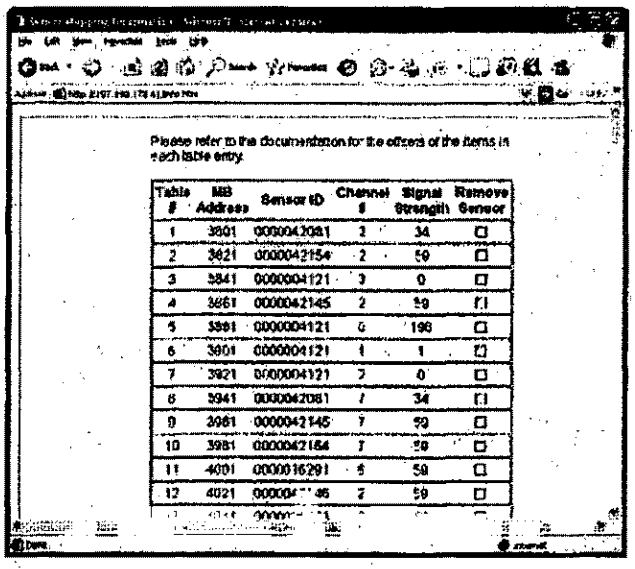
Figure 21:



Please refer to the documentation for the offsets of the items in each table entry.

Table #	MB Address	Sensor ID	Channel #	Signal Strength	Remove Sensor
1	3801	0000042081	3	34	☐
2	3821	0000042154	2	59	☐
3	3841	0000004121	3	0	☐
4	3861	0000042145	2	59	☐
5	3881	0000004121	6	198	☐
6	3901	0000004121	1	1	☐
7	3921	0000004121	7	0	☐
8	3941	0000042081	7	34	☐
9	3961	0000042145	7	59	☐
10	3981	0000042154	7	59	☐
11	4001	0000016291	5	59	☐
12	4021	[illegible]	2	59	☐

Following is a list of useful quantities and their offsets within the range of registers assigned to each sensor:

Quantity	Offset
Sensor ID (two registers)	1 and 2
Celsius Reading in Hundredths of degree C	4
Fahrenheit Reading in Hundredths of degree F	14

Example:

To read the temperature in Celsius for Sensor ID 42154 displayed in the above diagram, you would send a ModBus read request to address 157.198.172.61, specifying the 3825 (3821 + 4), as the register number from which to read.

In the response packet you will get the temperature in hundreths of a degree Celsius. So if the temperature is 25 degrees Celsius you will get a ModBus response with the number 2500.

3. Clear the current sensor table by writing one to Modbus address 50000. This will also clear the flash tables.
4. Acquire sensor channels.
5. When all channels have been acquired (verify the sensor mapping as described in Step 2), write the sensor directory to flash by writing the value "2" to Modbus address 50001.

   NOTE: the flash write operation could take up to a minute depending on the number of channels acquired, so leave the unit powered up.
6. Setup the Modbus application to reference the sensor table locations acquired above.

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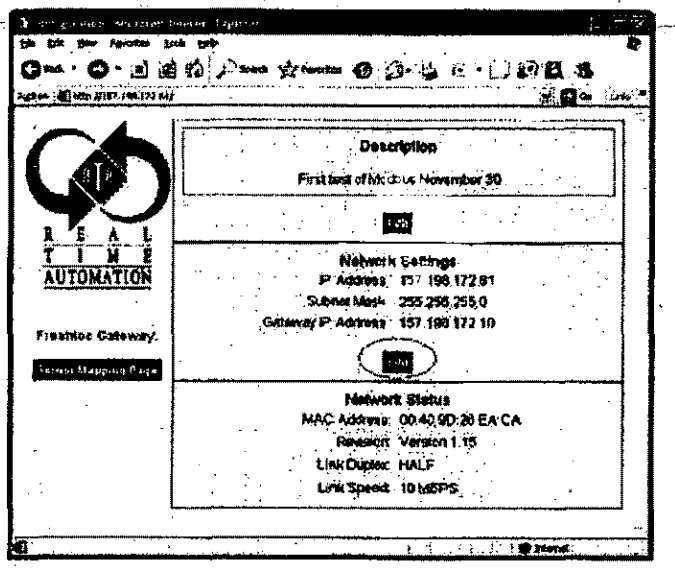
c. Change your PC IP settings back to the original settings you documented in step (a).

Figure 20:



2. The receiver has a range of registers that store the information for each sensor. The range starts at register 3801 and goes until 19800, with 20 registers allocated to each sensor.

Determine the sensor information that is stored at a specific register range by going to the Sensor Mapping Page from the link on the main page of the receiver. The table will only show entries for discovered sensors up to a maximum of 800 entries.

A sample mapping page is displayed in the screen capture below (Fig.21). The sensors are assigned a range by the receiver, as it detects them. The first range of 290 registers is referred to as Table 1, and so forth.

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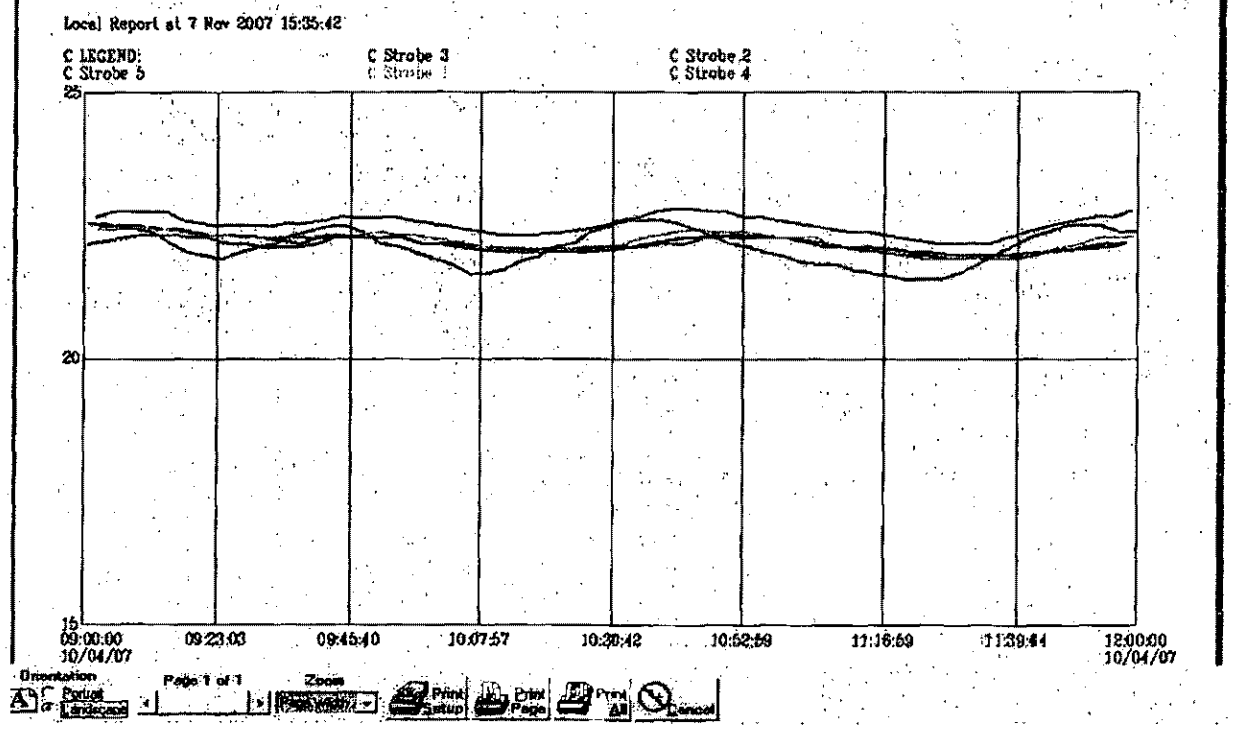
Figure 19: Local Report Plot



The data may be listed if the option "List" is chosen, then the data may be averaged for any selected time period and presented in tabular format. The data may be exported into text file, which is easily converted into Excel format for further analysis.

4.3. SCADA Software Integration

Most Supervisory Control and Data Acquisition (SCADA) and other monitoring software package have a Modbus driver either "built-in" or available as an option. In order to connect the Wireless Temperature monitoring system via Modbus to a software package, the Modbus TCP WTMS receiver will need to be utilized. The following steps should be followed to establish communications with the receiver and create a device tag within the SCADA software.

1. The WTMS receiver will need a static IP address. The unit comes preset with a default of 192.168.0.100.

   a. To configure the IP on the receiver, put your computer on the same subnet as the receiver (via the IP configuration of your PC). **Important:** Write down your settings before making the change. (Fig.20)

   b. Change the IP information on the receiver to work with your network, by going to the receiver website and clicking "Edit" under network settings. (See screen capture below) The website is located at http://<IP address of the reciever>, and can only be reached if your computer is on the same subnet as the device.

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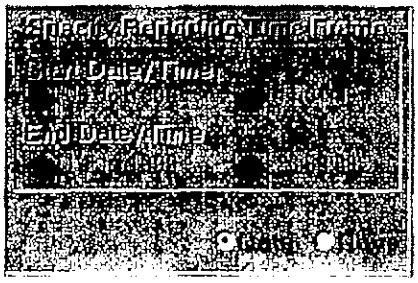
The next step is selecting the time frame for the report (Fig.18). Use the Date/Time markers to select the starting and ending point. To increase or decrease the Date/Time use the arrow buttons next to the Date/Time you wish to change.

Figure 18: Local Report: selecting time frame



To run a report for an allotted number of days you may click the *Days* button and Input a value in the *Report for Last ___ Days* Blank.

The report is now ready to be created. Select the type of report to use. Select the *List* button and LocalRpt will gather a list of strobe entries and display them in a report format. To create a graph select the *Plot* button and LocalRpt will create a line graph from the data recorded in the TAssure.log file. Listed below are examples of the two types of reports. Shown in Fig. 19 is an example of the *Plot* type report, it creates a graph of the temperature for chosen strobes.

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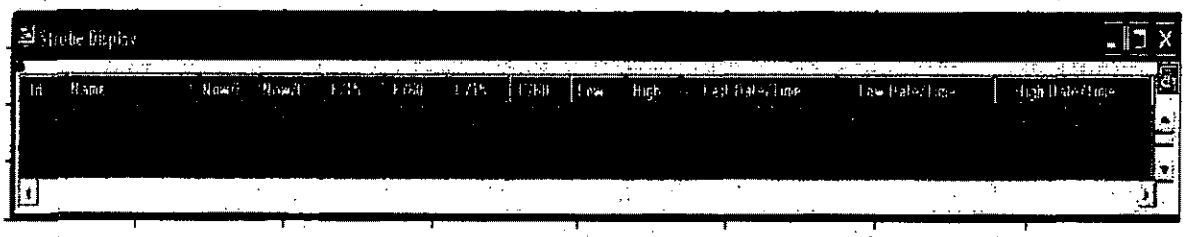
screen.
(7) Click "Save." You should now see your strobes on both the TempAssure strobe window and on the strobe display screen.

Strobe Display utility (Fig. 16) displays which sensors are installed and in which locations, and all other information chosen in Option Tab, such as Temperatures in Fahrenheit or Celsius degree, average temperatures for 15 or 60 minutes, the time stamp of last measurements, and so on.

Figure 16: Strobe Display Utility



4.2.3 TempAssure Reporting Software

The data collected by WTMS may be view and analyzed using TAssure Local Report Program. LocalRpt is a reporting tool used with the TAssure program to print a report and graph changes in strobe temperature. LocalRpt also supports graphing of multiple Strobes for easy comparisons between strobes. The Local Report requires that Sensors and Receivers have names. Make sure that this has been done before starting Local Report. The first step in using the reporting program is to select the sensor locations for the report. Click on the Show Item selection button (Fig. 17). This will display a list of sensor locations (items) to choose from. LocalRpt automatically selects all of the items on the list by default. If you donit want all items included on the report, click on the Select None button and choose the specific items. When making your selection you may select multiple strobes by holding down the *Ctrl* key and clicking on each item. Then click on the Hide Item Selection Button.

Figure 17: Local Report: choosing the sensors for display

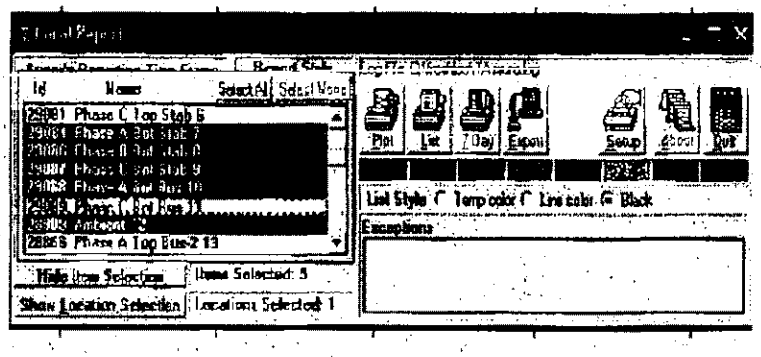


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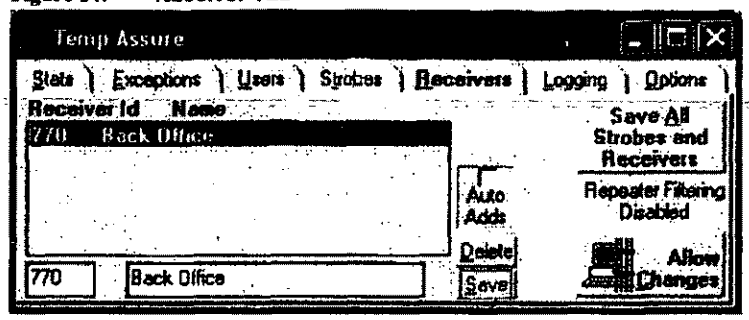
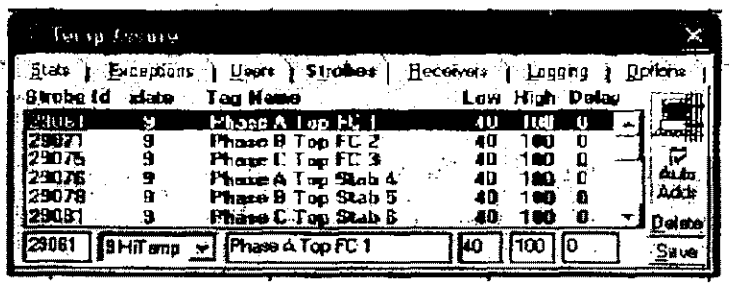
Figure 14: "Receiver Tab"



This is where you type in the numbers of the receiver(s) you have:
(1) In the first box, type in the number (ID) of your receiver or choose one of it is automatically added.
(2) In the second box, type in a name for your receiver (i.e. control room, etc.).
(3) Click Save.
(4) Repeat for additional Receivers.
Note: You must type a name for the receiver in order to run Local Reports (discussed later in this document).

Strobe(s) setup: Click on the **Strobes** tab (Fig.15).

Figure 15: "Strobe" Tab



You will need to input the strobe ID's on this screen in order to view the temperatures of your strobes.
(1) In the first box, enter in the number of your strobe (RFID) or click on the strobe automatically added.
(2) The second box "xlate" is a pull down menu, select **9 HiTemp**.
(3) In the third box "Tag Name," enter in exact location this strobe will be placed.
(4) In the fourth box "Low", enter in the **low alert temperature**. For high temperature application this value may be as high as maximum ambient temperature according to electrical standards (40 degree C).
(5) In the fifth box "High", enter in the high alert temperature. For example, it is an electrical contact, and you would not want it to go above 100 degree C, then you enter in 100 in this box.
(6) The sixth box is "Delay." You may enter in a time interval for a sensor to alert. The value needs to be entered in seconds. For example, if you set a delay of 0 seconds, and your contact temperature rises up to 100 degree C, the line with the sensor in this location would turn red on the strobe display

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ware on CD. The installation is supported by Installation Wizard. The software and log file will be saved on PC hard drive in the folder C:/Freshloc. For technical support on downloading and installation TempAssure Software WinNT/2000/XP contact Square D Services Engineering.

4.2.2. TempAssure Software Setup

When TempAssure launches, the window shown in Fig.12 will appear. If the computer cable is plugged into Com 1 it will show "Serial Port 1". If you need to change your com port and choose information to review, click on the Options Tab. You will now see the screen shown in Fig. 13.

Figure 12: TempAssure main screen

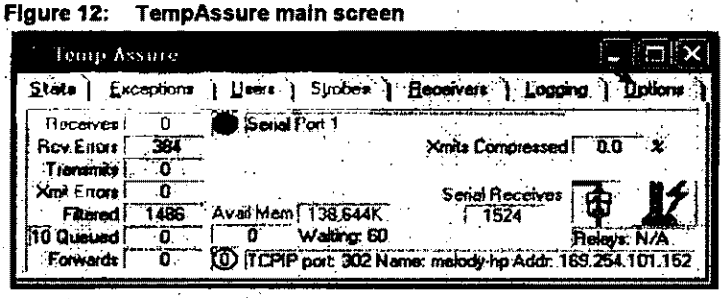
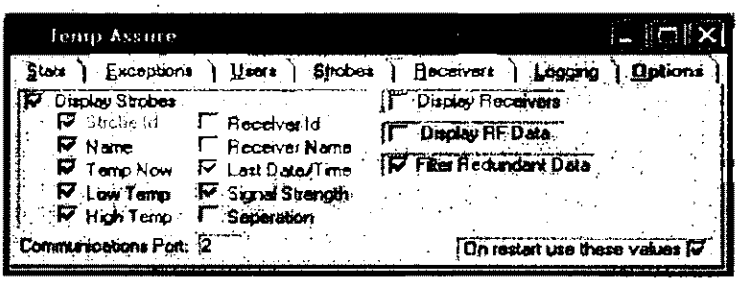


Figure 13: "Option" Tab



To change the com port:

(1) Type in the com port number in the box next to Communications Port, and press enter.
(2) Click the box next to **On restart use these values** to place a checkmark.
(3) Click on the **X** to close TAssure.
(4) Restart TAssure

Receiver(s) Setup. You will now be back at the main TAssure screen (**Stats**). A blinking green dot means your Receiver is connected and working. Once you start seeing numbers under **Serial Receives**, you know you are receiving data. Now that you know that everything is working, click on the **Receivers** Tab (Fig.14). If the "Auto Adds" is checked all receiving units will be automatically added.

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4.1. 3. Assembly of Connection Kit (Receiver to PC connection)
Parts in Connection Kit:

1. DB25M-DB9F converter
2. RS-232 to RS-485 B&B converter
3. RJ45-DB25F converter
4. Transformer 120 VAC to 12 VDC
5. RJ45 cable (CAT5)

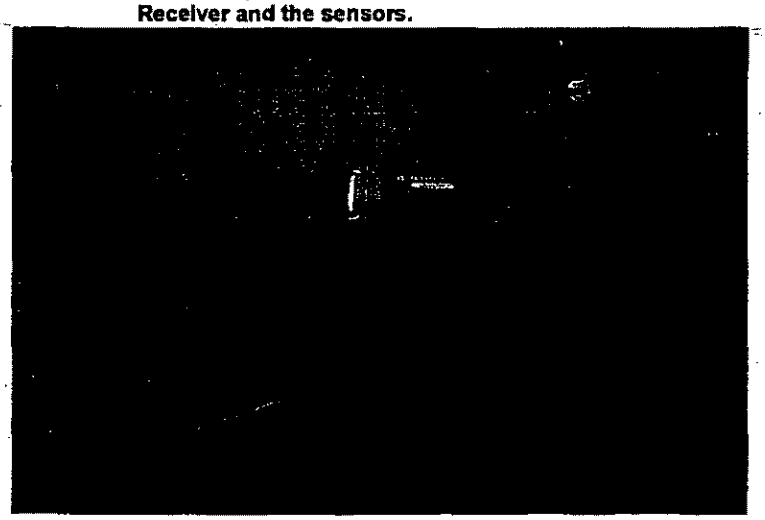
Assembly of Connection Kit

1. Attach the 9-pin connector of the DB25M-DB9F converter to com port 1 (9-pin) on the back of the computer. If PC does not have 9-pin port use one of USB ports with USB to RS-232 DB9 converter (not included).

2. Attach another end of DB25M-DB9F converter to the RS232 side of the B&B converter. Connect the RJ45-DB25F converter to the RS485 end of the B&B adapter. Connect the Receiver to RJ45-DB25F converter with RJ45 cable (use any of two lines on the bottom of the Receiver).

Assembled WTMS is shown in Fig. 11. If PC is located at significant distance from the Receiver, use as long as needed RJ45 cord to connect the Receiver to RJ45-DB25F converter. Otherwise use the cable included in the kit.
To energize the Receiver, connect the pin of power supply (transformer 120 VAC to 12 VDC) into the side of the RS485-RS232 B&B converter and plug transformer into power jack. As soon as connection is made, the LEDs towards the bottom of chassis of the Receiver begin flashing signalizing that the unit receives RF signals from the sensors.

Figure 11: Long Range Connection Kit with the Serial Single-band Receiver and the sensors.



4.2. Installation of Software for Standalone WTMS

4.2.1. TempAssure Installation

The data from temperature monitoring system are transferred from the sensors via the Receiver to TempAssure database. Standalone WTM System is working with TempAssure Software. It is installed by using TempAssure Soft-

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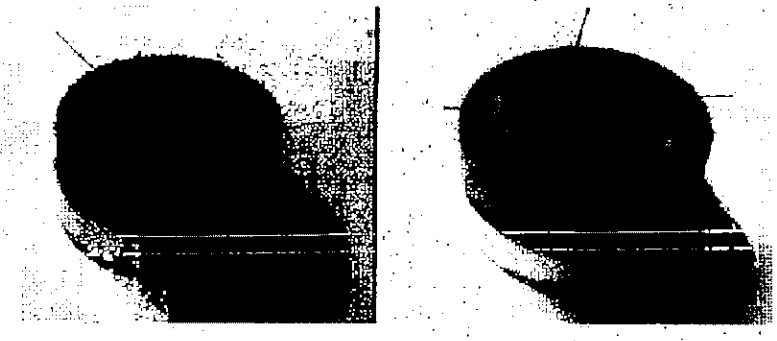
Figure 10: RTV Adhesive ring on the bottom of the case (left); drops of super glue on the inner elevated ring (right).



4.1.2. Installation of the Receiver

Finding the best location for the Receivers:

The key factor in a successful install, is finding the best possible location for the Receiver. The plant walk-through will provide best opportunity to search for a location based on the sensor array. Place readers in open areas to receive as many signals as possible. Here are a few guidelines to help when placing the Receiver:

- **Install the Receiver as high as possible**
- **Position the Receiver in a central location**

Place the Receiver as close to the center of the location as possible to maximize the reception of the antenna. If a central location is unavailable, look for the best possible sit in relationship to the sensors.

- **Keep the Receiver away from interference.**

The receiver is designed to work in noisy environments but it is hindered if placed near (within 5 feet) the following devices:

  — Florescent Lighting Fixtures
  — Computers and Monitors
  — TV's and Radios
  — Large Metal Objects
  — Telephone and Network (Ethernet) equipment
  — Other items that may block or absorb RF signals which may cause blind spots to Receivers, such as thick concrete walls, air-conditioning units.

- **Use at least one Extension Receiver**

Suggested mounting methods for Receivers: the Receivers should be mounted with a minimum of 1 in. separation from flat surfaces such as walls, rafters, etc. Steel walls and rafters especially require separation to get good reception.

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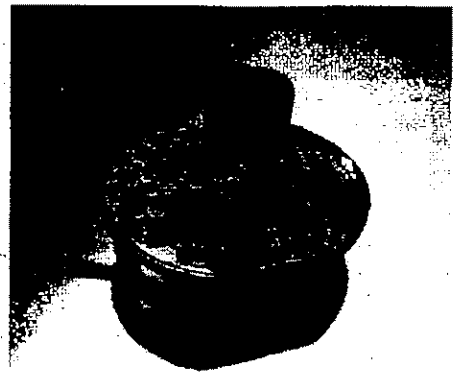
case. The silicone ring should be about 2.5mm wide, enough to seep around the case outside edges when applied (Fig.10, left)

2. Apply four drops of "super glue" equidistantly on the surface of small elevated ring in the center to the case (Fig.9, right). As soon as the case is pressed to the surface, the glue will spread and cover ~100% of the ring surface area.
3. Attach the case bottom in the position on the surface of the part for which the temperature is to be measured as soon as possible to avoid an early hardening of the instant glue. Press the sensor to the surface for 2 minutes, after which it is safe to leave the case for the next 24 hours to let the silicone cure. Super glue is strong enough to hold the weight of the sensor in any position.
4. Make sure the silicone seeps around the edge of the sensor to prevent airflow. After the cure is complete, the RTV silicone adhesive takes over.

Figure 8: The sensor: the top of the sensor with RFID label seen through the transparent lid and the label attached to the side of the case (left), the empty case of the sensor bottom up (center), the bottom of the assembled sensor with the sensing element in copper enclosure inserted into the opening in the bottom of the case (right).

Figure 9: Sensor assembly with sensing element within copper enclosure.



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Ret, Herman

From: Lochard, Daniel
Sent: Friday, November 19, 2010 11:12 AM
To: Ret, Herman
Cc: LaMarca, Thomas; Leonardo, Raul
Subject: Siemens Recertification Testing

Herman,

The Siemens Technician just completed today's testing session for Switchgear SA.
He will return once the WL circuit breakers have been returned from Texas, next week.
I'll provide the date as soon as I receive it.

Daniel

Ret, Herman

From: Lochard, Daniel
Sent: Friday, November 19, 2010 8:04 AM
To: 'Russ Elliott'
Cc: 'Winkler, Eric'; 'Don Sapanara'; Leonardo, Raul; Johnson, Caesar; LaMarca, Thomas; Ret, Herman
Subject: RE: Siemens Technician for Switchgear SA

Thanks Russ.
I'll meet him at the South Sub-station.

From: Russ Elliott [mailto:russ.elliott@smelectric.com]
Sent: Friday, November 19, 2010 7:54 AM
To: Lochard, Daniel
Cc: Winkler, Eric; Don Sapanara; Leonardo, Raul; Johnson, Caesar; LaMarca, Thomas; Ret, Herman
Subject: RE: Siemens Technician for Switchgear SA

Daniel,

Siemens is currently on site.

Thank you,

Russ Elliott
S.M. Electric Co., Inc.
at Newark Airport

Phone: 1-973-622-1470
Fax: 1-973-622-1471
Cell: 1-732-904-2354

From: Lochard, Daniel [mailto:dlochard@panynj.gov]
Sent: Friday, November 19, 2010 7:48 AM
To: Russ Elliott
Cc: Winkler, Eric; Don Sapanara; Leonardo, Raul; Johnson, Caesar; LaMarca, Thomas; Ret, Herman
Subject: RE: Siemens Technician for Switchgear SA

Russ,

Please confirm that Siemens will be on-site today and at what time.

Daniel

From: Russ Elliott [mailto:russ.elliott@smelectric.com]
Sent: Thursday, November 18, 2010 10:02 AM
To: Lochard, Daniel
Cc: Winkler, Eric; Don Sapanara
Subject: Siemens Technician for Switchgear SA

Daniel,

Ralph Walkowicz of Siemens just called me. He was called in last night on an emergency in the Massachusetts area and has just completed the work. He will not be on site today but will be here tomorrow from 7:00am to 12:30pm.

Thank you,

Russ Elliott
S.M. Electric Co., Inc.
at Newark Airport

Phone: 1-973-622-1470
Fax: 1-973-622-1471
Cell: 1-732-904-2354

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[redacted]

From: Winkler, Eric [mailto:E.Winkler@vrhcorp.com]
Sent: Tuesday, November 16, 2010 3:44 PM
To: Leonardo, Raul; Lochard, Daniel
Subject: FW: Switchgear SA Schedule

Eric Winkler
Project Manager

1 Terminal B Short Term Parking Lot
Construction Trailer
Newark Liberty International Airport
Newark, NJ 07114
Phone: 973-824-2520
Fax: 973-824-2561 Mobile: 201-481-6901
www.vrhcorp.com

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From: Don Sapanara [mailto:don.sapanara@smelectric.com]
Sent: Tuesday, November 16, 2010 1:50 PM
To: Winkler, Eric
Cc: Konen, Jeff; Al Fosbenner; Pete Cheche III; Russ Elliott
Subject: Switchgear SA Schedule

Eric,

Our schedule for completing Switchgear SA is attached. We have a commitment from Siemens to meet our testing and recertification dates. I'm waiting for a firm commitment from them on meeting the final report dates.

Don Sapanara
Project Manager

S.M. Electric Co., Inc.
601 New Brunswick Ave.
Rahway, NJ 07065

Main Office:
Phone 732-388-3540
Fax 732-388-3052

ConocoPhillips Site:
Phone 908-523-5508
Fax 908-523-5143

Ret, Herman

From: Ret, Herman
Sent: Friday, November 19, 2010 7:47 AM
To: Wallace, Michael
Subject: Discolored Bus

Mike

I need a copy of the final agreement with Siemens and VRH referencing the discolored Bus. The last I have was 9/16 sent around for comments.

Herman Ret
Newark Liberty International Airport
973-961-6144

[redacted]

From: Russ Elliott [mailto:russ.elliott@smelectric.com]
Sent: Thursday, November 18, 2010 10:02 AM
To: Lochard, Daniel
Cc: Winkler, Eric; Don Sapanara
Subject: Siemens Technician for Switchgear SA

Daniel,

Ralph Walkowicz of Siemens just called me. He was called in last night on an emergency in the Massachusetts area and has just completed the work. He will not be on site today but will be here tomorrow from 7:00am to 12:30pm.

Thank you,

Russ Elliott
S.M. Electric Co., Inc.
at Newark Airport

Phone: 1-973-622-1470
Fax: 1-973-622-1471
Cell: 1-732-904-2354

[redacted]

From: Russ Elliott [mailto:russ.elliott@smelectric.com]
Sent: Wednesday, November 17, 2010 11:34 AM
To: Winkler, Eric
Cc: Don Sapanara; Lochard, Daniel
Subject: Siemens Technician Site Work

Eric,

Ralph Walkowicz of Siemens has just informed me that he will be in the area tomorrow and Friday and wants to start electrically testing Switchgear SA. This will allow him to get a jump on the remaining recertification process. I do not want to let an opportunity to have a Siemens technician on site pass by, so I agreed that he should start his work tomorrow and continue on Friday. He'll call me tomorrow and let me know what time he'll be here.

Thank you,

Russ Elliott
S.M. Electric Co., Inc.
at Newark Airport

Phone: 1-973-622-1470

Fax: 1-973-622-1471
Cell: 1-732-904-2354

[redacted]

From: Winkler, Eric [mailto:E.Winkler@vrhcorp.com]
Sent: Tuesday, November 16, 2010 3:44 PM
To: Leonardo, Raul; Lochard, Daniel
Subject: FW: Switchgear SA Schedule

Eric Winkler
Project Manager

1 Terminal B Short Term Parking Lot
Construction Trailer
Newark Liberty International Airport
Newark, NJ 07114
Phone: 973-824-2520
Fax: 973-824-2561 Mobile: 201-481-6901
www.vrhcorp.com

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From: Don Sapanara [mailto:don.sapanara@smelectric.com]
Sent: Tuesday, November 16, 2010 1:50 PM
To: Winkler, Eric
Cc: Konen, Jeff; Al Fosbenner; Pete Cheche III; Russ Elliott
Subject: Switchgear SA Schedule

Eric,

Our schedule for completing Switchgear SA is attached. We have a commitment from Siemens to meet our testing and recertification dates. I'm waiting for a firm commitment from them on meeting the final report dates.

Don Sapanara
Project Manager

S.M. Electric Co., Inc.
601 New Brunswick Ave.
Rahway, NJ 07065

Main Office:
Phone 732-388-3540
Fax 732-388-3052

ConocoPhillips Site:
Phone 908-523-5508
Fax 908-523-5143

EWR 264.003 S.M. Electric : SCHEDULE FOR SWITCHGEAR SA

PERIOD: November 15, 2010 to December 19, 2010

		M	T	W	Th	F	Sa	Su	M	T	W	Th	F	Sa	Su	M	T	W	Th	F	Sa	Su	M	T	W	Th	F	Sa	Su	M	T	W	Th	F	Sa	Su
	TASK NAME Date	11/15	11/16	11/17	11/18	11/19	11/20	11/21	11/22	11/23	11/24	11/25	11/26	11/27	11/28	11/29	11/30	12/1	12/2	12/3	12/4	12/5	12/6	12/7	12/8	12/9	12/10	12/11	12/12	12/13	12/14	12/15	12/16	12/17	12/18	12/19
	Switchgear SA																																			
	WL Breaker test at Siemens, Texas	x	x	x																																
	WL Breaker return shipment to EWR				x	x			x	x																										
	S.M. to install WL breaker in Switchgear SA										x																									
*	Siemens on site to complete testing/recertification of SA															x	x	x																		
	Siemens data put into final report form																		x	x																
	Siemens final report and recertification sent to S.M.																						x													
	Siemens final report and recertifications sent to VRH/PA																							x												
*	PA inspection of Switchgear SA																		x																	
	S.M. to address any PA punchlist items																			x			x													
*	PA final inspection of Switchgear SA																							x												
*	PA review of Siemens report and recertification																								x	x	x									
*N	Outage to install bus details at PSE&G stab																													x	x					
	Switchgear SA energization to main breaker																														x					

* Activities require Port Authority support.

C Complete

N Night Work

EWR 264.003 S.M. Electric : SCHEDULE FOR SWITCHGEAR SA

PERIOD: November 15, 2010 to December 19, 2010

		M	T	W	Th	F	Sa	Su	M	T	W	Th	F	Sa	Su	M	T	W	Th	F	Sa	Su	M	T	W	Th	F	Sa	Su	M	T	W	Th	F	Sa	Su
	TASK NAME Date	11/15	11/16	11/17	11/18	11/19	11/20	11/21	11/22	11/23	11/24	11/25	11/26	11/27	11/28	11/29	11/30	12/1	12/2	12/3	12/4	12/5	12/6	12/7	12/8	12/9	12/10	12/11	12/12	12/13	12/14	12/15	12/16	12/17	12/18	12/19
	Switchgear SA																																			
	WL Breaker test at Siemens, Texas	X	X	X																																
	WL Breaker return shipment to EWR				X	X			X	X																										
	S.M. to install WL breaker in Switchgear SA										X																									
*	Siemens on site to complete testing/recertification of SA															X	X	X																		
	Siemens data put into final report form																		X	X																
	Siemens final report and recertification sent to S.M.																						X													
	Siemens final report and recertifications sent to VRH/PA																							X												
*	PA inspection of Switchgear SA																		X																	
	S.M. to address any PA punchlist items																			X			X													
*	PA final inspection of Switchgear SA																							X												
*	PA review of Siemens report and recertification																								X	X	X									
*N	Outage to install bus details at PSE&G stab																													X	X					
	Switchgear SA energization to main breaker																														X					

* Activities require Port Authority support.

C Complete

N Night Work

[redacted]

From: Winkler, Eric [mailto:E.Winkler@vrhcorp.com]
Sent: Wednesday, November 03, 2010 11:17 AM
To: Leonardo, Raul; Lochard, Daniel
Subject: Fw: Siemens ETU Testing

From: Russ Elliott <russ.elliott@smelectric.com>
To: Winkler, Eric
Cc: Don Sapanara <don.sapanara@smelectric.com>; Lochard, Daniel <dlochard@panynj.gov>
Sent: Wed Nov 03 11:13:13 2010
Subject: Siemens ETU Testing

Eric,

Keith Flowers, a Siemens factory representative, will be here on Thursday, November 4th, to test the four electronic trip units. The testing will begin at approximately 8:30am in the vicinity of our foremen's area in the unfinished space at the south end of Terminal B.

Thank you,

Russ Elliott
S.M. Electric Co., Inc.
at Newark Airport

Phone: 1-973-622-1470
Fax: 1-973-622-1471
Cell: 1-732-904-2354

Ret, Herman

From: Leonardo, Raul
Sent: Monday, November 01, 2010 7:37 AM
To: 'Winkler, Eric'
Cc: Lochard, Daniel; Ret, Herman
Subject: RE: WL Breaker Trip Units

Any date is acceptable – confirm date when finalized with Siemens.

From: Winkler, Eric [mailto:E.Winkler@vrhcorp.com]
Sent: Friday, October 29, 2010 10:10 AM
To: Leonardo, Raul
Subject: Fw: WL Breaker Trip Units

From: Don Sapanara <don.sapanara@smelectric.com>
To: Winkler, Eric
Cc: Russ Elliott <russ.elliott@smelectric.com>; Schornstein, Doris V <doris.schornstein@siemens.com>
Sent: Fri Oct 29 10:08:37 2010
Subject: RE: WL Breaker Trip Units

Eric,

Siemens is trying to have a representative from their factory on site on Thursday, 11/4/10 for the destructive inspection of the trip units. Please find out from PA what dates work for them.

Don Sapanara

From: Don Sapanara
Sent: Friday, October 29, 2010 8:26 AM
To: 'Winkler, Eric'
Cc: Russ Elliott; 'Schornstein, Doris V'
Subject: WL Breaker Trip Units

Eric,

We are crating the WL breakers for shipment to Siemens in Texas today. We will remove the old trip units and replace them with the new trip units before they are shipped. If PA would like to witness the removal of the trip units, Chip will be starting in the south end. If PA is not available, we will log the serial numbers of the units that were removed. The units will be stored in our office trailer until PA, Siemens, VRH and S.M. are available to perform the destructive inspection of the units.

Don Sapanara
Project Manager

S.M. Electric Co., Inc.
601 New Brunswick Ave.
Rahway, NJ 07065

Main Office:
Phone 732-388-3540
Fax 732-388-3052

ConocoPhillips Site:
Phone 908-523-5508
Fax 908-523-5143

[redacted]

Ret, Herman

From: Ret, Herman
Sent: Monday, September 27, 2010 7:25 PM
To: Lochard, Daniel
Cc: Ret, Herman
Subject: TB north sub NA
Attachments: IMG00142.jpg

Bus

From: Konen, Jeff [mailto:J.Konen@vrhcorp.com]
Sent: Monday, September 13, 2010 12:06 PM

To: Wallace, Michael
Subject: FW: Bus bar

Mike

Forwarding a response on Item numbers 7,9,11 and 15 to your 9/7/10 correspondence.

Jeffrey Konen
Vice President

VRH

320 Grand Ave.
Englewood, NJ 07631
Phone: 201-871-4422
Fax: 201-871-6727 Mobile: 201-259-4685
www.vrhcorp.com

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From: Don Sapanara [mailto:don.sapanara@smelectric.com]
Sent: Monday, September 13, 2010 8:17 AM
To: Konen, Jeff
Cc: Winkler, Eric; Al Fosbenner
Subject: RE: Bus bar

Jeff,

In response to Mike Wallace's questions below:

Item 7:
This response came from Harry Josten of Siemens.
"The industry including Siemens and our competitors have been using galvanized steel for bus braces, supports, etc. in contact with silver or tin plated bus for decades.

Carbon steel is used because it is inexpensive, strong, tough, and easy to fabricate. It must be coated to prevent corrosion. We prefer to use galvanized steel (zinc coated) because zinc provides superior corrosion protection to the steel than does paint. It also visually differentiates "live" steel parts from grounded steel parts used for the enclosure.

Stainless steel such as alloy 304 has also be used in place of carbon steel. This is usually done to reduce hysteresis loss where inductive heating of steel parts is a problem. We don't have a problem with inductive heating and pass all of our ANSI temperature tests with the carbon steel parts as supplied. Stainless steel also cost several times more per pound than carbon steel and is harder to fabricate. Tools designed to form low carbon steel parts may break or not form stainless properly due to the different material characteristics. Punches may also break trying to punch the harder stainless material.

Reinforced plastics are also much more expensive than low carbon steel and do not have nearly the mechanical strength. Fabrication is also more difficult and costly."

Item 9:
This response came from Allan Worthy of Siemens. The need for a quote for adding the DLOR test will be handled between S.M. and Siemens.
"I haven't requested that INBU do a DLRO test and to the best of my knowledge they aren't planning on doing one. They should be able to do it but you will need to get them to quote an adder for the additional work."

Item 11:

This response came from Allan Worthy of Siemens. The documents are attached.
"Attached is a copy of the Fort Worth breaker certified test report that shows what tests they run and how the information will be displayed. We planned on providing a copy of the test reports for the breakers that are returned for testing.
I'm also including a copy of the ANSI C37.50 standard that provides details on what breaker production tests are required."

Item 15 – Warranty:
The warranty for each lineup will take effect after Item 14 – Thermographic Testing has been completed. The thermographic testing will be performed after the equipment has been energized and is in service, so we are testing under actual load conditions.

If Port Authority or VRH have any further questions, please do not hesitate to contact us.

Thanks,

Don Sapanara

From: Konen, Jeff [mailto:J.Konen@vrhcorp.com]
Sent: Tuesday, September 07, 2010 1:53 PM
To: Al Fosbenner; Don Sapanara
Cc: Winkler, Eric
Subject: FW: Bus bar

Al/Don

See the following release from the Port on the Bus Bar recertification.
I agree that the additional comments are minor.

The ball is in your court, For our meeting this Friday at 10:00 am, please prepare a schedule to perform the work and testing associated with the recertification process and your schedule for the installation of the remaining switchgear and switchboards to include proposed dates for required shutdowns.
We will review this in detail on Friday.

We will then have a follow up meeting with the Port to present our schedule and confirm the requested shutdowns.

Jeffrey Konen
Vice President

VRH

320 Grand Ave.
Englewood, NJ 07631
Phone: 201-871-4422
Fax: 201-871-6727 Mobile: 201-259-4685
www.vrhcorp.com

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From: Wallace, Michael [mailto:mcwallac@panynj.gov]
Sent: Tuesday, September 07, 2010 1:25 PM
To: Konen, Jeff
Cc: Leonardo, Raul; Winkler, Eric; Lochard, Daniel
Subject: RE: Bus bar

Jeff,

As per our previous discussion, VRH is directed to proceed with the busbar re-certification process as outlined in your latest correspondence, dated 8-26-2010. This is an Approved as Noted with the following comments that need to be addressed and/or clarified but are deemed to be minor in nature:

Item 7

- We still do not have an understanding of the use of Galvanized components in contact with the bus bar – please clarify.

Item 9

- They should perform a DLOR test on all the bus joints. Preferable a minimum of 100 amps.

Item 11

- We need Siemens to indicate the name of the tests to be performed on returned circuit breakers for recertification. Are they same as the series of tests outlined in **ANSI C37.50-1989, Table 1-Test Sequence I**? Also, Siemens should make available to the Authority a copy of the test report for the tests performed on the returned breakers.

Item 15 – Warranty

- Warranty should begin when equipment is placed into service not before.

Please have your staff schedule this work with Dan Lochard and Raul Leonardo of my office. The PA will provide 100% coverage of all re-certification work as it is performed.

Michael C. Wallace, P.E. LEED AP
Senior Resident Engineer
Newark Liberty International Airport – CTA
(973) 622-0800 x 251(Building 125)
(973) 622-0172 FAX
(973) 390-5519 Cell
E-mail: mcwallac@panynj.gov

From: Konen, Jeff [mailto:J.Konen@vrhcorp.com]
Sent: Tuesday, September 07, 2010 10:01 AM
To: Wallace, Michael
Subject: Bus bar

Mike

Can we get a release on this today

Jeffrey Konen
ice President

VRH
320 Grand Ave.
Englewood, NJ 07631
Phone: 201-871-4422
Fax: 201-871-6727 Mobile: 201-259-4685
www.vrhcorp.com

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Energy & Automation
Ft. Worth, TX ModCenter

WL Low Voltage Power Circuit Breaker Certified Test Report

Catalog #:	XXXXX		
Breaker Type:	**UL1066 Drawout Breaker**		
CBID:	XXXXX	FS: **3**	Frame Rating: **4000**
Base Frame ID:	XXXXX	Interupt Cap.:	**150 kA**
Trip Unit ID:	XXXXX		**ETU745, LCD**
Test Station:	**MC17 : 1**	Rating Plug:	**4000**
Test Date:	**12/10/2007**		

Production Order: XXXXXXXXX
Sold To: XXXXX
XXXXX
XXXXX
Ship To: XXXXX
XXXXX

- ☑ Identity Test Performed - Incl. Programming, Labeling, Catalog Order Check
- ☑ Mechanical Accessory Tests Performed - Incl. Manual Mechanism Charging, Anti-Pumping, Trip/Close Solenoids, UVR, Motor, Aux. Switch Bell Alarms etc. (as per installed)
- ☑ Dielectric / Hi-Pot Tests Performed - Incl. @2.65kv: Open x A,B,C; Closed: AB, BC, AC, AG, BG, CG
  @1.80 kV: Accessories to Ground
  @1.20 kV: Motor connection to Ground

Primary Injection Test	**Settings** *ETU Initial settings / Test Current etc.; See Note 3*	**Results** A	B	C	*	**Acceptable Range** Min	Max	Pass
Long Time Pickup (A)	IR(xIn): 0.4 Inj A: 1600 tR(s): 5.5	**1744**				1600	1760	Pass
Long Time Delay (S)	Test Current: 4800	**19.9**				17.6	22	Pass
Short Time Pickup (A)	Isd(xIn): 1.3 Inj A: 5000 Tsd(s): 0.02		**5346**			5000	6000	Pass
Short Time Delay (S)	Tsd(s): 0.4 Test Current: 6250		**0.452**			0.43	0.48	Pass
Instantaneous Pickup (A)	Ii(xIn): 1.5 Inj A: 6000			**6472**		6000	7200	Pass
Ground Fault Pickup (A)	Trip: B Alarm: B Tg(s): 0.1					600	720	DNT
Neutral Delay (S)	tR(s): 2 IN(xIn): ON / IN = 0.5 x In Inj A: 2000 Test Current: 4000				**16.2**	14.4	18	Pass

UVR Drop-out Voltage: 48

Notes:
1. This WL Low Voltage Power Circuit Breaker was tested in accordance with ANSI/IEEE C37.50-1989
2. The above tests were carried out according to controlled Siemens-Ft. Worth test inspection plans and standards on calibrated equipment. This process and documentation is controlled and audited by UL in accordance with ISO9001:2000. Certification available upon request.
3. All delay test settings are the same as for the preceding pickup test unless otherwise noted.
4. All WL Circuit Breaker ETUs are set to factory default safety settings prior to shipment. [Lowest Pickups, Shortest Delays, N-protection off, Memory Off, GF=sumI]
5. The above product identification information [ETU, Catalog Number etc.] is accurate as of the test date. Any changes to this configuration are not covered by the above test results.
6. For product support, please contact your sales representative or customer service at: chrystelle.williams@siemens.com

Ryan J. DeLapp
Quality Manager, Siemens - Ft. Worth ModCenter

Item 15 – Warranty:
The warranty for each lineup will take effect after Item 14 – Thermographic Testing has been completed. The thermographic testing will be performed after the equipment has been energized and is in service, so we are testing under actual load conditions.

If Port Authority or VRH have any further questions, please do not hesitate to contact us.

Thanks,

Don Sapanara

From: Konen, Jeff [mailto:J.Konen@vrhcorp.com]
Sent: Tuesday, September 07, 2010 1:53 PM
To: Al Fosbenner; Don Sapanara
Cc: Winkler, Eric
Subject: FW: Bus bar

Al/Don

See the following release from the Port on the Bus Bar recertification.
I agree that the additional comments are minor.

The ball is in your court, For our meeting this Friday at 10:00 am, please prepare a schedule to perform the work and testing associated with the recertification process and your schedule for the installation of the remaining switchgear and switchboards to include proposed dates for required shutdowns.
We will review this in detail on Friday.

We will then have a follow up meeting with the Port to present our schedule and confirm the requested shutdowns.

Jeffrey Konen
Vice President

320 Grand Ave.
Englewood, NJ 07631
Phone: 201-871-4422
Fax: 201-871-6727 Mobile: 201-259-4685
www.vrhcorp.com

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From: Wallace, Michael [mailto:mcwallac@panynj.gov]
Sent: Tuesday, September 07, 2010 1:25 PM
To: Konen, Jeff
Cc: Leonardo, Raul; Winkler, Eric; Lochard, Daniel
Subject: RE: Bus bar

Jeff,

As per our previous discussion, VRH is directed to proceed with the busbar re-certification process as outlined in your latest correspondence, dated 8-26-2010. This is an Approved as Noted with the following comments that need to be addressed and/or clarified but are deemed to be minor in nature:

Item 7

- We still do not have an understanding of the use of Galvanized components in contact with the bus bar – please clarify.

Item 9

- They should perform a DLOR test on all the bus joints. Preferable a minimum of 100 amps.

Item 11

- We need Siemens to indicate the name of the tests to be performed on returned circuit breakers for recertification. Are they same as the series of tests outlined in **ANSI C37.50-1989, Table 1-Test Sequence I**? Also, Siemens should make available to the Authority a copy of the test report for the tests performed on the returned breakers.

Item 15 – Warranty

- Warranty should begin when equipment is placed into service not before.

Please have your staff schedule this work with Dan Lochard and Raul Leonardo of my office. The PA will provide 100% coverage of all re-certification work as it is performed.

Michael C. Wallace, P.E. LEED AP
Senior Resident Engineer
Newark Liberty International Airport - CTA
(973) 622-0800 x 251(Building 125)
(973) 622-0172 FAX
(973) 390-5519 Cell
E-mail: mcwallac@panynj.gov

From: Konen, Jeff [mailto:J.Konen@vrhcorp.com]
Sent: Tuesday, September 07, 2010 10:01 AM
To: Wallace, Michael
Subject: Bus bar

Mike

Can we get a release on this today

Jeffrey Konen
Vice President

320 Grand Ave.
Englewood, NJ 07631
Phone: 201-871-4422
Fax: 201-871-6727 Mobile: 201-259-4685
www.vrhcorp.com

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Ret, Herman

From: Lochard, Daniel
Sent: Friday, September 17, 2010 2:20 PM
To: 'Winkler, Eric'
Cc: Leonardo, Raul; Ret, Herman; Pierce, Ed; Bayne, Terrance
Subject: RE: Switchgear Recertification Work

Eric,

The 4,000A WL circuit breaker that connects ATS-NA has been chosen.

Thanks,

From: Winkler, Eric [mailto:E.Winkler@vrhcorp.com]
Sent: Friday, September 17, 2010 7:42 AM
To: Lochard, Daniel
Subject: Fw: Switchgear Recertification Work

From: Don Sapanara <don.sapanara@smelectric.com>
To: Winkler, Eric
Cc: Russ Elliott <russ.elliott@smelectric.com>
Sent: Fri Sep 17 07:41:09 2010
Subject: RE: Switchgear Recertification Work

Eric,

EMDS-N (Emergency Main Distribution Switchboard) contains four WL breakers; (2) 4,000A, (1) 600A and (1) 500A, none of which are a main breaker. The main breaker is in the Emergency Main Service Switchboard and is not a WL breaker.

Please identify a WL for EMDS-N to send out.

Don Sapanara

From: Winkler, Eric [mailto:E.Winkler@vrhcorp.com]
Sent: Thursday, September 16, 2010 2:28 PM
To: Russ Elliott; Don Sapanara
Subject: Fw: Switchgear Recertification Work

From: Lochard, Daniel <dlochard@panynj.gov>
To: Winkler, Eric
Cc: Leonardo, Raul <leonardr@panynj.gov>; Ret, Herman <hret@panynj.gov>; Johnson, Caesar <cjohnson@panynj.gov>
Sent: Thu Sep 16 14:21:32 2010
Subject: RE: Switchgear Recertification Work

Eric,

As per Item #2 below, the following six (6) circuits breakers have been selected.

WL Circuit Breakers (4)
The main circuit breaker for each switchgear (SA, SB, NB & EMDS-North).

Molded Case Circuit Breaker (2)
Switchboard B1 – Top 200A Spare in Section 2 of 5
Switchboard B2 – Top 200A Spare in Section 6 of 6

Daniel

From: Winkler, Eric [mailto:E.Winkler@vrhcorp.com]
Sent: Friday, September 10, 2010 1:36 PM
To: Lochard, Daniel; Leonardo, Raul
Subject: Fw: Switchgear Recertification Work

From: Don Sapanara <don.sapanara@smelectric.com>
To: Winkler, Eric
Cc: Russ Elliott <russ.elliott@smelectric.com>; Konen, Jeff; Al Fosbenner <afosbenner@matrixservice.com>
Sent: Fri Sep 10 12:46:01 2010
Subject: Switchgear Recertification Work

Eric,

1. We informed Port Authority in our bi-weekly meeting that we would like to begin the Recertification Process on Switchgear NB on Monday 9/13/10. We will begin with the alcohol wipe down.

2. Please have Port Authority identify the four WL breakers (one from each of the four switchgear line ups to be recertified) and the two molded case breakers (one from B1 and one from B2) that they would like to have Siemens factory test. The trip units from the four WL breakers will be used for the on site destructive test. Once the breakers have been chosen, we will make arrangements with Siemens for the testing.

3. We will forward a two week look ahead for our remaining work to you later today. We provided a spreadsheet and P3 schedule of our remaining work to Jeff this morning. Not all the activities shown on the P3 schedule are reflected in the two week look ahead, as some of the open activities in the schedule are items that were already started and are now riding the data date.

Don Sapanara
Project Manager

S.M. Electric Co., Inc.
601 New Brunswick Ave.
Rahway, NJ 07065

Main Office:
Phone 732-388-3540
Fax 732-388-3052

ConocoPhillips Site:

Phone 908-523-5508
Fax 908-523-5143

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Ret, Herman

From: Lochard, Daniel
Sent: Thursday, September 16, 2010 2:22 PM
To: 'Winkler, Eric'
Cc: Leonardo, Raul; Ret, Herman; Johnson, Caesar
Subject: RE: Switchgear Recertification Work

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WL Circuit Breakers (4)
The main circuit breaker for each switchgear (SA, SB, NB & EMDS-North).

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Switchboard B2 – Top 200A Spare in Section 6 of 6

Daniel

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Sent: Friday, September 10, 2010 1:36 PM
To: Lochard, Daniel; Leonardo, Raul
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From: Don Sapanara <don.sapanara@smelectric.com>
To: Winkler, Eric
Cc: Russ Elliott <russ.elliott@smelectric.com>; Konen, Jeff; Al Fosbenner <afosbenner@matrixservice.com>
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Main Office:
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Fax 732-388-3052

ConocoPhillips Site:
Phone 908-523-5508
Fax 908-523-5143

[redacted]

From: Konen, Jeff [mailto:J.Konen@vrhcorp.com]
Sent: Monday, September 13, 2010 12:06 PM
To: Wallace, Michael
Subject: FW: Bus bar

Mike

Forwarding a response on Item numbers 7,9,11 and 15 to your 9/7/10 correspondence.

Jeffrey Konen
Vice President

320 Grand Ave.
Englewood, NJ 07631
Phone: 201-871-4422
Fax: 201-871-6727 Mobile: 201-259-4685
www.vrhcorp.com

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From: Don Sapanara [mailto:don.sapanara@smelectric.com]
Sent: Monday, September 13, 2010 8:17 AM
To: Konen, Jeff
Cc: Winkler, Eric; Al Fosbenner
Subject: RE: Bus bar

Jeff,

In response to Mike Wallace's questions below:

Item 7:
This response came from Harry Josten of Siemens.
"The industry including Siemens and our competitors have been using galvanized steel for bus braces, supports, etc. in contact with silver or tin plated bus for decades.

Carbon steel is used because it is inexpensive, strong, tough, and easy to fabricate. It must be coated to prevent corrosion. We prefer to use galvanized steel (zinc coated) because zinc provides superior corrosion protection to the steel than does paint. It also visually differentiates "live" steel parts from grounded steel parts used for the enclosure.

Stainless steel such as alloy 304 has also be used in place of carbon steel. This is usually done to reduce hysteresis loss where inductive heating of steel parts is a problem. We don't have a problem with inductive heating and pass all of our ANSI temperature tests with the carbon steel parts as supplied. Stainless steel also cost several times more per pound than carbon steel and is harder to fabricate. Tools designed to form low carbon steel parts may break or not form stainless properly due to the different material characteristics. Punches may also break trying to punch the harder stainless material.

Reinforced plastics are also much more expensive than low carbon steel and do not have nearly the mechanical strength. Fabrication is also more difficult and costly."

Item 9:
This response came from Allan Worthy of Siemens. The need for a quote for adding the DLOR test will be handled between S.M. and Siemens.
"I haven't requested that INBU do a DLRO test and to the best of my knowledge they aren't planning on doing one. They should be able to do it but you will need to get them to quote an adder for the additional work."

Item 11:
This response came from Allan Worthy of Siemens. The documents are attached.
"Attached is a copy of the Fort Worth breaker certified test report that shows what tests they run and how the information will be displayed. We planned on providing a copy of the test reports for the breakers that are returned for testing.
I'm also including a copy of the ANSI C37.50 standard that provides details on what breaker production tests are required."

Item 15 – Warranty:
The warranty for each lineup will take effect after Item 14 – Thermographic Testing has been completed. The thermographic testing will be performed after the equipment has been energized and is in service, so we are testing under actual load conditions.

If Port Authority or VRH have any further questions, please do not hesitate to contact us.

Thanks,

Don Sapanara

From: Konen, Jeff [mailto:J.Konen@vrhcorp.com]
Sent: Tuesday, September 07, 2010 1:53 PM
To: Al Fosbenner; Don Sapanara
Cc: Winkler, Eric
Subject: FW: Bus bar

Al/Don

See the following release from the Port on the Bus Bar recertification.
I agree that the additional comments are minor.

The ball is in your court, For our meeting this Friday at 10:00 am, please prepare a schedule to perform the work and testing associated with the recertification process and your schedule for the installation of the remaining switchgear and switchboards to include proposed dates for required shutdowns.
We will review this in detail on Friday.

We will then have a follow up meeting with the Port to present our schedule and confirm the requested shutdowns.

Jeffrey Konen
Vice President

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Phone: 201-871-4422
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From: Wallace, Michael [mailto:mcwallac@panynj.gov]
Sent: Tuesday, September 07, 2010 1:25 PM
To: Konen, Jeff
Cc: Leonardo, Raul; Winkler, Eric; Lochard, Daniel
Subject: RE: Bus bar

Jeff,

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Item 9

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Item 11

- We need Siemens to indicate the name of the tests to be performed on returned circuit breakers for recertification. Are they same as the series of tests outlined in **ANSI C37.50-1989, Table 1-Test Sequence I**? Also, Siemens should make available to the Authority a copy of the test report for the tests performed on the returned breakers.

Item 15 – Warranty

- Warranty should begin when equipment is placed into service not before.

Please have your staff schedule this work with Dan Lochard and Raul Leonardo of my office. The PA will provide 100% coverage of all re-certification work as it is performed.

Michael C. Wallace, P.E. LEED AP
Senior Resident Engineer
Newark Liberty International Airport - CTA

(973) 622-0800 x 251(Building 125)
(973) 622-0172 FAX
(973) 390-5519 Cell
E-mail: mcwallac@panynj.gov

From: Konen, Jeff [mailto:J.Konen@vrhcorp.com]
Sent: Tuesday, September 07, 2010 10:01 AM
To: Wallace, Michael
Subject: Bus bar

Mike

Can we get a release on this today

Jeffrey Konen
Vice President

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Englewood, NJ 07631
Phone: 201-871-4422
Fax: 201-871-6727 Mobile: 201-259-4685
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6. Production Tests

6.1 General

All applicable production tests shall be performed by the manufacturer on each circuit breaker at the factory after final assembly, except that calibration may be performed on the individual direct-acting trip-device subassembly prior to final assembly on the circuit breaker. When the latter is carried out, the effect of the operating time of the circuit breaker shall be recognized, and the complete assembly shall be tested to ensure that the device will mechanically trip the circuit breaker.

Production tests shall include the following:

1) Calibration
2) Control and secondary wiring and device check test
3) Dielectric withstand test
4) No-load operation test

6.2 Calibration

6.2.1 General

Calibration shall include the procedures given in 6.2.2 and 6.2.3, where applicable.

6.2.2 Direct-Acting Trip Devices

Direct-acting trip devices shall be subjected to the following calibration, where applicable, for conformance to published time-current characteristic curves. Sinusoidal-wave-shape single-phase 60-Hz current at a convenient voltage shall be used. The calibration may be performed in any order deemed appropriate by the manufacturer:

1) Long-time-delay-element pickup
2) Short-time-delay-element pickup
3) Instantaneous-element pickup
4) Time delay of long-time-delay element
5) Time delay of short-time-delay element
6) Ground-element pickup
7) Time delay of the ground element

6.2.3 Undervoltage Trip Devices

Each undervoltage trip device shall be calibrated to ensure that it trips the circuit breaker when the voltage drops to a value that falls within the range of 30% to 60% of rated voltage. A test shall be performed to determine that with 85% of rated voltage applied the undervoltage trip device will permit the circuit breaker to be closed.

For an undervoltage trip device equipped with time delay, the time delay shall also be checked to see that it falls within the manufacturer's specified limits and that the device resets if voltage recovers in the delay period.

6.3 Control, Secondary Wiring, and Devices Check Test

Control, secondary wiring, and devices shall be checked to make sure that all connections have been made correctly.

Devices and relays, if used, shall be checked by actual operation where feasible. Those circuits for which operation is not feasible shall be checked for continuity.

6.4 AC Dielectric Withstand Test

The test shall be conducted in accordance with the requirements given in 3.5. The duration of the test may be reduced to 1 second if a voltage 20% greater than that specified in 3.5.2 is used. It is recognized that other suitable test terminal combinations than those stated in 3.5.3 may be used. These shall be permitted to be used if all of the conditions represented by 3.5.3 have been tested.

6.5 No-Load Operation Test

6.5.1 Power-Operated Circuit Breakers

Power-operated circuit breakers shall be given the following no-load operation tests:

1) Five closing and five opening operations atminimum control voltage.
2) Five closing, five opening, and five trip-free operations at maximum control voltage.
3) Two operations to check antipumping, which shall be performed in the following manner:

a) Apply uninterrupted control power to the closing circuit of the open circuit breaker as the closing signal.
b) Trip the circuit breaker. The circuit breaker shall remain open until closing circuit power has been interrupted and then restored.

If other devices, electrical or mechanical, are applicable, they shall be checked for proper functioning. Such devices shall include key interlocks, mechanical interlocks, electrical interlocks, padlocking, racking mechanisms, etc.

6.5.2 Manually Operated Circuit Breakers

Manually operated circuit breakers shall be given the following no-load operation tests:

1) Five closing and five opening operations.

2) When shunt trip is used, a minimum of five openings using the shunt trip at the minimum control voltage specified for the coil.

3) Five trip-free operations.

If other devices, electrical or mechanical, are applicable, they shall be checked for proper functioning. Such devices shall include key interlocks, padlocking, racking mechanisms, etc.

6.6 Open-Fuse Trip Device

The trip device shall be tested mechanically or by application of proper voltage to the device to establish positive tripping of the fused circuit breaker.

Energy & Automation
Ft. Worth, TX ModCenter

WL Low Voltage Power Circuit Breaker Certified Test Report

Catalog #:	XXXXX		
Breaker Type:	**UL1066 Drawout Breaker**		
CBID:	XXXXX	FS: **3**	Frame Rating: **4000**
Base Frame ID:	XXXXX	Interupt Cap.:	**150 kA**
Trip Unit ID:	XXXXX	**ETU745, LCD**	
Test Station:	**MC17 : 1**	Rating Plug:	**4000**
Test Date:	**12/10/2007**		

Production Order: XXXXXXXXX
Sold To: XXXXX
XXXXX
XXXXX
Ship To: XXXXX
XXXXX

☑ Identity Test Performed - Incl. Programming, Labeling, Catalog Order Check

☑ Mechanical Accessory Tests Performed - Incl. Manual Mechanism Charging, Anti-Pumping, Trip/Close Solenoids, UVR, Motor, Aux. Switch Bell Alarms etc. (as per installed)

☑ Dielectric / Hi-Pot Tests Performed - Incl. @2.65kv: Open x A,B,C; Closed: AB, BC, AC, AG, BG, CG
@1.80 kV: Accessories to Ground
@1.20 kV: Motor connection to Ground

Primary Injection Test	**Settings** *ETU Initial settings / Test Current etc.; See Note 3*	**Results** A	B	C	*	**Acceptable Range** Min	Max	Pass
Long Time Pickup (A)	IR(xIn): 0.4 Inj A: 1600 tR(s): 5.5	**1744**				1600	1760	Pass
Long Time Delay (S)	Test Current: 4800	**19.9**				17.6	22	Pass
Short Time Pickup (A)	Isd(xIn): 1.3 Inj A: 5000 Tsd(s): 0.02		**5346**			5000	6000	Pass
Short Time Delay (S)	Tsd(s): 0.4 Test Current: 6250		**0.452**			0.43	0.48	Pass
Instantaneous Pickup (A)	Ii(xIn): 1.5 Inj A: 6000			**6472**		6000	7200	Pass
Ground Fault Pickup (A)	Trip: B Alarm: B Tg(s): 0.1					600	720	DNT
Neutral Delay (S)	tR(s): 2 IN(xIn): ON / IN = 0.5 x In Inj A: 2000 Test Current: 4000				**16.2**	14.4	18	Pass

UVR Drop-out Voltage: 48

Notes:
1. This WL Low Voltage Power Circuit Breaker was tested in accordance with ANSI/IEEE C37.50-1989
2. The above tests were carried out according to controlled Siemens-Ft. Worth test inspection plans and standards on calibrated equipment. This process and documentation is controlled and audited by UL in accordance with ISO9001:2000. Certification available upon request.
3. All delay test settings are the same as for the preceding pickup test unless otherwise noted.
4. All WL Circuit Breaker ETUs are set to factory default safety settings prior to shipment. [Lowest Pickups, Shortest Delays, N-protection off, Memory Off, GF=sumI]
5. The above product identification information [ETU, Catalog Number etc.] is accurate as of the test date. Any changes to this configuration are not covered by the above test results.
6. For product support, please contact your sales representative or customer service at: chrystelle.williams@siemens.com

Ryan J. DeLapp
Quality Manager, Siemens - Ft. Worth ModCenter

Energy & Automation
Ft. Worth, TX ModCenter

WL Low Voltage Power Circuit Breaker Certified Test Report

Catalog #:	XXXXX		
Breaker Type:	**UL1066 Drawout Breaker**		
CBID:	XXXXX	FS: **3**	Frame Rating: **4000**
Base Frame ID:	XXXXX	Interupt Cap.:	**150 kA**
Trip Unit ID:	XXXXX		**ETU745, LCD**
Test Station:	**MC17 : 1**	Rating Plug:	**4000**
Test Date:	**12/10/2007**		

Production Order:	XXXXXXXXX
Sold To:	XXXXX
	XXXXX
	XXXXX
Ship To:	XXXXX
	XXXXX

☑ Identity Test Performed - Incl. Programming, Labeling, Catalog Order Check

☑ Mechanical Accessory Tests Performed - Incl. Manual Mechanism Charging, Anti-Pumping, Trip/Close Solenoids, UVR, Motor, Aux. Switch Bell Alarms etc. (as per installed)

☑ Dielectric / Hi-Pot Tests Performed - Incl. @2.65kv: Open x A,B,C; Closed: AB, BC, AC, AG, BG, CG
@1.80 kV: Accessories to Ground
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Primary Injection Test	**Settings** *ETU Initial settings / Test Current etc.; See Note 3*	**Results** A	B	C	*	**Acceptable Range** Min	Max	Pass
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Short Time Delay (S)	Tsd(s): 0.4 Test Current: 6250		**0.452**			0.43	0.48	Pass
Instantaneous Pickup (A)	Ii(xIn): 1.5 Inj A: 6000			**6472**		6000	7200	Pass
Ground Fault Pickup (A)	Trip: B Alarm: B Tg(s): 0.1					600	720	DNT
Neutral Delay (S)	tR(s): 2 IN(xIn): ON / IN = 0.5 x In Inj A: 2000 Test Current: 4000				**16.2**	14.4	18	Pass

UVR Drop-out Voltage: 48

Notes:
1. This WL Low Voltage Power Circuit Breaker was tested in accordance with ANSI/IEEE C37.50-1989
2. The above tests were carried out according to controlled Siemens-Ft. Worth test inspection plans and standards on calibrated equipment. This process and documentation is controlled and audited by UL in accordance with ISO9001:2000. Certification available upon request.
3. All delay test settings are the same as for the preceding pickup test unless otherwise noted.
4. All WL Circuit Breaker ETUs are set to factory default safety settings prior to shipment. [Lowest Pickups, Shortest Delays, N-protection off, Memory Off, GF=sumI]
5. The above product identification information [ETU, Catalog Number etc.] is accurate as of the test date. Any changes to this configuration are not covered by the above test results.
6. For product support, please contact your sales representative or customer service at: chrystelle.williams@siemens.com

Ryan J. DeLapp
Quality Manager, Siemens - Ft. Worth ModCenter

Ret, Herman

From: Leonardo, Raul
Sent: Monday, September 13, 2010 7:31 AM
To: Wallace, Michael; Ret, Herman; LaMarca, Thomas; Leggett, Gregg; Berty, Sherry; Johnson, Caesar
Subject: FW: EWR 264.003 Switchgear Recertification Work
Attachments: 2034 Two Week Look 09.13.10 (SM Electric).pdf

FYI...

From: Self, Kristopher [mailto:K.Self@vrhcorp.com]
Sent: Friday, September 10, 2010 3:31 PM
To: Leonardo, Raul
Cc: Lochard, Daniel
Subject: EWR 264.003 Switchgear Recertification Work

Raul & Daniel,

Attached is the Two-Week Look Ahead for SM's switchgear recertification work.

Kristopher Self
Office Engineer

1 Terminal B Short Term Parking Lot
Construction Trailer
Newark Liberty International Airport
Newark, NJ 07114
Phone: 973-824-2520
Fax: 973-824-2561 Mobile: 201-820-8539
www.vrhcorp.com

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EWR 264.003 S.M. Electric : 2 WEEK SCHEDULE

PERIOD: September 13, 2010 TO September 26, 2010

		M	T	W	Th	F	Sa	Su	M	T	W	Th	F	Sa	S
ID	**TASK NAME** Date	9/13	9/14	9/15	9/16	9/17	9/18	9/19	9/20	9/21	9/22	9/23	9/24	9/25	9/26
	Switchgear NB														
	Install Bus Connections	x	x	x	x	x									
*	Recertification Process 1 (Clean)	x	x												
*	Recertification Process 2 (Re-Plate)			x	x	x									
	Issue P.O. to Siemens for Recertification Inspections								x	x	x	x	x		
	Install PSE&G Metering Conduits & Wire (C/O Work)								x	x	x	x	x		
	North Generator														
	Bolt Down Generator	x	x												
	4" Conduit to EMDS-N			x	x	x									
*	Recertification Process 1 (Clean)								x	x					
*	Recertification Process 2 (Re-Plate)										x	x	x		
	Continue Bus Duct Runs								x	x	x	x	x		
	Switchgear SA														
	Install Conduit and JB for DPSA, DPSB			x	x	x			x	x	x	x	x		
	Miscellaneous														
*	Need Port Authority to identify (4) WL Breakers and	x													
	(2) Molded Case Breakers to be tested by Siemens														

* Activities require Port Authority support..

EWR 264.003 S.M. Electric : 2 WEEK SCHEDULE

PERIOD: September 13, 2010 TO September 26, 2010

		M	T	W	Th	F	Sa	Su	M	T	W	Th	F	Sa	S
ID	TASK NAME Date	9/13	9/14	9/15	9/16	9/17	9/18	9/19	9/20	9/21	9/22	9/23	9/24	9/25	9/26
	Switchgear NB														
	Install Bus Connections	x	x	x	x	x									
*	Recertification Process 1 (Clean)	x	x												
*	Recertification Process 2 (Re-Plate)			x	x	x									
	Issue P.O. to Siemens for Recertification Inspections								x	x	x	x	x		
	Install PSE&G Metering Conduits & Wire (C/O Work)								x	x	x	x	x		
	North Generator														
	Bolt Down Generator	x	x												
	4" Conduit to EMDS-N			x	x	x									
*	Recertification Process 1 (Clean)								x	x					
*	Recertification Process 2 (Re-Plate)										x	x	x		
	Continue Bus Duct Runs								x	x	x	x	x		
	Switchgear SA														
	Install Conduit and JB for DPSA, DPSB			x	x	x			x	x	x	x	x		
	Miscellaneous														
*	Need Port Authority to identify (4) WL Breakers and	x													
	(2) Molded Case Breakers to be tested by Siemens														

* Activities require Port Authority support..

[redacted]

VRH
CONSTRUCTION CORP.

August 26, 2010

Mr. Michael C. Wallace, P.E.
The Port Authority of NY & NJ
Newark Liberty International Airport
Building 125, Central Terminal Area
Newark, NJ 07114

Re: EWR264.003
Terminal B Modernization Program
Lower Level Expansion & B1 Vertical Circulation
VRH 2034

Dear Mr. Wallace,

Enclosed please find a document that outlines the steps for the Inspection and Recertification Procedure for Switchgear SA, SB, NB and EMDS – North. The document is inclusive of the work procedures and test parameters as per our agreement.

In addition please find a document extending the warranty for a period of four (4) years.

We look forward to your authorization to proceed.

Very truly yours,

Jeffrey P. Konen
Vice President

JPK:vmd
Enclosure

InspRecert

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AUG 31 2010
EWR CTA
RESIDENT ENGINEER

320 Grand Avenue
Englewood, NJ
07631-4355

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201.871.4422
Fax/Executive
201.871.6727
Fax/Accounting
201.871.1927
Fax/Estimating
201.871.0705

SIEMENS

To: SM /Matrix August 26, 2010

From: Barry Powell, PLM Director – Siemens BT Low Voltage Systems

Reference: Newark Airport
Type WL Low Voltage Switchgear
Siemens S.O. # 3001295712

Per our recent phone conversation, the memo below summarizes the inspection and recertification procedure for the Siemens low-voltage distribution products with discolored busway from the referenced job:

Inspection and Recertification Procedure for Switchgear SA, SB, NB and EMDS-North

Cleaning and Re-Plating of Exposed Bus:

1. The exposed areas of the bus will be wiped down with isopropyl alcohol to remove any possible remaining contaminants.

2. Exposed electrical field connection points (such as lug pads and busway collector bars) will have their joint surfaces refinished using an appropriate replating method. Siemens's recommendation is that this work be completed using a brushed-on electroplate, following the manufacturer's instructions. This type of plating repair is commonly used for field refinishing of electrical joints.

3. S.M. Electric will submit a product information sheet for Cool-Amp Silver Coating. The product will be installed according to the manufacturer's instructions. Siemens will authorize S.M. Electric to apply the product to the electrical field connection points and will certify the application as part of their inspection process.

Switchgear Breaker Compartment Inspection and Recertification:

4. Visually inspect the following WL breaker compartment items and confirm that there is no corrosion. If corrosion is found, refurbish or replace components as necessary:

   4.1. Stationary primary disconnects: Look for white/gray discoloration of the silver plated contact surfaces. Sulfur dioxide (blue, purple, or sometimes even a "rainbow" type discoloration) is acceptable.
   4.2. Shutter assembly (if applicable): Look for evidence of red rust on any of the steel components. The shutter should operate freely.
   4.3. Mechanism operated contacts (if applicable): Look for white/gray discoloration of the spring and clear zinc plated components.
   4.4. Any dust, dirt, water spots, or any other contaminants should be cleaned out of the circuit breaker compartment.

5. In each vertical section, visually inspect at least four bus bar bolted joint contact surfaces and ensure silver plating is still intact. The four joints should bbe on the busbar that shows the most corrosion. Also ensure that inspected joints include all areas of the section (cable compartment and bus compartment). If silver plating is missing or insufficient, re-plate as required.

6. Visually inspect and confirm that silver plating is still intact where field installation bolted connections will be made (lug plates, busway joints, etc). If silver plating is missing or insufficient, re-plate as required.

7. Visually inspect the galvanized busbar supports. In each vertical section visually inspect at least one bolted contact surface and ensure silver plating is still intact. If silver plating is missing or insufficient, re-plate as required.

8. Any sections of busbar that were burnished or sanded in an attempt to remove the discoloration will be replaced.
9. Run the following tests on the switchgear lineup. Testing procedure and evaluation per ANSI C37.51.

   9.1. Dielectric withstand voltage test
   9.2. Mechanical operation test
   9.3. Electrical operation and wiring test

WL Breaker Inspection and Recertification:

10. Visually inspect the following items on each WL circuit breaker, and confirm that there is no corrosion. If corrosion is found, refurbish or replace components as necessary:

    10.1 .Secondary disconnects: Look for white/gray discoloration of the silver-plated contact fingers. Sulfur dioxide (blue, purple, or sometimes even a "rainbow" type discoloration) is acceptable.
    10.2. Finger cluster: - finger tension springs: Look for evidence of red rust.
    10.3. Finger cluster - contact fingers: After removing the contact lubricant, look for white/gray discoloration of the contact surfaces. Sulfur dioxide (blue, purple, or sometimes even a "rainbow" type discoloration) is acceptable. After inspection, re-lubricate with WLBGREASE.
    10.4. Main contacts: After removing the arc chutes, inspect the main contacts for water spots, or for white/gray discoloration of the silver-plated contact fingers. Sulfur dioxide (blue, purple, or sometimes even a "rainbow" type discoloration) is acceptable. Main contacts should be left dry.
    10.5. Breaker mechanism accessory tray: Remove the front cover. There should be no water spots within the black plastic accessory tray. If there are shunt trips and close coils installed, they should be removed from the pocket to inspect for water spots or corrosion.
    10.6. Breaker drive mechanism: With the front cover still removed, look for evidence of red rust on the steel components of the drive mechanism.
    10.7. Breaker trip unit: Look for evidence of corrosion.

11. Return one WL circuit breaker from each switchgear lineup to the Fort Worth Mod Center for retesting and recertification. Based on the availability of the necessary test equipment, Siemens may choose to have the breakers tested and recertified locally. ANSI C37.50 production testing procedure will be used. The WL circuit breaker to be returned from each of the switchgear lineups will be chosen by a Port Authority Resident Engineer.

SIEMENS

12. The electronic trip unit from each of the WL circuit breakers previously chosen by a Port Authority Resident Engineer will be destructively inspected on site at Newark Airport, in the witness of a Port Authority Resident Engineer.

Molded Case Breaker Inspection and Recertification:

13. Return one molded case circuit breaker from Switchboard B1 and one molded case circuit breaker for Switchboard B2 to the Fort Worth Mod Center for retesting and recertification. Based on the availability of the necessary test equipment, Siemens may choose to have the breakers tested and recertified locally. The molded case circuit breaker to be returned from each of the switchboard lineups will be chosen by a Port Authority Resident Engineer.

Thermographic Testing:

14. Thermal scan energized (loaded) bus to ensure no overheating is present at startup, after six months of operation and at the end of each year anniversary of the extended warranty. Testing will be performed by a certified, third party testing company.

Warranty:

15. Upon successful completion of the Siemens Service inspection and testing detailed above, Siemens will re-certify the equipment and provide an extended warranty for a four (4) year period. This will be an extension of the original factory warranty and include the same scope as the original factory warranty. The warranty obligations of SM Electric Company, Inc. as described herein shall be limited to a pass through of the extended warranty provided by Siemens Service. It will be the responsibility of Port Authority to establish a periodic maintenance program, as detailed in the Siemens Instruction and Installation Guide for Type WL Low Voltage Metal-Enclosed Switchgear.

Siemens views SM/Matrix, VRH and the New York Port Authority as valued customers. Further, we believe the execution of this recertification procedure and offer of extended warranty should make the Port Authority comfortable with accepting this electrical gear.

Best Regards,

Barry E Powell

Barry Powell
Siemens Industry, Inc.
Director – Product Lifecycle Management
Building Technologies Division – Low Voltage Systems

SIEMENS

Siemens Industry, Inc Standard Terms of Warranty Effective June 1, 2010

Limited Warranty. (a.) Limited Product Warranty Statements. For each Product purchased from Siemens or an authorized reseller, Siemens makes the following limited warranties: (i) the Product is free from defects in material and workmanship, (ii) the Product materially conforms to Siemens' specifications that are attached to, or expressly incorporated by reference into, these terms, and (iii) at the time of delivery, Siemens has title to the Product free and clear of liens and encumbrances (collectively, the "Limited Warranties"). Warranties with respect to software which may be furnished by Seller as part of the Product, if any, are expressly set forth elsewhere in these terms. The Limited Warranties set forth herein do not apply to any software furnished by Siemens. If software is furnished by Siemens, then the attached Software License/Warranty Addendum shall apply.

(b.) Conditions to the Limited Warranties. The Limited Warranties are conditioned on (i) Buyer storing, installing, operating and maintaining the Product in accordance with Siemens' instructions, (ii) no repairs, modifications or alterations being made to the Product other than by Siemens or its authorized representatives, (iii) using the Product within any conditions or in compliance with any parameters set forth in specifications that are attached to, or expressly incorporated by reference into, these terms, (iv) Buyer discontinuing use of the Product after it has, or should have had, knowledge of any defect in the Product, (v) Buyer providing prompt written notice of any warranty claims within the warranty period described below, (vi) at Siemens' discretion, Buyer either removing and shipping the Product or non-conforming part thereof to Siemens, at Buyer's expense, or Buyer granting Siemens access to the Products at all reasonable times and locations to assess the warranty claims, and (vii) Buyer not being in default of any payment obligation to Siemens under these terms.

(c.) Exclusions from Limited Warranty Coverage. The Limited Warranties specifically exclude any equipment comprising part of the Product that is not manufactured by Siemens or not bearing its nameplate. To the extent permitted, Siemens herby assigns any warranties made to Siemens for such equipment. Siemens shall have no liability to Buyer under any legal theory for such equipment or any related assignment of warranties. Additionally, any Product that is described as being experimental, developmental, prototype, or pilot is specifically excluded from the Limited Warranties and is provided to Buyer "as is" with no warranties of any kind. Also excluded from the Limited Warranties are normal wear and tear items including any expendable items that comprise part of the Product, such as fuses and light bulbs and lamps.

(d.) *Limited Warranty Period. Buyer shall have 48 months from date of recertification to provide Siemens* with prompt, written notice of any claims of breach of the Limited Warranties. Continued use or possession of the Product after expiration of the warranty period shall be conclusive evidence that the Limited Warranties have been fulfilled to the full satisfaction of Buyer, unless Buyer has previously provided Siemens with notice of a breach of the Limited Warranties.

(e.) Remedies for Breach of Limited Warranty. Buyer's sole and exclusive remedies for any breach of the Limited Warranties are limited to Siemens' choice of repair or replacement of the Product, or non-conforming parts thereof, or refund of all or part of the purchase price. The warranty on repaired or replaced parts of the Product shall be limited to the remainder of the original warranty period. Unless otherwise agreed to in writing by Siemens, (i) Buyer shall be responsible for any labor required to gain access to the Product so that Siemens can assess the available remedies and (ii) Buyer shall be responsible for all costs of installation of repaired or replaced Products. All exchanged Products replaced under this Limited Warranty will become the property of Siemens.

(f.) Transferability. The Limited Warranties shall be transferable during the warranty period to the initial end-user of the Product.

THE LIMITED WARRANTIES SET FORTH IN THIS SECTION ARE SIEMENS' SOLE AND EXCLUSIVE WARRANTIES AND ARE SUBJECT TO THE LIMITS OF LIABILITY SET FORTH IN SECTION 8 BELOW. SIEMENS MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, COURSE OF DEALING AND USAGE OF TRADE.

8. LIMITATION OF LIABILITY. NEITHER SIEMENS, NOR ITS SUPPLIERS, SHALL BE LIABLE, WHETHER IN CONTRACT, WARRANTY, FAILURE OF A REMEDY TO ACHIEVE ITS INTENDED OR ESSENTIAL PURPOSES, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY, INDEMNITY OR ANY OTHER LEGAL THEORY, FOR LOSS OF USE, REVENUE, SAVINGS OR PROFIT, OR FOR COSTS OF CAPITAL OR OF SUBSTITUTE USE OR PERFORMANCE, OR FOR INDIRECT, SPECIAL, LIQUIDATED, PUNITIVE, EXEMPLARY, COLLATERAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, OR FOR ANY OTHER LOSS OR COST OF A SIMILAR TYPE, OR FOR CLAIMS BY BUYER FOR DAMAGES OF BUYER'S CUSTOMERS. SIEMENS' MAXIMUM LIABILITY UNDER THIS CONTRACT SHALL BE THE ACTUAL PURCHASE PRICE RECEIVED BY SIEMENS FOR THE PRODUCT AT ISSUE OR ONE MILLION DOLLARS, WHICHEVER IS LESS. BUYER AGREES THAT THE EXCLUSIONS AND LIMITATIONS SET FORTH IN THIS ARTICLE ARE SEPARATE AND INDEPENDENT FROM ANY REMEDIES WHICH BUYER MAY HAVE HEREUNDER AND SHALL BE GIVEN FULL FORCE AND EFFECT WHETHER OR NOT ANY OR ALL SUCH REMEDIES SHALL BE DEEMED TO HAVE FAILED OF THEIR ESSENTIAL PURPOSE. THESE LIMITATIONS OF LIABILITY ARE EFFECTIVE EVEN IF SIEMENS HAS BEEN ADVISED BY THE BUYER OF THE POSSIBILITY OF SUCH DAMAGES.

VRH
CONSTRUCTION CORP.

August 26, 2010

Mr. Michael C. Wallace, P.E.
The Port Authority of NY & NJ
Newark Liberty International Airport
Building 125, Central Terminal Area
Newark, NJ 07114

Re: EWR264.003
Terminal B Modernization Program
Lower Level Expansion & B1 Vertical Circulation
VRH 2034

Dear Mr. Wallace,

Enclosed please find a document that outlines the steps for the Inspection and Recertification Procedure for Switchgear SA, SB, NB and EMDS – North. The document is inclusive of the work procedures and test parameters as per our agreement.

In addition please find a document extending the warranty for a period of four (4) years.

We look forward to your authorization to proceed.

Very truly yours,

Jeffrey P. Konen
Vice President

JPK:vmd
Enclosure

InspRecert

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AUG 31 2010
EWR CTA
RESIDENT ENGINEER

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SIEMENS

To: SM /Matrix August 26, 2010

From: Barry Powell, PLM Director – Siemens BT Low Voltage Systems

Reference: Newark Airport
Type WL Low Voltage Switchgear
Siemens S.O. # 3001295712

Per our recent phone conversation, the memo below summarizes the inspection and recertification procedure for the Siemens low-voltage distribution products with discolored busway from the referenced job:

Inspection and Recertification Procedure for Switchgear SA, SB, NB and EMDS-North

Cleaning and Re-Plating of Exposed Bus:

1. The exposed areas of the bus will be wiped down with isopropyl alcohol to remove any possible remaining contaminants.

2. Exposed electrical field connection points (such as lug pads and busway collector bars) will have their joint surfaces refinished using an appropriate replating method. Siemens's recommendation is that this work be completed using a brushed-on electroplate, following the manufacturer's instructions. This type of plating repair is commonly used for field refinishing of electrical joints.

3. S.M. Electric will submit a product information sheet for Cool-Amp Silver Coating. The product will be installed according to the manufacturer's instructions. Siemens will authorize S.M. Electric to apply the product to the electrical field connection points and will certify the application as part of their inspection process.

Switchgear Breaker Compartment Inspection and Recertification:

4. Visually inspect the following WL breaker compartment items and confirm that there is no corrosion. If corrosion is found, refurbish or replace components as necessary:

   4.1. Stationary primary disconnects: Look for white/gray discoloration of the silver plated contact surfaces. Sulfur dioxide (blue, purple, or sometimes even a "rainbow" type discoloration) is acceptable.
   4.2. Shutter assembly (if applicable): Look for evidence of red rust on any of the steel components. The shutter should operate freely.
   4.3. Mechanism operated contacts (if applicable): Look for white/gray discoloration of the spring and clear zinc plated components.
   4.4. Any dust, dirt, water spots, or any other contaminants should be cleaned out of the circuit breaker compartment.

5. In each vertical section, visually inspect at least four bus bar bolted joint contact surfaces and ensure silver plating is still intact. The four joints should bbe on the busbar that shows the most corrosion. Also ensure that inspected joints include all areas of the section (cable compartment and bus compartment). If silver plating is missing or insufficient, re-plate as required.

6. Visually inspect and confirm that silver plating is still intact where field installation bolted connections will be made (lug plates, busway joints, etc). If silver plating is missing or insufficient, re-plate as required.

7. Visually inspect the galvanized busbar supports. In each vertical section visually inspect at least one bolted contact surface and ensure silver plating is still intact. If silver plating is missing or insufficient, re-plate as required.

8. Any sections of busbar that were burnished or sanded in an attempt to remove the discoloration will be replaced.
9. Run the following tests on the switchgear lineup. Testing procedure and evaluation per ANSI C37.51.

   9.1. Dielectric withstand voltage test
   9.2. Mechanical operation test
   9.3. Electrical operation and wiring test

WL Breaker Inspection and Recertification:

10. Visually inspect the following items on each WL circuit breaker, and confirm that there is no corrosion. If corrosion is found, refurbish or replace components as necessary:

    10.1 .Secondary disconnects: Look for white/gray discoloration of the silver-plated contact fingers. Sulfur dioxide (blue, purple, or sometimes even a "rainbow" type discoloration) is acceptable.
    10.2. Finger cluster: - finger tension springs: Look for evidence of red rust.
    10.3. Finger cluster - contact fingers: After removing the contact lubricant, look for white/gray discoloration of the contact surfaces. Sulfur dioxide (blue, purple, or sometimes even a "rainbow" type discoloration) is acceptable. After inspection, re-lubricate with WLBGREASE.
    10.4. Main contacts: After removing the arc chutes, inspect the main contacts for water spots, or for white/gray discoloration of the silver-plated contact fingers. Sulfur dioxide (blue, purple, or sometimes even a "rainbow" type discoloration) is acceptable. Main contacts should be left dry.
    10.5. Breaker mechanism accessory tray: Remove the front cover. There should be no water spots within the black plastic accessory tray. If there are shunt trips and close coils installed, they should be removed from the pocket to inspect for water spots or corrosion.
    10.6. Breaker drive mechanism: With the front cover still removed, look for evidence of red rust on the steel components of the drive mechanism.
    10.7. Breaker trip unit: Look for evidence of corrosion.

11. Return one WL circuit breaker from each switchgear lineup to the Fort Worth Mod Center for retesting and recertification. Based on the availability of the necessary test equipment, Siemens may choose to have the breakers tested and recertified locally. ANSI C37.50 production testing procedure will be used. The WL circuit breaker to be returned from each of the switchgear lineups will be chosen by a Port Authority Resident Engineer.

SIEMENS

12. The electronic trip unit from each of the WL circuit breakers previously chosen by a Port Authority Resident Engineer will be destructively inspected on site at Newark Airport, in the witness of a Port Authority Resident Engineer.

Molded Case Breaker Inspection and Recertification:

13. Return one molded case circuit breaker from Switchboard B1 and one molded case circuit breaker for Switchboard B2 to the Fort Worth Mod Center for retesting and recertification. Based on the availability of the necessary test equipment, Siemens may choose to have the breakers tested and recertified locally. The molded case circuit breaker to be returned from each of the switchboard lineups will be chosen by a Port Authority Resident Engineer.

Thermographic Testing:

14. Thermal scan energized (loaded) bus to ensure no overheating is present at startup, after six months of operation and at the end of each year anniversary of the extended warranty. Testing will be performed by a certified, third party testing company.

Warranty:

15. Upon successful completion of the Siemens Service inspection and testing detailed above, Siemens will re-certify the equipment and provide an extended warranty for a four (4) year period. This will be an extension of the original factory warranty and include the same scope as the original factory warranty. The warranty obligations of SM Electric Company, Inc. as described herein shall be limited to a pass through of the extended warranty provided by Siemens Service. It will be the responsibility of Port Authority to establish a periodic maintenance program, as detailed in the Siemens Instruction and Installation Guide for Type WL Low Voltage Metal-Enclosed Switchgear.

Siemens views SM/Matrix, VRH and the New York Port Authority as valued customers. Further, we believe the execution of this recertification procedure and offer of extended warranty should make the Port Authority comfortable with accepting this electrical gear.

Best Regards,

Barry E Powell

Barry Powell
Siemens Industry, Inc.
Director – Product Lifecycle Management
Building Technologies Division – Low Voltage Systems

SIEMENS

Siemens Industry, Inc Standard Terms of Warranty Effective June 1, 2010

Limited Warranty. (a.) Limited Product Warranty Statements. For each Product purchased from Siemens or an authorized reseller, Siemens makes the following limited warranties: (i) the Product is free from defects in material and workmanship, (ii) the Product materially conforms to Siemens' specifications that are attached to, or expressly incorporated by reference into, these terms, and (iii) at the time of delivery, Siemens has title to the Product free and clear of liens and encumbrances (collectively, the "Limited Warranties"). Warranties with respect to software which may be furnished by Seller as part of the Product, if any, are expressly set forth elsewhere in these terms. The Limited Warranties set forth herein do not apply to any software furnished by Siemens. If software is furnished by Siemens, then the attached Software License/Warranty Addendum shall apply.

(b.) Conditions to the Limited Warranties. The Limited Warranties are conditioned on (i) Buyer storing, installing, operating and maintaining the Product in accordance with Siemens' instructions, (ii) no repairs, modifications or alterations being made to the Product other than by Siemens or its authorized representatives, (iii) using the Product within any conditions or in compliance with any parameters set forth in specifications that are attached to, or expressly incorporated by reference into, these terms, (iv) Buyer discontinuing use of the Product after it has, or should have had, knowledge of any defect in the Product, (v) Buyer providing prompt written notice of any warranty claims within the warranty period described below, (vi) at Siemens' discretion, Buyer either removing and shipping the Product or non-conforming part thereof to Siemens, at Buyer's expense, or Buyer granting Siemens access to the Products at all reasonable times and locations to assess the warranty claims, and (vii) Buyer not being in default of any payment obligation to Siemens under these terms.

(c.) Exclusions from Limited Warranty Coverage. The Limited Warranties specifically exclude any equipment comprising part of the Product that is not manufactured by Siemens or not bearing its nameplate. To the extent permitted, Siemens herby assigns any warranties made to Siemens for such equipment. Siemens shall have no liability to Buyer under any legal theory for such equipment or any related assignment of warranties. Additionally, any Product that is described as being experimental, developmental, prototype, or pilot is specifically excluded from the Limited Warranties and is provided to Buyer "as is" with no warranties of any kind. Also excluded from the Limited Warranties are normal wear and tear items including any expendable items that comprise part of the Product, such as fuses and light bulbs and lamps.

(d.) Limited Warranty Period. Buyer shall have 48 months from date of recertification to provide Siemens with prompt, written notice of any claims of breach of the Limited Warranties. Continued use or possession of the Product after expiration of the warranty period shall be conclusive evidence that the Limited Warranties have been fulfilled to the full satisfaction of Buyer, unless Buyer has previously provided Siemens with notice of a breach of the Limited Warranties.

(e.) Remedies for Breach of Limited Warranty. Buyer's sole and exclusive remedies for any breach of the Limited Warranties are limited to Siemens' choice of repair or replacement of the Product, or non-conforming parts thereof, or refund of all or part of the purchase price. The warranty on repaired or replaced parts of the Product shall be limited to the remainder of the original warranty period. Unless otherwise agreed to in writing by Siemens, (i) Buyer shall be responsible for any labor required to gain access to the Product so that Siemens can assess the available remedies and (ii) Buyer shall be responsible for all costs of installation of repaired or replaced Products. All exchanged Products replaced under this Limited Warranty will become the property of Siemens.

(f.) Transferability. The Limited Warranties shall be transferable during the warranty period to the initial end-user of the Product.

THE LIMITED WARRANTIES SET FORTH IN THIS SECTION ARE SIEMENS' SOLE AND EXCLUSIVE WARRANTIES AND ARE SUBJECT TO THE LIMITS OF LIABILITY SET FORTH IN SECTION 8 BELOW. SIEMENS MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, COURSE OF DEALING AND USAGE OF TRADE.

8. LIMITATION OF LIABILITY. NEITHER SIEMENS, NOR ITS SUPPLIERS, SHALL BE LIABLE, WHETHER IN CONTRACT, WARRANTY, FAILURE OF A REMEDY TO ACHIEVE ITS INTENDED OR ESSENTIAL PURPOSES, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY, INDEMNITY OR ANY OTHER LEGAL THEORY, FOR LOSS OF USE, REVENUE, SAVINGS OR PROFIT, OR FOR COSTS OF CAPITAL OR OF SUBSTITUTE USE OR PERFORMANCE, OR FOR INDIRECT, SPECIAL, LIQUIDATED, PUNITIVE, EXEMPLARY, COLLATERAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, OR FOR ANY OTHER LOSS OR COST OF A SIMILAR TYPE, OR FOR CLAIMS BY BUYER FOR DAMAGES OF BUYER'S CUSTOMERS. SIEMENS' MAXIMUM LIABILITY UNDER THIS CONTRACT SHALL BE THE ACTUAL PURCHASE PRICE RECEIVED BY SIEMENS FOR THE PRODUCT AT ISSUE OR ONE MILLION DOLLARS, WHICHEVER IS LESS. BUYER AGREES THAT THE EXCLUSIONS AND LIMITATIONS SET FORTH IN THIS ARTICLE ARE SEPARATE AND INDEPENDENT FROM ANY REMEDIES WHICH BUYER MAY HAVE HEREUNDER AND SHALL BE GIVEN FULL FORCE AND EFFECT WHETHER OR NOT ANY OR ALL SUCH REMEDIES SHALL BE DEEMED TO HAVE FAILED OF THEIR ESSENTIAL PURPOSE. THESE LIMITATIONS OF LIABILITY ARE EFFECTIVE EVEN IF SIEMENS HAS BEEN ADVISED BY THE BUYER OF THE POSSIBILITY OF SUCH DAMAGES.

Ret, Herman

From: Wallace, Michael
Sent: Monday, August 09, 2010 4:07 PM
To: Leonardo, Raul; Lochard, Daniel; Ret, Herman; LaMarca, Thomas
Cc: Huda, Syed; McConkey, John; Roytman, Leonid; Simeonidis, Nicholas; Johnson, Caesar; Haines, Dawn; Hegarty, Brian; Radics, Frank; Heitmann, James
Subject: EWR 264.003 - LLE - Busbar - Letter to VRH
Attachments: Letter MW to JK 8-9-201- busbar.pdf

THE PORT AUTHORITY OF NY & NJ

August 9, 2010

VRH Construction Corp.
320 Grand Avenue
Englewood, NJ 07631

Attention: Mr. Jeffrey Konen

SUBJECT: **NEWARK LIBERTY INTERNATIONAL AIRPORT**
EWR-264.003 – TERMINAL B MODERNIZATION PROGRAM
LOWER LEVEL EXPANSION & B1 VERTICAL CIRCULATION
Reference: VRH letter to PANYNJ, dated 7/29/10

Dear Mr. Konen:

We are in receipt of your letter regarding the clarifications to the recertification of the Low Voltage Switchgears SA, SB, NB and EMDS-1 (North Generator).

Many of the Port Authority's concerns have been addressed in your response, but the following items listed below must be agreed to in order for the PA to fully accept and allow the recertification to commence:

1. Submit a fully inclusive certification process, which incorporates all correspondences to date to the Resident Engineer for final review. The certification process is defined as all inspections and test procedures proposed by Siemens, SM Electric, VRH and the Port Authority. The reference correspondences are as follows:
    a. Siemens' Letter dated June 30, 2010
    b. VRH Letter, J. Konen to M. Wallace, dated July 29, 2010
    c. This correspondence
2. In the absence of a definitive conclusion to the busbar discoloration/corrosion and an explanation to what environmental factors the equipment may have been exposed to, the PA is requiring a five (5) year warranty from the in-service date with thermographic testing performed in accordance with NETA standards at the following intervals: 6 mo., 1, 2, 3, 4 and 5th year. The thermographic testing must be performed by a certified, independent, third party testing agency.
3. All devices designated for destructive testing and/or shipment back to the factory will be chosen in the field by PA Resident Engineer.
4. All destructive testing will be performed at Newark Airport in the witness of a PA representative.
5. The galvanized connections to the uncoated busbar sections have yet to be addressed. A corrective action to this issue must be received or all galvanized connections removed and replaced.
6. Any sections of busbar that were burnished or sanded in an attempt to remove the discoloration must be replaced.

Please forward your concurrence and all pertaining documentation so that work can commence.

Sincerely,

Michael C. Wallace, P.E., LEED AP
Senior Resident Engineer
Central Terminal Area, EWR

Building #125, Central Terminal Area
Newark, NJ 07114
T: 973 622 0800

THE PORT AUTHORITY OF NY & NJ

August 9, 2010

VRH Construction Corp.
320 Grand Avenue
Englewood, NJ 07631

Attention: Mr. Jeffrey Konen

SUBJECT: **NEWARK LIBERTY INTERNATIONAL AIRPORT**
EWR-264.003 – TERMINAL B MODERNIZATION PROGRAM
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Central Terminal Area, EWR

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[redacted]

VRH
CONSTRUCTION CORP.

Building trust

for 50 years.

1955-2005

July 29, 2010

Mr. Michael C. Wallace, P.E.
The Port Authority of NY & NJ
Newark Liberty International Airport
Building 74, CTA
Newark, NJ 07114

Re: EWR264.003
Terminal B Modernization Program
Lower Level Expansion & B1 Vertical Circulation
VRH 2034

Dear Mr. Wallace,

The following response is provided to the questions raised in your 7/23/10 correspondence regarding the proposed recertification to the Siemens switchgear.

Repair to Discolored Busbar

1. As part of the recertification process in each vertical section Siemens will visually inspect at least four bolted joint contact surfaces by disassembling the Joint to ensure that the silver plating is still intact. The inspection will include both the cable and bus compartments.

Preliminary inspections preformed to date have confirmed that the silver plating remains intact. In the event that the plating is not fully intact at any bolted connection, remedial repair to restore the silver plating will be performed.

2. As confirmed by Barry Powell of Siemens in our 7/28/10 conference call; "The loss of silver outside the electrical joints will not reduce the current carrying capacity or negatively impact the temperature rise of the bus bars in service and will not reduce the effective service life of the equipment.

3. During the recertification process, any components or equipment found to be compromised by corrosion or other means will be refurbished or replaced.

4. A representative from the silver plating manufacturer will train and certify S. M. Electric personnel for the installation of the field applied silver plating. Siemens will inspect the application as part of the recertification process. Written confirmation of training will be provided.

Phone
201.871.4422
Fax/Executive
201.871.6727
Fax/Accounting
201.871.1927
Fax/Estimating
201.871.0705

320 Grand Avenue
Englewood, NJ
07631-4355

VKH
CONSTRUCTION CORP.

July 29, 2010

Electrical Components

1. All electronic trip units will be visually inspected as part of the recertification process.

In addition, one unit from each line up (total of four units) will be disassembled for complete internal analysis.

2. One WL circuit breaker from each line up (total of 4 breakers) will be shipped offsite for bench testing above and beyond field inspection. One molded case breaker from switchboards B1 and B2 will be shipped offsite for bench testing above and beyond field inspection.

Prior to commencement of the recertification process, Siemens will prepare a report to outline the inspection and testing procedures to be performed as part of the recertification. This report will be transmitted via separate cover.

Siemens will furnish a final recertification report and documentation stating that the equipment is certified as new consistent with new, switchgear being shipped from the factory.

Siemens will provide a warranty for the equipment for a period of two (2) years from the in service date.

Very truly yours,

Jeffrey P. Konen
Vice President

JPK:vmd

7 23 10 ResCorr.doc

VRH
CONSTRUCTION CORP.

Building trust

for 50 years.

1955–2005

July 29, 2010

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Newark Liberty International Airport
Building 74, CTA
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CONSTRUCTIO... ...RP.

July 29, 2010

Mr. Michael C. Wallace, P.E.
Page 2

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Very truly yours,

Jeffrey P. Konen
Vice President

JPK:vmd

7 23 10 ResCorr.doc

Ret, Herman

From: Wallace, Michael
Sent: Monday, July 26, 2010 1:25 PM
To: Ret, Herman; Heitmann, James; Radics, Frank; Simeonidis, Nicholas; Johnson, Caesar; McConkey, John; Huda, Syed; McKeon, Sarah; Roytman, Leonid; LaMarca, Thomas
Cc: Hegarty, Brian; Leonardo, Raul
Subject: EWR 264.003 - Busbar Discoloration

Attached please find the letter sent back to VRH for the latest submission from Siemens.

I received comments from Herman and my staff that are reflected in the response.

Letter MW to JK BUSBAR .pdf

As soon as I hear from VRH, I will set up a meeting to hopefully come to a final resolution.

Mike

THE PORT AUTHORITY OF NY & NJ

July 23, 2010

VRH Construction Corp.
320 Grand Avenue
Englewood, NJ 07631

Attention: Mr. Jeffrey Konen

SUBJECT: **NEWARK LIBERTY INTERNATIONAL AIRPORT**
EWR-264.003 – TERMINAL B MODERNIZATION PROGRAM
LOWER LEVEL EXPANSION & B1 VERTICAL CIRCULATION

Reference: Siemens letter to PANYNJ, dated 6/30/10

Dear Mr. Konen:

We are in receipt of the Siemens's letter forwarded by VRH that reviews and provides recommendations for recertification of the Low Voltage Switchgears SA, SB and NB.

The Port Authority acknowledges that this issue is finally being given the proper priority and attention; however, several questions have arisen that need to be reviewed in order for a final determination to be provided. They are as follows:

Repair to Discolored Busbar

1. Pg 2 - How will the bus be cleaned between the stacked bus bars? How will it be verified?
2. Pg 2 – Under Recommended Steps, the installation of brushed on electroplate on the exposed electrical connection points does not fully address the remaining bus that was to be plated in accordance with PA Specifications.
3. Pg 2 - what is the procedure if evidence of corrosion is found on any of the equipment identified in (1) through (6)?
4. The installation of this brush-on plating must be done by a certified entity, approved by the manufacturer, Siemens. Written confirmation of this approval would be required.

Electrical Components

1. There is no mention of inspection for the electronic trip units and/or replacement if corrosion or damage is found.
2. Item #5 on page 3 states "Return one circuit breaker from each lineup." It needs to be changed to "Return one WL circuit breaker and one molded case circuit breaker from each switchgear and switchboard."

Building #125, Central Terminal Area
Newark, NJ 07114
T: 973 622 0800

In addition to the above, this latest letter does not fully address or determine what was the root cause of the initial busbar discoloration. Without a definitive response, statements regarding the service life of the equipment are questionable and would have to be backed by a warranty of better than the suggested one year for the Port Authority's consideration.

Furthermore, any future response regarding this issue needs to come from VRH, with supporting documentation from SM Electric and Siemens. The PA has a Contract with VRH and we expect our general contractor to outline and captain all efforts necessary to put this issue to rest. The Resident Engineer's Office and Facility staffs are available to meet with you at the earliest convenience if necessary to discuss the aforementioned concerns and reach a viable resolution.

Sincerely,

Michael C. Wallace, P.E., LEED AP
Senior Resident Engineer
Central Terminal Area, EWR

THE PORT AUTHORITY OF NY & NJ

July 23, 2010

VRH Construction Corp.
320 Grand Avenue
Englewood, NJ 07631

Attention: Mr. Jeffrey Konen

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EWR-264.003 – TERMINAL B MODERNIZATION PROGRAM
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Sincerely,

Michael C. Wallace, P.E., LEED AP
Senior Resident Engineer
Central Terminal Area, EWR

From: Konen, Jeff [mailto:J.Konen@vrhcorp.com]
Sent: Thursday, July 01, 2010 3:10 PM
To: Wallace, Michael; Leonardo, Raul
Cc: Winkler, Eric
Subject: FW: Bus Discoloration Letter

Mike

Attached please find correspondence from Siemens regarding the Bus Bar and proposed remedial action prior to recertification of the equipment by Siemens.
In addition, product data for the proposed remedial product is attached for review.

Jeffrey Konen
Vice President

320 Grand Ave.
Englewood, NJ 07631
Phone: 201-871-4422
Fax: 201-871-6727 Mobile: 201-259-4685
www.vrhcorp.com

[redacted]

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SIEMENS **Industry**

To: Port Authority of New York & New Jersey June 30, 2010

From: Barry Powell, PLM Director – Siemens BT Low Voltage Systems

Reference: Newark Airport
Type WL Low Voltage Switchgear
Siemens S.O. # 3001295712

Detailed below is the Siemens response to the bus discoloration field issue on the low voltage switchgear referenced above.

BACKGROUND:

Siemens shipped this order in October 2008 with product that completely met the specification of the Port Authority and all applicable industry product standards. The bus bars on the switchgear were fully plated by an industry-standard process.

CURRENT CONDITION OF LOW-VOLTAGE SWITCHGEAR:

- The silver plating is no longer present on many areas of exposed copper bus in the rear of the LVS and the exposed copper exhibits brown staining. A metallurgical evaluation conducted by Lucius Pitkin, Inc. on a sample bus bar concluded that the brown stain was primarily a copper oxide or copper hydroxide and that the silver layer had possibly been consumed at the stained locations. The report further concluded that this loss of silver was not an aging process and that the cause was not known.
- The silver plating in areas not exposed to the atmosphere, such as in electrical joints, appeared to be intact. The metallurgical evaluation showed the silver thickness on these portions of the sample bar to be approximately 3 microns.
- A visual inspection of one breaker and breaker compartment by Siemens personnel on site indicated that the breaker and breaker compartment (including main breaker contacts, primary and secondary disconnects) appeared normal.

TECHNICAL DISCUSSION:

- Silver or tin plating is required by ANSI in bus joints designed for a maximum 65° C temperature rise. Unplated copper bus joints are allowed with a limited allowable maximum temp rise of 30° C. The plating is required by the standard only in the current carrying part of the joint.
- The standards do not require a minimum plating thickness. The thickness of the plating is dependant on the plating process.
- The bars used in Siemens LVS are typically plated using a silver flash method by the copper bus bar supplier at the mill. Siemens specified minimum silver plating

thickness is 2 microns. Actual plating thickness varies between 3 and 7 microns. No maximum thickness is given.

- The mills that supply Siemens copper bus use the same silver flash process to provide bus bars to other switchgear OEMs. The flash plating process has been used for many years and is typical in the industry.
- **The loss of silver outside of the electrical joints will not reduce the current carrying capacity or negatively impact the temperature rise of the bus bars in service and will not reduce the effective service life of the equipment.**

RECOMMENDED STEPS TO RE-CERTIFY THE LVS:

- First, the exposed areas of the bus should be wiped down with isopropyl alcohol to remove any possible remaining contaminants. The assumption by Siemens is that this work will be performed by S.M. or their designated representative prior to any future inspections by Siemens personnel.

- Next, exposed electrical field connection points must have their joint surfaces refinished prior using an appropriate re-plating method. This includes any lug pads where the lugs have moved from factory-installed position.

- Siemens recommendation is that this work is completed using a brushed-on electroplate following the manufacturer's instructions. This type of plating repair is commonly used for field refinishing of electrical joints. Siemens does not recommend a specific brushed-on electroplate product. The assumption by Siemens is that this work will be performed by S.M. or their designated representative prior to any future inspections by Siemens personnel.

- Finally, S.M./Matrix should contract Siemens Service organization to perform the following inspections and testing required to re-certify the equipment:

(1) Visually inspect the following items on each WL circuit breaker and confirm that there is no corrosion:

a. Secondary disconnects: Look for white/gray discoloration of the silver plated contact fingers. Sulfur dioxide (blue, purple, or sometimes even a "rainbow" type discoloration) is acceptable.

b. Finger cluster finger tension springs: Look for evidence of red rust.

c. Finger cluster contact fingers: After removing the contact lubricant, look for white/gray discoloration of the contact surfaces. Sulfur dioxide (blue, purple, or sometimes even a "rainbow" type discoloration) is acceptable. After inspection, re-lubricate with WLBGREASE.

d. Main contacts: After removing the arc chutes, inspect the main contacts for water spots or for white/gray discoloration of the silver plated contact fingers. Sulfur dioxide (blue, purple, or even a "rainbow" type discoloration) is acceptable. Main contacts should be left dry.

e. Breaker mechanism accessory tray: Remove the front cover and confirm there are no water spots on the black plastic accessory tray. If there are shunt trips and close coils installed, they should be removed from the pocket to inspect for water spots or corrosion.

f. Breaker drive mechanism: With the front cover still removed, look for evidence of red rust on the steel components of the drive mechanism.

(2) Visually inspect the following WL breaker compartment items and confirm that no corrosion is present:
   a. Stationary primary disconnects: Look for white/gray discoloration of the silver plated contact surfaces. Sulfur dioxide (blue, purple, or sometimes even a "rainbow" type discoloration) is acceptable.
   b. Shutter assembly: Look for evidence of red rust on any of the steel components. The shutter should operate freely.
   c. Mechanism operated contacts (if applicable): Look for white/gray discoloration of the spring and clear zinc plated components.
   d. Any dust, dirt, water spots or any other contaminants should be cleaned out of the circuit breaker compartment.

(3) In each vertical section, visually inspect at least four bolted joint contact surfaces on the most discolored bus bar and ensure silver plating is still intact. The inspected joints should include all areas of the section (cable compartment and bus compartment).

(4) Visually confirm that silver plating (either factory original plating or brushed-on electroplate) is intact at all electrical connections which will ultimately be made in the field (busway joints, etc).

(5) Return one circuit breaker from each lineup to the Fort Worth WL Circuit Breaker factory for re-testing and re-certification. If proper test equipment is available closer to jobsite, Siemens is open to discussion on completing this step closer to the jobsite.

(6) Run the following tests on the switchgear lineup
   a. Dielectric withstand voltage test
   b. Mechanical operation test
   c. Electrical operation and wiring test

(7) Thermal scan energized (loaded) bus to ensure no overheating is present at startup and at the end of each year anniversary if extended warranty is more than one year.

Upon successful completion of the Siemens Service inspection and testing detailed above, Siemens will re-certify the equipment and provide an extended warranty (12 month minimum). This will be an extension of the original factory warranty and include the same scope as the original factory warranty.

Siemens views our S.M., Matrix, VRH and the Port Authority as valued customers and will make every effort to resolve the issues associated with this order as quickly as possible. We believe this memo clearly summarizes the current condition of the product, the pertinent technical issues and a clear path to re-certify the LVS. Please advise on how we can support you on the next steps to resolve this issue.

Best Regards,

Barry E. Powell

Barry Powell
Siemens Industry, Inc.
Director – Product Lifecycle Management
Building Technologies Division – Low Voltage Systems

COOL-AMP Conducto-Lube COMPANY SINCE 1944

15834 Upper Boones Ferry Road, Lake Oswego, Oregon 97035-4066 (503)624-6426 www.cool-amp.com

COOL-AMP #1233-500 PRODUCT INFORMATION SHEET

COOL-AMP is an odorless, water soluble, white powder used to apply a protective coating of Silver metal on copper or low-alloy brass and bronze substrates. The process is *electroless* and deposits an adherent coating typically 40 – 70 micro-inches in thickness by rubbing the moistened powder onto the cleaned part. There is no significant variation in thickness with the number of applications. It is an *electrochemical* process in which the very surface of the copper is displaced as the silver deposits.

Benefits of COOL-AMP Silver coating

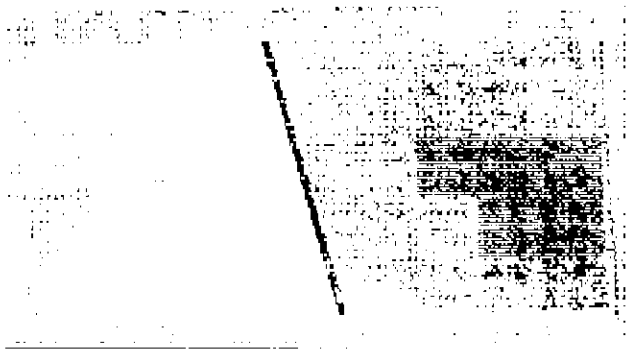
Applying a Silver coating provides a protective barrier to inhibit corrosion of the base copper. Copper oxidizes in air, creating a high resistance oxide film over the surface of the conductor. Silver brings an additional benefit: It has the lowest resistivity of all metals at room temperature. Silver is very resistant to oxidation in air so exposure to oxygen does not degrade electrical performance. By maintaining a stable resistivity over time, the silver coating significantly increases the useful life and efficiency of the connection.

Material	Resistivity, 10^{-8} Ohm•m
Silver	1.629
Copper	1.725
Gold	2.271
Aluminum	2.733
Zinc	6.06
Tin	11.5

Thermal conductivity of silver is 4.29 W/m-K.

Increases in *contact resistance* caused by oxide or other corrosion films on electrical contacts are well known. Tests exposing Silver and Copper contacts to N_2-O_2-SO_2-S_8-H_2O have shown Silver contacts to have superior performance.

Coated samples heat treated for two hours at 150 °C in air have shown the Silver-to-Copper bond passes ASTM B 571 in 45° modified Bend Test.



Procedures for applying COOL-AMP

Good bonding of the silver coating requires the metal substrate be completely free of any corrosion or oily films. Parts should be cleaned by wet-sanding with a fine-grit paper and distilled water and then rinsed with fresh distilled water.

In cases of oily residues, strong detergents, *e.g.*, those for automatic dish washers, may be required, prior to wet-sanding the surfaces. Heavy build-up of solid films may be removed with stainless steel, fine-wire brushes.

The cleaned part is now ready to be Silver coated. Use a wet/moist soft cloth to rub portions of the dry COOL-AMP onto the part, until a continuous, bright Silver surface has formed. Rinse the Silver with distilled water to remove all of the powder. After drying, the part is ready for service.

One pound of COOL-AMP will Silver coat 6000 in^2 or ~42 ft^2 of substrate.

Guidelines for using COOL-AMP

Recommended for use on parts made of copper or low-alloy brasses and bronzes. Use on moving parts will result in wear by friction or scratching.

COOL-AMP Registrations: NSN #6850-00-561-0349, NAIC CODE #325998 and SIC CODE #2899.

SIEMENS **Industry**

To: Port Authority of New York & New Jersey June 30, 2010

From: Barry Powell, PLM Director – Siemens BT Low Voltage Systems

Reference: Newark Airport
Type WL Low Voltage Switchgear
Siemens S.O. # 3001295712

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Siemens shipped this order in October 2008 with product that completely met the specification of the Port Authority and all applicable industry product standards. The bus bars on the switchgear were fully plated by an industry-standard process.

CURRENT CONDITION OF LOW-VOLTAGE SWITCHGEAR:

- The silver plating is no longer present on many areas of exposed copper bus in the rear of the LVS and the exposed copper exhibits brown staining. A metallurgical evaluation conducted by Lucius Pitkin, Inc. on a sample bus bar concluded that the brown stain was primarily a copper oxide or copper hydroxide and that the silver layer had possibly been consumed at the stained locations. The report further concluded that this loss of silver was not an aging process and that the cause was not known.
- The silver plating in areas not exposed to the atmosphere, such as in electrical joints, appeared to be intact. The metallurgical evaluation showed the silver thickness on these portions of the sample bar to be approximately 3 microns.
- A visual inspection of one breaker and breaker compartment by Siemens personnel on site indicated that the breaker and breaker compartment (including main breaker contacts, primary and secondary disconnects) appeared normal.

TECHNICAL DISCUSSION:

- Silver or tin plating is required by ANSI in bus joints designed for a maximum 65° C temperature rise. Unplated copper bus joints are allowed with a limited allowable maximum temp rise of 30° C. The plating is required by the standard only in the current carrying part of the joint.
- The standards do not require a minimum plating thickness. The thickness of the plating is dependant on the plating process.
- The bars used in Siemens LVS are typically plated using a silver flash method by the copper bus bar supplier at the mill. Siemens specified minimum silver plating

thickness is 2 microns. Actual plating thickness varies between 3 and 7 microns. No maximum thickness is given.

- The mills that supply Siemens copper bus use the same silver flash process to provide bus bars to other switchgear OEMs. The flash plating process has been used for many years and is typical in the industry.
- **The loss of silver outside of the electrical joints will not reduce the current carrying capacity or negatively impact the temperature rise of the bus bars in service and will not reduce the effective service life of the equipment.**

RECOMMENDED STEPS TO RE-CERTIFY THE LVS:

- First, the exposed areas of the bus should be wiped down with isopropyl alcohol to remove any possible remaining contaminants. The assumption by Siemens is that this work will be performed by S.M. or their designated representative prior to any future inspections by Siemens personnel.

- Next, exposed electrical field connection points must have their joint surfaces refinished prior using an appropriate re-plating method. This includes any lug pads where the lugs have moved from factory-installed position.

- Siemens recommendation is that this work is completed using a brushed-on electroplate following the manufacturer's instructions. This type of plating repair is commonly used for field refinishing of electrical joints. Siemens does not recommend a specific brushed-on electroplate product. The assumption by Siemens is that this work will be performed by S.M. or their designated representative prior to any future inspections by Siemens personnel.

- Finally, S.M./Matrix should contract Siemens Service organization to perform the following inspections and testing required to re-certify the equipment:

(1) Visually inspect the following items on each WL circuit breaker and confirm that there is no corrosion:

a. Secondary disconnects: Look for white/gray discoloration of the silver plated contact fingers. Sulfur dioxide (blue, purple, or sometimes even a "rainbow" type discoloration) is acceptable.

b. Finger cluster finger tension springs: Look for evidence of red rust.

c. Finger cluster contact fingers: After removing the contact lubricant, look for white/gray discoloration of the contact surfaces. Sulfur dioxide (blue, purple, or sometimes even a "rainbow" type discoloration) is acceptable. After inspection, re-lubricate with WLBGREASE.

d. Main contacts: After removing the arc chutes, inspect the main contacts for water spots or for white/gray discoloration of the silver plated contact fingers. Sulfur dioxide (blue, purple, or even a "rainbow" type discoloration) is acceptable. Main contacts should be left dry.

e. Breaker mechanism accessory tray: Remove the front cover and confirm there are no water spots on the black plastic accessory tray. If there are shunt trips and close coils installed, they should be removed from the pocket to inspect for water spots or corrosion.

f. Breaker drive mechanism: With the front cover still removed, look for evidence of red rust on the steel components of the drive mechanism.

(2) Visually inspect the following WL breaker compartment items and confirm that no corrosion is present:
   a. Stationary primary disconnects: Look for white/gray discoloration of the silver plated contact surfaces. Sulfur dioxide (blue, purple, or sometimes even a "rainbow" type discoloration) is acceptable.
   b. Shutter assembly: Look for evidence of red rust on any of the steel components. The shutter should operate freely.
   c. Mechanism operated contacts (if applicable): Look for white/gray discoloration of the spring and clear zinc plated components.
   d. Any dust, dirt, water spots or any other contaminants should be cleaned out of the circuit breaker compartment.

(3) In each vertical section, visually inspect at least four bolted joint contact surfaces on the most discolored bus bar and ensure silver plating is still intact. The inspected joints should include all areas of the section (cable compartment and bus compartment).

(4) Visually confirm that silver plating (either factory original plating or brushed-on electroplate) is intact at all electrical connections which will ultimately be made in the field (busway joints, etc).

(5) Return one circuit breaker from each lineup to the Fort Worth WL Circuit Breaker factory for re-testing and re-certification. If proper test equipment is available closer to jobsite, Siemens is open to discussion on completing this step closer to the jobsite.

(6) Run the following tests on the switchgear lineup
   a. Dielectric withstand voltage test
   b. Mechanical operation test
   c. Electrical operation and wiring test

(7) Thermal scan energized (loaded) bus to ensure no overheating is present at startup and at the end of each year anniversary if extended warranty is more than one year.

Upon successful completion of the Siemens Service inspection and testing detailed above, Siemens will re-certify the equipment and provide an extended warranty (12 month minimum). This will be an extension of the original factory warranty and include the same scope as the original factory warranty.

Siemens views our S.M., Matrix, VRH and the Port Authority as valued customers and will make every effort to resolve the issues associated with this order as quickly as possible. We believe this memo clearly summarizes the current condition of the product, the pertinent technical issues and a clear path to re-certify the LVS. Please advise on how we can support you on the next steps to resolve this issue.

Best Regards,

Barry E. Powell

Barry Powell
Siemens Industry, Inc.
Director – Product Lifecycle Management
Building Technologies Division – Low Voltage Systems

COOL-AMP Conductolube COMPANY SINCE 1944

15834 Upper Boones Ferry Road, Lake Oswego, Oregon 97035-4066 (503)624-6426 www.cool-amp.com

COOL-AMP #1233-500 PRODUCT INFORMATION SHEET

COOL-AMP is an odorless, water soluble, white powder used to apply a protective coating of Silver metal on copper or low-alloy brass and bronze substrates. The process is *electroless* and deposits an adherent coating typically 40 – 70 micro-inches in thickness by rubbing the moistened powder onto the cleaned part. There is no significant variation in thickness with the number of applications. It is an *electrochemical* process in which the very surface of the copper is displaced as the silver deposits.

Benefits of COOL-AMP Silver coating

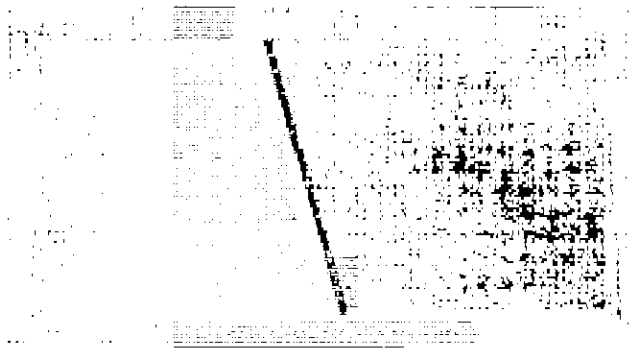
Applying a Silver coating provides a protective barrier to inhibit corrosion of the base copper. Copper oxidizes in air, creating a high resistance oxide film over the surface of the conductor. Silver brings an additional benefit: It has the lowest resistivity of all metals at room temperature. Silver is very resistant to oxidation in air so exposure to oxygen does not degrade electrical performance. By maintaining a stable resistivity over time, the silver coating significantly increases the useful life and efficiency of the connection.

Material	Resistivity, 10^{-8} Ohm•m
Silver	1.629
Copper	1.725
Gold	2.271
Aluminum	2.733
Zinc	6.06
Tin	11.5

Thermal conductivity of silver is 4.29 W/m-K.

Increases in *contact resistance* caused by oxide or other corrosion films on electrical contacts are well known. Tests exposing Silver and Copper contacts to N_2-O_2-SO_2-S_8-H_2O have shown Silver contacts to have superior performance.

Coated samples heat treated for two hours at 150 °C in air have shown the Silver-to-Copper bond passes ASTM B 571 in 45° modified Bend Test.



Procedures for applying COOL-AMP

Good bonding of the silver coating requires the metal substrate be completely free of any corrosion or oily films. Parts should be cleaned by wet-sanding with a fine-grit paper and distilled water and then rinsed with fresh distilled water.

In cases of oily residues, strong detergents, *e.g.*, those for automatic dish washers, may be required, prior to wet-sanding the surfaces. Heavy build-up of solid films may be removed with stainless steel, fine-wire brushes.

The cleaned part is now ready to be Silver coated. Use a wet/moist soft cloth to rub portions of the dry COOL-AMP onto the part, until a continuous, bright Silver surface has formed. Rinse the Silver with distilled water to remove all of the powder. After drying, the part is ready for service.

One pound of COOL-AMP will Silver coat 6000 in^2 or ~42 ft^2 of substrate.

Guidelines for using COOL-AMP

Recommended for use on parts made of copper or low-alloy brasses and bronzes. Use on moving parts will result in wear by friction or scratching.

COOL-AMP Registrations: NSN #6850-00-561-0349, NAIC CODE #325998 and SIC CODE #2899.

[redacted]

Ret, Herman

From: Wallace, Michael
Sent: Tuesday, June 08, 2010 9:25 AM
To: Simeonidis, Nicholas; Radics, Frank; Heitmann, James; Hegarty, Brian; McConkey, John; Ret, Herman; Roytman, Leonid
Subject: EWR 264.003 - Letter to VRH regarding Siemen's Busbar

The letter which predicated next Wednesday's meeting.

From: Schweitzer, Ruth
Sent: Tuesday, June 08, 2010 9:22 AM
To: Wallace, Michael
Subject:

DOC100607.pdf

THE PORT AUTHORITY OF NY & NJ

NEWARK LIBERTY INTERNATIONAL AIRPORT
BUILDING 74, CTA
NEWARK, NJ 07114
(973) 622-0800 FAX (973) 622-7222

June 7, 2010

SUBJECT: NEWARK LIBERTY INTERNATIONAL AIRPORT
EWR-264.003 – TERMINAL B MODERNIZATION PROGRAM
LOWER LEVEL EXPANSION & B1 VERTICAL CIRCULATION

Reference: Siemens letter to S.M. Electric, dated 5/26/10

Dear Mr. Konen,

We are in receipt of Siemens' letter addressing the oxidation of the bus bars for Switchgears SA, SB and NB. The response that a certain level of discoloration on the bus bar is a common occurrence and will not affect the performance of the equipment is not acceptable.

The letter also incorrectly states that the project specifications calls for only the joints to be silver-plated. Be advised that Contract Drawing E003 clearly notes that bus bars are to be silver-plated copper, not just the joints. The intent of the silver plating is to prevent oxidation of the entire bus bar, not just the joints. Furthermore, Siemens' shop drawing submittal states that the entire bus bar will be silver-plated and that is not what was received. The manufacturer's indifference to not achieving their own requirements is alarming. It is evident that the silver-plating on the bus bar is deficient and as a result, the subject equipment is not in compliance with the Contract and remains unacceptable.

The Port Authority expects a high level of service from all its contractors and subcontractors. To date, Siemens has not responded in a timely and professional manner to various issues relating to their equipment.

Immediate attention and resolution to this issue is warranted in order for this project to move forward without further delays. The Port Authority expects the appropriate parties from Siemens, SM Electric, and VRH to be available to meet and resolve these issues because further correspondences on this issue will not suffice. Please coordinate this effort with Raul Leonardo of my staff and schedule a meeting as soon as possible.

Sincerely,

for Michael C. Wallace, P.E., LEED AP
Senior Resident Engineer
EWR-Central Terminal Area

THE PORT AUTHORITY OF NY & NJ

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Sincerely,

for Michael C. Wallace, P.E., LEED AP
Senior Resident Engineer
EWR-Central Terminal Area

[redacted]

From: Russ Elliott [mailto:russ.elliott@smelectric.com]
Sent: Thursday, February 18, 2010 11:02 AM
To: Winkler, Eric
Cc: Lochard, Daniel; Don Sapanara; Lovas, Keith
Subject: South Substation Switchboard A1 Testing

Eric,

Bill Poland of NCE will be on site starting Monday, February 22, to start testing Switchboard A1 in the south substation.

Thank you,

Russ Elliott
S.M. Electric Co., Inc.
at Newark Airport

Phone: 1-973-622-1470
Fax: 1-973-622-1471
Cell: 1-732-904-2354

Ret, Herman

From: Ret, Herman
Sent: Sunday, May 30, 2010 12:54 PM
To: Ret, Herman

Tracking:

Recipient	Read
Ret, Herman	Read: 5/30/2010 1:50 PM

IMG_0080.jpg IMG_0088.jpg

Herman Ret
Newark Liberty International Airport
973-961-6144

Ret, Herman

From: Ret, Herman
Sent: Sunday, May 30, 2010 12:54 PM
To: Ret, Herman

IMG_0080.jpg IMG_0088.jpg

Herman Ret
Newark Liberty International Airport
973-961-6144

Ret, Herman

From: Konen, Jeff [J.Konen@vrhcorp.com]
Sent: Thursday, May 27, 2010 9:31 AM
To: Wallace, Michael; Leonardo, Raul
Cc: Winkler, Eric
Subject: Bus Bar discoloration
Attachments: 20100527091323142.pdf

Mike/Raul

Attached please find correspondence from Siemens addressing the bus discoloration issue.

SIEMENS

May 27, 2010

S.M. Electric
Newark Airport
US Route 1
Terminal B Modernization
Newark, NJ 07114

Attn: Don Sapanara

RE: Bus Discoloration

In reference to the noted Siemens Bus Discoloration matter we offer the following:

Siemens has exceeded the specification for this project by supplying silver plated bus bars. The project specification calls for only the joints to be silver plated which is standard UL-891-2005 Clause 8.8.1.1.5. It is common practice for most manufacturers like Siemens to provide complete silver plated bus bars for commercial considerations. The purpose of the silver plating is to reduce oxidation in the joint. It is inside the joint, around the bolt, where the current transfer takes place. In the case of the bus in question, the silver plating has oxidized in areas outside the joints where it is exposed to oxygen. The joint itself is not exposed to oxygen and therefore the silver plating in the joint will not oxidize and remain intact.

We cannot determine the cause of the discoloration of the bus after it has left our factory. The bus discoloration in question has only occurred to the exposed, non-critical portion of the bus, and will not impede or affect the performance of the bus. The silver plating inside the joints will remain intact. It is a common occurrence for a certain level of discoloration to form on equipment outside factory conditions. This noted discoloration or oxidation will not affect the performance of this equipment and can go untreated as a result.

Siemens will stand by its factory warranty per the terms and conditions of this contract.

Sincerely,

Harry W. Josten
Switchgear Development Manager
Siemens Industry, Inc

Siemens Industry, Inc.
170 Wood Ave South
Iselin, NJ 08830

SIEMENS

May 27, 2010

S.M. Electric
Newark Airport
US Route 1
Terminal B Modernization
Newark, NJ 07114

Attn: Don Sapanara

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Sincerely,

Harry W. Josten
Switchgear Development Manager
Siemens Industry, Inc

Siemens Industry, Inc.
170 Wood Ave South
Iselin, NJ 08830

[redacted]

[redacted]

[redacted]

Lucius Pitkin, Inc. *Consulting Engineers*

Fitness-For-Service
Failure & Materials Evaluation
Nondestructive Engineering

April 15, 2010

Report No. F10166

The Port Authority of NY & NJ
Materials & Research Division
Engineering Department
241 Erie Street - Room 234
Jersey City, NJ 07310-1397

Attention: Mr. John Bullard

Subject: **EVALUATION OF BUSS BAR**

An electrical buss bar was submitted to LPI for evaluation of a brown stain on the surface. The buss bar, shown in Fig. 1 in the as-received condition, measured 4 in. wide X ¼ in. thick and was bent at a right angle with one leg measuring 14 ¾ in. long and the other 7 ¾ in. long. LPI was advised that the buss bar was made of silver plated copper.

A sample of the brown stain was scraped from the surface and analyzed by energy dispersive x-ray spectroscopy (EDS) in a scanning electron microscope (SEM) at 20 kV accelerating potential. The acquired spectrum, shown in Fig. 2, exhibited large peaks of copper and oxygen; small peaks of carbon, aluminum, and silicon from the mount used to place the sample in the SEM; small peaks of sulfur, chlorine, potassium, iron and calcium from atmospheric sources, and a small peak of silver from the plating.

* * *

304 Hudson Street, New York, NY 10013-1015 Tel: 212-233-2737 Fax: 212-406-1417 www.lpiny.com
New York, NY Bethlehem, PA West Palm Beach, FL San Diego, CA

"Ensuring the integrity of today's structures for tomorrow's world"™

The Port Authority of NY & NJ
Attention: Mr. John Bullard

April 15, 2010
F10166

Results of this examination indicate that the brown stain was primarily a copper oxide or copper hydroxide. The trace of silver detected in the scrapings indicated that the silver layer had possibly been consumed at the stained locations.

Respectfully submitted,

LUCIUS PITKIN, INC.

Andrew Shapiro
Materials Engineer

Joseph P. Crosson, P.E.
Principal

AS:JPC/P:Projects/2010/F10166-Report – PANYNJ Eval. of buss bar

This report is rendered upon the condition that it is not to be reproduced wholly or in part for advertising or other purposes over our signature or in connection with our name without special permission in writing. Be advised that all materials submitted for evaluation will be retained for six months. After such time, all material will be discarded unless otherwise notified in writing to retain beyond six months.

FORM 107-2/76

The Port Authority of NY & NJ
Attention: Mr. John Bullard

April 15, 2010
F10166

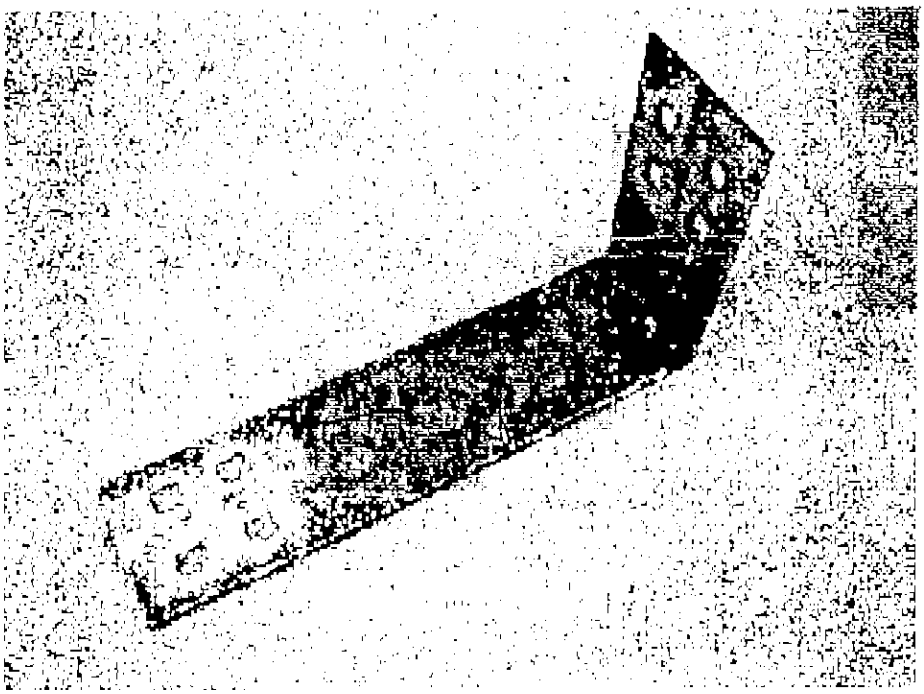

Fig. 1 Buss bar in the as-received condition.

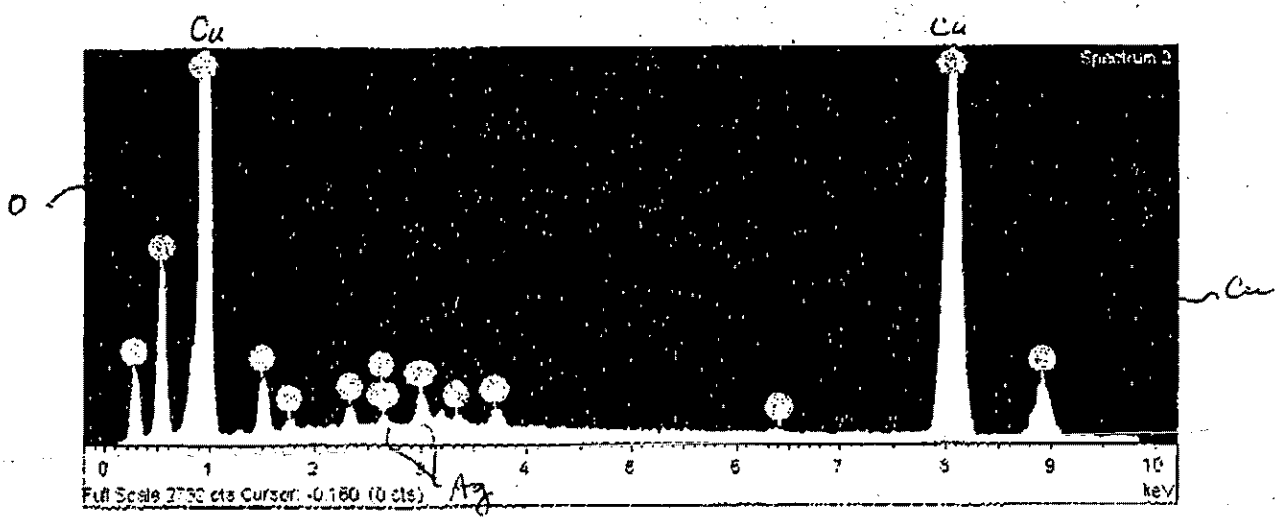

Fig. 2 EDS spectrum of the brown stain.

Lucius Pitkin, Inc. *Consulting Engineers*

Fitness-For-Service
Failure & Materials Evaluation
Nondestructive Engineering

TO: Mr. Joe Wallace FAX 973-622-0172
FROM: JOHN BULLARD

REPORT NO. F10166

EVALUATION OF BUSS BAR

THE PORT AUTHORITY OF NY & NJ

APRIL 15, 2010

304 Hudson Street, New York, NY 10013-1015 Tel: 212-233-2737 Fax: 212-406-1417 www.lpinc.com
New York, NY Bethlehem, PA West Palm Beach, FL San Diego, CA

"Ensuring the integrity of today's structures for tomorrow's world"™

MATRIX SERVICE
INDUSTRIAL CONTRACTORS, INC.

April 29, 2010

Mr. Jeffrey Konen
Vice President
VRH Construction Corp.
320 Grand Avenue
Englewood, NJ 07631

Dear Jeff:

S.M. Electric is in receipt of the Port Authority's letter of April 26 (and attached April 15 evaluation of the bus bar by Lucius Pitkin, Inc.) regarding the bus bar discoloration issue and offers the following comments and go-forward plan to resolve the issue.

Based on the findings to date S.M. Electric does not agree with the Port Authority April 26 letter that states "switchgears SA, SB and NB are not in compliance with the contract". Upon receipt of additional independent testing results (as noted below) we will again discuss and assess our position regarding this issue. At that time we can then discuss with the Port Authority a fair and speedy resolution to this issue.

The switchgear was bought in accordance with the specifications – Division 16, Section 16335, Low Voltage Switchgear, Part 2.03, K.1. (see attached purchase order, page 1 of 23).

S.M. Electric, at its own expense, sent discolored bus samples to both Siemens (equipment manufacturer) and North Central Electric (equipment supplier) for testing. Both companies confirm that the discoloration will not affect equipment performance. (see attached findings from both companies).

S.M. Electric has been an electrical contractor for over 50 years, and has performed many switchgear equipment installations in many different settings. Experienced company management and project management personnel at S.M. Electric state that bus discoloration is a common occurrence, and that the discoloration itself will not affect equipment performance.

S.M. Electric will procure additional independent metals testing services to test and report on the bus discoloration as it relates to equipment performance. It is S.M. Electric's plan to have the results from this service available for distribution by Friday, May 7.

Please call me should you have any questions. Thank you.

Sincerely,

Albert D. Fosbenner
Vice President – Accounting & Administration

1510 Chester Pike, Suite 500 • Eddystone, PA 19022
Phone: (610) 876-9292 • Fax: (610) 876-5902 • *www.matrixservice.com*

S. M. ELECTRIC COMPANY, INC.

601 NEW BRUNSWICK AVE. RAHWAY, NJ 07065-3816
LICENSE/PERMIT #5225 MEMBER N.E.C.A.
(732) 388-3540 PURCHASING FAX (732) 388-9619

PURCHASE ORDER NO.: F7016
VENDOR CODE: MONAR
JOB NUMBER: C1260X

PURCHASE ORDER NUMBER AND JOB NUMBER MUST BE ON ALL PACKING SLIPS AND INVOICES.

SHIP TO: **S.M. ELECTRIC CO., INC.**

SITE OF: Newark Liberty International Airport
Terminal B - Lower Level
US Route 1
Newark, NJ 07114

SELLER: Monarch Electric Company
1 Dodge Drive
CN2225
West Caldwell, NJ 07006

ATTN: Bohdan Kachmar 973-227-4151 x229

ATTN: Bob Pereira 973-418-4864 (Cell)

DATE					
3/13/07	Ground		site		
CONTACT	SHIPVIA	DELIVERY DATE	CONFIRMING TO	REMARKS	TAX
Stephen Ray	On Board	12/29/07	T. Aldag	Page 1	No

QTY. REQ.	ITEM NO.	DESCRIPTION	UNIT COST	EXTENDED COST
		CONFIRMING ORDER - DO NOT DUPLICATE		
Lot		Furnish and deliver to the jobsite upon written release, the distribution equipment for the Terminal B Lower Level Moderization Project, as per the following documents:		
		1) The Buyer's Request for Quotation dated 1/3/07 and all documents included therein.		
		2) The attached Seller's proposal dated 3/7/07.		
		Purchase Order Amount (tax exempt)		$1,698,500.00
		Notes:		
		1) No items on this purchase order shall be released or shipped unless authorized by a written release from S. M. Electric.		
		2) Twelve (12) copies of cuts and/or drawings are required for approval prior to the manufacturing or shipment of any material. If possible, submittals may be transmitted via email as a PDF attachment to steve.ray@smelectric.com. This purchase order is subject to the approval of the submitted product data sheets by the entity having that responsibility, in accordance with the Buyer's Prime Contract. Disapproval of the submitted product data sheets may cause this purchase order to be renegotiated or cancelled, at the Buyer's discretion, at no expense to the Buyer.		
		KINDLY SIGN AND DATE THE GREEN ACKNOWLEDGEMENT COPY AND RETURN TO BUYER'S PURCHASING DEPARTMENT.		

SME-61
Rev. 1/07

THIS PURCHASE ORDER IS SUBJECT TO THE TERMS AND CONDITIONS ON THE REVERSE SIDE.

FIELD COPY

S. M. ELECTRIC COMPANY, INC.

601 NEW BRUNSWICK AVE. RAHWAY, NJ. 07065-3816
LICENSE/PERMIT #5225 MEMBER N.E.C.A.
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SITE OF: Newark Liberty International Airport
Terminal B - Lower Level
US Route 1
Newark, NJ 07114

SELLER: Monarch Electric Company
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CN2225
West Caldwell, NJ 07006

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ATTN: Bob Pereira 973-418-4864 (Cell)

F.O. DATE	SHIP VIA				TAX
3/13/07	Ground		Jobsite		
BUYER	**FREIGHT**	**DELIVERY**	**DESIGNER**	**REMARKS**	
Stephen Ray	On Board	12/29/07	T. Aldag	Page 1	No

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SME-61
Rev. 1/07

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(732) 388-3540 PURCHASING FAX (732) 388-9619

PURCHASE ORDER NO.: F7016
VENDOR CODE: MONAR
JOB NUMBER: C1260X

PURCHASE ORDER NUMBER AND JOB NUMBER MUST BE ON ALL PACKING SLIPS AND INVOICES.

SHIP TO: **S.M. ELECTRIC CO., INC.**

SITE OF: Newark Liberty International Airport
Terminal B - Lower Level
US Route 1
Newark, NJ 07114

ATTN: Bob Pereira 973-418-4864 (Cell)

SELLER: Monarch Electric Company
1 Dodge Drive
CN2225
West Caldwell, NJ 07006

ATTN: Bohdan Kachmar 973-227-4151 x229

DATE	[illegible]	[illegible]	[illegible]	[illegible]
3/13/07	Ground			

BUYER	[illegible]	[illegible]	[illegible]	REMARKS	TAX
Stephen Ray	On Board	12/29/07	T. Aldag	Page 2	No

QTY. REQ.	ITEM NO.	DESCRIPTION	UNIT COST	EXTENDED COST
		CONFIRMING ORDER - DO NOT DUPLICATE		

3) Forty eight (48) hour delivery notice is required for all material deliveries. Contact Bob Pereira @ 973-418-4864. Deliveries made without such notice are subject to refusal at no additional cost to the Buyer.

4) All equipment except panel boards and disconnect switches shall be shipped on a flat bed or open top truck.

5) All boxes, cartons, crates and loose material items shall be marked with the Buyer's Purchase Order Number and Job Number and all items on this purchase order shall be accompanied by packing slips listing materials delivered and noting all items backordered. All packing slips and invoices shall also contain the Buyer's Purchase Order Number and Job Number.

6) All items on this purchase order are not subject to N. J. Sales Tax. The appropriate exemption certificate is attached to this order or shall be forwarded upon its receipt from our customer.

7) All material furnished must be in strict compliance with the plans and specifications for this project, as provided to the Seller, except as noted in the Seller's attached proposal.

KINDLY SIGN AND DATE THE GREEN ACKNOWLEDGEMENT COPY AND RETURN TO BUYER'S PURCHASING DEPARTMENT.

SME-61
Rev. 1/07

THIS PURCHASE ORDER IS SUBJECT TO THE TERMS AND CONDITIONS ON THE REVERSE SIDE.

FIELD COPY

S. M. ELECTRIC COMPANY, INC.

601 NEW BRUNSWICK AVE. RAHWAY, NJ 07065-3816
LICENSE/PERMIT #5225 MEMBER N.E.C.A.
(732) 388-3540 PURCHASING FAX (732) 388-9619

PURCHASE ORDER NO.: F7016
VENDOR CODE: MONAR
JOB NUMBER: C1260X

PURCHASE ORDER NUMBER AND JOB NUMBER MUST BE ON ALL PACKING SLIPS AND INVOICES.

SHIP TO: **S.M. ELECTRIC CO., INC.**

SITE OF: Newark Liberty International Airport
Terminal B - Lower Level
US Route 1
Newark, NJ 07114

SELLER: Monarch Electric Company
1 Dodge Drive
CN2225
West Caldwell, NJ 07006

ATTN: Bohdan Kachmar 973-227-4151 x229

ATTN: Bob Pereira 973-418-4864 (Cell)

REQUIRED	SHIPVIA	F.O.B.	TERMS
3/13/07	Ground	Jobsite	

BUYER	REQUIST	REQ DATE	TRANSFER MODE	REMARKS	TAX
Stephen Ray	On Board	12/29/07	T. Aldag	Page 3	No

QTY REQ	ITEM NO.	DESCRIPTION	UNIT COST	EXTENDED COST
		CONFIRMING ORDER - DO NOT DUPLICATE		
		8) All notes on this purchase order shall apply to all subsequent change orders, unless amended in writing by S. M. Electric Co., Inc.		
		ACKNOWLEDGMENT DATE		
		PVCIII / SR		
		JOHN J. MURPHY - PRESIDENT & COO		
		KINDLY SIGN AND DATE THE GREEN ACKNOWLEDGEMENT COPY AND RETURN TO BUYER'S PURCHASING DEPARTMENT.		

SME-61
Rev. 1/07

THIS PURCHASE ORDER IS SUBJECT TO THE TERMS AND CONDITIONS ON THE REVERSE SIDE.

FIELD COPY

MONARCH
ELECTRIC CO.
Wholesale Electrical Distributor for Construction & Industry

One Dodge Drive • West Caldwell, NJ 07006
973-227-4151 • fax 973-227-8455
www.monarchelectric.com

March 7, 2007

SM Electric Company, Inc.
Mr. Steve Ray

RE: Newark Airport – Terminal B
SM Job# C1260X
Contract# EWR-264.003

Reference our meeting of 3/5/07 regarding the subject project, we are pleased to offer the following revised proposal for your consideration.

All comments and clarifications discussed have been addressed.

Circuitry changes have been made.

ASCO start-up is included.

Siemens start-up and training is included.

Coordination study is included.

Preliminary approval drawings will be supplied in 2-3 weeks.

Initial layout information given to you regarding the ASCO dimensions was incorrect. The ASCO drawing is attached. It will be 96in total width due to the bypass feature in lieu of 48in. as originally indicated.

Siemens' revised bill of material is attached.

I again reiterate that we include the specified Siemens ETU-776 trip unit as required by the Port Authority which does add substantial cost over the normal solid state trip unit. There are approximately 52 of these units included in our proposal.

Total revised lot price less the 4 – 600amp transfer switches:

~~$1,741,666 net all~~

$1,698,500.00 PER TOM ALDAG 3/11/07

~~Adder for 4 – 600amp ASCO bypass isolation switches:~~

~~$91,490 net all~~

If you have any additional questions, please contact me.

Very truly yours,

Thomas R. Aldag
Vice President - Sales

ASCO Power Technologies
www.ascopower.com

EMERSON.
Network Power

January 8, 2007

ASCO Quotation for:

NEWARK AIRPORT TERMINAL B
QUOTE #06-557R4

ITEM A - Qty. (3) Bulletin 7000 Catalog No. 7ATBC34000N5XC Automatic Transfer with Bypass/Isolation Switch, 4 Poles, 4000 Amperes, arranged to operate on a Normal and Emergency Voltage of 480Y/277V, 3 Phase, 4 Wire, 60 Hertz and to include Standard Accessory Group 5, plus optional accessories 27 and 72A. Unit furnished in a NEMA 1 Enclosure.

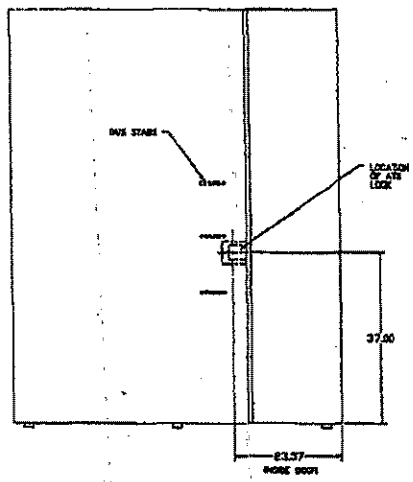
12-14 Weeks Lead-time

Per Tom ALAAB 3/5/07 SR

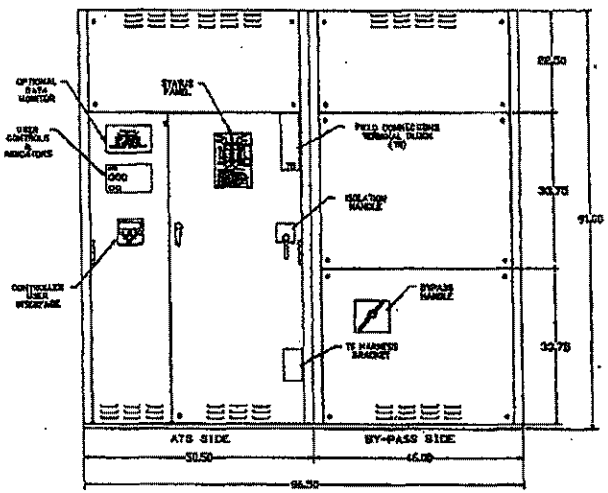
Notes:

1. Freight is ~~not~~ SR included.
2. Start-Up or training is ~~not~~ included.
3. ASCO takes exception to section 2.03.A.15.a. Overcurrent protection devices are not included in this quote.
4. Price of Item C is contingent upon purchase of entire bill of material quoted.
5. Please note that the 4000 amp switches will be provided with the frame of the entire switch, and as by-pass switches must have NEMA 1 enclosures.

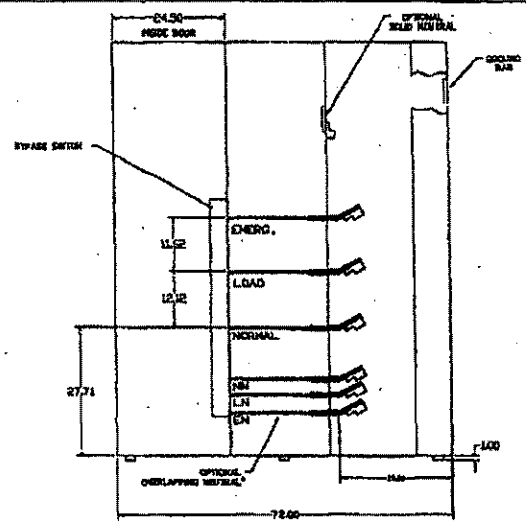
Asco Power Technologies, Inc. 1460 Route 9 North Suite 209 Woodbridge, NJ 07095
Phone: 732-596-1733 Fax: 732-596-0150



LEFT SIDE VIEW
(ATS SIDE)

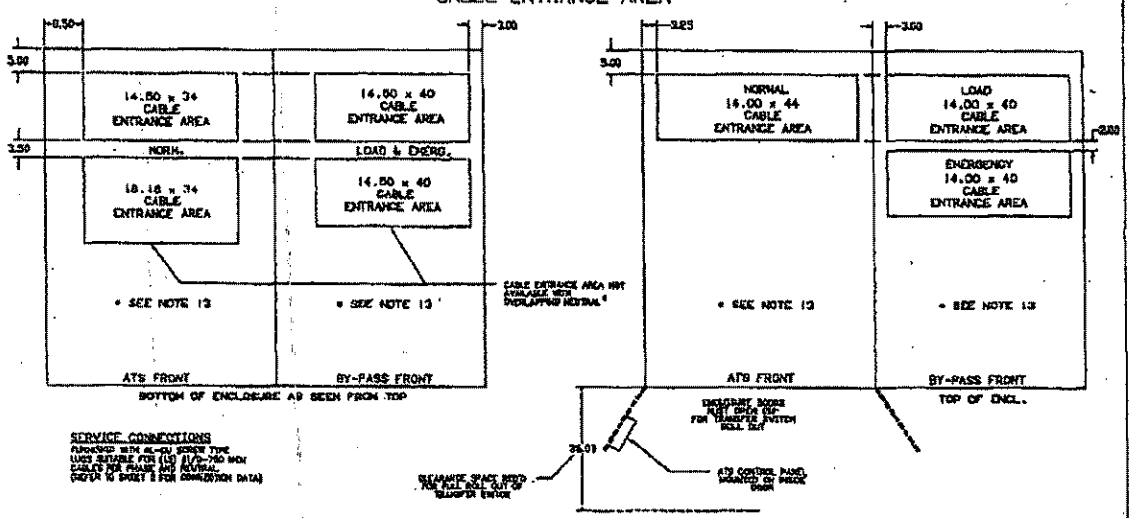


FRONT VIEW



RIGHT SIDE VIEW
(BYPASS SIDE)

CABLE ENTRANCE AREA



SERVICE CONNECTIONS
FURNISHED WITH AL-CU SCREW TYPE LUGS SUITABLE FOR (12) #1/0-750 MCM CABLES FOR PHASE AND NEUTRAL.
(REFER TO SHEET 2 FOR CONNECTION DATA)

GENERAL NOTES

1. NEMA 1 , FREE STANDING, FLOOR MOUNTED CUBICLES UTILIZING 12 GAUGE FORMED FRAME CONSTRUCTION.
2. NEC STANDARD GAUGE PAN TYPE DOORS WITH LOCKABLE HANDLES AND STANDARD GAUGE REMOVABLE COVERS.
3. ALL EXTERIOR SURFACES ARE FINISHED WITH ANSI 61 SWITCHBOARD LIGHT GRAY ENAMEL. FOR OTHER AVAILABLE FINISHES CONSULT FACTORY.
4. CONSTRUCTION IS IN ACCORDANCE WITH APPLICABLE REQUIREMENTS OF U.L.1008.
5. TO INTEGRATE SWITCH INTO A SWITCHBOARD, REMOVE AND MODIFY SIDE COVERS TO SUIT.
6. BRACKETS ARE INCLUDED IN THE REAR SECTION TO ACCOMMODATE THE INSTALLATION OF CABLE SUPPORT BARS BY THE INSTALLER.
7. CABLE ENTRY AREAS ARE PROVIDED FOR TOP OR BOTTOM ENTRY.
8. CONNECTOR MFG. CO. CWC-6ASV-750 SCREW TYPE LUGS SUITABLE FOR (12) 1/0-750MCM ARE PROVIDED AS STANDARD. CRIMP LUGS ARE AVAILABLE. CONSULT FACTORY FOR DETAILS.
9. DETACHABLE RAMPS ARE FURNISHED TO ACCOMMODATE ATS ROLL-OUT TO FLOOR LEVEL. WHEN NOT IN USE, RAMPS ARE STORED IN ATS SECTION.
10. BUS DUCT CONNECTIONS ARE ADAPTABLE. CONSULT FACTORY FOR LOCATION DIMENSIONS.
11. RECOMMENDED CLEARANCE TO CUBICLE FROM REAR THREE FEET, FROM FRONT FIVE FEET.
12. SWITCH OPTIONS AS FOLLOWS.
    3ϕ 4 WIRE WITH SOLID NEUTRAL
    3ϕ 4 WIRE WITH OVERLAPPING NEUTRAL *
13. THE STANDARD CONFIGURATION IS FOR TOP EMERGENCY AND BOTTOM NORMAL. OPTIONALLY THE SWITCH MAY BE SUPPLIED WITH REVERSE SOURCES. (REFER TO WIRING DIAGRAM TO DETERMINE TERMINATION POSITIONS.)

* AVAILABLE ONLY ON 7ATB & 7ACTB

ROUTING & MOUNTING 7000 SERIES (7ATB/7ACTB/7ADTB) 4000A, GROUP 5 CONTROLS	ASCO
	05925284-001

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To: **MONARCH ELECTRIC CO.**

Attention: Tom Aldag

From: **Siemens Energy & Automation**
Michael Cito
186 Wood Ave
Iselin, NJ 08830
Tel. No.: 732-452-2337
Fax No.: 732-767-1713
michael.cito@siemens.com

Project Name: **Newark Liberty International Airport**
Quote Name: **Terminal B Modernization Project**
Quote Number: 1475-3033J-13
Bid Date: **3/06/2007**

Siemens Energy & Automation, Inc (Company) agrees to sell to Purchaser and Purchaser agrees to purchase from the Company the goods described below Written quotations are valid for 30 days from its date unless otherwise stated in the quotation.

Introduction: **We are pleased to quote the following**

Item **Qty** **Description**

ITEM A: WL Swgr "NA"

1 - Group of Siemens type W Low Voltage Metal-Enclosed Switchgear, rated 480V, 60 hertz, with 6 vertical sections, 3 phase, 4 wire, 4000 amp copper bus with silver plated connections, 150kA symmetrical bus bracing, and an indoor enclosure, constructed and tested in accordance with UL1558 and ANSI C37 standards. The switchgear sections will be furnished as generally described in Siemens Selection and Application Guide for WL Switchgear.

1 - WLF-800 circuit breakers, rated 800 amperes continuous, 200 KAIC, electrically operated with Auxiliary Switch (4NO/4NC), Bell Alarm, Manually Reset, ETU-776 LSI w/Display, GF, 4 Wire, Trip & Alarm, Metering Function Plus

2 - WLF-1200 circuit breakers, rated 1200 amperes continuous, 200 KAIC, electrically operated with Auxiliary Switch (4NO/4NC), Bell Alarm, Manually Reset, ETU-776 LSI w/Display, GF, 4 Wire, Trip & Alarm, Metering Function Plus

1 - WLF-2000 circuit breaker, rated 2000 amperes continuous, 200 KAIC, electrically operated with Auxiliary Switch (4NO/4NC), Bell Alarm, Manually Reset, ETU-776 LSI w/Display, GF, 4 Wire, Trip & Alarm, Metering Function Plus

2 - WLM-4000 circuit breakers, rated 4000 amperes continuous, 150/150kA KAIC, electrically operated with Auxiliary Switch (4NO/4NC), Bell Alarm, Manually Reset, ETU-776 LSI w/Display, GF, 4 Wire, Trip & Alarm, Metering Function Plus.

The following components are included:

2 - W32+: 4000A, 4W, Copper Bus
2 - W22: 4000A, 4W, Copper Bus
3 - W32: 4000A, 4W, Copper Bus
1 - Power Co. Metering Sect., 4000
1 - Incoming Line Barrier
1 - Service Entrance
1 - Incom: Bus Duct, 4W, 4000A
2 - Brkr Compt: 4000A EO (FS3)
1 - Brkr Compt: 2000A EO (FS2)

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3 - Brkr Compt: 1600A EO (FS2)
2 - Brkr Compt: 800A EO (FS2)
2 - 22"X22 5" Auxiliary Compartmnt
2 - 32"X22.5" Auxiliary Compartmnt
2 - 32"X45" Auxiliary Compartment
2 - Auxiliary Section 32"
1 - Fdr: Bus Duct, 4W, 2000A
1 - Fdr: Bus Duct, 4W, 4000A
2 - Crimp Lugs, 4W, 800A
3 - Crimp Lugs, 4W, 1600A
1 - CPT, 3 KVA
12 - PT,Instrument Type (Class 0.3)
18 - CT, 3P Cradle Mtd , 3200A Max
6 - CT, 3P Cradle Mtd., 5000A Max
8 - Short Cktg Terminal Block
8 - Brkr Cntrl Switch W/2 Lights
6 - Shutters, FS2 Breaker
2 - Shutters, FS3 Breaker
8 - Ground Sensor CT
8 - MOC Switch (4 NO/4 NC)
8 - TOC Switch (6 Form C)
18 - Padlockable Door Handle
8 - Warning Nameplates
18 - Wire Markers
8 - Heater, Cell Mounted
7 - 9350 Power Meter
8 - Indicating Light
1 - Hinged Rear Door w/3 Pt Latch
6 - 10" Rear Extension
6 - Channel Sills
6 - Cable/Bus Compartment Barrier
11 - Section Barriers
6 - Thermostat, Adjustable
6 - Special Terminal Blocks
3 - CT Special Mounting
6 - UL Label
6 - Seismic Zone 4
2 - Side Sheets, Indoor
5 - Vertical Bus, 4000A
6 - Insulated/Isolated Bus
6 - Bus Bracing 150 kA
6 - Stainless Steel Bus Hardware
18 - Device Nameplates
18 - Plastic Mimic Bus
6 - MCCB, 15- 100 Amp, 1 Pole
1 - Integral Breaker Hoist & Track
1 - Spare Parts
6 - Door Stops
1 - ATS Provisions

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ITEM B: WL Swgr "NB"

1 - Group of Siemens type W Low Voltage Metal-Enclosed Switchgear, rated 480V, 60 hertz, with 6 vertical sections, 3 phase, 4 wire, 4000 amp copper bus with silver plated connections, 150kA symmetrical bus bracing, and an indoor enclosure, constructed and tested in accordance with UL1558 and ANSI C37 standards. The switchgear sections will be furnished as generally described in Siemens Selection and Application Guide for WL Switchgear

2 - WLM-4000 circuit breakers, rated 4000 amperes continuous, 150/150kA KAIC, electrically operated with Auxiliary Switch (4NO/4NC), Bell Alarm, Manually Reset, ETU-776 LSI w/Display, GF, 4 Wire, Trip & Alarm, Metering Function Plus.

2 - WLF-1200 circuit breakers, rated 1200 amperes continuous, 200 KAIC, electrically operated with Auxiliary Switch (4NO/4NC), Bell Alarm, Manually Reset, ETU-776 LSI w/Display, GF, 4 Wire, Trip & Alarm, Metering Function Plus.

2 - WLF-800 circuit breakers, rated 800 amperes continuous, 200 KAIC, electrically operated with Auxiliary Switch (4NO/4NC), Bell Alarm, Manually Reset, ETU-776 LSI w/Display, GF, 4 Wire, Trip & Alarm, Metering Function Plus

The following components are included:

2 - W32+: 4000A, 4W, Copper Bus
2 - W22: 4000A, 4W, Copper Bus
3 - W32: 4000A, 4W, Copper Bus
1 - Power Co. Metering Sect , 4000
1 - Incoming Line Barrier
1 - Service Entrance
1 - Incom: Bus Duct, 4W, 4000A
2 - Brkr Compt: 4000A EO (FS3)
2 - Brkr Compt: 1600A EO (FS2)
4 - Brkr Compt: 800A EO (FS2)
2 - 22"X22 5" Auxiliary Compartmnt
2 - 32"X22.5" Auxiliary Compartmnt
2 - 32"X45" Auxiliary Compartment
2 - Auxiliary Section 32"
1 - Fdr: Bus Duct, 4W, 1600A
1 - Fdr: Bus Duct, 4W, 4000A
4 - Crimp Lugs, 4W, 800A
1 - Crimp Lugs, 4W, 1600A
1 - CPT, 3 KVA
12 - PT,Instrument Type (Class 0.3)
18 - CT, 3P Cradle Mtd., 3200A Max
6 - CT, 3P Cradle Mtd., 5000A Max
8 - Short Cktg Terminal Block
8 - Brkr Cntrl Switch W/2 Lights
6 - Shutters, FS2 Breaker
2 - Shutters, FS3 Breaker
8 - Ground Sensor CT
8 - MOC Switch (4 NO/4 NC)
8 - TOC Switch (6 Form C)
18 - Padlockable Door Handle
8 - Warning Nameplates
18 - Wire Markers
8 - Heater, Cell Mounted
7 - 9350 Power Meter
8 - Indicating Light

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1 - Hinged Rear Door w/3 Pt Latch
6 - 10" Rear Extension
6 - Channel Sills
6 - Cable/Bus Compartment Barrier
11 - Section Barriers
6 - Thermostat, Adjustable
6 - Special Terminal Blocks
3 - CT Special Mounting
6 - UL Label
6 - Seismic Zone 4
2 - Side Sheets, Indoor
5 - Vertical Bus, 4000A
6 - Insulated/Isolated Bus
6 - Bus Bracing 150 kA
6 - Stainless Steel Bus Hardware
18 - Device Nameplates
18 - Plastic Mimic Bus
6 - MCCB, 15- 100 Amp, 1 Pole
1 - Integral Breaker Hoist & Track
1 - Spare Parts
6 - Door Stops
1 - ATS Provisions

ITEM C: WL Swgr "SA"

1 - Group of Siemens type W Low Voltage Metal-Enclosed Switchgear, rated 480V, 60 hertz, with 6 vertical sections, 3 phase, 4 wire, 4000 amp copper bus with silver plated connections, 150kA symmetrical bus bracing, and an indoor enclosure, constructed and tested in accordance with UL1558 and ANSI C37 standards The switchgear sections will be furnished as generally described in Siemens Selection and Application Guide for WL Switchgear

2 - WLF-1200 circuit breakers, rated 1200 amperes continuous, 200 KAIC, electrically operated with Auxiliary Switch (4NO/4NC), Bell Alarm, Manually Reset, ETU-776 LSI w/Display, GF, 4 Wire, Trip & Alarm, Metering Function Plus

1 - WLF-2000 circuit breaker, rated 2000 amperes continuous, 200 KAIC, electrically operated with Auxiliary Switch (4NO/4NC), Bell Alarm, Manually Reset, ETU-776 LSI w/Display, GF, 4 Wire, Trip & Alarm, Metering Function Plus

1 - WLF-800 circuit breaker, rated 800 amperes continuous, 200 KAIC, electrically operated with Auxiliary Switch (4NO/4NC), Bell Alarm, Manually Reset, ETU-776 LSI w/Display, GF, 4 Wire, Trip & Alarm, Metering Function Plus

1 - WLM-4000 circuit breaker, rated 4000 amperes continuous, 150/150kA KAIC, electrically operated with Auxiliary Switch (4NO/4NC), Bell Alarm, Manually Reset, ETU-776 LSI w/Display, GF, 4 Wire, Trip & Alarm, Metering Function Plus

The following components are included:

2 - W32+: 4000A, 4W, Copper Bus
2 - W22: 4000A, 4W, Copper Bus
3 - W32: 4000A, 4W, Copper Bus
1 - Power Co. Metering Sect., 4000
1 - Incoming Line Barrier
1 - Service Entrance
1 - Incom: Bus Duct, 4W, 4000A

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1 - Brkr Compt: 4000A EO (FS3)
1 - Brkr Compt: 2000A EO (FS2)
2 - Brkr Compt: 1600A EO (FS2)
2 - Brkr Compt: 800A EO (FS2)
4 - 22"X22.5" Auxiliary Compartmnt
2 - 32"X22.5" Auxiliary Compartmnt
2 - 32"X45" Auxiliary Compartment
2 - Auxiliary Section 32"
2 - Crimp Lugs, 4W, 800A
2 - Crimp Lugs, 4W, 1600A
1 - Crimp Lugs, 4W, 2000A
1 - CPT, 3 KVA
12 - PT,Instrument Type (Class 0.3)
15 - CT, 3P Cradle Mtd., 3200A Max
3 - CT, 3P Cradle Mtd., 5000A Max.
6 - Short Cktg Terminal Block
6 - Brkr Cntd Switch W/2 Lights
4 - Shutters, FS2 Breaker
2 - Shutters, FS3 Breaker
6 - Ground Sensor CT
6 - MOC Switch (4 NO/4 NC)
6 - TOC Switch (6 Form C)
18 - Padlockable Door Handle
6 - Warning Nameplates
18 - Wire Markers
6 - Heater, Cell Mounted
5 - 9350 Power Meter
6 - Indicating Light
1 - Hinged Rear Door w/3 Pt Latch
6 - 10" Rear Extension
6 - Channel Sills
6 - Cable/Bus Compartment Barrier
11 - Section Barriers
6 - Thermostat, Adjustable
6 - Special Terminal Blocks
3 - CT Special Mounting
6 - UL Label
6 - Seismic Zone 4
2 - Side Sheets, Indoor
5 - Vertical Bus, 4000A
6 - Insulated/Isolated Bus
6 - Bus Bracing 150 kA
6 - Stainless Steel Bus Hardware
18 - Device Nameplates
18 - Plastic Mimic Bus
6 - MCCB, 15- 100 Amp, 1 Pole
1 - Integral Breaker Hoist & Track
1 - Spare Parts
6 - Door Stops
1 - ATS Provisions

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ITEM D: WL Swgr "SB"

1 - Group of Siemens type W Low Voltage Metal-Enclosed Switchgear, rated 480V, 60 hertz, with 6 vertical sections, 3 phase, 4 wire, 4000 amp copper bus with silver plated connections, 150kA symmetrical bus bracing, and an indoor enclosure, constructed and tested in accordance with UL1558 and ANSI C37 standards. The switchgear sections will be furnished as generally described in Siemens Selection and Application Guide for WL Switchgear

1 - WLF-800 circuit breaker, rated 800 amperes continuous, 200 KAIC, electrically operated with Auxiliary Switch (4NO/4NC), Bell Alarm, Manually Reset, ETU-776 LSI w/Display, GF, 4 Wire, Trip & Alarm, Metering Function Plus.

1 - WLM-4000 circuit breaker, rated 4000 amperes continuous, 150/150kA KAIC, electrically operated with Auxiliary Switch (4NO/4NC), Bell Alarm, Manually Reset, ETU-776 LSI w/Display, GF, 4 Wire, Trip & Alarm, Metering Function Plus.

3 - WLF-2000 circuit breakers, rated 2000 amperes continuous, 200 KAIC, electrically operated with Auxiliary Switch (4NO/4NC), Bell Alarm, Manually Reset, ETU-776 LSI w/Display, GF, 4 Wire, Trip & Alarm, Metering Function Plus.

The following components are included:

2 - W32+: 4000A, 4W, Copper Bus
2 - W22: 4000A, 4W, Copper Bus
3 - W32: 4000A, 4W, Copper Bus
1 - Power Co. Metering Sect., 4000
1 - Incoming Line Barrier
1 - Service Entrance
1 - Incom: Bus Duct, 4W, 4000A
1 - Brkr Compt: 4000A EO (FS3)
3 - Brkr Compt: 2000A EO (FS2)
2 - Brkr Compt: 800A EO (FS2)
4 - 22"X22 5" Auxiliary Compartmnt
2 - 32"X22.5" Auxiliary Compartmnt
2 - 32"X45" Auxiliary Compartment
2 - Auxiliary Section 32"
2 - Crimp Lugs, 4W, 800A
3 - Crimp Lugs, 4W, 2000A
1 - CPT, 3 KVA
12 - PT,Instrument Type (Class 0.3)
15 - CT, 3P Cradle Mtd , 3200A Max
6 - Short Cktg Terminal Block
6 - Brkr Cntrl Switch W/2 Lights
2 - Shutters, FS2 Breaker
4 - Shutters, FS3 Breaker
6 - Ground Sensor CT
8 - MOC Switch (4 NO/4 NC)
6 - TOC Switch (6 Form C)
18 - Padlockable Door Handle
6 - Warning Nameplates
18 - Wire Markers
6 - Heater, Cell Mounted
5 - 9350 Power Meter
6 - Indicating Light
1 - Hinged Rear Door w/3 Pt Latch
6 - 10" Rear Extension
6 - Channel Sills

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6 - Cable/Bus Compartment Barrier
11 - Section Barriers
6 - Thermostat, Adjustable
6 - Special Terminal Blocks
3 - CT Special Mounting
6 - UL Label
6 - Seismic Zone 4
2 - Side Sheets, Indoor
5 - Vertical Bus, 4000A
6 - Insulated/Isolated Bus
6 - Bus Bracing 150 kA
6 - Stainless Steel Bus Hardware
18 - Device Nameplates
18 - Plastic Mimic Bus
6 - MCCB, 15- 100 Amp, 1 Pole
1 - Integral Breaker Hoist & Track
1 - Spare Parts
6 - Door Stops
1 - ATS Provisions

A. 1 **PMDP -- Switchboard SWBD SB3 FCS2 CB**
SB3/FCS2 Front Connected, BOTTOM LEFT, Non SUSE, 3p/4w, 480/277V, Nontapered Cu Bus, 2000A, CU, 150K AIC, Brac 150K AIC, NEMA1 Enc.
1 - Auxiliary Section Bussed 2000A
11 - 240 / 3 SCJD6, 300A Sensors Solid State Branch Breaker
1 - MCCBSS 400A Outgoing Busway Connection
1 - Trip Unit - LSIG - GF w/Neutral Sensor
1 - Switchboard Device Nameplate
3 - 100 / 3 SCJD6, 200A Sensors Solid State Branch Breaker
1 - (2) #4/0-500 kcmil Al
1 - Trip Unit - LSIG - GF w/Neutral Sensor
1 - Switchboard Device Nameplate
1 - 150 / 3 SCJD6, 300A Sensors Solid State Branch Breaker
1 - (2) #4/0-500 kcmil Al
1 - Trip Unit - LSIG - GF w/Neutral Sensor
1 - Switchboard Device Nameplate
1 - 200 / 3 SCJD6, 200A Sensors Solid State Branch Breaker
1 - (2) #4/0-500 kcmil Al
1 - Trip Unit - LSIG - GF w/Neutral Sensor
1 - Switchboard Device Nameplate
1 - 800/3 M O. S.M. WLC - 800, 800A Plug, Branch Breaker
1 - SecondaryTerminalConnection/TensionSpring
1 - Electronic Trip Unit ETU745 LSIG (GF Trip&Alarm)
1 - (3) #3/0-500 kcmil
1 - Switchboard Device Nameplate
28 - 500 Kcmil AL/CU Mechanical Lugs
1 - Copper Ground Bus
1 - Switchboard Master Nameplate
4 - Extra Depth Upgrades
4 - 100% Neutral Bus
5 - Lifting Eyes

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B. 1 **TMDP -- Switchboard SWBD SB3 FCS2 CB**

SB3/FCS2 Front Connected, BOTTOM LEFT, Non SUSE, 3p/4w, 480/277V, Nontapered Cu Bus, 2000A, CU, 150K AIC, Brac 150K AIC, NEMA1 Enc

- 1 - Auxiliary Section Bussed 2000A
- 2 - 150 / 3 SCJD6, 300A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 1 - 130 / 3 SCJD6, 200A Sensors Solid State Branch Breaker
  - 1 - MCCBSS 400A Outgoing Busway Connection
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 5 - 240 / 3 SCJD6, 300A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 1 - 300 / 3 SCJD6, 300A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 1 - 80 / 3 SCJD6, 200A Sensors Solid State Branch Breaker
  - 1 - MCCBSS 400A Outgoing Busway Connection
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 2 - 260 / 3 SCJD6, 400A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 1 - 400 / 3 SCJD6, 400A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 28 - 500 Kcmil AL/CU Mechanical Lugs
- 1 - Copper Ground Bus
- 1 - Switchboard Master Nameplate
- 2 - 100% Neutral Bus
- 3 - Lifting Eyes

C. 1 **NA-3 -- Switchboard SWBD SB3 FCS2 CB**

SB3/FCS2 Front Connected, TOP LEFT, Non SUSE, 3p/4w, 480/277V, Nontapered Cu Bus, 2000A, CU, 150K AIC, Brac 150K AIC, NEMA1 Enc.

- 1 - Auxiliary Section Bussed 2000A
- 2 - 400 / 3 CJD6 Branch Breaker Provision
  - 1 - (1) 250-500 kcmil Al
- 1 - 1000/3 M O S.M WLC - 1200, 1000A Plug, Branch Breaker
  - 1 - Electronic Trip Unit ETU776 LSIG (GF Trip&Alarm)
  - 1 - (4) #3/0-500 kcmil
  - 1 - Switchboard Device Nameplate
- 1 - 1200/3 M O. S M. WLC - 1200, 1200A Plug, Branch Breaker Space
- 1 - Incoming 2000A Busway
- 1 - Copper Ground Bus
- 1 - Switchboard Master Nameplate
- 2 - 100% Neutral Bus
- 3 - Lifting Eyes
- 2 - Short Circuit Rating Per Section

S

D. 1 **A2 -- Switchboard SWBD SB3 FCS2 CB**

SB3/FCS2 Front Connected, TOP LEFT, Non SUSE, 3p/4w, 480/277V, Nontapered Cu Bus, 4000A, CU, 150K AIC, Brac 150K AIC, NEMA1 Enc

- 1 - Auxiliary Section Bussed 4000A
- 1 - 800/3 M O. S.M. WLC - 800, 800A Plug, Branch Breaker
  - 1 - Electronic Trip Unit ETU776 LSIG (GF Trip&Alarm)
  - 1 - (3) #3/0-500 kcmil
  - 1 - Switchboard Device Nameplate
- 6 - 400 / 3 SCJD6, 400A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 1 - 400 / 3 SCLD6, 400A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 1 - 600 / 3 SCLD6, 600A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 4 - 200 / 3 SCJD6, 200A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 4 - 100 / 3 SCJD6, 200A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 1 - 1600/3 M O S.M WLC - 1600, 1600A Plug, Branch Breaker
  - 1 - Electronic Trip Unit ETU776 LSIG (GF Trip&Alarm)
  - 1 - (6) #3/0-500 kcmil
  - 1 - Switchboard Device Nameplate
- 1 - Incoming 4000A Busway
- 1 - Copper Ground Bus
- 1 - Switchboard Master Nameplate
- 4 - 100% Neutral Bus
- 5 - Lifting Eyes

S

E. 1 **A1 -- Switchboard SWBD SB3 FCS2 CB**

SB3/FCS2 Front Connected, TOP RIGHT, Non SUSE, 3p/4w, 480/277V, Nontapered Cu Bus, 2000A, CU, 150K AIC, Brac 150K AIC, NEMA1 Enc

- 1 - Auxiliary Section Bussed 2000A
- 1 - 1200/3 M.O. S.M. WLC - 1200, 1200A Plug, Branch Breaker
  - 1 - Electronic Trip Unit ETU776 LSIG (GF Trip&Alarm)
  - 1 - (4) #3/0-500 kcmil
  - 1 - Switchboard Device Nameplate
- 3 - 200 / 3 SCJD6, 200A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 1 - 400 / 3 SCJD6, 400A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 1 - 450 / 3 SCLD6, 500A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 1 - 800/3 M.O S.M. WLC - 800, 800A Plug, Branch Breaker
  - 1 - Electronic Trip Unit ETU745 LSIG (GF Trip&Alarm)
  - 1 - (3) #3/0-500 kcmil
  - 1 - Switchboard Device Nameplate
- 3 - 360 / 3 SCJD6, 400A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 1 - 1200/3 M.O S.M WLC - 1200, 1200A Plug, Branch Breaker
  - 1 - Electronic Trip Unit ETU776 LSIG (GF Trip&Alarm)
  - 1 - (4) #3/0-500 kcmil
  - 1 - Switchboard Device Nameplate
- 1 - 800/3 M.O S.M. WLC - 800, 800A Plug, Branch Breaker Space
- 1 - 300 / 3 SCJD6, 300A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 4 - 400 / 3 SCJD6, 400A Sensors Solid State Branch Breaker Space
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
- 28 - 500 Kcmil AL/CU Mechanical Lugs
- 1 - Copper Ground Bus
- 1 - Switchboard Master Nameplate
- 5 - Lifting Eyes
- 4 - 100% Neutral Bus

S

F. 1 **Temp SWBD T-North -- Switchboard SWBD SB3 FCS2 CB**
SB3/FCS2 Front Connected, TOP LEFT, Non SUSE, 3p/4w, 480/277V, Nontapered Cu Bus, 2000A, CU, 100K AIC, Brac 100K AIC, NEMA1 Enc
- 1 - Auxiliary Section Bussed 2000A
- 1 - 2000/3 M.O S.M WLL - 2000, 2000A Plug, Branch Breaker
  - 1 - Electronic Trip Unit ETU745 LSIG (GF Trip&Alarm)
  - 1 - (7) #3/0-500 kcmil
  - 1 - Switchboard Device Nameplate
  - 1 - ETU Meter Functions Standard
  - 1 - ETU Communications MODBUS
  - 1 - Siemens Digital Meter 9200DG - 1ZZA
- 1 - 1200/3 M O. S.M WLL - 1200, 1200A Plug, Branch Breaker
  - 1 - Electronic Trip Unit ETU745 LSIG (GF Trip&Alarm)
  - 1 - (4) #3/0-500 kcmil
  - 1 - Switchboard Device Nameplate
  - 1 - ETU Meter Functions Standard
  - 1 - ETU Communications MODBUS
  - 1 - Siemens Digital Meter 9200DG - 1ZZA
- 1 - 1200/3 M.O S.M. WLL - 1200, 1200A Plug, Branch Breaker
  - 1 - Electronic Trip Unit ETU745 LSIG (GF Trip&Alarm)
  - 1 - (4) #3/0-500 kcmil
  - 1 - Switchboard Device Nameplate
  - 1 - ETU Meter Functions Standard
  - 1 - ETU Communications MODBUS
  - 1 - Siemens Digital Meter 9200DG - 1ZZA
- 1 - 2000/3 M.O S M. WLL - 2000, 2000A Plug, Branch Breaker Space
- 1 - 2000/3 M.O. S M WLL - 2000, 2000A Plug, Branch Breaker Space
- 28 - 500 Kcmil AL/CU Mechanical Lugs
- 1 - Copper Ground Bus
- 1 - Switchboard Master Nameplate
- 3 - 100% Neutral Bus
- 4 - Lifting Eyes

G. 1 **Temp Svc Switch- N -- Switchboard SWBD SB3 FCS2 FUSIBLE**
SB3/FCS2 Front Connected, TOP LEFT, N, SUSE, 3p/4w, 480/277V, Nontapered Cu Bus, 2000A, CU, 100K AIC, Brac 100K AIC, NEMA1 Enc
- 1 - Auxiliary Section Bussed 2000A
- 1 - Utility - PUBLIC SERVICE ELECTRIC & GAS CO , NJ - Hot
- 1 - 2000 / 3 BP Main Switch
  - 1 - Ground Fault (CPT and Shunt Trip Included) 1601 - 2000A
  - 1 - (7) #3/0-500 kcmil
- 28 - 500 Kcmil AL/CU Mechanical Lugs
- 1 - Copper Ground Bus
- 1 - Switchboard Master Nameplate
- 1 - Extra Depth Upgrades
- 1 - 100% Neutral Bus
- 2 - Lifting Eyes

S

H. 1 **Temp SWDB-T-N -- Switchboard SWBD SB3 FCS2 CB**

SB3/FCS2 Front Connected, TOP LEFT, Non SUSE, 3p/4w, 480/277V, Nontapered Cu Bus, 2000A, CU, 100K AIC, Brac 100K AIC, NEMA1 Enc

- 1 - MLO Section
- 1 - 1600/3 M.O. S.M WLL - 1600, 1600A Plug, Branch Breaker
  - 1 - Electronic Trip Unit ETU745 LSIG (GF Trip&Alarm)
  - 1 - (6) #3/0-500 kcmil
  - 1 - Switchboard Device Nameplate
- 6 - 400 / 3 SCJD6, 400A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 5 - 200 / 3 SCJD6, 200A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 2 - 100 / 3 SCJD6, 200A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 1 - 600 / 3 SCLD6, 600A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 1 - 800/3 M.O. S.M. WLL - 800, 800A Plug, Branch Breaker
  - 1 - Electronic Trip Unit ETU745 LSIG (GF Trip&Alarm)
  - 1 - (3) #3/0-500 kcmil
  - 1 - Switchboard Device Nameplate
- 1 - 500 / 3 SCLD6, 500A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 1 - 450 / 3 SCLD6, 500A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 1 - 150 / 3 SCJD6, 300A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 1 - 60 / 3 SCJD6, 200A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 28 - 500 Kcmil AL/CU Mechanical Lugs
- 1 - Copper Ground Bus
- 1 - Switchboard Master Nameplate
- 4 - 100% Neutral Bus
- 4 - Lifting Eyes

S

I. 1 **Temp SWDB-T-S -- Switchboard SWBD SB3 FCS2 CB**
SB3/FCS2 Front Connected, TOP LEFT, Non SUSE, 3p/4w, 480/277V, Nontapered Cu Bus, 2000A, CU, 100K AIC, Brac 100K AIC, NEMA1 Enc

1 - MLO Section
3 - 360 / 3 SCJD6, 400A Sensors Solid State Branch Breaker
  1 - (2) #4/0-500 kcmil Al
  1 - Trip Unit - LSIG - GF w/Neutral Sensor
  1 - Switchboard Device Nameplate
1 - 400 / 3 SCJD6, 400A Sensors Solid State Branch Breaker
  1 - (2) #4/0-500 kcmil Al
  1 - Trip Unit - LSIG - GF w/Neutral Sensor
  1 - Switchboard Device Nameplate
1 - 300 / 3 SCJD6, 300A Sensors Solid State Branch Breaker
  1 - (2) #4/0-500 kcmil Al
  1 - Trip Unit - LSIG - GF w/Neutral Sensor
  1 - Switchboard Device Nameplate
1 - 450 / 3 SCLD6, 500A Sensors Solid State Branch Breaker
  1 - (2) #4/0-500 kcmil Al
  1 - Trip Unit - LSIG - GF w/Neutral Sensor
  1 - Switchboard Device Nameplate
1 - 1200/3 M.O S.M WLL - 1200, 1200A Plug, Branch Breaker
  1 - Electronic Trip Unit ETU776 LSIG (GF Trip&Alarm)
  1 - (4) #3/0-500 kcmil
  1 - Switchboard Device Nameplate
1 - 800/3 M.O. S.M. WLL - 800, 800A Plug, Branch Breaker
  1 - Electronic Trip Unit ETU776 LSIG (GF Trip&Alarm)
  1 - (3) #3/0-500 kcmil
  1 - Switchboard Device Nameplate
1 - 1200/3 M O S.M. WLL - 1200, 1200A Plug, Branch Breaker
  1 - Electronic Trip Unit ETU776 LSIG (GF Trip&Alarm)
  1 - (4) #3/0-500 kcmil
  1 - Switchboard Device Nameplate
1 - 1200/3 M O S.M. WLL - 1200, 1200A Plug, Branch Breaker
  1 - Electronic Trip Unit ETU776 LSIG (GF Trip&Alarm)
  1 - (4) #3/0-500 kcmil
  1 - Switchboard Device Nameplate
3 - 200 / 3 SCJD6, 200A Sensors Solid State Branch Breaker
  1 - (2) #4/0-500 kcmil Al
  1 - Trip Unit - LSIG - GF w/Neutral Sensor
  1 - Switchboard Device Nameplate
1 - 150 / 3 SCJD6, 300A Sensors Solid State Branch Breaker
  1 - (2) #4/0-500 kcmil Al
  1 - Trip Unit - LSIG - GF w/Neutral Sensor
  1 - Switchboard Device Nameplate
1 - 180 / 3 SCJD6, 200A Sensors Solid State Branch Breaker
  1 - (2) #4/0-500 kcmil Al
  1 - Trip Unit - LSIG - GF w/Neutral Sensor
  1 - Switchboard Device Nameplate
1 - 600 / 3 SCLD6, 600A Sensors Solid State Branch Breaker
  1 - (2) #4/0-500 kcmil Al
  1 - Trip Unit - LSIG - GF w/Neutral Sensor
  1 - Switchboard Device Nameplate
28 - 500 Kcmil AL/CU Mechanical Lugs
1 - Copper Ground Bus
1 - Switchboard Master Nameplate
4 - Lifting Eyes

S

J. 1 **LLE-EMDP -- Switchboard SWBD SB3 FCS2 CB**
SB3/FCS2 Front Connected, BOTTOM LEFT, Non SUSE, 3p/4w, 480/277V, Nontapered Cu Bus, 600A, CU, 150K AIC, Brac 150K AIC, NEMA1 Enc
- 1 - Auxiliary Section Bussed 600A
- 1 - 400 / 3 SCJD6, 400A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 1 - 240 / 3 SCJD6, 300A Sensors Solid State Branch Breaker
  - 1 - (2) #4-#3/0-Cu/Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 1 - 200 / 3 SCJD6, 200A Sensors Solid State Branch Breaker
  - 1 - (1) #3/0-600 kcmil Cu
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 4 - 100 / 3 SCJD6, 200A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 1 - 80 / 3 SCJD6, 200A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 6 - 400 / 3 SCJD6, 400A Sensors Solid State Branch Breaker Provision
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
- 12 - 350 Kcmil AL/CU Mechanical Lugs
- 1 - Copper Ground Bus
- 1 - Switchboard Master Nameplate
- 3 - Lifting Eyes
- 2 - 100% Neutral Bus

K. 1 **B2 -- Switchboard SWBD SB3 FCS2 CB**
SB3/FCS2 Front Connected, TOP LEFT, Non SUSE, 3p/4w, 480/277V, Nontapered Cu Bus, 4000A, CU, 150K AIC, Brac 150K AIC, NEMA1 Enc
- 1 - Auxiliary Section Bussed 4000A
- 7 - 400 / 3 SCJD6, 400A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 4 - 200 / 3 SCJD6, 200A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 1 - 450 / 3 SCLD6, 500A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 1 - 100 / 3 SCJD6, 200A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 1 - 60 / 3 SCJD6, 200A Sensors Solid State Branch Breaker

S

1 - (2) #4/0-500 kcmil Al
1 - Trip Unit - LSIG - GF w/Neutral Sensor
1 - Switchboard Device Nameplate
1 - 1600/3 M O S.M. WLC - 1600, 1600A Plug, Branch Breaker
1 - Electronic Trip Unit ETU776 LSIG (GF Trip&Alarm)
1 - (6) #3/0-500 kcmil
1 - Switchboard Device Nameplate
1 - 150 / 3 SCJD6, 300A Sensors Solid State Branch Breaker
1 - (2) #4/0-500 kcmil Al
1 - Trip Unit - LSIG - GF w/Neutral Sensor
1 - Switchboard Device Nameplate
1 - 800/3 M.O S.M. WLC - 800, 800A Plug, Branch Breaker
1 - Electronic Trip Unit ETU776 LSIG (GF Trip&Alarm)
1 - (3) #3/0-500 kcmil
1 - Switchboard Device Nameplate
1 - 800/3 M O. S.M. WLC - 800, 800A Plug, Branch Breaker
1 - Electronic Trip Unit ETU776 LSIG (GF Trip&Alarm)
1 - (3) #3/0-500 kcmil
1 - Switchboard Device Nameplate
1 - 800/3 M O. S.M. WLC - 800, 800A Plug, Branch Breaker
1 - Electronic Trip Unit ETU776 LSIG (GF Trip&Alarm)
1 - (3) #3/0-500 kcmil
1 - Switchboard Device Nameplate
1 - Incoming 4000A Busway
1 - Copper Ground Bus
1 - Switchboard Master Nameplate
5 - 100% Neutral Bus
6 - Lifting Eyes

L. 1 **Temp Svc Switch- S -- Switchboard SWBD SB3 FCS2 FUSIBLE**
SB3/FCS2 Front Connected, TOP LEFT, N, SUSE, 3p/4w, 480/277V, Nontapered Cu Bus, 3000A, CU, 100K AIC, Brac 100K AIC, NEMA1 Enc.
1 - Auxiliary Section Bussed 3000A
1 - Utility - PUBLIC SERVICE ELECTRIC & GAS CO , NJ - Hot
1 - 3000 / 3 BP Main Switch
1 - Ground Fault (CPT and Shunt Trip Included) 2001 - 3000A
1 - (10) #3/0-500 kcmil
36 - 500 Kcmil AL/CU Mechanical Lugs
1 - Copper Ground Bus
1 - Switchboard Master Nameplate
1 - Nontapered 1000A/in2 Cu Bus 100% Rated
3 - Lifting Eyes
2 - 100% Neutral Bus

S

M. 1 **B1 -- Switchboard SWBD SB3 FCS2 CB**

SB3/FCS2 Front Connected, TOP RIGHT, Non SUSE, 3p/4w, 480/277V, Nontapered Cu Bus, 2000A, CU, 150K AIC, Brac 150K AIC, NEMA1 Enc

- 1 - Auxiliary Section Bussed 2000A
- 1 - 1200/3 M.O. S.M WLC - 1200, 1200A Plug, Branch Breaker
  - 1 - Electronic Trip Unit ETU776 LSIG (GF Trip&Alarm)
  - 1 - (4) #3/0-500 kcmil
  - 1 - Switchboard Device Nameplate
- 7 - 200 / 3 SCJD6, 200A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 1 - 400 / 3 SCJD6, 400A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 1 - 450 / 3 SCLD6, 500A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 4 - 400 / 3 SCJD6, 400A Sensors Solid State Branch Breaker Provision
- 1 - 600 / 3 SCLD6, 600A Sensors Solid State Branch Breaker
  - 1 - MCCBSS 600A Outgoing Busway Connection
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 1 - 180 / 3 SCJD6, 200A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 1 - 150 / 3 SCJD6, 300A Sensors Solid State Branch Breaker
  - 1 - MCCBSS 400A Outgoing Busway Connection
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 1 - 1200/3 M.O. S.M. WLC - 1200, 1200A Plug, Branch Breaker
  - 1 - Electronic Trip Unit ETU776 LSIG (GF Trip&Alarm)
  - 1 - (4) #3/0-500 kcmil
  - 1 - Switchboard Device Nameplate
- 1 - 1200/3 M O. S.M. WLC - 1200, 1200A Plug, Branch Breaker
  - 1 - Electronic Trip Unit ETU776 LSIG (GF Trip&Alarm)
  - 1 - (4) #3/0-500 kcmil
  - 1 - Switchboard Device Nameplate
- 1 - 1200/3 M.O. S M WLC - 1200, 1200A Plug, Branch Breaker Space
- 1 - 360 / 3 SCJD6, 400A Sensors Solid State Branch Breaker
  - 1 - (2) #4/0-500 kcmil Al
  - 1 - Trip Unit - LSIG - GF w/Neutral Sensor
  - 1 - Switchboard Device Nameplate
- 28 - 500 Kcmil AL/CU Mechanical Lugs
- 1 - Copper Ground Bus
- 1 - Switchboard Master Nameplate
- 6 - Lifting Eyes
- 5 - 100% Neutral Bus

S

N. 1 **EMDS SOUTH -- Switchboard SWBD SB3 FCS2 CB**
SB3/FCS2 Front Connected, TOP LEFT, Non SUSE, 3p/4w, 480/277V, Tapered Cu Bus, 5000A, CU, 150K AIC, Brac 150K AIC, NEMA1 Enc.
1 - Auxiliary Section Bussed 5000A
1 - 4000/3 M.O. S.M. WLC - 4000, 4000A Plug, Branch Breaker
1 - Electronic Trip Unit ETU776 LSIG (GF Trip&Alarm)
1 - (13) #3/0-500 kcmil
1 - Switchboard Device Nameplate
1 - 4000/3 M O. S.M WLC - 4000, 4000A Plug, Branch Breaker
1 - Electronic Trip Unit ETU776 LSIG (GF Trip&Alarm)
1 - (13) #3/0-500 kcmil
1 - Switchboard Device Nameplate
2 - 600 / 3 SCLD6, 600A Sensors Solid State Branch Breaker
1 - (2) #4/0-500 kcmil Al
1 - Trip Unit - LSIG - GF w/Neutral Sensor
1 - Switchboard Device Nameplate
60 - 600 Kcmil AL/CU Mechanical Lugs
3 - 100% Neutral Bus
1 - Copper Ground Bus
4 - Lifting Eyes
1 - Switchboard Master Nameplate

O. 1 **EMDS NORTH -- Switchboard SWBD SB3 FCS2 CB**
SB3/FCS2 Front Connected, TOP LEFT, Non SUSE, 3p/4w, 480/277V, Tapered Cu Bus, 5000A, CU, 150K AIC, Brac 150K AIC, NEMA1 Enc
1 - Auxiliary Section Bussed 5000A
1 - 4000/3 M.O S.M. WLC - 4000, 4000A Plug, Branch Breaker
1 - Electronic Trip Unit ETU776 LSIG (GF Trip&Alarm)
1 - (13) #3/0-500 kcmil
1 - Switchboard Device Nameplate
1 - 4000/3 M.O S.M. WLC - 4000, 4000A Plug, Branch Breaker
1 - Electronic Trip Unit ETU776 LSIG (GF Trip&Alarm)
1 - (13) #3/0-500 kcmil
1 - Switchboard Device Nameplate
2 - 600 / 3 SCLD6, 600A Sensors Solid State Branch Breaker
1 - (2) #4/0-500 kcmil Al
1 - Trip Unit - LSIG - GF w/Neutral Sensor
1 - Switchboard Device Nameplate
60 - 600 Kcmil AL/CU Mechanical Lugs
3 - 100% Neutral Bus
1 - Copper Ground Bus
4 - Lifting Eyes
1 - Switchboard Master Nameplate

S

P. 1 **Temp SWBD-T South -- Switchboard SWBD SB3 FCS2 CB**
SB3/FCS2 Front Connected, TOP LEFT, SUSE, 3p/4w, 480/277V, Nontapered Cu Bus, 3000A, CU, 100K AIC, Brac 100K AIC, NEMA1 Enc
- 1 - Auxiliary Section Bussed 3000A
- 1 - 2000/3 M O. S.M. WLL - 2000, 2000A Plug, Branch Breaker
  - 1 - Electronic Trip Unit ETU776 LSIG (GF Trip&Alarm)
  - 1 - (7) #3/0-500 kcmil
  - 1 - Switchboard Device Nameplate
- 1 - 2000/3 M O S.M WLL - 2000, 2000A Plug, Branch Breaker
  - 1 - Electronic Trip Unit ETU776 LSIG (GF Trip&Alarm)
  - 1 - (7) #3/0-500 kcmil
  - 1 - Switchboard Device Nameplate
- 1 - 2000/3 M O. S.M. WLL - 2000, 2000A Plug, Branch Breaker
  - 1 - Electronic Trip Unit ETU776 LSIG (GF Trip&Alarm)
  - 1 - (7) #3/0-500 kcmil
  - 1 - Switchboard Device Nameplate
- 40 - 500 Kcmil AL/CU Mechanical Lugs
- 2 - 100% Neutral Bus
- 1 - Copper Ground Bus
- 3 - Lifting Eyes
- 1 - Switchboard Master Nameplate

Q. 1 **NA Vault Run -- Busway Sentron**
10 ft , 4000A, Sentron Copper Feeder, 480Y/277 3ø4W, Internal Grd, 200KAIC, Amb 40C, Std Neut
- 2 - Hanger - Trapeze - SXTH3
- 1 - Elbow Stack - SX440C20ES
- 1 - Switchboard Stub Siemens - SX440C20FEND
- 1 - End Tap Box, Horizontal, With Special Lugs - SX440C20ETHX

R. 1 **NB Vault Run -- Busway Sentron**
10 ft , 4000A, Sentron Copper Feeder, 480Y/277 3ø4W, Internal Grd, 200KAIC, Amb 40C, Std Neut
- 2 - Hanger - Trapeze - SXTH3
- 1 - Elbow Stack - SX440C20ES
- 1 - Switchboard Stub Siemens - SX440C20FEND
- 1 - End Tap Box, Horizontal, With Special Lugs - SX440C20ETHX

S. 1 **SB Vault Run -- Busway Sentron**
10 ft , 4000A, Sentron Copper Feeder, 480Y/277 3ø4W, Internal Grd, 200KAIC, Amb 40C, Std Neut
- 2 - Hanger - Trapeze - SXTH3
- 1 - Elbow Stack - SX440C20ES
- 1 - Switchboard Stub Siemens - SX440C20FEND
- 1 - End Tap Box, Horizontal, With Special Lugs - SX440C20ETHX

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T. 1 **SA Vault Run -- Busway Sentron**
10 ft , 4000A, Sentron Copper Feeder, 480Y/277 3ø4W, Internal Grd, 200KAIC, Amb 40C, Std Neut
- 2 - Hanger - Trapeze - SXTH3
- 1 - Elbow Stack - SX440C20ES
- 1 - Switchboard Stub Siemens - SX440C20FEND
- 1 - End Tap Box, Horizontal, With Special Lugs - SX440C20ETHX

U. 1 **NA Run -- Busway Sentron**
96 ft., 4000A, Sentron Copper Feeder, 480Y/277 3ø4W, Internal Grd, 200KAIC, Amb 40C, Std Neut
- 11 - Hanger - Trapeze - SXTH3
- 6 - Elbow Stack - SX440C20ES
- 2 - Switchboard Stub Siemens - SX440C20FEND

V. 1 **NB Run -- Busway Sentron**
40 ft., 4000A, Sentron Copper Feeder, 480Y/277 3ø4W, Internal Grd, 200KAIC, Amb 40C, Std Neut
- 5 - Hanger - Trapeze - SXTH3
- 4 - Elbow Stack - SX440C20ES
- 2 - Switchboard Stub Siemens - SX440C20FEND

W. 1 **NA3 Run -- Busway Sentron**
50 ft., 2000A, Sentron Copper Feeder, 480Y/277 3ø4W, Internal Grd, 150KAIC, Amb 40C, Std Neut
- 6 - Hanger - Trapeze - SXTH2
- 3 - Elbow Stack - SX420C20ES
- 1 - End Tap Box - Horizontal - SX420C20ETHS

X. 1 **LLE-T-M -- PB P4**
P4E75L1800FTS, 800 Amp MB Top Feed, 480/277V, 3ø4W, Tin Plated, Standard Copper Main Bus, NEMA 1 Indoor, Surface Mount, 42,000 AIC
- 1 - Non-Ins Ground Connector - AL/CU (Std)
- 1 - Main Bus - Tin Plated Copper
- 1 - Engraved Nameplate - Screwed Trim
- 7 - HED4 70/3
- 6 - HED4 60/3
- 1 - HLD6 500/3
- 1 - HED4 /3 Prov

Y. 1 **ELLE-P-M -- PB P2**
P2E42HL400FTS, 400 Amp MB Top Feed, 480/277V, 3ø4W, Tin Plated, Standard Copper Main Bus, NEMA 1 Indoor, Surface Mount, 42,000 AIC
- 1 - Non-Ins Ground Connector - AL/CU (Std)
- 1 - Main Bus - Tin Plated Copper
- 1 - Engraved Nameplate - Screwed Trim
- 1 - HED4 70/3
- 2 - HED4 60/3
- 1 - HED4 45/3
- 9 - HED4 30/3
- 3 - HED4 20/1

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Z. 1 **LLE-PLP -- PB P2**
P2E42H2225FTS, 225 Amp MB Top Feed, 480/277V, 3ø4W, Tin Plated, Standard Copper Main Bus, NEMA 1 Indoor, Surface Mount, 42,000 AIC, Series Rated
- 1 - Non-Ins Ground Connector - AL/CU (Std)
- 1 - Main Bus - Tin Plated Copper
- 1 - Engraved Nameplate - Screwed Trim
- 1 - Card Holder - Metal Frame
- **1 - Adder for Lighting Control Panel**
- 42 - BQD 20/1

AA. 1 **LLE-T-VR -- PB P1**
P1C42BL050CTS, 50 Amp MB Top Feed, 208/120V, 3ø4W, Tin Plated, Standard Copper Main Bus, NEMA 1 Indoor, Surface Mount, 10,000 AIC
- 1 - Non-Ins Ground Connector - AL/CU (Std)
- 1 - Main Bus - Tin Plated Copper
- 1 - Engraved Nameplate - Screwed Trim
- 1 - Card Holder - Metal Frame
- 32 - BL 20/1
- 10 - BL /1 Prov

BB. 1 **ELLE-PLP -- PB P2**
P2E42H2225FTS, 225 Amp MB Top Feed, 480/277V, 3ø4W, Tin Plated, Standard Copper Main Bus, NEMA 1 Indoor, Surface Mount, 42,000 AIC
- 1 - Non-Ins Ground Connector - AL/CU (Std)
- 1 - Main Bus - Tin Plated Copper
- 1 - Engraved Nameplate - Screwed Trim
- 1 - Card Holder - Metal Frame
- 32 - HED4 20/1
- 10 - HED4 /1 Prov

CC. 1 **LLE-TLP -- PB P2**
P2E42H4125FTS, 125 Amp MB Top Feed, 480/277V, 3ø4W, Tin Plated, Standard Copper Main Bus, NEMA 1 Indoor, Surface Mount, 42,000 AIC, Series Rated
- 1 - Non-Ins Ground Connector - AL/CU (Std)
- 1 - Main Bus - Tin Plated Copper
- 1 - Engraved Nameplate - Screwed Trim
- 1 - Card Holder - Metal Frame
- **1 - Adder for Lighting Control Panel**
- 42 - BQD 20/1

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DD. 1 **LLE-T-V -- PB P2**
P2E42H6300FTS, 300 Amp MB Top Feed, 480/277V, 3ø4W, Tin Plated, Standard Copper Main Bus, NEMA 1 Indoor, Surface Mount, 42,000 AIC
- 1 - Non-Ins Ground Connector - AL/CU (Std)
- 1 - Main Bus - Tin Plated Copper
- 1 - Engraved Nameplate - Screwed Trim
- 1 - HED4 70/3
- 7 - HED4 60/3
- 2 - HED4 80/3
- 3 - HED4 35/3
- 1 - HED4 25/3

EE. 1 **LLE-PRP -- PB P1**
P1C42QJ150CTS, 150 Amp MB Top Feed, 208/120V, 3ø4W, Tin Plated, Standard Copper Main Bus, NEMA 1 Indoor, Surface Mount, 10,000 AIC
- 1 - Non-Ins Ground Connector - AL/CU (Std)
- 1 - Main Bus - Tin Plated Copper
- 1 - Engraved Nameplate - Screwed Trim
- 1 - Card Holder - Metal Frame
- 38 - BL 20/1
- 4 - BL 15/1

FF. 1 **ELLE-PRP -- PB P1**
P1C42QJ150CTS, 150 Amp MB Top Feed, 208/120V, 3ø4W, Tin Plated, Standard Copper Main Bus, NEMA 1 Indoor, Surface Mount, 10,000 AIC
- 1 - Non-Ins Ground Connector - AL/CU (Std)
- 1 - Main Bus - Tin Plated Copper
- 1 - Card Holder - Metal Frame
- 1 - Engraved Nameplate - Screwed Trim
- 32 - BL 20/1
- 10 - BL /1 Prov

GG. 1 **LLE-P-M -- PB P2**
P2E42H5225FTS, 225 Amp MB Top Feed, 480/277V, 3ø4W, Tin Plated, Standard Copper Main Bus, NEMA 1 Indoor, Surface Mount, 42,000 AIC
- 1 - Non-Ins Ground Connector - AL/CU (Std)
- 1 - Main Bus - Tin Plated Copper
- 1 - Card Holder - Metal Frame
- 1 - Engraved Nameplate - Screwed Trim
- 4 - HED4 70/3
- 5 - HED4 60/3
- 1 - HED4 30/3
- 1 - HED4 25/3
- 1 - HED4 20/3
- 2 - HED4 15/3

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HH. 1 **NS-EPP -- PB P1**
P1C30QJ100CTS, 100 Amp MB Top Feed, 208/120V, 3ø4W, Tin Plated, Standard Copper Main Bus, NEMA 1 Indoor, Surface Mount, 10,000 AIC
1 - Non-Ins Ground Connector - AL/CU (Std)
1 - Main Bus - Tin Plated Copper
1 - Card Holder - Metal Frame
1 - Engraved Nameplate - Screwed Trim
2 - BL 20/2
20 - BL 20/1
6 - BL /1 Prov

II. 1 **T-EM-P1 -- Transformer**
Dist Dry Type Trans: 3 Phase, 45 KVA, 480V Primary, 208Y/120V Secondary, 6 - 2 5% 2 FCAN,4 FCBN Taps, Ventilated Indoor/Outdoor Encl , 3F3Y045CTP1

JJ. 1 **TRX-T-P1 -- Transformer**
Dist Dry Type Trans: 3 Phase, 45 KVA, 480V Primary, 208Y/120V Secondary, 6 - 2 5% 2 FCAN,4 FCBN Taps, Ventilated Indoor/Outdoor Encl , 3F3Y045CTP1

KK. 1 **TRX T-T2 -- Transformer**
Dist Dry Type Trans: 3 Phase, 45 KVA, 480V Primary, 208Y/120V Secondary, 6 - 2 5% 2 FCAN,4 FCBN Taps, Ventilated Indoor/Outdoor Encl , 3F3Y045CTP1

LL. 1 **TRX T-T2 -- Transformer**
Dist Dry Type Trans: 3 Phase, 15 KVA, 480V Primary, 208Y/120V Secondary, 6 - 2 5% 2 FCAN,4 FCBN Taps, Ventilated Indoor/Outdoor Encl., 3F3Y015CTP1

MM. 9 **HF363N -- Standard Product**
100A 3P 600V 4W FUSED HD TYPE 1

NN. 1 **HNF363 -- Standard Product**
100A 3P 600V 3W NON-FUSED HD TYPE 1

OO. 4 **HF364N -- Standard Product**
200A 3P 600V 4W FUSED HD TYPE 1

PP. 9 **HF361N -- Standard Product**
30A 3P 600V 4W FUSED HD TYPE 1

QQ. 3 **HF365N -- Standard Product**
400A 3P 600V 4W FUSED HD TYPE 1

RR. 3 **HNF362 -- Standard Product**
60A 3P 600V 3W NON FUSED HD TYPE 1

S

SS. 2 DAYS OF START UP FOR SIEMENS EQUIPMENT
Mod Options: M-F STRAIGHT TIME
Additional cost for weekend and after hours

TT. 1 COORDINATION STUDY

UU. 1 ECP Tie in - FIELD VISIT

Please note:

All breakers in LV switchgear will be draw out type Siemens WL with ETU-776 trip unit as specified. Line ups NA, NB and SA will have integrally mounted ATS as shown. Line up SB will have provision only for future ATS mounting.

In accordance with drawing E-003 note E, all switchboard breakers will be fixed mounted insulated case on frame sizes 800amp and above. Breakers 600amp and below will be molded case solid state with LSIG trip unit in compliance with 16475 3 f.

Busway will be copper, 3 phase 4 wire internal ground as no spec was provided. If footage is different than stated on quote, price is subject to change.

For factory witness testing add $1500.00 p/day plus expenses

Panels LLE-TLP & LLE-PLP quoted as Lighting Control Panels.

Additional: - **The following items are not included;**
a) **Generator & ATS's.**
b) **Fuses.**

Other: This proposal is based on the Company's interpretation of the plans and specifications and is subject to correction for errors in such plans or specifications.

SIEMENS

Date: 3/16/2010

To: S.M. Electric Co., Inc.

Attn: Russ Elliott
601 New Brunswick Avenue
Rahway, NJ 07065

Reference: Newark Airport

Subject: Bus discoloration.

A piece of bus from the low voltage switchgear was sent for review of discoloration of the bussing and bus plating. The sample bus piece has been reviewed by the factory and it does not appear to be a bussing and/or plating defect. Plated bussing has a tendency to naturally oxidize and may reflect a tarnished appearance over a period of time. The discoloration of the bus will not affect the performance of the bus. Although, some environmental conditions may exacerbate this condition, this is not expected to negatively impact its performance. This discoloration could possibly be a result of unusual and atypical environmental conditions which should be reviewed in the field.

Regards

SIEMENS

Matt Gray

Matt Gray
Warranty – Application & Tech Support Eng.
Siemens Industry Inc.
501 Fountain Pkwy
Grand Prairie, TX 75050

North Central Electric

69 Midway Avenue, Langhorne, Pa. 19047
Telephone: 215 - 945 - 7632

SWITCHGEAR TEST REPORT

Customer	SM Electric	**Date**	4-7-2010	**Page 1**	**Of 1**
Address	601 New Brunswick Ave Rahway, N.J.	**Project Number**	3610		
Owner	NY/NJ Port Authority	**Last Inspection Report**	ACCEPTANCE		
Address	Newark Liberty International Airport	**Last Inspection Date**	ACCEPTANCE		
Equipment Location	South Substation	**Air Temperature**	75 DEG. F		
Owner Identification	Switchgear SA	**Relative Humidity**	30%		

Nameplate Data Siemens / Switchboard Type WL / 480 / 277 3 Phase 4 wire / 4000 Amp / 5 Sections / 150 KA

Bus Resistance Section 1 - Section 2 A=26 B=21 C=24 N=20 Section 1 - Section 3 A=37 B=41 C=37 N=39

Section 4 - Section 5 A=30 B=32 C=35 N=34

All results are Micro Ohms.

Discoloring of bus was noticed but did not affect electrical connections or test results.

Electrical Tests Insulation Resistance Tested at 1000 V DC for 1 min.

A Phase to Ground (B&C&N Phase to ground) : 4000+ Meg Ohms

B Phase to Ground (A&C&N Phase to ground) : 4000+ Meg Ohms

C Phase to Ground (A&B&N Phase to ground) : 4000+ Meg Ohms

Neutral to Ground (A&B&C Phase to ground) : 4000+ Meg Ohms

General Notes Visual Inspection for physical damage performed (ok).

Verified breaker sizes per contract drawings (ok).

Visual Inspection for Insulation damage performed (ok).

All breakers manually and electricaly operated and exercised(see note below).

Verified proper "rack in rack out of breakers (ok. see note of main breaker).

Inspected mechanical indicating devices(ok).

Verified heater operation.

Verified meter operation.

Verified indicating lights (open Close Trip).

REMARKS Equipment used Fluke 1kv megger Model 1520 cal 9-09, Biddle Ductor model DLROCal 1-10 SN 49939 Doble 2250

Submitted By B. Poland

Equipment Used

THE PORT AUTHORITY OF NY & NJ

NEWARK LIBERTY INTERNATIONAL AIRPORT
BUILDING 74, CTA
NEWARK, NJ 07114
(973) 622-0800 FAX (973) 622-7222

April 26, 2010

Mr. Jeffery Konen
VRH Construction Corp.
320 Grand Avenue
Englewood, NJ 07631

SUBJECT: NEWARK LIBERTY INTERNATIONAL AIRPORT
EWR-264.003 – TERMINAL B MODERNIZATION PROGRAM
LOWER LEVEL EXPANSION & B1 VERTICAL CIRCULATION

Reference: Lucius Pitkin, Inc. Report, dated April 15, 2010

Dear Mr. Konen,

As you are aware, several of the electrical equipment for the north & south substations were delivered to the job site with brown staining on the bus bars. The Contract requires the bus bars to be silver-plated copper.

A sample of the stained bus bar was sent to Port Authority Material Division for evaluation. Results of the evaluation indicate that the brown stains were primarily a copper oxide or copper hydroxide. It also noted that the trace of silver detected in the samples indicated that the silver layer had possibly been consumed at the stained location (see attached referenced report).

Switchgears SA, SB and NB are not in compliance with the Contract and the approved shop drawings/catalog cuts and are hereby rejected.

Advise this office of your proposed corrective action by Friday, April 30, 2010.

If you have any questions, please contact Raul Leonardo of my staff at (973) 622–0800, x-207.

Sincerely,

for Michael C. Wallace, P.E., LEED AP
Senior Resident Engineer
EWR-Central Terminal Area

Attachment

Lucius Pitkin, Inc. *Consulting Engineers*

Fitness-For-Service
Failure & Materials Evaluation
Nondestructive Engineering

April 15, 2010

Report No. F10166

The Port Authority of NY & NJ
Materials & Research Division
Engineering Department
241 Erie Street - Room 234
Jersey City, NJ 07310-1397

Attention: Mr. John Bullard

Subject: **EVALUATION OF BUSS BAR**

An electrical buss bar was submitted to LPI for evaluation of a brown stain on the surface. The buss bar, shown in Fig. 1 in the as-received condition, measured 4 in. wide X ¼ in. thick and was bent at a right angle with one leg measuring 14 ¾ in. long and the other 7 ¾ in. long. LPI was advised that the buss bar was made of silver plated copper.

A sample of the brown stain was scraped from the surface and analyzed by energy dispersive x-ray spectroscopy (EDS) in a scanning electron microscope (SEM) at 20 kV accelerating potential. The acquired spectrum, shown in Fig. 2, exhibited large peaks of copper and oxygen; small peaks of carbon, aluminum, and silicon from the mount used to place the sample in the SEM; small peaks of sulfur, chlorine, potassium, iron and calcium from atmospheric sources, and a small peak of silver from the plating.

* * *

304 Hudson Street, New York, NY 10013-1015 Tel: 212-233-2737 Fax: 212-406-1417 www.lpiny.com
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The Port Authority of NY & NJ
Attention: Mr. John Bullard

April 15, 2010
F10166

Results of this examination indicate that the brown stain was primarily a copper oxide or copper hydroxide. The trace of silver detected in the scrapings indicated that the silver layer had possibly been consumed at the stained locations.

Respectfully submitted,

LUCIUS PITKIN, INC.

Andrew Shapiro
Materials Engineer

Joseph P. Crosson, P.E.
Principal

AS:JPC/P:Projects/2010/F10166-Report – PANYNJ Eval. of buss bar

This report is rendered upon the condition that it is not to be reproduced wholly or in part for advertising or other purposes over our signature or in connection with our name without special permission in writing. Be advised that all materials submitted for evaluation will be returned for six months. After such time, all material will be discarded unless otherwise notified in writing to retain beyond six months.

FORM 107-2/75

The Port Authority of NY & NJ
Attention: Mr. John Bullard

April 15, 2010
F10166

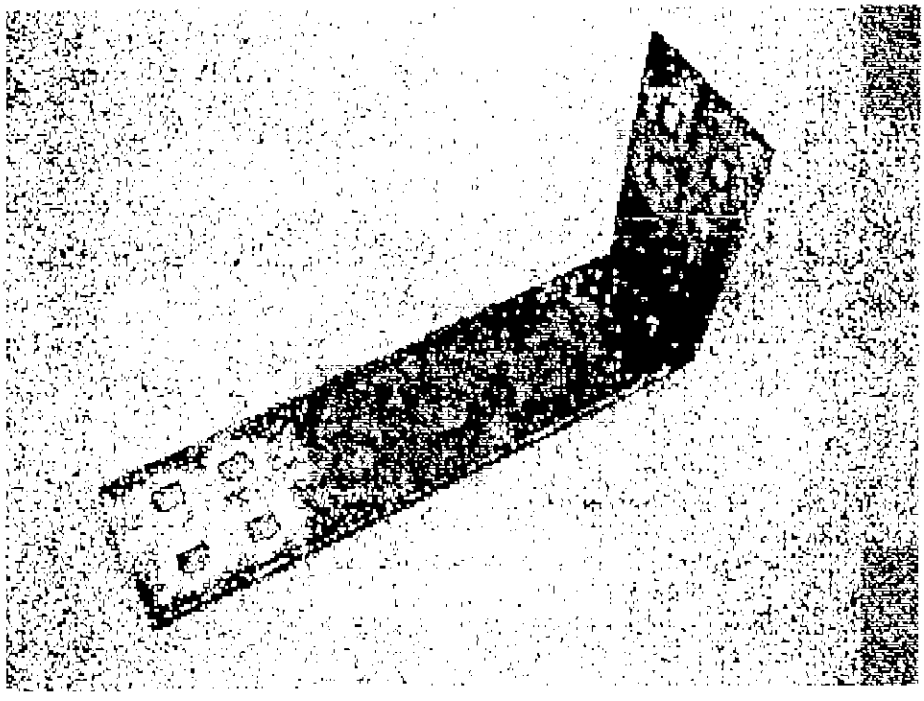

Fig. 1 Buss bar in the as-received condition.

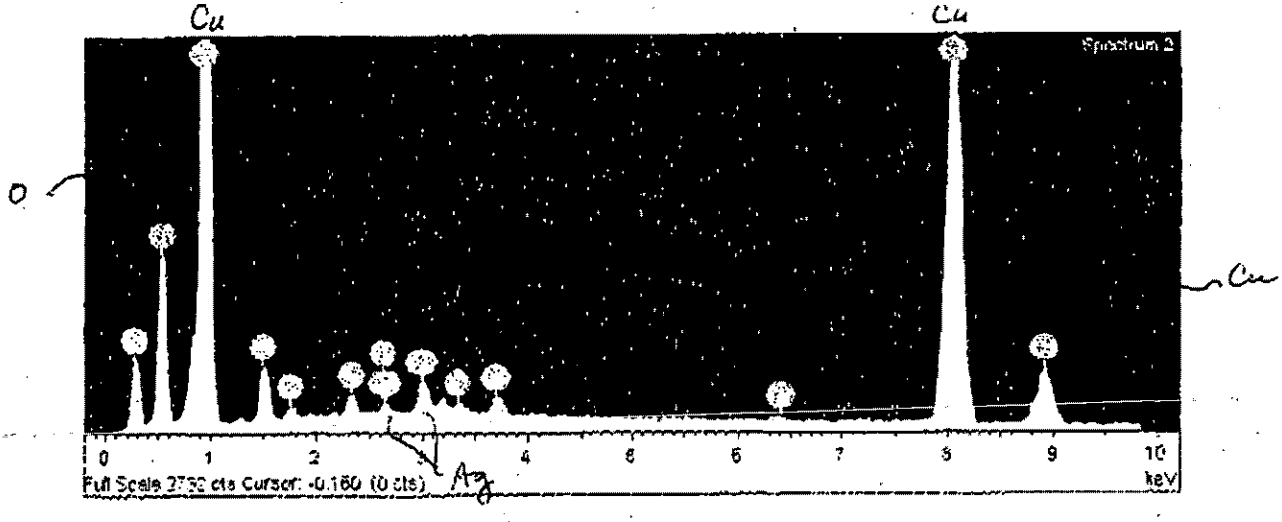

Fig. 2 EDS spectrum of the brown stain.

Lucius Pitkin, Inc. *Consulting Engineers*

Fitness-For-Service
Failure & Materials Evaluation
Nondestructive Engineering

TO: Mike Wallace FAX 973-622-0172
FROM: JOHN BULLARD

REPORT NO. F10166

EVALUATION OF BUSS BAR

THE PORT AUTHORITY OF NY & NJ

APRIL 15, 2010

304 Hudson Street, New York, NY 10013-1015 Tel: 212-233-2737 Fax: 212-406-1417 www.loiny.com
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SUBMITTAL No. 1

16335-063

VAH CONSTRUCTION CORP.

GENERAL INFORMATION:

CONSTRUCTION:	■ INDOOR ☐ OUTDOOR WALKIN ☐ OUTDOOR NON-WALKIN
VOLTAGE:	■ 480 V ☐ 600 V ☐ 208 V ☐ OTHER
FREQUENCY:	■ 60 Hz ☐ 50 Hz
SYSTEM:	☐ 3 WIRE ■ 4 WIRE
SYS INT RATING:	☐ 65 kA ☐ 85 kA ☐ 100 kA ■ 150 kA ☐ 200 kA
BUS BRACING:	BRACE RATING: 150 KA
MAIN BUS:	☐ 1000 A ☐ 2000 A ☐ 3200 A ■ 4000 A ☐ 5000 A
NEUTRAL BUS:	☐ 1600 A ☐ 2000 A ☐ 3200 A ■ 4000 A ☐ 5000 A
GROUND BUS:	■ 0.25 X 3.00 IN ☐ BOTTOM ■ TOP
BUS PLATING:	■ SILVER ☐ TIN (ALL BUS IS COPPER)
INSULATED BUS:	■ YES ☐ NO (NOTE: COVERS PHASE BUS ONLY)
LUGS:	■ COMPRESSION ☐ MECHANICAL
LUGS PROV. BY:	■ SIEMENS ☐ CUSTOMER
PAINT COLOR:	■ ANSI 61 ☐ ANSI 70 ☐ OTHER

ELECTRICAL REQUIREMENTS:

SPACE HEATERS:	■ HALF VOLTAGE (240 V RATED, OPERATED AT 120 V) ☐ FULL VOLTAGE (120 V RATED, OPERATED AT 120 V) ☐ FULL VOLTAGE (240 V RATED, OPERATED AT 240 V)
CONTROL:	☐ FIXED THERMOSTAT ■ ADJ THERMOSTAT ☐ HUMIDISTAT
WIRE MARKERS:	☐ WIRE NUMBER ☐ OPPOSITE END ■ ORIGIN
TERMINAL BLOCKS:	■ 3 PT, 600 V ☐ 12 PT, 600 V ☐ SLIDING LINK ■ PROVIDE 20 PERCENT SPARE TERMINALS FOR CUSTOMER
WIRE TERMINATIONS:	☐ LOCKING FORK ☐ RING TONGUE ■ RING TONGUE ON CT CIRCUITS, ALL OTHERS LOCKING FORK
WIRE SIZE:	■ PROVIDE #14 AWG SIS WIRE FOR ALL CIRCUITS EXCEPT AS NOTED ■ PROVIDE #10 AWG SIS WIRE FOR ALL CURRENT CIRCUITS ■ PROVIDE #16 AWG SIS WIRE FOR CONTROL POWER DISTRIBUTION

MECHANICAL REQUIREMENTS:

BARRIERS	■ SECTION BARRIER – BUS COMPARTMENT ■ SECTION BARRIER – CABLE COMPARTMENT ■ CABLE COMPARTMENT BARRIERS
SHUTTERS:	■ AUTOMATIC SHUTTERS PROVIDED ON ALL BREAKER COMPARTMENTS ☐ AUTOMATIC SHUTTERS ONLY ON FUTURE COMPARTMENTS
EQUIPMENT DEPTH: (INDOOR ONLY)	☐ NONE (80" DEEP) ☐ 16" (70" DEEP) ☐ 20" (80" DEEP) ☐ 85" FUSED ONLY ■ 75" FUSED ONLY ☐ 80" FUSED ONLY
CHANNEL SILLS:	■ 4" CHANNEL SILLS ■ SHIP SEPARATE ☐ SHIP ATTACHED
WELDED BASE:	☐ 4" HIGH ☐ 6" HIGH ☐ OTHER
TILT PACKAGING:	☐ TILT PACKAGING REQUIRED (BREAKERS CRATED SEPARATELY)
LABELING:	■ UL LISTED ☐ UL RECOGNIZED (OEM) ☐ CUL ■ SUITABLE FOR USE AS SERVICE EQUIPMENT ☐ SERV EQPT, CONTINUOUS INDUSTRIAL PROCESS ☐ SERV EQPT, IND. PROCESS, WHICH RESISTANCE GND
BUS SPECIALS:	☐ 2-BOLT GROUND BUS JOINTS ☐ BELLEVILLE WASHERS ON ALL BUS JOINTS ■ STAINLESS STEEL HDWE ■ PHASE ■ NEUTRAL ■ GROUND ☐ SILICON BRONZE HDWE ☐ PHASE ☐ NEUTRAL ☐ GROUND ☐ NON-MAGNETIC HDWE ☐ PHASE ☐ NEUTRAL ☐ GROUND ☐ OTHER
REAR COVERS:	☐ BOLTED 2-PIECE COVERS (INDOOR ONLY) ☐ HINGED DOORS, SECURED WITH HEX BOLTS OUTDOOR ONLY ☐ HINGED DOORS, SECURED WITH THUMB SCREWS (INDOOR ONLY) ■ HINGED DOORS, SECURED WITH 3-POINT LATCH ☐ PADLOCKABLE ☐ KEYED
FRONT COVERS:	☐ STANDARD ■ PADLOCKABLE ☐ KEYED
SEISMIC:	☐ NONE ■ ZONE 4
SHIPPING PALLET:	■ STANDARD ☐ CEM
PHASE LABELS:	☐ A-B-C ☐ 1-2-3 ☐ OTHER
MISCELLANEOUS:	☐ CABLE COMPARTMENT FLOOR PLATES (STANDARD ON OUTDOOR) ☐ REAR LEXAN BARRIERS ON INSTRUMENT PANELS ☐ FUNGUS PROOFING ☐ NEW YORK CITY CODE ☐ CHICAGO CODE ☐ CALIFORNIA CODE

BUS DUCT:

MFR/TYPE:	MANUFACTURER: SIEMENS TYPE: SENTRON
RATING:	PHASE: 4000A NEUTRAL: 4000A
GROUNDING:	■ BUS DUCT HAS INTERNAL GND BAR ☐ BD HOUSING USED FOR GND
HEATERS:	☐ N/A 120VAC FROM: ☐ SWGR CPT ☐ CUSTOMER SOURCE

NAMEPLATE/MIMIC BUS:

NAMEPLATES:	☐ WHITE W/BLACK LETTERS ■ BLACK W/WHITE LETTERS EXTERNAL NP SIZE: 1.0" X 3.0" ■ MIN. CHAR. HEIGHT: 0.18" ☐ BREAKER NPs ALSO ON REAR ☐ SPECIAL NP (SEE PA DWG.) ☐ ALL PANEL NPs MOUNTED BOTH INSIDE AND OUTSIDE OF PANEL ☐ INTERNAL DEVICE NAMEPLATES ☐ SIZE: ☐ INTERNAL NPs ALSO ON MOC, TOC, TERMINAL BLOCKS INTERNAL NP ATTACHMENT: ☐ ADHESIVE ☐ S.S. SCREWS EXTERNAL NP ATTACHMENT: ☐ ADHESIVE ■ S.S. SCREWS
MIMIC BUS:	■ MIMIC BUS IS PROVIDED (SEE PANEL ARRGT DWG.) ☐ LAMACOID ADHESIVE ■ PLASTIC STRIP ■ S.S. SCREWS WIDTH: X" COLOR: BLACK

NOTES:

INTERRUPTING RATINGS:	THE EQUIPMENT SHORT TIME/SHORT CIRCUIT RATING IS EQUAL TO THE LOWER OF THE BUS BRACING OR THE LOWEST RATED DEVICE INSTALLED IN THE POWER CIRCUIT. EXCEPTION: THE EQUIPMENT SHORT CIRCUIT RATING IS EQUAL TO 200 kA WHEN ALL CIRCUIT BREAKERS ARE FUSED.
INSULATION:	RATED INSULATION LEVEL IS 2.2 KV FOR ONE MINUTE AT NORMAL FREQUENCY.
SCHEMATIC/ WIRING DIAGRAM:	ALL DEVICE CONTACTS ARE SHOWN WITH THE DEVICE DE-ENERGIZED, OPEN, OR IN THE RESET CONDITION. ALL CUSTOMER CONNECTIONS ARE SHOWN WITH DASHED LINES.

CIRCUIT BREAKERS:

FEATURES: (MAIN/TIE)	■ TRIP UNIT COVER ☐ DUAL SHUNT TRIP ☐ UNDERVOLTAGE ☐ PROFIBUS	■ BELL ALARM ■ WLNKT ☐ MODBUS ■ LCD	☐ DIGITAL I/O MODULE ☐ ANALOG OUTPUT MOD. ☐ ZSI ■ METERING FUNCTION
FEATURES: (FEEDERS)	■ TRIP UNIT COVER ☐ DUAL SHUNT TRIP ☐ UNDERVOLTAGE ☐ PROFIBUS	■ BELL ALARM ■ WLNKT ☐ MODBUS ■ LCD	☐ DIGITAL I/O MODULE ☐ ANALOG OUTPUT MOD. ☐ ZSI ■ METERING FUNCTION

ACCESSORIES:

- ☐ WLTS (PORTABLE ETU TEST UNIT)
- ☐ PORTABLE GROUND DETECTOR
- ☐ TEST PLUGS FOR GE PK-2 TEST BLOCKS (1 EACH 4-POINT AND 8-POINT)
- ☐ WESTINGHOUSE/ABB RELAY TEST PLUGS
- ☐ GE/BASLER RELAY TEST PLUGS
- ☐ BREAKER TRANSFER TRUCK
- ☐ MOBILE BREAKER DOLLY W/HOIST
- ☐ _____SPARE FUSES OF EACH TYPE USED
- ■ BREAKER HOIST LIFTING CAPACITY 350LB
- ☐ _____SPARE PILOT LIGHTS OF EACH TYPE USED
- ☐ TEST CABINET - PART NUMBER:
- ☐ DRIP PROOF HOOD (REMOVED FOR SHIPMENT, ATTACHED IN THE FIELD)

NOTE: REQUEST TOUCHUP PAINT FROM THE NEAREST SIEMENS SALES OFFICE. TOUCHUP PAINT IS PROVIDED IN AEROSOL CANS WHICH CANNOT BE SHIPPED IN THE ACCESSORY CRATE DUE TO TRUCKING SAFETY REGULATIONS.

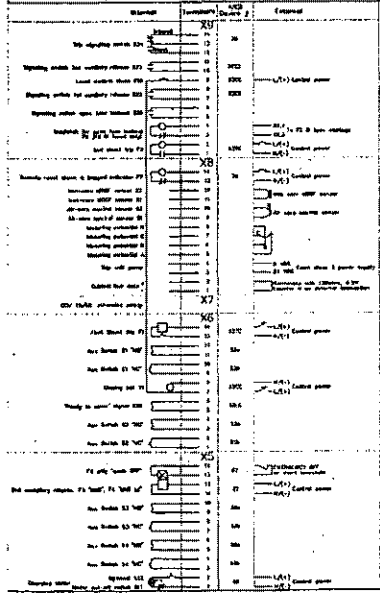
ADDITIONAL INFORMATION:

1) TESTED IN ACCORDANCE WITH UL1558 AND ANSI C37 STANDARDS.
2) INSULATED / ISOLATED BUS.
3) INCOMING LINE BARRIER IS TO BE PROVIDED IN SECTION 1.
4) DOOR STOPPER IS TO BE PROVIDED IN ALL REAR DOORS.
5) 2 HOS - BREAKER HOIST IS TO BE PROVIDED.
6) WARNING NAMES PLATES TO BE PROVIDED FOR EACH BREAKER.
7) MIMIC BUS IS TO BE SCREWED IN EVERY 12" GAP.

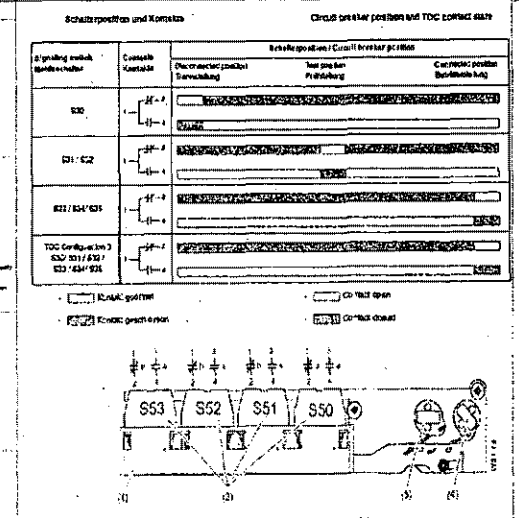
DEVICE LEGEND:

CC	-	CLOSING COIL (SPRING RELEASE)
TC	-	SHUNT TRIP COIL
CS	-	SPRING CHARGING MOTOR
MCO	-	MOTOR CUTOFF SWITCH
MDS	-	MOTOR DISCONNECT SWITCH
Y	-	CLOSING RELAY (ANTI-PUMPING)
a	-	AUX. SWITCH, CLOSED WHEN BREAKER CLOSED
b	-	AUX. SWITCH, CLOSED WHEN BREAKER OPEN
BA	-	ALARM SWITCH (OPERATES ONLY WHEN BREAKER TRIPS DUE TO PROTECTIVE FUNCTION)
ETU	-	ELECTRONIC TRIP UNIT
UV	-	UNDERVOLTAGE TRIP DEVICE
CBCC	-	BREAKER CONTROL SWITCH CLOSE
CBPT	-	BREAKER CONTROL SWITCH TRIP
CLF	-	CURRENT LIMITING FUSE
FU	-	FUSE
CT	-	CURRENT TRANSFORMER
PT	-	VOLTAGE TRANSFORMER
CPT	-	CONTROL POWER TRANSFORMER
R3	-	CONTROL POWER (TRANSFER) RELAY
TB	-	TEST BLOCK
TS	-	TEST SWITCH
NS	-	NEUTRAL SENSOR
"ATB"	-	SHORTING TERMINAL BLOCK
AM	-	AMMETER
AS	-	AMMETER SWITCH
VM	-	VOLTMETER
VS	-	VOLTMETER SWITCH

WL CIRCUIT BREAKER INTERNALS:



WL MOC AND TOC CONFIGURATIONS



SIEMENS

DOCUMENT NAME: SWITCHGEAR, Bs
DESCRIPTION: INTERNAL INFORMATION

PRODUCT TYPE: WL Gear

SCALE: 1 mm = 1 mm

DRAWN: LJA

APPR: LJA

SIEMENS S.O. # 8C0B0399

S. PO. ITE No. P09

CUSTOMER: VAH CONSTRUCTION GROUP.

CUSTOMER PROJECT: REPAIRS AND ADDITIONS TERMINALS & MODERNIZATION

CUSTOMER ORDER: 4140206-1574643

PRELIMINARY APPROVAL DEADLINE:

DOC. NO.: LVS 07 - 8B0B0399 - 01 01

01	11/07/07	LJA	ISSUED FOR APPROVAL
02	11/07/07	LJA	GEAR DEPTH CHANGED TO 75".

SHOP DRAWING REVIEW

Reviewed for general compliance with contract documents. Sole responsibility for correctness of dimensions, details, quantities and safety during fabrication and erection shall remain with the contractor.

☒ Approved
☐ Approved as Noted
☐ Approved as Noted-Resubmit
☐ Disapproved

By: Eric Wilkes Date 4-11-08

URS CORPORATION

ONE PENN PLAZA
SUITE 610
NEW YORK, NY 10119
TEL: (212) 736-4444

SIEMENS

Date: 3/16/2010

To: S.M. Electric Co., Inc.

Attn: Russ Elliott
601 New Brunswick Avenue
Rahway, NJ 07065

Reference: Newark Airport.

Subject: Bus discoloration.

A piece of bus from the low voltage switchgear was sent for review of discoloration of the bussing and bus plating. The sample bus piece has been reviewed by the factory and it does not appear to be a bussing and/or plating defect. Plated bussing has a tendency to naturally oxidize and may reflect a tarnished appearance over a period of time. The discoloration of the bus will not affect the performance of the bus. Although, some environmental conditions may exacerbate this condition, this is not expected to negatively impact its performance. This discoloration could possibly be a result of unusual and atypical environmental conditions which should be reviewed in the field.

Regards

SIEMENS

Matt Gray

Matt Gray
Warranty – Application & Tech Support Eng.
Siemens Industry Inc.
501 Fountain Pkwy
Grand Prairie, TX 75050

Ret, Herman

From: Ret, Herman
Sent: Wednesday, May 12, 2010 11:06 AM
To: Wallace, Michael
Subject: Discolored Bus

Mike

Can I get a copy of the test report for the discolored bus?

Herman Ret
Newark Liberty International Airport
973-961-6144

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

From: Winkler, Eric [mailto:E.Winkler@vrhcorp.com]
Sent: Wednesday, March 17, 2010 8:57 AM
To: Lochard, Daniel; Leonardo, Raul
Subject: Fw: Siemens Bus Discoloration Letter

From: Russ Elliott
To: Winkler, Eric
Sent: Wed Mar 17 08:36:26 2010
Subject: Siemens Bus Discoloration Letter

Eric,

See attached files.

Thank you,

Russ Elliott
S.M. Electric Co., Inc.
at Newark Airport

Phone: 1-973-622-1470
Fax: 1-973-622-1471
Cell: 1-732-904-2354

[redacted]

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S.M. ELECTRIC COMPANY, INC.

601 NEW BRUNSWICK AVE. P.O. BOX 1144 RAHWAY, NEW JERSEY 07065-1144

LICENSE/PERMIT #191 MEMBER N.E.C.A. PHONE: 732-388-3540

FAX NUMBERS: GENERAL/CONSTRUCTION/PURCHASING: 732-388-3052 ESTIMATING: 732-381-6390

TRANSMITTAL C1260X-TR-253

TO: VRH Construction Corp.
320 Grand Ave.
Engelwood, NJ 07631-4355

ATTN: Eric Winkler

DATE: March 17, 2010
PROJECT: PANY/NJ-EWR-264.003
Lower Level Expan. &
Vertical Circ.
EST/JOB #: C1260X

TRANSMITTING BY: [ ] E-MAIL [ ] FED EX [X] HAND DELIVERY

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[ ] FOR REVIEW AND COMMENT [ ] OTHER ____

[ ] **FOR BIDS DUE:** ____

COPIES	NUMBER	DESCRIPTION
1		Siemens Analysis Letter Pertaining to Discoloration of Bus Work in Switchgear SA

Note: Upon receipt of this transmittal, please fax a signed copy to 973-622-1471

VERY TRULY YOURS,

KINDLY RETURN ____ COPIES OF EACH

S.M. ELECTRIC COMPANY, INC.

RECEIVED: ____

BY R. Elliott
Russ Elliott (732) 904-2354

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S.M. ELECTRIC COMPANY, INC.

RECEIVED: ____

BY R. Elliott
Russ Elliott (732) 904-2354

Ret, Herman

From: LaMarca, Thomas
Sent: Tuesday, January 26, 2010 8:16 AM
To: Ret, Herman; Parfinik, Peter; Grassi, Robert; Hreha, Andrew; Ballance, Joseph
Subject: FW: Switchgear SA

FYI

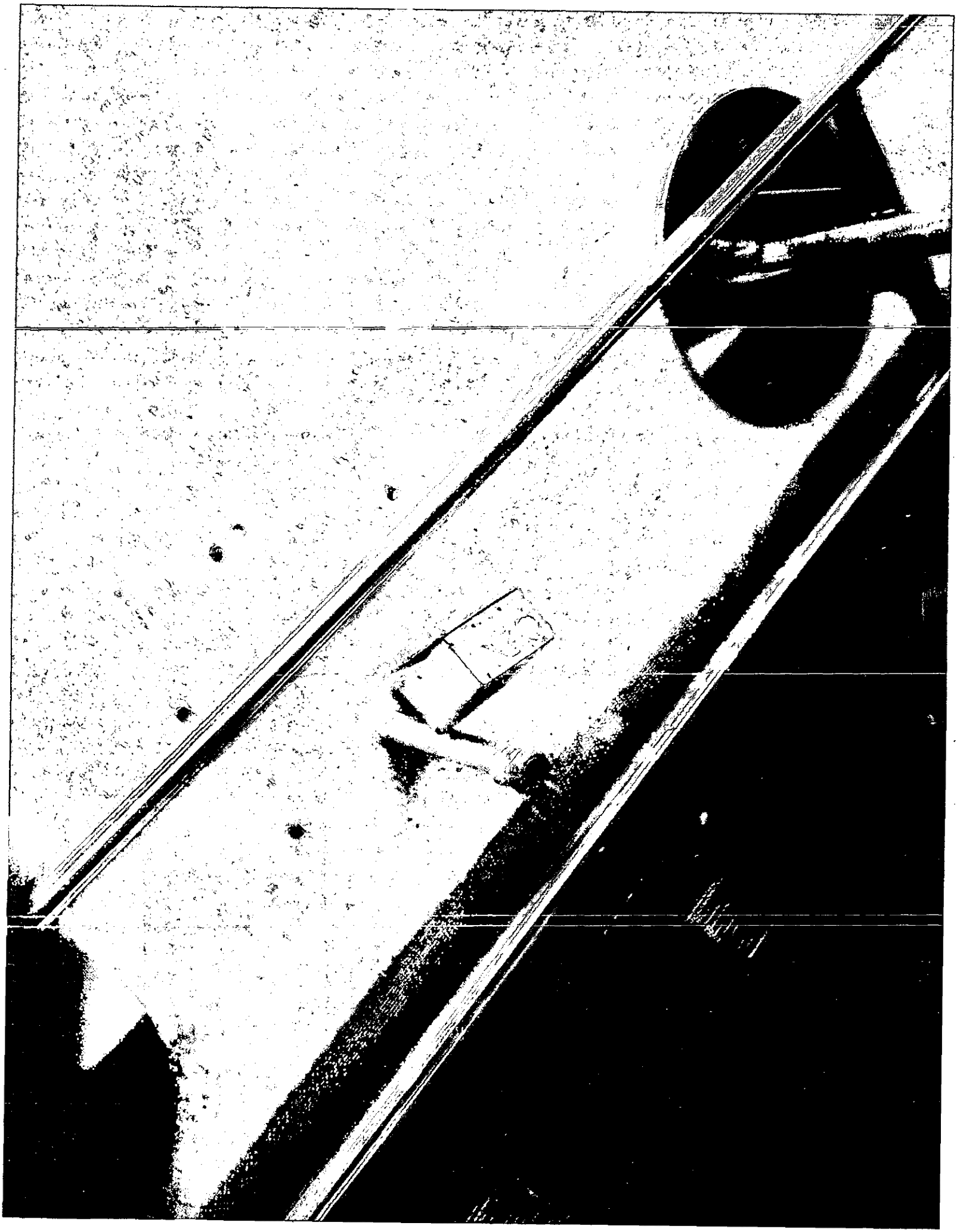
Tom LaMarca
Electrical Unit Supv. EWR
973 961-6010

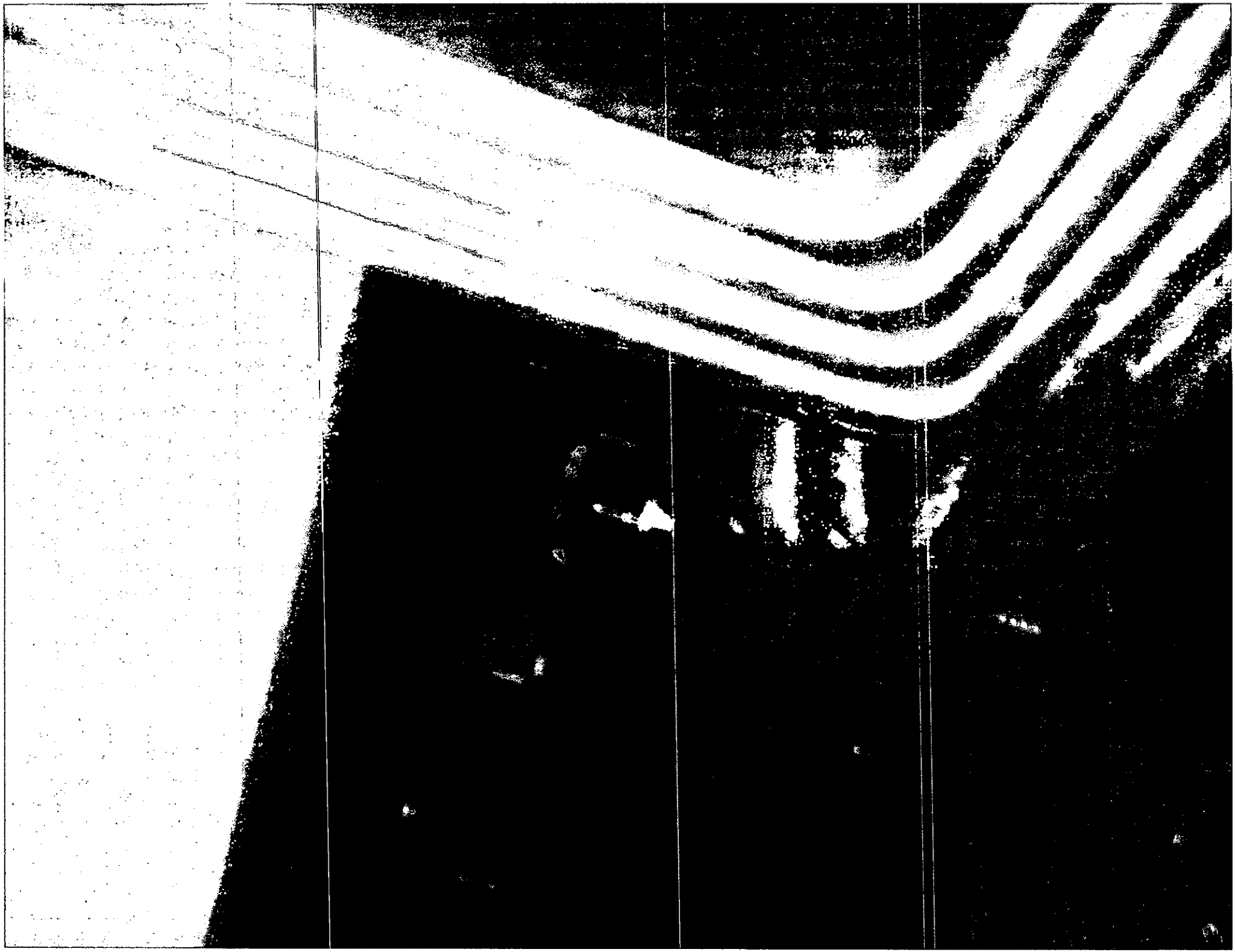
-----Original Message-----
From: Berty, Sherry
Sent: Tuesday, January 26, 2010 8:06 AM
To: Keith Lovas (E-mail)
Cc: Eric Winkler (E-mail); Leonardo, Raul; Lochard, Daniel; LaMarca, Thomas
Subject: Switchgear SA

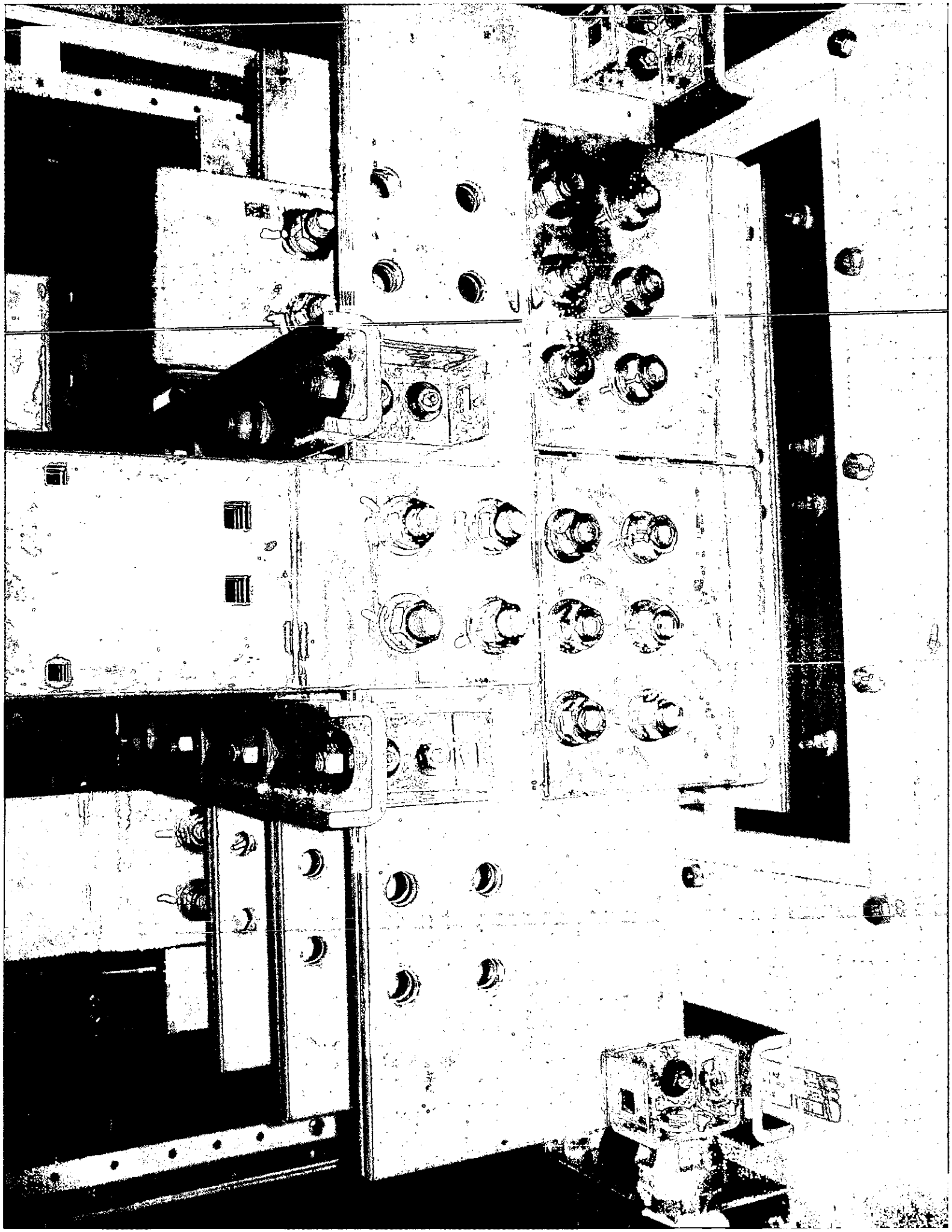
Good morning Keith,
The copper bus on Switchgear SA are all rusted/oxidized. Please have SM address immediately.

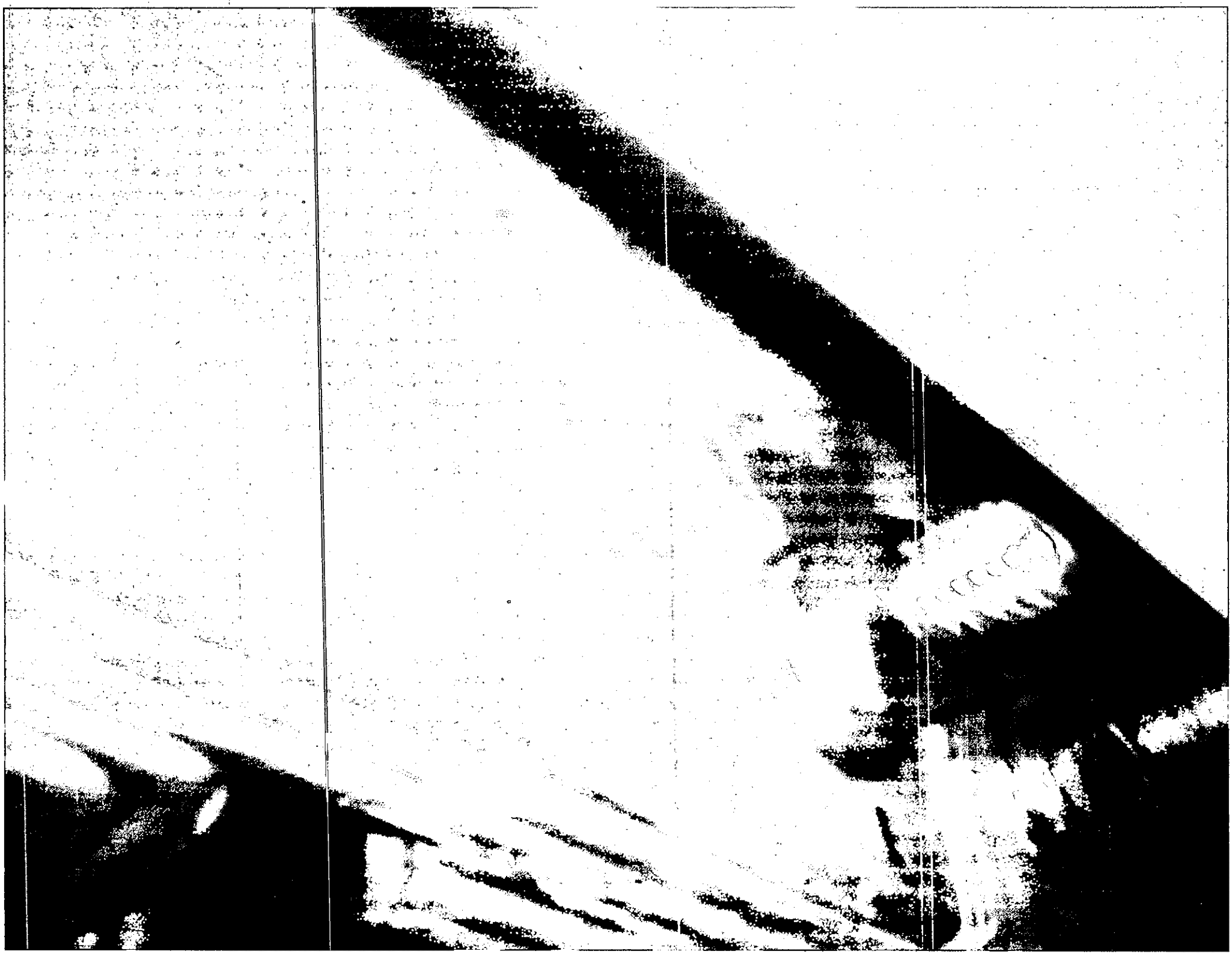
The Switchgear in its current condition will not be accepted by the PA Electric Shop.

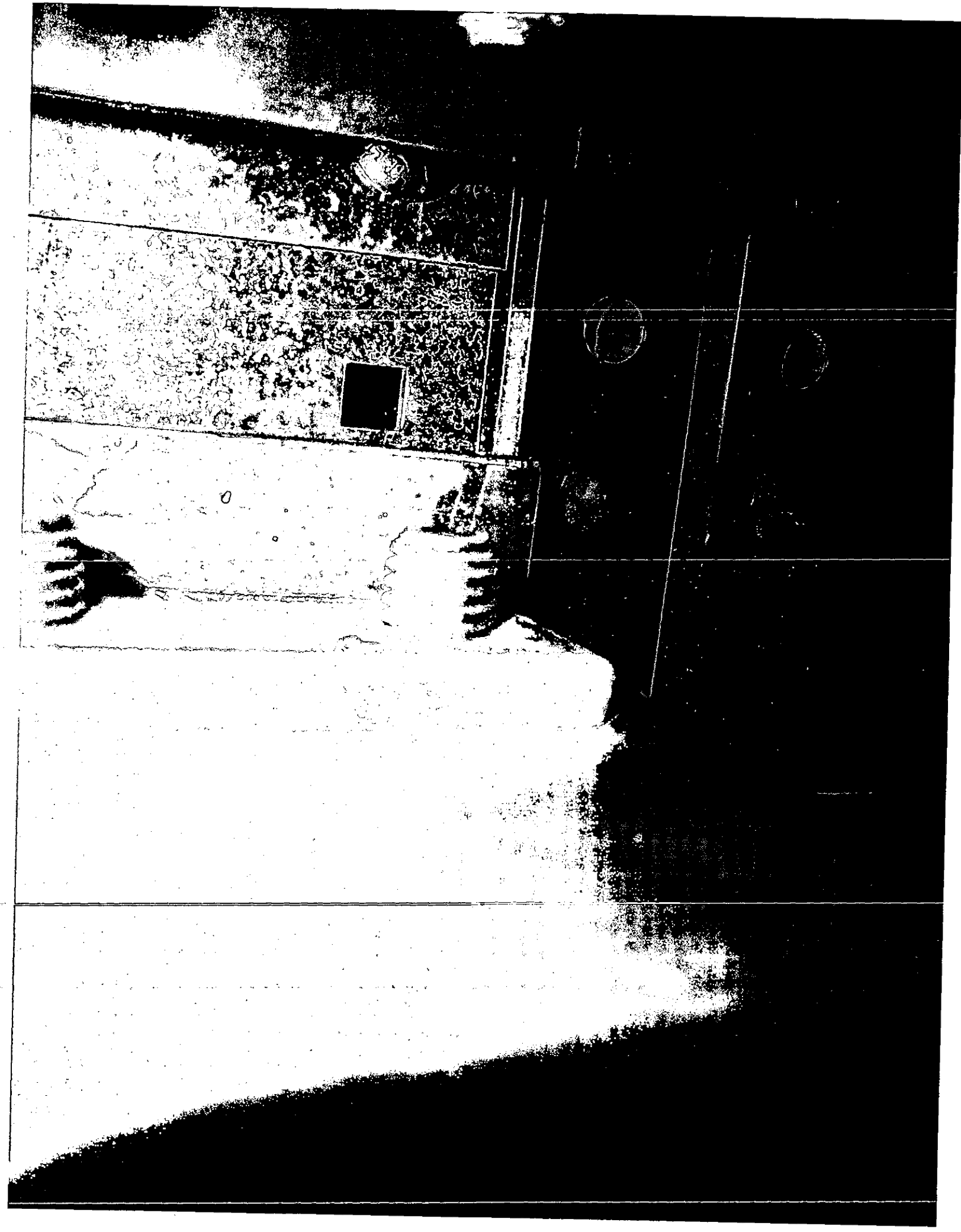
Thanks,
Sherry Berty
201-697-2073

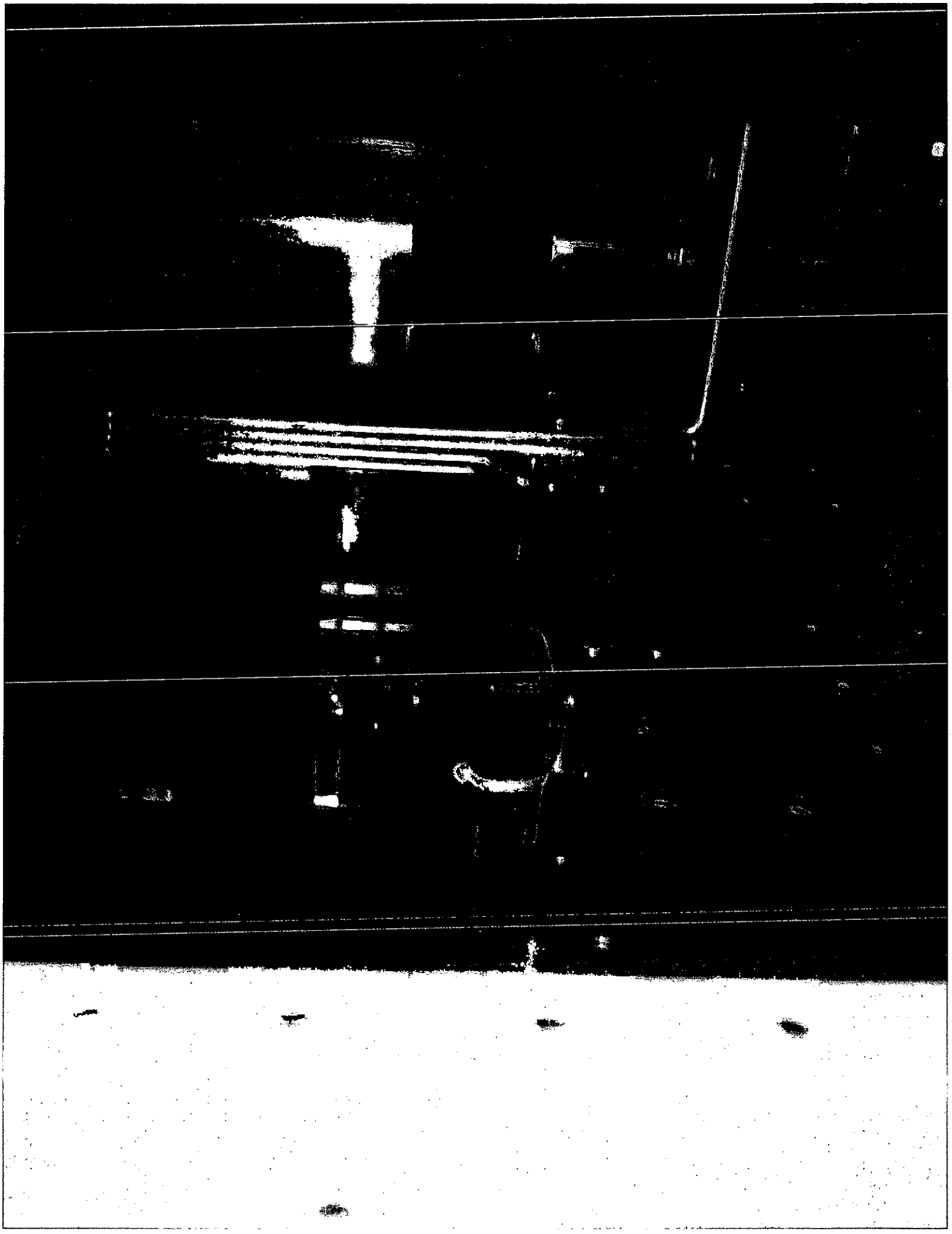


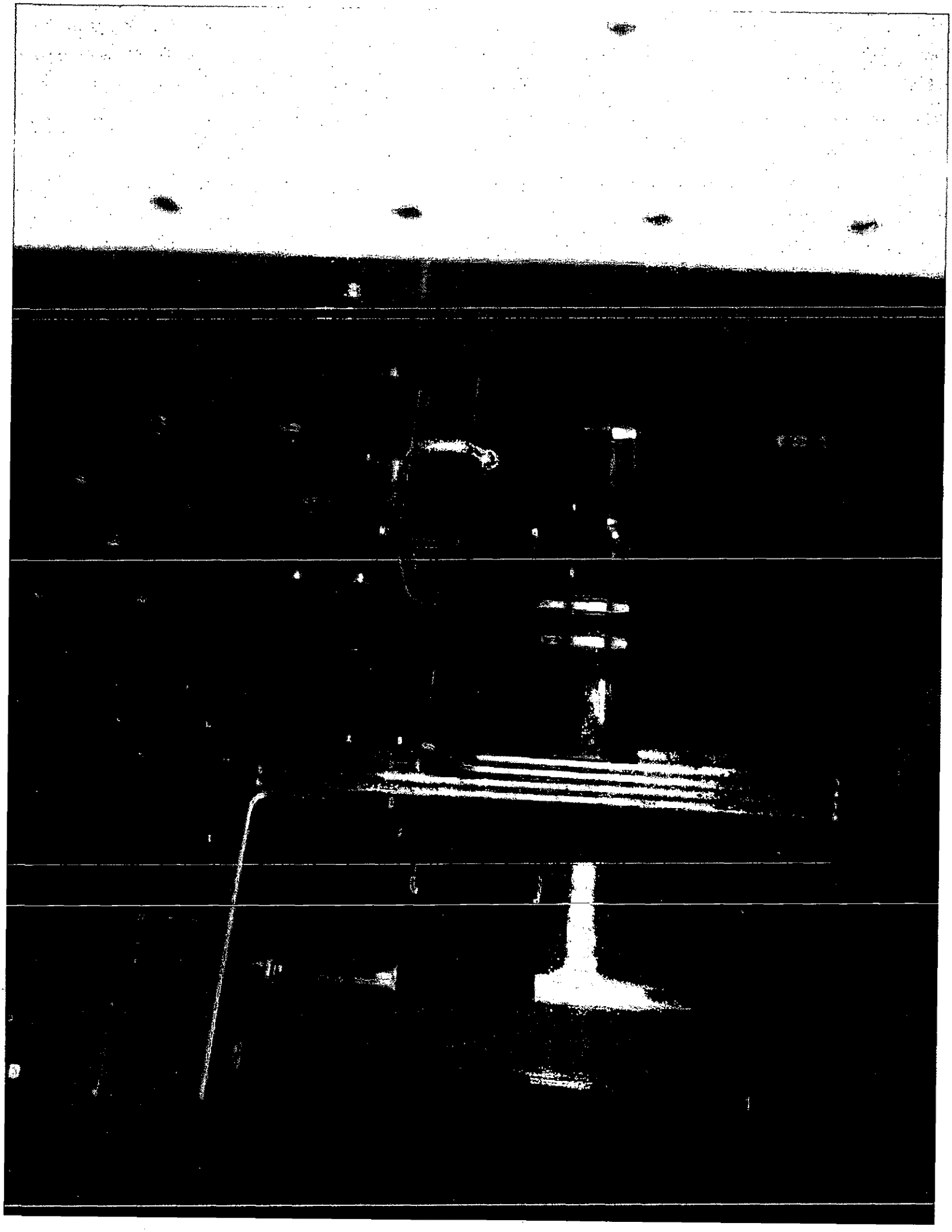


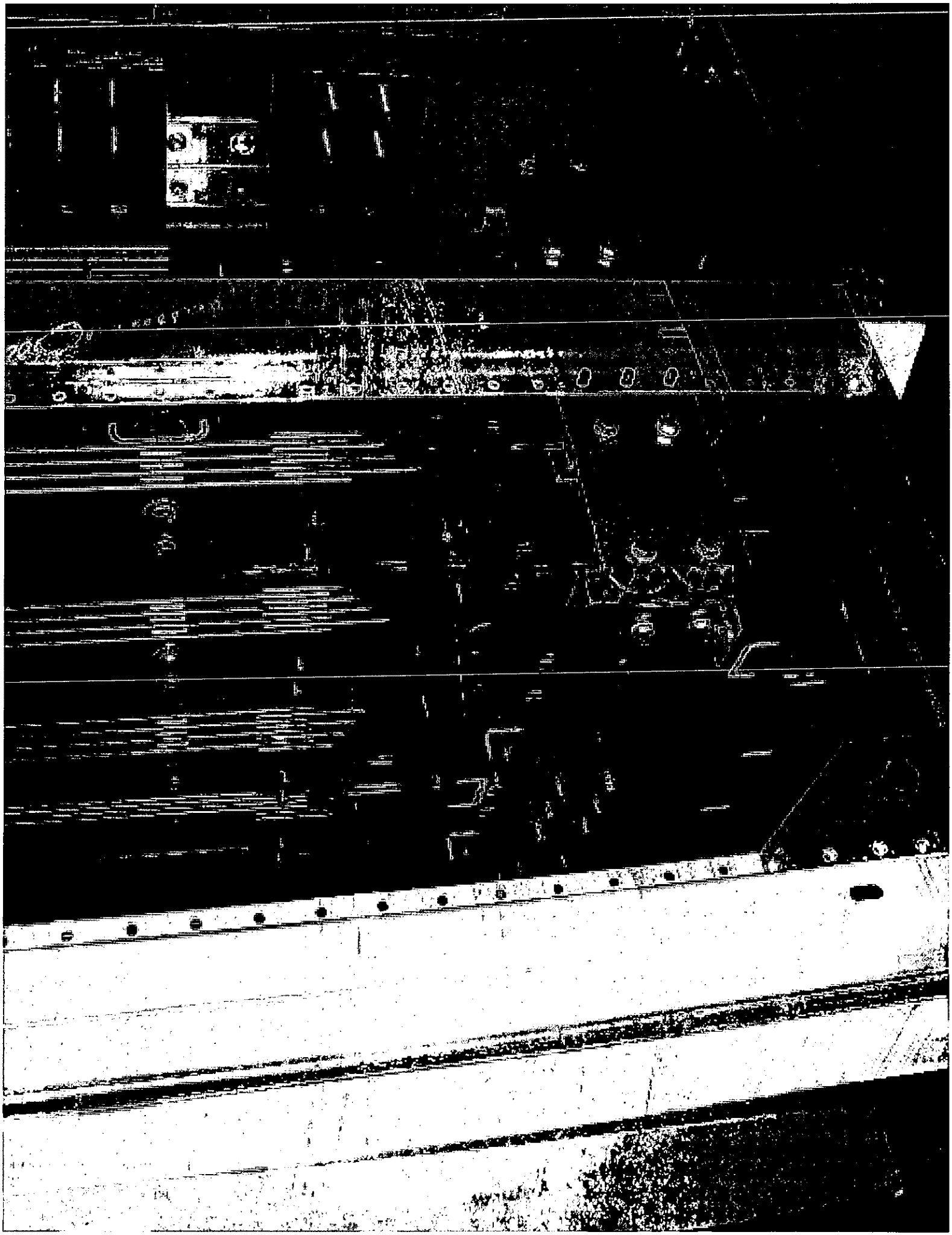


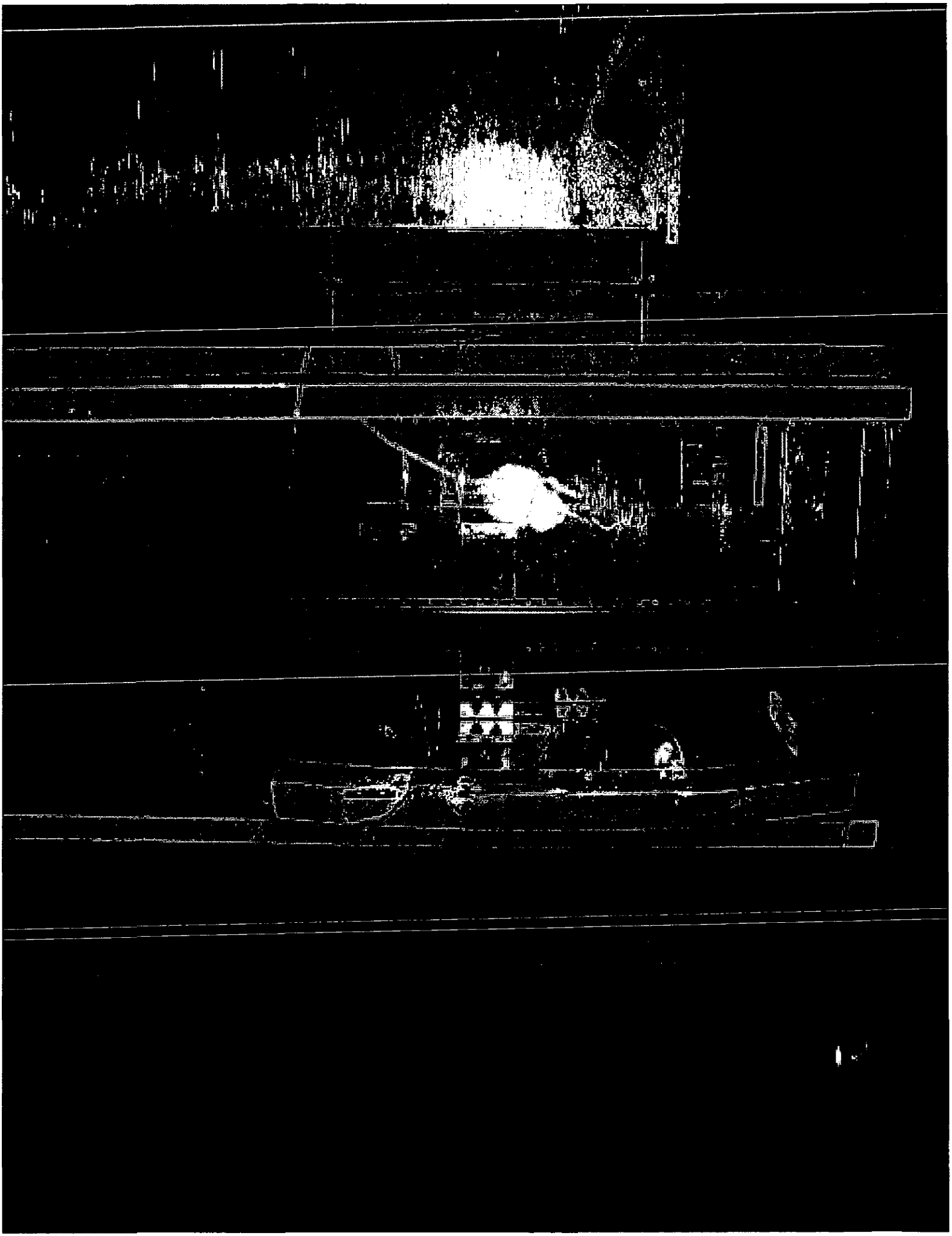


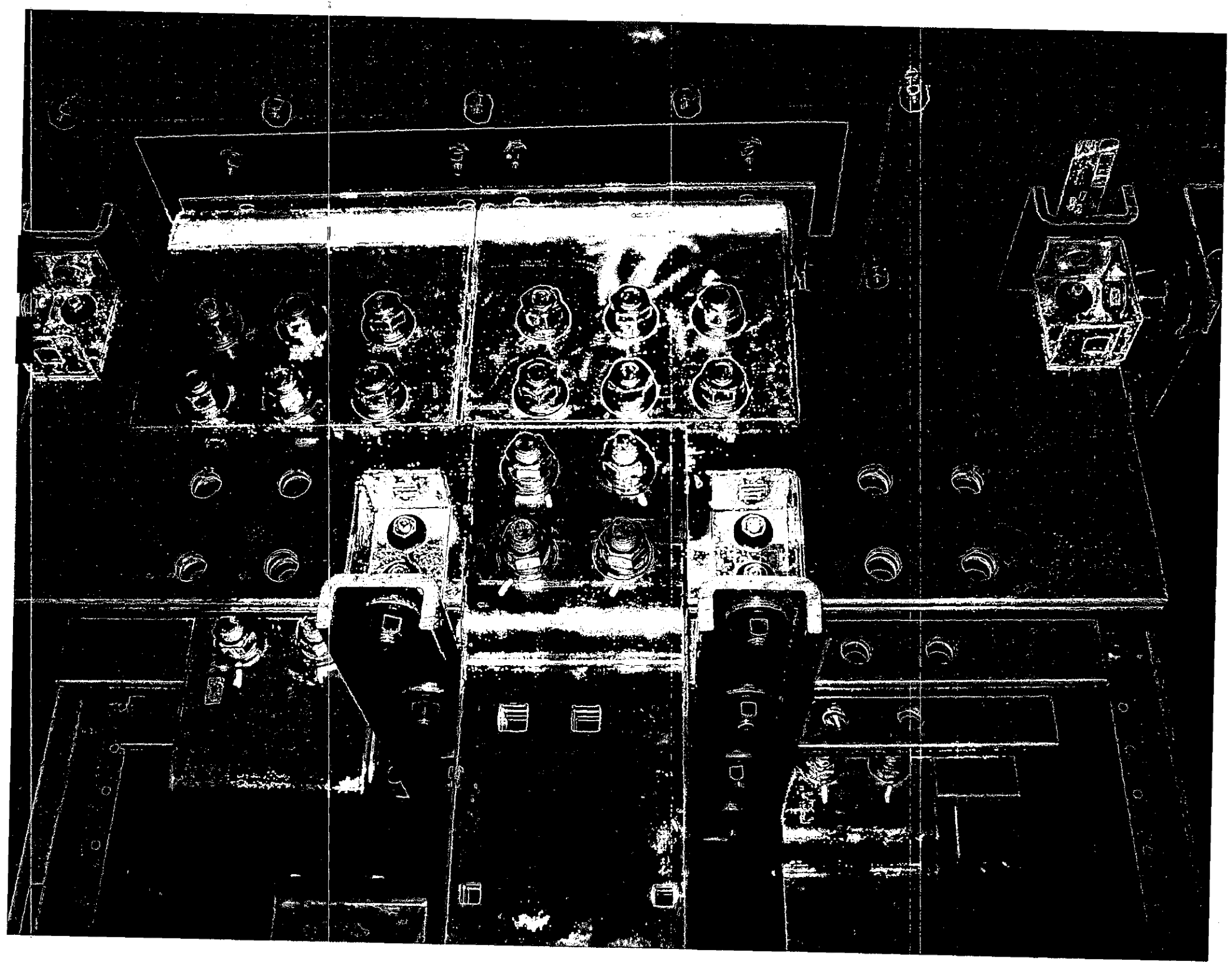


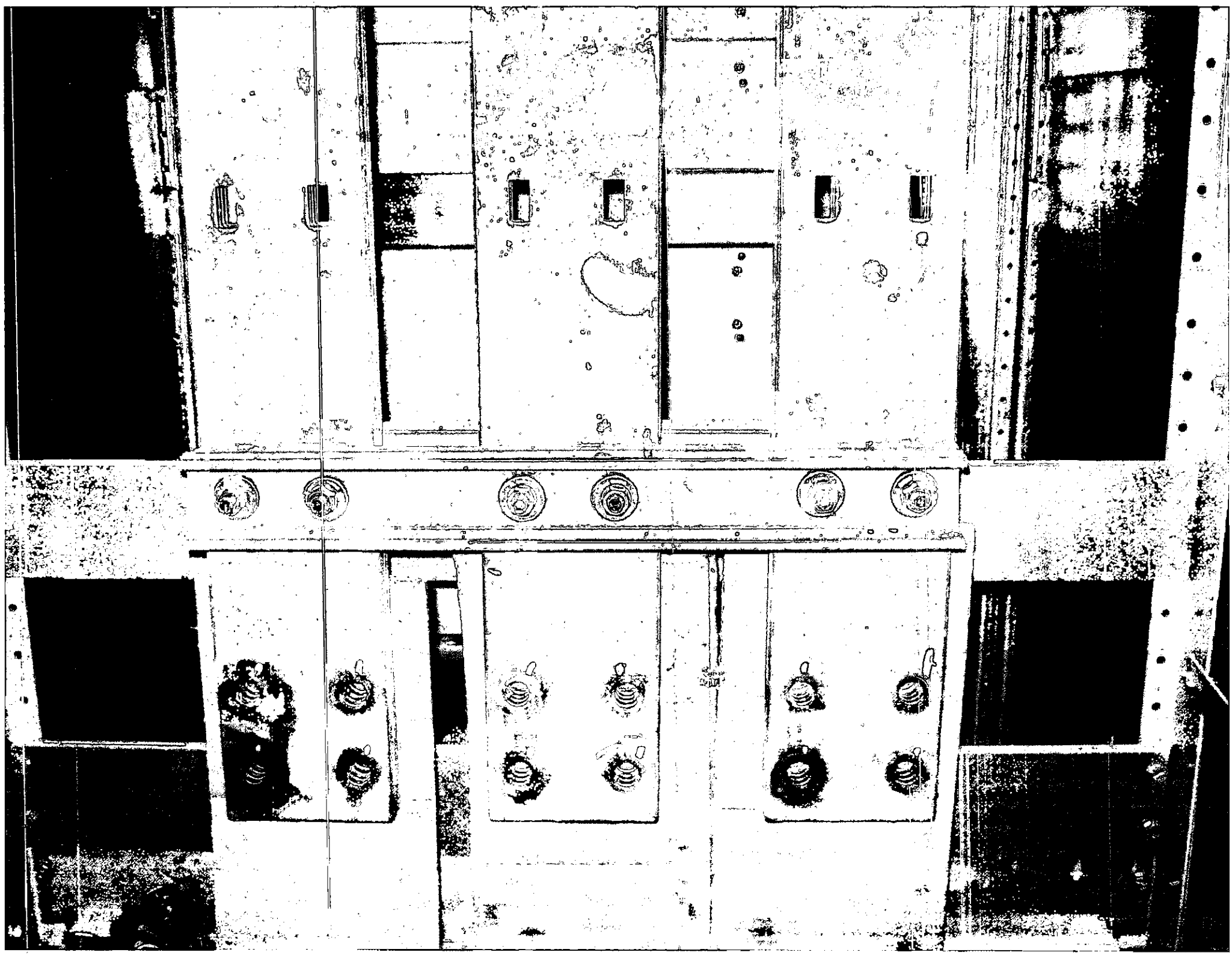


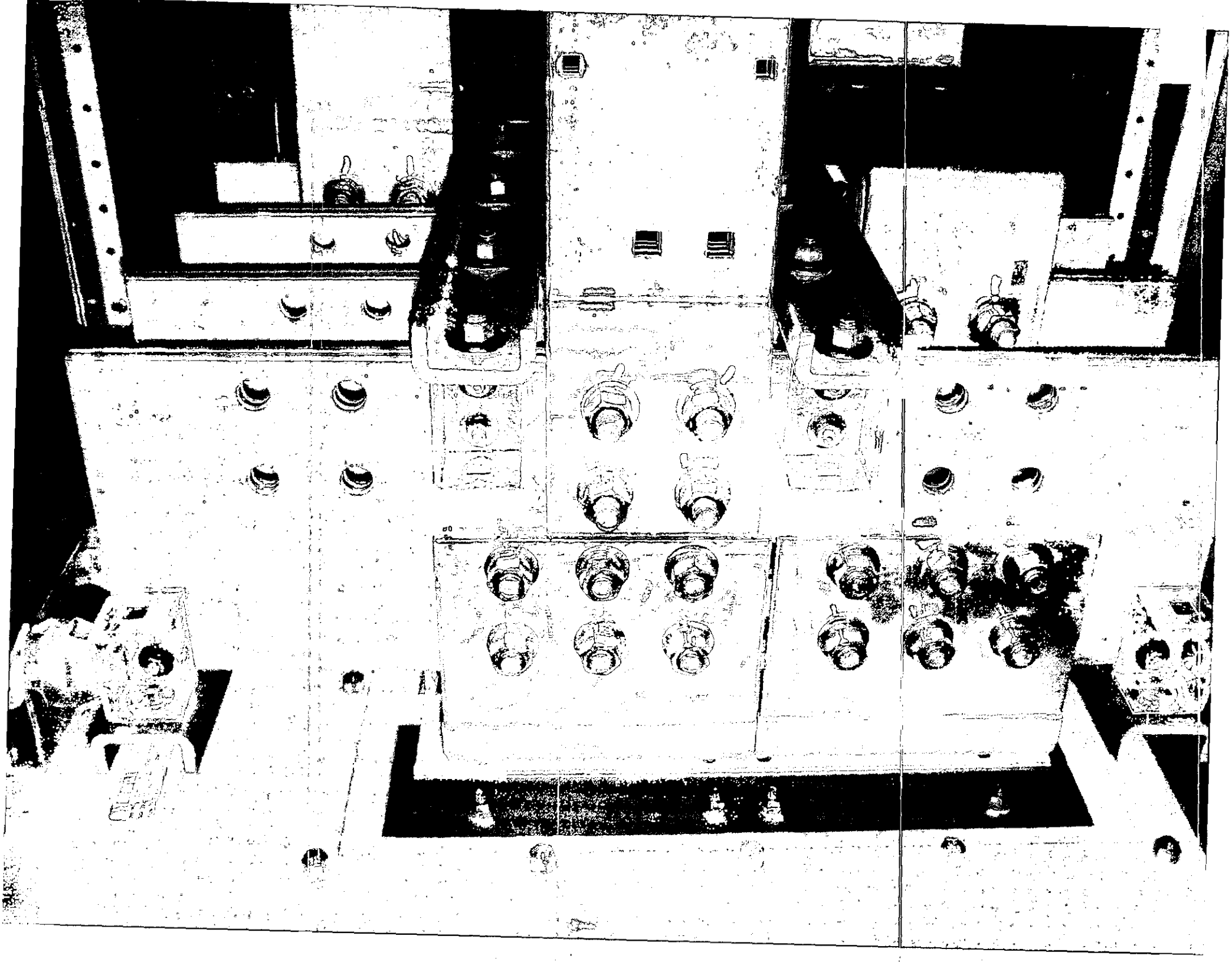


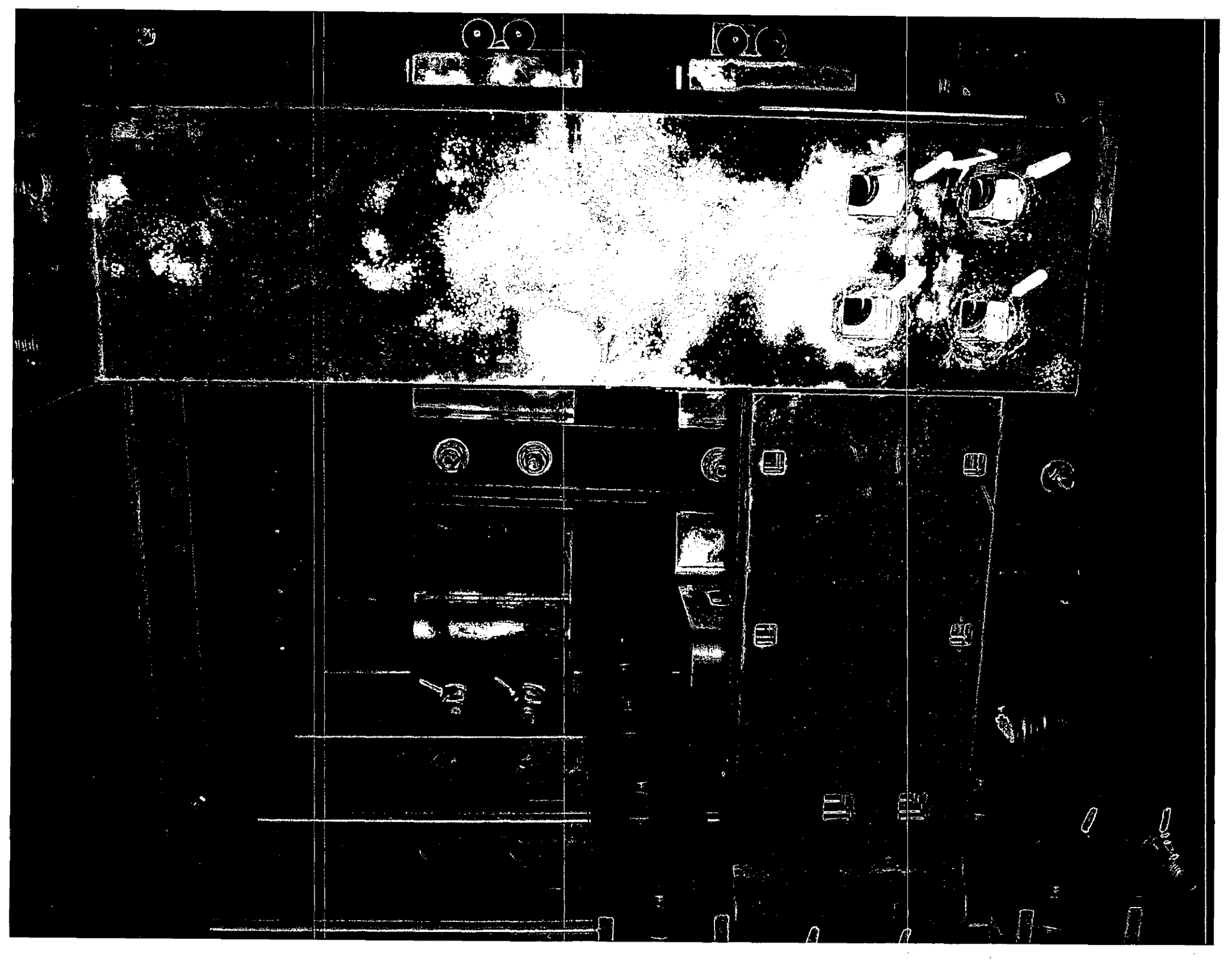


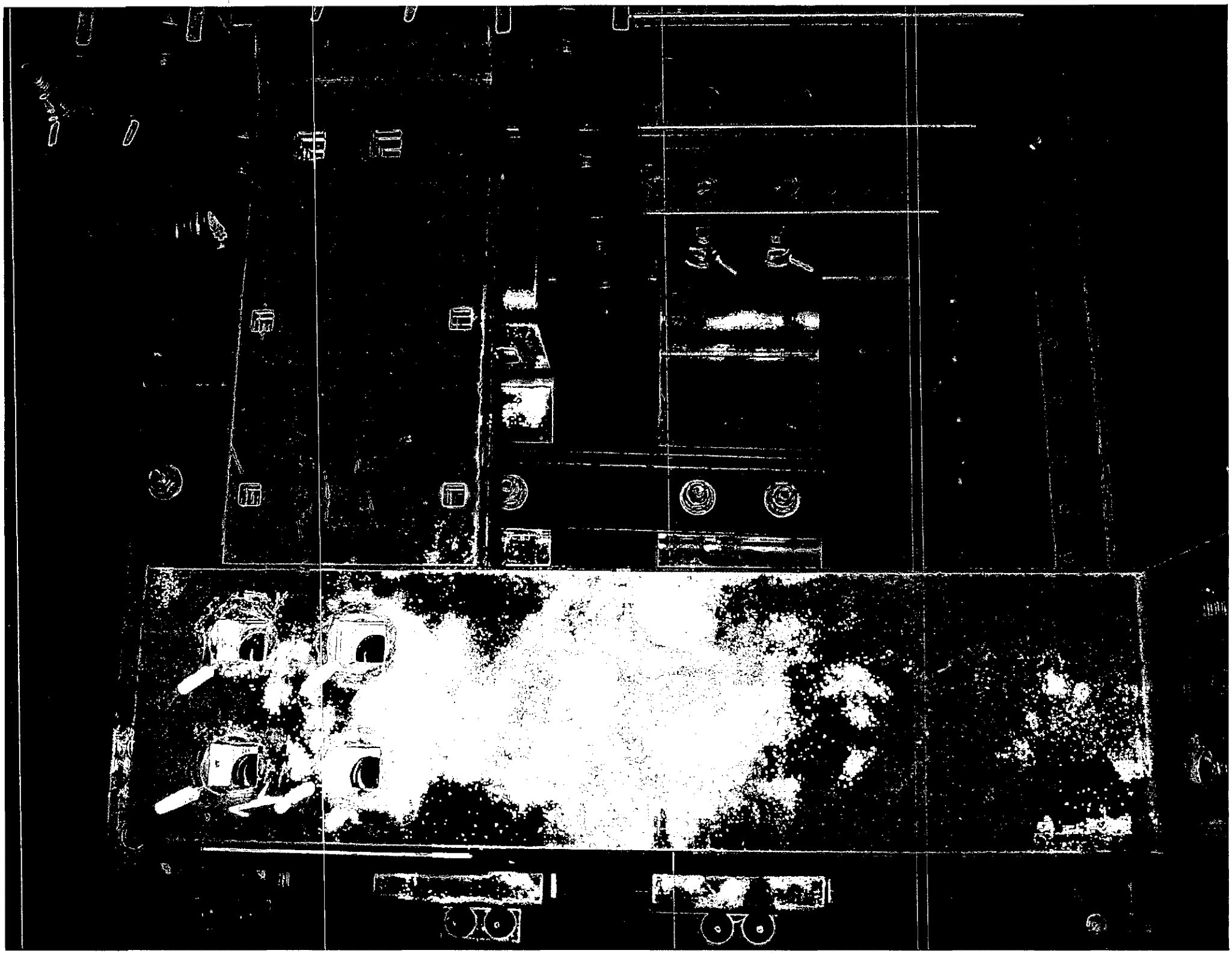


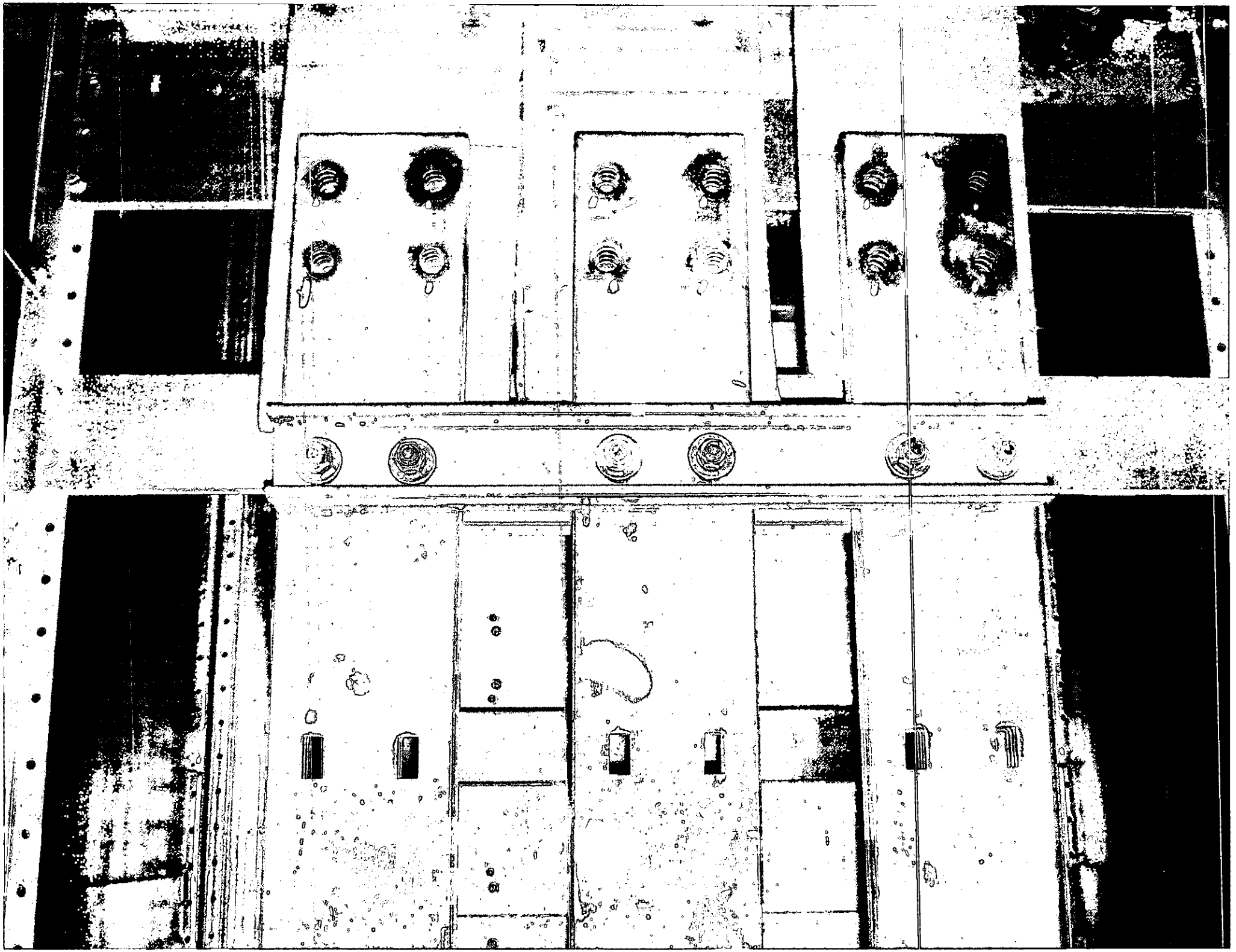


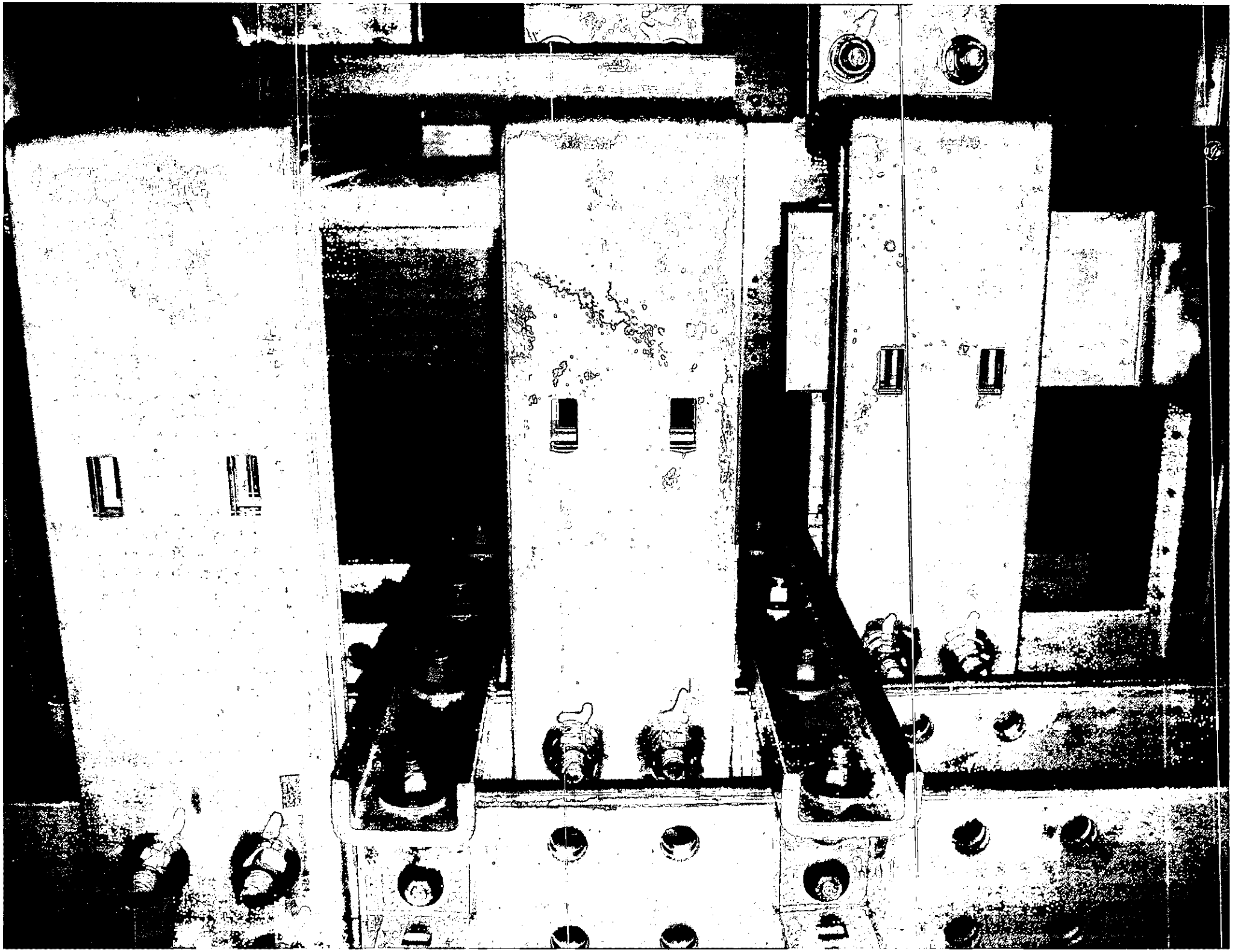


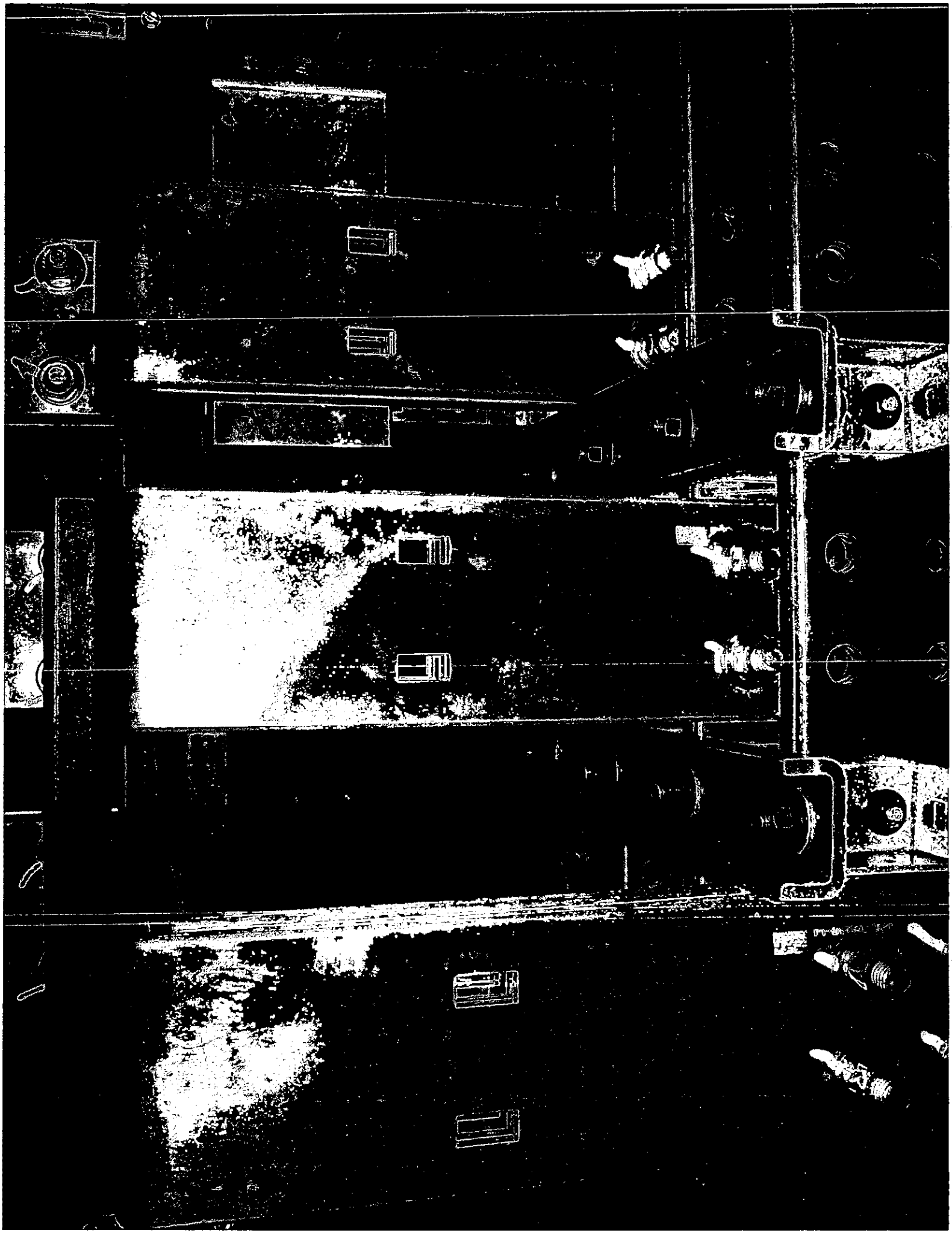


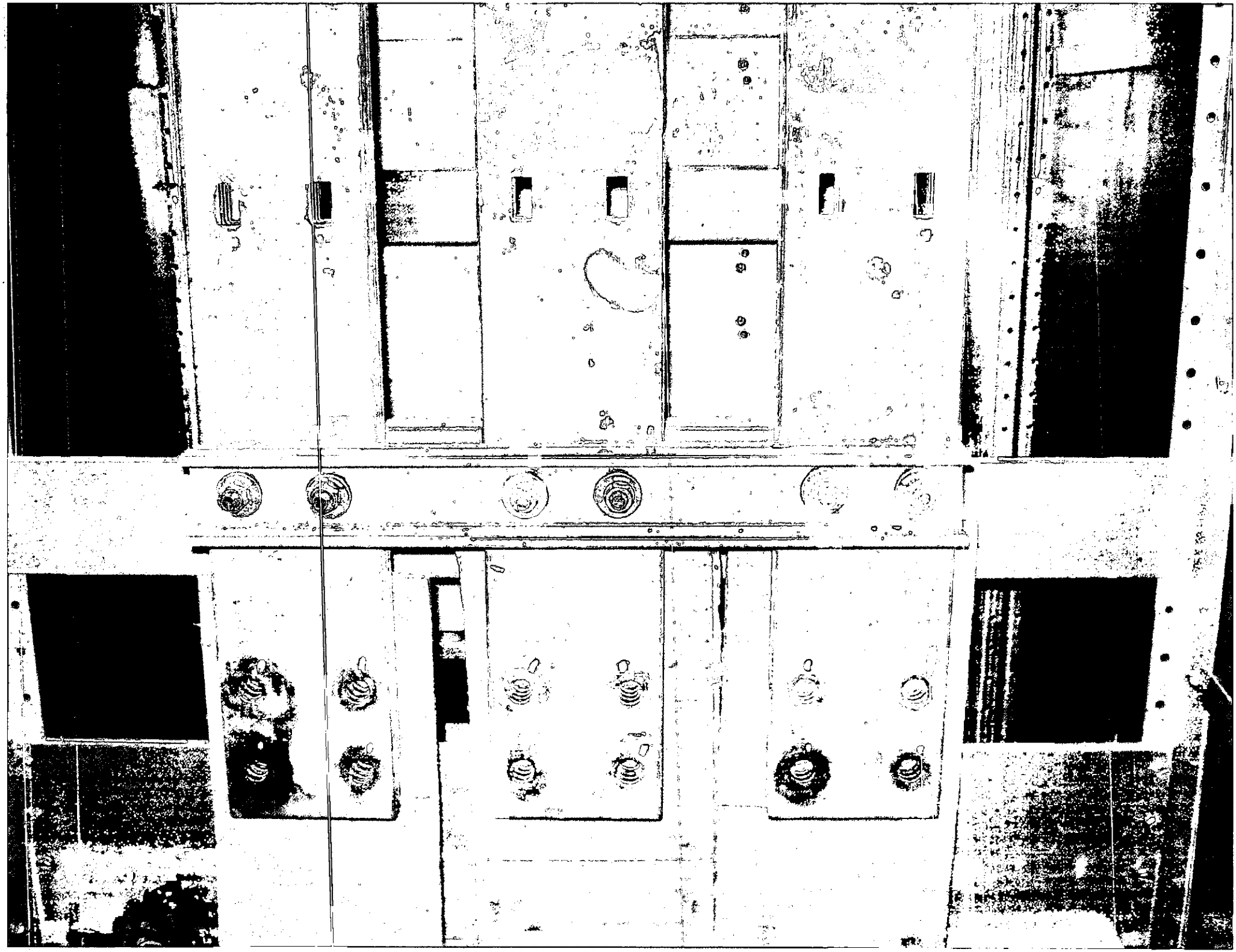


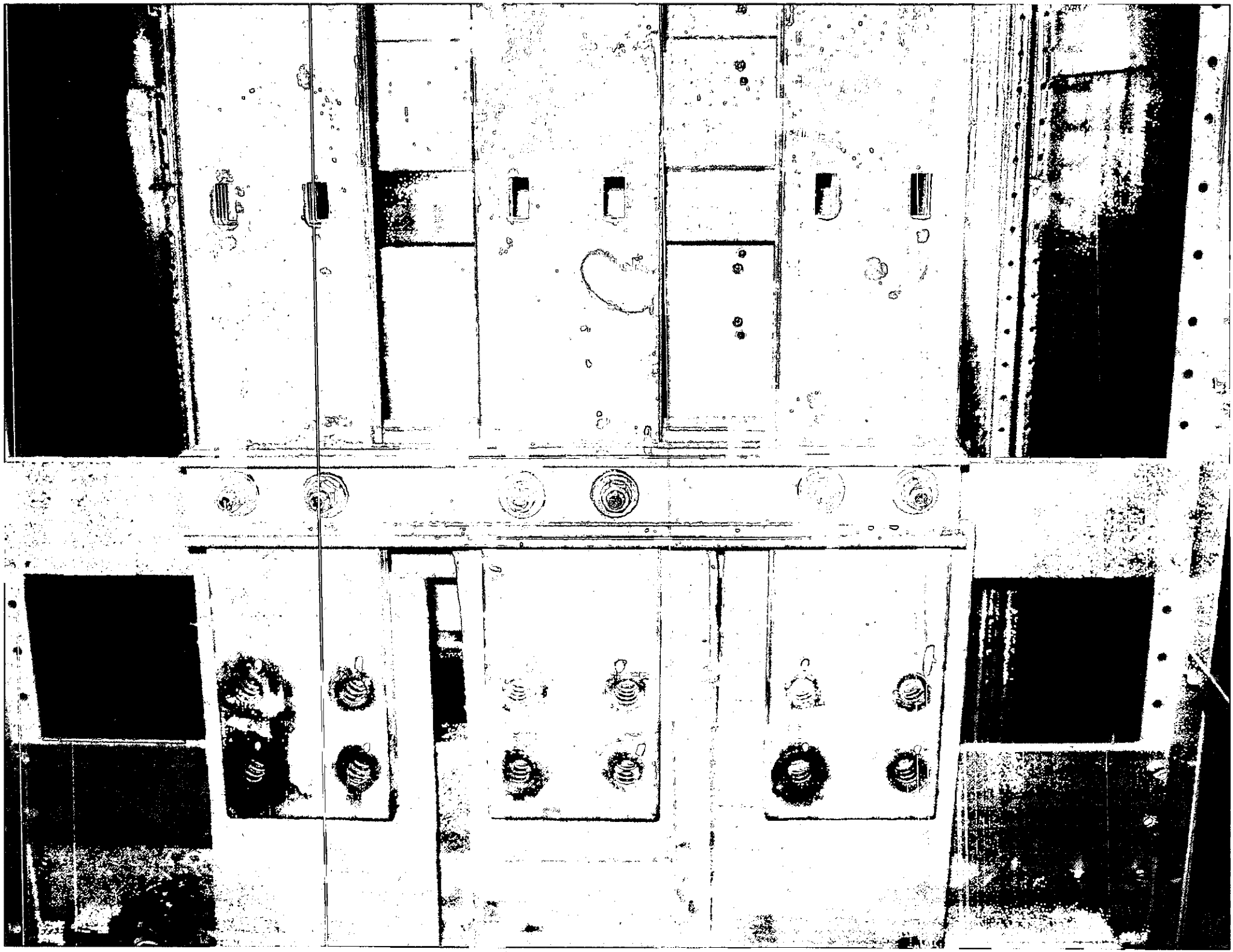












CHANGE ORDER REQUEST REPORT

Sorted By COR Status

VRH

Job No	2034	Sheet	1 of 47
Project Name	Trm. B-LL Exp. & Verti.Circ.- PA Con. EWR-264.003	Date	10/03/14

COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
Approved					
2	Approved	05/02/07	25	Perform all required work for the rehabilitation of the Terminal B Concessions Elevator in accordance with PACC 3, dated 3/22/07.	$59,046.00
6	Approved	10/09/07	21	As directed by The PANY/NJ on PACC-1 Drawings dated 3/20/07 Attachment "A" consisting of revisions to Room 103- Women's Toilet, Deletion of bollards in Room 111- Ticketing Area and Revisons to interior wall details.	$1,580.00
7	Approved	07/05/07	36	Furnish and install the "Tunnel Work" requested by The Port Authority at the Lower Level (B2) temporary partition.	$32,624.00
11	Approved	10/09/07	35	Per the Port Authority of NY&NJ Request for Quotation dated 9/27/07: Furnish and install a new 12" sanitary main from the Crawl Space in Terminal B to an existing sanitary manhole at the Lower Level Inner Roadway. Disconnect, remove and re-route existing 8" and 10" sanitary lines in the Crawl Space and Lower Level of Terminal B in accordance with PACC No. 13 dated May 24, 2007.	$94,118.13
12	Approved	07/05/07	46	Per The Port Authority of New York & New Jersey's request for quotation dated 6/25/07: Removal and disposal of the existing Ground Transportation Counter at the mid-level of Terminal B, demolition of the existing tenant office and storage spaces located behind the Ground Transportation Counter and relocation of the existing Verizon telephone termination block and associated cables. Work in accordance with Sketches PACC-7-SK-1, PACC-7-SK-2 and PACC-7-SK-3, all dated May 10, 2007.	$28,189.15
13	Approved	09/24/07	28	Per The PANY&NJ Request for Quotation dated August 30, 2007, perform all work necessary to construct an office, break room and storage room at the south end of Terminal B, Mid-Level all in accordance with PACC No. 8 drawings dated May 14, 2007.	$62,488.00
14	Approved	07/08/08	40	In accordance with The Port Authority of NY&NJ PACC 5 Request for Quotation dated 1/02/08: Perform all work necessary to construct the longitudinal expansion joint along the Terminal B Mid Level frontage sidewalk in accordance with the revised Contract Drawings EWR-264.003 - A0929 (Revision 4), A1219 (Revision 1) and S504 (Revision 2), all dated June 21, 2007.	$159,281.00
17	Approved	01/22/08	44	Per the Port Authority Request for Quotation dated 1/16/08: As directed by the Engineer, perform all work necessary to furnish and install electrical switchgear equipment and automatic transfer switches in the North and South Substations of Terminal B in accordance with PACC #15 drawings, dated 6/21/07.	$1,237,968.60
18	Approved	07/19/07	29	Per the Port Authority's PACC #10 RFQ dated June 8, 2007, furnish and install fully tempered (Type FT) glass in lieu of the specified annealed glass for Lite No. 1 of the decorative glass panel system, approximately 4,900 square feet. The work shall be in accordance with revised Specification Section 07465 entitled "Decorative Glass Panel", dated April 23, 2007.	$53,543.00

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Project Name	Trm. B-LL Exp. & Verti.Circ.- PA Con. EWR-264.003	Date	10/03/14

COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
19	Approved	08/25/08	42	Per The Port Authority of NY&NJ PACC #9 Request for Quotation, dated 6/23/08: Perform all work required for miscellaneous architectural, mechanical, fire protection and electrical changes in the Lower and Mid Levels of Terminal B in accordance with PACC9 drawings. The work generally consists of: addition of access hatches in the gypsum wallboard ceilings, addition of metal lay-in ceiling system in restrooms and family room, material substitution of selected aluminum panels with GFRG panels in elliptical lighting coves in lobby ceilings, reduction of scope of semi-rigid ceiling insulation, deletion of air louvers from the North Emergency Generator Room, addition of exterior column covers, deletion of LED cove lighting in selected areas, changes to stainless steel column covers and addition of exit signs.	$58,239.00
20	Approved	04/08/08	50	In accordance with The Port Authority of NY&NJ PACC #12 Request for Quotation dated 10/18/07: Perform all work necessary to construct the exterior window wall and vestibules at the Lower Level of Terminal B in accordance with the sketches and revised contract drawings on PACC-12, Attachment 'A', dated 10/18/07.	$97,307.94
21	Approved	08/30/07	63	Per the Port Authority's response to RFI #73, demolish existing 18 x 14 duct and install new as indicated on sketch SK-RFI-73 dated 8/7/07.	$20,917.43
23	Approved	06/04/08	65	Per The Port Authority of NY&NJ PACC #34 Request for Quotation, dated 5/22/08: Furnish and install electrical power for hot water pumps HWP-5, HWP-6, HWP-7, HWP-8 and HWP-9 in various Mechanical Equipment Rooms in Terminal B in accordance with the following: - Furnish and install combination starter/disconnect switch for each pump motor. - Furnish and install 20 Amp, 3-pole circuit breaker for each pump motor. - Hot water pumps HWP-6, HWP-7, HWP-8 located in MERs 119, 143 and 144 respectively, shall be wired to Panel LLE-T-M. - Hot water pumps HWP-5 and HWP-9, located in MERs 116 and 144 respectively, shall be wired to Panel LLE-P-M.	$54,067.00
24	Approved	10/22/07	66	Per The Port Authority of NY&NJ Request for Quotation dated 10/4/07: As directed by the Engineer, perform all work necessary to construct an additional P2 pile cap and tie beam between Column Lines 2 and 3 and Dd and Db at the Lower Level of Terminal B in accordance with Sketch SK-1-PACC-22, dated 10/4/07.	$33,769.00
26	Approved	01/02/08	58	Per the Port Authority's directive dated July 23, 2007, provide all labor, material and equipment necessary to remove asbestos and lead-based paint from the existing steel beams and ceiling decks in the Terminal B South Substation and Service Elevator Machine Room in accordance with sketch NC-21.H-SK-1, dated July 23, 2007.	$105,288.00
27	Approved	09/25/07	74	Per The Port Authority of NY&NJ letter dated 9/21/07, install temporary hot water and chilled water supply and return lines to existing AC unit AC-2A in B2 Lobby in accordance with sketch SK-NC-21C-01, dated 9/21/07.	$4,774.00

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Job No	2034	Sheet	3 of 47
Project Name	Trm. B-LL Exp. & Verti.Circ.- PA Con. EWR-264.003	Date	10/03/14

COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
29	Approved	11/12/07	78	Per The Port Authority of NY&NJ letter dated September 27, 2007: Provide all labor, material and equipment necessary to monitor the existing electrical feeder to distribution panel DP-G located in the Delta Baggage Area of Terminal B.	$7,889.00
30	Approved	10/18/07	82	Per the Port Authority of NY&NJ request for quotation dated 10/4/07, perform all work necessary to install a suspended ceiling system in the area formally occupied by the Ground Transportation Counter at the Mid Level of Terminal B in accordance with Sketch SK-1-PACC-21, dated 9/5/07. The work generally consists of the installation of a new suspended ceiling system, light fixtures, ductwork and the insulation of existing ductwork.	$34,085.00
32	Approved	10/30/07	87	Per the Port Authority of NY&NJ PACC #11 Request for Quotation dated 11/16/07: Furnish and install approximately 550 linear feet of 3" RGS Conduit in lieu of the specified 2 1/2" RGS Conduit for the electrical feeders at the following locations in Terminal B: - From panel P-MDP to panel LLE-P-M - From panel P-MDP to panel LLE-PLP - From panel T-MDP to disconnect 1B4/CD4 - From panel T-MDP to panel LLE-T-V - From panel T-MDP to Elevator 1 - From panel T-MDP to Elevator 2 Furnish and install approximately 225 linear feet of 3 1/2" RGS Conduit in lieu of the specified 3" RGS Conduit from Switchgear SB to Panel DPSA in Terminal B.	$17,424.00
35	Approved	01/22/08	93	Per the Port Authority of NY&NJ Request for Quotation dated 1/15/08: Perform all work necessary to furnish and install additional reinforcing steel to the concrete slab and grade beams for the South Generator Foundation in the B1 Courtyard in accordance with Sketch PACC-24-SKS-4, dated 9/6/07.	$15,996.50
36	Approved	08/25/08	56	Per the Port Authority of NY&NJ PACC 17 Request for Quotation dated 2/13/08: perform all work necessary to enlarge existing Bag Belt Room (Room 107A) in the lower level of Terminal B in accordance with the drawings listed on PACC-17, Attachment 'A', dated 9/21/07.	$50,900.40
37	Approved	01/09/08	96	Remove and dispose of asbestos containing sprayed on fire proofing in the elevator shaft.	$34,775.00
39	Approved	03/07/08	98	Per The Port Authority of NY&NJ PACC-23 Request for Quotation dated 12/11/07: Furnish and install a new 6" sanitary main at the south end of Terminal B in accordance with Sketch SK-1-PACC-23, October 15, 2007.	$33,539.15

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Project Name	Trm. B-LL Exp. & Verti.Circ.- PA Con. EWR-264.003	Date	10/03/14

COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
43	Approved	12/09/08	107	Per The Port Authority of NY&NJ PACC #40 Request for Quotation dated 9/2/08: Furnish and install eight (8) NEMA 12 enclosures for the eight (8) disconnect switches in the TSA Screening Room and Baggage Makeup Room shown on Contract Drawing E308, dated 7/24/06, in lieu of the NEMA 1 enclosures specified in the Contract. Furnish and install one (1) additional 4" PVC conduit in the south roadway ductbank, approximately 200 linear feet. Furnish and install 2" conduit from the Temporary CT Cabinet to the location of the new metering pan in the South Substation, approximately 30 linear feet.	$12,500.00
46	Approved	07/25/08	114	Per The Port Authority of NY&NJ PACC #19 Request for Quotation dated 4/14/08: Perform all work necessary to furnish and install the ductwork in the B2 Lobby of Terminal B in accordance with revised Contract Drawings EWR 264.003 A0406 and A0410 both Revision 3, M301 and M302 both Revision 2 and M408 Revision 1, all dated 8/13/07.	$105,000.00
47	Approved	05/19/08	124	Per The Port Authority of NY&NJ PACC #32 Request for Quotation dated 3/20/08: Furnish and install 2" steel channels, 4' 0" on center, for the support of the perforated metal panel ceilings east of Column Line G at the lower level of Terminal B, approximately 4,000 linear feet.	$42,800.00
51	Approved	03/21/08	130	Per The Port Authority of NY&NJ PACC 31 Request for Quotation dated 3/13/08: Perform all work necessary to furnish, install and terminate conduit and wire for Automatic Sliding Doors Nos. 115A through 115E and 133A through 133E.	$19,972.00
52	Approved	03/19/08	135	Per The Port Authority of NY&NJ directive dated 2/28/08: Provide all labor, material and equipment necessary to monitor existing Switchgears NA & NB in the Terminal B North Substation. Data shall be recorded for a period of thirty (30) consecutive calendar days.	$16,846.08
54	Approved	08/26/08	90	In accordance with The Port Authority of NY&NJ PACC #16 Request for Quotation dated 7/28/08: Perform all work necessary to furnish and install additional cove lighting along the west exterior wall of the Lower Level of Terminal B, south of Column Line 5. In addition, furnish and install elevator and escalator pit lighting and associated circuits.	$56,352.00
57	Approved	03/21/08	129	Per The Port Authority of NY&NJ PACC 26 Request for Quotation dated 2/5/08: Furnish and install new fire standpipe piping for the fire hose cabinets in Room 111 - Ticketing Area in accordance with Contract Drawing F503 (Rev 1), dated 1/24/08.	$14,830.00
59	Approved	04/15/08	151	Per The Port Authority of NY&NJ PACC #33 Request for Quotation dated 4/14/08: Perform all work necessary to furnish and install a new 45 KVA Transformer and 208/120V, 3-phase electrical panel in the existing LLTC Electrical Room in the Lower Level of Terminal B in accordance with sketches SKX-E1-PACC-33, SKX-E2-PACC-33 and SKX-E3-PACC-33, all dated 3/24/08.	$15,569.00

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COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
60	Approved	05/30/08	152	Per The Port Authority of NY&NJ PACC #27 Request for Quotation dated 5/7/08: Furnish and install ceiling access hatches and Progressive Collapse Joints in the gypsum board ceilings at the Lower Level of Terminal B in accordance with sketch SK-A01-PACC-27, Revision 1, dated 4/11/08.	$36,088.00
63	Approved	05/02/08	160	Per The Port Authority of NY&NJ directive dated 3/24/08: Furnish and install temporary 1200 Amp disconnect switch for Pump Station No. 2 at the south substation of Terminal B.	$38,412.00
66	Approved	05/12/10	174	Per The Port Authority of NY&NJ Request for Proposal PACC No. 114 - Furnish and install conduits and wire for a 20amp, 120 volt circuit for two (2) future CNN monitors located along Column Line R5, between column lines 9 and 10 and 14 and 15 in the Lower Level of Terminal B. Conduit and wire shall be installed between monitor locations and the above-ceiling area in Room 124, approximately 420 linear feet and shall be sized in accordance with NEC.	$15,924.00
67	Approved	09/23/08	175	Per The Port Authority of NY&NJ PACC #42 Request for Quotation dated 9/15/08: Perform all work necessary to provide power to six (6) Fire Smoke Dampers (FSD #11, 15, 16, 23, 28 and 85) from Circuit #5 Panel ELLE-PRP located in the Terminal B South Emergency Switchgear Room, Room #146. Conduit and wire shall be sized in accordance with the NEC. *** NOTE: The Port approved this work on a (T&M) basis with CO #00032.	$0.00
68	Approved	09/23/08	176	Per The Port Authority of NY&NJ PACC #43 Request for Quotation dated 9/15/08: Furnish and install one (1) 30kVA dry-type transformer and associated feeder wiring for Panel NSS-EPP in the Terminal B North Generator Room.	$21,222.00
70	Approved	07/23/08	178	Per The Port Authority of NY&NJ PACC #39 Request for Quotation dated 7/17/08: Furnish and install electrical power to VAVs 9.1 and 9.2 from Panel ELLE-P-M, Circuit #36 in Emergency Switchgear Room 146 in the Lower Level of Terminal B. Conduit and wire shall be sized in accordance with the National Electrical Code (NEC). Furnish and install conduit and wire necessary to energize Motorized Dampers D1, D2 and D3 on Air Handling Units AHU-5, AHU-6, AHU-7, AHU-8 and AHU-9 from Panel ELLE-PRP, Circuit #5 in Emergency Switchgear Room 146 in the Lower Level of Terminal B. Conduit and wire shall be sized in accordance with the National Electrical Code (NEC).	$15,240.00

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Project Name	Trm. B-LL Exp. & Verti.Circ.- PA Con. EWR-264.003	Date	10/03/14

COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
71	Approved	06/23/09	179	Per The Port Authority of NY&NJ Request for Quotation PACC No. 71, dated 6/10/09: -Furnish and install two (2) 2" conduits, two (2) 1-1/4" conduits and one (1) 1-1/2" conduit for the "Roadways" Public Address System from FID Room 179 in the FIS Building of Terminal B to a junction box on the east side of the Restricted Service Road, opposite Guard Post Bravo, approximately 580 linear feet. -Furnish and install two (2)" conduits for the "Roadways" Public Address System in the Lower level of Terminal B in lieu of the contractually required one (1) 1-1/2" conduit, approximately 400 linear feet. -Furnish and install two (2) 1-1/4" conduits for the lower level Public Address System, Zones 6, 8 and 9, from Room 146 in the Lower Level to MER 1 on the concourse level in lieu of the contractually required two (2) 1" conduits, approximately 250 linear feet.	$58,911.00
73	Approved	03/12/09	181	Per The Port Authority of NY&NJ Request for Quotation, PACC No. 62 dated 3/5/09: Furnish and install three (3) sets of 4-conductor 500MCM, XHHW armored cable for the feed to Switchboard A4, approximately 60 linear feet per set. The armored cables shall extend from pull box NSB5 in the crawlspace to Switchboard A2 in the North Switchgear Room, Terminal B. Furnish and install two (2) sets of 4-conductor 500MCM, XHHW armored cable for the feed to Switchboard B4, approximately 60 linear feet per set. The armored cables shall extend from pull box NSB6 in the crawlspace to Switchboard B2 in the North Switchgear Room, Terminal B.	$42,800.00
74	Approved	06/10/08	183	Internal Only - Net Penalty For Concrete Compression Deficiency.	$0.00
75	Approved	06/10/08	184	Net Penalty For Concrete Compression Deficiency.	($1,242.00)

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COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
77	Approved	07/09/09	186	Per The Port Authority of NY & NJ Request for Quotation PACC No. 72 dated 5/29/09: Provide 120V circuits for lighting and utility outlets for the Baggage Handling System Motor Control Panels (MCP) 1, 2, 3 and 4 located in the Baggage Make-Up Room of Terminal B. -MCP-1 shall be fed from Panel LLE-PRP, Circuit 32 in Electric Room 145 -MCP-2 shall be fed from panel LLE-TRP, Circuit 16 in Electric Room 145 -MCP-3 shall be fed from Panel LLE-TRP, Circuit 18 in Electric Room 145 -MCP-4 shall be fed from Panel LLE-TRP, Circuit 20 in Electric Room 145	$35,000.00
80	Approved	06/17/08	190	Per The Port Authority of NY&NJ PACC #25 Request for Quotation, dated 5/29/08: Furnish and install two additional refrigerant pipes, approximately 113 linear feet each of 7/8" suction and 5/8" liquid lines between Unit AC-1 and Unit ACC-1. Furnish and install approximately 100 linear feet of 1 1/8" suction line in lieu of the specified 7/8" suction line for Units AC-2 and ACC-2 in Room 165. Furnish and install 3/4" supply and return copper piping, approximately 20 linear feet, for VAVs #13 and #14 in Room #103 and #105. Remove existing re-heat coils #1 and #2. Furnish additional fire/smoke dampers in the Lower Level of Terminal B in accordance with Sketches SK-1-PACC-25, SK-2-PACC-25, SK-3-PACC-25, SK-4-PACC-25 and SK-5-PACC-25, all dated 4/22/08.	$35,743.00
81	Approved	05/01/09	168 -	Per The Port Authority of NY&NJ PACC #29 Request for Quotation, dated 5/14/08: Construct Room 168 - North Electrical Substation Expansion Room in Terminal B in accordance with revised Contract Drawings EWR-264.003, A1216, and A1217, both Revision 2, both dated 2/14/08.	$5,029.00
82	Approved	07/29/08	197	Per The Port Authority of NY&NJ PACC #41 Request for Quotation dated 7/23/08: - Remove and dispose of existing concrete platform at the doorway to the South Substation in Terminal B. - Furnish and install new 3" floor drain in Room 147 - South Egress Corridor in accordance with Sketch SK-1-PACC-41, dated 7/21/08. - Furnish and install new terrazzo flooring in a portion of the B1 and B2 Vestibules in lieu of the contractually required floor mat in accordance with Sketch SK-2-PACC-41, dated 7/21/08.	$14,420.00

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COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
83	Approved	09/10/08	200	Per The Port Authority of NY&NJ directives dated 6/10/08 and 6/11/08: In accordance with Contract Drawing G005, General Note 21.C added via Letter Agreement dated 2/5/07, purchase and turn over to the Engineer: Three (3) Hioki 3196-1000A Pro Kit Power Quality Analyzers. Each kit shall include: Hioki 3196 Three Phase Power Quality Analyzer, three (3) 9669 1000A CTs, one (1) 9661 500A CT, battery pack, AC adapter, voltage leads, carry case, Pro Software, 128MB Flash Card and LAN Cable. Purchase and turn over to the Engineer three (3) Fluke 1735 Power Loggers. Connect one (1) Fluke 1735 Power Logger to Switchgear SA and one (1) Fluke 1735 Power Logger to Switchgear SB in the South Substation.	$47,060.00
88	Approved	09/17/08	210	Per The Port Authority of NY&NJ PACC #35 Request for Quotation dated 9/9/08: Furnish and install twelve (12) type N11 lighting fixtures in the B1 and B2 Lobby Ceilings of Terminal B. The light fixtures shall be installed in accordance with Sketches SK-1-PACC-35 and SK-2-PACC-35, both dated 8/13/08.	$14,906.00
91	Approved	11/10/08	217	Per The Port Authority of NY&NJ PACC #44 Request for Quotation dated 10/15/08: Perform all work necessary to furnish and install metal stud framing for the curved linear return air diffusers in the B1 Lobby, approximately 210 linear feet, and the B2 Lobby, approximately 110 linear feet in accordance with Sketches SK-1-PACC-44 and SK-2-PACC-44, both dated 10/15/08.	$31,882.00
93	Approved	09/17/08	219	Per The Port Authority of NY&NJ Directive dated 9/12/08: Provide all labor, material and equipment necessary to relocated electrical power and controls conduit and wire for the Delta Motor Control Panel (MCP) in the Delta Bag Room in Terminal B.	$20,411.00
95	Approved	06/04/13	228	Per the Port Authority of NY & NJ, request for proposal PACC No. 165 dated 5/17/13, as directed by the Engineer, perform all work necessary to modify the installation of the linear diffusers and install new ceiling registers and diffuser, in the Terminal B, B1 Lobby in accordance with Sketches Sk-1-PACC-165 and SK-2-PACC 165, both dated 7/30/08. The work consists of: -Modify the installation of the linear diffusers at the B1 ellipse from 140 lf at two locations, to 80 lf at the north and 60 lf at the south portion of the ellipse. -Install three 36" x 36" ceiling registers and one 35 lf diffuser.	$3,700.00

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COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
97	Approved	09/10/08	235	Per The Port Authority of NY&NJ directive dated June 11, 2008: In accordance with Contract Drawing G005, General Note 21.C added via letter agreement dated February 5, 2008, purchase and turn over to the Engineer the following: Three (3) Lenovo Thinkpad R61 Notebooks. Each Notebook shall include: 2 Duo Processor T9300 (2.5Hz 800MHz 6MBL2), Genuine Windows XP Professional Operating System, 15.4 WSXGA+TFT Display Panel, NVIDIA Quadro FX 570M (256MB Open GL) System Graphics, 2 GB PC2-5300 DDR2 SDRAM 667 MHz DODIMM Memory (1 DIMM) Total Memory, 200GB Hard Disk Drive 7200rpm with Disk Encryption, CD-RW/DVD-ROM Combo 24X/24X/24X/8X Max Ultrabay Slim Optical Device, PC Card Slot and Express Card Slot System Expansion Slots, Intel Wireless WiFi Link 4965AGN (supporting Centrino Pro) Wireless Card, Integrated Bluetooth PAN, 6 Cell Li-Ion Battery, Country Pack North America Power Cord, Microsoft Office Professional 2007 Software - English and 3-year Depot Warranty.	$6,995.00
101	Approved	01/26/09	241	Per The Port Authority of NY&NJ PACC #46 Request for Quotation dated 11/05/08: Perform all work necessary to furnish and install a temporary 1200A panel board, cable tray and associated cables and energize Panels P-MDP, T-MDP and EMDB in Room 146 of Terminal B, in accordance with Sketches SK-1-PACC-46 and SK-2-PACC-46, both dated 7/01/08. Remove the temporary panel and all associated cable trays and cables upon completion of permanent power.	$147,464.00

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COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
103	Approved	10/17/08	248	Per The Port Authority of NY&NJ directive dated 10/13/08:	$12,321.00

Installation of two (2) recording ammeters capable of monitoring all phases of each electrical feeder, including duration and magnitude of peak loads. The recording ammeters shall be placed on the main buses for Switchgears NA and NB located in the North Switchgear Room. Data shall be recorded for a period of thirty (30) continuous calendar days; submit interim reports of the data readings at the end of each of the first three weeks and a final report at the end of thirty (30) days.

Furnish and turn over to the Engineer twelve (12) Hioki 5000A flexible current sensors (CTs) and twelve (12) coordination AC Adapters.

Shut down of the existing feeders shall not be permitted. All activities necessary to complete this work shall be conducted on and around fully energized electrical feeders and equipment.

Final report shall be submitted no later than three (3) days after the completion of the recording period. The report shall include, but not be limited to, the following information:

- Analog current and voltage values
- Peak current and voltage values
- Phase harmonics
- Peak demand KVA, KW, KVAR and PF

All data shall be indicated as per phase and total values, and as the Engineer may otherwise require.

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Project Name	Trm. B-LL Exp. & Verti.Circ.- PA Con. EWR-264.003	Date	10/03/14

COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
113	Approved	01/21/09	260	Per The Port Authority PACC No. 51, dated 12/15/08, Perform all work necessary to: -Furnish & install one (1) additional power receptacle (15A, 120V) in the Amenities Alcove at Column Line E5. Conduit and wire shall be routed to the nearest junction box, approximately 10 linear feet. -Furnish and Install three (3) additional telephone/data boxes in the Amenities Alcove at Column Line E5. 1" EMT conduit shall extend 6" above ceiling, approximately 15 linear per conduit. - Extend the one (1) 1" rigid galvanized steel telephone/data conduit from Room 132 - Elevator Machine Room to Unfinished Space C, appromiately 60 linear feet. - Provide power from Panel LLE-TLP in Room 145 (Electrical Room #1) to the water heater in Room 129 - Janitor's Closet. Conduit and wire shall be in accordance with NEC. - Provide power from Panel LLE-TLP in Room 145 (Electrical Room #1) to the sump pump and controller in Room 122 (MER #2). Conduit and wire shall be in accordance with NEC.	$23,989.00
117	Approved	11/02/09	266	Per The Port Authority of NY&NJ Request for Quotation PACC No. 95 dated 10/27/09, furnish and install new conduit and wire from Panel DP-SA to Supply Fan No. 1 in Mechanical Equipment Room No. 1 on the Concourse Level of Terminal B, approximately 100 linear feet. Conduit and wire shall be sized in accordance with the National Electric Code.	$5,036.00
119	Approved	04/15/09	270	Per The Port Authority of NY & NJ directive dated February 19, 2009 - In accordance with Drawing G005, General Note No. 21.H., added via Letter Agreement dated May 9, 2007, provide all labor, material and equipment necessary to remove existing asbestos spray-on fireproofing from the north, south and east steel framing for the B1 Concourse Level floor opening in accordance with Sketch NC-21H-01, dated February 19, 2009.	$91,000.00
120	Approved	11/25/08	276	Per The Port Authority of NY&NJ PACC #48 Request for Quotation dated 11/17/08: Perform all work necessary to: - Furnish and install reinforced perforated stainless steel grates for the trench drains at the B1 and B2 Lobbies of Terminal B in lieu of the contractually required galvanized steel grates. - Furnish and install a 2' x 2' acoustical tile ceiling system in Room 104 - Janitor's Closet, approximately 30 square feet. - Furnish and install new 2-1/2" black iron and hangers for the exterior 2' x 2' metal pan ceiling between Column Lines 2 & 5 at the Lower Level of Terminal B. Support system shall be installed in accordance with Detail 2/Drawing A0924. Submit shop drawings for review and approval. - Furnish and install opacifying film on the exterior face of the glass elevator shaft walls at the Lower Level of the B2 Lobby in accordance with Sketch SK-1-PACC-48, dated 8/6/08. - Extend (4) 1" drain lines at the Lower Level of Terminal B in accordance with Sketch SK-2-PACC-48, dated 10/6/08.	$17,463.00

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COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
122	Approved	03/11/10	278	Per The Port Authority Request for Proposal PACC No. 109 dated 02/04/2010, -Reroute the supply duct for Ait Handling Unit No. 8 in the Lower Level of Terminal B in accordance with Shop Drawings MER-8-9, Revision 3, dated 9/30/09, Drawing SM-12B, dated 7/12/07 and Drawing SM-13, Revision 3, dated 9/17/08. -Furnish and install 18" diameter temporary flexible supply duct for Air Handling Unit No. 4 in the Lower Level of Terminal B, approximately 25 linear feet.	$21,992.00
124	Approved	03/02/09	283	Per The Port Authority PACC No. 61 Request for Quotation dated February 26, 2009: Perform all work necessary to furnish and install a suspended acoustical tile ceiling in the B2 North Corridor - Room 110 at the Lower Level of Terminal B in accordance with Sketch SK-1-PACC-61, dated 12/02/08.	$14,980.00

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Project Name	Trm. B-LL Exp. & Verti.Circ.- PA Con. EWR-264.003	Date	10/03/14

COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
125	Approved	04/06/09	285	Per The Port Authority Request for Quotation PACC No. 63 dated 3/11/09:	$35,593.00

1. Furnish and install 120V power to two (2) Fire Alarm Circuit Extender Panels located in Elevator Machine Room 1 (EMR-1) and Elevator Machine Room 4 (EMR-4) in Terminal B. The circuit extender panel in EMR-1 (column D18) shall receive power from Panel LLTC-ERP, circuit #9 in the LLTC Electric Closet, Room 110, approximately 180 linear feet away. The circuit extender panel in EMR-4 (column D6) shall receive power from Panel ELLE-PRP, circuit #5 in the Electric Closet, Room 146, approximately 400 linear feet away.

2. Furnish and install two (2) power receptacles, one (1) for the Flight Information Display (FID) Monitor and one (1) for the Baggage Information Display (BID) Monitor in the B1 Lobby. The receptacles shall be powered from Panel LLE-TRP, curcuit #16 in Room 145, approximately 200 linear feet. Conduit shall be rigid galvanized steel (RGS). Conduit and wire sized in accordance with NEC.

3. Furnish & install two (2) data junction boxes, one (1) for the FID monitor and one (1) for the BID monitor in the B1 Lobby. The 3/4" conduit and drag line shall extend from the monitors to the Communications Closet, approximately 120 linear feet. Wire and terminations to be performed by others.

4. Furnish and install a grounding system for the South Generator Enclosure. The system shall include two (2) 10-foot 3/4" grounding copper rods and a 3/0 ground conductor cable, approximately 80 linear feet. The ground conductor cable shall interconnect the two (2) ground rods, generator enclosure, generator framing and generator neutral.

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Project Name	Trm. B-LL Exp. & Verti.Circ.- PA Con. EWR-264.003	Date	10/03/14

COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
128	Approved	03/20/09	287	Per The Port Authority directive dated February 10, 2009: In accordance with Drawing G005, General Note No. 21.G., added via Letter Agreement dated February 5, 2007, Provide all labor material and equipment necessary to install temporary power and lighting during the electrical shutdown for the removal of Switchgear NA in the North Substation of Terminal B. The work consists of the following: 1. Temporary installation of seven (7) 4,000W diesel-powered light towers at locations as directed by the Engineer. 2. Temporary installation of sixteen (16) battery-operated twin head light towers at locations as directed by the Engineer. 3. Temporary installation of a 480V, 3-phase, 225KW generator for the sprinkler system air compressor in the B3 Satellite Mechanical Room. 4. The shutdown shall be from 12:00AM to 4:00AM	$25,577.00
129	Approved	02/26/09	289	Per The Port Authority of NY&NJ PACC 49 Request for Quotation dated February 4, 2009: Perform all work necessary to furnish & install additional structural framing for the loading dock ceiling at the Lower Level of Terminal B in accordance with Sketches SK-1-PACC-49, SK-2-PACC-49, SK-3-PACC-49, SK-4-PACC-49 and SK-5-PACC-49, all dated 10/21/08.	$8,654.00
131	Approved	03/18/09	291	Per The Port Authority PACC No. 60, Request for Quotation dated February 19, 2009: Perform all work necessary to furnish and install the South Emergency Generator security fence and platform grating in the B1 Courtyard in accordance with Sketches SK-1-PACC-60, dated 10/17/08 and SK-2-PACC-60, dated 11/3/08.	$60,191.00

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Project Name	Trm. B-LL Exp. & Verti.Circ.- PA Con. EWR-264.003	Date	10/03/14

COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
133	Approved	07/06/09	301	As per The Port Authority Request for Quotation PACC No. 65 dated 4/24/09: 1. Furnish and install one (1) 500MCM, XHHW Neutral Cable from Switchboard T-N to Junction Box EJB7, approximately 60 linear feet, and from Switchboard A2 to Junction Box EJBY, approximately 40 linear feet, for the feed to Elevators B1 and B3. 2. Furnish and install two (2) smoke detectors, one in each of the two Service Elevator Shafts and connect to Fire Alarm System. Conduit and wire shall be in accordance with NEC. 3. Provide power from Panel ELLE-PRP in Terminal B, Electrical Room 146 to Panel SS-EPP in the South Generator Enclosure. The work shall consist of the following: -Furnish and install one (1) 100A, 480V circuit breaker in Panel ELLE-PRP. -Furnish and install one (1) 1-1/2" RGS conduit from Panel ELLE-PRP to the South Substation exterior wall, approximatrely 100 linear feet. -Furnish and install one (1) #2 AWG XHHW wire and one (1) E8 AWG XHHW ground wire from Panel ELLE-PRP, through the 1-1/2" RGS and existing 4" power conduit in the South Ductbank to the South Generator Enclosure, approximately 350 linear feet. 4. Provide control wiring from the Automatic Transfer Switch (ATS) in Electrical Room 146 to the South Generator in the B1 Courtyard. The work shall consist of the following: -Furnish and install one (1) EMT from the ATS in Electrical Room 146 to the South Substation exterior wall, approximately 100 linear feet. -Furnish and install control wiring from the ATS in Electrical Room 146, through the 1" EMT and existing 4" communications conduit in the South Ductbank to the South Generator, approximately 350 linear feet, as per the manufacturer's recommendation.	$30,000.00

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COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
134	Approved	02/12/09	302	Per The Port Authority of NY&NJ PACC No. 52 Request for Quotation dated February 9, 2009: Perform all work necessary to construct Office 4 (Room 121) and Office 5 (Room 123) in the Lower Level Claim Hall of Terminal B in accordance with revised Contract Drawings EWR-264.003 - A0302 (Rev. 5), A0309 (Rev. 5), A0402 (Rev. 7), A0402 (Rev. 7), A0407 (Rev. 4), A0409 (Rev. 5), A1216 (Rev. 3), A1301 (Rev. 6), A1302 (Rev. 6), M303 (Rev. 3), F306 (Rev. 2), E303 (Rev. 2) and E404 (Rev. 1) all dated 12/5/08.	$40,475.00
140	Approved	03/26/09	313	Per The Port Authority of NY & NJ Request for Quotation PACC No. 67, dated March 20, 2009: Perform all work necessary to furnish and install two (2) 1-1/2" gate valves and one (1) 1-1/2" globe valve on the hot water return coil piping for Air Handling Units 5, 6, 7, 8 and 9 in Terminal B in accordance with Sketches SK-1-PACC-67 and SK-2-PACC-67, both dated 2/19/09.	$10,668.00
141	Approved	03/02/09	243	Per The Port Authority PACC No. 45 Request For Quotation, dated February 10, 2009: Furnish and install a supplemental ceiling support system for the elliptical ceiling in the eastern half of the Terminal B, B2 Lobby in accordance with Sketches SK-1-PACC-45, SK-2-PACC-45, SK-3-PACC-45, SK-4-PACC-45, SK-5-PACC-45 and SK-6-PACC-45, all dated 12/18/07.	$77,752.00
142	Approved	11/09/09	303	Per The Port Authority Request for Proposal PACC No. 57 dated 10/20/09, extend the 3/4" fire-rated plywood sheathing along the exterior side of glass storefront wall in the Lower Level of Terminal B to the bottom of the existing roadway box beams, approximately 9" in heights, 405 linear feet. Provide backer rod and sealant between the plywood and box beam.	$28,000.00

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COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
148	Approved	04/15/09	323	As per The Port Authority of NY&NJ Request for Quotation PACC No. 47, perform all work necessary to delete the following hardware from the following doors in the Lower Level of Terminal B: DOORS 109, 110 and 116: -Two (2) each Flush Bolts -One (1) Lockset -One (1) Mortise Cylinder DOORS 141 and 147 (Insulated): -Two (2) each Flush Bolts -One (1) Lockset -One (1) Mortise Cylinder -One (1) each Overhead Stop -One (1) each Door Bottom In lieu of the deleted hardware, furnish and install the following door hardware, or approved equal: DOORS 109, 110 and 116: -Two (2) each filler Plate (Flush Bolt), Model DJEF-634 as manufactured by DON-JO -One (1) Filler Plate (Strike), Model DJBS-86 as manufactured by DON-JO -One (1) Filler Plate (Lockset), Model DJEF-86 as manufactured by DON-JO -One (1) each Push Plate, Model 1001-2 630 as manufactured by TRIMCO -One (1) each Pull Plate, Model 1013-2 630 as manufactured by TRIMCO -One (1) Coordinator, Model COR1 USD32D as manufactured by IVES -One (1) Closer, Model 4041 Rw/PA as manufactured by LCN DOORS 141 and 147 (insulated): -One (1) each Exit Device, Model 9827L-NLx17 LHR RHR USD26D as manufactured by VON DUPRIN. Existing lockset gap shall be reinforced prior prior to installing of exit device. -Two (2) each Filler Plate (Flush Bolt) Model DJEF-634 as manufactured by DON-JO -One (1) Filler Plate (Strike), Model DJBS-86 as manufactured by DON-JO -One (1) Filler Plate (Lockset), Model DJEF-86 as manufactured by DON-JO	$10,888.00

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Project Name	Trm. B-LL Exp. & Verti.Circ.- PA Con. EWR-264.003	Date	10/03/14

COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
164	Approved	06/02/09	351	As per The Port Authority of NY & NJ Request for Quotation PACC No. 70 dated 5/20/09 - Perform all work necessary to retrieve and submit weekly load readings from the recording ammeters connected to Temporary Switchboard T-N and existing switchgear NB in the North Substation of Terminal B. The reports shall include, but not be limited to, the following information: - Analog current and voltage values. - Peak current and voltage vaules. - Phase harmonics. - Peak demand KVA, KW, KVAR, and PF. All data shall be indicated as per phase and total values. Load readings shall be submitted for an 18-week period.	$7,261.00
165	Approved	08/26/09	359	Per The Port Authority Request for Quoation PACC No. 79 dated 7/22/09: 1. Furnish and install a new 300 KVA transformer and a new 1200A 120/208V panel outside of the North Substation in Terminal B, in lieu of relocating the existing transformer and panel. Submit catalog cuts for review and approval. 2. Provide temporary power to the new transformer from temporary Switchboard T-N (section 3 of 8) in the North Substation. Furnish and install three (3) #600 KCMIL and one (1) #2 AWG XHHW in a 4" RGS conduit, approximately fifty (50) linear feet. Circuit trip plug shall be set to 450A. Disconnect and remove temporary connection upon completion of transference of circuits to the new 1200A panel.	$52,965.00
166	Approved	06/18/09	356	Per The Port Authority of NY & NJ Request for Quotation PACC No. 73 dated 6/4/09, Furnish and install two (2) 2" RGS conduits in the North and South Substations for the PSE&G revenue meters in accordance with Sketches SK-1-PACC-73 and SK-2-PACC-73, both dated 5/11/09. The conduits shall be installed with no pull points and shall extend into the PSE&G CT cabinets of the gear.	$0.00

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Project Name	Trm. B-LL Exp. & Verti.Circ.- PA Con. EWR-264.003	Date	10/03/14

COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
167	Approved	04/07/10	361	Per The Port Authority of NY & NJ Request for Proposal PACC No. 81 dated 02/22/2010 - furnish temporary power and lighting for the shutdown of Switchgear SA in the Terminal B, South Substation for one 7-day period. The following equipment shall be provided: -One (1) 4,000W diesel powered light plant to be located near Gates 43 and 44. -One (1) 4,000W diesel powered light plant to be located near Gates 46 and 47. -One (1) 4,000W diesel powered light plant to be located near Gates 51 and 52. -One (1) 4,000W diesel powered light plant to be located near Gates 54 and 55. -Two (2) twin head lights to be located at the B1 Arrivals Frontage -Three (3) twin head lights to be located at the IB-4 Carousel at the Arrivals Level. -One (1) twin head light to be located at the Delta Office -Four (4) twin head lights to be located at the B2 Satellite -Four (4) twin head lights to be located at the B2 Connector -Four (4) twin head lights to be located at the South Substation and Corridor -Two (2) twin head lights to be located outside of Guard Post Bravo near IB-4. -Two (2) twin head lights to be located in the Delta Baggage Area. -One (1) twin head light to be located in the TSA Enclosure in the Delta Baggage Area. -One (1) single phase 10K generator for the B1 Arrivals Level -One (1) single phase 10K generator for the lights in the South Substation and Corridor. -One (1) single phase 10K generator for Delta Computer PODS 1, 2 and 3 -One (1) single phase 10K generator for Valve Room A Sprinkler Compressor. -One (1) three phase 50K generator for the PA NY&NJ Inbound Baggage Conveyor System power against Column B14 outside of the Delta Baggage Room. -One (1) three phase 10K generatorfor the sewage ejector pump in the B1 Satellite at Gate 40. -One (1) three phase 10K generator for the sprinkler air compressor between Gates 46 and 47 (B1 Satellite). -One (1) three phase 10K generator for the sewage ejector pump in the B2 Satellite between Gates 51 and 52.	$26,311.00
168	Approved	09/14/09	363	Per The Port Authority Request for Quotation PACC No. 74 dated 9/3/09, furnish and install (4) draingage pipes in the south generator dike wall in the B1 Courtyard in accordance with revised Contract Drawings EWR 264.003 - S604, Revision 3 and S606, Revision 1, both dated 6/10/09.	$34,149.00

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COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
170	Approved	07/08/09	349	Per The Port Authority Request for Quotation PACC No. 68 dated 5/11/09: Furnish and install sixteen (16) additional exit signs in the Lower Level Baggage Claim Hall of Terminal B in accordance with revised Contract Drawings EWR 264.003 - A0401 (Revision 9), A0402 (Revision 8), A0405 (Revision 5), A0406 (Revision 6), A0408 (Revision 3), A0409 (Revision 6), A0410 (Revision 6), E401 (Revision 5), E402 (Revision 3), E403 (Revision 2), E404 (Revision 2), E405 (Revision 3), E406 (Revision 4) and E407 (revision 5), all dated 4/21/09.	$15,536.00
173	Approved	09/28/09	368	Per The Port Authority Request for Quotation PACC No. 89 dated 9/16/09 1. Furnish and install approx 40LF of 5,000A copper bus duct, in lieu of fourteen (14) 4" RGS conduits, from the South Substation to Switchboard EMDS in Room 146 at Terminal B. In addition, furnish and install a 36" x 36" cable-bus transition box in the South Substation to incorporate the 40 linear feet section of bus duct in the South Generator feeder. 2. Furnish and install an addressable elevator recall module for each of the two (2) Service Elevators, S1 and S2 in Terminal B. The modules shall be installed next to each respective elevator control panel in the Elevator Machine Room and shall be connected to the nearest Fire Alarm Junction Box.	$13,907.00
176	Approved	09/04/09	379	Per The Port Authority of NY & NJ Request for Quotation PACC No. 83 dated 8/4/09 - Extend the existing column in the B1 & B2 Service Elevator Shaft in accordance with Sketch SK-1-PACC 83, and Request for Quotation dated 8/4/09. - Extend the existing slab edge at the B1 Core, Concourse Level to the E5 Escalator in accordance with Sketches SK-2-PACC 83 and SK-3 PACC 83, and Request for Quotation dated 8/4/09.	$9,974.00
177	Approved	09/25/09	382	Per The Port Authority Request for Quotation PACC No. 90 dated 9/17/09, furnish and install two (2) 290 linear feet of 5,000A copper bus ducts in lieu of the twenty-four (24) 4" RGS conduit with 500 MCM USE-EPR cables from Automatic Transfer Switch NA and Automatic Transfer Switch NB, both located in the North Switchgear Room at Terminal B, to the North Emergency Distribution Switchboard in the NOrth Generator Enclosure.	$21,293.00
178	Approved	08/26/09	375	Per The Port Authority Request for Quotation PACC No. 75 dated 7/16/09, perform all work necessary to provide temporary power to the automatic transfer switch in the Emergency Switchgear Room in the lower level of Terminal B in accordance with Sketch SK-1-PACC-75, dated 6/25/09.	$4,619.00

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COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
179	Approved	08/28/09	385	Internal Only - PACC #78 - received to proceed on T&M basis.	$0.00
180	Approved	09/15/09	354	Internal Only - Proceed on a T&M Basis with PACC #64.	$0.00
181	Approved	09/18/09	387	Per The Port Authority Request for Quotation PACC No. 84 dated 9/3/09: 1. Furnish and Install one (1) Omntec OEL 80011 Automatic Tand Gauging System in the South Generator Enclosure for the South Generator in the B1 Courtyard, Terminal B. The Gauging System shall be powered from the generator auxiliary panel that is located in the generator enclosure in accordance with the NEC. One (1) 15A, 120V circuit breaker shall be installed in the generator auxiliary panel to feed the circuit. 2. Furnish and install eighteen (18) Glastic Arc Shields, in lieu of the factory-installed Lexan Shields, in the following switchboards: -Switchboard A1 (South Switchgear Room) - four (4) shields -Swithcboard A2 (North Switchgear Room) - two (2) shields -Switchboard P-MDP (Room 145) - one (1) shield -Switchboard EMDS (Room 146) - two (2) shields -Switchboard B1 (South Switchgear Room) - four (4) shields -Switchboard B2 (North Switchgear Room) - four (4) shields -Switchboard NA-3 (North switchgear Room) - one (1) shield	$42,656.00
182	Approved	03/09/10	390	Per The Port Authority Request for Proposal PACC No. 106 dated 01/14/2010: -Repair existing VAV's 1, 1A and 10 in the Lower Level of Terminal B. -Re-route 50"x26" exhaust duct for Air Handling Units No. 5 in the Baggage Make-up Room of Terminal B in accordance with "Approved as Noted" Submittal #15891-020, Revision 4, dated 1/6/09.	$9,974.00

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Project Name	Trm. B-LL Exp. & Verti.Circ.- PA Con. EWR-264.003	Date	10/03/14.

COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
183	Approved	10/19/09	392	Per The Port Authority Request for Quotation PACC No. 66 dated 9/9/09 -Furnish and install a new painted steel guardrail and handrail in the Terminal B Lower Level South Corridor Ramp (Room 147) in accordance with Sketches SK-1-PACC-66 and SK-2-PACC-66, both dated 4/16/09. -Furnish and install the ceiling in the South Corridor Ramp (Roon 147) in accordance with Sketch SK-3-PACC-66 dated 1/12/09.	$12,045.00
184	Approved	10/01/09	378	Internal Only - PACC #82 received to proceed on a T&M basis.	$0.00
185	Approved	10/01/09	386	Internal Only - PACC-#86 received to proceed on T&M basis.	$0.00
186	Approved	09/30/09	394	Internal Only - Received PACC #69 (CO #00065) to proceed on T&M basis.	$0.00
187	Approved	09/10/09	374	Internal Only - Received PACC #50 (CO #00058) to proceed on T&M basis.	$0.00
190	Approved	11/04/09	404	Per The Port Authority Request for Proposal PACC No. 93 dated 10/20/09, provide all labor, material and equipment necessary to re-prorgam the Motor Control Panel (MCP) for the Inbound Conveyor No. 4 (IB4). The scopeof work is as follows: -Remove the legacy and unsupportable PLC from teh existing MCP. -Furnish and install a new I/O rack with the appropriate I/O cards compatible with the PLC provided for the new IB4 MCP. -Re-wire all I/O wiring from removed PLC onto the new I/O cards. -Write additional PLC code in the new IB4 PLC to suppor tand control the conveyor system IB4-1 through IB4-13) and remaining fire/security doors. -Revise control drawings to include the control connections and provide additional required documentation.	$31,851.00
191	Approved	10/15/09	393	Internal Only - Received PACC #88, to proceed on a T&m Basis.	$0.00
193	Approved	11/17/09	407	Per The Port Authority Request for Proposal PACC No. 97, dated 11/5/09, furnish service end box, 30" x 55" x 42" pull box and 4000 Amp copper bus bar and neutral bus bar for Switchgear SA in the South Substation in accordance with revised Contract Drawings EWR-264.003, E709 abd E710, both Revision 1, both dated 3/13/09.	$29,619.00

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Job No	2034	Sheet	24 of 47
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COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
194	Approved	02/02/10	399	Per The Port Authority Request for Proposal PACC No. 87 dated 01/22/10, 1.Provide direct fire alarm system shutdown of outside air fans SF-1 located in Mechanical Equipment Room (MER) No. 1 and SF-2 located in MER No. 4 on the Concourse Level of Terminal B through the existing Fire Alarm Control Panel in accordance with revised contract drawings EWR 264.003 - E323 (Rev 1) and M506 (Rev 2) both dated 9/21/09. 2. Relocate existing static pressure sensors for Air Handling Units 1 and 4 in the Lower Level of Terminal B in accordance with Sketches SK-1-PACC-87 and SK-2-PACC-87 both dated 9/21/09.	$25,152.00
195	Approved	02/02/10	408	Per The Port Authority Request for Proposal, PACC No. 77 dated 01/22/2010: -Furnish and install two (2) submersible sump pumps in the new Terminal B passenger and service elevator pits. -Furnish and install two (2) hoistway vents in the existing Terminal B joistway for the new service elevators. All work shall be in accordance with revised Contract Drawings EWR-264.003 - E305 (Revision 6), E311 (Revision 3), E500 (Revision 4) and E506 (Revision 2), all dated 9/28/09 and E601 (Revision 7), P100 (Revision 1), P304 (Revision 1), P400 (Revision 1) and M508 (Revision 2), all dated 7/8/09 and Sketches SK-1-PACC-77 and SK-2-PACC 77 both dated 10/9/09.	$52,000.00
196	Approved	03/10/10	409	Per The Port Authority Request for Proposal PACC No. 98 dated 01/29/2010, furnish and install additional power and communication receptacles for the Building Management System in Room 140 located in the lower level of Terminal B in accordance with Sketch SK-1-PACC-98 dated 10/20/09.	$9,442.00
197	Approved	01/06/10	410	Per The Port Authority Request for Proposal PACC No. 103 dated 12/7/09, perform all work necessary to reroute an existing 6" storm drainage line in the Lower Level of Terminal B in accordance with Sketches Sk-1-PACC-103 and SK-2-PACC-103, both dated 9/15/09.	$10,780.00
198	Approved	11/25/09	405	Internal Only - Proceed on T&M basis as per PACC #92.	$0.00

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COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
200	Approved	03/11/10	415	Per The Port Authority of NY&NJ Request for Proposal PACC No. 96 dated 01/28/2010 - Modify the glass fiber reinforced gypsum (GRFG) soffit at the B1 & B2 vertical circulation core of Terminal B in accordance with Sketches SK-1-PACC-96 and SK-2-PACC-96 both dated 11/17/09. Hours of work shall be 11:00PM to 7:00AM. - Furnish and install a 2'-0" x 2'-0" acoustical ceiling system in existing Offices 1 & 2 in the Delta Baggage Area of Terminal B, approximately 320 sq. ft. in accordance with sketch SK-3-PACC-96 dated 11/17/09 for location of offices.	$20,865.00
204	Approved	03/18/10	419	Per The Port Authority Request for Proposal PACC No. 104 dated 01/28/2010, -Furnish and install differential pressure switches to coil booster pumps for Air Handling Units (AHU) 5 through 9 in the lower level of Terminal B in accordance with Sketch SK-1-PACC-104 dated 01/28/10. -Furnish and install 3-way control valve and pre-calibrated circuit setter for HV-A in the TSA Bag Make-up Room in Terminal B in accordance with Sketch SK-2-PACC-104 dated 1/28/10. -Revise the coil booster pump operation for AHU's 5 through 9 in accordance with Sketch SK-3-PACC-104 dated 1/28/10.	$55,310.00
208	Approved	03/29/11	424	Per The Port Authority of NY&NJ Request for Proposal PACC No. 127 dated 03/11/2011, perform all work required to change the rigging location, provide a larger crane and reschedule the removal of the existing supply fan and install SF-1 on the roof of MER No. 1 of Terminal B.	$19,009.00
212	Approved	05/18/10	428	Per The Port Authorityof NY & NJ Request for Proposal PACC No. 116 dated 05/11/2010, Furnish service end box, 30" x 55" x 45" pull box and 4,000amp copper bus bar and neutral bus bar for Switchgear SB in the South Substation in accordance with revised Contract Drawings EWR-264.003, E117, E118, E709 and E710, all Revision 1, all dated 3/13/09.	$24,954.00
214	Approved	03/31/10	433	Internal Only - Received PACC #36 to proceed on a T&M Basis.	$0.00
215	Approved	03/31/10	434	Internal Only - Received PACC #100 to proceed on a T&M Basis.	$0.00
216	Approved	03/31/10	435	Internal Only - Received PACC #99 to proceed on a T&M Basis.	$0.00
217	Approved	03/31/10	436	Internal Only - Received PACC #101 to proceed on a T&M Basis.	$0.00

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COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
218	Approved	03/31/10	437	Internal Only - Received PACC #102 to proceed on a T&M Basis.	$0.00
221	Approved	06/18/10	443	Per The Port Authority of NY & NJ Request for Proposal PACC No. 110, dated 06/10/2010 - furnish and install: - Electrical power to five (5) unit heaters in the North Emergency Generator Room of Terminal B. - Electrical power to North Generator Jacket Heater. -Additional light fixtures and receptacle in the North Emergency Generator Room of Terminal B. All work will be performed in accordance with revised Contract Drawings EWR-264.003 -E004 (Revision 3), E111 (Revision 2), E318 (revision 1), E328 (revision 1) and E600 (Revision 7), all dated 2/5/10.	$59,745.00
223	Approved	05/04/10	438	Per The Port Authority of NY & NJ Request for Proposal PACC No. 111, dated 03/25/2010 - furnish and install eleven (11) motorized dampers in the North Generator Room of Terminal B in accordance with revised Contract Drawings EWR 264.003 - M314 (Revision 1), M504 (Revision1), E318 (Revision 2) and E600 (Revision 8), all dated 02/16/10.	$72,835.00
224	Approved	05/05/10	446	Internal Only - Received PACC #108 to proceed on a T&M Basis.	$0.00
225	Approved	05/06/10	447	Per The Port Authority Request for Proposal PACC No. 112 dated 04/12/2010 - furnish & install conduits and wire for the emergency feeders for Panel DP-E4 in MER No. 2 in Terminal B in accordance with Sketch SK-1-PACC-112, dated 03/01/10.	$72,118.00
226	Approved	05/06/10	448	Per The Port Authority of NY & NJ Request for Proposal PACC No. 115 dated 04/19/2010: 1. Furnish and install thirteen (13) temporary twin head emergency lighting units in the B1 Lobby of Terminal B. 2. Furnish and install six (6) temporary combination emergency lighting/exit signs in the B1 Lobby of Terminal B. 3. Furnish and install five (5) temporary 4' x 2' flourescent lighting fixtures in Room 128 - B1 North Corridor of Terminal B. 4. Furnish and install one Fire Alarm Control Relay Module for Express Escalator No. 4 in Room 164 - Elevator Machine Room No. 4 in Terminal B. - All conduit and wire shall be sized in accordance with the National Electric Code.	$20,962.00

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COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
229	Approved	06/03/10	454	Per The Port Authority of NY & NJ Request for Proposal PACC No. 117 dated 05/26/10, Provide power to six (6) Fire Smoke Dampers (FSD #11, 15, 16, 23, 28 and 85) from Circuit #5 Panel ELLE-PRP located in the Terminal B South Emergency Switchgear Room, Room #146. Conduit and wire shall be sized in accordance with the NEC.	$20,972.00
230	Approved	06/14/10	455	As Per The Port Authority Request for Proposal PACC No. 94 dated 05/14/2010, Supply permanent power to Pump Station No. 3 from Terminal B, North Substation in accordance with Sketch SK-1-PACC-94 dated 3/1/2010.	$26,583.00
231	Approved	06/16/10	456	Per The Port Authority of NY & NJ Request for Proposal PACC No. 113 dated 04/09/2010, install new steel framing in the cable trench for Switchboard A1 in the South Substation of Terminal B in accordance with Sketch SK-1-PACC-113 dated 11/9/09. Hours of work shall be from 12:00 AM to 4:00 AM.	$19,417.00
235	Approved	07/28/10	463	Internal Only - Received PACC #107 to proceed on a T&M Basis.	$0.00

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COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
237.	Approved	08/12/10	467	Per The Port Authority of NY & NJ Request for Proposal PACC No. 120 dated 08/05/2010, perform all work necessary to: 1. Relocate thermostats (wall modules) for VAV's 1A, 4.2, 4.4, 6.10, 9.1, 9.2, 7.4, 8.5, 4.1 and 4.8 in Terminal B, Lower Level in accordance with Sketches SK-1-PACC-120, SK-2-PACC-120, SK-3-PACC-120, SK-4-PACC-120, SK-5-PACC-120, and SK-6-PACC-120, all dated 6/25/08. 2. Furnish and install four (4) fire dampers in Terminal B, Lower Level. Fire dampers shall be as follows: -Two (2) 50" x 29" dampers in outside air intake for Air Handling Units 8 and 9. -One (1) 50" x 29" damper in supply air duct for Air Handling Unit 9. -One (1) 50" x 23" damper in supply air duct for Air Handling Unit 8. 3. Furnish and install 28" x 138" x 2" high, 18 gauge, galvanized steel drip pan above the elevator control panel in Elevator Machine Room 163, Terminal B, Lower Level. 4. Furnish and install three (3) 36" x 16" x 4" high, 16 gauge, galvanized steel ramps over the condensate lines for Air Handling Units 5, 6 and 7 in Terminal B, Lower Level. 5. Replace existing 2" control valve on chilled water line for Air Handling Unit No. 5 in Terminal B, Lower Level 6. Furnish and install fifty-five (55) 5" diameter volume dampers for linear diffusers along the window wall in Terminal B, Lower Level in accordance with Sketch SK-7-PACC-120 dated 6/25/08. 7. Reroute outside air intake duct for Air Handling Unit No. 9 in Terminal B, Lower Level in accordance with Sketch SK-8-PACC-120 dated 6/25/08.	$24,187.00
239	Approved	08/18/10	469	Internal Only - Received PACC #119 to proceed on a T&M Basis.	$0.00

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COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
241	Approved	08/23/10	466	Per The Port Authority of NY & NJ Request for Proposal PACC No. 118 dated 07/23/2010: -Furnish and install 3" balancing valve in lieu of 3" plug valve on the return line of the hot water coils for Air Handling Units 1, 2, 3 and 4 (4 in total) in the Lower Level of Terminal B -Furnish and install 3" balancing valve on the return line of the chill water coils for Air Handling Units 1, 2, 3 and 4 (4 in total) in the Lower Level of Terminal B.	$12,560.00
244	Approved	11/16/10	478	Per the Port Authority of NY & NJ Request for Proposal PACC No. 121 dated 10/13/2010: - Furnish and install additional header support steel framing & stainless steel front cover for passenger elevator doors in the B1 Core of Terminal B in accordance with EWR 264.003, Approved as Noted, Submittal No 08805-011, R1 dated 10/26/07. - Furnish and install additional miscellaneous steel and stainless steel trim pieces at the E1 and E2 Escalator opening in Terminal B in accordance with Sketches SK-1-PACC-121 and SK-2-PACC-121, both dated 09/18/08. - Furnish and install elevator stop ring on Service Elevator S2 Piston in Terminal B.	$48,485.00
245	Approved	10/29/10	479	Internal Only - Net Penalty For Concrete Compression - deduct CO written to Pannetta and Berto on In-Scope CM #340.	($3,710.36)
246	Approved	11/02/10	480	Internal Only - Received PACC #91 to proceed on a T&M Basis.	$0.00
249	Approved	11/16/10	484	Internal Only - Received PACC #122 to proceed on a T&M Basis.	$0.00
250	Approved	12/03/10	486	Per the Port Authority of NY & NJ Request for Proposal PACC No. 123 dated 11/15/2010: - Provide light poles (4) in the Terminal B, B1 Core, with a custom paint color in accordance with Submittal No. 16510-027, dated 1/21/10. - Provide off-site storage for the North Emergency Generator and its associated equipment from July 1, 2010 to September 30, 2010.	$11,642.00
251	Approved	12/07/10	487	Internal COR - Received PACC #53 to proceed on a T&M Basis	$0.00

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COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
252	Approved	12/21/10	488	Per The Port Authority of NY & NJ Request for Proposal PACC No. 125 dated 12/07/2010, Provide power to Air Curtain DH-1 in the Outer Bag Room of terminal B from Panel LLESC in the Delta/TSA Bag Room. Furnish & install a 20A/208V heavy duty disconnect switch immediately adjacent to the air curtain. Conduit and wire shall be sized in accordance with NEC.	$5,983.00
253	Approved	01/25/11	491	Per The Port Authority Request for Proposal PACC No. 126 dated 01/12/2011, perform all work necessary to revise the sequence of operations for AHU-5, 6, 7, 8 & 9 in Terminal B, as follows: - When the outside air temperature os 60F (adj) or greater the discharge air temperature set point will be 55F (adj). As the outside air temperature falls the discharge air temperature set point will be reset up proportionally based on the four reset ratio set points. When the outside air temperature is 30F (adj) the discharge air temperature set point will be 70F (adj). All four reset ration values, minimum outside air, maximum outside air, minimum discharge air and maximum discharge air are all software set points, adjustable from the XBS Workstation and the X1580 POT's. -When the room temperature rises above the room temperature set-point the VAV (with reheat and without reheat) will drive to the maximum CFM. When the room temperature is at the room temperature set-point the VAV (with reheat and without reheat) will drive to the minimum CFM. During the heating season only (heating enabled when outside air temperature is less than 60F (adj), when the room temperature falls below the room temperature set-point the VAV (without reheat) will drive to the heating CFM, which is typically 50% of the maximum CFM. When the room (space) temperature falls below set-point the VAV (with reheat), the controller will establish reheat airflow CFM and will modulate the hot water reheat valve to maintain set-point. All work shall be coordinated with the Engineer 48 hours prior to the start of work.	$4,874.00
256	Approved	05/05/14	500	Per the Port Authority of NY&NJ, request for proposal PACC No. 166, dated 3/28/13, as directed by the Engineer, perform all work necessary to provide a coordination study on the 2,000A circuit breaker in temporary Switchboard T-S in the South Substation of Terminal B.	$8,089.00
257	Approved	05/05/11	502	Per The Port Authority of NY & NJ Request for Proposal PACC No. 137 dated 04/12/2011: Furnish & install terrazzo flooring in the Concourse Level of Terminal B in seven (7) stages in lieu of the contractually required two (2) stages. This work shall be staged in accordance with Sketches SK-1-PACC-137, SK-2-PACC-137, SK-3-PACC-137, SK-4-PACC-137, SK-5-PACC-137, SK-6-PACC-137 and SK-7-PACC-137 all dated 9/14/09.	$27,730.00

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COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
258	Approved	05/19/11	503	Per The Port Authority of NY & NJ Request for Proposal PACC No. 129 dated 04/06/2011, furnish and install 3/4" conduit and wire to connect VAV boxes 7.1, 8.1 and 8.1A to the nearest VAV box, 7.2 located near Column Line 9Dd, approximately 75 feet away. Conduit and wire shall be sized in accordance with the NEC. Material and hours of work shall match those specified int he Contract.	$4,861.00
259	Approved	09/15/11	504	Per The Port Authority of NY&NJ Request for Proposal PACC No. 149 dated 09/13/2011, perform all work necessary to service and clean Air Handling Unit NO. 7 in the B1 Lobby of Terminal B. The work includes, but is not limited to, the following: -Furnish and install new fan belts -Furnish and install a new Return Damper Actuator at the D Line. -Furnish and install a new Static Pressure Sensor -Furnish and install new filters. -Clean entire unit and coils.	$4,521.00
260	Approved	06/29/11	508	Per The Port Authority Request for Proposal PACC No. 146 dated 06/20/2011, perform all work necessary to re-program, adjust and balance Air Handling Units (AHU) 1 through 9 in accordance with Sketches SK-1-PACC-146, SK-2-PACC-146, SK-3-PACC-146 and SK-4-PACC-146, all dated 5/10/11.	$21,611.00
261	Approved	09/22/11	509	Per The Port Authority of NY & NJ Request for Proposal PACC No. 150 dated 09/14/2011, Perform all work necessary to: -Repair the Economizer Damper Actuator on Air Handling Unit No. 6 located in Terminal B -Repair the controllers on VAV 1.4 and 4.6	$2,382.00
262	Approved	07/20/11	511	Per The Port Authority of NY & NJ Request for Proposal PACC No. 147 dated 06/27/2011 - Install a 16"-0" x 10'-0" x 1'-0" concrete pad reinforced with 4# rebar at 12" o.c. top and bottom each way and anchored to civil slab with 4# rebar at 12" o.c. vertical dowels on the pad perimeter for the North Generator Fuel Tank in Terminal B in accordance with Sketch SK-1-PACC-147 dated 6/24/11.	$8,950.00
263	Approved	07/11/13	512	Per the Port Authority of NY/NJ, request for proposal for PACC # 164 dated 5/30/13, as directed by the Engineer, perform all work necessary to install additional 2'x2' tandem metal ceiling panels required to completely close the ceiling area of the Terminal B, Lower Level Exterior Entrance in accordance with Sketch SK-1-PACC-164 dated 8/21/12.	$11,877.00
264	Approved	08/01/11	513	Internal COR - PACC No. 132 received to proceed on T&M	$0.00

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Project Name	Trm. B-LL Exp. & Verti.Circ.- PA Con. EWR-264.003	Date	10/03/14

COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
265	Approved	08/01/11	514	Internal COR - PACC No. 134 received to proceed on T&M	$0.00
266	Approved	08/01/11	515	Internal COR - PACC #141 received to proceed on T&M	$0.00
267	Approved	09/30/11	519	Per The Port Authority of NY & NJ Request for Proposal PACC No. 136 dated 04/05/2011, perform all work necessary to install approximately fifty (50) linear feet of 1 1/2" black pipe (as per specifications) from the Elevator Machine Room to the tie in point adjacent to MER No. 104 in Terminal B to reroute the CHW lines. The routhing shall follow the existing refrigerant piping belonging to EMAC-2 from the Elevator Machine Room to the location where the CHW piping can penetrate into MER No. 104 by the south west corner. Use dielectric fittings where required. Hours of work shall be as per Contract.	$5,593.00
268	Approved	09/22/11	521	Per The Port Authority of NY & NJ Request for Proposal PACC No. 142 dated 06/16/2011, Perform all work necessary to install new steel framing the cable trench for Switchboard B1 in the South Substation of Terminal B in accordance with Sketch SK-1-PACC-142 dated 5/20/11. Hours of work shall be 12:00am to 4:00am	$17,061.00
271	Approved	11/08/11	525	Per The Port Authority of NY & NJ Request for Proposal PACC No. 148 dated 11/1/2011, perform all work necessary to remove the existing pull box for Panel DP-A in the North Switchgear Room in Terminal B in accordance with Sketch SK-1-PACC-148 dated 8/17/11 -	$42,768.00
274	Approved	11/18/11	529	Per The Port Authority Request for Proposal PACC No. 153 dated 11/07/2011, perform all work necessary to -Flush mount six (6) 16 gauge stainless steel fascia panels, 60" wide by 15" deep in the Terminal B Passenger Elevators, P1 and P2 shaftway under the door sills.	$2,311.00

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COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
276	Approved	02/28/12	537	Per the Port Authority of NY & NJ Request for Proposal PACC No. 151 dated 09/14/2011 (A) Furnish & install a fire alarm system smoke detector in Terminal B, Mid Level Elevator Lobby in accordance with Sketch SK-1-PACC-151 dated 9/13/11. (B) Furnish & install (2) additional light fixtures, one in each of the two (2) B1 Passenger Elevator Pits in Terminal B. Lighting fixture shall Canlet, Cat. No. BFWF18H1GGPC or approved equal. Power shall be obtained from the nearest pit receptacle. Conduit and wire shall be sized in accordance with the NEC.	$13,354.00
277	Approved	02/28/12	538	Per The Port Authority of NY & NJ Request for Proposal PACC No. 154 dated 02/06/2012, Provide all labor, material and equipment to perform the following work in the Electric Closet (Room #146) in Terminal B: -Disconnect the 2" RGS conduit feed for Panel LLE-TLP to the existing 3' x 3' Switchboard T-MDP pull box. -Leave the conduit run from the existing 3' x 3' pull box to Switchboard T-MDP and label it 'SPARE' -Pull the existing circuit feed from Panel LLE-TLP to it srespective CB in Switchboard T-MDP. -Install a new 2" RGS conduit from Panel LLE-TLP to ithe 3' x 3' pull box for SwitchboardP-MDP (approximately 15LF). -Install a new 2" RGS conduit feed from the 3' x 3' Switchboard P-MDP pull box to Switchboard P-MDP, Section 5/5 (approximately 5 LF). -Pull and terminate (4) #1 AWG and (1) $6 Ground XHW-2 cables from the Panel LLE-TLP to the 200A CB that is labeled "Mid Level HVAC", in Switchboard P-MDP. -Label all circuits as requred.	$10,047.00
278	Approved	03/13/12	541	Per The Port Authority Request for Proposal PACC No. 156 dated 01/24/2012, perform all work necessary to blank off a 110" x 55" section of the outside air plenum with an insulated sheet metal panel at the Emergency Generator Room at the Operations Level of Terminal B in accordance with Sketch SK-1-PACC-156 dated 01/24/2012.	$2,033.00
279	Approved	03/26/12	543	Per The Port Authority of NY & NJ Request for Proposal PACC No. 157 dated 02/13/2012, perform all work necessary to replace the existing fan in the Terminal B, Lower Level Bathroom with a Belt Drive Duct Fan as shown on Sketches SK-1-PACC-157, SK-2-PACC-157 and SK-3-PACC-157, all dated 2/6/12. Installation shall include 3/4" GRC conduit for power from teh LLTC Closet to the exhaust fan, one (1) 20A 1 Pole Circuit Breaker and 5# 12 XHHW Wire.	$14,980.00

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COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
280	Approved	04/18/12	544	Per The Port Authority of NY & NJ Request for Proposal PACC No. 158 dated 03/27/2012, perform all work necessary to modify and install lighting fixtures in the Terminal B, North Generator Room in accordance with Sketch SKE-01 dated 3/9/12. The work includes: - Remove the ten (10) existing pendant-mounted flourescent lighting fixtures. - Reinstall the ten (10) existing fixtures in a new arrangement at 11'-0" A.F.F. - Install two (2) new twin-head NiCad battery emergency lighting fixtures on the opposing structural columns.	$16,050.00
281	Approved	05/24/12	545	Per The Port Authority of NY & NJ Request for Proposal PACC No. 159 dated 04/09/2012, perform all work necessary to furnish and install seventy-five (75) cabinet locks and cores for the Mid Level Ticket Counters located in Terminal B.	$11,636.00
282	Approved	05/24/12	546	Per The Port Authority of NY & NJ Request for Proposal PACC No. 160 dated 05/14/2012, Perform all work necessary to raise & repair the existing fuel oil line piping for the North Generator which extends across the Terminal B parking roadway.	$6,782.00
285	Approved	10/09/12	550	Per The Port Authority of NY & NJ Request for Proposal PACC No. 161 dated 06/21/2012 - Perform all work necessary to reconfigure the existing duct plenum wall behind the emergency generator to maintain a clear 24" minimum space between the plenum and the existing day tank in the North Generator Room in accordancew ith Skwtch SK-1-PACC-161 dated 05/24/2012.	$10,875.00
287	Approved	10/09/12	554	Per the Port Authority of NY & NJ Request for Proposal PACC #162 dated 9/20/12, As directed by the Engineer, perform all work necessary to furnish and install a Simples, Model FFP-2 (for oil) Fuel Port Cabinet for the Terminal B, North Emergency Generator Oil Tank.	$6,664.00
288	Approved	12/05/12	555	Per the Port Authority of NY & NJ, request for proposal PACC No. 163 dated 11/29/12, as directed by the Engineer, perform all work necessary to re-stage the following work: -Install ductwork roughing in the Delta Bag Room and the South end of B-2. -Install HVAC equipment and piping in MER #4. -Complete the installation of the fuel oil tank and monitoring equipment for the North emergency generator.	$26,750.00
290	Approved	01/31/13	559	Per the Port Authority of NY & NJ, request for proposal PACC No.152 dated 1/28/13, as directed by the Engineer, perform all work necessary to clean, repair and retest flood damaged equipment in the escalator pit of Escalator E1 and E2 in the Terminal B, Lower Level Lobby.	$16,835.00

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COR Number	COR Status	COR Date	Related CM #	COR Description	Carry
292	Approved	09/26/13	561	Per the Port Authority of NY/NJ, request for proposal PACC No. 167, dated 09/17/13, as directed by the Engineer, perform all work necessary to furnish, install and later remove approximately 1,500 sq. ft. of security netting under the OB-9 Conveyor Belt which runs in the Terminal B Loading Dock Area.	$17,709.00
293	Approved	05/05/14	12	Per the Port Authority of NY & NJ, Request for Proposal PACC No. 168, dated 4/17/14, as directed by the Engineer, perform all work necessary to transport and dispose of approximately 400 tons of non-hazardous excess soil excavated from the Lower Level of Terminal B.	$19,166.00
294	Approved	05/08/14	563	Per the Port Authority of NY & NJ, Request for Proposal PACC No. 189, dated 05/05/14, as directed by the Engineer, perform all work necessary to provide temporary power to Inbound Conveyors IB2 & IB4 in Terminal B from an existing emergency power source. Provide one (1) standby electrician for four (4) off-hours electrical shut doens of Switchgears SA & SB.	$4,926.00

THE PORT AUTHORITY OF NY & NJ
Newark Liberty International Airport
Terminal "B" Modernization Program
Contract No. EWR 264.003
DAILY SIGN IN SHEET

5/7

TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Elect.	Christopher Adc[illegible]	S.M. Electric	7/16/07	[illegible]			
	Michael Alberta	S.M. Electric	3/11/08	X			✓
Elect.	Frank Co[illegible]	[illegible]	7/1[illegible]	X	X		✓
	James Cowan	[illegible]	8/2[illegible]	X			✓
Ele[illegible]	[illegible]ichard Du[illegible]	[illegible] Elec[illegible]	[illegible]	X			
	Daniel Gribbi[illegible]	[illegible] Elec[illegible]	[illegible]	X			
	John Griffith	S.M. Electric	[illegible]4/08	X			
	Steven Gage	S.M. Electric	[illegible]7/07	X	X		
Elect.	Paul Higgins	S.M. Electric	1/18/07	X	X		✓
[illegible]	Marc Infozin[illegible]	S.M. Electric	[illegible]7/08	X			
	Stefan Lapadat	S.M. Electric	[illegible]0/08				
	Tony Maaldu[illegible]	S.M. Electric	[illegible]1/0[illegible]	X	X		
Elect.	James Masse	S.M. Electric	[illegible]	X	X		
[illegible]	Wally Jacc[illegible]	S.M. Elec[illegible]	[illegible]	X			✓
Elect.	Michael Melk	S.M. Electric	[illegible]	X	X		
Elect.	Joseph O' Conn[illegible]	S.M. Electric	[illegible]	X			
[illegible]	Edwin Raime	S.M. Elect[illegible]	[illegible]				✓
Elect.	Robert Penera	S.M. Electric	[illegible]	X	X		✓
	Lee Sherw[illegible]	S.M. Electric	3/[illegible]	X			
[illegible]	Andres Ve[illegible]	S.M. Electric	3/1[illegible]	X			✓
Plumber	Anthony DeFr[illegible]	Zabranski	4/2/07	X			
Plumbe	[illegible] Wi[illegible]	Zabrans[illegible]	[illegible]	X			
	[illegible]hn Diehl	Carol Hardy Mech			X		
	Albert Gaynore	Carol Hardy Mech.			X		
	[illegible]sc[illegible] Moore	Carol Hardy Mech		X	X		
	John Cuffe	Northeast		X			
	Eric Hernandez	Northeast	8/22/07	X			
	Joseph McTerna[illegible]	Northeas[illegible]	8/25/08	X			
	John Takacs	Northeast	6/27/07	X			
	Patrick Yodice	Northeast	1/24/08	X			
	Herbert Sanchez	Northeas[illegible]	9/2/08	X			
	Patrick Visconti	Northeast	3/31/08	X			
	Robert Sanchez	Northeast	9/2/08				
	Kevin Thomson	Venture Electric	3/3/08				
	Michael Gabriel	Venture Electric	7/30/07	X			
	Jim Falk Jr	Venture Electric	7/30/07	X			
	Kurt Falk	Venture Electric	7/30/07	X			
	Attila Vigilante	Venture Electric	1/22/08	X			
	Anthony Danielson	Metra[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Fitter	Albert King	Monmouth Controls	5/17/07	X			
Fitter	Daniel Nuger	Monmouth Controls	9/12/07	X			
Fitter	Joseph Stanio	Monmouth Controls	8/27/07	X			
	Eric Grieb	Monmouth Controls	6/17/08	X			
	Kevin Vaughn	Monmouth Controls	11/17/08				
	Michael Gaffney	EEI	6/4/07	X			
	Gary Molzen	EEI	11/19/07	X			
	Michael Hawtin	EEI	2/4/08	X			
	Shayne Spaziani	EEI	2/4/08	X			
	Fred Russo	EEI	8/28/07	X			
	Francis Kaufmann	EEI	8/20/08	X			
	Robert Applegate	EEI	10/6/08				
	Douglas Dornicolo	EEI	10/6/08	X			
E	Scott Ritter	EEI (MCS)	5/7/07	X			
	Mark Titmas	EEI (MCS)	8/27/07	X			
	Ron Butler	EEI (MCS)	9/27/07	X			
E	Craig Harrigan	EEI (MCS)	5/7/07	X			
F	Tod McEvoy	EEI (MCS)	7/20/07	X			
E	Lee Melnikoff	EEI (MCS)	5/7/07	X			
	Richard Good	EEI (MCS)	9/12/07	X			
	William Fantasia	EEI (MCS)	12/12/07	X			
	Darrin Valente	EEI (MCS)	4/24/07	X			
	Carl Jorgensen	EEI (MCS)	4/24/07	X			
	Paul Schuck	EEI (MCS)		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Labor	Gary Lennon	VRH	3/12/07			X	
Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carp	Tim Perrotta	VRH	1/8/07			X	✓
Laborer	Edwin De Jesus	VRH	9/26/07	X			✓
	Keith Lovas	VRH	10/15/0	X		X	✓
Carpt	Robert Burns	VRH	10/25/0	X			✓
	Anthony Andrade	VRH	12/18/07	X			
	Todd Perrotta	VRH	12/27/0			X	
	Gary Reuter	VRH	2/10/07			X	✓
	Salvatore Giordano	VRH	9/30/0	X			
Sprt	Joe Anetz	Panetta		X			
I.W.	Joe Medway	Panetta		X			
I.W.	Paul Medway	Panetta		X			
Carpt	Damian Piemontese	Panetta	2/9/07	X			
Opt. Eng	Joe Panetta	Panetta		X			
Opt. Eng	Rocky Panetta	Panetta	2/9/0	X			
Laborer	Giorgio Panetta	Panetta		X			
	Robert Bianchi	Panetta	08	X			
	Roger Stolte	Layout Inc					
	Dave Woodward	Layout Inc					
	Tim Carr	Layout Inc	8/30/07	X			
Laborer	Edgar Cruz	Mazzocchi	2/6/07	X			
Laborer	Jose Duque	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/7/07	X			
Laborer	Edgar German	Mazzocchi	6/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Grecco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/28/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Michael Benson	Uniquie Scaffolding	3/26/09				
	Sean Slavin	Uniquie Scaffolding	3/26/09				
	Vito Mongelli	Amanda	9/14/07	X			✓
	Santos Sanchez	Amanda	9/17/07	X			✓

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Mason	Nicholas Vitale	Amanda	12/22/08				✓
	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp iron Works	3/31/08	X			
	Michael Muto	Papp Iron Works	3/24/09				
	JIM GILL	RCC		X			✓
	Thomas Kazim	RCC	[illegible]	X			
	Kenny Carolyn	RCC					✓
	Ronald Gorman	RCC	4/29/09				
	PAT LOWLOR	RCC					✓
	Terance Ban	McCann	[illegible]	X			
	Vincent Bellofa	McCann	[illegible]	X			✓
	Adam Bellofat	McCann	[illegible]	X			
	Joe DeAngelis	McCann	1/24/07	X			✓
	Joe LaTorre	McCann	11/26/07	X			✓
	Anthony Novello	McCann	11/2/07	X			✓
	Raymond Paxton	McCann	[illegible]8	X			
	Paul Kensek	McCann	[illegible]8	X			✓
	Craig Humphrey	McCann	3/13/08	X			✓
	Frank Corrao	McCann	[illegible]				
	Zygmunt Galazka	Par					
	Gabriel Quinones	Par					
	Pedro Alavarado	Par					
	Jaime Rivera	Par					
	Beatriz Lefebre	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nester Banda	Par					
	Gregory Tomasula	Josloff Glass	2/27/07	X			
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	8/4/08	X			
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass					
	Gustavo Ramirez	Schnell	11/28/07				
	Aniseto Lazaro	Schnell	3/3/08				
	Pablo Veras	Schnell	7/9/07	X			
	Santiago Diaz	Schnell	4/24/08				
	Daniel Flores	Schnell		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			✓
	Gerardo A. Mo[illegible]	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Clemente Fuentes	D. Magnan	4/21/08				
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Mark Palazzolo	D. Magnan	1/26/09				
	Martin P[illegible]ich	D. Magnan	6/13/08	X			
	Victor Guiracocha	D. Magnan	6/17/08	X			
	Jon Korzelius	D. Magnan	[illegible]				
	Roberto Fernandez	D. Magnan	[illegible]				
	[illegible]	[illegible]					✓
	Jose Domingu[illegible]	Fine Painting	[illegible]	X			
	Manuel Ro[illegible]	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	[illegible]	X			
	Jose Olaya	Fine Painting		X			
	Antonio Fraga	Fine Painting	11/[illegible]/06	X			
	Jacek Czernik	Signs & Decals	5/6/08	X		X	
	Jorge Alvarez	Signs & Decals	5/6/08				
	Jaime Castillo	Signs & Decals					
	Dennis McQuillen	ThyssenKrupp	6/16/08	X			
	David Malito	Thyssen Krupp	6/16/08	X			
	Salvatore Federico	Thyssen Krupp	6/16/08	X			
	Sean Murray	Thyssen Krupp	6/16/08	X			
	Frankie DeGirolamo	Thyssen Krupp	7/7/08				
	Danny Vitale	Thyssen Krupp	7/11/08				
	Nick Comodo	Thyssen Krupp	7/9/08				
	John Eckhoff	Thyssen Krupp	7/24/08				
	John Ostroski	Thyssen Krupp	8/11/08		x		
	John Cestone	Thyssen Krupp	1/8/09				
	Robert Ryback	Thyssen Krupp	1/8/09				
	Saviour Debono	Thyssen Krupp	2/24/09				
	Robert Goodfellow	Thyssen Krupp	2/24/09				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Elec	Christopher Adorna	S.M. Electric	7/16/07	X			
	Michael Alberta	S.M. Electric	3/11/08	X			✓
Elec	Frank Coppo	S.M. Electric	/16	X	X		✓
	James Cowan	S.M. Electric		X			✓
Elec	Richard D	S.M. Electric		X			
	Daniel Gribbin	S.M. Electric		X			
	John Griffiths	S.M. Electric		X			
	Steven Gage	S.M. Electric		X	X		✓
Elect.	Paul Higgins	S.M. Electric		X	X		✓
	Marc Infozino	S.M. Elec		X			
	Stefan Lapadat	S.M. Elec					
	Tony Maalouf	S.M. Elec	21	X	X		
Elect	James Masse	S.M. Elec		X	X		✓
	Wally Jacobu	S.M. Elec					✓
Elect	Michael Melk	S.M. Electric		X	X		
Elect.	Joseph O' Con	S.M. Electric		X			
	Edwin Palmer	S.M. Electric					✓
Elect.	Robert Periera	S.M. Electric		X	X		✓
	Lee Sherwood	S.M. Electric		X			✓
	ndres Velez	S.M. Electric		X			
Plum	Anthony DeFil	Zarrilli		X			
Plum	Daniel Wieniec	Zarrilli		X			
	John Diehl	Carol Hardy Mech			X		
	Albert Gaynore	Carol Hardy Mech			X		
	Oscar M	Carol Hardy		X	X		
	John Cuffe	Northeast		X			
	Eric Hernandez	Northeast	22/07	X			
	Joseph McTeman	Northeast	25/0	X			
	John Takacs	Northeast	6/27/07	X			
	Patrick Yodice	Northeast	1/24/08	X			
	Herbert Sanchez	Northeast	9/2/08	X			
	Patrick Visconti	Northeast	3/31/08	X			
	Robert Sanchez	Northeast	9/2/08				
	Kevin Thomson	Venture Electric	3/5/08				
	Michael Gabriel	Venture Electric	7/30/07	X			
	Jim Falk Jr.	Venture Electric	7/30/07	X			
	Kurt Falk	Venture Electric	7/30/07	X			
	Attila Vigilante	Venture Electric	1/22/08	X			
	Anthony Danielson	Metro		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Fitter	Albert King	Monmouth Controls	5/17/07	X			
Fitter	Daniel Nugent	Monmouth Controls	9/12/07	X			
F	Joseph Stanio	Monmouth Controls	8/27/07	X			
	Eric Grieb	Monmouth Controls	6/17/08	X			
	Kevin Vaughn	Monmouth Controls	11/17/08				
	Michael	EEI	6/4/07	X			
	Gary Molzen	EEI	11/19/07	X			
	Michael Hawlin	EEI	2/4/08	X			
	Shayne Spazia	EEI	2/4/08	X			
	Fred Russo	EEI	8/28/07	X			
	Francis Kaufmann	EEI	8/20/08	X			
	Robert Applegate		10/6/08				
	Douglas Domico	EEI	0/6/01	X			
E	Scott Ritter	EEI	5/7/07	X			
	Mark Titmas	EEI (MCS)	3/27/07	X			
	Ron Butler	EEI (MCS)	9/27/07	X			
	Craig Harrigan	EEI (MCS)	5/7/07	X			
	Tod McEvoy	EEI (MCS)	7/20/07	X			
E	Lee Melnikoff	EEI (MCS)	5/7/07	X			
	Richard Good	EEI	9/12/07	X			
	William Far	EEI (MCS)	12/12/07	X			
	Darrin Valente	EEI (MCS)	4/24/07	X			
	Carl Jorgens	EEI (MCS)	4/24/07	X			
	Paul Schuck	EEI (MCS)		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Labor	Guy Lemon	VRH	3/12/08			X	
Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carpt	Tim Ferrotta	VRH	1/8/07			X	✓
Laborer	Edwin De Jesus	VRH	9/26/07	X			✓
	Keith Lovas	VRH	10/15/07	X		X	✓
Carpt	Robert Burns	VRH	10/29/07	X			
	Anthony Andrade	VRH	12/18/07	X			
	Todd Ferrotta	VRH	12/27/07			X	
	Gary Reuter	VRH	12/10/07			X	✓
	Salvatore Giordano	VRH	9/30/08	X			
Supt	Joe Anatz	Panetta	2/12/07	X			
I.W.	Noe Medway	Panetta	[illegible]	X			
I.W	Paul Medway	Panetta		X			
Carpt	Damian Piemontese	Panetta	2/8/07	X			
Op. Eng	Joe Panetta	Panetta	2/12/07	X			
Op. Eng	Rocky Panetta	Panetta	2/8/07	X			
Laborer	Giorgio Panetta	Panetta	6/21/07	X			
	Robert Bianchi	Panetta	7/16/08	X			
	Roger Stoke	Layout Inc.					
	Dave Woodward	Layout Inc.					
	Tim Carr	Layout Inc.	8/30/07	X			
Laborer	Edgar Cruz	Mazzocchi	2/8/07	X			
Laborer	Jose Duque	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/1/07	X			
Laborer	Edgar Garman	Mazzocchi	6/23/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Grecco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/26/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Samuelson	Mazzocchi	2/8/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Michael Benson	Uniquie Scaffolding	3/26/09				
	Sean Slavin	Uniquie Scaffolding	3/26/09				
	Vito Mongelli	Amanda	9/14/07	X			✓
	Santos Sanchez	Amanda	9/17/07	X			✓

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Mason	Nicholas Vitale	Amanda	12/22/08				
	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			
	Michael Muto	Papp Iron Works	3/24/09				
	Thomas Kazim	RCC	2/5/08	X			
	Kerry Carolyn	RCC					✓
	Ronald Gorman	RCC	4/29/09				
	PAT LOWZOWE	RCC					✓
	Terrance Barry	McCann	1/7/07	X			✓
	Vincent Bellofatto	McCann	12/18/07	X			✓
	Adam Bellofatto	McCann	12/27/07	X			
	Joe DeAngelis	McCann	1/24/05	X			✓
	Joe LaTerre	McCann	11/26/07	X			✓
	Anthony Novello	McCann	11/26/07	X			✓
	Raymond Paxton	McCann	1/28/08	X			
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Frank Corrao	McCann	[illegible]				
	Zygmunt Galazka	Par					
	Gabriel Quinones	Par					
	Pedro Alavarado	Par					
	Jaime Rivera	Par					
	Beatriz Lefebre	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nester Banda	Par					
	Gregory Tomasula	Josloff Glass	2/27/07	X			
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	4/18/08	X			
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass					
	Gustavo Ramirez	Schnell	11/28/07				
	Anisetto Lazaro	Schnell	3/3/08				
	Pablo Veras	Schnell	7/9/07	X			
	Santiago Diaz	Schnell	4/24/08				
	Daniel Flores	Schnell		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Anthony Castellazzo	D. Magnan	[illegible]	X			
	Anthony Russo	D. Magnan	[illegible]	X			
	Earl Leski	D. Magnan	[illegible]	X			
	Gerardo A. Monge	D. Magnan	[illegible]	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Clemente Fuentes	D. Magnan	4/21/08				
	Sergio Ramirez	D. Magnan	[illegible]	X			
	Mark Palazzolo	D. Magnan	[illegible]				
	Martin Pic[illegible]	D. Magnan	[illegible]	X			
	Victor Guiracocha	D. Magnan	[illegible]	X			
	Jon Korzelius	D. Magnan	[illegible]				
	Roberto F[illegible]	D. Magnan	[illegible]				
	Jose Dominguez	Fine Painting	[illegible]	X			✓
	Manuel Romero	Fine Painting	[illegible]	X		X	
	Avtar Singh	Fine Painting	[illegible]	X			
	Jose Olaya	Fine Painting		X			
	Antonio Braga	Fine Painting	11/[illegible]	X			
	Jacek Czernik	Signs & Decals	5/5/08	X		X	
	Jorge Alvarez	Signs & Decals	5/5/08				
	Jaime Castillo	Signs & Decals					
	Dennis McQuillen	ThyssenKrupp	6/16/08	X			
	David Malito	Thyssen Krupp	6/16/08	X			
	Salvatore Federico	Thyssen Krupp	6/16/08	X			
	Sean Murray	Thyssen Krupp	6/16/08	X			
	Frankie DeGiorgio	Thyssen Krupp	7/7/08				
	Danny Vitale	Thyssen Krupp	7/11/08				
	Nick Comodo	Thyssen Krupp	7/8/08				
	John Eckhoff	Thyssen Krupp	7/24/08				
	John Ostroski	Thyssen Krupp	8/11/08		X		
	John Cestone	Thyssen Krupp	1/8/09				
	Robert Ryback	Thyssen Krupp	1/8/09				
	Saviour Debono	Thyssen Krupp	2/24/09				
	Robert Goodfellow	Thyssen Krupp	2/24/09				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Elect	Christopher Ador	S.M. Electric	7/16/07	X			
	Michael Alberta	S.M. Electric	2/11/08	X			
Elect	Frank Coppol	S.M. Electric	[illegible]	X	X		
	James Cow	S.M. Electric	8/23/07	X			
Elect	[illegible]	S.M. Electric	10/26/[illegible]	X			
	Daniel Grib	S.M. Electric	2/1/08	X			
	Joh Griffit	S.M. Electric	12/14/08	X			
	Steven Gage	S.M. Electric	3/7/07	X	X		
Elect.	Paul Higgins	S.M. Electric	1/18/07	X	X		
	Marc Infozi	S.M. Electric	3/[illegible]/08	X			
	Stefan Lapadat	S.M. Electric	10/30/08				
	Tony Maalo	S.M. Electric	2/[illegible]/08	X	X		
	Jame Mas	S.M. Electric	[illegible]	X	X		
	Ma Jacob	S.M. Electric	[illegible]	X			
Elec.	Mic Me	S.M. Electric	[illegible]	X	X		
Elect.	Joseph O' Conn	S.M. Electric	12/19[illegible]	X			
	Edwin Palmer	S.M. Electric	12/30/08				
Elect.	Robert Periera	S.M. Electric	1/8/07	X	X		
	Lee Sherwood	S.M. Electric	3/4/08	X			
	Andres Velez	S.M. Electric	3/17/08	X			
Plumber	Anthony Def	[illegible]	[illegible]/2	X			
Plumber	Daniel Viei	[illegible]	[illegible]/2	X			
	John Dieh	[illegible]	[illegible]/5/7		X		
	Albert Gayr	[illegible] Hardy M	9/25		X		
	Oscar Mooi	[illegible] Hardy Mech.	9/21	X	X		
	John Cuffe	Northeast	10/11	X			
	Eric Hernandez	Northeast	8/22/07	X			
	Joseph Mc[illegible]	Northeast	8/25/08	X			
	John Takacs	Northeast	6/27/07	X			
	Patrick Yodice	Northeast	1/24/08	X			
	Herbert Sanchez	Northeast	9/2/08	X			
	Patrick Visconti	Northeast	3/31/08	X			
	Robert Sanchez	Northeast	9/2/08				
	Kevin Thomson	Venture Electric	3/3/08				
	Michael Gabriel	Venture Electric	7/30/07	X			
	Jim Falk Jr.	Venture Electric	7/30/07	X			
	Kurt Falk	Venture Electric	7/30/07	X			
	Attila Vigilante	Venture Electric	1/22/08	X			
	Anthony Danielson	Metro		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Fitter	Albert King	Monmouth Controls	5/17/07	X			
Fitter	Daniel Nugent	Monmouth Controls	9/12/07	X			
Fitter	Joseph Stanio	Monmouth Controls	8/27/07	X			
	Eric Grieb	Monmouth Controls	6/17/08	X			
	Kevin Vaughn	Monmouth Controls	11/17/08				
	Michael Gaffney	EEI	6/4/07	X			
	Gary Molzen	EEI	11/19/07	X			
	Michael Hawtin		2/4/08	X			
	Shayne Spaziani	EEI	2/4/08	X			
	Fred Russo	EEI	8/28/07	X			
	Francis Kaufmann	EEI	8/20/08	X			
	Robert Applegate	EEI	10/6/08				
	Douglas Domicolo	EEI	10/6/08	X			
E	Scott Ritter		5/7/07	X			
	Mark Titmas	EEI	8/27/07	X			
	Ron Butler		9/27/07	X			
E	Craig Harrigan	EEI (MCS)	5/7/07	X			
E	Tod McEvoy	EEI (MCS)	7/20/07	X			
E	Lee Melnikoff	EEI (MCS)	5/7/07	X			
	Richard Good	EEI (MCS)	9/12/07	X			
	William Fantas	EEI (MCS)	12/12/07	X			
	Darrin Valente	EEI (MCS)	4/24/07	X			
	Carl Jorgensen	EEI (MCS)	4/24/07	X			
	Paul Schuck	EEI (MCS)		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Labor	Guy Lennon	VRH	1/1/07			X	
Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carpt	Tim Perrotta	VRH	1/8/07			X	✓
Laborer	Edwin De Jesus	VRH	9/26/07	X			✓
	Keith Lovas	VRH	10/15/07	X		X	✓
Carpt	Robert Burns	VRH	10/25/07	X			
	Anthony Andrade	VRH	12/18/07	X			✓
	Todd Perrotta	VRH	12/27/07			X	✓
	Gary Reuter	VRH	12/10/07			X	✓
	Salvatore Giordano	VRH	9/30/08	X			
Supt.	Joe Alvarez	Panetta	2/12/07	X			
I.W.	Joe Medway	Panetta		X			
I.W.	Paul Medway	Panetta		X			
Carpt	Damian Piemontese	Panetta	2/9/07	X			
Opt. Eng	Joe Panetta	Panetta	2/12/07	X			
Opt. Eng	Rocky Panetta	Panetta	2/9/07	X			
Laborer	Giorgio Panetta	Panetta	6/21/07	X			
	Robert Bianchi	Panetta	7/16/08	X			
	Roger Stolte	Layout Inc					
	Dave Woodward	Layout Inc.					
	Tim Carr	Layout Inc	8/30/07	X			
Laborer	Edgar Cruz	Mazzocchi	2/6/07	X			
Laborer	Jose Duque	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/7/07	X			
Laborer	Edgar German	Mazzocchi	6/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Grecco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/28/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Michael Benson	Uniquie Scaffolding	3/26/09				
	Sean Slavin	Uniquie Scaffolding	3/26/09				
	Vito Mongelli	Amanda	9/14/07	X			
	Santos Sanchez	Amanda	9/17/07	X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Mason	Nicholas Vitale	Amanda	12/22/08				
	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			
	Michael Muto	Papp Iron Works	3/24/09				
	Thomas Kazimir	RCC	2/5/08	X			
	Kenny Carolyn	RCC					
	Ronald Gorman	RCC	4/29/09				
	Terrance Barry	McCann	1/7/07	X			
	Vincent Bellofatto	McCann	12/18/07	X			✓
	Adam Bellofatto	McCann	12/27/07	X			
	Joe DeAngelis	McCann	1/24/07	X			✓
	Joe LaTorre	McCann	11/26/07	X			✓
	Anthony Novello	McCann	11/2/07	X			✓
	Raymond Paxton	McCann	1/28/08	X			
	Paul Kensek	McCann AC	3/10/08	X			✓
	Craig Humphrey	McCann AC	3/10/08	X			✓
	Frank Corrao	McCann	3/26/09				
	Zygmunt Galazka	Par					
	Gabriel Quinones	Par					
	Pedro Alavarado	Par					
	Jaime Rivera	Par					
	Beatriz Lefebre	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nester Banda	Par					
	Gregory Tomasula	Josloff Glass	2/27/07	X			
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	8/4/08	X			
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass					
	Gustavo Ramirez	Schnell	11/28/07				
	Aniseto Lazaro	Schnell	3/3/08				
	Pablo Veras	Schnell	7/9/07	X			
	Santiago Diaz	Schnell	4/24/08				
	Daniel Flores	Schnell		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			
	Gerardo A. Monge	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Clemente Fuentes	D. Magnan	4/21/08				
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Mark Palazzolo	D. Magnan	1/26/09				
	Martin Picinich	D. Magnan	5/13/08	X			
	Victor Guiracocha	D. Magnan	6/17/08	X			
	Jon Korzelius	D. Magnan	9/3/08				
	Roberto Fernandez	D. Magnan	2/24/09				
	Jose Dominguez	Fine Painting	3/30/07	X			✓
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			
	Antonio Fraga	Fine Painting	11/3/08	X			
	Jacek Czernik	Signs & Decals	5/6/08	X		X	
	Jorge Alvarez	Signs & Decals	5/6/08				
	Jaime Castillo	Signs & Decals					
	Dennis McQuillen	ThyssenKrupp	6/16/08	X			
	David Malito	Thyssen Krupp	6/16/08	X			
	Salvatore Federico	Thyssen Krupp	6/16/08	X			
	Sean Murray	Thyssen Krupp	6/16/08	X			
	Frankie DeGirolamo	Thyssen Krupp	7/7/08				
	Danny Vitale	Thyssen Krupp	7/11/08				
	Nick Comodo	Thyssen Krupp	7/9/08				
	John Eckhoff	Thyssen Krupp	7/24/08				
	John Ostroski	Thyssen Krupp	8/11/08		x		
	John Cestone	Thyssen Krupp	1/8/09				
	Robert Ryback	Thyssen Krupp	1/8/09				
	Saviour Debono	Thyssen Krupp	2/24/09				
	Robert Goodfellow	Thyssen Krupp	2/24/09				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Elect.	[illegible]	S.M. Electric	7/18/07	X			
	Michael Alberta	S.M. Electric	3/11/08	X			
Electric	Frank Cappo[illegible]	S.M. Electric	7/18/07	X	X		
	James Cl[illegible]	S.M. Electric	9/24/08	X			
Elect.	Rishon Duf[illegible]	S.M. Electric	10/15/07	X			
	Dale Gibson	S.M. Electric	2/1/08	X			
	Robb Gittins	S.M. Electric	2/14/08	X			
	Steven Gage	S.M. Electric	3/7/07	X	X		
Elect.	Paul Higgins	S.M. Electric	1/18/07	X	X		
	Mark Hodge	S.M. Electric	3/17/08	X			
	Steven Lepadat	S.M. Electric	10/8/08				
	Glen Massett	S.M. Electric	1/21/08	X	X		
Elect.	James Massett	S.M. Electric	2/27/07	X	X		
	Ed DeJesus	S.M. Electric					
Elect.	Michael McKenzie	S.M. Electric	9/11/07	X	X		
Elect.	Joseph O Connor	S.M. Electric	11/16/07	X			
	Edwin Palmer	S.M. Electric	10/20/08				
Elect.	Robert Perez	S.M. Electric	1/8/07	X	X		
	[illegible]	S.M. Electric	8/4/08	X			
	Andres Velazquez	S.M. Electric	3/17/08	X			
Plumber	Armando Balbuena	Zamansky	4/2/07	X			
Plumber	Daniel Alvarez	Zamansky	4/2/07	X			
	Kevin Ba[illegible]	Cardi Corporation	5/7/08		X		
	Robert Cu[illegible]	Cardi Corporation	7/25/07		X		
	Robert Moore	Cardi Corporation	3/21/07	X	X		
	Jose Ca[illegible]	Northeast	10/11/07	X			
	Eric Hernandez	Northeast	3/12/07	X			
	Joseph McLennan	Northeast	8/25/08	X			
	Jose Tokuss	Northeast	2/27/08	X			
	Patrick Yorke	Northeast	7/24/08	X			
	Herbert Sanchez	Northeast	9/2/08	X			
	Patrick Vacant	Northeast	7/11/08	X			
	Robert Sa[illegible]	Northeast	9/2/08				
	Kevin Thomson	Venture Electric	[illegible]/08				
	Michael Gabre	Venture Electric	7/30/07	X			
	[illegible]	Venture Electric	7/23/08	X			
	[illegible]	Venture Electric	7/30/07	X			
	Aldo Vigliarolo	Venture Electric	[illegible]/2008	X			
	Anthony Danielson	Venture Electric	[illegible]	X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Fitter	Albert King	Monmouth Controls	5/17/07	X			
Fitter	Daniel Nugent	Monmouth Controls	9/12/07	X			
Fitter	Joseph Stanio	Monmouth Controls	8/27/07	X			
Fitter	Eric Grieb	Monmouth Controls	6/17/08	X			
Fitter	Kevin Vaughn	Monmouth Controls	11/17/08				
	Michael Ca[illegible]	EEI (MCS)	6/4/07	X			—
	Gary Molzen	EEI	11/19/07	X			—
	Michael Hawtin	EEI	2/4/08	X			—
	Shayne Spazzarini	EEI	2/4/08	X			
	Fred Russo	EEI	3/28/07	X			
	Francis Kaufmann	EEI	10/20/08	X			
	Robert Appetzano	EEI	10/5/09				
	Douglas Demicolo	EEI	10/6/09	X			
E	Scott Ritter	EEI (MCS)	8/7/07	X			
	Mark Torres	EEI (MCS)	8/27/07	X			
	Ron Butler	EEI (MCS)	9/27/07	X			
	Craig Hartinger	EEI (MCS)	5/7/07	X			
	Ted McEvoy	EEI (MCS)	7/9/07	X			
	Jeff Mainkar	EEI (MCS)	5/7/07	X			
	Patrick Dunn	EEI (MCS)	9/12/07	X			
	William Torres	EEI (MCS)	12/17/07	X			
	Darin Valente	EEI (MCS)	4/24/07	X			
	Ray Vergara	EEI (MCS)	2/24/07	X			
	Paul Schuck	EEI (MCS)		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Supt.	Arthur Leichert	VRH	1/8/07			X	
Labor	Guy Lenner	VRH	3/12/07			X	
Labor	Angelo Tramutolo	VRH	[illegible]	X		X	
Carpt	Tim Perrotta	VRH	[illegible]			X	✓
Laborer	Edwin De Jesus	VRH	9/25/07	X			✓
	Keith Lovasko	VRH	10/15/07	X		X	✓
Carpt	Robert Burns	VRH	9/25/07	X			
	Anthony Andrade	VRH	12/13/07	X			✓
	Todd Perrotta	VRH	12/2[illegible]			X	✓
	Gary Reuter	VRH	12/10/07			X	✓
	Salvatore Giordano	VRH	9/30/06	X			
	Scottie Thompson	VRH	[illegible]	X			
Supt.	Joe Anetz	Panetta	[illegible]	X			
I.W.	Joe Medway	Panetta		X			
I.W.	Paul Medway	Panetta		X			
Carpt	Damian Piemontese	Panetta	2/9/07	X			
Opt. Eng	Joe Panetta	Panetta	[illegible]	X			
Opt. Eng	Rocky Panetta	Panetta	2/9/07	X			
Laborer	Giorgio Panetta	Panetta	6/21/07	X			
Laborer	Eugene Williams	Panetta	10/4/07	X			
	Cosimo Filleri	Panetta	[illegible]	X			
	David Latina	Panetta	7/23/08				
	Robert Bianchi	Panetta	7/[illegible]	X			
	Roger Stoke	Layout Inc	[illegible]				
	Dave Woodward	Layout Inc					
	Tim Carr	Layout Inc	8/30/07	X			
Laborer	Edgar Cruz	Mazzocchi	2/6/07	X			
Laborer	Jose Duque	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/7/07	X			
Laborer	Edgar German	Mazzocchi	6/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Grecco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/28/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Vito Morgeli	Amanda	9/14/07	X			
	Joseph Nalewajko	Amanda	9/24/07	X			
	Santos Sanchez	Amanda	9/17/07	X			
	Filipo Calcagno	Amanda	8/28/08				
Mason	Nicholas Vitale	Amanda	12/22/05				
	Jason Halus	Pasquale Iron Works	11/1/07	X			
	Fred Kunze	Pasquale Iron Works	11/1/07	X			
	Kevin Griswold	Pasquale Iron Works	3/31/08	X			
	Thomas Kammer	RCC	2/6/08	X			
	Terrance Barry	McCann	1/7/07	X			✓
	Vincent Bellofatto	McCann	12/13/07	X			✓
	Adam Bellofatto	McCann	1/27/07	X			
	Nick Cardillo	McCann					
	James Carroll	McCann	4/16/07	X			
	Joe DeAngelis	McCann	1/24/07	X			✓
	Joe LaTorre	McCann	11/26/07	X			✓
	David May	McCann	2/11/08	X			
	Anthony Novello	McCann	11/2/07	X			✓
	Raymond Paxton	McCann	1/28/08	X			
	Corey Sofia	McCann	12/17/07	X			
	Paul Kensek	McCann	3/10/08	X			✓
	Craig Humphrey	McCann	3/10/08	X			✓
	Dennis Pepe	McCann	9/26/08	X			
	Zygmunt Galazka	Par					
	Gabriel Quinones	Par					
	Pedro Alavarado	Par					
	Jaime Rivera	Par					
	Beatriz Lefebre	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nester Banda	Par					
	Gregory Tomasula	Josloff Glass	2/27/07	X			
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	8/4/08	X			
	Bob Ferraro	Josloff Glass		X			
	Gustavo Ramirez	Schnell	11/28/07				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Aniseto Lazaro	Schnell	3/3/08				
	Pablo Veras	Schnell	7/9/07	X			
	Santiago Diaz	Schnell	4/24/08				
	Daniel Flores	Schnell		X			
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			
	Gerardo A. Monge	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Clemente Fuentes	D. Magnan	4/21/08				
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Mark Palazzolo	D. Magnan	1/26/09				
	Martin Plenich	D. Magnan	5/13/08	X			
	Victor Guiracocha	D. Magnan	6/17/08	X			
	Jon Korzelius	D. Magnan	9/3/08				
	Roberto Fernandez	D. Magnan	2/24/09				
	Jose Dominguez	Fine Painting	3/30/07	X			✓
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Victor Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			
	Antonio Fraga	Fine Painting	1/18/08	X			
	Jacek Czernik	Signs & Decals	5/6/08	X		X	
	Jorge Alvarez	Signs & Decals	5/6/08				
	Jaime Cuello	Signs & Decals					
	Dennis McQuillen	ThyssenKrupp	6/16/08	X			
	David Malito	Thyssen Krupp	6/16/08	X			
	Salvatore Federico	Thyssen Krupp	6/16/08	X			
	Sean Murray	Thyssen Krupp	6/16/08	X			
	Frankie DeGirolamo	Thyssen Krupp	7/7/08				
	Danny Vitale	Thyssen Krupp	7/11/08				
	Nick Comodo	Thyssen Krupp	7/9/08				
	John Eckhoff	Thyssen Krupp	7/24/08				
	John Ostroski	Thyssen Krupp	8/11/08		x		
	John Cestone	Thyssen Krupp	1/8/09				
	Robert Ryback	Thyssen Krupp	1/8/09				
	Saviour Debono	Thyssen Krupp	2/24/09				
	Robert Goodfellow	Thyssen Krupp	2/24/09				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
	[illegible]	S.M. Electric	[illegible]	X			✓
	Michael Alberta	S.M. Electric	3/11/08	X			✓
	[illegible]	S.M. Electric	[illegible]	X	X		✓
	[illegible]	S.M. Electric	2/25/08	X			✓
El	[illegible]	S.M. Electric	[illegible]	X			✓
	[illegible]	S.M. Electric	2/7/08	X			✓
	[illegible]	S.M. Electric	2/14/08	X			✓
	[illegible]	S.M. Electric	9/7/07	X	X		✓
Elec	[illegible]	S.M. Electric	1/18/07	X	X		✓
	[illegible]	S.M. Electric	[illegible]	X			✓
	[illegible]	S.M. Electric	10/20/08				✓
	[illegible]	S.M. Electric	[illegible]	X	X		✓
	[illegible]	S.M. Electric	[illegible]	X	X		✓
	[illegible]	S.M. Electric	[illegible]				
	[illegible]	S.M. Electric	4/11/07	X	X		
Elec	[illegible]	S.M. Electric	[illegible]	X			
	[illegible]	S.M. Electric	[illegible]				
Elec	[illegible]	S.M. Electric	12/07	X	X		✓
	[illegible]	S.M. Electric	[illegible]	X			✓
	[illegible]	S.M. Electric	[illegible]	X			✓
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]		X		
	Albert Gayl[illegible]	[illegible]	[illegible]		X		
	[illegible]	[illegible]	[illegible]	X	X		
	John Cuffe	Northeast	[illegible]	X			
	Eric Hernandez	Northeast	[illegible]	X			
	[illegible]	Northeast	[illegible]	X			
	John Taka[illegible]	Northeast	[illegible]	X			
	Patrick Yodice	Northeast	1/24/08	X			
	[illegible]	Northeast	9/2/08	X			
	Patrick Visconti	Northeast	3/31/08	X			
	Robert Sanchez	Northeast	9/2/08				
	[illegible]	Vacuum Electric	[illegible]				
	Michael Gabriel	Vacuum Electric	7/30/07	X			
	[illegible]	Vacuum Electric	7/30/07	X			
	[illegible]	Vacuum Electric	7/30/07	X			
	[illegible]	Vacuum Electric	11/22/06	X			
	[illegible]	[illegible]	[illegible]	X			

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Fitter	Albert King	Monmouth Controls	5/17/07	X			
Fitter	[illegible]	[illegible]	[illegible]	X			
Fitter	Joseph Star[illegible]	Monmouth Contrl[illegible]	8/27/07	X			
	Eric Gre[illegible]	[illegible]	[illegible]	X			
	Kevin Vaccar[illegible]	Monmouth Controls	[illegible]				
	[illegible]	EEI	[illegible]	X			
	Steve Mclnere	EEI	[illegible]	X			
	Michael Hawkin	EEI	2/4/08	X			
	Sandine Spaziani	EEI	2/4/08	X			
	Fred Russo	EEI	2/29/07	X			
	Francis Kaufmann	EEI	[illegible]	X			
	Robert Appoldate	EEI	10/1/08				
	Douglas Dolmed[illegible]	EEI	10/1/08	X			
E	Scott Ar[illegible]	EEI (MCS)	5/7/07	X			
	Mark Tomas[illegible]	EEI (MCS)	8/27/07	X			
	Ron Butler	EEI (MCS)	8/27/07	X			
E	Dan Marquet[illegible]	EEI (MCS)	[illegible]	X			
E	[illegible] McEvoy	EEI (MCS)	7/20/07	X			
E	Lee Johnson	EEI (MCS)	[illegible]	X			
	Richard Gu[illegible]	EEI (MCS)	9/12/07	X			
	William [illegible]	EEI (MCS)	[illegible]	X			
	Dan[illegible] Vilardo	EEI (MCS)	4/24/07	X			
	Carl Rogers[illegible]	EEI (MCS)	[illegible]	X			
	Paul Schuck	EEI (MCS)		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Supt.	Arthur Leichert	VRH	1/8/07			X	
Labor	Guy Lanno	VRH	3/12/07			X	
Labor	Angelo Tramutola	VRH	2/8/07	X		X	
Carpt.	Tim Perrotta	VRH	1/8/07			X	✓
Laborer	Edwin De Jesus	VRH	9/26/07	X			✓
[illegible]	Keith Lovas	VRH	10/15/07	X		X	✓
Carpt	Robert Burns	VRH	10/25/07	X			
	Anthony Andrade	VRH	12/18/07	X			✓
	Todd Perrotta	VRH	12/27/07			X	✓
	Gary Reuter	VRH	12/10/07			X	✓
	Salvatore Giordano	VRH	[illegible]	X			
	Scott Thompson	VRH	10/25/08	X			
Supt	Joe Anetz	Panetta	[illegible]	X			
I.W.	Joe Medway	Panetta		X			
I.W.	Paul Medway	Panetta		X			
Carpt.	Damian Fiemontese	Panetta	[illegible]	X			
Opt. Eng	Joe Panetta	Panetta	[illegible]	X			
Opt. Eng	Rocky Panetta	Panetta	[illegible]	X			
Laborer	Giorgio Panetta	Panetta	[illegible]	X			
Laborer	Eugene Williams	Panetta	[illegible]	X			
	Cosimo Filleri	Panetta	3/10/2008	X			
	David Latina	Panetta	7/23/08				
	Robert Bianchi	Panetta	7/16/08	X			
	Roger Stolte	Layout Inc.					
	Dave Woodward	Layout Inc.					
	Tim Carr	Layout Inc.	8/30/07	X			
Laborer	Edgar Cruz	Mazzocchi	2/6/07	X			
Laborer	Jose Duque	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/7/07	X			
Laborer	Edgar German	Mazzocchi	6/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Grecco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/28/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Vito Mongelli	Amanda	9/14/07	X			
	Joseph Nalewajko	Amanda	9/24/07	X			
	Santos Sanchez	Amanda	9/17/07	X			
	Filipo Ciccigno	Amanda	5/28/08				
Mason	Nicholas Vitale	Amanda	12/22/08				
	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Künze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			
	Thomas Kazimir	PCC	2/5/08	X			
	Terrance Barry	McCann	1/7/07	X			✓
	Vincent Bellofatto	McCann	12/[illegible]	X			
	Adam Bellofatto	McCann	12/[illegible]	X			
	Nick Cardillo	McCann					
	James Carroll	McCann	4/10/07	X			
	Joe DeAngelis	McCann	1/[illegible]	X			✓
	Joe LaTorre	McCann	11/26/07	X			✓
	David May	McCann	2/11/07	X			
	Anthony Novello	McCann	11/2/07	X			✓
	Raymond Paxton	McCann	1/28/08	X			
	Corey Sofie	McCann	12/17/07	X			
	Paul Kensek	McCann	3/10/08	X			✓
	Craig Humphrey	McCann	3/10/08	X			✓
	Dennis Pepe	McCann	9/26/08	X			
	Zygmunt Galazka	Par					
	Gabriel Quinones	Par					
	Pedro Alavarado	Par					
	Jaime Rivera	Par					
	Beatriz Lefebre	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nester Banda	Par					
	Gregory Tomasula	Josloff Glass	2/27/07	X			
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	8/4/08	X			
	Bob Ferraro	Josloff Glass		X			
	Gustavo Ramirez	Schnell	11/28/07				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Aniseto Lazaro	Schnell	3/3/08				
	Pablo Veras	Schnell	7/9/07	X			
	Santiago Diaz	Schnell	4/24/08				
	Daniel Flores	Schnell		X			
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			
	Gerardo A. Monge	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Clemente Fuentes	D. Magnan	4/21/08				
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Mark Palazzolo	D. Magnan	1/26/09				
	Martin Picinich	D. Magnan	5/13/08	X			
	Victor Guiracocha	D. Magnan	6/17/08	X			
	Jon Korzelius	D. Magnan	9/3/08				
	Roberto Fernandez	D. Magnan	2/24/09				
	Jose Dominguez	Fine Painting	3/30/07	X			✓
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			
	Antonio Fraga	Fine Painting	11/3/08	X			
	Nicolas Czernik	Signs & Decals	5/6/08	X		X	
	Jorge Alvarez	Signs & Decals	5/6/08				
	Jaime Castillo	Signs & Decals					
	Dennis McQuillen	ThyssenKrupp	6/16/08	X			
	David Malito	Thyssen Krupp	6/16/08	X			
	Salvatore Federico	Thyssen Krupp	6/16/08	X			
	Sean Murray	Thyssen Krupp	6/16/08	X			
	Frankie DeGirolamo	Thyssen Krupp	7/7/08	X			✓
	Danny Vitale	Thyssen Krupp	7/11/08	X			✓
	Nick Comodo	Thyssen Krupp	7/9/08				
	John Eckhoff	Thyssen Krupp	7/24/08				
	John Ostroski	Thyssen Krupp	8/11/08		x		
	John Cestone	Thyssen Krupp	1/8/09				
	Robert Ryback	Thyssen Krupp	1/8/09				
	Saviour Debono	Thyssen Krupp	2/24/09				
	Robert Goodfellow	Thyssen Krupp	2/24/09				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
[illegible]	[illegible]	S.M. Electric	7/16/07	X			✓
	Michael Alberta	S.M. Electric	3/11/08	X			
[illegible]	[illegible]	S.M. Electric	7/16/07	X	X		✓
	James Cowan	S.M. Electric	8/25/08	X			✓
[illegible]	Richard Duffy	S.M. Electric	10/26/07	X			✓
	Daniel Gibson	S.M. Electric	2/1/08	X			✓
	[illegible]	S.M. Electric	2/1/08	X			✓
	Steven Gage	S.M. Electric	3/7/07	X	X		
Elect.	Paul Hibbins	S.M. Electric	1/18/07	X	X		✓
[illegible]	[illegible]	S.M. Electric	3/17/08	X			
	Stefan Lebeau	S.M. Electric	10/30/08				✓
[illegible]	Tony Madfour	S.M. Electric	3/25/08	X	X		✓
Elect.	James Massell	S.M. Electric	2/27/07	X	X		✓
	Wally Jacobus	S.M. Electric	[illegible]				✓
Elect.	Michael Mekenzie	S.M. Electric	9/11/07	X	X		
Elect.	Joseph O' Connor	S.M. Electric	12/19/07	X			
	Edgar Patrick	S.M. Electric	2/20/08				✓
Elect.	Robert Pereira	S.M. Electric	1/8/07	X	X		✓
	Lee Simpwood	S.M. Electric	3/4/08	X			✓
	Andres Vega	S.M. Electric	10/17/08	X			
Plumber	Anthony DeFino	Zabransky	4/2/07	X			
Plumber	David Wiener	Zabransky	4/2/07	X			
	Hank Diehl	Carl Hall Mech	5/7/07		X		
	Albert Gaynore	Carl Hall Mech	9/26/07		X		
	Oscar Moore	Carl Hall Mech	9/21/07	X	X		
	John Cuffe	Northeast	10/11/07	X			
	Eric Hamander	Northeast	8/22/07	X			
	Joseph McTernan	Northeast	1/22/08	X			
	John Tennis	Northeast	8/27/07	X			
	Patrick Yocice	Northeast	1/24/08	X			
	Manuel Sanchez	Northeast	3/3/08	X			
	Patrick Vincent	Northeast	3/31/08	X			
	Robert Sanchez	Northeast	9/2/08				
	Kevin Thomson	Northeast	3/3/08				
	Manuel Gabrie	Vernon Electric	7/30/07	X			
	Tim Falk Jr.	Vernon Electric	7/30/07	X			
	Ron Falk	Vernon Electric	7/30/07	X			
	Arlo Vollante	Vernon Electric	1/22/08	X			
	Anthony DiNielsof	Vernon	[illegible]	X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Fitter	Albert King	Monmouth Controls	5/17/07	X			
[illegible]	Daniel Nugent	Monmouth Controls	[illegible]	X			
Fitter	Joseph Stanio	Monmouth Controls	8/27/07	X			
[illegible]	Eric Grieb	Monmouth Controls	[illegible]	X			
[illegible]	Kevin Vaughn	Monmouth Controls	[illegible]				
[illegible]	Michael Geoffrey	EE	[illegible]	X			
	Gary Molzen	EE	11/19/07	X			
	Michael Hawtin	EE	[illegible]	X			
[illegible]	Shayne Spaulding	EE	[illegible]	X			
	Fred Russo	EE	[illegible]	X			
[illegible]	Francis Kaufmann	EE	[illegible]	X			
	Robert Applegate	EE	[illegible]				
[illegible]	Douglas Dominoto	EE	[illegible]	X			
E	Sam Fiber	EEI (MCS)	5/7/07	X			
[illegible]	Mark Thomas	EEI (MCS)	[illegible]	X			
	Ron Butler	EEI (MCS)	9/27/07	X			
E	Craig Flanagan	EEI (MCS)	5/7/07	X			
E	Don McIlvey	EEI (MCS)	4/20/07	X			
E	Ken Mainkoff	EEI (MCS)	[illegible]	X			
	Richard Good	EEI (MCS)	9/12/07	X			
[illegible]	William Fanseca	EEI (MCS)	12/12/07	X			
	Darrin Valente	EEI (MCS)	4/24/07	X			
[illegible]	Carl Jorgensen	EEI (MCS)	4/24/07	X			
	Paul Schuck	EEI (MCS)		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Supt.	Arthur Leichert	VRH	1/8/07			X	
Labor	Guy Lerman	VRH	8/12/07			X	
Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carpt.	Tim Ferrotta	VRH	1/8/07			X	✓
Laborer	Edwin De Jesus	VRH	9/26/07	X			✓
	Keith Lovas	VRH	10/15/07	X		X	✓
Carpt.	Robert Burns	VRH	10/26/07	X			
	Anthony Andreoli	VRH	12/15/07	X			✓
	Todd Perrotta	VRH	12/17/07			X	✓
	Gary Reuter	VRH	12/10/07			X	✓
	Salvatore Giordano	VRH	9/3/08	X			
	Scottie Thompson	VRH	10/20/08	X			
Supt.	Joe Anetz	Panetta	2/12/07	X			
I.W.	Joe Medway	Panetta		X			
I.W.	Paul Medway	Panetta		X			
Carpt.	Damian Piemontese	Panetta	2/9/07	X			
Opt. Eng	Joe Panetta	Panetta	2/12/07	X			
Opt. Eng	Rocky Panetta	Panetta	2/8/07	X			
Laborer	Giorgio Panetta	Panetta	8/21/07	X			
Laborer	Eugene Williams	Panetta	10/4/07	X			
	Cosimo Filieri	Panetta	3/10/2008	X			
	Dave Lutino	Panetta	7/23/08				
	Robert Bianchi	Panetta	7/16/08	X			
	Roger Stolte	Layout Inc.					
	Dave Woodward	Layout Inc.					
	Tim Carr	Layout Inc.	8/30/07	X			
Laborer	Edgar Cruz	Mazzocchi	2/6/07	X			
Laborer	Jose Duque	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/7/07	X			
Laborer	Edgar German	Mazzocchi	6/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Grecco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/28/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Vito Mongelli	Amanda	9/14/07	X			
	Joseph Natewa	Amanda	9/24/07	X			
	Santos Sanchez	Amanda	9/17/07	X			
	Fillipo Calcagno	Amanda	5/28/08				
Mason	Nicholas Vitale	Amanda	10/22/08				
	Jason Hayes	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Gravado	Papp Iron Works	3/31/08	X			
	KENNY CAROLYN	RCC		X			✓
	Thomas Kazmir	RCC	2/5/08	X			
	PAT LAWLOR	RCC					✓
	Terrance Barry	McCann	1/7/07	X			
	Vincent Bellofatto	McCann	12/18/07	X			✓
	Adam Bellofatto	McCann	12/27/07	X			
	Nick Cardillo	McCann					
	James Carroll	McCann	4/18/07	X			
	Joe DeAngelis	McCann	1/24/07	X			✓
	Joe LaTorre	McCann	1/26/07	X			✓
	David May	McCann	2/11/08	X			
	Anthony Novello	McCann	11/2/07	X			✓
	Raymond Paxton	McCann	1/28/08	X			
	Corey Sotta	McCann	12/17/07	X			
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Dennis Pepe	McCann	9/26/08	X			
	Zygmunt Galazka	Par					
	Gabriel Quinones	Par					
	Pedro Alavarado	Par					
	Jaime Rivera	Par					
	Beatriz Lefebre	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nester Banda	Par					
	Gregory Tomasula	Josloff Glass	2/27/07	X			
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	8/4/08	X			
	Bob Ferraro	Josloff Glass		X			
	Gustavo Ramirez	Schnell	11/28/07				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Aniseto Lazaro	Schnell	3/3/08				
	Pablo Vera	Schnell	7/9/07	X			
	Santiago Diaz	Schnell	4/24/07				
	Daniel Flores	Schnell		X			
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Ean Weeks	D. Magnan	3/27/08	X			
	Gerardo A. Monge	D. Magnan	3/27/08	X			
	Luis Rugiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Clemente Fuentes	D. Magnan	4/21/08				
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Mark Palazzolo	D. Magnan	1/26/09				
	Martin Ricinski	D. Magnan	5/13/09	X			
	Victor Guiracocha	D. Magnan	6/17/08	X			
	Jon Korzelius	D. Magnan	9/3/08				
	Roberto Fernandez	D. Magnan	2/24/09				
	Jose Dominguez	Fine Painting	3/30/07	X			✓
	Manuel Ramero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			
	Antonio Braga	Fine Painting	1/2/08	X			
	Jacek Czernik	Signs & Decals	5/6/08	X		X	
	Jorge Alvarez	Signs & Decals	5/6/08				
	Jaime Castillo	Signs & Decals					
	Dennis McQuillen	ThyssenKrupp	6/16/08	X			
	David Malito	Thyssen Krupp	6/16/08	X			
	Salvatore Federico	Thyssen Krupp	6/16/08	X			
	Sean Murray	Thyssen Krupp	6/16/08	X			
	Frankie DeGirolamo	Thyssen Krupp	7/7/08				
	Danny Vitale	Thyssen Krupp	7/11/08				
	Nick Comodo	Thyssen Krupp	7/9/08				
	John Eckhoff	Thyssen Krupp	7/24/08				
	John Ostroski	Thyssen Krupp	8/11/08		X		
	John Cestone	Thyssen Krupp	1/8/09				
	Robert Ryback	Thyssen Krupp	1/8/09				
	Saviour Debono	Thyssen Krupp	2/24/09				
	Robert Goodfellow	Thyssen Krupp	2/24/09				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
	[illegible]	[illegible]	[illegible]	X			
	Michael Alberta	S.M. Electric	1/08	X			
Elec	[illegible]	[illegible]	[illegible]	X	X		
	James Cowan	S.M. Electric	[illegible]	X			
	[illegible]	S.M. Electric	[illegible]	X			
	Dave Gibson	S.M. Electric	[illegible]	X			
	[illegible]	S.M. Electric	[illegible]	X			
	Steven Gogo	S.M. Electric	[illegible]	X	X		
Elect	[illegible]	S.M. Electric	[illegible]	X	X		
	[illegible]	S.M. Electric	[illegible]	X			
	[illegible]	S.M. Electric	[illegible]				
	[illegible]	S.M. Electric	[illegible]	X	X		
Elect	James [illegible]	S.M. Electric	[illegible]	X	X		
	[illegible]	S.M. Electric	[illegible]				
Elect	[illegible]	S.M. Electric	[illegible]	X	X		
Elect.	Joseph O'Connor	S.M. Electric	10/15/07	X			
	[illegible]	S.M. Electric	[illegible]				
Elect.	Robert Perina	S.M. Electric	[illegible]	X	X		
	Lee Sherwood	S.M. Electric	[illegible]	X			
	[illegible]	S.M. Electric	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]		X		
	[illegible]	[illegible]	[illegible]		X		
	[illegible]	[illegible]	[illegible]	X	X		
	John Cuffe	Northeast	10/1/07	X			
	Eric Hernandez	Northeast	[illegible]	X			
	Joseph McLaughlin	Northeast	[illegible]	X			
	John Takacs	Northeast	[illegible]	X			
	Patrick Yodice	Northeast	[illegible]	X			
	Robert San[illegible]	Northeast	[illegible]	X			
	Patrick Visconti	Northeast	[illegible]	X			
	Robert Sanchez	Northeast	[illegible]				
	[illegible]	[illegible]	[illegible]				
	Michael Gabriel	Venture	[illegible]	X			
	[illegible]	Venture	[illegible]	X			
	[illegible]	Venture	[illegible]	X			
	[illegible]	Venture Electric	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Fitter	Albert King	Monmouth Controls	5/17/07	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
Fitter	Joseph Stanio	Monmouth	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	Kevin Walsh	Monmouth Controls	[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	X			
	Gary Molzen	[illegible]	[illegible]	X			
	Michael Hawtin	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible] Russo	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	Dennis Valente	[illegible]	4/24/07	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
	Paul Schuck	EEI (MCS)		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Supt.	[redacted]ert	VRH	1/8/07			X	
Labor	[redacted]	VRH	3/12/07			X	
Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carpt.	Tim Perrotta	VRH	1/8/07			X	
Laborer	Edwin De Jesus	VRH	9/26/07	X			✓
	Keith Lovas	VRH	10/15/0	X		X	✓
Carpt.	[redacted]ms	VRH	10/25/07	X			
	Anthony Andrade	VRH	12/13/07	X			
	Todd Perrotta	VRH	12/27/0			X	✓
	Gary Rei[illegible]	VRH	12/[illegible]/07			X	✓
	Salvatore [illegible]	VRH	9/[illegible]	X			
	[redacted]on	VRH	[illegible]	X			
Supt.	Joe Anetz	Panetta	[illegible]	X			
I.W.	Joe Medway	Panetta		X			
I.W.	Paul Medway	Panetta		X			
Carpt.	Damian Piemontese	Panetta	[illegible]	X			
Opt. Eng	Joe Panetta	Panetta	[illegible]	X			
Opt. Eng	Rocky Panetta	Panetta	[illegible]	X			
Laborer	Giorgio Panetta	Panetta	[illegible]	X			
Laborer	[redacted]	Panetta	[illegible]	X			
	[redacted]	Panetta	[illegible]	X			
	[redacted]	Panetta	[illegible]				
	Robert Bianchi	Panetta	7/16/08	X			
	Roger Stolte	Layout Inc.					
	Dave Woodward	Layout Inc.					
	Tim Carr	Layout Inc.	8/30/07	X			
Laborer	Edgar Cruz	Mazzocchi	2/6/07	X			
Laborer	Jose Duque	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/7/07	X			
Laborer	Edgar German	Mazzocchi	6/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Grecco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/28/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Vito Mongelli	Amanda	9/14/07	X			
	[redacted]	Amanda	3/24/07	X			
	Santos Sanchez	Amanda	9/17/07	X			
	[redacted]	Amanda	5/28/08				
Mason	Nicholas Vitale	Amanda	12/22/08				
	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			
	KENNY CAROLYN	RCC		X			✓
	Thomas Kazimir	RCC	2/5/08	X			
	PAT LAWLOR	RCC					✓
	Terrance Barry	McCann	1/7/07	X			
	Vincent Bellofatto	McCann	12/18/07	X			✓
	[redacted]	McCann	12/27/07	X			
	[redacted]	McCann					
	[redacted]	McCann	4/16/07	X			
	Joe DeAngelis	McCann	1/24/07	X			✓
	Joe LaTorre	McCann	11/26/07	X			✓
	[redacted]	McCann	2/11/08	X			
	Anthony Novello	McCann	11/2/07	X			✓
	[redacted]	McCann	1/28/08	X			
	[redacted]	McCann	12/17/07	X			
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	[redacted]	McCann	9/26/08	X			
	Zygmunt Galazka	Par					
	Gabriel Quinones	Par					
	Pedro Alavarado	Par					
	Jaime Rivera	Par					
	Beatriz Lefebre	Par					
	Segundo Alvarado	Par					
	DOUGLAS LENNEZ	PROMPTON PAINTING		X			✓
	DAN LENNER	" "					✓
	Gregory Tomasula	Josloff Glass	2/27/07	X			
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	8/4/08	X			
	Bob Ferraro	Josloff Glass		X			
	Gustavo Ramirez	Schnell	11/28/07				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Aniseto Lazaro	Schnell	3/3/08				
	Pablo Veras	Schnell	7/9/07	X			
	Santiago Diaz	Schnell	4/24/08				
	Daniel Flores	Schnell		X			
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			
	~~Gerardo A. Monge~~	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	~~Clemente Fuentes~~	D. Magnan	4/21/08				
	~~Sergio Ramirez~~	D. Magnan	5/13/08	X			
	~~Matt Palazzolo~~	D. Magnan	1/26/09				
	~~Martin Picinich~~	D. Magnan	5/13/08	X			
	~~Victor Quiracocha~~	D. Magnan	6/17/08	X			
	~~Jon Kerzelius~~	D. Magnan	9/3/08				
	~~Rel[illegible]mandez~~	D. Magnan	2/24/09				
	Jose Dominguez	Fine Painting	3/30/07	X			✓
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			
	Antonio Fraga	Fine Painting	11/3/08	X			
	Jacek Dzemik	Signs & Decals	5/6/08	X		X	
	Jorge Alvarez	Signs & Deca	5/6/08				
	Jaime Castillo	Signs & Decals					
	~~Dennis McCullen~~	ThyssenKrupp	6/16/08	X			
	~~David Vitale~~	Thyssen Krupp	6/16/08	X			
	~~Salvatore Federico~~	Thyssen Krupp	6/16/08	X			
	Sean Murray	Thyssen Krupp	6/16/08	X			
	Frankie DeGirolamo	Thyssen Krupp	7/7/08				
	Danny Vitale	Thyssen Krupp	7/11/08				
	Nick Comodo	Thyssen Krupp	7/9/08				
	~~John Eckhoff~~	Thyssen Krupp	7/24/08				
	~~John Gatteski~~	Thyssen Krupp	8/11/08		X		
	~~John Gastone~~	Thyssen Krupp	1/8/09				
	~~Robert Ryback~~	Thyssen Krupp	1/8/09				
	Saviour Debono	Thyssen Krupp	2/24/09				
	Robert Goodfellow	Thyssen Krupp	2/24/09				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
	[illegible]	[illegible]	[illegible]	X			
	Michael Alberta	S.M. Electric	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X	X		
	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X	X		
Elect	[illegible]	[illegible]	[illegible]	X	X		
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]				
	[illegible]	[illegible]	[illegible]	X	X		
	[illegible]	[illegible]	[illegible]	X	X		
	[illegible]	[illegible]	[illegible]				
	[illegible]	[illegible]	[illegible]	X	X		
Elect.	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	12/30/08				
Elect.	[illegible]	[illegible]	[illegible]	X	X		
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]		X		
	Albert Gayn[illegible]	[illegible]arol Ha[illegible]	[illegible]		X		
	[illegible]	[illegible]	[illegible]	X	X		
	John Cuffe	Northeast	[illegible]	X			
	Eric Hernandez	Northeast	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	John Takac[illegible]	[illegible]orthea[illegible]	[illegible]	X			
	[illegible]atrick Yodi[illegible]	[illegible]	1/24/08	X			
	[illegible]	[illegible]	[illegible]	X			
	Patrick Visconti	[illegible]	3/31/08	X			
	Robert Sanchez	[illegible]	9/2/08				
	[illegible]	[illegible]	[illegible]				
	Michael Gat[illegible]	[illegible]	7/30/07	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Fitter	Albert King	Monmouth Controls	5/17/07	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
Fitter	Joseph Sta[illegible]	[illegible]	8/27/07	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	Kevin Vale[illegible]	[illegible]	[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	Robe[illegible]	[illegible]	[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	X			
E	Scott Pifter	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	Ron [illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
F	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	Vale[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
	Paul Schuck	EEI (MCS)		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carp	Tim Perrotta	VRH	1/8/07			X	✓
Laborer	Edwin De Jesus	VRH	9/26/07	X			✓
	Keith Lovas	VRH	10/15/07	X		X	✓
	Anthony Andrade	VRH	12/18/07	X			✓
	Todd Perrotta	VRH	12/27/07			X	✓
	Gary Reiner	VRH	12/10/07			X	✓
	Salvatore Giordano	VRH	9/30/05	X			
	Dan Leaver	Pomptain Painting					
	Dennis Leaver	Pomptain Painting		X			
	Roger Stone	Layout Inc.					
	Dave Woodward	Layout Inc					
	Tim Carr	Layout Inc	8/30/07	X			
Laborer	Edgar Cruz	Mazzocchi	2/5/07	X			
Laborer	Jose Duque	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/ /07	X			
Laborer	Edgar German	Mazzocchi	6/23/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/16/07				
Laborer	Robert Grecco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/28/07	X			
Laborer	Edward Robins	Mazzocchi	2/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sanchez	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Michael Benson	Uniquie Scaffolding	3/26/09				
	Sean Slavin	Uniquie Scaffolding	3/26/09				
	Vito Mongelli	Amanda	9/14/07	X			
	Santos Sanchez	Amanda	9/17/07	X			
Mason	Nicholas Vitale	Amanda	12/22/08				
	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kanze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			
	Michael Muto	Papp Iron Works	3/24/09				
	Tom Pilcher	RCC			X		✓
	Patrick Lawlor	RCC		X			✓

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Kenny Carolyn	RCC		X			✓
	Terrance Barry	McCann	1/7/07	X			
	Vincent Bellofatto	McCann	12/18/07	X			✓
	Joe DeAngelis	McCann	1/24/07	X			✓
	Joe LaTorre	McCann	11/26/07	X			✓
	Anthony Novello	McCann	11/2/07	X			✓
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/12/08	X			
	Frank Corrao	McCann	3/28/08				
	Zygmunt Galazka	Par					
	Gabriel Quinones	Par					
	Pedro Alavarado	Par					
	Jaime Rivera	Par					
	Beatriz Perebre	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nester Banda	Par					
	Gregory Tomasula	Josloff Glass	2/27/07	X			
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	8/1/08	X			
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass					
	Gustavo Ramirez	Schnell	11/23/07				
	Aniseto Lazaro	Schnell	3/3/08				
	Pablo Veras	Schnell	7/9/07	X			
	Santiago Diaz	Schnell	4/24/08				
	Daniel Flores	Schnell		X			
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			
	Luis Rodiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Jose Dominguez	Fine Painting	3/30/07	X			✓
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Antonio Fraga	Fine Painting	11/3/08	X			
	Jacek Czernik	Signs & Decals	5/6/08	X		X	
	Jorge Alvarez	Signs & Decals	5/6/08				
	Jaime Castillo	Signs & Decals					
	Sean Murray	Thyssen Krupp	5/18/08	X			
	Frankie DeGirolamo	Thyssen Krupp	7/7/08				✓
	Danny Vitale	Thyssen Krupp	7/1/08				✓
	Nick Comodo	Thyssen Krupp	7/9/08				
	Saviour Debono	Thyssen Krupp	2/24/09				
	Robert Goodfellow	Thyssen Krupp	2/24/09				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
[illegible]	[illegible]	[illegible]	[illegible]	X			
	Michael Alberta	S.M. Electric	3/11/08	X			
[illegible]	Frank Coppola	S.M. Electric	[illegible]	X	X		
	James Cowan	S.M. Electric	[illegible]	X		L/O	
[illegible]	[illegible]	S.M. Electric	[illegible]	X			
	Daniel Gribbin	S.M. Electric	[illegible]	X		L/O	
	[illegible]	S.M. Electric	[illegible]	X			
	Steven Gage	S.M. Electric	[illegible]	X	X		
Elect	Paul Hagan	S.M. Electric	1/28/07	X	X		
	Mark Fleming	S.M. Electric	[illegible]	X			
	Istefan Lepardi	S.M. Electric	1/[illegible]				
	[illegible]	S.M. Electric	[illegible]	X	X		
	[illegible]	S.M. Electric	[illegible]	X	X	L/O	
	[illegible]	S.M. Electric				L/O	
	Michael McKinney	S.M. Electric	[illegible]	X	X		
Elect	Joseph O'Connor	S.M. Electric	12/1[illegible]/07	X			
	Kevin Palmer	S.M. Electric	[illegible]				
Elect.	Robert Perlow	S.M. Electric	1/[illegible]/07	X	X		
	[illegible]	S.M. Electric	[illegible]	X			
	[illegible]	S.M. Electric	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	Carlos Vincent	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]		X		
	[illegible]	[illegible]	[illegible]		X		
	[illegible]	[illegible]	[illegible]	X	X		
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	Joseph Mathewson	[illegible]	[illegible]	X			
	John Takacs	[illegible]	[illegible]	X			
	Patrick Yodice	Northeast	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	Patrick Visconti	Northeast	[illegible]	X			
	Robert Sanchez	Northeast	[illegible]				
	[illegible]	[illegible]	[illegible]				
	Michael Gabriel	Ventura	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
~~Fitter~~	~~Albert King~~	~~Monmouth Controls~~	~~5/17/07~~	~~X~~			
[illegible]	[illegible]	[illegible]	[illegible]	X			
Fitter	Joseph Stanio	Monmouth Controls	8/27/07	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	X			
	Gary Molzen	[illegible]	[illegible]	X			
	Michael Hawtin	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
	[illegible] Russo	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	X			
E	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
E	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
	Dario Valente	[illegible]	4/24/07	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
	Paul Schuck	EEI (MCS)		X			

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Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carpt	Tim Perrotta	VRH	1/8/07			X	
Laborer	Edwin De Jesus	VRH	9/28/07	X			✓
	Keith Reyes	VRH	10/15/07	X		X	✓
	Anthony Andrade	VRH	12/18/07	X			
	Todd Perrotta	VRH	12/27/07			X	
	Gary Reuter	VRH	12/10/07			X	✓
	Salvatore Giordano	VRH	9/30/08	X			
	Dan Leaver	Pompton Painting					
	Dennis Leaver	Pompton Painting		X			
	Roger Stelte	Layout Inc					
	Dave Woodward	Layout Inc					
	Tim Carr	Layout Inc	8/30/07	X			
Laborer	Edgar Cruz	Mazzocchi	2/6/07	X			
Laborer	Jose Duque	Mazzocchi	3/3/07	X			
Laborer	Raul Espinosa	Mazzocchi	3/7/07	X			
Laborer	Edgar German	Mazzocchi	6/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Grecco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/9/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/9/07	X			
Laborer	William Sanchez	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	07/06				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Michael Benson	Uniquie Scaffolding	3/26/09				
	Sean Slavin	Uniquie Scaffolding	3/26/09				
	Vito Mongelli	Amanda	9/12/07	X			
	Santos Sanchez	Amanda	9/17/07	X			
Mason	Nicholas Vitale	Amanda	12/27/08				
	Jason Hales	Papp Iron Works	11/1/07	X			
	Erec Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/06	X			
	Michael Muto	Papp Iron Works	3/24/09				
	Patrick Lawlor	RCC		X			✓

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	Kenny Carolyn	RCC		X			✓
	Thomas Paulin	RCC					✓
	Terrance Barry	McCann	1/7/07	X			
	Vincent Bellofatto	McCann	12/18/07	X			
	Joe DeAngelis	McCann	3/24/07	X			
	Joe LaTorre	McCann	11/26/07	X			
	Anthony Novello	McCann	11/2/07	X			
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Frank Corrao	McCann	3/26/08				
	Zygmont Galacka	Par					
	Gabriel Quinones	Par					
	Pedro Alvarado	Par					
	Jaime Rivera	Par					
	Benny Lefebre	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nestor Bandat	Par					
	Gregory Tomasula	Josloff Glass	2/27/07	X			
	Brian Cunningham	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	5/4/08	X			
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass					
	Gustavo Ramirez	Schnell	11/28/07				
	Aniseto Lazaro	Schnell	3/3/08				
	Pablo Veras	Schnell	7/5/07	X			
	Santiago Diaz	Schnell	4/24/08				
	Daniel Flores	Schnell		X			
	Anthony Castellazzo	D. Magnan	3/24/08	X			
	Anthony Russo	D. Magnan	3/24/08	X			
	Earl Leslie	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Jose Dominguez	Fine Painting	3/30/07	X			✓
	Manuel Romero	Fine Painting	3/30/07	X		X	✓
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			

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	Antonio Fraga	Fine Painting	11/3/08	X			
	Jacek Czernik	Signs & Decals	3/6/08	X		X	
	Jorge Alvarez	Signs & Decals	5/18/08				
	Jaime Castillo	Signs & Decals					
	Sean Murray	Thyssen Krupp	6/16/08	X			
	Frankie DeGirolamo	Thyssen Krupp	7/7/08				
	Danny Vitale	Thyssen Krupp	7/11/08				
	Nick Comodo	Thyssen Krupp	7/9/08				
	Savour Deconto	Thyssen Krupp	2/24/09				
	Robert Goodfellow	Thyssen Krupp	2/24/09				

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Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carp	Tim Perrotta	VRH	1/8/07			X	
Laborer	Edwin De Jesus	VRH	9/25/07	X			✓
	Keith Lovas	VRH	10/16/07	X		X	✓
	Anthony Andrade	VRH	12/18/07	X			
	Todd Perrotta	VRH	12/27/07			X	
	Gary Reuter	VRH	12/10/07			X	✓
	Salvatore Giordano	VRH	9/30/08	X			
	Dan Leaver	Pomptain Painting					
	Dennis Leaver	Pomptain Painting		X			
	Roger Stoberl	Layout Inc					
	Dave Woodward	Layout inc.					
	Tim Carr	Layout Inc	8/30/07	X			
Laborer	Edgar Cruz	Mazzocchi	2/6/07	X			
Laborer	Jose Duque	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/7/07	X			
Laborer	Edgar German	Mazzocchi	6/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Greco	Mazzocchi	2/9/07	X			
Laborer	Michael Patton	Mazzocchi	2/28/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Michael Benson	Uniquie Scaffolding	3/26/09				
	Sean Slavin	Uniquie Scaffolding	3/26/09				
	Vic Mongelli	Amanda	5/24/07	X			
	Santos Sanchez	Amanda	9/17/07	X			
Mason	Nicholas Viale	Amanda	12/22/08				
	Jason Hales	Papp Iron Works	11/7/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			
	Michael Muto	Papp Iron Works	3/24/09				
	Patrick Lawlor	RCC		X			✓

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	Kenny Carol	RCC		X			✓
	Thomas Pi	Rizz			X		✓
	Terrance Barry	McCann	1/7/07	X			
	Vincent Bellofatto	McCann	12/13/07	X			
	Joe DeAngelis	McCann	1/24/07	X			✓
	Joe LaTorre	McCann	11/26/07	X			✓
	Anthony Novello	McCann	11/2/07	X			✓
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Frank Corrao	McCann	3/28/09				
	Zygmunt Galazka	Par					
	Gabriel Quinones	Par					
	Pedro Alaverado	Par					
	Jaime Rivera	Par					
	Beatriz Lefebre	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nestor Barrio	Par					
	Gregory Tomasulla	Josloff Glass	2/27/07	X			
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	3/4/08	X			
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass					
	Gustavo Ramirez	Schnell	1/28/07				
	Arnaldo Lazaro	Schnell	3/7/08				
	Pablo Veras	Schnell	7/6/07	X			
	Santiago Diaz	Schnell	4/04/08				
	Daniel Flores	Schnell		X			
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Teskoski	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Saez	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Jose Dominguez	Fine Painting	3/30/07	X			
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Elect.	Christopher Adorna	S.M. Electric	7/16/07	X			✓
	Michael Alberta	S.M. Electric	3/11/08	X			✓
Elect.	Frank Coppola	S.M. Electric	7/18/07	X	X		✓
Elect.	Richard Duffy	S.M. Electric	12/25/07	X			✓
	John Griffiths	S.M. Electric	2/14/08	X			
	Steven Gage	S.M. Electric	3/7/07	X	X		✓
Elect.	Paul Higgins	S.M. Electric	1/18/07	X	X		✓
	Marc Indozino	S.M. Electric	3/17/08	X			
	Stefan Laparlat	S.M. Electric	10/8/08				
	Tony Maalouf	S.M. Electric	1/21/08	X	X		
Elect.	Michael Melkonian	S.M. Electric	9/11/07	X	X		✓
Elect.	Joseph O'Connor	S.M. Electric	12/13/07	X			✓
	Edwin Palmer	S.M. Electric	12/30/08				
Elect.	Robert Pereira	S.M. Electric	1/8/07	X	X		✓
	Lee Sherwood	S.M. Electric	3/4/08	X			✓
	Andres Velez	S.M. Electric	3/17/08	X			
Plumber	Anthony DeFrus	Zaborsky	4/2/07	X			
Plumber	Daniel Wiener	Zaborsky	4/2/07	X			
	John Bich	Carol Hardy Mech	3/5/07		X		
	Albert Gaynore	Carol Hardy Mech	3/25/07		X		
	Oscar Moore	Carol Hardy Mech	3/2/08	X	X		
	Eric Hernandez	Northeast	8/22/07	X			
	John Takacs	Northeast	6/27/07	X			—
	Patrick Yodice	Northeast	1/24/08	X			—
	Patrick Visconti	Northeast	3/31/08	X			
	Kurt Falk	Venture Electric	7/30/07	X			—
	Alfie Vaglama	Venture Electric	1/22/08	X			
	Anthony Danielson	Metro		X			
Fitter	Joseph Stanco	Monmouth Controls	5/27/07	X			
	Eric Gries	Monmouth Controls	5/17/06	X			
	Kevin Vaughn	Monmouth Controls	11/17/08				
	Michael Gaffney	EEI	6/4/07	X			—
	Gary Molzer	EEI	11/15/07	X			—
	Michael Hawton	EEI	2/4/08	X			—
	Shayne Spaman	EEI	2/4/08	X			
	Fred Russo	EEI	5/28/07	X			
	Francis Kaufmann	EEI	8/20/08	X			
	Robert Applegate	EEI	10/6/08				

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	Douglas Dombrowski	EEI	10/6/06	X			
E	Scott Ritter	EEI (MCS)	5/7/07	X			—
	Mark Timmis	EEI (MCS)	8/27/07	X			
	Ron Butler	EEI (MCS)	8/27/07	X			
E	Craig Harrigan	EEI (MCS)	5/7/07	X			
E	Ted McEvoy	EEI (MCS)	7/20/07	X			—
E	Lee Malinkoff	EEI (MCS)	5/7/07	X			
	Richard Good	EEI (MCS)	8/12/07	X			
	William Fantasia	EEI (MCS)	12/12/07	X			
	Darrin Valente	EEI (MCS)	4/24/07	X			
	Carl Jorgensen	EEI (MCS)	4/24/07	X			
	Paul Schuck	EEI (MCS)		X			

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	Kenny Carolyn	RCC		✓			✓
	Thomas Philbin				✓		✓
	Terrance Barry	McCann	12/18/07	X			
	Vincent Bellofato	McCann	12/18/07	X			
	Joe DeAngelis	McCann	11/24/07	X			✓
	Joe LaTorre	McCann	11/26/07	X			✓
	Anthony Novello	McCann	11/2/07	X			
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Frank Corrao	McCann	3/26/09				
	Zygmunt Galazka	Par					
	Gabriel Quinones	Par					
	Pedro Alavarado	Par					
	Jaime Rivera	Par					
	Juan Lefebre	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nester Banca	Par					
	Gregory Tomasula	Josloff Glass	2/27/07	X			✓
	Brian Cummings	Josloff Glass	3/3/08	X			
	Thomas DeMaio	Josloff Glass	8/4/08	X			
	Bob Ferraro	Josloff Glass		X			✓
	T. DeMaio	Josloff Glass					
	Isaac Cruz	" "		X			✓
	Gustavo Ramirez	Schnell	11/26/07				
	Aniseto Lazaro	Schnell	3/3/08				
	Pablo Veras	Schnell	7/9/07	X			
	Santiago Diaz	Schnell	4/14/08				
	Daniel Flores	Schnell		X			
	Anthony Castellazzo	DeMagnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			
	Luis Rueiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Jose Dominguez	Fine Painting	3/30/07	X			
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avter Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			

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Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carp	Tim Perrotta	VRH	[illegible]/07			X	
Laborer	Edwin DeJesus	VRH	9/28/07	X			✓
	Keith Loyas	VRH	10/15/07	X		X	✓
	Anthony Andrade	VRH	12/13/07	X			
	Todd Perrotta	VRH	12/2[illegible]/07			X	
	Gary Reuter	VRH	12/10/07			X	✓
	Salvatore Giordano	VRH	9/30/08	X			
	Dan Leaver	Pompitain Painting					
	Dennis Leaver	Pompitain Painting		X			
	Roger Stolte	Layout Inc.					
	Dave Woodward	Layout Inc.					
	Tim Carr	Layout Inc.	8/30/07	X			
Laborer	Edgar Cruz	Mazzocchi	2/8/07	X			
Laborer	Jose Diaz	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/7/07	X			
Laborer	Edgar Gaman	Mazzocchi	8/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Greco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/26/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Michael Benson	Uniquie Scaffolding	3/26/09				
	Sean Slavin	Uniquie Scaffolding	3/26/09				
	Vito Mongelli	Amanda	9/14/07	X			
	Santos Sanchez	Amanda	9/17/07	X			
Mason	Nicholas Vitale	Amanda	12/22/08				
	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/06	X			
	Michael Muto	Papp Iron Works	3/24/09				
	MARK GRAAB	RCC			✓		✓
	Patrick Lawlor	RCC		X			✓

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Elect	Christopher Adorna	S.M. Electric	7/16/07	X			✓
	Michael Alberta	S.M. Electric	3/11/08	X			✓
Elect	Frank Coppola	S.M. Electric	7/16/07	X	X		✓
Elect	Richard Duffy	S.M. Electric	10/26/07	X			✓
	John Griffiths	S.M. Electric	2/14/08	X			✓
	Steven Gage	S.M. Electric	9/7/07	X	X		✓
Elect	Paul Higgins	S.M. Electric	1/18/07	X	X		✓
	Marcin Iozzo	S.M. Electric	3/17/08	X			
	Stefan Lapadat	S.M. Electric	10/22/08				
	Tony Marabuti	S.M. Electric	1/29/08	X	X		
Elect	Michael Melkonian	S.M. Electric	9/11/07	X	X		✓
Elect	Joseph O' Connor	S.M. Electric	12/19/07	X			✓
	Edwin Palmer	S.M. Electric	12/30/08				
Elect	Robert Pereira	S.M. Electric	1/8/07	X	X		✓
	Lee Sherwood	S.M. Electric	3/4/08	X			✓
	Andres Velez	S.M. Electric	9/17/08	X			
Plumber	Anthony DeFranis	Zabriansky	4/2/07	X			
Plumber	Derek Wiener	Zabriansky	4/2/07	X			
	Adrian Glen	Carol Hardy Mech	5/7/07		X		
	Albert Gaynore	Carol Hardy Mech	9/25/07		X		
	Oscar Moore	Carol Hardy Mech	9/25/08	X	X		
	Eric Hernandez	Northeast	8/22/07	X			
	John Takacs	Northeast	6/27/07	X			
	Patrick Yodice	Northeast	1/24/08	X			
	Patrick Visconti	Northeast	3/31/08	X			
	Kurt Falk	Venture Electric	7/30/07	X			
	Alfa Vigliarolo	Venture Electric	1/22/08	X			
	Anthony Depalma	Metro		X			
Fitter	Joseph Sciarra	Monmouth Controls	8/27/07	X			
	Eric Gnieto	Monmouth Controls	6/17/08	X			
	Kevin Vaughn	Monmouth Controls	11/17/08				
	Michael Gattney	EEI	6/4/07	X			
	Gary Molzen	EEI	11/19/07	X			
	Michael Hawkin	EEI	2/4/08	X			
	Shayne Spaziani	EEI	2/4/08	X			
	Fred Russo	EEI	8/28/0	X			
	Francis Kaufmann	EEI	8/28/08	X			
	Robert Applegate	EEI	10/6/08				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
	Douglas Dorwood	EEI	10/6/08	X			
E	Scott Ritter	EEI (MCS)	5/7/07	X			—
	Mark Turnca	EEI (MCS)	8/27/07	X			
	Ron Butler	EEI (MCS)	9/27/07	X			
E	Craig Flanigan	EEI (MCS)	5/7/07	X			—
E	Tod McEvoy	EEI (MCS)	7/23/07	X			—
E	Lee Menikoff	EEI (MCS)	5/7/07	X			
	Richard Good	EEI (MCS)	9/17/07	X			
	William Fantasia	EEI (MCS)	12/12/07	X			
	Darrin Valente	EEI (MCS)	4/24/07	X			
	Carl Jorgensen	EEI (MCS)	4/24/07	X			
	Paul Schuck	EEI (MCS)		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carpt	Tim Perrotta	VRH	1/8/07			X	
Laborer	Edwin De Jesus	VRH	9/26/07	X			✓
	Keith Lovas	VRH	10/15/07	X		X	✓
	Anthony Andrade	VRH	12/18/07	X			
	Todd Perrotta	VRH	12/2/07			X	
	Gary Reuter	VRH	12/10/07			X	✓
	Salvatore Giordano	VRH	3/23/09	X			
	Dan Leaver	Pompian Painting					
	Dennis Leaver	Pompian Painting		X			
	Roger Stotler	Layout Inc					
	Dave Woodward	Layout Inc					
	Tim Carr	Layout Inc	8/30/07	X			
Laborer	Edgar Cruz	Mazzocchi	2/6/07	X			
Laborer	Jose Oduer	Mazzocchi	2/6/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/[illegible]/07	X			
Laborer	Edgar German	Mazzocchi	6/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	[illegible]				
Laborer	Robert Greco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/28/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/5/07	X			
Laborer	William Sanchalk	Mazzocchi	2/2/07	X			
	James Soldano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Michael Benson	Uniquie Scaffolding	3/26/09				
	Sean Slavin	Uniquie Scaffolding	3/26/09				
	Vito Mongelli	Amanda	5/14/07	X			
	Santos Sanchez	Amanda	9/17/07	X			
Mason	Nicholas Vitale	Amanda	12/22/08				
	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/09	X			
	Michael Muto	Papp Iron Works	3/24/09				
	Thomas Philbin	RCC			X		✓
	Patrick Lawlor	RCC		X			✓

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Kenny Carolyn	RCC		X			✓
	ALAN FOX	RCC			X		✓
	Terrance Barry	McCann	1/7/07	X			
	Vincent Bulcolto	McCann	12/18/07	X			
	Joe DeAngelis	McCann	1/24/07	X			✓
	Joe La Torre	McCann	11/26/07	X			✓
	Anthony Novello	McCann	11/2/07	X			✓
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/[illegible]	X			
	Frank Corrao	McCann	3/26/09				
	Zygmunt Galazka	Par					
	Gabriel Quinones	Par					
	Pedro Alavarado	Par					
	Jaime Rivera	Par					
	Beatriz Lefebre	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nester Banda	Par					
	Gregory Tomasula	Joslott Glass	3/27/07	X			✓
	Brian Cummings	Joslott Glass	5/2/08	X			
	Thomas DeMaio	Joslott Glass	8/4/08	X			
	Bob Ferraro	Joslott Glass		X			
	T. DeMaio	Joslott Glass					
	ISAIC CAR[illegible]	T[illegible]		X			✓
	Gustavo Ramirez	Schnell	11/28/07				
	Aniseto Lazaro	Schnell	3/3/08				
	Pablo Veras	Schnell	7/9/07	X			
	Santiago Diaz	Schnell	4/24/08				
	Daniel Flores	Schnell		X			
	Anthony Castellazzo	D. Magnan	3/24/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/13/09	X			
	Jose Dominguez	Fine Painting	3/30/07	X			
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Elect.	Christopher Adorna	S.M. Electric	7/16/07	X			
	Michael Alberta	S.M. Electric	3/11/08	X			
Elect.	Frank Coppola	S.M. Electric	7/16/07	X	X		
Elect.	Richard Duffy	S.M. Electric	10/26/07	X			
	John Griffiths	S.M. Electric	2/14/08	X			
	Steven Gage	S.M. Electric	3/1/07	X	X		
Elect.	Paul Higgins	S.M. Electric	1/18/07	X	X		
	Marc Infozino	S.M. Electric	3/17/08	X			
	Stefan Lapadat	S.M. Electric	10/30/08				
	Tony Maalouf	S.M. Electric	1/21/08	X	X		
Elect.	Michael Melkonian	S.M. Electric	9/11/07	X	X		
Elect.	Joseph O' Connor	S.M. Electric	12/19/07	X			
	Edwin Palmer	S.M. Electric	12/30/08				
Elect.	Robert Pereira	S.M. Electric	1/9/07	X	X		
	Lee Sherwood	S.M. Electric	3/4/08	X			
	Andres Velez	S.M. Electric	3/17/08	X			
Plumber	Anthony DeFine	Zabriansky	4/2/07	X			
Plumber	Daniel Werner	Zabriansky	4/2/07	X			
	John Duehl	Carol Hardy Mech	5/7/07		X		
	Albert Daynors	Carol Hardy Mech	3/25/07		X		
	Oscar Moore	Carol Hardy Mech	9/21/07	X	X		
	Eric Hernandez	Northeast	8/22/07	X			
	John Takacs	Northeast	6/27/07	X			
	Patrick Yodice	Northeast	1/24/08	X			
	Patrick Visconti	Northeast	3/31/08	X			
	Kurt Falk	Venture Electric	7/30/07	X			
	Attila Vigliante	Venture Electric	1/22/08	X			
	Anthony Danielsch	Venture Electric	[illegible]	X			
Fitter	Joseph Stanio	Monmouth Controls	8/27/07	X			
	Eric Grieg	Monmouth Controls	8/17/06	X			
	Kevin Vaughn	Monmouth Controls	11/17/08				
	Michael Gaffney	EEI	6/4/07	X			
	Gary Milzen	EEI	11/19/07	X			
	Michael Hawtin	EEI	2/4/08	X			
	Shayne Spaziani	EEI	2/14/08	X			
	Fred Russo	EEI	8/27/07	X			
	Francis Kaufmann	EEI	8/20/08	X			
	Robert Applegate	EEI	10/6/08				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
	Douglas Domicolo	EEI	10/6/06	X			
E	Scott Ritter	EEI (MCS)	5/7/07	X			
	Mark Tumas	EEI (MCS)	8/27/07	X			
	Ron Butler	EEI (MCS)	8/27/07	X			
E	Craig Harrigan	EEI (MCS)	5/7/07	X			
E	Tod McEvoy	EEI (MCS)	7/20/07	X			
E	Lee Melnikoff	EEI (MCS)	5/7/07	X			
	Richard Good	EEI (MCS)	9/1/07	X			
	William Fantasia	EEI (MCS)	12/12/07	X			
	Dario Valente	EEI (MCS)	4/24/07	X			
	Carl Jorgensen	EEI (MCS)	4/24/07	X			
	Paul Schuck	EEI (MCS)		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carpt	Tim Parrotta	VRH	1/8/07			X	
Laborer	Edwin De Jesus	VRH	9/26/07	X			✓
	Keith Lovas	VRH	10/15/07	X		X	
	Anthony Andrade	VRH	12/18/07	X			
	Todd Perrotta	VRH	2/27/07			X	
	Gary Reuter	VRH	12/10/07			X	✓
	Salvatore Giordano	VRH	9/5/08	X			
	Dan Leaver	Pomptam Painting					
	Dennis Leaver	Pomptam Painting		X			
	Roger Stolle	Layout Inc					
	Dave Woodward	Layout Inc					
	Tim Carr	Layout Inc	8/30/07	X			
Laborer	Edgar Cruz	Mazzocchi	2/8/07	X			
Laborer	Jose Duque	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/7/07	X			
Laborer	Edgar German	Mazzocchi	6/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Greco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/28/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sarchelli	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Michael Benson	Uniquie Scaffolding	3/26/09				
	Sean Slavin	Uniquie Scaffolding	3/26/09				
	Vito Vergelli	Amanda	3/14/07	X			
	Santos Sanchez	Amanda	3/17/07	X			
Mason	Nicholas Vitale	Amanda	12/22/08				
	Jason Hayes	Papp Iron Works	1/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/3/08	X			
	Michael Muto	Papp Iron Works	3/24/08				
	Thomas Philbin	RCC			X		✓
	Patrick Lewis	RCB		X			✓

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Kenny Carolan	RCC		X			
	ALLAN FOX	RCC					
	Terranca Barry	McCann	1/7/07	X			
	Vincent Belofatto	McCann	12/18/07	X			
	Joe D'Angelis	McCann	1/29/07	X			✓
	Joe LaTorre	McCann	11/26/07	X			✓
	Anthony Novello	McCann	11/2/07	X			✓
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Frank Corrao	McCann	3/26/08				
	Germán Sánchez	Par					
	Gabriel Quinones	Par					
	Pedro Alavarado	Par					
	Jaime Rivera	Par					
	Beamiz Lefebre	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nesser Banda	Par					
	Gregory Tomasula	Josloff Glass	2/27/07	X			✓
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	8/4/08	X			
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass		X			
	ISAAC CRUZ	JOSLOFF GLASS		X			✓
	Gustavo Ramirez	Schnell	11/28/07				
	Angelo Lazaro	Schnell	8/3/08				
	Pablo Veras	Schnell	7/3/07	X			
	Santiago Diaz	Schnell	4/24/08				
	Daniel Flores	Schnell		X			
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			
	Luis Rosiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Jose Dominguez	Fine Painting	3/30/07	X			
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olava	Fine Painting		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Elec	Christopher Alonia	S.M. Electric	7/16/07	X			
	Michael Alberti	S.M. Electric	3/11/08	X			
Elec	Frank Coppola	S.M. Electric	7/16/07	X	X		
Elec	Richard Duffy	S.M. Electric	10/26/07	X			
	John Griffiths	S.M. Electric	2/14/08	X			
	Steven Gage	S.M. Electric	3/7/07	X	X		
Elect	Paul Higgins	S.M. Electric	1/18/07	X	X		
	Marc Imperiale	S.M. Electric	3/17/08	X			
	Stefan Lapadat	S.M. Electric	10/30/08				
	Tony Maglioli	S.M. Electric	1/21/08	X	X		
Elect	Michael Melkonian	S.M. Electric	9/31/07	X	X		
Elec	Joseph O'Connor	S.M. Electric	12/19/07	X			
	Edwin Palmer	S.M. Electric	12/30/08				
Elect	Robert Pariona	S.M. Electric	1/8/07	X	X		
	Lee Shenkoda	S.M. Electric	3/4/08	X			
	Andres Velez	S.M. Electric	3/17/08	X			
Plumber	Anthony Dellinis	Zabransky	4/2/07	X			
Plumber	Daniel Wiener	Zabransky	4/2/07	X			
	John Diehl	Carol Hardy Mech.	5/7/07		X		
	Albert Gaynore	Carol Hardy Mech.	9/25/07		X		
	Oscar Mobe	Carol Hardy Mech.	3/26/07	X	X		
	Eric Hernandez	Northeast	8/22/07	X			
	John Takacs	Northeast	6/27/07	X			
	Patrick Yodice	Northeast	1/24/08	X			
	Patrick Visconti	Northeast	3/31/08	X			
	Kurt Falk	Venture Electric	7/30/07	X			
	Alla Vigdorchik	Venture Electric	1/22/08	X			
	Anthony Danielsen	Metro		X			
Fitter	Joseph Stanto	Monmouth Controls	8/27/07	X			
	Eric Gnebe	Monmouth Controls	5/17/08	X			
	Kevin Vaughn	Monmouth Controls	11/17/08				
	Michael Gaffney	EEI	5/4/07	X			
	Gary Molzen	EEI	11/19/07	X			
	Michael Hawtin	EEI	2/4/08	X			
	Shayne Spazzini	EEI	2/4/08	X			
	Fred Russo	EEI	8/28/07	X			
	Francis Kaufmann	EEI	3/27/08	X			
	Robert Applegate	EEI	10/6/08				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
	Douglas Domicolo	EEI	10/6/06	X			
E	Scott Ritter	EEI (MCS)	5/7/07	X			—
	Mark Titmas	EEI (MCS)	8/27/07	X			
	Ron Buner	EEI (MCS)	9/27/07	X			
E	Craig Harrigan	EEI (MCS)	5/7/07	X			—
E	Tod McEvoy	EEI (MCS)	7/20/07	X			
E	Lee Melnikoff	EEI (MCS)	5/7/07	X			—
	Richard Good	EEI (MCS)	9/12/07	X			
	William Fantasia	EEI (MCS)	12/12/07	X			
	Darrin Valente	EEI (MCS)	4/24/07	X			
	Carl Jorgensen	EEI (MCS)	4/24/07	X			
	Paul Schuck	EEI (MCS)		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carpt	Tim Perrotta	VRH	1/3/07			X	
Laborer	Edwin De Jesus	VRH	9/26/07	X			
	Kem Lovas	VRH	10/15/07	X		X	✓
	Anthony Andrade	VRH	12/18/07	X			✓
	Todd Perrotta	VRH	12/27/07			X	
	Gary Reuter	VRH	12/10/07			X	✓
	Salvatore Giordano	VRH	9/30/08	X			
	Dan Leaver	Pomptain Painting					
	Dennis Leaver	Pomptain Painting		X			
	Roger Stolte	Layout Inc					
	Dave Woodward	Layout Inc					
	Jim Carr	Layout Inc	8/30/07	X			
Laborer	Edgar Cruz	Mazzocchi	2/8/07	X			
Laborer	Jose Dique	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	[illegible]	X			
Laborer	Edgar German	Mazzocchi	5/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Greco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/28/07	X			
Laborer	Edward Robinson	Mazzocchi	2/28/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/3/08				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Michael Benson	Uniquie Scaffolding	3/26/09				
	Sean Slavin	Uniquie Scaffolding	3/26/09				
	Vito Mongelli	Amanda	3/14/07	X			
	Santos Sanchez	Amanda	3/17/07	X			
Mason	Nicholas Vitale	Amanda	12/22/08				
	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			
	Michael Muto	Papp Iron Works	3/24/09				
	Thomas Phelan	Rcc			✓		✓
	Patrick Lawlor	RCC		X			✓

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Kenny Carolan	ECC		X			
	ALLAN ROY	ECC					✓
	Terrance Barry	McCann	12/7/07	X			
	Vincent Bellofatto	McCann	12/18/07	X			
	Joe DeAngelis	McCann	1/24/07	X			
	Joe LaTorre	McCann	11/26/07	X			✓
	Anthony Novello	McCann	11/2/07	X			✓
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Frank Corrao	McCann	4/28/09				
	Zygmunt Galazka	Par					
	Gabriel Quinones	Par					
	Pedro Alarcado	Par					
	Jaime Rivera	Par					
	Beatriz Lefebre	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nester Banda	Par					
	Gregory Tomasula	Josloff Glass	2/27/07	X			
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	8/4/08	X			
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass					
	Gustavo Ramirez	Schnell	11/28/07				
	Aniseto Lazaro	Schnell	3/3/08				
	Pablo Veras	Schnell	7/9/07	X			
	Santiago Diaz	Schnell	4/14/08				
	Daniel Flores	Schnell		X			
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Leskie	D. Magnan	5/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Jose Dominguez	Fine Painting	3/30/07	X			
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	4/12/07	X			
	Jose Olaya	Fine Painting		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Electr	Christopher Adorna	S.M. Electric	7/1/07	X			
	Michael Alberta	S M Electric	3/11/08	X			
Elect	Frank Coppola	S.M. Electric	7/18/07	X	X		
Elect	Richard Duffy	S.M. Electric	10/26/07	X			
	John Griffiths	S.M. Electric	2/14/08	X			
	Steven Gage	S.M. Electric	3/7/07	X	X		
Elect	Paul Higgins	S.M. Electric	1/18/07	X	X		
	Mario Infozino	S.M. Electric	3/17/08	X			
	Stefan Lapadat	S.M. Electric	10/30/08				
	Tony Maalouf	S.M. Electric	1/21/08	X	X		
Elect	Michael Malkonian	S.M. Electric	3/11/07	X	X		
Elect	Joseph O' Connor	S.M. Electric	12/18/07	X			
	Edwin Palmer	S.M. Electric	12/30/08				
Elect	Robert Pereira	S.M. Electric	1/8/07	X	X		
	Lee Sherwood	S.M. Electric	3/4/08	X			
	Andres Velez	S.M. Electric	3/17/08	X			
Plumber	Anthony DeFinis	Zaborsky	4/2/07	X			
Plumber	Daniel Wiener	Zaborsky	4/2/07	X			
	John Dienl	Carstarphen Mech	5/7/07		X		
	Albert Gaynore	Carstarphen Mech	9/25/07		X		
	Oscar Moore	Carstarphen Mech	8/21/07	X	X		
	Eric Hernandez	Northeast	8/22/07	X			
	John Takacs	Northeast	6/27/07	X			
	Patrick Yodice	Northeast	1/24/08	X			
	Patrick Visconti	Northeast	3/31/08	X			
	Kurt Falk	Venture Electric	7/30/07	X			
	Anja Violante	Venture Electric	1/22/08	X			
	Anthony Danielson	Venture		X			
Fitter	Joseph Stanco	Monmouth Controls	9/27/07	X			
	Eric Grieb	Monmouth Controls	6/13/08	X			
	Kevin Vaughn	Monmouth Controls	1/17/09				
	Michael Gartnex	EEI	6/4/07	X			
	Gary Mozen	EEI	11/19/07	X			
	Michael Hawin	EEI	2/4/08	X			
	Shawn Spaziani	EEI	2/4/08	X			
	Fred Russo	EEI	9/28/07	X			
	Francis Kaufmann	EEI	8/20/08	X			
	Robert Appiegate	EEI	10/6/08				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
	Douglas [illegible]	EEI	10/6/08	X			
E	Scott Ritter	EEI (MCS)	5/7/07	X			
	Mark Tomas	EEI (MCS)	8/27/07	X			
	Ron Butler	EEI (MCS)	8/27/07	X			
E	Craig Harrigan	EEI (MCS)	5/7/07	X			
E	Tod McEvoy	EEI (MCS)	7/20/07	X			
E	Lee Melcher	EEI (MCS)	5/7/07	X			
	Richard Good	EEI (MCS)	9/12/07	X			
	William Fantasia	EEI (MCS)	12/12/07	X			
	Darrin Valente	EEI (MCS)	4/24/07	X			
	Carl Jorgensen	EEI (MCS)	4/24/07	X			
	Paul Schuck	EEI (MCS)		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carpt	Jim Parrotta	VRH	1/8/07			X	
Laborer	Edwin De Jesus	VRH	9/26/07	X			
	Keith Lovas	VRH	10/15/07	X		X	✓
	Anthony Andrade	VRH	12/18/07	X			✓
	Todd Parrotta	VRH	12/27/07			X	
	Gary Reuter	VRH	12/18/07			X	✓
	Salvatore Giordano	VRH	9/30/08	X			
	Dan Leaver	Pomptain Painting					
	Dennis Leaver	Pomptain Painting		X			
	Roger Stolte	Layout Inc.					
	Dave Woodward	Layout Inc.					
	Tim Carr	Layout Inc.	8/30/07	X			
Laborer	Edgar Cruz	Mazzocchi	2/6/07	X			
Laborer	Jose Duque	Mazzocchi	2/6/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/7/07	X			
Laborer	Edgar German	Mazzocchi	6/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Greco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/28/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/6/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	7/7/09				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Michael Benson	Uniquie Scaffolding	3/26/09				
	Sean Slavin	Uniquie Scaffolding	3/26/09				
	Vito Mongell	Amanda	9/14/07	X			
	Santos Sanchez	Amanda	9/14/07	X			
Mason	Nicholas Vitale	Amanda	1/27/08				
	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			
	Michael Muto	Papp Iron Works	3/24/09				
	Thomas Phillips	RCC			✓		✓
	Patrick Lawlor	RCC		X			

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	Kenny Carolyn	RCC		X			
	ALLAN FOX	RCC			X		✓
	Terrance Barry	McCann	1/7/07	X			
	Vincent Bellofatto	McCann	12/19/07	X			
	Joe DeAngelis	McCann	1/24/07	X			
	Joe LaTorre	McCann	11/28/07	X			
	Anthony Novello	McCann	11/28/07	X			
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Frank Corrao	McCann	3/26/09				
	Zygmunt Galazka	Par					
	Gabriel Quinones	Par					
	Pedro Alavarado	Par					
	Jaime Rivera	Par					
	Beatriz Lafebro	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nester Banda	Par					
	Gregory Tomasulo	Joslof Glass	2/27/07	X			
	Brian Cummings	Joslof Glass	5/7/08	X			
	Thomas DeMaio	Joslof Glass	5/4/08	X			
	Bob Ferraro	Joslof Glass		X			
	T. DeMaio	Joslof Glass					
	Gustavo Ramirez	Schnell	11/28/07				
	Anisetto Lazaro	Schnell	7/3/08				
	Pablo Veras	Schnell	7/9/07	X			
	Santiago Diaz	Schnell	4/24/08				
	Daniel Flores	Schnell		X			
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Bart Lesko	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Jose Dominguez	Fine Painting	3/30/07	X			
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
[illegible]	[illegible]	[illegible]	[illegible]	X			
	[illegible]ael Alberta	S.M. [illegible]	[illegible]	X			
[illegible]	[illegible] Cop[illegible]	[illegible]	[illegible]	X	X		
	[illegible]es Co[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
	Daniel Gribbin	[illegible]	[illegible]	X			
	[illegible] Gri[illegible]	[illegible]	[illegible]	X			
	Steven Gage	[illegible]	[illegible]	X	X		
Elec	Paul Higgins	[illegible]	[illegible]	X	X		
	[illegible]	[illegible]	[illegible]	X			
	Stefan Lapadat	[illegible]	[illegible]				
	[illegible]	[illegible]	[illegible]	X	X		
[illegible]	[illegible]	[illegible]	[illegible]	X	X		
	[illegible]	[illegible]	[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	X	X		
Elec	[illegible]oh O' Conn[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]				
Elec	Robert Periera	[illegible]	[illegible]	X	X		
	Lee Sherwood	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]		X		
	Albert Gay[illegible]	[illegible]Hardy Mech.	[illegible]		X		
	[illegible]	[illegible]	[illegible]	X	X		
	John Cuffe	Northeast	10/1[illegible]	X			
	Eric Hernandez	Northeast	8/2[illegible]	X			
	[illegible]eph M[illegible]	[illegible]	[illegible]	X			
	John Takacs	[illegible]east	[illegible]	X			
	Patrick Yodice	North[illegible]	[illegible]	X			
	[illegible]en Se[illegible]	[illegible]	[illegible]	X			
	Patrick Visconti	Northeast	[illegible]	X			
	Robert Sanchez	Northeast	[illegible]				
	[illegible]ist	[illegible]	[illegible]				
	Michael Gabriel	Ventur[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	Attila Vigil[illegible]	[illegible]	[illegible]	X			
	Anthony D[illegible]	[illegible]	[illegible]	X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carpt	Tim Perrotta	VRH	1/8/07			X	
Laborer	Edwin De Jesus	VRH	9/25/07	X			
	Keith Lovas	VRH	10/15/07	X		X	✓
	Anthony Andrade	VRH	2/18/07	X			✓
	Todd Ferrotta	VRH	[illegible]			X	
	Gary Reuter	VRH	2/10/07			X	✓
	Salvatore Giordano	VRH	5/27/08	X			
	Dan Leaver	Pompitain Painting					
	Dennis Leaver	Pompitain Painting		X			
	Roger Stolte	Layout Inc.					
	Dave Woodware	Layout Inc.					
	Tim Carr	Layout Inc.	8/30/07	X			
Laborer	Edgar Cruz	Mazzocchi	2/6/07	X			
Laborer	Jose Duque	Mazzocchi	2/9/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/7/07	X			
Laborer	Eddar Gelman	Mazzocchi	8/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Grecco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/26/07	X			
Laborer	Edward Robinson	Mazzocchi	9/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Michael Benson	Uniquie Scaffolding	3/26/09				
	Sean Slavin	Uniquie Scaffolding	3/26/09				
	Vito Mongelli	Amanda	9/14/07	X			
	Santos Sanchez	Amanda	9/17/07	X			
Mason	Nicholas Vitale	Amanda	12/22/08				
	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			
	Michael Muto	Papp Iron Works	3/24/09				
	Thomas Phelbin	RCC		✓	X		✓
	Patrick Lawlor	RCC		X			✓

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Kenny Carolyn	RCC		✓			
	ALAN FOX				✓		✓
	Terrance Barry	McCann	1/7/07	X			
	Vincent Bellofatto	McCann	12/18/07	X			
	Joe DeAngelis	McCann	1/24/07	X			
	Joe LaTorre	McCann	11/26/07	X			✓
	Anthony Novello	McCann	11/2/07	X			✓
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Frank Corrao	McCann	3/26/09				
	Zygmunt Galazka	Par					
	Gabriel Quinones	Par					
	Pedro Alavarado	Par					
	Jaime Rivera	Par					
	Beatriz Lefebre	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nester Banda	Par					
	Gregory Tomasula	Josloff Glass	12/27/07	X			
	Brian Cummings	Josloff Glass	8/2/08	X			
	Thomas DeMaio	Josloff Glass	8/4/08	X			
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass					
	Gustavo Ramirez	Schnell	11/28/07				
	Aniseto Lazaro	Schnell	3/3/08				
	Pablo Veras	Schnell	12/18/07	X			
	Santiago Diaz	Schnell	4/24/08				
	Daniel Flores	Schnell		X			
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Jose Dominguez	Fine Painting	3/30/07	X			✓
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
[illegible]	[illegible]	[illegible]	[illegible]	X			
	Michael Alberta	S.M. Electric	3/11/08	X			
[illegible]	[illegible]	[illegible]	[illegible]	X	X		
	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X	X		
Elect	[illegible]	[illegible]	[illegible]	X	X		
[illegible]	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]				
	[illegible]	[illegible]	[illegible]	X	X		
	[illegible]	[illegible]	[illegible]	X	X		
	[illegible]	[illegible]	[illegible]				
	[illegible]	[illegible]	[illegible]	X	X		
Elect	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]				
Elect	[illegible]	[illegible]	[illegible]	X	X		
	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]		X		
	Albert [illegible]	[illegible]	[illegible]		X		
	[illegible]	[illegible]	[illegible]	X	X		
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	Robert [illegible]	[illegible]	[illegible]				
	Kevin Thompson	[illegible]	[illegible]				
	Michael Ga[illegible]	[illegible]	[illegible]	X			
	Jim Falk Jr	[illegible]	[illegible]	X			
	Kurt Falk	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			

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Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carpt	Tim Perrotta	VRH	1/8/07			X	
Labor	Edwin De Jesus	VRH	9/28/07	X			✓
	Keith Novas	VRH	10/16/07	X		X	✓
	Anthony Andrade	VRH	12/18/07	X			✓
	Todd Perrotta	VRH	12/27/07			X	
	Gary Reuter	VRH	12/10/07			X	✓
	Salvatore Giordano	VRH	9/10/08	X			
	Dan Leaver	Pomptain Painting					
	Dennis Leaver	Pomptain Painting		X			
	Roger Stolte	Layout Inc					
	Dave Woodward	Layout Inc					
	Tim Carr	Layout Inc	9/20/07	X			
Laborer	Edgar Cruz	Mazzocchi	2/6/07	X			
Laborer	Jose Duque	Mazzocchi	2/6/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/7/07	X			
Laborer	Edgar German	Mazzocchi	5/23/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Grecco	Mazzocchi	2/8/07	X			
Laborer	Michael Pacion	Mazzocchi	2/28/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/9/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Socarras	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Michael Benson	Uniquie Scaffolding	3/26/09				
	Sean Slavin	Uniquie Scaffolding	3/26/09				
	Vito Morgelli	Amanda	9/14/07	X			
	Santos Sanchez	Amanda	9/17/07	X			
Mason	Nicholas Vitale	Amanda	2/22/08				
	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			
	Michael Muto	Papp Iron Works	3/24/09				
	THOMAS PITCELLI	RCC			X		✓
	Patrick Lawlor	RCC		X			✓
	ROBERT DEL PAOLI	RCC			X		✓

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Kenny Carolyn	HCC					
	Alan FOX	[illegible]			X		✓
	Terrance Barry	McCann	1/7/07	X			
	Vincent Bellofatto	McCann	12/18/07	X			
	Joe DeAngelis	McCann	1/24/07	X			
	Joe LaTorre	McCann	11/28/07	X			
	Anthony Novello	McCann	11/2/07	X			
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Frank Corrao	McCann	3/26/09				
	Zygmunt Gaczka	Par					
	Gabriel Quinonez	Par					
	Pedro Alavarado	Par					
	Jaime Rivera	Par					
	Beatriz Lefebre	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nester Barrio	Par					
	Gregory Tomasulo	Josloff Glass	2/27/07	X			
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	8/4/08	X			
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass					
	Gustavo Ramirez	Schnell	11/28/07				
	Anisoto Lazaro	Schnell	3/3/08				
	Pablo Veras	Schnell	7/9/07	X			
	Santiago Diaz	Schnell	4/24/08				
	Daniel Flores	Schnell		X			
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Jose Dominguez	Fine Painting	3/30/07	X			
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			

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Elect	Christopher Agorna	S.M. Electric	7/16/07	X			—
	Michael Alberta	S.M. Electric	3/14/08	X			—
Elect	Frank Coppola	S.M. Electric	7/16/07	X	X		—
Elect	Richard Daly	S.M. Electric	10/26/07	X			—
	John Griffiths	S.M. Electric	2/14/08	X			
	Steven Gage	S.M. Electric	3/ /07	X	X		—
Elect.	Paul Higgins	S.M. Electric	1/18/07	X	X		—
	Marc Infazino	S.M. Electric	3/12/08	X			
	Stefan Lapacat	S.M. Electric	10/30/08				—
	Tony Maalouf	S.M. Electric	1/21/08	X	X		—
Elect	Michael Melkonian	S.M. Electric	9/11/07	X	X		—
Elect	Joseph O' Connor	S.M. Electric	12/19/07	X			
	Edwin Palmer	S.M. Electric	12/50/08				
Elect.	Robert Pereira	S.M. Electric	1/8/07	X	X		—
	Lee Sherwood	S.M. Electric	3/4/08	X			—
	Andres Velez	S.M. Electric	3/17/08	X			—
Plumber	Anthony DeFinis	Zabransky	4/2/07	X			
Plumber	Daniel Wiener	Zabransky	4/2/07	X			
	John Dient	Carr Hardy Mech	5/7/07		X		
	Albert Gavrone	Carr Hardy Mech	9/25/07		X		
	Oscar Mosqueda	Carr Hardy Mech	9/21/07	X	X		
	Eric Hernandez	Northeast	8/22/07	X			
	John Takacs	Northeast	6/27/07	X			—
	Patrick Yodice	Northeast	1/24/08	X			—
	Patrick Visconti	Northeast	3/31/08	X			
	Kurt Falk	Venture Electric	7/30/07	X			
	Atola Mellarite	Venture Electric	11/23/08	X			
	Anthony Danielson	Metro		X			
Fitter	Joseph Stanio	Monmouth Controls	8/27/07	X			
	Eric Grieb	Monmouth Controls	6/15/08	X			
	Kenny Vaughn	Monmouth Controls	11/17/08				
	Michael Gaffney	EEI	6/4/07	X			
	Gary Molzen	EEI	11/19/07	X			
	Michael Hawtin	EEI	2/4/06	X			
	Shayne Spaziani	EEI	2/4/08	X			
	Fred Russo	EEI	8/23/07	X			
	Frank Kaufmann	EEI	8/20/08	X			
	Robert Applegate	EEI	10/6/08				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
	Douglas Dan Solo	EEI	10/6/08	X			
E	Scott Ritter	EEI (MCS)	5/7/07	X			
	Mark Times	EEI (MCS)	5/27/07	X			
	Ron Butler	EEI (MCS)	5/27/07	X			
E	Craig Garrigan	EEI (MCS)	5/7/07	X			
E	Tod McEvoy	EEI (MCS)	5/30/07	X			
E	Lee Menikoff	EEI (MCS)	5/7/07	X			
	Richard Goss	EEI (MCS)	5/12/07	X			
	William Fantasia	EEI (MCS)	5/12/07	X			
	Darrin Valente	EEI (MCS)	4/24/07	X			
	Carl Jorgensen	EEI (MCS)	4/24/07	X			
	Paul Schuck	EEI (MCS)		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carpt	Tim Perrotta	VRH	1/8/07			X	
Laborer	Lowin De Jesus	VRH	9/26/07	X			✓
	Keith Lovas	VRH	10/15/07	X		X	✓
	Anthony Andrade	VRH	12/13/07	X			✓
	Todd Perrotta	VRH	12/27/07			X	
	Gary Reuter	VRH	12/13/07			X	✓
	Salvatore Giordano	VRH	9/30/08	X			
	Dan Leaver	Pomptain Painting					
	Dennis Leaver	Pomptain Painting		X			
	Roger Stolte	Layout Inc					
	Dave Woodward	Layout Inc					
	Tim Carr	Layout Inc	8/30/07	X			
Laborer	Edgar Cruz	Mazzocchi	2/8/07	X			
Laborer	Jose Duque	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/7/07	X			
Laborer	Edgar Gechan	Mazzocchi	6/25/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Gre	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/8/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Michael Benson	Uniquie Scaffolding	3/26/09				
	Sean Slavin	Uniquie Scaffolding	3/26/09				
	Vito Mongelli	Amanda	9/14/07	X			
	Santos Sanchez	Amanda	9/17/07	X			
Mason	Nicholas Vitale	Amanda	12/22/08				
	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			
	Michael Muto	Papp Iron Works	3/24/09				
	Allen Fox	RCC			✓		✓
	Patrick Lawlor	RCC		X			✓
	Robert Del Paoli	RCC			✓		✓

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Kenny Carolyn	RCC					
	Thomas Phillips	RCC			✓		✓
	Terrance Barry	McCann	1/7/07	X			
	Vincent Bellofatto	McCann	12/13/07	X			
	Joe DeNicolis	McCann	1/24/07	X			
	Joe LaTorre	McCann	11/26/07	X			
	Anthony Novello	McCann	1/22/07	X			
	Paul Kensek	McCann	3/[illegible]/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Frank Corrao	McCann	3/[illegible]/08				
	Zygmunt Galazka	Par					
	Gabriel Quinones	Par					
	Pedro Alavarado	Par					
	Jaime Rivera	Par					
	Beatriz Lefebre	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nester Barrida	Par					
	Gregory Tomasula	Josloff Glass	3/2/07	X			
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	3/4/08	X			
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass					
	Gustavo Ramirez	Schnell	11/26/07				
	Aniseto Lazaro	Schnell	3/7/08				
	Pablo Veras	Schnell	7/5/07	X			
	Santiago Diaz	Schnell	4/14/08				
	Daniel Flores	Schnell		X			
	DAVID KRIVAC	PENINSULA			✓		✓
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Jose Dominguez	Fine Painting	3/30/07	X			
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Elect.	Christopher Ad[illegible]	S.M. Electric	7/[illegible]/07	X			✓
	Michael Alberta	S.M. Electric	3/11/08	X			✓
Elect.	Frank Cappola	S.M. Electric	7/16/07	X	X		✓
Elect.	Richard Crify	S.M. Electric	10/26/07	X			✓
	John Griffiths	S.M. Electric	2/14/08	X			✓
	Steven Gage	S.M. Electric	3/7/07	X	X		✓
Elect.	Paul Higgins	S.M. Electric	1/15/07	X	X		✓
	Mauro Mozzi	S.M. Electric	3/17/08	X			✓
	Stefan Lopardet	S.M. Electric	10/30/08				
	Tony Maalouf	S.M. Electric	1/21/08	X	X		✓
Elect.	Michael Melkonian	S.M. Electric	9/11/07	X	X		✓
Elect.	Joseph O'Connor	S.M. Electric	12/19/07	X			✓
	Edwin Parmenter	S.M. Electric	12/30/08				
Elect.	Robert Pereira	S.M. Electric	1/8/07	X	X		✓
	Lee Shenwood	S.M. Electric	3/4/08	X			✓
	Andres Velez	S.M. Electric	3/17/08	X			✓
Plumber	Anthony DeFr[illegible]	Zubrensky	4/2/07	X			
Plumber	Daniel Wiene[illegible]	Zubrensky	4/2/07	X			
	John Drah[illegible]	Carol Hardy Mech.	5/7/07		X		✓
	Albert Gaynor	Carol Hardy Mech.	5/25/[illegible]		X		✓
	Oscar Moore	Carol Hardy Mech.	5/21/07	X	X		✓
	Eric Hernandez	Northeast	8/22/07	X			
	John Takacs	Northeast	6/27/07	X			
	Patrick Yodice	Northeast	1/24/08	X			—
	Patrick Visconti	Northeast	3/31/08	X			—
	Kurt Falk	Ventura Electric	7/30/07	X			
	Stella Vigliotte	Ventura Electric	1/22/08	X			
	Anthony Danielson	Mech.		X			
Fitter	Joseph Stan[illegible]	Monmouth Controls	8/27/07	X			
	Eric Grieb[illegible]	Monmouth Controls	8/17/08	X			
	Kevin Vaughn	Monmouth Controls	11/17/08				
	Michael Gaffney	EEI	6/4/07	X			
	Gary Molzen	EEI	11/13/07	X			
	Michael Hawtin	EEI	2/4/08	X			
	Shayne Spazzani	EEI	2/4/08	X			
	Fred Russo	EEI	8/28/07	X			
	Francis Kaufmann	EEI	8/28/08	X			
	Robert Applegate	EEI	10/6/08				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
	Douglas Demico	EEI	10/5/08	X			
E	Scott Ritter	EEI (MCS)	5/7/07	X			
	Mark Titma	EEI (MCS)	8/27/07	X			
	Ron Butler	EEI (MCS)	8/27/07	X			
E	Craig Harrigan	EEI (MCS)	5/7/07	X			
E	Tod McEvoy	EEI (MCS)	7/25/07	X			
E	Jeff Telnikoff	EEI (MCS)	5/7/07	X			
	Richard Good	EEI (MCS)	8/12/07	X			
	William Fantasia	EEI (MCS)	12/12/07	X			
	Darrin Valente	EEI (MCS)	4/24/07	X			
	Carl Jorgensen	EEI (MCS)	4/24/07	X			
	Paul Schuck	EEI (MCS)		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Elect	Christopher Adurni	S.M. Electric	7/16/07	X			✓
	Michael Alberta	S.M. Electric	3/11/08	X			✓
Elect	Frank Coppola	S.M. Electric	7/16/07	X	X		✓
Elect	Richard Duffy	S.M. Electric	10/26/07	X			✓
	John Griffiths	S.M. Electric	2/14/08	X			✓
	Steven Gugg	S.M. Electric	[illegible]	X	X		✓
Elect	Paul Higgins	S.M. Electric	7/16/07	X	X		✓
	Marc Infozino	S.M. Electric	3/17/08	X			✓
	Stefan Lapadat	S.M. Electric	10/3/08				✓
	Tony Maalouf	S.M. Electric	1/21/08	X	X		✓
Elect	Michael Melkonian	S.M. Electric	5/11/07	X	X		✓
Elect	Joseph O'Connor	S.M. Electric	12/13/07	X			✓
	Edwin Palmer	S.M. Electric	12/30/08				✓
Elect	Robert Pirrera	S.M. Electric	1/8/07	X	X		✓
	Lee Sherwood	S.M. Electric	3/4/08	X			✓
	Andres Velez	S.M. Electric	3/17/08	X			✓
Plumber	Anthony DeFino	Zabransky	4/2/07	X			
Plumber	Daniel Wiener	Zabransky	4/2/07	X			
	John Diehl	Curci Hardy Mech.	4/5/07		X		
	Albert Galvano	Curci Hardy Mech.	9/25/07		X		
	Oscar Moore	Curci Hardy Mech.	9/21/07	X	X		
	Eric Hernandez	Northeast	8/22/07	X			✓
	John Takacs	Northeast	6/27/07	X			✓
	Patrick Yodice	Northeast	1/24/08	X			
	Patrick Visconti	Northeast	3/31/08	X			
	Kurt Falk	Venture Electric	7/30/07	X			
	Attila Vigilante	Venture Electric	1/22/08	X			
	Anthony Danielson	Metro		X			
Fitter	Joseph Stanio	Monmouth Controls	8/27/07	X			
	Eric Grieb	Monmouth Controls	6/17/08	X			
	Kevin Vaughn	Monmouth Controls	11/17/08				
	Michael Gaffney	EEI	6/4/07	X			✓
	Gary Molzen	EEI	11/19/07	X			✓
	Michael Hawtin	EEI	2/4/08	X			✓
	Shayne Spaziani	EEI	2/4/08	X			✓
	Fred Russo	EEI	8/28/07	X			✓
	Francis Kaufmann	EEI	8/20/08	X			✓
	Robert Applegate	EEI	10/6/08				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
	Douglas Domicolo	EE[illegible]	10/6/08	X			
E	Scott Ritter	EEI (MCS)	5/7/07	X			
	Mark Titmas	EEI (MCS)	[illegible]/07	X			
	Ron Butler	EEI (MCS)	9/27/07	X			
E	Craig Harrigan	EEI (MCS)	5/7/07	X			
F	Tod McEvoy	EEI (MCS)	7/20/07	X			
E	Joe Melnick	EEI (MCS)	5/7/07	X			
	Richard Good	EEI (MCS)	9/12/07	X			
	William Fantasia	EEI (MCS)	12/12/07	X			
	Darrin Valente	EEI (MCS)	4/24/[illegible]	X			
	Carl Jorgensen	EEI (MCS)	4/24/07	X			
	Paul Schuck	EEI (MCS)		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carpt	Tim Perrotta	VRH	1/8/07			X	
Laborer	Edwin De Jesus	VRH	9/28/07	X			✓
	Keith LoVasco	VRH	10/15/07	X		X	✓
	Anthony Andrade	VRH	12/18/07	X			✓
	Todd Perrotta	VRH	12/27/07			X	
	Gary Reuter	VRH	12/10/07			X	✓
	Salvatore Giordano	VRH	9/30/09	X			
	Dan Leaver	Pompitain Painting					
	Dennis Leaver	Pompitain Painting		x			
	Roger Stolte	Layout Inc.					
	Dave Woodward	Layout Inc.					
	Tim Carr	Layout Inc.	8/30/07	X			
Laborer	Edgar Cruz	Mazzocchi	2/8/07	X			
Laborer	Jose Duque	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/7/07	X			
Laborer	Edgar German	Mazzocchi	6/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Greco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/28/07	X			
Laborer	Edward Robinson	Mazzocchi	2/8/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Solano	Mazzocchi	7/7/06				
Laborer	Michael Turner	Mazzocchi	1/13/06				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Michael Benson	Uniquie Scaffolding	3/26/09				
	Sean Slavin	Uniquie Scaffolding	3/26/09				
	Vito Mongelli	Amanda	9/14/07	X			✓
	Santos Sanchez	Amanda	9/17/07	X			✓
Mason	Nicholas Viale	Amanda	12/22/08				
	DAVID KRUSE	PORTAL			✓		✓
	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			
	Michael Muto	Papp Iron Works	3/24/09				
	ROBERT DEL PAOLI	RCC			✓	—	✓
	Patrick Lawlor	RCC		X			
	ALLAN FOX	RCC			✓		✓

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Kenny Carolyn	RCC					
	Thomas Phillips	RCC					
	Terrance Barry	McCann	1/7/07	X			
	Vincent Bellofatto	McCann	12/18/07	X			
	Joe DeAngelis	McCann	1/24/07	X			
	Joe LaTorre	McCann	11/26/07	X			
	Anthony Novello	McCann	11/2/07	X			
	Paul Kensek	McCann	3/10/08	X			
	Craig Hunt Binney	McCann	3/10/08	X			
	Frank Corrao	McCann	3/26/09				
	Zygmunt Galacka	Par					
	Gabriel Quinones	Par					
	Pedro Alavarado	Par					
	Jaime Rivera	Par					
	Beatriz Lefebre	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nester Banda	Par					
	Gregory Tomasula	Josloff Glass	2/27/07	X			
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	8/4/08	X			
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass					
	Gustavo Ramirez	Schnell	11/26/07				
	Aniseto Lazaro	Schnell	3/3/08				
	Pablo Veras	Schnell	7/9/07	X			
	Santiago Diaz	Schnell	4/24/08				
	Daniel Flores	Schnell		X			
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Jose Dominguez	Fine Painting	3/30/07	X			
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carpi	Tim Ferrotta	VRH	1/8/07			X	
Laborer	Edwin De Jesus	VRH	9/28/07	X			✓
	Keith Lovas	VRH	10/15/07	X		X	✓
	Anthony Andrade	VRH	12/18/07	X			✓
	Fred Ferrotta	VRH	12/27/07			X	
	Gary Reuter	VRH	12/10/07			X	✓
	Salvatore Lapolla	VRH	9/20/08	X			
	Dan Leaver	Pompetain Painting					
	Dennis Leaver	Pompetain Painting		X			
	Roger Stone	Layout Inc.					
	Dave Woodward	Layout Inc.					
	Tim Carr	Layout Inc.	8/30/07	X			
Laborer	Edgar Cruz	Mazzocchi	2/6/07	X			
Laborer	Jose Duque	Mazzocchi	2/3/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/7/07	X			
Laborer	Edgar German	Mazzocchi	6/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Gr[illegible]	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/28/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Sanchez	Mazzocchi	2/8/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Soriano	Mazzocchi	7/7/08				
Laborer	Michael Tu[illegible]	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Michael Benson	Uniquie Scaffolding	3/26/09				
	Sean Slavin	Uniquie Scaffolding	3/26/09				
	Vito Mongelli	Amanda	9/14/07	X			✓
	Santos Sanchez	Amanda	9/17/07	X			✓
Mason	Nicholas Vitale	Amanda	12/22/08				
	David Krivac	Pe[illegible]			✓		✓
	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			
	Michael Muto	Papp Iron Works	3/24/09				
	Robert De Paoli	RCC			✓	—	✓
	Patrick Lawlor	RCC		X			
	Allan Fox	RCC			✓		✓

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	Kenny Carolin	RCC					
	Thomas Paul Sin	RCC					
	Terrance Barry	McCann	1/7/07	X			
	Vincent Bellofatto	McCann	12/18/07	X			
	Joe DeAngelis	McCann	1/24/07	X			
	Joe LaTorre	McCann	11/26/07	X			
	Anthony Novello	McCann	11/2/07	X			
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Frank Corrao	McCann	3/25/08				
	Zygmunt Galazka	Par					
	Gabriel Quinones	Par					
	Pedro Alevarado	Par					
	Carlos Rivera	Par					
	Beatriz Lefebre	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nester Banda	Par					
	Gregory Tomasula	Josloff Glass	2/27/07	X			
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas De Maio	Josloff Glass	5/4/08	X			
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass					
	Gustavo Ramirez	Schnell	11/28/07				
	Aniseto Lazaro	Schnell	3/3/08				
	Pablo Veras	Schnell	7/9/07	X			
	Santiago Diaz	Schnell	4/24/08				
	Daniel Flores	Schnell		X			
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Jose Dominguez	Fine Painting	3/30/07	X			
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			

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Frank Roberto
Robert Frank
Robert Power

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Elect.	Christopher Adorna	S.M. Electric	7/16/07	X			
	Michael Alberta	S.M. Electric	3/11/08	X			
Elect.	Frank Coppola	S.M. Electric	7/16/07	X	X		
Elect.	Richard Duffy	S.M. Electric	10/26/07	X			
	John Griffiths	S.M. Electric	2/14/08	X			
	Steven Gage	S.M. Electric	3/7/07	X	X		
Elect.	Paul Higgins	S.M. Electric	1/18/07	X	X		
	Mario Infazino	S.M. Electric	3/17/08	X			
	Stefan Lapadat	S.M. Electric	12/30/08				
Elect.	Tony Mazzeo	S.M. Electric	1/27/08	X	X		
Elect.	Michael Mefka	S.M. Electric	3/10/07	X	X		
Elect.	Joseph O' Connor	S.M. Electric	12/19/07	X			
	Edwin Palmer	S.M. Electric	12/30/08				
Elect.	Robert Periera	S.M. Electric	1/8/07	X	X		
	Lee Sherwood	S.M. Electric	3/4/08	X			
	Andres Velez	S.M. Electric	3/17/08	X			
Plumber	Anthony DeFi	Zebrowsky	4/2/07	X			
Plumber	Daniel Mere	Zebrowsky	4/2/07	X			
	John Diehl	Carol Hardy Masonry	5/7/07		X		
	Albert Gaynore	Carol Hardy Masonry	9/25/07		X		
	Oscar Moore	Carol Hardy Masonry	9/21/07	X	X		
	Eric Hernandez	Northeast	8/22/07	X			
	John Takacs	Northeast	6/27/07	X			
	Patrick Yodice	Northeast	1/24/08	X			
	Patrick Visconti	Northeast	3/31/08	X			
	Kurt Falk	Venture Electric	7/30/07	X			
	Atila Veliladi	Venture Electric	2/2/08	X			
	Anthony Danielson	Mercury		X			
Fitter	Joseph Stanic	Monmouth Controls	8/2/07	X			
	Eric Gilch	Monmouth Controls	6/17/08	X			
	Kevin Vaughn	Monmouth Controls	11/17/08				
	Michael Gaffney	EEI	6/4/07	X			
	Gary Molzen	EEI	11/19/07	X			
	Michael Hawtin	EEI	2/4/08	X			
	Shayne Spaziani	EEI	2/4/08	X			
	Fred Russo	EEI	8/28/07	X			
	Francis Kaufmann	EEI	8/20/08	X			
	Robert Applegate	EEI	10/6/08				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
	Douglas Domicolo	EEI	12/3/06	X			
E	Scott Ritter	EEI (MCS)	5/7/07	X			—
	Mark Tomas	EEI (MCS)	3/27/07	X			
	Ron Butler	EEI (MCS)	9/27/07	X			
E	Craig Hansen	EEI (MCS)	5/7/07	X			—
E	Tod McEvoy	EEI (MCS)	7/20/07	X			
E	Lee Merillot	EEI (MCS)	5/7/07	X			
	Richard Goss	EEI (MCS)	8/12/07	X			
	William Fantasi	EEI (MCS)	12/12/07	X			
	Darrin Valente	EEI (MCS)	4/24/07	X			
	Carl Jorgensen	EEI (MCS)	4/24/07	X			
	Paul Schuck	EEI (MCS)		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Labor	Angelo Tramutola	VRH	2/8/07	X		X	
Carpt.	Tim Carroll	VRH	1/8/07			X	
Laborer	Edwin De Jesus	VRH	9/26/07	X			✓
	Keith Lovas	VRH	10/15/07	X		X	✓
	Anthony Arcidiade	VRH	12/18/07	X			✓
	Tonio Perrotta	VRH	12/27/07			X	
	Gary Reuter	VRH	12/10/07			X	✓
	Salvatore Ferraro	VRH	[illegible]	X			
	Dan Leaver	Pompton Painting					
	Dennis Leaver	Pompton Painting		X			
	Roger Stolle	Layout Inc.					
	Dave Wonsowski	Layout Inc.					
	Tim Carr	Layout Inc.	8/30/07	X			
Laborer	Edgar Cruz	Mazzocchi	2/6/07	X			
Laborer	Jose Duque	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/[illegible]	X			
Laborer	Edgar German	Mazzocchi	6/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Greco	Mazzocchi	12/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/28/07	X			
Laborer	Edward Robinson	Mazzocchi	2/28/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Michael Benson	Uniquie Scaffolding	3/26/09				
	Sean Slavin	Uniquie Scaffolding	3/26/09				
	Vito Mongelli	Amanda	9/14/07	X			
	Santos Sanchez	Amanda	9/17/07	X			
Mason	Nicholas Vitale	Amanda	12/22/08				
	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			
	Michael Muto	Papp Iron Works	3/24/09				
	DAVID KRIVAC	PENHAM			X		✓
	Patrick Lawlor	RCC		X			✓

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Kenny Carolyn	RCC		X			✓
	Terrance Barry	McCann	1/7/07	X			
	Vincent Bellofatto	McCann	12/18/07	X			
	Joe DeAngelis	McCann	1/24/07	X			
	Joe LaTorre	McCann	11/26/07	X			
	Anthony Novello	McCann	11/2/07	X			
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Frank Corrao	McCann	8/26/08				
	Zygmunt Galazka	Par					
	Gabriel Quinones	Par					
	Pedro Alavarado	Par					
	Jaime Rivera	Par					
	Beatriz Lefebre	Par					
	Segundo Alvarado	Par					
	Mario Maverde	Par					
	Nester Banda	Par					
	Gregory Tomasula	Josloff Glass	2/27/07	X			
	Brian Cummings	Josloff Glass	9/2/06	X			
	Thomas DeMaio	Josloff Glass	9/4/08	X			
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass					
	Gustavo Ramirez	Schnell	11/28/07				
	Aniseto Lazaro	Schnell	3/3/08				
	Pablo Veras	Schnell	7/9/0	X			
	Santiago Diaz	Schnell	1/24/0				
	Daniel Flores	Schnell		X			
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/0	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Jose Dominguez	Fine Painting	3/30/07	X			
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Elect	Christopher Acorna	S.M. Electric	7/16/07	X			
	Michael Alberta	S.M. Electric	3/11/08	X			
Elect	Frank Coppola	S.M. Electric	7/16/07	X	X		
Elect	Richard Duffy	S.M. Electric	10/26/07	X			
	John Griffiths	S.M. Electric	2/14/08	X			
	Steven Gage	S.M. Electric	[illegible]	X	X		
Elect	Paul Higgins	S.M. Electric	1/18/07	X	X		
	Marc Infazino	S.M. Electric	3/17/08	X			
	Stefan Lapadat	S.M. Electric	10/30/08				
	Tony Maiaou	S.M. Electric	1/21/08	X	X		
Elect	Michael Melkonian	S.M. Electric	9/17/07	X	X		
Elect	Joseph D. Cannon	S.M. Electric	12/13/07	X			
	Edwin Palmer	S.M. Electric	12/30/08				
Elect	Robert Pereira	S.M. Electric	1/5/07	X	X		
	Lee Sherwood	S.M. Electric	3/4/09	X			
	Andres Velez	S.M. Electric	3/17/08	X			
Plumber	Anthony DeFinis	Zebransky	4/2/07	X			
Plumber	Daniel Wisner	Zebransky	4/2/07	X			
	John Diet	Carol Hardy Mech	5/2/07		X		
	Albert Gaynor	Carol Hardy Mech	9/25/07		X		
	Oscar Moore	Carol Hardy Mech	9/27/07	X	X		
	Eric Hernandez	Northeast	8/22/07	X			
	John Takacs	Northeast	6/27/07	X			
	Patrick Yodice	Northeast	1/24/08	X			
	Patrick Visconti	Northeast	3/31/08	X			
	Kurt Falk	Venture Electric	7/30/07	X			
	Nella Vigliante	Venture Electric	1/22/08	X			
	Anthony Danielson	[illegible]		X			
Fire	Joseph Stano	Monmouth Controls	8/2/07	X			
	Eric Gries	Monmouth Controls	8/17/08	X			
	Kevin Vaughn	Monmouth Controls	11/17/08				
	Michael Gaffney	EEI	8/24/07	X			
	Gary Molzen	EEI	11/19/07	X			
	Michael Hawtin	EEI	2/4/08	X			
	Sabino Spaziani	EEI	2/4/08	X			
	Fred Russo	EEI	8/29/07	X			
	Francis Kaufmann	EEI	8/22/08	X			
	Robert Applegate	EEI	10/6/08				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
	Douglas Domi[illegible]	EEI	10/5/08	X			
E	Scott Ritter	EEI (MCS)	[illegible]	X			
	Mark [illegible]	EEI (MCS)	8/27/07	X			
	Ron Butler	EEI (MCS)	8/27/07	X			
E	Craig Harrigan	EEI (MCS)	5/7/07	X			
E	Tod McEvoy	EEI (MCS)	7/23/07	X			
E	Lee Merrick	EEI (MCS)	5/7/07	X			
	Richard Go[illegible]	EEI (MCS)	9/12/07	X			
	William Ca[illegible]asia	EEI (MCS)	12/13/07	X			
	Darrin Valente	EEI (MCS)	4/24/07	X			
	Carl Jorgensen	EEI (MCS)	4/24/07	X			
	Paul Schuck	EEI (MCS)		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Kenny Carolyn	RCC					
	Terrance Barry	McCann	1/7/07	X			
	Vincent Bellofatto	McCann	12/18/07	X			
	Joe DeAngelis	McCann	1/24/07	X			
	Joe LaTorre	McCann	11/26/07	X			
	Anthony Novello	McCann	11/2/07	X			
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Frank Corrao	McCann	3/26/09				
	Zygmunt Galazka	Par					
	Gabriel Quinones	Par					
	Pedro Alavarado	Par					
	Jaime Rivera	Par					
	Beatriz Lefebre	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nestor Bando	Par					
	Gregory Tomasula	Josloff Glass	2/27/07	X			
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	8/19/08	X			
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass					
	Gustavo Ramirez	Schnell	11/28/07				
	Ariseto Lazaro	Schnell	3/3/08				
	Pablo Veras	Schnell	7/9/07	X			
	Santiago Diaz	Schnell	4/24/08				
	Daniel Flores	Schnell		X			
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Jose Dominguez	Fine Painting	3/30/07	X			
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Antonio Fraga	Fine Painting	11/3/08	X			
	Jacek Czernik	Signs & Decals	5/6/08	X		X	
	Jorge Alvarez	Signs & Decals	5/6/08				
	Jaime Castillo	Signs & Decals					
	Sean Murray	Thyssen Krupp	6/16/08	X			
	Frankie DeGirolamo	Thyssen Krupp	7/7/08				
	Danny Vitale	Thyssen Krupp	7/11/08				
	Nick Comodo	Thyssen Krupp	7/9/08				
	Seymour Debono	Thyssen Krupp	2/24/09				
	Robert Goodfellow	Thyssen Krupp	2/24/09				
	PAUL MEDWAY JR.	PANETTA		X			✓
	ROCKY PANETTA	"		X			✓
	JOE ANETS	"		X			✓
	Damian Pontarese	"		X			✓
	JOE PANETTA	"		X			✓

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Elect	Christopher Adorna	S.M. Electric	7/16/07	X			
	Michael Albert	S.M. Electric	3/11/08	X			
Elect.	Frank Coppola	S.M. Electric	7/16/07	X	X		
Elect.	Richard Duffy	S.M. Electric	10/26/07	X			
	John Griffiths	S.M. Electric	2/14/08	X			
	Steven Gage	S.M. Electric	3/7/07	X	X		
Elect.	Paul Higgins	S.M. Electric	1/13/07	X	X		
	Marc Infozino	S.M. Electric	3/19/08	X			
	Stefan Lanadac	S.M. Electric	10/30/08				
	Tony Maalouf	S.M. Electric	1/21/08	X	X		
Elect.	Michael Melkonian	S.M. Electric	9/13/07	X	X		
Elect.	Joseph O' Connor	S.M. Electric	12/19/07	X			
	Edwin Palmer	S.M. Electric	12/30/08				
Elect.	Robert Perier	S.M. Electric	7/6/07	X	X		
	Lee Sherwood	S.M. Electric	3/4/08	X			
	Andres Valez	S.M. Electric	3/17/08	X			
Plumber	Anthony DeFino	Zablansky	4/2/07	X			
Plumber	Daniel Werner	Zablansky	4/2/07	X			
	Jason Blegi	Carol Hardy Mech	5/2/07		X		
	Albert Gaynor	Carol Hardy Mech	9/25/07		X		
	Oscar Moore	Carol Hardy Mech	9/21/07	X	X		
	Eric Hernandez	Northeast	8/22/07	X			
	John Takacs	Northeast	6/27/07	X			
	Patrick Yodice	Northeast	1/24/08	X			
	Patrick Visconti	Northeast	3/31/08	X			
	Kurt Falk	Venture Electric	7/30/07	X			
	Attila Williams	Venture Electric	1/22/08	X			
	Anthony Danielson	Mure		X			
Fitter	Joseph Grant	Monmouth Controls	9/4/07	X			
	Eric Grieb	Monmouth Controls	6/17/08	X			
	Kevin Murphy	Monmouth Controls	11/17/08				
	Michael Gartney	EEI	3/4/07	X			
	Sean Minzen	EEI	[illegible]	X			
	Michael Hayes	EEI	3/4/08	X			
	Shayne Sciuzioni	EEI	3/4/08	X			
	Fred Russo	EEI	8/28/07	X			
	Francis Kaufmann	EEI	8/20/08	X			
	Robert Applegate	EEI	10/6/08				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
	Douglas Domicolo	EEI	10/5/08	X			
E	Scott Ritter	EEI (MCS)	5/7/07	X			—
	Mark Tilmas	EEI (MCS)	9/27/07	X			
	Ron Butler	EEI (MCS)	9/27/07	X			
E	Craig Harrigar	EEI (MCS)	5/7/07	X			
E	Tod McEvoy	EEI (MCS)	9/20/07	X			
E	Lee M[illegible]	EEI (MCS)	5/7/07	X			
	Richard Good	EEI (MCS)	9/12/07	X			
	William Fantasia	EEI (MCS)	12/12/07	X			
	Darrin Valente	EEI (MCS)	4/24/07	X			
	Carl Jorgensen	EEI (MCS)	1/24/08	X			
	Paul Schuck	EEI (MCS)		X			

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Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carpt	Tim Perrotta	VRH	1/8/07			X	
Laborer	Edwin De Jesus	VRH	8/2/07	X			✓
	Keith Loves	VRH	10/15/07	X		X	✓
	Anthony Andrade	VRH	12/18/07	X			✓
	Todd Perrotta	VRH	12/27/07			X	
	Gary Reuter	VRH	12/10/07			X	✓
	Salvatore Giordano	VRH	9/30/08	X			
	Dan Leaver	Pernstein Painting					
	Dennis Leaver	Pernstein Painting		X			
	Roger Stolte	Layout Inc					
	Dave Woodward	Layout Inc					
	Tim Carr	Layout Inc	8/30/07	X			
Laborer	Edgar Cruz	Mazzocchi	2/8/07	X			
Laborer	José Duque	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/7/07	X			
Laborer	Edgar Germac	Mazzocchi	6/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Greco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/7/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/0	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sanchelli	Mazzocchi	2/3/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Michael Benson	Uniquie Scaffolding	3/26/09				
	Sean Slavin	Uniquie Scaffolding	3/26/09				
	Vito Mongelli	Amanda	9/14/07	X			✓
	Santos Sanchez	Amanda	9/17/07	X			✓
Mason	Nicholas Vitale	Amanda	12/22/08				✓
	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			
	Michael Muto	Papp Iron Works	3/24/09				
	Patrick Lawlor	RCC		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Kenny Carolan	RCC					
	Terance Barry	McCann	1/7/07	X			
	Vincent Bellofatto	McCann	12/18/07	X			
	Joe DeAngelis	McCann	1/24/07	X			
	Joe LaTorre	McCann	11/26/07	X			
	Anthony Novello	McCann	11/2/07	X			
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Frank Corrao	McCann	3/26/09				
	Zygmunt Galazka	Par					
	Gabriel Quinones	Par					
	Pedro Alavarado	Par					
	Jaime Rivera	Par					
	Beatriz Lefebre	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nester Bandi	Par					
	Gregory Tomasula	Josloff Glass	12/27/07	X			
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	8/4/08	X			
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass					
	Gustavo Ramirez	Schnell	11/28/07				
	Aniseto Lazaro	Schnell	3/3/08				
	Pablo Veras	Schnell	7/9/07	X			
	Santiago Diaz	Schnell	4/24/08				
	Daniel Flores	Schnell		X			
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Jose Dominguez	Fine Painting	3/30/07	X			
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Antonio Fraga	Fine Painting	11/3/08	X			
	Jacek Czernik	Signs & Decals	5/6/08	X		X	
	Jorge Alvarez	Signs & Decals	5/6/08				
	Jaime Castillo	Signs & Decals					
	Sean Murray	Thyssen Krupp	6/16/08	X			
	Frankie DeGirolamo	Thyssen Krupp	7/7/08				
	Danny Vitale	Thyssen Krupp	7/11/08				
	Nick Comodo	Thyssen Krupp	7/3/08				
	Savour Debono	Thyssen Krupp	2/24/09				
	Robert Goodfellow	Thyssen Krupp	2/24/09				
	PAUL MEDWAY JR.	PANETTA		X			✓
	ROCKY PANETTA	"		X			✓
	JOE ANETS	"		X			✓
	DAMIEN	"		X			✓
	JOE PANETTA	"		X			✓

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Elect	Christopher Adorna	S.M. Electric	7/16/07	X			X
	Michael Alberta	S.M. Electric	3/11/08	X			
Elect	Frank Coppola	S.M. Electric	7/16/07	X	X		X
Elect	Richard Duffy	S.M. Electric	10/23/07	X			X
	John Griffiths	S.M. Electric	2/14/08	X			X
	Steven Gage	S.M. Electric	3/3/07	X	X		X
Elect	Paul Hughes	S.M. Electric	1/18/07	X	X		X
	Marc Infozino	S.M. Electric	3/17/08	X			X
	Stefan Lapard	S.M. Electric	10/30/08				
	Tony Maalouf	S.M. Electric	1/21/08	X	X		X
Elect	Michael Melkonian	S.M. Electric	9/11/07	X	X		X
Elect	Joseph O' Connor	S.M. Electric	12/19/07	X			X
	Rowan Palmer	S.M. Electric	12/30/08				
Elect	Robert Perri	S.M. Electric	1/8/07	X	X		X
	Lee Sherwood	S.M. Electric	8/4/08	X			X
	Andres Vélez	S.M. Electric	3/17/08	X			X
							X
Plumber	Anthony DeFinis	Zabransky	4/2/07	X			
Plumber	Daniel Wagner	Zabransky	4/2/07	X			
	John Diehl	Carol Handy Mech	5/7/07		X		
	Albert Gavnore	Carol Handy Mech	9/25/07		X		
	Oscar Mo	Carolina Mech	9/21/07	X	X		
	Eric Hernandez	Northeast	8/22/07	X			
	John Takacs	Northeast	6/27/07	X			
	Patrick Yodice	Northeast	1/24/08	X			
	Patrick Visconti	Northeast	3/31/08	X			
	Kurt Falk	Venture Electric	7/30/07	X			
	Attila Veghes	Venture Electric	1/22/08	X			
	Anthony Danielsch	Mech		X			
Fitter	Joseph Stanic	Monmouth Controls	8/27/07	X			
	Eric Grieb	Monmouth Controls	8/17/08	X			
	Kevin Vaughn	Monmouth Controls	1/17/08				
	Michael Gaffney	EEI	6/4/07	X			
	Gary Molzen	EEI	11/19/07	X			
	Michael Hawtin	EEI	2/4/08	X			
	Shayne Spaziani	EEI	2/4/08	X			
	Fred Russo	EEI	9/28/07	X			
	Francois Kaufmann	EEI	8/20/08	X			
	Robert Applegate	EEI	10/6/08				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
	Douglas Dom[illegible]	EEI	[illegible]/6/0[illegible]	X			
E	Scott Ritter	EEI (MCS)	5/7/0[illegible]	X			
	Mark [illegible]	EEI (MCS)	8/27/0[illegible]	X			
	Ron Butler	EEI (MCS)	8/27/07	X			
E	Craig Ramgan	EEI (MCS)	[illegible]5/7/07	X			
E	Ted McEvoy	EEI (MCS)	7/30/0[illegible]	X			
	Lee Meinhoff	EEI (MCS)	5/7/07	X			
	Richard Goo[illegible]	EEI (MCS)	9/12/[illegible]	X			
	Milan Fantasia	EEI (MCS)	12/12/07	X			
	Darrin Valente	EEI (MCS)	4/24/07	X			
	Carl Jorgensen	EEI (MCS)	4/24/0[illegible]	X			
	Paul Schuck	EEI (MCS)		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carpt	Tim Perrotta	VRH	1/8/07			X	
Laborer	Edwin De Jesus	VRH	9/26/07	X			✓
	Keith Lewis	VRH	10/15/07	X		X	✓
	Anthony Andrade	VRH	12/18/07	X			✓
	Todd Perrotta	VRH	12/27/07			X	
	Gary Reuter	VRH	12/10/07			X	✓
	Salvatore Giordano	VRH	9/30/08	X			
	Dan Leavell	Pompain Painting					
	Dennis Leavell	Pompain Painting		X			
	Roger Stolte	Layout Inc.					
	Dave Woodward	Layout Inc.					
	Tim Carr	Layout Inc.	8/30/07	X			
	Paul Medway Jr	Panetta		✓			✓
	Rocky Panetta	Panetta		✓			
	Joe Aristz	Panetta		✓			
	Damion Portanese	Panetta		✓			
	Joe Panetta	Panetta		✓			
Laborer	Edgar Cruz	Mazzocchi	2/8/07	X			
Laborer	Jose Ducuara	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/7/07	X			
Laborer	Edgar German	Mazzocchi	6/23/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Grecco	Mazzocchi	2/8/07	X			
Laborer	Michael Parro	Mazzocchi	2/28/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Sciandra	Mazzocchi	2/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Michael Benson	Uniquie Scaffolding	3/26/09				
	Sean Slavin	Uniquie Scaffolding	3/26/09				
	Vito Mongelli	Amanda	9/14/07	X			✓
	Samuel Sanchez	Amanda	9/17/07	X			✓
Mason	Nicholas Vitale	Amanda	12/22/08	✓			✓

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	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			
	Michael Muto	Papp Iron Works	3/24/09				
	Patrick Lawlor	RCC		X			
	Kenny Carolyn	RCC					
	Terrance Barry	McCann	1/7/07	X			
	Vincent Bellotto	McCann	12/18/07	X			
	Joe DeMichelis	McCann	1/24/07	X			
	Joe LaTorre	McCann	11/26/07	X			
	Anthony Novello	McCann	11/2/07	X			
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Frank Corrao	McCann	3/26/09				
	Zygmunt Galazka	Par					
	Gabriel Quinones	Par					
	Pedro Navarro	Par					
	Jaime Rivera	Par					
	Beatriz Lerebre	Par					
	Segundo Alvarado	Par					
	Mario Valencia	Par					
	Nester Blanda	Par					
	Gregory Tontasura	Josloff Glass	2/27/07	X			
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	3/24/08	X			
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass					
	Gumaro Ramirez	Schnell	11/15/07				
	Anseto Lazaro	Schnell	3/3/08				
	Pablo Verde	Schnell	7/9/07	X			
	Santiago Diaz	Schnell	4/24/08				
	Daniel Flores	Schnell		X			
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			
	Luis Robleno	D. Magnan	4/21/08	X			

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Electr	Christopher Adorna	S.M. Electric	7/1/07	X			
	Michael Alberto	S.M. Electric	[illegible]	X			
			7/16/07	X	X		
Elec	Frank Coppola	S.M. Electric	10/23/07	X			
Elect	Richard Duffy	S.M. Electric	2/14/08	X			
	John Griffith	S.M. Electric	[illegible]	X	X		
	Steven Gage	S.M. Electric	[illegible]	X	X		
Elect.	[illegible]	S.M. Electric	1/15/07	X			
	Marc Infante	S.M. Electric	3/17/08	X			
	[illegible]	S.M. Electric	10/20/08				
	Gary Maalpo	S.M. Electric	1/21/08	X	X		
Elec	Michael Melkonian	S.M. Electric	8/11/07	X	X		
Elect	Joseph O' Connor	S.M. Electric	12/18/07	X			
	Edwin Palmer	S.M. Electric	12/30/08				
Elec	Robert Pereira	S.M. Electric	[illegible]	X	X		
	[illegible]	S.M. Electric	3/4/08	X			
	Andres Velez	S.M. Electric	2/13/08	X			
Plumber	Anthony Dennis	Zaccransky	[illegible]	X			
Plumber	Daniel Vicinelli	Zaccransky	[illegible]	X			
	John Diehl	Carr Hall Mech	5/2/07		X		
	Albert Gravinese	Carr Hall Mech	9/25/07		X		
	Oscar Moore	Carr Hall Mech	8/2/07	X	X		
	Eric Hernandez	Northeast	8/22/07	X			
	John Takacs	Northeast	6/27/07	X			
	Patrick Yodice	Northeast	1/24/08	X			
	Patrick Visconti	Northeast	3/31/08	X			
	Kurt Falk	Venture Electric	7/30/07	X			
	[illegible]	Venture Electric	1/22/08	X			
	Anthony Vanichon	[illegible]	[illegible]	X			
Fitter	Joseph Sterio	Monmouth Controls	[illegible]	X			
	Eric Greb	Monmouth Controls	6/17/08	X			
	Kevin Vaughn	Monmouth Controls	11/17/08				
	Michael Garrity	EE	[illegible]	X			
	Gary Mu[illegible]	EE	1/[illegible]	X			
	Michael Hawtin	EE	[illegible]	X			
	Shayne Spaziani	EE	2/4/08	X			
	Fred Russo	EE	[illegible]	X			
	Francis Kaufmann	EE	5/28/08	X			
	Robert Applegate	EEI	10/6/08				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
	Douglas Domicolo	EEI	[illegible]	X			
E	Scott Ritter	EEI (MCS)	5/7/07	X			—
	Mark Titmas	EEI (MCS)	8-27-07	X			
	Ron Butler	EEI (MCS)	9-27-07	X			
E	Craig Hamja	EEI (MCS)	5/7/07	X			
E	Tod McEvoy	EEI (MCS)	7-23-07	X			—
E	Lee Melchiot	EEI (MCS)	5/7/07	X			—
	Richard Goss	EEI (MCS)	4-12-07	X			
	William Farrell	EEI (MCS)	12-12-07	X			
	Darrin Valente	EEI (MCS)	4-23-07	X			
	Carl Jorgensen	EEI (MCS)	4-23-07	X			
	Paul Schuck	EEI (MCS)		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carp.	Tim Perrotta	VRH	1/8/07			X	✓
Laborer	Edwin De Jesus	VRH	9/26/07	X			✓
	Keith Lovas	VRH	10/15/07	X		X	✓
	Anthony Andrade	VRH	12/18/07	X			✓
	Todd Perrotta	VRH	12/27/07			X	✓
	Gary Reuter	VRH	12/10/07			X	✓
	Salvatore Giordano	VRH	9/30/08	X			
	Dan Leaver	Pompton Painting					
	Dennis Leaver	Pompton Painting		X			
	Roger Stolle	Layout Inc.					
	Dave Woodward	Layout Inc.					
	Tim Carr	Layout Inc.	6/30/07	X			
	Paul Medwa[illegible]	Panetta					
	Rocky Panetta	Panetta					
	Joe Anel	Panetta					
	Damion Pontanlese	Panetta					
	Joe Panetta	Panetta					
Laborer	Edgar Cruz	Mazzocchi	2/5/07	X			
Laborer	Jose Duque	Mazzocchi	2/5/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/7/07	X			
Laborer	Edgar Serrano	Mazzocchi	6/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Greco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/28/07	X			
Laborer	Edward Robinson	Mazzocchi	2/5/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sanchez	Mazzocchi	2/9/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Michael Benson	Uniquie Scaffolding	3/26/09				
	Sean Slavin	Uniquie Scaffolding	3/26/09				
	Vito Mongelli	Amanda	9/14/07	X			
	Santos Sanchez	Amanda	9/17/07	X			
Mason	Nicholas Vitale	Amanda	12/22/08				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Jason Hales	Papp Iron Works	11/1/07	X			
	Greg Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			
	Michael Muto	Papp Iron Works	3/24/09				
	Patrick Lawlor	RCC		X			✓
	Kenny Caroff	RCC		X			✓
	Terrance Fahy	McCann	[illegible]	X			✓
	Vincent Bellofatto	McCann	12/18/07	X			
	Joe DeAngelis	McCann	12/4/07	X			
	Joe LaTorre	McCann	11/26/07	X			
	Anthony Novello	McCann	11/2/07	X			
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Frank Corrao	McCann	3/26/09				
	Jim Corrao	McCann		X			✓
	Zygmunt Cazzaka	Par					
	Gabriel Quinones	Par					
	Pedro Alarcado	Par					
	Jaime Rivera	Par					
	Beatriz Lefebre	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nester Banda	Par					
	Gregory Tomasula	Josloff Glass	2/27/07	X			
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	8/4/08	X			
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass					
	Gustavo Ramirez	Schnell	11/28/07				
	Antonio Lazaro	Schnell	3/3/09				
	Pablo Veras	Schnell	7/9/07	X			
	Santiago Diaz	Schnell	4/24/09				
	Daniel Flores	Schnell		X			
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			

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	Jose Baez	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Jose Dominguez	Fine Painting	3/30/07	X			
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olayar	Fine Painting		X			
	Antonio Frapa	Fine Painting	11/3/08	X			
	Jacek Czernik	Signs & Decals	5/6/08	X		X	
	Jorge Alvarez	Signs & Decals	5/6/08				
	Jaime Castillo	Signs & Decals					
	Sean Murray	Thyssen Krupp	6/16/08	X			✓
	Frankie DeGirolamo	Thyssen Krupp	7/7/08				
	Danny Vitale	Thyssen Krupp	7/11/08				
	Nick Comito	Thyssen Krupp	7/9/08				
	Saviour Debono	Thyssen Krupp	2/24/09				
	Robert Goodfellow	Thyssen Krupp	2/24/09				
	John OSTROSKI	Thyssen		X			✓

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Elect.	Christopher Adoma	S.M. Electric	7/16/07	X			X
	Michael Alberta	S.M. Electric	3/11/08	X			X
Elect	Frank Coppola	S.M. Electric	7/16/07	X	X		X
Elect	Richard Duffy	S.M. Electric	0/26/07	X			X
[illegible]	John Griffiths	S.M. Electric	2/14/08	X			X
	Steven Gepp	S.M. Electric	[illegible]	X	X		X
Elect	Paul Hogan	S.M. Electric	[illegible]	X	X		
	Marc Infozino	S.M. Electric	3/17/08	X			X
	Stefan Lapaglia	S.M. Electric	[illegible]				
	Tony Maalouf	S.M. Electric	[illegible]	X	X		
Elect.	Michael Melkonian	S.M. Electric	9/[illegible]/07	X	X		X
Elect.	Joseph O'Connor	S.M. Electric	12/19/07	X			X
	Elbio Palmer	S.M. Electric	12/30/08				
Elect	Robert Pugliese	S.M. Electric	[illegible]	X	X		
	Lee Stewart	S.M. Electric	[illegible]	X			X
	Andres Velez	S.M. Electric	2/17/08	X			X
Plumber	Anthony DeFilippo	Zabransky	4/2/07	X			
Plumber	Daniel Wiener	Zabransky	4/2/07	X			
	John Brett	Carol Hardy Meter	5/7/07		X		
	Albert Gavnoe	Carol Hardy Meter	3/25/07		X		
	Oscar Moore	Carol Hardy Meter	9/21/07	X	X		
	Eric Hernandez	Northeast	8/22/07	X			
	John Takacs	Northeast	6/27/07	X			
	Patrick Yodice	Northeast	1/24/08	X			
	Patrick Visconti	Northeast	3/31/08	X			
	Kurt Falk	Venture Electric	7/30/07	X			
	Attila Vigilante	Venture Electric	1/22/08	X			
	Anthony Danielson	Metro		X			
Fitter	Joseph Starlo	Monmouth Controls	8/27/07	X			
	Eric Grieb	Monmouth Controls	6/17/08	X			
	Kevin Vaughn	Monmouth Controls	11/17/08				
	Michael Gaffney	EEI	6/4/07	X			
	Gary Molzen	EEI	11/19/07	X			
	Michael Hawtin	EEI	2/4/08	X			
	Shayne Spaziani	EEI	2/4/08	X			
	Fred Russo	EEI	8/28/07	X			
	Francis Kaufmann	EEI	8/20/08	X			
	Robert Applegate	EEI	10/6/08				

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Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carpt	Tim Perrotta	VRH	1/8/07			X	✓
Laborer	Edwin DeJesus	VRH	9/26/07	X			✓
	Keith Lovas	VRH	10/15/07	X		X	✓
	Anthony Andrade	VRH	12/18/07	X			✓
	Todd Perrotta	VRH	12/27/07			X	✓
	Gary Reuter	VRH	12/13/07			X	✓
	Salvatore Giordano	VRH	9/30/09	X			
	Dan Leaver	Pompton Painting					
	Dennis Leaver	Pompton Painting		X			
	Roger Stolte	Layout Inc.					
	Dave Woodward	Layout Inc					
	Tim Carr	Layout Inc.	8/30/07	X			
	Paul Medway Jr	Panetta					
	Rocky Panetta	Panetta					
	Joe Arst	Panetta					
	Damion Pontaniese	Panetta					
	Joe Panetta	Panetta					
Laborer	Edgar Cruz	Mazzocchi	2/6/07	X			
Laborer	Jose Duque	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/7/07	X			
Laborer	Edgar German	Mazzocchi	6/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Gueco	Mazzocchi	2/8/07	X			
Laborer	Michael Patter	Mazzocchi	2/26/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Michael Benson	Uniquie Scaffolding	3/26/09				
	Sean Slavin	Uniquie Scaffolding	3/26/09				
	Vito Mongelli	Amanda	9/14/07	X			
	Samos Sanchez	Amanda	9/17/07	X			
Mason	Nicholas Vitale	Amanda	12/22/08				

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	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			
	Michael Muto	Papp Iron Works	3/24/09				
	Patrick Lawlor	RCC		X			
	Kenny Carolyn	RCC					
	Allan Fox	RCC			X		✓
	Terrance Barry	McCann	1/7/07	X			
	Vincent Bellofatto	McCann	12/18/07	X			✓
	Joe DeAngelis	McCann	1/24/07	X			
	Joe LaTorre	McCann	11/26/07	X			
	Anthony Novello	McCann	11/2/07	X			
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Frank Corrao	McCann	3/26/08				
	Jimmy Carol	McCann		X			✓
	Zygmunt Calazza	Par					
	Gabriel Quinones	Par					
	Pedro Alarcon	Par					
	Jaime Rivera	Par					
	Beatriz Lefebre	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nestor Bando	Par					
	Gregory Tomasura	Josloff Glass	2/27/07	X			
	Brian Cummings	Josloff Glass	9/2/08	X			
	Thomas DeMaio	Josloff Glass	8/4/08	X			
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass					
	Gustavo Ramirez	Schnell	11/28/07				
	Alberto Lazaro	Schnell	3/3/08				
	Pablo Veras	Schnell	7/9/07	X			
	Santiago Diaz	Schnell	4/24/08				
	Daniel Flores	Schnell		X			
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			

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	Jose Baez	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Jose Dominguez	Fine Painting	3/30/07	X			
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			
	Antonio Fraga	Fine Painting	11/2/08	X			
	Jacek Czernik	Signs & Decals	5/6/08	X		X	
	Jorge Alvarez	Signs & Decals	5/6/08				
	Jaime Castillo	Signs & Decals					
	Sean Murray	Thyssen Krupp	6/16/08	X			
	Frankie DeGirolamo	Thyssen Krupp	7/7/08				
	Danny Vitale	Thyssen Krupp	7/7/08				
	Nick Comodo	Thyssen Krupp	7/9/08				
	Saviour Debono	Thyssen Krupp	2/24/09				
	Robert Goodfellow	Thyssen Krupp	2/24/09				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Electr	Christopher Leonard	S.M. Electric	[illegible]	X			
	Michael Alberta	S.M. Electric	3/11/08	X			
Electr	Frank Coppola	S.M. Electric	[illegible]	X	X		
Electr	Richard Guity	S.M. Electric	10/26/07	X			
	John Grunnis	S.M. Electric	2/14/08	X			
	Steven Gaga	S.M. Electric	[illegible]	X	X		
Electr	Gary Fischer	S.M. Electric	[illegible]	X	X		
	Marc Infante	S.M. Electric	[illegible]	X			
	Steven Lancaster	S.M. Electric	[illegible]				
	Gary Maskout	S.M. Electric	[illegible]	X	X		
Electr	Manuel Melkonian	S.M. Electric	[illegible]	X	X		
Electr	Joseph O'Connor	S.M. Electric	[illegible]	X			
	Ronald Palmer	S.M. Electric	4/28/08				
Electr	Robert Pagliete	S.M. Electric	1/8/07	X	X		
	Lee Shewell	S.M. Electric	[illegible]	X			
	Andres Velez	S.M. Electric	[illegible]	X			
Plumber	Anthony DeFilippis	Zabranski	[illegible]	X			
Plumber	Daniel Werner	Zabranski	[illegible]	X			
	John Brent	Carol Hardy Mech	[illegible]		X		
	Albert Gaynore	Carol Hardy Mech	[illegible]		X		
	Oscar Moore	Carol Hardy Mech	[illegible]	X	X		
	Eric Hernandez	Northeast	8/22/07	X			
	John Takacs	Northeast	6/27/07	X			
	Patrick Yodice	Northeast	1/24/08	X			
	Patrick Visconti	Northeast	3/31/08	X			
	Kurt Falk	Venture Electric	7/30/07	X			
	Attila Marlante	Venture Electric	[illegible]	X			
	Anthony Danielson	Nelco		X			
Fitter	Stephen Stanton	Monmouth Contract	[illegible]	X			
	Rick Gray	Monmouth Contract	[illegible]	X			
	Kevin Vaughn	Monmouth Contract	11/7/08				
	Michael Gaffney	EEI	[illegible]	X			
	Gary Molzen	EEI	[illegible]	X			
	Michael Hawtin	EEI	[illegible]	X			
	Shayne Schatz	EEI	[illegible]	X			
	Fred Russo	EEI	[illegible]	X			
	Francis Kaufmann	EEI	[illegible]	X			
	Robert Applegate	EEI	10/6				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
	Douglas Domicolo	EEI	10/6/03	X			
E	Scott Ritter	EEI (MCS)	[illegible]	X			
	Mark [illegible]	EEI (MCS)	6/27/07	X			
	Ron Butler	EEI (MCS)	[illegible]	X			
E	Craig Harrigan	EEI (MCS)	5/7/07	X			
E	Tom McEvoy	EEI (MCS)	7/30/07	X			
E	Lee Meinkoff	EEI (MCS)	9/7/07	X			
	Richard Good	EEI (MCS)	9/12/07	X			
	William Fantasia	EEI (MCS)	12/[illegible]/07	X			
	Darrin Valente	EEI (MCS)	4/24/07	X			
	Carl Jurgensen	EEI (MCS)	4/24/07	X			
	Paul Schuck	EEI (MCS)		X			

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Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carpt	Tim Perrotta	VRH	1/8/07			X	✓
Laborer	Edwin De Jesus	VRH	9/18/07	X			✓
	Keith Lovas	VRH	10/18/07	X		X	✓
	Anthony Andrade	VRH	12/18/07	X			✓
	Todd Perrotta	VRH	12/12/07			X	✓
	Gary Reuter	VRH	12/10/07			X	✓
	Salvatore Giordano	VRH	9/10/08	X			
	Dan Leaver	Pomptain Painting					✓
	Dennis Leaver	Pomptain Painting		X			✓
	Roger Stolte	Layout Inc					
	Dave Woodward	Layout Inc					
	Tim Carr	Layout Inc	8/30/07	X			
	Paul Medway Jr	Paretta					
	Rocky Paretta	Paretta					
	Joe Anet	Paretta					
	Damon Paretta Jr	Paretta					
	Joe Paretta	Paretta					
Laborer	Edgar Cruz	Mazzocchi	2/8/07	X			
Laborer	Jose Duque	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/7/07	X			
Laborer	Edgar German	Mazzocchi	6/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Grecco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/28/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sancheli	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Michael Benson	Uniquie Scaffolding	3/26/09				
	Sean Slavin	Uniquie Scaffolding	3/26/09				
	Vito Mongelli	Amanda	9/14/07	X			✓
	Santos Sanchez	Amanda	9/17/07	X			✓
Mason	Nicholas Vitale	Amanda	12/22/08				✓

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	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			
	Michael Muto	Papp Iron Works	3/24/09				
	Thomas Phillips	RCC					✓
	Patrick Lavin	RCC		X			
	Kenny Carolyn	RCC					
	KEVIN RUANE	RCC					
	Terrance Barry	McCann	1/7/07	X			✓
	Vincent Bellofatto	McCann	12/10/07	X			
	Joe DeAngelis	McCann	1/24/07	X			
	Joe LaTorre	McCann	11/26/07	X			
	Anthony Novello	McCann	11/2/07	X			
	Paul Kensek	McCann	3/13/08	X			
	Craig Hutchinson	McCann	3/10/08	X			
	Frank Corrao	McCann	3/25/08				
	Zygmunt Galazka	Par					
	Gabriel Quinones	Par					
	Pedro Alavarado	Par					
	Jaime Rivera	Par					
	Beatriz Lefebre	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nester Banda	Par					
	Gregory Tomasula	Josloff Glass	2/27/07	X			
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	8/4/08	X			
	Bob Ferraro	Josloff Glass		X			
	T DeMaio	Josloff Glass					
	Gustavo Ramirez	Schnell	11/26/07				
	Anisaio Lazaro	Schnell	3/3/08				
	Pablo Veras	Schnell	7/9/07	X			
	Santiago Diaz	Schnell	4/24/08				
	Daniel Flores	Schnell	[illegible]	X			
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Jose Baez	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/12/08	X			
	Jose Dos Santos	Fine Painting	3/30/07	X			
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/30/07	X			
	Jose Olaya	Fine Painting		X			
	Antonio Frada	Fine Painting	1/12/09	X			
	Jacek Czernik	Signs & Decals	5/6/08	X		X	
	Jorge Alvarez	Signs & Decals	5/6/08				
	Jaime Castillo	Signs & Decals					
	Sean Murray	Thyssen Krupp	6/16/08	X			
	Frankie DeGiacomo	Thyssen Krupp	7/7/08				
	Danny Vitale	Thyssen Krupp	7/14/08				
	Nick Comodo	Thyssen Krupp	7/9/08				
	Saviour Deburio	Thyssen Krupp	2/24/09				
	Robert Goodfellow	Thyssen Krupp	2/24/09				
	Thomas Nordquist	Able Door			✓		✓
	Terry Hardiman	"			✓		✓
	Kitaka Hall	"			✓		✓

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Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carpt.	Tim Perrotta	VRH	1/2/07			X	
Laborer	Edwin De Jesus	VRH	6/23/07	X			✓
	Keith Lovas	VRH	10/15/07	X		X	✓
	Anthony Arcrade	VRH	12/18/07	X			✓
	Todd Perrotta	VRH	12/27/07			X	✓
	Gary Reuter	VRH	12/10/07			X	✓
	Salvatore Giordano	VRH	9/1/08	X			
	Dan Leaver	Pomptam Painting					✓
	Dennis Leaver	Pomptam Painting		X			✓
	Roger Sowe	Layout Inc					
	Dave Woodward	Layout Inc					
	Tim Carr	Layout Inc	3/30/07	X			
Laborer	Edgar Cruz	Mazzocchi	2/8/07	X			
Laborer	Jose Duque	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/7/07	X			
Laborer	Edgar German	Mazzocchi	6/18/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Giecco	Mazzocchi	2/8/07	X			
Laborer	Michael Paton	Mazzocchi	2/26/07	X			
Laborer	Edward Robinson	Mazzocchi	3/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/5/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	2/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Michael Benson	Uniquie Scaffolding	3/26/09				
	Sean Slavin	Uniquie Scaffolding	3/26/09				
	Vito Mongelli	Amanda	9/14/07	X			
	Santos Sanchez	Amanda	9/17/07	X			
Mason	Nicholas Vitale	Amanda	12/22/08				
	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			
	Michael Muto	Papp Iron Works	3/24/09				
	Thomas Pailgin	RCC				X	✓
	Patrick Lawlor	RCC		X			

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	Kenny Carolyn	RCC					
	KEVIN RUAVE	RCC					✓
	Terrance Barry	McCann	11/7/07	X			✓
	Vincent Bellofatto	McCann	12/18/07	X			
	Joe DeAngelis	McCann	12/4/07	X			
	Joe LaTorre	McCann	11/26/07	X			
	Anthony Novello	McCann	11/2/07	X			
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Frank Corrao	McCann	3/26/09				
	Zygmunt Galazka	Par					
	Gabriel Quinones	Par					
	Pedro Alavarado	Par					
	Jaime Rivera	Par					
	Beatriz Lefebre	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nester Banda	Par					
	Gregory Tomasula	Josloff Glass	2/27/07	X			
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	8/4/08	X			
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass					
	Gustavo Ramirez	Schnell	11/28/07				
	Anseto Lazaro	Schnell	3/3/08				
	Pablo Veras	Schnell	7/9/07	X			
	Santiago Diaz	Schnell	4/14/08				
	Daniel Flores	Schnell		X			
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Jose Domingquez	Fine Painting	3/30/07	X			✓
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Elect.	Christopher Adorna	S.M. Electric	7/16/07	X			✓
	Michael Alberta	S.M. Electric	3/11/08	X			✓
Elect.	Frank Coppola	S.M. Electric	7/16/07	X	X		✓
Elect.	Richard Duffy	S.M. Electric	10/28/07	X			✓
	John Griffiths	S.M. Electric	2/14/08	X			✓
	Steven Gage	S.M. Electric	3/7/07	X	X		✓
Elect.	Paul Higgins	S.M. Electric	1/15/07	X	X		✓
	Marc Infozino	S.M. Electric	5/17/08	X			✓
	Stefan [illegible]	S.M. Electric	10/30/08				✓
	Tony Massoud	S.M. Electric	3/21/08	X	X		✓
Elect.	Michael Melkonian	S.M. Electric	9/11/07	X	X		✓
Elect.	Joseph O' Connor	S.M. Electric	10/15/07	X			✓
	Edward Paine	S.M. Electric	12/30/08				✓
Elect.	Robert Pa[illegible]	S.M. Electric	[illegible]	X	X		✓
	Lee Sherwood	S.M. Electric	3/4/08	X			✓
	Andres Velez	S.M. Electric	3/17/08	X			✓
Plumber	Anthony DeFi[illegible]	Zabransky	4/2/07	X			
Plumber	Daniel Wiener	Zabransky	4/2/07	X			
	John Die[illegible]	Carol Hardy Mech	5/7/07		X		
	Albert G[illegible]	Carol Hardy Mech	9/28/07		X		
	Oscar Moore	Carol Hardy Mech	9/21/07	X	X		
	Eric Hernandez	Northeast	8/22/07	X			
	John Takacs	Northeast	6/27/07	X			
	Patrick Yodice	Northeast	1/24/08	X			
	Patrick Visconti	Northeast	3/31/08	X			
	Kurt Falk	Venture Electric	7/30/07	X			
	Attila Vigilante	Venture Electric	1/22/08	X			
	Anthony Danielson	Metro		X			
Fitter	Joseph Stanio	Monmouth Controls	8/27/07	X			
	Eric Grieb	Monmouth Controls	8/17/08	X			
	Kevin Vaughn	Monmouth Controls	11/17/08				
	Michael Gaffney	EEI	6/4/07	X			
	Gary Molzen	EEI	11/19/07	X			
	Michael Hawtin	EEI	2/4/08	X			
	Shayne Spaziani	EEI	2/4/08	X			
	Fred Russo	EEI	8/28/07	X			
	Francis Kaufmann	EEI	8/20/08	X			
	Robert Applegate	EEI	10/6/08				

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	Douglas Domicolo	EEI	10/6/08	X			
E	Scott Ritter	EEI (MCS)	5/7/07	X			—
	Mark Tirmas	EEI (MCS)	8/27/07	X			
	Ron Butler	EEI (MCS)	9/27/07	X			
E	Craig Harrigan	EEI (MCS)	5/7/07	X			—
E	Tom McEvoy	EEI (MCS)	12/7/07	X			
E	Lee Melnikoff	EEI (MCS)	5/7/07	X			
	Richard Gosso	EEI (MCS)	9/12/07	X			
	William Fanzasia	EEI (MCS)	12/12/07	X			
	Darrin Vacante	EEI (MCS)	4/24/07	X			
	Carl Jorgensen	EEI (MCS)	4/24/07	X			
	Paul Schuck	EEI (MCS)		X			

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	Kenny Carolyn	RCC					
	Terrance Barry	McCann	1/7/07	X			
	Vincent Bellofatto	McCann	12/16/07	X			
	Joe DeAngelis	McCann	1/24/07	X			
	Joe LaTorre	McCann	1/29/07	X			
	Anthony Novello	McCann	11/2/07	X			
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Frank Corrao	McCann	3/26/09				
	Zygmunt Galazka	Par					
	Gabriel Quinones	Par					
	Pedro Alavarado	Par					
	Jaime Rivera	Par					
	Beatriz Lefebre	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nester Banda	Par					
	Gregory Tomasula	Josloff Glass	2/27/07	X			
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	8/4/08	X			✓
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass		✓			✓
	Gustavo Ramirez	Schnell	11/28/07				
	Aniseto Lazaro	Schnell	3/3/08				
	Pablo Veras	Schnell	7/9/07	X			
	Santiago Diaz	Schnell	4/24/08				
	Daniel Flores	Schnell		X			
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Jose Dominguez	Fine Painting	3/30/07	X			✓
	Manuel Romero	Fine Painting	3/30/07	X		X	✓
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carpt	Tim Perrotta	VRH	2/8/07			X	
Laborer	Edwin De Jesus	VRH	8/28/07	X			✓
	Keith Loves	VRH	10/15/07	X		X	✓
	Anthony Andrade	VRH	12/18/07	X			✓
	Todd Perrotta	VRH	12/27/07			X	
	Gary Reuter	VRH	2/10/07			X	✓
	Salvatore Giordano	VRH	4/10/08	X			
	Dan Leaver	Pomptain Painting					
	Dennis Leaver	Pomptain Painting		X			
	Roger Sloyle	Layout Inc					
	Dave Wagnwam	Layout Inc					
	Tim Carr	Layout Inc.	8/30/07	X			
Laborer	Edgar Cruz	Mazzocchi	2/6/07	X			
Laborer	Jose Duque	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/7/07	X			
Laborer	Edgar German	Mazzocchi	6/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Grecco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/28/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Michael Benson	Uniquie Scaffolding	3/26/09				
	Sean Slavin	Uniquie Scaffolding	3/26/09				
	Vito Mongelli	Amanda	3/14/07	X			
	Santos Sanchez	Amanda	9/17/07	X			
Mason	Nicholas Vitale	Amanda	12/22/08				
	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			
	Michael Muto	Papp Iron Works	3/24/09				
	Thomas Philbin	RCC			✓		✓
	Patrick Lawlor	RCC	[illegible]	X			

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Elect.	Christopher Adorno	S.M. Electric	7/16/07	X			✓
	Michael Alberta	S.M. Electric	3/11/08	X			✓
Elect.	Frank Coppola	S.M. Electric	[illegible]	X	X		✓
Elect.	Richard Duffy	S.M. Electric	10/26/07	X			✓
[illegible]	John Griffiths	S.M. Electric	2/14/08	X			✓
	Steven Gage	S.M. Electric	[illegible]	X	X		✓
Elect.	Paul Higgins	S.M. Electric	[illegible]	X	X		✓
	Marc Infozino	S.M. Electric	3/17/08	X			✓
	Stefan Lipscitz	S.M. Electric	[illegible]				✓
	Tony Masloutis	S.M. Electric	[illegible]	X	X		✓
Elect.	Michael Melkonian	S.M. Electric	9/11/07	X	X		✓
Elect.	Joseph O'Connor	S.M. Electric	[illegible]	X			✓
	Edwin Palme	S.M. Electric	12/30/08				✓
Elect.	Robert Periera	S.M. Electric	[illegible]	X	X		✓
	Lee Sherwood	S.M. Electric	[illegible]	X			✓
	Andres Velez	S.M. Electric	[illegible]	X			✓
Plumber	Anthony Dei[illegible]	Zabransky	[illegible]	X			
Plumber	Daniel Wie[illegible]	Zabransky	1/2/07	X			
[illegible]	John D[illegible]	Carol Hardy M[illegible]	[illegible]		X		✓
	Albert Gaym[illegible]	Carol Hardy M[illegible]	[illegible]		X		✓
[illegible]	Oscar Moore	Carol Hardy M[illegible]	[illegible]	X	X		✓
	Eric Hernandez	Northeast	8/22/07	X			
	John Takacs	Northeast	6/27/07	X			
	Patrick Yodice	Northeast	1/24/08	X			
	Patrick Visconti	Northeast	3/31/08	X			
	Kurt Falk	Venture Electric	7/30/07	X			
	Attila Vigilante	Venture Electric	1/22/08	X			
	Anthony Danielson	Metro		X			
Fitter	Joseph Stanio	Monmouth Controls	8/27/07	X			
	Eric Grieb	Monmouth Controls	6/17/08	X			
	Kevin Vaughn	Monmouth Controls	11/17/08				✓
	Michael Gaffney	EEI	6/4/07	X			✓
	Gary Molzen	EEI	11/19/07	X			✓
	Michael Hawtin	EEI	2/4/08	X			✓
	Shayne Spaziani	EEI	2/4/08	X			✓
	Fred Russo	EEI	8/28/07	X			
	Francis Kaufmann	EEI	8/20/08	X			
	Robert Applegate	EEI	10/6/08				

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	Douglas Domicolo	EEI	10/6/08	X			
E	Scott Ritter	EEI (MCS)	5/7/07	X			—
	Mark [illegible]	EEI (MCS)	6/27/07	X			
	Ron Butler	EEI (MCS)	9/27/07	X			
E	Craig Hamigan	EEI (MCS)	5/7/07	X			—
E	Tod McEvoy	EEI (MCS)	7/30/07	X			
E	Lee Melnikoff	EEI (MCS)	5/7/07	X			—
	Richard Good	EEI (MCS)	9/12/07	X			
	William Fantasia	EEI (MCS)	12/12/07	X			
	Darrin Valente	EEI (MCS)	4/24/07	X			
	Carl Jorgensen	EEI (MCS)	4/24/07	X			
	Paul Schuck	EEI (MCS)		X			

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Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carpt	Tim Perrotta	VRH	1/8/07			X	
Laborer	Edwin De Jesus	VRH	8/26/07	X			✓
	Ralf Lovas	VRH	10/15/07	X		X	✓
	Anthony Andrade	VRH	12/18/07	X			✓
	Todd Perrotta	VRH	2/27/07			X	
	Gary Reuter	VRH	12/10/07			X	✓
	Salvatore Giordano	VRH	9/30/08	X			
	Dan Leaver	Pomptain Painting					
	Dennis Leaver	Pomptain Painting		X			
	Roger Stolte	Layout Inc					
	Dave Woodward	Layout Inc					
	Tim Carr	Layout Inc	9/30/07	X			
Laborer	Edgar Cruz	Mazzocchi	2/8/07	X			
Laborer	Jose Duque	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/7/07	X			
Laborer	Edgar German	Mazzocchi	6/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Greco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/23/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Michael Benson	Uniquie Scaffolding	3/26/09				
	Sean Slavin	Uniquie Scaffolding	3/26/09				
	Vito Mongelli	Amanda	9/14/07	X			✓
	Santos Sanchez	Amanda	9/17/07	X			✓
Mason	Nicholas Vitale	Amanda	12/22/08				
	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			
	Michael Muto	Papp Iron Works	3/24/09				
	KEVIN RUANO	RCC		X			✓
	Patrick Lawlor	RCC		X			

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	Kenny Carolyn	RCC					
	Thomas Pirozzi	RCC					✓
	Terrance Barry	McCann	1/2/07	X			
	Vincent Bellofatto	McCann	12/18/07	X			
	Joe DeAngelis	McCann	1/24/07	X			
	Joe LaTorre	McCann	11/26/07	X			
	Anthony Novello	McCann	11/2/07	X			
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Frank Corrao	McCann	3/26/09				
	Zygmunt Galazka	Par					
	Gabriel Quinones	Par					
	Pedro Alavarado	Par					
	Juan e Rivera	Par					
	Beatriz Lefebre	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nester Banda	Par					
	Gregory Tomasula	Josloff Glass	2/27/07	X			
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	3/4/08	X			✓
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass		X			✓
	Gustavo Ramirez	Schnell	11/26/07				
	Anfeeto Lazaro	Schnell	2/2/08				
	Pablo Veras	Schnell	7/9/07	X			
	Santiago Diaz	Schnell	4/24/08				
	Daniel Flores	Schnel		X			
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Jose Dominguez	Fine Painting	3/[illegible]	X			
	Manuel Romero	Fine Painting	3/31/07	X		X	
	Avtar Singh	Fine Painting	3/1[illegible]	X			
	Jose Olaya	Fine Painting		X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Elect	Christopher [illegible]	S.M. Electric	7/15/07	X			✓
Elect	Michael Alberta	S.M. Electric	[illegible]	X			✓
Elec	Frank Coppola	S.M. Electric	[illegible]	X			✓
	Richard Dar[illegible]	S.M. Electric	[illegible]	X	X		✓
	John Griffit[illegible]	S.M. Electric	1/[illegible]	X			✓
	Steve [illegible]	S.M. Electric	[illegible]	X			✓
Elec	Paul [illegible]	[illegible]	2/14/[illegible]	X			✓
	Mar[illegible]	[illegible]	[illegible]	X	X		✓
	[illegible]	S.M. Electric	[illegible]	X	X		✓
	[illegible] Medlou[illegible]	[illegible]	[illegible]	X			✓
Elect	Michael Mokon[illegible]	S.M. Electric	[illegible]				✓
Elect.	[illegible]	S.M. Electric	3/27/[illegible]	X	X		✓
	Eson Patrick	S.M. Electric	[illegible]	X	X		✓
Elect.	[illegible]	S.M. Electric	[illegible]	X			✓
	[illegible]	S.M. Electric	12/[illegible]				✓
	[illegible]	S.M. Electric	[illegible]	X	X		✓
	Andres Vel[illegible]	S.M. Electric	3/[illegible]	X			✓
		S.M. Electric	3/[illegible]	X			✓
Plumber	Anthony DeFin[illegible]	Zatran[illegible]	[illegible]	X			
Plumber	Daniel Wiener	Zatran[illegible]	[illegible]	X			
	John Diel[illegible]	[illegible]	[illegible]		X		
	Albert Ga[illegible]	[illegible]	[illegible]		X		
	Oscar M[illegible]	[illegible]	9/[illegible]	X	X		
	Eric Hernandez	Northeast	8/22/07	X			
	John Takacs	Northeast	6/27/07	X			
	Patrick Yodice	Northeast	1/24/08	X			
	Patrick Visconti	Northeast	3/31/08	X			
	Kurt Falk	Venture Electric	7/30/07	X			
	Attila Vigliante	Venture Electric	1/22/08	X			
	Anthony Daniels	[illegible]		X			
Fitter	Joseph Stanic	Monmouth Controls	8/27/07	X			
	Eric Gneb	Monmouth Controls	6/17/08	X			
	Kevin Vaughn	Monmouth Controls	11/17/08				
	Michael Gaffney	EEI	6/4/07	X			✓
	Gary Molzen	EEI	11/19/07	X			✓
	Michael Hawtin	EEI	2/4/08	X			✓
	Shayne Spaziani	EEI	2/4/08	X			✓
	Fred Russo	EEI	8/28/07	X			
	Francis Kaufmann	EEI	8/20/08	X			
	Robert Applegate	EEI	10/6/08				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
	Douglas Domicolo	EEI	10/6/08	X			
E	Scott Ritter	EEI (MCS)	5/7/07	X			✓
	Mark Titmas	EEI (MCS)	8/27/07	X			
	Ron Butler	EEI (MCS)	9/27/07	X			
E	Craig Harnegan	EEI (MCS)	5/7/07	X			✓
E	Tod McFadyen	EEI (MCS)	7/20/07	X			
E	Lee Melnick	EEI (MCS)	5/7/07	X			
	Richard Good	EEI (MCS)	9/12/07	X			
	William Fehlasia	EEI (MCS)	12/12/07	X			
	Darrin Valente	EEI (MCS)	4/24/07	X			
	Carl Jorgensen	EEI (MCS)	4/24/07	X			
	Paul Schuck	EEI (MCS)		X			

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Elec	Christopher [illegible]	S.M. Electric	7/13/07	X	X		✓
	Michael Alberta	S.M. Electric	3/11/08	X			✓
Elect	Frank Coppola	S.M. Electric	7/16/07	X	X		✓
Elect	Richard Duffy	S.M. Electric	10/26/07	X			
	John Griffiths	S.M. Electric	2/14/08	X			✓
	Steven Gage	S.M. Electric	[illegible]/07	X	X		
Elect	Paul Higgins	S.M. Electric	1/[illegible]	X	X		✓
	Marc Iniozino	S.M. Electric	3/17/08	X			✓
	Stefan Lapadat	S.M. Electric	10/[illegible]/08				✓
	Tony Maalouf	S.M. Electric	1/21/08	X	X		✓
Elect	Michael Melkonian	S.M. Electric	9/11/07	X	X		✓
Elect	Joseph O' Connor	S.M. Electric	[illegible]/19/[illegible]	X			
	Edwin Palmer	S.M. Electric	12/30/08				
Elect	Robert Pereira	S.M. Electric	[illegible]	X	X		✓
	Lee Sherwood	S.M. Electric	3/4/08	X			✓
	Andres Velez	S.M. Electric	3/17/08	X			✓
Plumber	Anthony DeFrancis	Zabranskey	4/2/07	X			
Plumber	Daniel Wiener	Zabranskey	4/2/07	X			
	John Diehl	Carroll Heavy Mech.	5/7/07		X		
	Albert Gayno	Carroll Heavy Mech.	9/28/07		X		
	Oscar Moore	Carroll Heavy Mech.	9/21/07	X	X		
	Eric Hernandez	Northeast	8/22/07	X			
	John Takacs	Northeast	6/27/07	X			
	Patrick Yodice	Northeast	1/24/08	X			
	Patrick Visconti	Northeast	3/31/08	X			
	Kurt Falk	Venture Electric	7/30/07	X			
	Attila Vigilante	Venture Electric	1/22/08	X			
	Anthony Danielson	Mano		X			
Fitter	Joseph [illegible]	Monmouth Controls	8/27/07	X			
	Eric Grieb	Monmouth Controls	6/17/08	X			
	Kevin Vaughn	Monmouth Controls	11/17/08				
	Michael Gaffney	EEI	6/4/07	X			✓
	Gary Molzen	EEI	11/19/07	X			✓
	Michael Hawtin	EEI	2/4/08	X			✓
	Shayne Spaziani	EEI	2/4/08	X			✓
	Fred Russo	EEI	8/28/07	X			✓
	Francis Kaufmann	EEI	8/20/08	X			
	Robert Applegate	EEI	10/6/08				

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	Douglas Dom.colo	EEI	10/6/08	X			
	STEVE CHOVRONY	EEI		X			✓
E	Scott Ritter	EEI (MCS)	5/7/07	X			
	Mark Thomas	EEI (MCS)	8/27/07	X			
	Ron Butler	EEI (MCS)	9/27/07	X			
E	Craig Hargan	EEI (MCS)	5/7/07	X			
E	Tom McEvoy	EEI (MCS)	7/27/07	X			
E	Lee Menkoff	EEI (MCS)	5/7/07	X			
	Richard Good	EEI (MCS)	9/[illegible]	X			
	William Fantasia	EEI (MCS)	12/12/07	X			
	Darrin Valente	EEI (MCS)	4/24/07	X			
	Carl Jorgensen	EEI (MCS)	4/24/07	X			
	Paul Schuck	EEI (MCS)		X			

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	Kenny Carolyn	RCS					
	Terrance Barry	McCann	[illegible]	X			
	Vincent Bellofatto	McCann	12/18/07	X			
	Joe DeAngelis	McCann	[illegible]	X			
	Joe LaTorre	McCann	11/26/07	X			
	Anthony Novello	McCann	11/2/07	X			
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Frank Corrao	McCann	3/26/09				
	Zygmunt Galazka	Par					
	Gabriel Quinones	Par					
	Pedro Alavarado	Par					
	Jaime Rivera	Par					
	Beatriz Lefebre	Par					
	Segundo Alvarado	Par					
	Mario Valverde	Par					
	Nester Bandala	Par					
	Gregory Tomasulo	Josloff Glass	2/27/07	X			
	Brian Cummings	Josloff Glass	5/2/06	X			
	Thomas DeMaio	Josloff Glass	3/4/08	X			✓
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass		X			✓
	Gustavo Ramirez	Schnell	11/28/07				
	Aniseto Lazaro	Schnell	3/3/08				
	Pablo Veras	Schnell	7/9/07	X			
	Santiago Diaz	Schnell	4/24/08				
	Daniel Flores	Schnell		X			
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Jose Domingez	Fine Painting	3/30/07	X			
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			

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Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carpenter	Tim Perrotta	VRH	1/2/07	X		X	
Laborer	Edwin De Jesus	VRH	8/23/07	X			✓
	Keith Lovas	VRH	10/15/07	X		X	
	Anthony Andrade	VRH	12/18/07	X			
	Todd Perrotta	VRH	12/27/07			X	
	Gary Reuter	VRH	12/10/07			X	✓
	Salvatore Giordano	VRH	3/3/08	X			
	Dan Leaver	Pompton Painting					
	Dennis Leaver	Pompton Painting		X			
	Roger Stolte	Layout Inc					
	Dave Woodward	Layout Inc					
	Tim Carr	Layout Inc	5/30/07	X			
Laborer	Edgar Cruz	Mazzocchi	2/8/07	X			
Laborer	Jose Duque	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/7/07	X			
Laborer	Edgar German	Mazzocchi	6/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/1/07				
Laborer	Robert Greco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/9/07	X			
Laborer	Edward Robinson	Mazzocchi	2/8/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Santichell	Mazzocchi	2/12/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Michael Benson	Uniquie Scaffolding	3/26/09				
	Sean Slavin	Uniquie Scaffolding	3/26/09				
	Vito Moncal	Amanda	9/14/07	X			
	Santos Sanchez	Amanda	8/17/07	X			
Mason	Nicholas Vitale	Amanda	12/22/08				
	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			
	Michael Muto	Papp Iron Works	3/24/09				
	Patrick Lawlor	RCC		X			

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Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carpt	Tim Perrotta	VRH	8/07			X	
Laborer	Edwin De Jesus	VRH	6/07	X			✓
	Keith Lovas	VRH	10/15/07	X		X	✓
	Anthony Andrade	VRH	12/18/07	X			✓
	[illegible]	VRH	12/27/07			X	
	Gary Reuter	VRH	12/10/07			X	✓
	Dan Leavor	Pomptain Painting					
	Dennis Leavor	Pomptain Painting		x			
	Roger Stolte	Layout Inc					
	Dave Woodward	Layout Inc					
	Tim Carr	Layout Inc	3/30/07	X			
	Paul Medway Jr.	Panetta					
	Rocky Panetta	Panetta					
	Joe Anst	Panetta					
	Damion Pontaniese	Panetta					
	Joe Panetta	Panetta					
Laborer	Edgar Cruz	Mazzocchi	2/6/07	X			
Laborer	Jose Duque	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/7/07	X			
Laborer	Edgar German	Mazzocchi	6/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Grecco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/28/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stepher Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Vito Mongelli	Amanda	9/14/07	X			
	Santos Sanchez	Amanda	9/17/07	X			
Mason	Nicholas Vitale	Amanda	12/22/08				
	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			

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	Michael Muto	Papp Iron Works	3/24/09				
	Patrick Lawlor	RCC		X			✓
	Kenny Carolyn	RCC		X			✓
	Terrance Burr	McCann	1/7/07	X			
	Vincent Bell	McCann	12/18/07	X			
	Joe DeAngelis	McCann	1/24/07	X			
	Joe LaTorre	McCann	11/26/07	X			
	Anthony Novello	McCann	11/2/07	X			
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Frank Corrao	McCann	3/2[illegible]				
	Gregory Torrajla	Josloff Glass	2[illegible]	X			
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	5/4/08	X			
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass					
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			
	Luis Rubio	D. Magnan	4/21/08	X			
	[illegible]	D. Magnan	4/21/08	X			
	[illegible]	[illegible]	13/08	X			
	Jose Dominguez	Fine Painting	3/30/07	X			
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			
	Antonio Franco	Fine Painting	11/3/08	X			
	Jacek Czernik	Signs & Decals	5/6/08	X		X	
	Jorge Alvarez	Signs & Decals	5/6/08				
	Jaime Castillo	Signs & Decals					
	Sean Murray	Thyssen Krupp	6/16/08	X			
	Frankie DeGirolamo	Thyssen Krupp	7/7/08				
	Danny Vitale	Thyssen Krupp	7/11/08				
	Nick Comodo	Thyssen Krupp	7/9/08				
	Saviour Debono	Thyssen Krupp	2/24/09				
	Zachory Randall	Thyssen Krupp			X		✓

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	David Malito	Thyssen Krupp			X		✓
	Ron Bauder	Thyssen Krupp			X		✓
	John Ostroski	Thyssen Krupp					
	Robert Goodfel[illegible]	[illegible]ssen Krupp	2/24/09				
	DENNIS McQUILLIN	" "			X		✓

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	Michael Muto	Papp Iron Works	3/24/09				
	Patrick Taylor	RCC		X			✓
	Kenny Carolyn	RCC		X			✓
	Terrance Barry	McCann	11/7/07	X			
	Vincent Bellofatto	McCann	12/18/07	X			
	Joe DeAngelis	McCann	11/24/07	X			
	Joe LaTorre	McCann	11/26/07	X			
	Anthony Novello	McCann	11/2/07	X			
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Frank Corrao	McCann	3/26/09				
	Gregory Tomasula	Josloff Glass	2/27/07	X			
	Brian Cumming	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	5/4/08	X			
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass					
	Anthony Castellazzo	D. Magnan	3/1/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lisko	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/12/08	X			
	Jose Domingues	Fine Painting	3/31/07	X			
	Manuel Romero	Fine Painting	6/30/07	X		X	
	Antar Singh	Fine Painting	3/12/07	X			
	Jose Chaye	Fine Painting		X			
	Antonio Braga	Fine Painting	1/7/08	X			
	Jacek Czernik	Signs & Decals	5/6/08	X		X	
	Jorge Alvarez	Signs & Decals	5/5/08				
	Jaime Castillo	Signs & Decals					
	Sean Murray	Thyssen Krupp	6/16/08	X			
	Frankie DeGirolamo	Thyssen Krupp	7/7/08				
	Danny Vitale	Thyssen Krupp	7/11/08				
	Nick Comodo	Thyssen Krupp	7/9/08				
	Saviour Debono	Thyssen Krupp	2/24/09				
	Zachory Randall	Thyssen Krupp					

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Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carp	Tim Ferrara	VRH	1/8/07			X	
Laborer	Edwin De Jesus	VRH	[illegible]	X			✓
	Kevin Loyas	VRH	10/15/07	X		X	✓
	Anthony Andrade	VRH	12/18/07	X			✓
	Tom Perrotta	VRH	[illegible]			X	
	Carl Reuter	VRH	12/10/07			X	✓
	Dan Leaver	Pompetan Painting					
	Dennis Leaver	Pompetan Painting	[illegible]	X			
	Roger Stolte	Layout Inc.	[illegible]				
	Dave Woodward	Layout Inc.					
	Tim Carr	Layout Inc.	8/30/07	X			
	Paul Medwey Jr.	Panetta					
	Rocky Fiorenza	Panetta					
	Joe Anst[illegible]	Panetta	[illegible]				
	Damion Pontanese	Panetta					
	Joe Panetta	Panetta					
	[illegible]						
Laborer	Edgar Cruz	Mazzocchi	2/8/07	X			
Laborer	Jose Duque	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	2/7/07	X			
Laborer	Edgar Germar	Mazzocchi	6/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/1/07				
Laborer	Robert Grecco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/28/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	[illegible]	X			
	Vito Mongelli	Amanda	9/14/07	X			✓
	Santos Sanchez	Amanda	9/17/07	X			✓
Mason	Nicholas Vitale	Amanda	12/22/08				
	Adam Hales	Papp Iron Works	[illegible]	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			

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Elec.	Christopher Adorna	S.M. Electric	7/16/07	X			X
	Michael Alberta	S.M. Electric	3/11/08	X			X
Elec.	Frank Coppola	S.M. Electric	7/16/07	X	X		X
Elect.	Richard Durry	S.M. Electric	10/26/07	X			X
	John Griffiths	S.M. Electric	2/14/08	X			X
	Steven Gage	S.M. Electric	[illegible]	X	X		
Elec.	Paul Higgins	S.M. Electric	[illegible]	X	X		X
	Marc Infozino	S.M. Electric	3/17/08	X			
	Stefan Lap[illegible]	S.M. Electric	[illegible]				X
	Tony Maa[illegible]	S.M. Electric	1/21/08	X	X		
Elec.	Michael Melkon[illegible]	S.M. Electric	[illegible]	X	X		X
Elect.	Joseph O' Conn[illegible]	S.M. Electric	[illegible]	X			X
	Edwin Pal[illegible]	S.M. Electric	12/30/08				X
Elect.	Robert Periera	S.M. Electric	[illegible]/07	X	X		X
	Lee Sherwood	S.M. Electric	[illegible]	X			X
	Andres Vel[illegible]	S.M. Electric	3/17/08	X			X
Plumber	Anthony DeFin[illegible]	Zabransky	4/2/07	X			
Plumber	Daniel Wiener	Zabransky	4/2/07	X			
	John Diehl	Cord Hardy Mech.	[illegible]		X		
	Albert Gonzalez	Cord Hardy Mech.	[illegible]		X		
	Oscar Moore	Cord Hardy Mech.	9/21/07	X	X		
	Eric Hernandez	Northeast	8/22/07	X			
	John Takacs	Northeast	6/27/07	X			
	Patrick Yodice	Northeast	1/24/08	X			
	Patrick Visconti	Northeast	3/31/08	X			
	Kurt Falk	Venture Electric	7/30/07	X			
	Attila Vigilante	Venture Electric	1/22/08	X			
	Anthony Danielson	Metro		X			
Fitte	Robert Sta[illegible]	Monmouth Controls	9/27/07	X			
	Eric Grieb	Monmouth Controls	6/17/08	X			
	Kevin Vaughn	Monmouth Controls	11/17/08				
	Michael Gaffney	EEI	6/4/07	X			
	Gary Molzen	EEI	11/19/07	X			
	Michael Hawtin	EEI	2/4/08	X			
	Shayne Spaziani	EEI	2/4/08	X			
	Fred Russo	EEI	8/28/07	X			
	Francis Kaufmann	EEI	8/20/08	X			
	Robert Applegate	EEI	10/6/08				

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	Douglas Domiccio	EEI	10/6/08	X			
E	Scott Ritter	EEI (MCS)	5/7/07	X			—
	Mark Tomas	EEI (MCS)	8/27/07	X			
	Ron Butler	EEI (MCS)	9/27/07	X			
E	Craig Harrigan	EEI (MCS)	5/7/07	X			—
E	Ted McSwey	EEI (MCS)	[illegible]	X			—
E	Lee Melnikoff	EEI (MCS)	5/7/07	X			
	Richard Good	EEI (MCS)	9/12/07	X			
	William Fantasia	EEI (MCS)	12/12/07	X			
	Tarin Valente	EEI (MCS)	4/24/07	X			
	Carl Jorgensen	EEI (MCS)	4/24/07	X			
	Paul Schuck	EEI (MCS)		X			

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Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carpt	Tim Perrotta	VRH	[illegible]			X	
Laborer	Edwin De Jesus	VRH	[illegible]	X			
	Keith Loves	VRH	10/19/07	X		X	
	Anthony Andrade	VRH	12/18/07	X			
	Todd Perrotta	VRH	12/[illegible]			X	
	Gary Reuter	VRH	12/10/07			X	✓
	Dan Leaver	Pornotain Painting					
	Dennis Leaver	Pornotain Painting		x			
	Roger Stone	Layout Inc					
	Dave Woodward	Layout Inc					
	Tim Carr	Layout Inc	6/3/06	X			
	Paul Medwayor	Panetta					
	Rocky Panetta	Panetta					
	Joe Aost	Panetta					
	Damon Portuguese	Panetta					
	Joe Panetta	Panetta					
Laborer	Edgar Cruz	Mazzocchi	[illegible]	X			
Laborer	Jose Duque	Mazzocchi	2/8/07	X			
Laborer	Raul Espinosa	Mazzocchi	3/7/07	X			
Laborer	Edgar German	Mazzocchi	5/23/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Grecco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/28/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sancheili	Mazzocchi	2/2/07	X			
	James Sedano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Vito Mongelli	Amanda	9/14/07	X			✓
	Santos Sanchez	Amanda	9/17/07	X			✓
Mason	Nicholas Vitale	Amanda	12/22/08	X			✓
	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			

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	Michael Muto	Papp Iron Works	3/24/09				
	Patrick Lawlor	RCC		X			✓
	Kenny Carolyn	RCC		X			✓
	Terrance Barry	McCann	1/7/07	X			
	Vincent Beliofatto	McCann	12/18/07	X			
	Joe DeAngelis	McCann	1/24/07	X			
	Joe LaTorre	McCann	11/26/07	X			
	Anthony Novello	McCann	11/2/07	X			
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Frank Corrao	McCann	3/26/09				
	Gregory Tomasella	Josloff Glass	2/27/07	X			✓
	Brian Cunningham	Josloff Glass	[illegible]	X			
	Thomas DeMaio	Josloff Glass	6/4/08	X			✓
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass		X			✓
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Leske	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Ruiz	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Jose Dominguez	Fine Painting	3/30/07	X			
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			
	Antonio Fraga	Fine Painting	11/3/08	X			
	Jacek Czernik	Signs & Decals	5/6/08	X		X	
	Jorge Alvarez	Signs & Decals	5/6/08				
	Jaime Castillo	Signs & Decals					
	Sean Murray	Thyssen Krupp	6/16/08	X			
	Frankie DeGirolamo	Thyssen Krupp	7/7/08				
	Danny Vitale	Thyssen Krupp	7/11/08				
	Nick Comodo	Thyssen Krupp	7/9/08				
	Saviour Debono	Thyssen Krupp	2/24/09				
	Zachory Randall	Thyssen Krupp					

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Elect.	Christopher Aquino	S.M. Electric	7/15/08	X			✓
	Michael Alberta	S.M. Electric	3/11/08	X			✓
Elect.	Frank Coppola	S.M. Electric	7/18/07	X	X		✓
Elect.	Richard Doty	S.M. Electric	10/25/07	X			
	John Griffiths	S.M. Electric	3/14/08	X			✓
	Steven Gage	S.M. Electric	3/7/07	X	X		✓
Elect.	Paul Higgins	S.M. Electric	1/18/07	X	X		
	Mario Mozzo	S.M. Electric	3/17/08	X			✓
	Stefan Lessard	S.M. Electric	10/20/08	✓			✓
	Tony Maggio	S.M. Electric	1/24/08	X	X		✓
Elect.	Michael Melkonian	S.M. Electric	9/11/07	X	X		
Elect.	Joseph D'Cenzo	S.M. Electric	12/19/07	X			✓
	Edwin Palesh	S.M. Electric	12/20/99				
Elect.	Robert Parlong	S.M. Electric	1/8/07	X	X		
	Lee Sherwood	S.M. Electric	3/4/09	X			
	Andres Velez	S.M. Electric	3/17/08	X			✓
	F. ROBERTS	SM					✓
Plumber	A. JAMES	SM		X			✓
Plumber	Daniel Warner	Zarbanos	4/2/07	X			
	JOE FEGTR	NORTHEAST		X			✓
	John Delli	[illegible]	5/7/07		X		✓
	Albert Cayuro	[illegible]	3/28/07		X		✓
	Jose Moore	[illegible]	9/21/07	X	X		✓
	Eric Hernandez	Northeast	8/22/07	X			
	John Takacs	Northeast	6/27/07	X			
✓	Patrick Yodice	Northeast	1/24/08	X			✓
✓	Patrick Visconti	Northeast	3/31/08	X			✓
	Kurt Falk	Venture Electric	7/30/07	X			
	[illegible]	Venture Electric	1/22/08	X			
	[illegible]	[illegible]		X			
	[illegible]	Northeast		X			✓
Fitter	Joseph Stanic	Monmouth Contrs	8/27/07	X			
	Eric Gage	Monmouth Contrs	9/17/08	X			
	Kevin Vaughn	Monmouth Contrs	11/17/08				
	Michael Gaffney	EEI	3/3/08	X			
	Gary Moran	EEI	1/19/07	X			
	Michael Hanna	EEI	2/4/08	X			
	Sergio Sirezdan	EEI	2/4/08	X			
	Fred Russo	EEI	3/29/07	X			
	Frank Kaufmann	EEI	12/2/08	X			
	Robert Applegate	EEI	10/6/08				

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	[illegible]	[illegible]	[illegible]	X			
E	Scott Ritter	EEI (MCS)	5/7/07	X			
	Mark [illegible]	EEI (MCS)	6/27/07	X			
	Ron Butler	EEI (MCS)	4/27/07	X			
	Gary Hanigan	EEI (MCS)	5/7/07	X			
E	Joe Valevo	EEI (MCS)	7/2/07	X			
	Lee Melnikoff	EEI (MCS)	5/7/07	X			
	Richard Geep	EEI (MCS)	5/12/07	X			
	William [illegible]	EEI (MCS)	12/12/07	X			
	Frank Valente	EEI (MCS)	4/21/07	X			
	[illegible]	EEI (MCS)	4/24/07	X			
	Paul Schuck	EEI (MCS)		X			

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	[illegible]	[illegible]	[illegible]	X			✓
	Michael Alberta	S.M. Electric	3/11/08	X			✓
	[illegible]	[illegible]	[illegible]	X	X		
Elect	[illegible]	[illegible]	[illegible]	X			✓
	[illegible]	[illegible]	[illegible]	X			✓
	[illegible]	[illegible]	[illegible]				
	[illegible]	[illegible]	[illegible]	X	X		
Elect	[illegible]	[illegible]	[illegible]	X	X		✓
	[illegible]	[illegible]	[illegible]	X			✓
	[illegible]	[illegible]	[illegible]				✓
	[illegible]	[illegible]	[illegible]	X	X		
Elect.	[illegible]	[illegible]	[illegible]	X	X		✓
	[illegible]	[illegible]	[illegible]	X			✓
	Kevin Power	[illegible]	[illegible]				
	[illegible]	[illegible]	[illegible]	X	X		✓
	[illegible]	[illegible]	[illegible]	X			✓
	[illegible]	[illegible]	[illegible]	X			✓
	[illegible]	[illegible]	[illegible]				
	Bob Eberle	[illegible]	[illegible]				
Plumber	Anthony De[illegible]	[illegible]	[illegible]	X			
Plumber	Daniel Wier[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]		X		
	[illegible]	[illegible]	[illegible]				
	[illegible]	[illegible]	[illegible]				
	[illegible]	[illegible]	[illegible]		X		
	[illegible]	[illegible]	[illegible]	X	X		
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			✓
	[illegible]	[illegible]	[illegible]	X			✓
	[illegible]	[illegible]	[illegible]				✓
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	Northeast		X			✓
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]				
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]				
	[illegible]	[illegible]	[illegible]	X			✓
	Mark Titmas	EEI (MCS)	8/27/07	X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
	[redacted]	[redacted]	[redacted]	X			
E	Craig Hersleen	EEI (MCS)	5/7/07	X			
	[redacted]	[redacted]	[redacted]	X			
	[redacted]	[redacted]	[redacted]	X			
	[redacted]	[redacted]	[redacted]	X			
	[redacted]	[redacted]	[redacted]	X			
	[redacted]	[redacted]	[redacted]	X			
	[redacted]	[redacted]	[redacted]	X			
	[redacted]	[redacted]	[redacted]	X			
	[redacted]	[redacted]	[redacted]	X			
	[redacted]	[redacted]	[redacted]	X			
	[redacted]	[redacted]	[redacted]	X			
	[redacted]	[redacted]	[redacted]	X			
	[redacted]	[redacted]	[redacted]	X			
	Tom Reid	Santaniello	7/6/09				

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[illegible]	Christopher [illegible]	S.M. Electric	6/[illegible]	X			
Elect	Frank Coppola	S.M. Electric	7/16/07	X	X		
	John Griffiths	S.M. Electric	10/26/07	X			
Elect	[illegible]	S.M. Electric	[illegible]	X	X		
[illegible]	[illegible]	S.M. Electric	[illegible]/08	X			
Elect.	[illegible]	S.M. Electric	9/1/07	X	X		
[illegible]	[illegible]	S.M. Electric	12/19/07	X			
[illegible]	Robert [illegible]	S.M. Electric	[illegible]	X	X		
	[illegible]	S.M. Electric	3/4/08	X			
	[illegible]	S.M. Electric	[illegible]	X			
	Michael [illegible]	S.M. Electric	[illegible]	X			
	[illegible]	S.M. Electric	[illegible]	X			
Plumber	Daniel Wier	[illegible]	4/2/07	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]						
[illegible]	John Diehl	[illegible]	5/[illegible]		X		
	[illegible]	[illegible]	9/25/07		X		
	[illegible]	[illegible]	[illegible]	X	X		
	Joe McGarrigle	[illegible]	[illegible]	X			
	Patrick [illegible]	[illegible]	[illegible]/08	X			
	Patrick Viscuso	Northeast	2/3/08	X			
	[illegible]						
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]					
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	Metro	10/1/08				
Fitter	Joseph [illegible]	Monmouth Central	[illegible]	X			
	[illegible]	Monmouth Central	[illegible]	X			
	[illegible]	Monmouth Central	[illegible]	X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
	[illegible]	[illegible]		X			✓
Elect.	[illegible]	[illegible]		X	X		✓
Elect	[illegible]	[illegible]		X	X		✓
	[illegible]	[illegible]		X			✓
Elect.	[illegible]	[illegible]		X	X		✓
	[illegible]	[illegible]		X			
	[illegible]	[illegible]		X	X		
	[illegible]	[illegible]		X			✓
	[illegible]	[illegible]		X			
	[illegible]	[illegible]		X			
	BBB FOERNER	S.N. ELECTRIC		X			✓
Plumb	[illegible]	[illegible]		X			
	[illegible]	[illegible]		X			
	[illegible]	[illegible]					
	[illegible]	[illegible]			X		[illegible]
	[illegible]	[illegible]			X		
	[illegible]	[illegible]		X	X		[illegible]
	[illegible]	[illegible]		X			
	[illegible]	[illegible]		X			
	[illegible]	[illegible]		X			
	[illegible]	[illegible]					
	[illegible]	[illegible]		X			
	[illegible]	[illegible]		X			
	[illegible]	[illegible]					
	[illegible]	[illegible]		X			
	[illegible]	[illegible]		X			
	[illegible]	[illegible]					
	[illegible]	[illegible]		X			
	[illegible]	[illegible]					
	[illegible]	[illegible]		X			
	[illegible]	[illegible]		X			
	[illegible]	[illegible]		X			
	ALBERT KING	" "		X			✓
	TODD GROKOLSKI	" "		X			✓

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Labor	Angelo Tramutolo	VRH	2/8/07	X		X	✓
Carpt	Tim Perrotta	VRH	1/3/07			X	
Laborer	Edwin De Jesu	VRH	9/23/07	X			✓
	Keith Lovas	VRH	10/15/07	X		X	✓
	Anthony Andrade	VRH	12/18/07	X			✓
	Todd Perrotta	VRH	12/2[illegible]/07			X	✓
	Gary Reuter	VRH	12/1[illegible]/07			X	✓
	Dan Leaver	Pompstar Painting					
	Dennis Leaver	Pompstar Painting		X			
	Roger Stolte	Layout Inc					
	Dave Woodward	Layout Inc					
	Tim Carr	Layout Inc	6/20/07	X			
	Pap Medway Jr	Panetta					
	Rocky Panetta	Panetta					
	Joe Anst	Panetta					
	Damion Pontar[illegible]	Panetta					
	Joe Panetta	Panetta					
Laborer	Edgar Cruz	Mazzocchi	[illegible]	X			
Laborer	Jose Duque	Mazzocchi	2/[illegible]/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/[illegible]/07	X			
Laborer	Edgar German	Mazzocchi	6/[illegible]/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/[illegible]				
Laborer	Robert Grecco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/28/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Vito Mongelli	Amanda	9/14/07	X			✓
	Santos Sanchez	Amanda	9/17/07	X			✓
Mason	Nicholas Vitale	Amanda	12/22/08				
	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Michael Muto	Papp Iron Works	3/24/09				
	Patrick Lawler	RCC		X			
	Kenny Carolyn	RCC					
	Terrance Barry	McCann	1/7/07	X			
	Vincent Bellofatto	McCann	12/18/07	X			
	Joe DeAngelis	McCann	1/24/07	X			
	Joe LaTorre	McCann	11/26/07	X			
	Anthony Novello	McCann	11/2/07	X			
	Paul Kensek	McCann	3/10/08	X			
	Chris Hunsberry	McCann	3/10/08	X			
	Frank Corrao	McCann	3/26/09				
	Gregory Tomasula	Josloff Glass	2/27/07	X			
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	8/4/08	X			
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass					
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Cesko	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Bae	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/13/08	X			
	[illegible]	[illegible]		X			
	Jose Dominguez	Fine Painting	3/30/07	X			
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			
	Antonio Fraga	Fine Painting	11/3/08	X			
	Jacek Czernik	Signs & Decals	5/6/08	X		X	
	Jorge Alvarez	Signs & Decals	5/6/08				
	Jaime Castillo	Signs & Decals					
	Sean Murray	Thyssen Krupp	6/16/08	X			
	Frankie DeGirolamo	Thyssen Krupp	7/7/08				
	Danny Vitale	Thyssen Krupp	7/11/08				
	Nick Comodo	Thyssen Krupp	7/9/08				
	Saviour Debono	Thyssen Krupp	2/24/09				
	Zachory Randall	Thyssen Krupp					

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	David Malito	Thyssen Krupp					
	Ron Bauder	Thyssen Krupp					
	John Ostroski	Thyssen Krupp					
	Robert Goodfellow	Thyssen Krupp	2/24/09				
	Matt Jansson	Mirotrond			✓		✓
	John Looney	"			✓		✓
	Jason LaRue	"			✓		✓
	Carlo Mentzoli	"			✓		✓
	Mike Martin	"			✓		✓

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Elect.	Christopher Adorna	S.M. Electric	7/16/07	X			✓
	Michael Alberta	S.M. Electric	3/11/08	X			✓
Elect.	Frank Coppola	S.M. Electric	7/16/07	X	X		✓
Elect.	Richard Duffy	S.M. Electric	10/22/07	X			✓
	John Griffith	S.M. Electric	10/26/07	X			✓
	Mike James	S.M. Electric	10/26/07				✓
	Steven Gage	S.M. Electric	3/7/07	X	X		✓
Elect.	Paul Hayes	S.M. Electric	1/3/07	X	X		✓
	Mario Pedano	S.M. Electric	3/17/08	X			✓
	Steven Lepovitz	S.M. Electric	10/20/08				✓
	Tony Maalouf	S.M. Electric	1/21/08	X	X		✓
Elect.	Michael McKenna	S.M. Electric	[illegible]	X	X		✓
Elect.	Joseph O'Connor	S.M. Electric	[illegible]	X			✓
	Edwin Palmer	S.M. Electric	[illegible]				✓
Elec	Robert Pedano	S.M. Electric	[illegible]	X	X		✓
	Joe Sarnowski	S.M. Electric	[illegible]	X			✓
	Andres Velez	S.M. Electric	[illegible]	X			✓
	Frank Roberts	S.M. Electric	[illegible]				
	Ed Foerhner	S.M. Electric	[illegible]				
Plumber	Anthony DeFrisco	Zabransky	[illegible]	X			
Plumber	Daniel Wiene	Zabransky	[illegible]	X			
	John Dietl	Carol Harvey Mech	5/7/07		X		
	Sterling Singer	Carol Harvey Mech					
	Tom Maloney	Carol Harvey Mech					
	Albert Gaynore	Carol Harvey Mech	9/25/07		X		
	Oscar Montes	Carol Harvey Mech	9/21/07	X	X		
	Eric Hernandez	Northeast	8/22/07	X			
	John Takacs	Northeast	8/27/07	X			
	Patrick Yodice	Northeast	1/24/08	X			
	Patrick Visconti	Northeast	3/31/08	X			
	Joe McTeiman	Northeast					
	John Feger	Northeast					
	Kurt Falk	Northeast	[illegible]	X			
	Attila Vigilanti	Northeast	[illegible]	X			
	Anthony Danielson	Northeast	[illegible]	X			
Fire	Joseph Stanio	Monmouth Controls	[illegible]	X			
	Eric Grieb	Monmouth Controls	[illegible]	X			
	Kevin Vaughn	Monmouth Controls	11/17/08				
	Michael Gaffney	EEI	6/4/07	X			
	Gary Molzen	EEI	11/19/07	X			
	Michael Hawtin	EEI	2/4/08	X			
	Shayne Spaziani	EEI	2/4/08	X			
	Fred Russo	EEI	8/28/07	X			
E	Scott Ritter	EEI (MCS)	5/7/07	X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
	Mark Titmas	EEI (MCS)	8/27/07	X			
	Todd McEvoy	EEI (MCS)	[illegible]	X			
	Darrin Valenti	EEI (MCS)	4/24/07	X			
	Carl Jorgensen	EEI (MCS)	4/24/07	X			
	Paul Schuck	EEI (MCS)	[illegible]	X			
	Thomas Gau[illegible]	Santaniello	6/5/08	X			
	Young Ma	Santaniello	[illegible]	X			
	Williams	Santaniello	7/[illegible]				
	Don McMillon	Santaniello	7/6/09				
	Jim [illegible]	Santaniello	7/6/09				
	Tom Reid	Santaniello	7/6/09				

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	Michael Muto	Papp Iron Works	3/24/09				
	Patrick Lawlor	RCC		X			
	Kenny Carolyn	RCC					
	Terrance Barry	McCann	1/7/07	X			
	Vincent Bellofatto	McCann	12/18/07	X			
	Joe DeAngelis	McCann	1/24/07	X			
	Joe LaTorre	McCann	11/26/07	X			
	Anthony Novello	McCann	11/2/07	X			
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Frank Corrao	McCann	3/26/09				
	Gregory Tomasula	Josloff Glass	2/27/07	X			
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	8/4/08	X			✓
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass		X			✓
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			✓
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Kevin Clark	D. Magnan					
	Jose Dominguez	Fine Painting	3/30/07	X			
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			
	Antonio Fraga	Fine Painting	11/3/08	X			
	Jacek Czernik	Signs & Decals	5/6/08	X		X	
	Jorge Alvarez	Signs & Decals	5/6/08				
	Jaime Castillo	Signs & Decals					
	Sean Murray	Thyssen Krupp	6/16/08	X			
	Frankie DeGirolamo	Thyssen Krupp	7/7/08				
	Danny Vitale	Thyssen Krupp	7/11/08				
	Nick Comodo	Thyssen Krupp	7/9/08				
	Saviour Debono	Thyssen Krupp	2/24/09				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Zachory Randall	Thyssen Krupp					
	David Malito	Thyssen Krupp					
	Ron Bauder	Thyssen Krupp					
	John Ostroski	Thyssen Krupp					
	Robert Goodfellow	Thyssen Krupp	[illegible]				
	Matthew Janssen	Moretrench			X		✓
	John Loehr	Moretrench			X		✓
	Jason Larue	Moretrench					
	Carlo Mondelli	Moretrench			X		✓
	Mike Maiu	Moretrench			[illegible]		✓
	JASON KUZA	VL			X		✓
	KELLY GREEN	GUARDIAN			X		✓
	RONALD VAN BURIEN	"			X		✓
	JORGE MALAVE	"			X		✓
	HARRY McCOURT	"			X		✓

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Labor	Angelo Tramutolo	VRH	2/8/07	X		X	✓
Carpenter	Tim Petrotta	VRH	1/2/07			X	
Laborer	Edwin De Jesus	VRH	9/26/07	X			✓
	Ralph Levas	VRH	10/1/07	X		X	✓
	Anthony Andrade	VRH	12/13/07	X			✓
	Todd Perrotta	VRH	12/27/07			X	✓
	Gary Reuter	VRH	12/12/07			X	✓
	Don Leavoy	Pompitain Painting					
	Dennis Leaver	Pompitain Painting		X			
	Roger Stolte	Layout Inc					
	Dave Woodward	Layout Inc					
	Tim Carr	Layout Inc	6/30/07	X			
	Paul Medway Jr	Panetta					
	Rocky Panetta	Panetta					✓
	Joe Anstis	Panetta					
	Damion Panetta	Panetta					✓
	Joe Panetta	Panetta					✓
Laborer	Edgar Cruz	Mazzocchi	2/5/07	X			
Laborer	Jose Duque	Mazzocchi	2/5/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/7/07	X			
Laborer	Edgar German	Mazzocchi	5/26/07	X			
Laborer	Ralph Gravano	Mazzocchi	4/13/07				
Laborer	Robert Grecco	Mazzocchi	2/3/07	X			
Laborer	Michael Patton	Mazzocchi	2/2/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sanchez	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viten	Mazzocchi	4/11/07	X			
	Vito Mongelli	Amanda	8/14/07	X			
	Santos Sanchez	Amanda	9/17/07	X			
Mason	Nicholas Vitale	Amanda	12/22/08				
	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
[illegible]	[illegible]	[illegible]	[illegible]	X			
	Michael Alberta	S.M. Electric	3/11/08	X			
[illegible]	[illegible]	[illegible]	[illegible]	X	X		
Elect.	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	X	X		
Elect.	[illegible]	[illegible]	[illegible]	X	X		
[illegible]	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	X	X		
[illegible]	[illegible]	[illegible]	[illegible]	X	X		
[illegible]	[illegible]	[illegible]	12/19/07	X			
	[illegible]	[illegible]	[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	X	X		
	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	X			
Plumb	Daniel Wiener	Zaoransky	[illegible]	X			
[illegible]	[illegible]	Carol Hardy Mech	[illegible]		X		
	Sterling Sloan	Carol Hardy Mech					
[illegible]	[illegible]	[illegible]	[illegible]				
	Albert Gaynore	Carol Hardy Mech.	[illegible]		X		
[illegible]	[illegible]	[illegible]	[illegible]	X	X		
	[illegible]	Northeast	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]				
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]				
	[illegible]	EEI	[illegible]	X			
	[illegible]	EEI	[illegible]	X			
	[illegible]	EEI	[illegible]	X			
	[illegible]	EEI	[illegible]	X			
	[illegible]	EEI	8/28/07	X			
[illegible]	[illegible]	EEI (MCS)	5/7/0[illegible]	X			
	Mark Titmas	EEI (MCS)	8/27/07	X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]				
[illegible]	Tom Reid	Santaniello	7/6/09				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Elect	Christopher A[illegible]	S.M. Electric	[illegible]	X			✓
	Mario A[illegible]	S.M. Electric	[illegible]	X			✓
Elect	Frank Ciccarelli	S.M. Electric	[illegible]	X	X		✓
Elect	[illegible]	S.M. Electric	[illegible]	X			✓
	John Griffith	S.M. Electric	[illegible]	X			✓
	Mike Jones	S.M. Electric	[illegible]				✓
	Steven Gaga	S.M. Electric	[illegible]	X	X		✓
Elect	Paul Higgins	S.M. Electric	[illegible]	X	X		✓
	Marc Infezino	S.M. Electric	[illegible]	X			✓
	[illegible]	S.M. Electric	[illegible]				✓
	Tony Maiolo	S.M. Electric	[illegible]	X	X		✓
Elect.	Mike Morrison	S.M. Electric	[illegible]	X	X		✓
Elect	[illegible] O'Connor	S.M. Electric	[illegible]	X			
	Edward Palmer	S.M. Electric	[illegible]				✓
Elect	Robert Henry	S.M. Electric	[illegible]	X	X		✓
	Joe Sne[illegible]	S.M. Electric	[illegible]	X			✓
	Andrew [illegible]	S.M. Electric	[illegible]	X			✓
	Bob Foermner	S.M. Electric	[illegible]				
Plumbe	[illegible]	[illegible]	[illegible]	X			
Plumbe	Daniel W[illegible]	[illegible]	[illegible]	X			
	John [illegible]	[illegible]	[illegible]		X		
	Sherry Sloan	[illegible]					
	[illegible]	[illegible]					
	Aaron Seymore	[illegible]	[illegible]		X		
	Oscar [illegible]	[illegible]	[illegible]	X	X		
	Eric Hernandez	Northeast	[illegible]	X			
	John Tal[illegible]	Northeast	[illegible]	X			✓
	Patrick Young	Northeast	[illegible]	X			
	Patrick Visconti	Northeast	[illegible]	X			
	Joe McTeighe	Northeast	[illegible]				
	John Fa[illegible]	Northeast					
	Kurt Fa[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	Anthony [illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	Eric [illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]				
	Michael Gaffney	EEI	[illegible]	X			✓
	[illegible]	EEI	[illegible]	X			✓
	[illegible]	EEI	[illegible]	X			✓
	[illegible]	EEI	[illegible]	X			
	[illegible]	EEI	[illegible]	X			
	Scott K[illegible]	EEI (MCS)	[illegible]	X			
	Mark Titmas	EEI (MCS)	8/27/07	X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
	Ted Mbewe	EEI MCS	7/2/09	X			
	Dan Valente	EEI MCS	4/24/07	X			
	Dan Jonnemann	EEI MCS	4/24/07	X			
	Paul Schuck	EEI MCS	[illegible]	X			
	Thomas Gatt	Santaniello	6/5/09	X			
	Young Ma	Santaniello	[illegible]	X			
	Vito Ettis	Santaniello	[illegible]				
	Don McMillan	Santaniello	[illegible]				
	Jim Cunningham	Santaniello	6/8/09				
	Tom Reid	Santaniello	7/6/09				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Labor	Angelo Tramutolo	VRH	2/8/07	X		X	✓
Carpenter	Tim Pernotta	VRH	[illegible]			X	
Laborer	Edwin De Jesus	VRH	9/26/07	X			✓
	Keith Lovas	VRH	12/15/07	X		X	✓
	Anthony Andrade	VRH	12/18/07	X			✓
	Todd Panetta	VRH	12/27/07			X	
	Gary Reiner	VRH	12/10/07			X	✓
	Dan Leavey	Pontiptain Painting					
	Dennis Leavey	Pontiptain Painting		X			
	Roger Stolte	Layout Inc.					
	Dave Woodward	Layout Inc.					
	Tim Carr	Layout Inc.	8/31/07	X			
	Paul Medway Jr.	Panetta					
	Rocky Panetta	Panetta					
	Joe Antonucci	Panetta					
	Carmen Pontarelli	Panetta					
	Joe Panetta Jr.	Panetta					
Laborer	Edgar Cruz	Mazzocchi	2/8/07	X			
Laborer	Jose Luque	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	2/7/07	X			
Laborer	Edgar German	Mazzocchi	2/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Grecco	Mazzocchi	2/6/07	X			
Laborer	Michael Patton	Mazzocchi	2/26/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Vito Mongelli	Amanda	9/14/07	X			✓
	Santos Sanchez	Amanda	9/17/07	X			✓
Mason	Nicholas Vitale	Amanda	12/22/08				✓
	Jason Hales	Papp Iron Works	11/1/07	X			✓
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			✓

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Michael Muto	Papp Iron Works	3/24/09				
	Patrick Lawlor	RCC		X			
	Kenny Caro[illegible]	RCC					
	Fernando Barry	McCann	1/7/07	X			
	Vincent Bellofatto	McCann	12/18/07	X			
	Joe DeAngelis	McCann	1/24/07	X			
	Joe LaTorre	McCann	11/26/07	X			
	Anthony Novello	McCann	11/2/07	X			✓
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Frank Corrao	McCann	3/26/09				
	Gregory Tomasulo	Josloff Glass	2/27/07	X			
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas DeMaio	Josloff Glass	8/4/08	X			✓
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass		X			✓
	Anthony Castellazzo	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Luske	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			✓
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Kevin Clark	D. Magnan					
	Jose Dominguez	Fine Painting	3/30/07	X			
	Manuel Romero	Fine Painting	3/30/07	X		X	✓
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			
	Antonio Braga	Fine Painting	11/3/08	X			
	Jacek Czernik	Signs & Decals	5/6/08	X		X	
	Jorge Alvarez	Signs & Decals	5/6/08				
	Jaime Castillo	Signs & Decals					
	Sean Murray	Thyssen Krupp	6/16/08	X			✓
	Frankie DeGirolamo	Thyssen Krupp	7/7/08	X			✓
	Danny Vitale	Thyssen Krupp	7/11/08	X			✓
	Nick Comodo	Thyssen Krupp	7/9/08				
	Saviour Debono	Thyssen Krupp	2/24/09				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Zachory Randall	Thyssen Krupp					
	David Malito	Thyssen Krupp					
	Ron Bauder	Thyssen Krupp					
	John Ostroski	Thyssen Krupp					
	Robert Goodfellow	Thyssen Krupp	2/24/09				
	Matthew Janssen	Moretrench					
	John Loehr	Moretrench		X			✓
	Jason Larue	Moretrench					
	Carlo Mondelli	Moretrench			X		✓
	Mike Martin	Moretrench		X			✓

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
	[illegible]	[illegible]	[illegible]	X			
	Michael All[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X	X		
Elect	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]				
	[illegible]	[illegible]	[illegible]	X	X		
Elect	[illegible]	[illegible]	[illegible]	X	X		
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]				
	[illegible]	[illegible]	[illegible]	X	X		
Elect	Michael [illegible]	[illegible]	[illegible]	X	X		
	Joseph [illegible]	[illegible]	[illegible]	X			
	Edwin [illegible]	[illegible]	[illegible]				
	Robert [illegible]	[illegible]	[illegible]	X	X		
	Lee Sherw[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	Bob Foerhner	[illegible]	[illegible]				
Plumber	Anthony [illegible]	[illegible]	[illegible]	X			
Plumber	Daniel Wiener	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]		X		
	Sterling Sic[illegible]	[illegible]	[illegible]				
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]		X		
	[illegible]	[illegible]	[illegible]	X	X		
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]				
	[illegible]	[illegible]	[illegible]				
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	Anthony Dan[illegible]	[illegible]	[illegible]	X			
	Joseph Star[illegible]	[illegible]	[illegible]	X			
	Eric Grieb	[illegible]	[illegible]	X			
	Kevin Vaughn[illegible]	[illegible]	11/17/08				
	Michael Gaffney	[illegible]	9/4/07	X			
	Gary Molzen	[illegible]	11/19/07	X			
	Michael Hawtin[illegible]	[illegible]	[illegible]	X			
	Shayne Spaziani	[illegible]	[illegible]	X			
	Fred Russo[illegible]	[illegible]	[illegible]	X			
	Scott Ritter	EEI (M[illegible]	[illegible]	X			
	Mark Titmas	EEI (MCS)	8/27/07	X			

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	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]				
	[illegible]	[illegible]	[illegible]				
	[illegible]	[illegible]	[illegible]				
	Tom Reid	Santaniello	7/6/09				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Labor	Angelo Tramutolo	VRH	2/8/07	X		X	—
[illegible]	[illegible]	VRH	1/8/07			X	
Laborer	Edwin [illegible]	VRH	9/26/07	X			—
	Kurt Loveys	VRH	8/13/07	X		X	—
	[illegible]	VRH	12/18/07	X			—
	[illegible]	VRH	12/27/07			X	
	[illegible]	VRH	[illegible]			X	
	Dan Leaver	Pompeo Panone					
	[illegible]	Pompeo Panone		X			
	Roger [illegible]	Lavour Inc					
	Dave [illegible]	Lavour Inc					
	Tim Carr	Lavour Inc	8/27/07	X			
	Paul Broadway	Paterna					
	Rocky Panetta	Paterna					
	[illegible]	Panetta					
	Damon Ponticello	Paterna					
	Joe Panetta	Paterna					
Laborer	Edgar Cruz	Mazzocchi	2/5/07	X			
Laborer	Jesse Daddel	Mazzocchi	9/4/07	X			
Laborer	Raul Fonseca	Mazzocchi	3/7/07	X			
Laborer	Edgar German	Mazzocchi	10/25/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/12/07				
Laborer	Robert Greco	Mazzocchi	2/5/07	X			
Laborer	Michael Patto	Mazzocchi	2/23/07	X			
Laborer	Edward Robinson	Mazzocchi	12/12/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/5/07	X			
Laborer	William Sanchez	Mazzocchi	2/5/07	X			
	James Sciarro	Mazzocchi	7/7/07				
Laborer	Michael Turner	Mazzocchi	[illegible]				
Laborer	[illegible]	Mazzocchi	4/11/07	X			
	Vito [illegible]	Amado	5/14/07	X			—
	Santos Sanchez	Amado	1/17/07	X			—
Mason	Nicholas [illegible]	Amado	12/22/06				—
	Jason [illegible]	Papp Iron Works	1/11/07	X			
	[illegible]	Papp Iron Works	1/11/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			

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	Michael Muto	Papp Iron Works	3/24/09				
	Patrick Lawlor	RCC		X			
	Kenny Sarcton	RCC					
	Orlando Barry	McCann	[illegible]	X			
	Vincent Barcatto	McCann	12/18/07	X			
	[illegible] DeAngelis	McCann	[illegible]	X			
	Joe LaTorre	McCann	11/26/07	X			
	Anthony Novello	McCann	11/2/07	X			
	Paul Kensek	McCann	3/10/08	X			
	Craig Hamaltree	McCann	[illegible]	X			
	Frank Corrao	McCann	3/26/09				
	Gregory Tomasello	Josloff Glass	[illegible]	X			
	Brian Cummings	Josloff Glass	5/2/08	X			
	Thomas [illegible]	Josloff Glass	[illegible]	X			
	Bob Ferraro	Josloff Glass		X			
	T. DeMaio	Josloff Glass					
	Anthony Castellazzo	D. Magnan	[illegible]	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Fran Lasko	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/19/08	X			
	Kevin Clark	D. Magnan					
	Jose Dominguez	Fine Painting	3/30/07	X			
	Miguel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olava	Fine Painting	[illegible]	X			
	Antonio Fraga	Fine Painting	11/3/08	X			
	Jacek Czarnik	Signs & Decals	5/6/08	X		X	
	Jorge Alvarez	Signs & Decals	5/6/08				
	Jaime Castillo	Signs & Decals					
	Sean Murray	Thyssen Krupp	[illegible]	X			
	[illegible] Grogano	Thyssen Krupp	[illegible]				
	Danny Vitale	Thyssen Krupp	7/11/08				
	[illegible]	Thyssen Krupp	[illegible]				
	Saviour Debono	Thyssen Krupp	2/24/09				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Zachory Randall	Thyssen Krupp					
	David Malito	Thyssen Krupp					
	Ron Bauder	Thyssen Krupp					
	John Ostroski	Thyssen Krupp					
	[illegible]	Thyssen Krupp	2/24/09				
	Matthew Janssen	Moretrench					—
	John Loehr	Moretrench					
	Jason Larue	Moretrench					—
	Carlo Mondelli	Moretrench					—
	Mike Martin	Moretrench					—

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
[illegible]	[illegible]	S.M. Electric	[illegible]	X			
	Michael Alberta	S.M. Electric	3/11/08	X			
[illegible]	[illegible]	S.M. Electric	[illegible]	X	X		
Elect	[illegible]	S.M. Electric	[illegible]	X			
	[illegible]	S.M. Electric	[illegible]	X			
	[illegible]	S.M. Electric	10.29.07				
[illegible]	[illegible]	S.M. Electric	[illegible]	X	X		
Elect	[illegible]	S.M. Electric	[illegible]	X	X		
	[illegible]	S.M. Electric	[illegible]	X			
	[illegible]	S.M. Electric	[illegible]				
	[illegible]	S.M. Electric	[illegible]	X	X		
Elect	[illegible]	S.M. Electric	[illegible]	X	X		
[illegible]	[illegible]	S.M. Electric	[illegible]	X			
	[illegible]	S.M. Electric	[illegible]				
[illegible]	[illegible]	S.M. Electric	[illegible]	X	X		
	[illegible]	S.M. Electric	[illegible]	X			
	[illegible]	S.M. Electric	[illegible]	X			
	[illegible]	S.M. Electric	[illegible]				
Plumb	[illegible]	[illegible]	[illegible]	X			
Plumber	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]		X		
	[illegible]	[illegible]					
	[illegible]	[illegible]					
	[illegible]	[illegible]	9.25.07		X		
	[illegible]	[illegible]	[illegible]	X	X		
	[illegible]	Northeast	8.22.07	X			
	[illegible]	Northeast	[illegible]	X			
	[illegible]	Northeast	1.14.08	X			
	[illegible]	Northeast	[illegible]	X			
	[illegible]	Northeast					
	[illegible]	Northeast					
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	1.22.08	X			
	[illegible]	[illegible]		X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]					
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	EEI	[illegible]	X			
	[illegible]	EEI	[illegible]	X			
	[illegible]	EEI	[illegible]	X			
	[illegible]	EEI	5/[illegible]/07	X			
	[illegible]	EEI (MCS)	[illegible]	X			
	Mark Titmas	EEI (MCS)	8/27/[illegible]	X			

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[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]				
	Don McMillon	Santaniello	7/6/09				
[illegible]	[illegible]	[illegible]	[illegible]				
	Tom Reid	Santaniello	7/6/09				

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Ca[illegible]	Tim Pe[illegible]	VRH	[illegible]/8/0[illegible]			X	
La[illegible]	Edwin De[illegible]	VRH	9/25/[illegible]	X			✓
	Keith Lo[illegible]	VRH	10/[illegible]	X		X	✓
	Anthony Andra[illegible]	VRH	12/13/07	X			✓
	Todd Peretta	VRH	12/27/[illegible]			X	✓
	Gary Reuter	VRH	12/13/07			X	✓
	Dan Leaver	Pomptain Painting					
	Dennis Leaver	Pomptain Painting		X			
	Roger Stohe	Layout Inc.					
	Dave Woodward	Layout Inc.					
	Tim Carr	Layout Inc.	8/30/07	X			
	Paul Medway Jr.	Panetta					
	Rocky Panetta	Panetta					✓
	Joe Arst	Panetta					
	Damian Montanez	Panetta					
	Joe Panetta	Panetta					✓
La[illegible]	Edgar Cruz	Mazzocchi	2/6/07	X			
Laborer	Jose Duque	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	3/7/07	X			
Laborer	Edgar German	Mazzocchi	6/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/13/07				
Laborer	Robert Grecco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/28/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	Vito Mongelli	Amanda	9/14/07	X			✓
	Santos Sanchez	Amanda	9/17/07	X			✓
Mason	Nicholas Vitale	Amanda	12/22/08	X			✓
	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
Elect.	Christopher Adorna	S.M. Electric	7/13/07	X			✓
	Michael Alberda	S.M. Electric	3/11/08	X			✓
Elect.	Frank Coppola	S.M. Electric	7/18/07	X	X		✓
Elect.	Richard Duffy	S.M. Electric	10/23/07	X			✓
	John Gaffney	S.M. Electric	10/23/07	X			✓
	Mike James	S.M. Electric	10/23/07				✓
	Steven Gaga	S.M. Electric	8/7/07	X	X		✓
Elect.	Paul Higgins	S.M. Electric	10/23/07	X	X		✓
	Mark Infante	S.M. Electric	3/17/08	X			✓
	Stefan Lebedat	S.M. Electric	10/30/08				✓
	Tony Meadur	S.M. Electric	12/7/08	X	X		✓
Elect.	Michael McKenna	S.M. Electric	9/11/07	X	X		✓
Elect.	Joseph Q. Cramer	S.M. Electric	2/19/07	X			✓
	Kevin Palmer	S.M. Electric	2/30/08				
	Robert Pentelagent	S.M. Electric	1/8/07	X	X		✓
	Lee Sherwood	S.M. Electric	9/4/08	X			✓
	[illegible]	S.M. Electric	3/7/08	X			✓
	Frank Roberts	S.M. Electric	8/1/08				
	Bob Freeman	S.M. Electric	3/7/08				
Plumber	Anthony DeFrancesco	Zabranski	4/2/07	X			
Plumber	Daniel Villanueva	Zabranski	4/2/07	X			
	Leonard Blanco	Constantly Mobile	8/7/07		X		
	Steve Hausman	Constantly Mobile					—
	Anthony Maloney	Constantly Mobile	[illegible]				—
	Albert Quinones	Constantly Mobile	9/25/07		X		—
	Oscar Moore	Constantly Mobile	9/21/07	X	X		—
	Eric Fernandez	Northeast	6/22/07	X			
	John Tavares	Northeast	6/27/07	X			
	Patrick Yodice	Northeast	7/24/06	X			—
	Patrick Wisconti	Northeast	12/3/08	X			—
	John Feger	Northeast					—
	Kirk Bark	Mariano Electric	7/23/07	X			
	Attila Vellanne	Mariano Electric	7/22/08	X			
	Anthony Bartolsen	Mariano	[illegible]	X			
Fitter	Joseph Stanco	Monmouth Control	8/27/07	X			
	Eric Grab	Monmouth Control	8/17/08	X			
	Kevin Vaughn	Monmouth Control	1/7/08				
	Michael Gartney	EEI	8/4/07	X			
	Gary Molzen	EEI	[illegible]	X			
	Michael Hawk	EEI	[illegible]	X			
	Shayne Spaziani	EEI	2/4/08	X			
	Ed Russo	EEI	8/2/07	X			
	Scott Rimer	EEI (MCS)	8/7/07	X			
	Mark Titmas	EEI (MCS)	8/27/07	X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
	[illegible]	EEI (MCS)	9/27/07	X			
E	Craig Harrigan	EEI (MCS)	5/7/07	X			
	[illegible] McEvoy	EEI (MCS)	7/23/07	X			
E	Lee Monk	EEI (MCS)	5/7/07	X			
	Richard Steed	EEI (MCS)	5/7/07	X			
	A. Tom Fonseca	EEI (MCS)	12/12/07	X			
	Darrin Valenti	EEI (MCS)	4/24/07	X			
	Carl Longenecker	EEI (MCS)	4/24/07	X			
	Paul Schlack	EEI (MCS)	[illegible]	X			
	Thomas Gaul	Santaniello	6/8/08	X			
	Young Mo	Santaniello	6/6/08	X			
	Wm Tomis	Santaniello	6/3/09				
	Don McMahon	Santaniello	7/6/09				
	[illegible]	Santaniello	[illegible]				
	Tom Reid	Santaniello	7/6/09				

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Labor	Angelo Tramutolo	VRH	2/8/07	X		X	
Carpe	Tom Perrotta	VRH	1/8/07			X	
Labor	Edwin De Jesus	VRH	[illegible]	X			
	Keith Lovas	VRH	10/18/07	X		X	✓
	Anthony Andrade	VRH	12/18/07	X			
	Todd Perrotta	VRH	12/27/07			X	
	Gary Reuter	VRH	12/10/07			X	✓
	Dan Leaver	Pompton Painting					
	Dennis Leaver	Pompton Painting		X			
	Roger Stolte	Layout Inc.					
	Dave Woodward	Layout Inc.					
	Tim Carr	Layout Inc.	6/30/07	X			
	Paul Medway Jr	Panetta					
	Rocky Panetta	Panetta					
	Joel Arst	Panetta					
	Damion Fontanbuse	Panetta					
	Joe Panetta	Panetta					
Laborer	Edgar Cruz	Mazzocchi	2/8/07	X			
Laborer	Jose Luque	Mazzocchi	2/8/07	X			
Laborer	Raul Espinoza	Mazzocchi	2/7/07	X			
Laborer	Edgar German	Mazzocchi	6/28/07	X			
Laborer	Ralph Giordano	Mazzocchi	4/1[illegible]/07				
Laborer	Robert Grecco	Mazzocchi	2/8/07	X			
Laborer	Michael Patton	Mazzocchi	2/28/07	X			
Laborer	Edward Robinson	Mazzocchi	2/2/07	X			
Laborer	Stephen Sampson	Mazzocchi	2/8/07	X			
Laborer	William Sanchelli	Mazzocchi	2/2/07	X			
	James Sodano	Mazzocchi	7/7/08				
Laborer	Michael Turner	Mazzocchi	1/13/09				
Laborer	Luis Viteri	Mazzocchi	4/11/07	X			
	KEVIN LAURENT	BAYWAY LUMBER			✓		✓
	Vito Mongelli	Amanda	9/14/07	X			✓
	Santos Sanchez	Amanda	9/17/07	X			✓
Mason	Nicholas Vitale	Amanda	12/22/08	X			✓
	Jason Hales	Papp Iron Works	11/1/07	X			
	Fred Kunze	Papp Iron Works	11/1/07	X			
	Kevin Griswold	Papp Iron Works	3/31/08	X			

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	TEMP BADGE	SITA BADGE	ON SITE
	Michael Muto	Papp Iron Works	3/24/09				
	Patrick Lawlor	RCC		X			
	Kenny Carolyn	RCC					
	Terrance Barry	McCann	1/7/07	X			
	Vincent Bellofatto	McCann	12/18/07	X			
	Joe DeAngelis	McCann	1/24/07	X			
	Joe LaTorre	McCann	11/26/07	X			
	Anthony Novello	McCann	11/2/07	X			
	Paul Kensek	McCann	3/10/08	X			
	Craig Humphrey	McCann	3/10/08	X			
	Frank Corrao	McCann	3/26/09				
	Gregory Tomasulo	Jeskoff Glass	2/2/07	X			
	Brian Cummings	Jeskoff Glass	3/2/08	X			
	Thomas DeMaio	Jeskoff Glass	5/4/08	X			
	Bob Ferraro	Jeskoff Glass		X			
	T. DeMaio	Jeskoff Glass					
	Anthony Castellano	D. Magnan	3/4/08	X			
	Anthony Russo	D. Magnan	3/4/08	X			
	Earl Lesko	D. Magnan	3/27/08	X			
	Luis Rubiano	D. Magnan	4/21/08	X			
	Jose Baez	D. Magnan	4/21/08	X			
	Sergio Ramirez	D. Magnan	5/13/08	X			
	Jose Dominguez	Fine Painting	3/30/07	X			
	Manuel Romero	Fine Painting	3/30/07	X		X	
	Avtar Singh	Fine Painting	3/12/07	X			
	Jose Olaya	Fine Painting		X			
	Antonio Fraga	Fine Painting	11/3/08	X			
	Jacek Czernik	Signs & Decals	5/6/08	X		X	
	Jorge Alvarez	Signs & Decals	5/6/08				
	Jaime Castillo	Signs & Decals					
	Sean Murray	Thyssen Krupp	6/16/08	X			
	Frankie DeGirolamo	Thyssen Krupp	7/7/08				
	Danny Vitale	Thyssen Krupp	7/11/08				
	Nick Comodo	Thyssen Krupp	7/9/08				
	Saviour Debono	Thyssen Krupp	2/24/09				
	Zachory Randall	Thyssen Krupp					

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TRADE	EMPLOYEE NAME	COMPANY	START DATE	CMD BADGE ISSUED	SITA BADGE	TEMP BADGE	ON SITE
[illegible]	[illegible]	S.M. [illegible]	[illegible]	X			
	Michael [illegible]	S.M. [illegible]	[illegible]	X			
[illegible]	Frank Gobbola	S.M. [illegible]	[illegible]	X	X		
Elect.	[illegible]	S.M. [illegible]	[illegible]	X			
	[illegible]	S.M. [illegible]	[illegible]	X			
	[illegible]	S.M. [illegible]	[illegible]				
[illegible]	[illegible]	S.M. [illegible]	[illegible]	X	X		
Elect	[illegible]	S.M. [illegible]	[illegible]	X	X		
	Marc [illegible]	S.M. [illegible]	[illegible]	X			
	[illegible]	S.M. [illegible]	[illegible]				
	[illegible]	S.M. [illegible]	[illegible]	X	X		
Elect	[illegible]	S.M. [illegible]	[illegible]	X	X		
[illegible]	[illegible]	S.M. [illegible]	[illegible]	X			
	[illegible]	S.M. [illegible]	[illegible]				
[illegible]	Robert [illegible]	S.M. [illegible]	[illegible]	X	X		
	[illegible]	S.M. [illegible]	[illegible]	X			
	[illegible]	S.M. [illegible]	[illegible]	X			
Plumber	Anthony [illegible]	[illegible]	[illegible]	X			
Plumber	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]		X		
	[illegible]	[illegible]					
[illegible]	[illegible]	[illegible]	[illegible]				
	[illegible]	[illegible]	[illegible]		X		
	[illegible]	[illegible]	[illegible]	X	X		
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]				
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
[illegible]	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	[illegible]	[illegible]	X			
	[illegible]	EEI	[illegible]	X			
	[illegible]	EEI	[illegible]	X			
	Scott [illegible]	EEI (MCS)	[illegible]	X			
	Mark Titmas	EEI (MCS)	8/27/[illegible]	X			
	[illegible]	EEI (MCS)	[illegible]	X			
E	Craig Harrigan	EEI (MCS)	5/7/07	X			

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	Ted Malvey	EEI (MCS)	7/2[illegible]	X			
E	Lee Melnikoff	EEI (MCS)	5/7/07	X			
	Frank Good	EEI (MCS)	[illegible]	X			
	William Fardoser	EEI (MCS)	12/[illegible]	X			
	Gene Marone	EEI (MCS)	[illegible]	X			
	Karl Jacobson	EEI (MCS)	[illegible]	X			
	Paul Schuck	EEI (MCS)		X			
	Frankie Gaskin	Santaniello	[illegible]	X			
	Tony Mo	Santaniello	[illegible]	X			
	Mo Tomas	Santaniello	[illegible]				
	Don McMillan	Santaniello	[illegible]				
	[illegible]	Santaniello	7/6/09				
	Tom Reid	Santaniello	7/6/09				