

SOUTHERN NEW ENGLAND
ELECTRICAL TESTING^{LLC}

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203-269-8778

Maintenance Testing

For

*State of Connecticut – Department of Corrections
201 West Main Street
Niantic, CT*

AT

*York Correctional Facility
201 West Main Street
Niantic, CT*

Project 21-268

June 2021



SCOPE:

Southern New England Electrical Testing performed relay and vacuum breaker testing. Testing was performed in accordance with NETA specifications.

RESULTS:

SNEET completed the required testing and found the following:

Multi Relay Test R22, 23kV Switchboard:

The main breaker will trip before the feeder breakers because of its settings, recommend performing a coordination study.

Multi Relay Test 24, 23kV Switchboard:

The C-A voltage relay is out of pickup tolerance and should be replaced. It is on a higher tap to match results.

Multi Relay Test R33, 23kV Switchboard:

The main breaker will trip before the feeder breakers because of its settings, recommend performing a coordination study.

Multi Relay Test R35, 23kV Switchboard:

The main breaker will trip before the feeder breakers because of its settings, recommend performing a coordination study.

Multi Relay Test R37, 23kV Switchboard:

The main breaker will trip before the feeder breakers because of its settings, recommend performing a coordination study.

Multi Relay Test R40, 23kV Switchboard:

The main breaker will trip before the feeder breakers because of its settings, recommend performing a coordination study.

Respectfully Submitted,

Southern New England Electrical Testing LLC
An Independent Electrical Testing Company

TESTING GUIDELINES

Based on NETA and NFPA recommendations, Southern New England Electrical Testing suggests that your electrical equipment be tested at the following frequency in order to keep your electrical system in good working order.

(Frequency in Months)

*Recommended Frequencies could change based on site policies (or manufacturer recommendations) and site conditions such as humidity and dirt levels. Any major changes or electrical "events" to your system should prompt follow-up testing.

Equipment	Visual	Vis/Mechanical	Vis/Mech/Electrical
Switchgear & Switchboard Assemblies	12	12	24
Small Dry Type Transformers	2	12	36
Large Dry Type Transformers	1	12	24
Liquid Filled Transformers	1	12	24
Low Voltage Cables	2	12	36
Medium/High Voltage Cables	2	12	36
Metal Enclosed Busways	2	12	24
LV Air Switches	2	12	36
MV Metal Enclosed Switches	-	12	24
MV & HV Open/Oil/Vacuum/SF6 Switches	1	12	24
Cutouts	12	24	24
LV Breakers	1	12	36
MV Air or Oil Breakers	1	12	36
MV Vacuum Breakers	1	12	24
HV Breakers	1	12	24
Extra HV SF6 Breakers	1	12	12
Circuit Switchers	1	12	12
Network Protectors	12	12	24
Relays (ALL types)	1	12	12
Instrument Transformers	12	12	36
Metering Devices	12	12	36
Step Voltage Regulators	1	12	24
Induction Regulators	12	12	24
Current Regulators	1	12	24
Load Tap Changers	1	12	24
Grounding Systems	2	12	24
Ground Fault Protection Systems	2	12	12
AC/DC Motors & Generators	1	12	24
LV & MV Motor Starters and MCCs	2	12	24
Adjustable Speed Drive Systems	1	12	24
Batteries & Battery Chargers	1	12	12
Rectifiers	1	12	24
Surge Arresters	2	12	24
Capacitors & Capacitor Control Devices	1	12	12
Reactors (Dry-type)	2	12	24
Reactors (Liquid-Filled)	1	12	24
Outdoor Bus	1	12	36
Engine Generator	1	2	12
Uninterruptible Power Systems	1	12	12
Automatic Transfer Switches	1	12	12
Telemetry/Pilot Wire SCADA	1	12	12
Automatic Circuit Reclosers (oil/vacuum)	1	12	24
Automatic Line Sectionalizers (oil)	1	12	24
EMF Testing	12	12	12
Fluid Samples on ALL Oil-Filled Equipment	-	-	12
Infrared Scanning on ALL Equipment	-	-	12

The National Fire Protection Agency states that "The difficulty of obtaining an outage should never be a factor in determining the frequency of testing and maintenance. Equipment for which an outage is difficult to obtain is usually the equipment that is most vital in the operation of the electrical system. Consequently, a failure of this equipment would most likely create the most problems relative to the continued successful operation of the system." (NFPA 70B, 2019 Edition, Section 11.4)

4160 Switchboard

				Test #	R1	of	
Customer	State of CT	Date	6/30/2021	Job #	21-268		
Address	201 West Main Street, Niantic, CT			Temperature	20°C		
Owner/User	York Correctional Facility			Date Last Inspection	5/2/2016		
Address	201 West Main Street, Niantic, CT			Last Inspection Job #	16-271		
Equipment Location	4160 Switchboard						
Circuit Identification	52-G1						
Relay Identification	Overcurrent	CT Ratio	250:5	PT Ratio	35:1		

Relay Information

Manufacturer	Basler	Type Phase	BE1-51/27R	Type Ground	NA
Control Voltage	125 VDC	Tap Range Phase	0.5 - 12 amps	Tap Range Ground	NA
Use	Overcurrent	Curve Phase	Inverse	Curve Ground	NA
Relay Type	Solid State	Inst Range Phase	1 - 40 LT	Inst Range Ground	NA
		Instruct Book Phase	9 1372 00 999	Instruct Book Ground	NA

Settings

	Instantaneous				Tap Setting				Time Dial Setting				
	ICS	AØ	BØ	CØ	G	AØ	BØ	CØ	G	AØ	BØ	CØ	G
Specified													
As Found	NA	>90	>90	>90	NA	4	4	4	NA	30	30	30	NA
As Left	NA	>90	>90	>90	NA	4	4	4	NA	30	30	30	NA

Visual Inspection

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Cover Gasket	X	X	X	NA	Moisture	X	X	X	NA	Disc Clearance	NA	NA	NA	NA
Glass	X	X	X	NA	Spiral Spring	NA	NA	NA	NA	Rust	X	X	X	NA
Foreign Material	X	X	X	NA	Bearing Condition	NA	NA	NA	NA					

Routine Maintenance

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Glass Cleaned	X	X	X	NA	Connections Tight	X	X	X	NA	Insulation Resist.	NA	NA	NA	NA
Case Cleaned	X	X	X	NA	Taps Tight	X	X	X	NA	Trip Circuit	*	*	*	NA
Relay Cleaned	X	X	X	NA	Contacts Cleaned	X	X	X	NA					

Remarks The Trip circuit was not tested at this time. Catalog Number Phase: B1E B5P B1N0F

Phase times: 300%- 3.6 seconds, 400%- 2.5 seconds

Test Operations as Found (Time in Seconds)

	Timing Tests				Instantaneous		ICS			Pickup @50% V 2 A @ 60 V	Pickup @ 75% V 3 A @90 V
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In		
	Tap 1	Tap 2	300%	400%							
A Phase	4.01	NA	3.50	2.37	>90	OK	NA	NA	NA	2.03	3.06
B Phase	4.00	NA	3.51	2.35	>90	OK	NA	NA	NA	2.03	3.06
C Phase	4.00	NA	3.47	2.33	>90	OK	NA	NA	NA	2.03	3.06
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Test Operations as Left (Time in Seconds)

	Timing Tests				Instantaneous		ICS			Pickup @50% V 2 A @ 60 V	Pickup @ 75% V 3 A @90 V
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In		
	Tap 1	Tap 2	300%	400%							
A Phase	4.01	NA	3.50	2.37	>90	OK	NA	NA	NA	2.03	3.06
B Phase	4.00	NA	3.51	2.35	>90	OK	NA	NA	NA	2.03	3.06
C Phase	4.00	NA	3.47	2.33	>90	OK	NA	NA	NA	2.03	3.06
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Submitted By Stan MacMillan

Equipment Used MTS-5000

Customer	State of CT	Date	6/30/2021	Test #	R2	of	
Address	201 West Main Street, Niantic, CT	Job #	21-268	Temperature	20°C		
Owner/User	York Correctional Facility	Date Last Inspection	5/2/2016				
Address	201 West Main Street, Niantic, CT	Last Inspection Job #	16-271				
Equipment Location	4160 Switchboard						
Circuit Identification	52-G2						
Relay Identification	Overcurrent	CT Ratio	250:5	PT Ratio	35:1		

Relay Information

Manufacturer	Basler	Type Phase	BE1-51/27R
Control Voltage	125 VDC	Tap Range Phase	0.5 - 12 amps
Use	Overcurrent	Curve Phase	Inverse
Relay Type	Solid State	Inst Range Phase	1 - 40 LT
		Instruct Book Phase	9 1372 00 999
Type Ground	NA		
Tap Range Ground	NA		
Curve Ground	NA		
Inst Range Ground	NA		
Instruct Book Ground	NA		

Settings

	Instantaneous				Tap Setting				Time Dial Setting				
	ICS	AØ	BØ	CØ	G	AØ	BØ	CØ	G	AØ	BØ	CØ	G
Specified													
As Found	NA	>90	>90	>90	NA	4	4	4	NA	30	30	30	NA
As Left	NA	>90	>90	>90	NA	4	4	4	NA	30	30	30	NA

Visual Inspection

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Cover Gasket	X	X	X	NA	Moisture	X	X	X	NA	Disc Clearance	NA	NA	NA	NA
Glass	X	X	X	NA	Spiral Spring	NA	NA	NA	NA	Rust	X	X	X	NA
Foreign Material	X	X	X	NA	Bearing Condition	NA	NA	NA	NA					

Routine Maintenance

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Glass Cleaned	X	X	X	NA	Connections Tight	X	X	X	NA	Insulation Resist.	NA	NA	NA	NA
Case Cleaned	X	X	X	NA	Taps Tight	X	X	X	NA	Trip Circuit	*	*	*	NA
Relay Cleaned	X	X	X	NA	Contacts Cleaned	X	X	X	NA					

Remarks The Trip circuit was not tested at this time. Catalog Number Phase: B1E B5P B1N0F

Phase times: 300%- 3.6 seconds, 400%- 2.5 seconds

Test Operations as Found (Time in Seconds)

	Pickup Tests		Timing Tests		Instantaneous		ICS			Pickup @ 50% V 2 A @ 60 V	Pickup @ 75% V 3 A @ 90 V
	Tap 1	Tap 2	300%	400%	Pickup	Drop Out	Pickup	Drop Out	Seal In		
A Phase	4.01	NA	3.55	2.37	>90	OK	NA	NA	NA	2.06	3.08
B Phase	4.00	NA	3.57	2.37	>90	OK	NA	NA	NA	2.02	3.05
C Phase	4.00	NA	3.57	2.37	>90	OK	NA	NA	NA	2.04	3.06
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Test Operations as Left (Time in Seconds)

	Pickup Tests		Timing Tests		Instantaneous		ICS			Pickup @ 50% V 2 A @ 60 V	Pickup @ 75% V 3 A @ 90 V
	Tap 1	Tap 2	300%	400%	Pickup	Drop Out	Pickup	Drop Out	Seal In		
A Phase	4.01	NA	3.55	2.37	>90	OK	NA	NA	NA	2.03	3.08
B Phase	4.00	NA	3.57	2.37	>90	OK	NA	NA	NA	2.02	3.05
C Phase	4.00	NA	3.57	2.37	>90	OK	NA	NA	NA	2.04	3.06
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

		Test #	R3	of	
Customer	State of CT	Date	6/30/2021	Job #	21-268
Address	201 West Main Street, Niantic, CT			Temperature	20°C
Owner/User	York Correctional Facility	Date Last Inspection	5/2/2016		
Address	201 West Main Street, Niantic, CT			Last Inspection Job #	16-271
Equipment Location	4160 Switchboard				
Circuit Identification	52-G3				
Relay Identification	Overcurrent	CT Ratio	250:5	PT Ratio	35:1

Relay Information

Manufacturer	Basler	Type Phase	BE1-51/27R
Control Voltage	125 VDC	Tap Range Phase	0.5 - 12 amps
Use	Overcurrent	Curve Phase	Inverse
Relay Type	Solid State	Inst Range Phase	1 - 40 LT
		Instruct Book Phase	9 1372 00 999
		Type Ground	NA
		Tap Range Ground	NA
		Curve Ground	NA
		Inst Range Ground	NA
		Instruct Book Ground	NA

Settings

	Instantaneous				Tap Setting				Time Dial Setting				
	ICS	AØ	BØ	CØ	G	AØ	BØ	CØ	G	AØ	BØ	CØ	G
Specified													
As Found	NA	>90	>90	>90	NA	4	4	4	NA	30	30	30	NA
As Left	NA	>90	>90	>90	NA	4	4	4	NA	30	30	30	NA

Visual Inspection

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Cover Gasket	X	X	X	NA	Moisture	X	X	X	NA	Disc Clearance	NA	NA	NA	NA
Glass	X	X	X	NA	Spiral Spring	NA	NA	NA	NA	Rust	X	X	X	NA
Foreign Material	X	X	X	NA	Bearing Condition	NA	NA	NA	NA					

Routine Maintenance

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Glass Cleaned	X	X	X	NA	Connections Tight	X	X	X	NA	Insulation Resist.	NA	NA	NA	NA
Case Cleaned	X	X	X	NA	Taps Tight	X	X	X	NA	Trip Circuit	*	*	*	NA
Relay Cleaned	X	X	X	NA	Contacts Cleaned	X	X	X	NA					

Remarks The Trip circuit was not tested at this time. Catalog Number Phase: B1E B5P B1N0F

Phase times: 300%- 3.6 seconds, 400%- 2.5 seconds

Test Operations as Found (Time in Seconds)

	Timing Tests				Instantaneous		ICS			Pickup @50% V 2 A @ 60 V	Pickup @ 75% V 3 A @90 V
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In		
	Tap 1	Tap 2	300%	400%							
A Phase	4.00	NA	3.46	2.30	>90	OK	NA	NA	NA	2.10	3.08
B Phase	4.01	NA	3.46	2.30	>90	OK	NA	NA	NA	2.08	3.09
C Phase	4.02	NA	3.45	2.30	>90	OK	NA	NA	NA	2.08	3.09
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Test Operations as Left (Time in Seconds)

	Timing Tests				Instantaneous		ICS			Pickup @50% V 2 A @ 60 V	Pickup @ 75% V 3 A @90 V
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In		
	Tap 1	Tap 2	300%	400%							
A Phase	4.00	NA	3.46	2.30	>90	OK	NA	NA	NA	2.10	3.08
B Phase	4.01	NA	3.46	2.30	>90	OK	NA	NA	NA	2.08	3.09
C Phase	4.02	NA	3.45	2.30	>90	OK	NA	NA	NA	2.08	3.09
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Submitted By Stan MacMillan

Equipment Used MTS-5000

Customer	State of CT	Date	6/30/2021	Test #	R4 of
Address	201 West Main Street, Niantic, CT		Job #	21-268	
Owner/User	York Correctional Facility		Temperature	20°C	
Address	201 West Main Street, Niantic, CT		Date Last Inspection	5/2/2016	
Equipment Location	4160 Switchboard		Last Inspection Job #	16-271	
Circuit Identification	52-G1				
Relay Identification	Neutral Overcurrent	CT Ratio	250:5	PT Ratio	NA

Relay Information

Manufacturer	ABB	Type	51S	Catalog Number	443S4141
Control Voltage	125 VDC	Tap Range	0.5 - 2.0 amps		
Use	51N overcurrent	Curve	Short		
Relay Type	Solid State	Inst Range	2 X - 20 X		
		Instruct Book	7.2.1.7-14		

Settings

	ICS	Inst Setting	Tap Setting	Time Dial					
Specified									
As Found	NA	20 X	0.6	10					
As Left	NA	20 X	0.6	10					

Visual Inspection

Cover Gasket	<input checked="" type="checkbox"/>	Foreign Material	<input checked="" type="checkbox"/>	Spiral Spring	<input type="checkbox"/>	Disc Clearance	<input type="checkbox"/>
Glass	<input checked="" type="checkbox"/>	Moisture	<input checked="" type="checkbox"/>	Bearing Condition	<input type="checkbox"/>	Rust	<input checked="" type="checkbox"/>

Routine Maintenance

Glass Cleaned	<input checked="" type="checkbox"/>	Relay Cleaned	<input checked="" type="checkbox"/>	Taps Tight	<input checked="" type="checkbox"/>	Insulation Resist.	<input type="checkbox"/>
Case Cleaned	<input checked="" type="checkbox"/>	Connections Tight	<input checked="" type="checkbox"/>	Contacts Cleaned	<input checked="" type="checkbox"/>	Trip Circuit	<input checked="" type="checkbox"/>

Remarks The Trip circuit was not tested at this time.

Trip times: 300%- 0.85 seconds, 400%- 0.65 seconds

Test Operations (Time in Seconds)

	Pickup Tests		Timing Tests		Instantaneous		ICS		
	Tap 1	Tap 2	P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In
			300%	400%					
As Found	0.60	NA	0.83	0.67	12.1	OK	NA	NA	NA
As Left	0.60	NA	0.83	0.67	12.1	OK	NA	NA	NA

As Found									
As Left									

Remarks

Customer	State of CT	Date	6/30/2021	Test #	R5 of
				Job #	21-268
Address	201 West Main Street, Niantic, CT			Temperature	20°C
Owner/User	York Correctional Facility			Date Last Inspection	5/2/2016
Address	201 West Main Street, Niantic, CT			Last Inspection Job #	16-271
Equipment Location	4160 Switchboard				
Circuit Identification	52-G2				
Relay Identification	Neutral Overcurrent	CT Ratio	250:5	PT Ratio	NA

Relay Information

Manufacturer	ABB	Type	51S	Catalog Number	443S4141
Control Voltage	125 VDC	Tap Range	0.5 - 2.0 amps		
Use	51N overcurrent	Curve	Short		
Relay Type	Solid State	Inst Range	2 X - 20 X		
		Instruct Book	7.2.1.7-14		

Settings

	ICS	Inst Setting	Tap Setting	Time Dial					
Specified									
As Found	NA	20 X	0.6	10					
As Left	NA	20 X	0.6	10					

Visual Inspection

Cover Gasket	X	Foreign Material	X	Spiral Spring	NA	Disc Clearance	NA
Glass	X	Moisture	X	Bearing Condition	NA	Rust	X

Routine Maintenance

Glass Cleaned	X	Relay Cleaned	X	Taps Tight	X	Insulation Resist.	NA
Case Cleaned	X	Connections Tight	X	Contacts Cleaned	X	Trip Circuit	*

Remarks The Trip circuit was not tested at this time.

Trip times: 300%- 0.85 seconds, 400%- 0.65 seconds

Test Operations (Time in Seconds)

	Pickup Tests		Timing Tests		Instantaneous		ICS					
	Tap 1	Tap 2	P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In			
			300%	400%								
As Found	060	NA	0.83	0.66	12.0	OK	NA	NA	NA			
As Left	0.60	NA	0.83	0.66	12.0	OK	NA	NA	NA			

As Found												
As Left												

Remarks

Submitted By Stan MacMillan

Equipment Used Manta MTS 5000

Customer	State of CT	Date	6/30/2021	Test #	R6 of
Address	201 West Main Street, Niantic, CT	Job #	21-268	Temperature	20°C
Owner/User	York Correctional Facility	Date Last Inspection	5/2/2016	Last Inspection Job #	16-271
Equipment Location	4160 Switchboard				
Circuit Identification	52-G3				
Relay Identification	Neutral Overcurrent	CT Ratio	250:5	PT Ratio	NA

Relay Information

Manufacturer	ABB	Type	51S	Catalog Number	443S4141
Control Voltage	125 VDC	Tap Range	0.5 - 2.0 amps		
Use	51N overcurrent	Curve	Short		
Relay Type	Solid State	Inst Range	2 X - 20 X		
		Instruct Book	7.2.1.7-14		

Settings

	ICS	Inst Setting	Tap Setting	Time Dial					
Specified									
As Found	NA	20 X	0.6	10					
As Left	NA	20 X	0.6	10					

Visual Inspection

Cover Gasket	X	Foreign Material	X	Spiral Spring	NA	Disc Clearance	NA
Glass	X	Moisture	X	Bearing Condition	NA	Rust	X

Routine Maintenance

Glass Cleaned	X	Relay Cleaned	X	Taps Tight	X	Insulation Resist.	NA
Case Cleaned	X	Connections Tight	X	Contacts Cleaned	X	Trip Circuit	*

Remarks The Trip circuit was not tested at this time.

Trip times: 300%- 0.85 seconds, 400%- 0.65 seconds

Test Operations (Time in Seconds)

	Timing Tests				Instantaneous		ICS					
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In			
	Tap 1	Tap 2	300%	400%								
As Found	0.60	NA	0.82	0.66	12.6	OK	NA	NA	NA			
As Left	0.60	NA	0.82	0.66	12.6	OK	NA	NA	NA			

As Found									
As Left									

Remarks

Customer	State of CT	Date	6/30/2021	Test #	R7	of	
Address	201 West Main Street, Niantic, CT			Job #	21-268		
Owner/User	York Correctional Facility			Temperature	20°C		
Address	201 West Main Street, Niantic, CT			Date Last Inspection	5/2/2016		
Equipment Location	4160 Switchboard						
Circuit Identification	52-G1						
Relay Identification	Reverse Power	CT Ratio	250:5	PT Ratio	35:1		

Relay Information

Manufacturer	ABB	Type	32R	Catalog Number	437W4790
Control Voltage	24 VDC	Tap Range	13 - 150 watts		
Use	Reverse Power	Curve	Definite		
Relay Type	Solid State	Inst Range	NA		
		Instruct Book	7.8.1.7-1		

Settings

	ICS	Inst Setting	Tap Setting	Time Dial					
Specified									
As Found	NA	NA	20	10					
As Left	NA	NA	20	10					

Visual Inspection

Cover Gasket	<input checked="" type="checkbox"/>	Foreign Material	<input checked="" type="checkbox"/>	Spiral Spring	NA	Disc Clearance	NA
Glass	<input checked="" type="checkbox"/>	Moisture	<input checked="" type="checkbox"/>	Bearing Condition	NA	Rust	<input checked="" type="checkbox"/>

Routine Maintenance

Glass Cleaned	<input checked="" type="checkbox"/>	Relay Cleaned	<input checked="" type="checkbox"/>	Taps Tight	<input checked="" type="checkbox"/>	Insulation Resist.	NA
Case Cleaned	<input checked="" type="checkbox"/>	Connections Tight	<input checked="" type="checkbox"/>	Contacts Cleaned	<input checked="" type="checkbox"/>	Trip Circuit	*

Remarks The Trip circuit was not tested at this time.

Test Operations (Time in Seconds)

	Timing Tests				Instantaneous		ICS					
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In			
	Tap 1	Tap 2	300%	400%								
As Found	20.64	NA	9.87	9.85	NA	NA	NA	NA	NA			
As Left	20.64	NA	9.87	9.85	NA	NA	NA	NA	NA			

As Found												
As Left												

Remarks

Customer	State of CT	Date	6/30/2021	Test #	R8	of	
Address	201 West Main Street, Niantic, CT			Job #	21-268		
Owner/User	York Correctional Facility			Temperature	20°C		
Address	201 West Main Street, Niantic, CT			Date Last Inspection	5/2/2016		
Equipment Location	4160 Switchboard						
Circuit Identification	52-G2						
Relay Identification	Reverse Power	CT Ratio	250:5	PT Ratio	35:1		

Relay Information

Manufacturer	ABB	Type	32R	Catalog Number	437W4790
Control Voltage	24 VDC	Tap Range	13 - 150 watts		
Use	Reverse Power	Curve	Definite		
Relay Type	Solid State	Inst Range	NA		
		Instruct Book	7.8.1.7-1		

Settings

	ICS	Inst Setting	Tap Setting	Time Dial					
Specified									
As Found	NA	NA	20	10					
As Left	NA	NA	20	10					

Visual Inspection

Cover Gasket	<input checked="" type="checkbox"/>	Foreign Material	<input checked="" type="checkbox"/>	Spiral Spring	NA	Disc Clearance	NA
Glass	<input checked="" type="checkbox"/>	Moisture	<input checked="" type="checkbox"/>	Bearing Condition	NA	Rust	<input checked="" type="checkbox"/>

Routine Maintenance

Glass Cleaned	<input checked="" type="checkbox"/>	Relay Cleaned	<input checked="" type="checkbox"/>	Taps Tight	<input checked="" type="checkbox"/>	Insulation Resist.	NA
Case Cleaned	<input checked="" type="checkbox"/>	Connections Tight	<input checked="" type="checkbox"/>	Contacts Cleaned	<input checked="" type="checkbox"/>	Trip Circuit	*

Remarks The Trip circuit was not tested at this time.

Test Operations (Time in Seconds)

	Pickup Tests		Timing Tests		Instantaneous		ICS					
	Tap 1	Tap 2	P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In			
			300%	400%								
As Found	19.74	NA	9.84	9.84	NA	NA	NA	NA	NA			
As Left	19.74	NA	9.84	9.84	NA	NA	NA	NA	NA			

As Found												
As Left												

Remarks

Customer	State of CT	Date	6/30/2021	Test #	R9 of
				Job #	21-268
Address	201 West Main Street, Niantic, CT			Temperature	20°C
Owner/User	York Correctional Facility			Date Last Inspection	9/27/2016
Address	201 West Main Street, Niantic, CT			Last Inspection Job #	16-471
Equipment Location	4160 Switchboard				
Circuit Identification	52-G3				
Relay Identification	Reverse Power	CT Ratio	250:5	PT Ratio	35:1

Relay Information

Manufacturer	ABB	Type	32R	Catalog Number	437W4790
Control Voltage	24 VDC	Tap Range	13 - 150 watts		
Use	Reverse Power	Curve	Definite		
Relay Type	Solid State	Inst Range	NA		
		Instruct Book	7.8.1.7-1		

Settings

	ICS	Inst Setting	Tap Setting	Time Dial					
Specified									
As Found	NA	NA	20	10					
As Left	NA	NA	20	10					

Visual Inspection

Cover Gasket	X	Foreign Material	X	Spiral Spring	NA	Disc Clearance	NA
Glass	X	Moisture	X	Bearing Condition	NA	Rust	X

Routine Maintenance

Glass Cleaned	X	Relay Cleaned	X	Taps Tight	X	Insulation Resist.	NA
Case Cleaned	X	Connections Tight	X	Contacts Cleaned	X	Trip Circuit	*

Remarks The Trip circuit was not tested at this time.

Test Operations (Time in Seconds)

	Timing Tests				Instantaneous		ICS					
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In			
	Tap 1	Tap 2	300%	400%								
As Found	19.67	NA	10.15	10.14	NA	NA	NA	NA	NA			
As Left	19.67	NA	10.15	10.14	NA	NA	NA	NA	NA			

As Found												
As Left												

Remarks

Customer	State of CT	Date	6/30/2021	Test #	R10 of	
Address	201 West Main Street, Niantic, CT		Job #	21-268		
Owner/User	York Correctional Facility		Temperature	20°C		
Address	201 West Main Street, Niantic, CT		Date Last Inspection	5/2/2016		
Equipment Location	4160 Switchboard					
Circuit Identification	52-G1					
Relay Identification	Reverse Var	CT Ratio	250:5	PT Ratio	35:1	

Relay Information

Manufacturer	ABB	Type	32R	Catalog Number	437W4790
Control Voltage	24 VDC	Tap Range	13 - 150 watts		
Use	Reverse Var	Curve	Definite		
Relay Type	Solid State	Inst Range	NA		
		Instruct Book	7.8.1.7-1		

Settings

	ICS	Inst Setting	Tap Setting	Time Dial					
Specified									
As Found	NA	NA	20	10					
As Left	NA	NA	20	10					

Visual Inspection

Cover Gasket	<input checked="" type="checkbox"/>	Foreign Material	<input checked="" type="checkbox"/>	Spiral Spring	<input type="checkbox"/>	Disc Clearance	<input type="checkbox"/>
Glass	<input checked="" type="checkbox"/>	Moisture	<input checked="" type="checkbox"/>	Bearing Condition	<input type="checkbox"/>	Rust	<input checked="" type="checkbox"/>

Routine Maintenance

Glass Cleaned	<input checked="" type="checkbox"/>	Relay Cleaned	<input checked="" type="checkbox"/>	Taps Tight	<input checked="" type="checkbox"/>	Insulation Resist.	<input type="checkbox"/>
Case Cleaned	<input checked="" type="checkbox"/>	Connections Tight	<input checked="" type="checkbox"/>	Contacts Cleaned	<input checked="" type="checkbox"/>	Trip Circuit	<input checked="" type="checkbox"/>

Remarks The Trip circuit was not tested at this time.

Test Operations (Time in Seconds)

	Timing Tests				Instantaneous		ICS					
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In			
	Tap 1	Tap 2	300%	400%								
As Found	18.60	NA	11.72	11.72	NA	NA	NA	NA	NA			
As Left	18.60	NA	11.72	11.72	NA	NA	NA	NA	NA			

As Found												
As Left												

Remarks

Customer	State of CT	Date	6/30/2021	Test #	R11 of	
Address	201 West Main Street, Niantic, CT		Job #	21-268		
Owner/User	York Correctional Facility		Temperature	20°C		
Address	201 West Main Street, Niantic, CT		Date Last Inspection	5/2/2016		
Equipment Location	4160 Switchboard					
Circuit Identification	52-G2					
Relay Identification	Reverse Var	CT Ratio	250:5	PT Ratio	35:1	

Relay Information

Manufacturer	ABB	Type	32R	Catalog Number	437W4790
Control Voltage	24 VDC	Tap Range	13 - 150 watts		
Use	Reverse Var	Curve	Definite		
Relay Type	Solid State	Inst Range	NA		
		Instruct Book	7.8.1.7-1		

Settings

	ICS	Inst Setting	Tap Setting	Time Dial					
Specified									
As Found	NA	NA	20	10					
As Left	NA	NA	20	10					

Visual Inspection

Cover Gasket	<input checked="" type="checkbox"/>	Foreign Material	<input checked="" type="checkbox"/>	Spiral Spring	<input type="checkbox"/>	Disc Clearance	<input type="checkbox"/>
Glass	<input checked="" type="checkbox"/>	Moisture	<input checked="" type="checkbox"/>	Bearing Condition	<input type="checkbox"/>	Rust	<input checked="" type="checkbox"/>

Routine Maintenance

Glass Cleaned	<input checked="" type="checkbox"/>	Relay Cleaned	<input checked="" type="checkbox"/>	Taps Tight	<input checked="" type="checkbox"/>	Insulation Resist.	<input type="checkbox"/>
Case Cleaned	<input checked="" type="checkbox"/>	Connections Tight	<input checked="" type="checkbox"/>	Contacts Cleaned	<input checked="" type="checkbox"/>	Trip Circuit	<input checked="" type="checkbox"/>

Remarks The Trip circuit was not tested at this time.

Test Operations (Time in Seconds)

	Timing Tests				Instantaneous		ICS					
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In			
	Tap 1	Tap 2	300%	400%								
As Found	19.08	NA	11.49	11.49	NA	NA	NA	NA	NA			
As Left	19.08	NA	11.49	11.49	NA	NA	NA	NA	NA			

As Found												
As Left												

Remarks

Customer	State of CT	Date	6/30/2021	Test #	R12 of	
Address	201 West Main Street, Niantic, CT		Job #	21-268		
Owner/User	York Correctional Facility		Temperature	20°C		
Address	201 West Main Street, Niantic, CT		Date Last Inspection	5/2/2016		
Equipment Location	4160 Switchboard					
Circuit Identification	52-G3					
Relay Identification	Reverse Var	CT Ratio	250:5	PT Ratio	35:1	

Relay Information

Manufacturer	ABB	Type	32R	Catalog Number	437W4790
Control Voltage	24 VDC	Tap Range	13 - 150 watts		
Use	Reverse Var	Curve	Definite		
Relay Type	Solid State	Inst Range	NA		
		Instruct Book	7.8.1.7-1		

Settings

	ICS	Inst Setting	Tap Setting	Time Dial					
Specified									
As Found	NA	NA	20	10					
As Left	NA	NA	20	10					

Visual Inspection

Cover Gasket	<input checked="" type="checkbox"/>	Foreign Material	<input checked="" type="checkbox"/>	Spiral Spring	NA	Disc Clearance	NA
Glass	<input checked="" type="checkbox"/>	Moisture	<input checked="" type="checkbox"/>	Bearing Condition	NA	Rust	<input checked="" type="checkbox"/>

Routine Maintenance

Glass Cleaned	<input checked="" type="checkbox"/>	Relay Cleaned	<input checked="" type="checkbox"/>	Taps Tight	<input checked="" type="checkbox"/>	Insulation Resist.	NA
Case Cleaned	<input checked="" type="checkbox"/>	Connections Tight	<input checked="" type="checkbox"/>	Contacts Cleaned	<input checked="" type="checkbox"/>	Trip Circuit	*

Remarks The Trip circuit was not tested at this time.

Test Operations (Time in Seconds)

	Timing Tests				Instantaneous		ICS					
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In			
	Tap 1	Tap 2	300%	400%								
As Found	18.48	NA	11.48	11.48	NA	NA	NA	NA	NA			
As Left	18.48	NA	11.48	11.48	NA	NA	NA	NA	NA			

As Found												
As Left												

Remarks

	Test #	R13	of		
Customer	State of CT	Date	6/29/2021	Job #	21-268
Address	201 West Main Street, Niantic, CT			Temperature	20°C
Owner/User	York Correctional Facility	Date Last Inspection	5/2/2016		
Address	201 West Main Street, Niantic, CT			Last Inspection Job #	16-271
Equipment Location	4160 Switchboard				
Circuit Identification	52-GM				
Relay Identification	Phase Overcurrent	CT Ratio	1000:5	PT Ratio	NA

Relay Information

Manufacturer	ABB	Type Phase	51 I	Type Ground	NA
Control Voltage	125 VDC	Tap Range Phase	1.5 - 6 amps	Tap Range Ground	NA
Use	Overcurrent	Curve Phase	Inverse	Curve Ground	NA
Relay Type	Solid State	Inst Range Phase	2 X - 20 X	Inst Range Ground	NA
		Instruct Book Phase	7.2.1.7-14	Instruct Book Ground	NA

Settings

	Instantaneous				Tap Setting				Time Dial Setting				
	ICS	AØ	BØ	CØ	G	AØ	BØ	CØ	G	AØ	BØ	CØ	G
Specified													
As Found	NA	20 X	20 X	20 X	NA	6	6	6	NA	7	7	7	NA
As Left	NA	20 X	20 X	20 X	NA	6	6	6	NA	7	7	7	NA

Visual Inspection

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Cover Gasket	X	X	X	NA	Moisture	X	X	X	NA	Disc Clearance	NA	NA	NA	NA
Glass	X	X	X	NA	Spiral Spring	NA	NA	NA	NA	Rust	X	X	X	NA
Foreign Material	X	X	X	NA	Bearing Condition	NA	NA	NA	NA					

Routine Maintenance

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Glass Cleaned	X	X	X	NA	Connections Tight	X	X	X	NA	Insulation Resist.	NA	NA	NA	NA
Case Cleaned	X	X	X	NA	Taps Tight	X	X	X	NA	Trip Circuit	*	*	*	NA
Relay Cleaned	X	X	X	NA	Contacts Cleaned	X	X	X	NA					

Remarks The Trip circuit was not tested at this time. Phase Catalog Number- 443T1241

Phase times: 300%- 4.1 seconds, 400%- 3.4 seconds

Instantaneous was tested at the 4 tap for pickup.

Test Operations as Found (Time in Seconds)

	Timing Tests				Instantaneous		ICS		
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In
	Tap 1	Tap 2	300%	400%					
A Phase	5.99	NA	4.25	3.43	80.3	OK	NA	NA	NA
B Phase	6.01	NA	4.25	3.42	79.8	OK	NA	NA	NA
C Phase	6.00	NA	4.25	3.42	79.8	OK	NA	NA	NA
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA

Test Operations as Left (Time in Seconds)

	Timing Tests				Instantaneous		ICS		
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In
	Tap 1	Tap 2	300%	400%					
A Phase	5.99	NA	4.25	3.43	80.3	OK	NA	NA	NA
B Phase	6.01	NA	4.25	3.42	79.8	OK	NA	NA	NA
C Phase	6.00	NA	4.25	3.42	79.8	OK	NA	NA	NA
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA

Submitted By Stan MacMillan

Equipment Used MTS-5000

Customer	State of CT	Date	6/29/2021	Test #	R14 of	
Address	201 West Main Street, Niantic, CT		Job #	21-268		
Owner/User	York Correctional Facility		Temperature	20°C		
Address	201 West Main Street, Niantic, CT		Date Last Inspection	5/2/2016		
Equipment Location	4160 Switchboard					
Circuit Identification	52-GM					
Relay Identification	Ground Overcurrent	CT Ratio	1000:5	PT Ratio	NA	

Relay Information

Manufacturer	ABB	Type	51S	Catalog Number	443S4141
Control Voltage	125 VDC	Tap Range	0.5 - 2.0 amps		
Use	51N overcurrent	Curve	Short		
Relay Type	Solid State	Inst Range	2 X - 20 X		
		Instruct Book	7.2.1.7-14		

Settings

	ICS	Inst Setting	Tap Setting	Time Dial					
Specified									
As Found	NA	20 X	0.5	10					
As Left	NA	20 X	0.5	10					

Visual Inspection

Cover Gasket	<input checked="" type="checkbox"/>	Foreign Material	<input checked="" type="checkbox"/>	Spiral Spring	<input type="checkbox"/>	Disc Clearance	<input type="checkbox"/>
Glass	<input checked="" type="checkbox"/>	Moisture	<input checked="" type="checkbox"/>	Bearing Condition	<input type="checkbox"/>	Rust	<input checked="" type="checkbox"/>

Routine Maintenance

Glass Cleaned	<input checked="" type="checkbox"/>	Relay Cleaned	<input checked="" type="checkbox"/>	Taps Tight	<input checked="" type="checkbox"/>	Insulation Resist.	<input type="checkbox"/>
Case Cleaned	<input checked="" type="checkbox"/>	Connections Tight	<input checked="" type="checkbox"/>	Contacts Cleaned	<input checked="" type="checkbox"/>	Trip Circuit	<input checked="" type="checkbox"/>

Remarks The Trip circuit was not tested at this time.

Trip times: 300%- 0.85 seconds, 400%- 0.65 seconds

Test Operations (Time in Seconds)

	Pickup Tests		Timing Tests		Instantaneous		ICS					
	Tap 1	Tap 2	P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In			
			300%	400%								
As Found	0.50	NA	0.83	0.67	10.1	OK	NA	NA	NA			
As Left	0.50	NA	0.83	0.67	10.1	OK	NA	NA	NA			

As Found												
As Left												

Remarks

	Test #	R15	of		
Customer	State of CT	Date	6/29/2021	Job #	21-268
Address	201 West Main Street, Niantic, CT			Temperature	20°C
Owner/User	York Correctional Facility	Date Last Inspection	5/2/2016		
Address	201 West Main Street, Niantic, CT			Last Inspection Job #	16-271
Equipment Location	4160 Switchboard				
Circuit Identification	52-GM				
Relay Identification	Transformer Differential	CT Ratio	150:5 / 800:5	PT Ratio	NA

Relay Information

Manufacturer	ABB	Type Phase	87T	Type Ground	NA
Control Voltage	125 VDC	Tap Range Phase	2.9 - 8.7 amps	Tap Range Ground	NA
Use	Trans Diff	Curve Phase	Inst	Curve Ground	NA
Relay Type	Solid State	Inst Range Phase	15% - 40% Slope	Inst Range Ground	NA
		Instruct Book Phase	7.6.1.7-4	Instruct Book Ground	NA

Settings

	Instantaneous				Tap Setting				Time Dial Setting				
	ICS	AØ	BØ	CØ	G	AØ	BØ	CØ	G	AØ	BØ	CØ	G
Specified													
As Found	NA	30%	30%	30%	NA	8.7	8.7	8.7	NA	INST	INST	INST	NA
As Left	NA	30%	30%	30%	NA	8.7	8.7	8.7	NA	INST	INST	INST	NA

Visual Inspection

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Cover Gasket	X	X	X	NA	Moisture	X	X	X	NA	Disc Clearance	NA	NA	NA	NA
Glass	X	X	X	NA	Spiral Spring	NA	NA	NA	NA	Rust	X	X	X	NA
Foreign Material	X	X	X	NA	Bearing Condition	NA	NA	NA	NA					

Routine Maintenance

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Glass Cleaned	X	X	X	NA	Connections Tight	X	X	X	NA	Insulation Resist.	NA	NA	NA	NA
Case Cleaned	X	X	X	NA	Taps Tight	X	X	X	NA	Trip Circuit	*	*	*	NA
Relay Cleaned	X	X	X	NA	Contacts Cleaned	X	X	X	NA					

Remarks The Trip circuit was not tested at this time. Phase Catalog Number- 419T2441

Tap High Side 8.7, Tap Low side 8.7, this was 5.0 on original test for High side. Minimum Restraint 2.0, Slope 30%

Setting = ((B current / 2 X Tap 2) -1)

Test Operations as Found (Time in Seconds)

	Timing Tests				Instantaneous		ICS			Slope A-17.4 B-22.62	Harmonic Blocking 15%
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In		
	Tap 1	Tap 2	300%								
A Phase	3.81	3.86	0.03	NA	NA	NA	NA	NA	NA	31.7%	15.72%
B Phase	3.90	3.92	0.04	NA	NA	NA	NA	NA	NA	30.5%	16.03%
C Phase	4.13	4.16	0.03	NA	NA	NA	NA	NA	NA	31.5%	15.68%
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Test Operations as Left (Time in Seconds)

	Timing Tests				Instantaneous		ICS			Slope A-17.4 B-22.62	Harmonic Blocking 15%
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In		
	Tap 1	Tap 2	300%								
A Phase	3.81	3.86	0.03	NA	NA	NA	NA	NA	NA	31.7%	15.72%
B Phase	3.90	3.92	0.04	NA	NA	NA	NA	NA	NA	30.5%	16.03%
C Phase	4.13	4.16	0.03	NA	NA	NA	NA	NA	NA	31.5%	15.68%
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Submitted By Stan MacMillan

Equipment Used MTS-5000

Customer	State of CT	Date	6/30/2021	Test #	R16 of	
Address	201 West Main Street, Niantic, CT		Job #	21-268		
Owner/User	York Correctional Facility		Temperature	20°C		
Address	201 West Main Street, Niantic, CT		Date Last Inspection	5/2/2016		
Equipment Location	4160 Switchboard					
Circuit Identification	52-G1					
Relay Identification	Generator Winding Temp	CT Ratio	NA	PT Ratio	NA	

Relay Information

Manufacturer	ABB	Type	49T	Catalog Number	436D6065
Control Voltage	120 VAC	Tap Range	130° - 180°C	Dropout	60% - 90%
Use	Over Temp	Curve	Definite		
Relay Type	Solid State	Inst Range	NA		
		Instruct Book	7.7.1.7-2		

Settings

	ICS	Inst Setting	Tap Setting	Time Dial	Dropout				
Specified									
As Found	NA	NA	170°C	NA	90%				
As Left	NA	NA	170°C	NA	90%				

Visual Inspection

Cover Gasket	<input checked="" type="checkbox"/>	Foreign Material	<input checked="" type="checkbox"/>	Spiral Spring	<input type="checkbox"/>	Disc Clearance	<input type="checkbox"/>
Glass	<input checked="" type="checkbox"/>	Moisture	<input checked="" type="checkbox"/>	Bearing Condition	<input type="checkbox"/>	Rust	<input checked="" type="checkbox"/>

Routine Maintenance

Glass Cleaned	<input checked="" type="checkbox"/>	Relay Cleaned	<input checked="" type="checkbox"/>	Taps Tight	<input checked="" type="checkbox"/>	Insulation Resist.	<input type="checkbox"/>
Case Cleaned	<input checked="" type="checkbox"/>	Connections Tight	<input checked="" type="checkbox"/>	Contacts Cleaned	<input checked="" type="checkbox"/>	Trip Circuit	<input checked="" type="checkbox"/>

Remarks The Trip circuit was not tested at this time.

Tap 1 is Pickup set 164.8 ohms, Tap 2 is Dropout set at 158 ohms

Test Operations (Time in Seconds)

	Timing Tests				Instantaneous		ICS					
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In			
	Tap 1	Tap 2	200%	NA								
As Found	160.0	156.3	0.10	NA	NA	NA	NA	NA	NA			
As Left	160.0	156.3	0.10	NA	NA	NA	NA	NA	NA			

As Found												
As Left												

Remarks

Customer	State of CT	Date	6/30/2021	Test #	R17 of	
Address	201 West Main Street, Niantic, CT		Job #	21-268		
Owner/User	York Correctional Facility		Temperature	20°C		
Address	201 West Main Street, Niantic, CT		Date Last Inspection	5/2/2016		
Equipment Location	4160 Switchboard					
Circuit Identification	52-G2					
Relay Identification	Generator Winding Temp	CT Ratio	NA	PT Ratio	NA	

Relay Information

Manufacturer	ABB	Type	49T	Catalog Number	436D6065
Control Voltage	120 VAC	Tap Range	130° - 180°C	Dropout	60% - 90%
Use	Over Temp	Curve	Definite		
Relay Type	Solid State	Inst Range	NA		
		Instruct Book	7.7.1.7-2		

Settings

	ICS	Inst Setting	Tap Setting	Time Dial	Dropout				
Specified									
As Found	NA	NA	170°C	NA	90%				
As Left	NA	NA	170°C	NA	90%				

Visual Inspection

Cover Gasket	<input checked="" type="checkbox"/>	Foreign Material	<input checked="" type="checkbox"/>	Spiral Spring	<input type="checkbox"/>	Disc Clearance	<input type="checkbox"/>
Glass	<input checked="" type="checkbox"/>	Moisture	<input checked="" type="checkbox"/>	Bearing Condition	<input type="checkbox"/>	Rust	<input checked="" type="checkbox"/>

Routine Maintenance

Glass Cleaned	<input checked="" type="checkbox"/>	Relay Cleaned	<input checked="" type="checkbox"/>	Taps Tight	<input checked="" type="checkbox"/>	Insulation Resist.	<input type="checkbox"/>
Case Cleaned	<input checked="" type="checkbox"/>	Connections Tight	<input checked="" type="checkbox"/>	Contacts Cleaned	<input checked="" type="checkbox"/>	Trip Circuit	<input checked="" type="checkbox"/>

Remarks The Trip circuit was not tested at this time.

Tap 1 is Pickup set 164.8 ohms, Tap 2 is Dropout set at 158 ohms

Test Operations (Time in Seconds)

	Timing Tests				Instantaneous		ICS				
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In		
	Tap 1	Tap 2	200%	NA							
As Found	162.0	156.2	0.10	NA	NA	NA	NA	NA	NA		
As Left	162.0	156.2	0.10	NA	NA	NA	NA	NA	NA		

As Found											
As Left											

Remarks

Customer	State of CT	Date	6/30/2021	Test #	R18 of	
Address	201 West Main Street, Niantic, CT			Job #	21-268	
Owner/User	York Correctional Facility			Temperature	20°C	
Address	201 West Main Street, Niantic, CT			Date Last Inspection	5/2/2016	
Equipment Location	4160 Switchboard					
Circuit Identification	52-G3					
Relay Identification	Generator Winding Temp	CT Ratio	NA	PT Ratio	NA	

Relay Information

Manufacturer	ABB	Type	49T	Catalog Number	436D6065
Control Voltage	120 VAC	Tap Range	130° - 180°C	Dropout	60% - 90%
Use	Over Temp	Curve	Definite		
Relay Type	Solid State	Inst Range	NA		
		Instruct Book	7.7.1.7-2		

Settings

	ICS	Inst Setting	Tap Setting	Time Dial	Dropout				
Specified									
As Found	NA	NA	170°C	NA	90%				
As Left	NA	NA	170°C	NA	90%				

Visual Inspection

Cover Gasket	<input checked="" type="checkbox"/>	Foreign Material	<input checked="" type="checkbox"/>	Spiral Spring	<input type="checkbox"/>	Disc Clearance	<input type="checkbox"/>
Glass	<input checked="" type="checkbox"/>	Moisture	<input checked="" type="checkbox"/>	Bearing Condition	<input type="checkbox"/>	Rust	<input checked="" type="checkbox"/>

Routine Maintenance

Glass Cleaned	<input checked="" type="checkbox"/>	Relay Cleaned	<input checked="" type="checkbox"/>	Taps Tight	<input checked="" type="checkbox"/>	Insulation Resist.	<input type="checkbox"/>
Case Cleaned	<input checked="" type="checkbox"/>	Connections Tight	<input checked="" type="checkbox"/>	Contacts Cleaned	<input checked="" type="checkbox"/>	Trip Circuit	<input checked="" type="checkbox"/>

Remarks The Trip circuit was not tested at this time.

Tap 1 is Pickup set 164.8 ohms, Tap 2 is Dropout set at 158 ohms

Test Operations (Time in Seconds)

	Timing Tests				Instantaneous		ICS					
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In			
	Tap 1	Tap 2	200%	NA								
As Found	162.0	154.9	0.10	NA	NA	NA	NA	NA	NA			
As Left	162.0	154.9	0.10	NA	NA	NA	NA	NA	NA			

As Found												
As Left												

Remarks

Customer	State of CT	Date	6/30/2021	Test #	R19 of <input type="text"/>
Address	201 West Main Street, Niantic, CT		Job #	21-268	
Owner/User	York Correctional Facility	Temperature	20°C		
Address	201 West Main Street, Niantic, CT		Date Last Inspection	5/2/2016	
Equipment Location	4160 Switchboard				
Circuit Identification	52-G1				
Relay Identification	Differential Relay	CT Ratio	200:5	PT Ratio	NA

Relay Information

Manufacturer	ABB	Type Phase	87M	Type Ground	NA
Control Voltage	125 VDC	Tap Range Phase	0.1 - 0.5 amps	Tap Range Ground	NA
Use	Gen Diff	Curve Phase	Fixed	Curve Ground	NA
Relay Type	Solid State	Inst Range Phase	NA	Inst Range Ground	NA
		Instruct Book Phase	7.6.1.7-1	Instruct Book Ground	NA

Settings

	Instantaneous				Tap Setting				Time Dial Setting				
	ICS	AØ	BØ	CØ	G	AØ	BØ	CØ	G	AØ	BØ	CØ	G
Specified	NA				NA				NA				NA
As Found	NA	NA	NA	NA	NA	0.4	0.4	0.4	NA	Fixed	Fixed	Fixed	NA
As Left	NA	NA	NA	NA	NA	0.4	0.4	0.4	NA	Fixed	Fixed	Fixed	NA

Visual Inspection

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Cover Gasket	X	X	X	X	Moisture	X	X	X	X	Disc Clearance	NA	NA	NA	NA
Glass	X	X	X	X	Spiral Spring	NA	NA	NA	NA	Rust	X	X	X	X
Foreign Material	X	X	X	X	Bearing Condition	NA	NA	NA	NA					

Routine Maintenance

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Glass Cleaned	X	X	X	X	Connections Tight	X	X	X	X	Insulation Resist.	NA	NA	NA	NA
Case Cleaned	X	X	X	X	Taps Tight	X	X	X	X	Trip Circuit	*	*	*	*
Relay Cleaned	X	X	X	X	Contacts Cleaned	X	X	X	X					

Remarks The Trip circuit was not tested at this time.

Relay Catalog Number: 219M2573

Test Operations as Found (Time in Seconds)

	Timing Tests				Instantaneous		ICS			Restraint current @ 10 amps
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In	
	Tap 1	Tap 2	300%							
A Phase	0.426	NA	0.02	NA	NA	NA	NA	NA	NA	0.97
B Phase	0.427	NA	0.03	NA	NA	NA	NA	NA	NA	0.99
C Phase	0.438	NA	0.03	NA	NA	NA	NA	NA	NA	0.98
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Test Operations as Left (Time in Seconds)

	Timing Tests				Instantaneous		ICS			Restraint current @ 10 amps
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In	
	Tap 1	Tap 2	300%							
A Phase	0.426	NA	0.02	NA	NA	NA	NA	NA	NA	0.97
B Phase	0.427	NA	0.03	NA	NA	NA	NA	NA	NA	0.99
C Phase	0.438	NA	0.06	NA	NA	NA	NA	NA	NA	0.98
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Submitted By Stan MacMillan

Equipment Used Manta MTS-5000

	Test #	R20	of		
Customer	State of CT	Date	6/30/2021	Job #	21-268
Address	201 West Main Street, Niantic, CT			Temperature	20°C
Owner/User	York Correctional Facility	Date Last Inspection	5/2/2016		
Address	201 West Main Street, Niantic, CT			Last Inspection Job #	16-271
Equipment Location	4160 Switchboard				
Circuit Identification	52-G2				
Relay Identification	Differential Relay	CT Ratio	200:5	PT Ratio	NA

Relay Information

Manufacturer	ABB	Type Phase	87M	Type Ground	NA
Control Voltage	125 VDC	Tap Range Phase	0.1 - 0.5 amps	Tap Range Ground	NA
Use	Gen Diff	Curve Phase	Fixed	Curve Ground	NA
Relay Type	Solid State	Inst Range Phase	NA	Inst Range Ground	NA
		Instruct Book Phase	7.6.1.7-1	Instruct Book Ground	NA

Settings

	Instantaneous				Tap Setting				Time Dial Setting				
	ICS	AØ	BØ	CØ	G	AØ	BØ	CØ	G	AØ	BØ	CØ	G
Specified	NA				NA				NA				NA
As Found	NA	NA	NA	NA	NA	0.4	0.4	0.4	NA	Fixed	Fixed	Fixed	NA
As Left	NA	NA	NA	NA	NA	0.4	0.4	0.4	NA	Fixed	Fixed	Fixed	NA

Visual Inspection

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Cover Gasket	X	X	X	X	Moisture	X	X	X	X	Disc Clearance	NA	NA	NA	NA
Glass	X	X	X	X	Spiral Spring	NA	NA	NA	NA	Rust	X	X	X	X
Foreign Material	X	X	X	X	Bearing Condition	NA	NA	NA	NA					

Routine Maintenance

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Glass Cleaned	X	X	X	X	Connections Tight	X	X	X	X	Insulation Resist.	NA	NA	NA	NA
Case Cleaned	X	X	X	X	Taps Tight	X	X	X	X	Trip Circuit	*	*	*	*
Relay Cleaned	X	X	X	X	Contacts Cleaned	X	X	X	X					

Remarks The Trip circuit was not tested at this time.

Relay Catalog Number: 219M2573

Test Operations as Found (Time in Seconds)

	Timing Tests				Instantaneous		ICS			Restraint current @ 10 amps
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In	
	Tap 1	Tap 2	300%							
A Phase	0.478	NA	0.03	NA	NA	NA	NA	NA	NA	1.05
B Phase	0.475	NA	0.03	NA	NA	NA	NA	NA	NA	1.06
C Phase	0.485	NA	0.03	NA	NA	NA	NA	NA	NA	1.08
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Test Operations as Left (Time in Seconds)

	Timing Tests				Instantaneous		ICS			Restraint current @ 10 amps
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In	
	Tap 1	Tap 2	300%							
A Phase	0.478	NA	0.03	NA	NA	NA	NA	NA	NA	1.05
B Phase	0.475	NA	0.03	NA	NA	NA	NA	NA	NA	1.06
C Phase	0.485	NA	0.03	NA	NA	NA	NA	NA	NA	1.08
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Submitted By Stan MacMillan Equipment Used Manta MTS-5000

Customer	State of CT	Date	6/30/2021	Test #	R21 of <input type="text"/>
Address	201 West Main Street, Niantic, CT		Job #	21-268	
Owner/User	York Correctional Facility		Temperature	20°C	
Address	201 West Main Street, Niantic, CT		Date Last Inspection	5/2/2016	
Equipment Location	4160 Switchboard				
Circuit Identification	52-G3				
Relay Identification	Differential Relay	CT Ratio	200:5	PT Ratio	NA

Relay Information

Manufacturer	ABB	Type Phase	87M	Type Ground	NA
Control Voltage	125 VDC	Tap Range Phase	0.1 - 0.5 amps	Tap Range Ground	NA
Use	Gen Diff	Curve Phase	Fixed	Curve Ground	NA
Relay Type	Solid State	Inst Range Phase	NA	Inst Range Ground	NA
		Instruct Book Phase	7.6.1.7-1	Instruct Book Ground	NA

Settings

	Instantaneous				Tap Setting				Time Dial Setting				
	ICS	AØ	BØ	CØ	G	AØ	BØ	CØ	G	AØ	BØ	CØ	G
Specified	NA				NA				NA				NA
As Found	NA	NA	NA	NA	NA	0.4	0.4	0.4	NA	Fixed	Fixed	Fixed	NA
As Left	NA	NA	NA	NA	NA	0.4	0.4	0.4	NA	Fixed	Fixed	Fixed	NA

Visual Inspection

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Cover Gasket	X	X	X	X	Moisture	X	X	X	X	Disc Clearance	NA	NA	NA	NA
Glass	X	X	X	X	Spiral Spring	NA	NA	NA	NA	Rust	X	X	X	X
Foreign Material	X	X	X	X	Bearing Condition	NA	NA	NA	NA					

Routine Maintenance

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Glass Cleaned	X	X	X	X	Connections Tight	X	X	X	X	Insulation Resist.	NA	NA	NA	NA
Case Cleaned	X	X	X	X	Taps Tight	X	X	X	X	Trip Circuit	*	*	*	*
Relay Cleaned	X	X	X	X	Contacts Cleaned	X	X	X	X					

Remarks The Trip circuit was not tested at this time.

Relay Catalog Number: 219M2573

Test Operations as Found (Time in Seconds)

	Timing Tests				Instantaneous		ICS			Restraint current @ 10 amps
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In	
	Tap 1	Tap 2	300%							
A Phase	0.476	NA	0.03	NA	NA	NA	NA	NA	NA	1.11
B Phase	0.478	NA	0.03	NA	NA	NA	NA	NA	NA	1.13
C Phase	0.493	NA	0.03	NA	NA	NA	NA	NA	NA	1.15
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Test Operations as Left (Time in Seconds)

	Timing Tests				Instantaneous		ICS			Restraint current @ 10 amps
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In	
	Tap 1	Tap 2	300%							
A Phase	0.476	NA	0.03	NA	NA	NA	NA	NA	NA	1.11
B Phase	0.478	NA	0.03	NA	NA	NA	NA	NA	NA	1.13
C Phase	0.493	NA	0.03	NA	NA	NA	NA	NA	NA	1.15
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Submitted By Stan MacMillan

Equipment Used Manta MTS-5000

Customer	State of CT	Date	6/29/2021	Test #	1	of	
Address	201 West Main Street, Niantic, CT		Temp	29°C	Job #	21-268	
Owner/User	York Correctional Facility		Date Last Inspection	5/2/2016			
Address	201 West Main Street, Niantic, CT		Last Inspection Job #	16-271			
Equipment Location	Building 10. Main Emergency Electrical Service Switchboard						
Breaker Identification	52-G3						

Breaker Information

Manufacturer	Westinghouse	Cat # / Type	50 VCP-W 250	Voltage	4.76KV	Amps	1200	Age	1993
Serial Number	93015702	Type of Op Mech	STD. ENE.	Int Rating	29KA	Other			

Test Results

Insulation Resistance	A-G	B-G	C-G	
5000 Volts	100K+	100K+	100K+	
(in Megohms)	A-B	B-C	C-A	
	100K+	100K+	100K+	
	A-A	B-B	C-C	
	100K+	100K+	100K+	
Contact Resistance	AØ	BØ	CØ	(in Micro-ohms)
As Found	43	50	28	
As Left	43	50	28	
Over Potential Test	AØ - G	BØ - G	CØ - G	
NA	NA	NA	NA	
Bottle Integrity Test	AØ L - L	BØ L - L	CØ L - L	
27 KVAC / 1 Min	Pass	Pass	Pass	

	Inspected	Cleaned/Lube
Overall Cleanliness	X	X
Insulating Members	X	X
Mech Connections	X	X
Structural members	X	X
Cubicle	X	X
Shutter Mechanism	X	X
Racking Device	X	X
Cubicle Wiring	X	X
Heaters	X	X
Panel Lights	X	X
Pri Contact Fingers	X	X
Sec Contact Assembly	X	X
Main Contacts	X	X
Breaker Wiring	X	X
Mechanical Lube	X	X
Ground Connection	OK	
Contact Sequence	A - B - C	
Counter	00987	

Adjustments

	Manufact. Recommend.	As Found	As Left
Erosion Indicator	1/8"	OK	OK
Main Contact Gap	NA	NA	NA

Remarks

Equipment Used	Megger / DLRO / AC Hipot	Equipment Serial #	090902 / 131202 / 100601
Submitted By	Jim Drury	Test Crew	JD

Customer	State of CT	Date	7/1/2021	Test #	2	of	
Address	201 West Main Street, Niantic, CT		Temp	22°C	Job #	21-268	
Owner/User	York Correctional Facility		Date Last Inspection	5/2/2016			
Address	201 West Main Street, Niantic, CT		Last Inspection Job #	16-271			
Equipment Location	Building 10. Main Emergency Electrical Service Switchboard						
Breaker Identification	52-G2						

Breaker Information

Manufacturer	Westinghouse	Cat # / Type	50 VCP-W 250	Voltage	4.76KV	Amps	1200	Age	1993
Serial Number	93015701	Type of Op Mech	STD. ENE.	Int Rating	29KA	Other			

Test Results

Insulation Resistance	A-G	B-G	C-G	
5000 Volts	100K+	100K+	100K+	
(in Megohms)	A-B	B-C	C-A	
	100K+	100K+	100K+	
	A-A	B-B	C-C	
	100K+	100K+	100K+	
Contact Resistance	AØ	BØ	CØ	(in Micro-ohms)
As Found	49	50	50	
As Left	49	50	50	
Over Potential Test	AØ - G	BØ - G	CØ - G	
NA	NA	NA	NA	
Bottle Integrity Test	AØ L - L	BØ L - L	CØ L - L	
27 KVAC / 1 Min	Pass	Pass	Pass	

	Inspected	Cleaned/Lube
Overall Cleanliness	X	X
Insulating Members	X	X
Mech Connections	X	X
Structural members	X	X
Cubicle	X	X
Shutter Mechanism	X	X
Racking Device	X	X
Cubicle Wiring	X	X
Heaters	X	X
Panel Lights	X	X
Pri Contact Fingers	X	X
Sec Contact Assembly	X	X
Main Contacts	X	X
Breaker Wiring	X	X
Mechanical Lube	X	X
Ground Connection	OK	
Contact Sequence	A - B - C	
Counter	01377	

Adjustments

	Manufact. Recommend.	As Found	As Left
Erosion Indicator	1/8"	OK	OK
Main Contact Gap	NA	NA	NA

Remarks

Equipment Used	Megger / DLRO / AC Hipot	Equipment Serial #	090902 / 131202 / 100601
Submitted By	Jim Drury	Test Crew	JD

Customer	State of CT	Date	7/1/2021	Test #	3	of	
Address	201 West Main Street, Niantic, CT		Temp	22°C	Job #	21-268	
Owner/User	York Correctional Facility		Date Last Inspection	5/2/2016			
Address	201 West Main Street, Niantic, CT		Last Inspection Job #	16-271			
Equipment Location	Building 10. Main Emergency Electrical Service Switchboard						
Breaker Identification	52-G1						

Breaker Information

Manufacturer	Westinghouse	Cat # / Type	50 VCP-W 250	Voltage	4.76KV	Amps	1200	Age	1993
Serial Number	93015700	Type of Op Mech	STD. ENE.	Int Rating	29KA	Other			

Test Results

Insulation Resistance	A-G	B-G	C-G	
5000 Volts	100K+	100K+	100K+	
(in Megohms)	A-B	B-C	C-A	
	100K+	100K+	100K+	
	A-A	B-B	C-C	
	100K+	100K+	100K+	
Contact Resistance	AØ	BØ	CØ	(in Micro-ohms)
As Found	45	51	51	
As Left	45	51	51	
Over Potential Test	AØ - G	BØ - G	CØ - G	
NA	NA	NA	NA	
Bottle Integrity Test	AØ L - L	BØ L - L	CØ L - L	
27 KVAC / 1 Min	Pass	Pass	Pass	

	Inspected	Cleaned/Lube
Overall Cleanliness	X	X
Insulating Members	X	X
Mech Connections	X	X
Structural members	X	X
Cubicle	X	X
Shutter Mechanism	X	X
Racking Device	X	X
Cubicle Wiring	X	X
Heaters	X	X
Panel Lights	X	X
Pri Contact Fingers	X	X
Sec Contact Assembly	X	X
Main Contacts	X	X
Breaker Wiring	X	X
Mechanical Lube	X	X
Ground Connection	OK	
Contact Sequence	A - B - C	
Counter	01056	

Adjustments

	Manufact. Recommend.	As Found	As Left
Erosion Indicator	1/8"	OK	OK
Main Contact Gap	NA	NA	NA

Remarks

Equipment Used	Megger / DLRO / AC Hipot	Equipment Serial #	090902 / 131202 / 100601
Submitted By	Jim Drury	Test Crew	JD

Customer	State of CT	Date	6/29/2021	Test #	4	of	
Address	201 West Main Street, Niantic, CT		Temp	22°C	Job #	21-268	
Owner/User	York Correctional Facility		Date Last Inspection	5/2/2016			
Address	201 West Main Street, Niantic, CT		Last Inspection Job #	16-271			
Equipment Location	Building 10. Main Emergency Electrical Service Switchboard						
Breaker Identification	52-GM						

Breaker Information

Manufacturer	Westinghouse	Cat # / Type	50 VCP-W 250	Voltage	4.76KV	Amps	1200	Age	1993
Serial Number	93015703	Type of Op Mech	STD. ENE.	Int Rating	29KA	Other			

Test Results

Insulation Resistance (in Megohms)	A-G	B-G	C-G
	100K+	100K+	100K+
	A-B	B-C	C-A
	100K+	100K+	100K+
	A-A	B-B	C-C
	100K+	100K+	100K+
Contact Resistance	AØ	BØ	CØ
As Found	50	49	46
As Left	50	49	46
Over Potential Test	AØ - G	BØ - G	CØ - G
NA	NA	NA	NA
Bottle Integrity Test	AØ L - L	BØ L - L	CØ L - L
27 KVAC / 1 Min	Pass	Pass	Pass

(in Micro-ohms)

	Inspected	Cleaned/Lube
Overall Cleanliness	X	X
Insulating Members	X	X
Mech Connections	X	X
Structural members	X	X
Cubicle	X	X
Shutter Mechanism	X	X
Racking Device	X	X
Cubicle Wiring	X	X
Heaters	X	X
Panel Lights	X	X
Pri Contact Fingers	X	X
Sec Contact Assembly	X	X
Main Contacts	X	X
Breaker Wiring	X	X
Mechanical Lube	X	X
Ground Connection	OK	
Contact Sequence	A - B - C	
Counter	01069	

Adjustments

	Manufact. Recommend.	As Found	As Left
Erosion Indicator	1/8"	OK	OK
Main Contact Gap	NA	NA	NA

Remarks

Equipment Used	Megger / DLRO / AC Hipot	Equipment Serial #	090902 / 131202 / 100601
Submitted By	Jim Drury	Test Crew	JD

23kV Switchboard

Customer	State of CT	Date	6/29/2021	Test #	R22	of	
Address	201 West Main Street, Niantic, CT			Job #	21-268		
Owner/User	York Correctional Facility			Temperature	20°C		
Address	201 West Main Street, Niantic, CT			Date Last Inspection	5/3/2016		
Equipment Location	23 KV Switchboard						
Circuit Identification	52-U1						
Relay Identification	Phase Overcurrent	CT Ratio	150:5	PT Ratio	NA		

Relay Information

Manufacturer	ABB	Type Phase	51 I	Type Ground	51 I
Control Voltage	125 VDC	Tap Range Phase	1.5 - 6 amps	Tap Range Ground	0.5 - 2 amps
Use	Overcurrent	Curve Phase	Inverse	Curve Ground	Short
Relay Type	Solid State	Inst Range Phase	2 X - 20 X	Inst Range Ground	2 X - 20 X
		Instruct Book Phase	7.2.1.7-14	Instruct Book Ground	7.2.1.7.14

Settings

	Instantaneous				Tap Setting				Time Dial Setting				
	ICS	AØ	BØ	CØ	G	AØ	BØ	CØ	G	AØ	BØ	CØ	G
Specified													
As Found	NA	20 X	20 X	20 X	20 X	6	6	6	0.8	2	2	2	10
As Left	NA	20 X	20 X	20 X	20 X	6	6	6	0.8	2	2	2	10

Visual Inspection

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Cover Gasket	X	X	X	X	Moisture	X	X	X	X	Disc Clearance	NA	NA	NA	NA
Glass	X	X	X	X	Spiral Spring	NA	NA	NA	NA	Rust	X	X	X	X
Foreign Material	X	X	X	X	Bearing Condition	NA	NA	NA	NA					

Routine Maintenance

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Glass Cleaned	X	X	X	X	Connections Tight	X	X	X	X	Insulation Resist.	NA	NA	NA	NA
Case Cleaned	X	X	X	X	Taps Tight	X	X	X	X	Trip Circuit	*	*	*	*
Relay Cleaned	X	X	X	X	Contacts Cleaned	X	X	X	X					

Remarks The Trip circuit was not tested at this time. Phase Catalog Number- 443S1241
 Ground Catalog Number- 443S4141
 The main breaker will trip before the feeder breakers because of settings, a coordination study should be performed
 Phase times: 300%- 1.0 seconds, 400%- 0.82 seconds, Instantaneous was tested at the 4 tap for pickup.
 Ground Times: 300%- 0.85 seconds, 400%- 0.65 seconds.

Test Operations as Found (Time in Seconds)

	Timing Tests				Instantaneous		ICS		
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In
	Tap 1	Tap 2	300%	400%					
A Phase	6.24	NA	1.00	0.81	83.6	OK	NA	NA	NA
B Phase	6.20	NA	1.02	0.82	82.5	OK	NA	NA	NA
C Phase	6.23	NA	1.02	0.83	81.0	OK	NA	NA	NA
Ground	0.81	NA	0.82	0.66	16.7	OK	NA	NA	NA

Test Operations as Left (Time in Seconds)

	Timing Tests				Instantaneous		ICS		
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In
	Tap 1	Tap 2	300%	400%					
A Phase	6.24	NA	1.00	0.81	83.6	OK	NA	NA	NA
B Phase	6.20	NA	1.02	0.82	82.5	OK	NA	NA	NA
C Phase	6.23	NA	1.02	0.83	81.0	OK	NA	NA	NA
Ground	0.81	NA	0.82	0.66	16.7	OK	NA	NA	NA

Submitted By Stan MacMillan

Equipment Used MTS-5000

		Test #	R23	of	
Customer	State of CT	Date	6/29/2021	Job #	21-268
Address	201 West Main Street, Niantic, CT			Temperature	20°C
Owner/User	York Correctional Facility	Date Last Inspection	5/3/2016		
Address	201 West Main Street, Niantic, CT			Last Inspection Job #	16-200
Equipment Location	23 KV Switchboard				
Circuit Identification	52-U1				
Relay Identification	Phase Under Voltage	CT Ratio	NA	PT Ratio	200:1

Relay Information

Manufacturer	ABB	Type Phase	27N	Type Ground	NA
Control Voltage	125 VDC	Tap Range Phase	60 - 110 volts PU	Tap Range Ground	NA
Use	Under Voltage	Curve Phase	Definite	Curve Ground	NA
Relay Type	Solid State	Inst Range Phase	70% - 99% DO	Inst Range Ground	NA
		Instruct Book Phase	7.4.1.7-7	Instruct Book Ground	NA

Settings

	Instantaneous				Tap Setting				Time Dial Setting				
	ICS	AØ	BØ	CØ	G	AØ	BØ	CØ	G	AØ	BØ	CØ	G
Specified													
As Found	NA	90%	90%	90%	NA	100	100	100	NA	2	2	2	NA
As Left	NA	90%	90%	90%	NA	100	100	100	NA	2	2	2	NA

Visual Inspection

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Cover Gasket	X	X	X	NA	Moisture	X	X	X	NA	Disc Clearance	NA	NA	NA	NA
Glass	X	X	X	NA	Spiral Spring	NA	NA	NA	NA	Rust	X	X	X	NA
Foreign Material	X	X	X	NA	Bearing Condition	NA	NA	NA	NA					

Routine Maintenance

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Glass Cleaned	X	X	X	NA	Connections Tight	X	X	X	NA	Insulation Resist.	NA	NA	NA	NA
Case Cleaned	X	X	X	NA	Taps Tight	X	X	X	NA	Trip Circuit	*	*	*	NA
Relay Cleaned	X	X	X	NA	Contacts Cleaned	X	X	X	NA					

Remarks The Trip circuit was not tested at this time. Phase Catalog Number- 411T4175

Tap 1 is pickup, Tap 2 is dropout

Test Operations as Found (Time in Seconds)

	Timing Tests				Instantaneous		ICS		
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In
	Tap 1	Tap 2	50%	0%					
A Phase	99.89	93.29	2.02	2.02	NA	NA	NA	NA	NA
B Phase	99.85	91.86	2.03	2.03	NA	NA	NA	NA	NA
C Phase	99.88	91.94	2.02	2.02	NA	NA	NA	NA	NA
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA

Test Operations as Left (Time in Seconds)

	Timing Tests				Instantaneous		ICS		
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In
	Tap 1	Tap 2	50%	0%					
A Phase	99.89	93.29	2.02	2.02	NA	NA	NA	NA	NA
B Phase	99.85	91.86	2.03	2.03	NA	NA	NA	NA	NA
C Phase	99.88	91.94	2.02	2.02	NA	NA	NA	NA	NA
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA

Submitted By Stan MacMillan

Equipment Used MTS-5000

Customer	State of CT	Date	6/29/2021	Test #	R24 of <input type="text"/>
Address	201 West Main Street, Niantic, CT		Job #	21-268	
Owner/User	York Correctional Facility		Temperature	20°C	
Address	201 West Main Street, Niantic, CT		Date Last Inspection	5/3/2016	
Equipment Location	23 KV Switchboard				
Circuit Identification	52-U1				
Relay Identification	Phase Over Voltage	CT Ratio	NA	PT Ratio	200:1

Relay Information

Manufacturer	ABB	Type Phase	59N	Type Ground	NA
Control Voltage	125 VDC	Tap Range Phase	100 - 150 volts PU	Tap Range Ground	NA
Use	Under Voltage	Curve Phase	Definite	Curve Ground	NA
Relay Type	Solid State	Inst Range Phase	70% - 99% DO	Inst Range Ground	NA
		Instruct Book Phase	7.4.1.7-7	Instruct Book Ground	NA

Settings

	Instantaneous				Tap Setting				Time Dial Setting				
	ICS	AØ	BØ	CØ	G	AØ	BØ	CØ	G	AØ	BØ	CØ	G
Specified													
As Found	NA	90%	90%	90%	NA	140	140	150	NA	2	2	2	NA
As Left	NA	90%	90%	90%	NA	140	140	150	NA	2	2	2	NA

Visual Inspection

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Cover Gasket	X	X	X	NA	Moisture	X	X	X	NA	Disc Clearance	NA	NA	NA	NA
Glass	X	X	X	NA	Spiral Spring	NA	NA	NA	NA	Rust	X	X	X	NA
Foreign Material	X	X	X	NA	Bearing Condition	NA	NA	NA	NA					

Routine Maintenance

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Glass Cleaned	X	X	X	NA	Connections Tight	X	X	X	NA	Insulation Resist.	NA	NA	NA	NA
Case Cleaned	X	X	X	NA	Taps Tight	X	X	X	NA	Trip Circuit	*	*	*	NA
Relay Cleaned	X	X	X	NA	Contacts Cleaned	X	X	X	NA					

Remarks The Trip circuit was not tested at this time. Phase Catalog Number- 411U6175

The C-A voltage relay is out of pickup tolerance and should be replaced. It is on a higher Tap to match results.

Tap 1 is pickup, Tap 2 is dropout

Test Operations as Found (Time in Seconds)

	Timing Tests				Instantaneous		ICS		
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In
	Tap 1	Tap 2	110%	115%					
A Phase	137.89	123.97	0.20	0.20	NA	NA	NA	NA	NA
B Phase	138.05	124.16	0.20	0.20	NA	NA	NA	NA	NA
C Phase	138.63	124.67	0.20	0.20	NA	NA	NA	NA	NA
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA

Test Operations as Left (Time in Seconds)

	Timing Tests				Instantaneous		ICS		
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In
	Tap 1	Tap 2	110%	115%					
A Phase	137.89	123.97	0.20	0.20	NA	NA	NA	NA	NA
B Phase	138.05	124.16	0.20	0.20	NA	NA	NA	NA	NA
C Phase	138.63	124.67	0.20	0.20	NA	NA	NA	NA	NA
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA

Customer	State of CT	Date	6/29/2021	Test #	R25 of	
Address	201 West Main Street, Niantic, CT		Job #	21-268		
Owner/User	York Correctional Facility		Temperature	20°C		
Address	201 West Main Street, Niantic, CT		Date Last Inspection	5/3/2016		
Equipment Location	23 KV Switchboard					
Circuit Identification	52-U1					
Relay Identification	Reverse Power	CT Ratio	150:5	PT Ratio	200:1	

Relay Information

Manufacturer	ABB	Type	32R	Catalog Number	422B1275
Control Voltage	125 VDC	Tap Range	1.7 - 20 watts		
Use	Reverse Power	Curve	Definite		
Relay Type	Solid State	Inst Range	NA		
		Instruct Book	7.4.1.7-5		

Settings

	ICS	Inst Setting	Tap Setting	Time Dial					
Specified									
As Found	NA	NA	3.5	15					
As Left	NA	NA	3.5	15					

Visual Inspection

Cover Gasket	<input checked="" type="checkbox"/>	Foreign Material	<input checked="" type="checkbox"/>	Spiral Spring	<input type="checkbox"/>	Disc Clearance	<input type="checkbox"/>
Glass	<input checked="" type="checkbox"/>	Moisture	<input checked="" type="checkbox"/>	Bearing Condition	<input type="checkbox"/>	Rust	<input checked="" type="checkbox"/>

Routine Maintenance

Glass Cleaned	<input checked="" type="checkbox"/>	Relay Cleaned	<input checked="" type="checkbox"/>	Taps Tight	<input checked="" type="checkbox"/>	Insulation Resist.	<input type="checkbox"/>
Case Cleaned	<input checked="" type="checkbox"/>	Connections Tight	<input checked="" type="checkbox"/>	Contacts Cleaned	<input checked="" type="checkbox"/>	Trip Circuit	<input checked="" type="checkbox"/>

Remarks The Trip circuit was not tested at this time.

Test Operations (Time in Seconds)

	Timing Tests				Instantaneous		ICS					
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In			
	Tap 1	Tap 2	300%	400%								
As Found	3.94	NA	15.23	15.23	NA	NA	NA	NA	NA			
As Left	3.94	NA	15.23	15.23	NA	NA	NA	NA	NA			

As Found												
As Left												

Remarks

Customer	State of CT	Date	6/29/2021	Test #	R26 of	
Address	201 West Main Street, Niantic, CT		Job #	21-268		
Owner/User	York Correctional Facility		Temperature	20°C		
Address	201 West Main Street, Niantic, CT		Date Last Inspection	5/3/2016		
Equipment Location	23 KV Switchboard					
Circuit Identification	52-U1					
Relay Identification	Under Frequency	CT Ratio	NA	PT Ratio	200:1	

Relay Information

Manufacturer	ABB	Type	81	Catalog Number	422B1275
Control Voltage	125 VDC	Tap Range	54 - 63 Hz		
Use	Under Freq	Curve	Definite		
Relay Type	Solid State	Inst Range	NA		
		Instruct Book	7.4.1.7-5		

Settings

	ICS	Inst Setting	Tap Setting	Time Dial					
Specified									
As Found	NA	NA	59.50	3 cy					
As Left	NA	NA	59.50	3 cy					

Visual Inspection

Cover Gasket	<input checked="" type="checkbox"/>	Foreign Material	<input checked="" type="checkbox"/>	Spiral Spring	<input type="checkbox"/>	Disc Clearance	<input type="checkbox"/>
Glass	<input checked="" type="checkbox"/>	Moisture	<input checked="" type="checkbox"/>	Bearing Condition	<input type="checkbox"/>	Rust	<input checked="" type="checkbox"/>

Routine Maintenance

Glass Cleaned	<input checked="" type="checkbox"/>	Relay Cleaned	<input checked="" type="checkbox"/>	Taps Tight	<input checked="" type="checkbox"/>	Insulation Resist.	<input type="checkbox"/>
Case Cleaned	<input checked="" type="checkbox"/>	Connections Tight	<input checked="" type="checkbox"/>	Contacts Cleaned	<input checked="" type="checkbox"/>	Trip Circuit	<input checked="" type="checkbox"/>

Remarks The Trip circuit was not tested at this time.

Test Operations (Time in Seconds)

	Timing Tests				Instantaneous		ICS			U/V Inhibit	
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In		
	Tap 1	Tap 2	90%	80%							
As Found	59.49	NA	6.5	6.6	NA	NA	NA	NA	NA	61.08 V	
As Left	59.49	NA	6.5	6.6	NA	NA	NA	NA	NA	61.08 V	

As Found											
As Left											

Remarks

Customer	State of CT	Date	6/29/2021	Test #	R27 of	
Address	201 West Main Street, Niantic, CT		Job #	21-268		
Owner/User	York Correctional Facility		Temperature	20°C		
Address	201 West Main Street, Niantic, CT		Date Last Inspection	5/3/2016		
Equipment Location	23 KV Switchboard					
Circuit Identification	52-U1					
Relay Identification	Over Frequency	CT Ratio	NA	PT Ratio	200:1	

Relay Information

Manufacturer	ABB	Type	81	Catalog Number	422B1275
Control Voltage	125 VDC	Tap Range	54 - 63 Hz		
Use	Under Freq	Curve	Definite		
Relay Type	Solid State	Inst Range	NA		
		Instruct Book	7.4.1.7-5		

Settings

	ICS	Inst Setting	Tap Setting	Time Dial					
Specified									
As Found	NA	NA	60.50	60 cy					
As Left	NA	NA	60.50	60 cy					

Visual Inspection

Cover Gasket	<input checked="" type="checkbox"/>	Foreign Material	<input checked="" type="checkbox"/>	Spiral Spring	<input type="checkbox"/>	Disc Clearance	<input type="checkbox"/>
Glass	<input checked="" type="checkbox"/>	Moisture	<input checked="" type="checkbox"/>	Bearing Condition	<input type="checkbox"/>	Rust	<input checked="" type="checkbox"/>

Routine Maintenance

Glass Cleaned	<input checked="" type="checkbox"/>	Relay Cleaned	<input checked="" type="checkbox"/>	Taps Tight	<input checked="" type="checkbox"/>	Insulation Resist.	<input type="checkbox"/>
Case Cleaned	<input checked="" type="checkbox"/>	Connections Tight	<input checked="" type="checkbox"/>	Contacts Cleaned	<input checked="" type="checkbox"/>	Trip Circuit	<input checked="" type="checkbox"/>

Remarks The Trip circuit was not tested at this time.

Test Operations (Time in Seconds)

	Timing Tests				Instantaneous		ICS			U/V Inhibit	
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In		
	Tap 1	Tap 2	110%	120%							
As Found	60.50	NA	61.8	60.8	NA	NA	NA	NA	NA	59.84 V	
As Left	60.50	NA	61.8	60.8	NA	NA	NA	NA	NA	59.84 V	

As Found											
As Left											

Remarks

Customer	State of CT	Date	6/29/2021	Test #	R28 of	
Address	201 West Main Street, Niantic, CT		Job #	21-268		
Owner/User	York Correctional Facility		Temperature	20°C		
Address	201 West Main Street, Niantic, CT		Date Last Inspection	5/3/2016		
Equipment Location	23 KV Switchboard					
Circuit Identification	52-U1					
Relay Identification	Current Balance Relay	CT Ratio	150:5	PT Ratio	NA	

Relay Information

Manufacturer	ABB	Type	46D	Catalog Number	427Q170
Control Voltage	125 VDC	Tap Range	1 - 4 X rating	Rating	0.1 amps
Use	Current Balance	Curve	Definite		
Relay Type	Solid State	Inst Range	NA		
		Instruct Book	7.6.1.7-2		

Settings

	ICS	Inst Setting	Tap Setting	Time Dial					
Specified									
As Found	NA	NA	4 X	4 sec					
As Left	NA	NA	4 X	4 sec					

Visual Inspection

Cover Gasket	<input checked="" type="checkbox"/>	Foreign Material	<input checked="" type="checkbox"/>	Spiral Spring	<input type="checkbox"/>	Disc Clearance	<input type="checkbox"/>
Glass	<input checked="" type="checkbox"/>	Moisture	<input checked="" type="checkbox"/>	Bearing Condition	<input type="checkbox"/>	Rust	<input checked="" type="checkbox"/>

Routine Maintenance

Glass Cleaned	<input checked="" type="checkbox"/>	Relay Cleaned	<input checked="" type="checkbox"/>	Taps Tight	<input checked="" type="checkbox"/>	Insulation Resist.	<input type="checkbox"/>
Case Cleaned	<input checked="" type="checkbox"/>	Connections Tight	<input checked="" type="checkbox"/>	Contacts Cleaned	<input checked="" type="checkbox"/>	Trip Circuit	<input checked="" type="checkbox"/>

Remarks The Trip circuit was not tested at this time.

Test Operations (Time in Seconds)

	Pickup Tests		Timing Tests		Instantaneous		ICS			Pickup B phase	Pickup C phase	
	Tap 1	Tap 2	P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In			
			200%	300%								
As Found	0.363	NA	3.88	3.83	NA	NA	NA	NA	NA	0.367	0.372	
As Left	0.363	NA	3.88	3.83	NA	NA	NA	NA	NA	0.367	0.372	

As Found												
As Left												

Remarks

Customer	State of CT	Date	6/29/2021	Test #	R29 of	
Address	201 West Main Street, Niantic, CT		Job #	21-268		
Owner/User	York Correctional Facility		Temperature	20°C		
Address	201 West Main Street, Niantic, CT		Date Last Inspection	5/3/2016		
Equipment Location	23 KV Switchboard					
Circuit Identification	52-U1					
Relay Identification	Sync Check	CT Ratio	NA	PT Ratio	200:1	

Relay Information

Manufacturer	ABB	Type	25S	Catalog Number	424J2105
Control Voltage	125 VDC	Tap Range	0 - 80 Volts	Rating	1 second
Use	Sync Check	Curve	Definite		
Relay Type	Solid State	Inst Range	NA		
		Instruct Book	7.3.1.7-1		

Settings

	ICS	Inst Setting	Tap Setting	Time Dial					
Specified									
As Found	NA	NA	30 V	0.5 X					
As Left	NA	NA	30 V	0.5 X					

Visual Inspection

Cover Gasket	<input checked="" type="checkbox"/>	Foreign Material	<input checked="" type="checkbox"/>	Spiral Spring	<input type="checkbox"/>	Disc Clearance	<input type="checkbox"/>
Glass	<input checked="" type="checkbox"/>	Moisture	<input checked="" type="checkbox"/>	Bearing Condition	<input type="checkbox"/>	Rust	<input checked="" type="checkbox"/>

Routine Maintenance

Glass Cleaned	<input checked="" type="checkbox"/>	Relay Cleaned	<input checked="" type="checkbox"/>	Taps Tight	<input checked="" type="checkbox"/>	Insulation Resist.	<input type="checkbox"/>
Case Cleaned	<input checked="" type="checkbox"/>	Connections Tight	<input checked="" type="checkbox"/>	Contacts Cleaned	<input checked="" type="checkbox"/>	Trip Circuit	<input checked="" type="checkbox"/>

Remarks The Trip circuit was not tested at this time.

Test Operations (Time in Seconds)

	Timing Tests				Instantaneous		ICS			Phase Angle Diff +	Phase Angle Diff -	Slip
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In			
	Tap 1	Tap 2	100%	NA								
As Found	29.79	NA	0.52	NA	NA	NA	NA	NA	NA	14.04°	14.14°	0.15 Hz
As Left	29.79	NA	0.52	NA	NA	NA	NA	NA	NA	14.04°	14.14°	0.15 Hz

As Found												
As Left												

Remarks

Customer	State of CT	Date	6/29/2021	Test #	R30 of	
Address	201 West Main Street, Niantic, CT		Job #	21-268		
Owner/User	York Correctional Facility		Temperature	20°C		
Address	201 West Main Street, Niantic, CT		Date Last Inspection	5/3/2016		
Equipment Location	23 KV Switchboard					
Circuit Identification	52-U1					
Relay Identification	Directional Unit 67V	CT Ratio	150:5	PT Ratio	200:1	
					Last Inspection Job # 16-200	

Relay Information

Manufacturer	ABB	Type	32	Catalog Number	425P0070
Control Voltage	125 VDC	Tap Range	0° - 90°		
Use	Directional	Curve	Definite		
Relay Type	Solid State	Inst Range	NA		
		Instruct Book	7.8.1.7-2		

Settings

	ICS	Inst Setting	Tap Setting	Time Dial					
Specified									
As Found	NA	NA	0°	Fixed					
As Left	NA	NA	0°	Fixed					

Visual Inspection

Cover Gasket	<input checked="" type="checkbox"/>	Foreign Material	<input checked="" type="checkbox"/>	Spiral Spring	<input type="checkbox"/>	Disc Clearance	<input type="checkbox"/>
Glass	<input checked="" type="checkbox"/>	Moisture	<input checked="" type="checkbox"/>	Bearing Condition	<input type="checkbox"/>	Rust	<input checked="" type="checkbox"/>

Routine Maintenance

Glass Cleaned	<input checked="" type="checkbox"/>	Relay Cleaned	<input checked="" type="checkbox"/>	Taps Tight	<input checked="" type="checkbox"/>	Insulation Resist.	<input type="checkbox"/>
Case Cleaned	<input checked="" type="checkbox"/>	Connections Tight	<input checked="" type="checkbox"/>	Contacts Cleaned	<input checked="" type="checkbox"/>	Trip Circuit	<input checked="" type="checkbox"/>

Remarks The Trip circuit was not tested at this time.

Tap 1 is current pickup at 0 degrees

Test Operations (Time in Seconds)

	Timing Tests				Instantaneous		ICS			Torque Angle Minus @ 1 amp	Torque Angle Plus @ 1 amp	
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In			
	Tap 1	Tap 2	200%	NA								
As Found	0.016A	NA	0.007	NA	NA	NA	NA	NA	NA	-90.15°	90.34°	
As Left	0.016A	NA	0.007	NA	NA	NA	NA	NA	NA	-90.15°	90.34°	

As Found												
As Left												

Remarks

Customer	State of CT	Date	6/29/2021	Test #	R31 of	
Address	201 West Main Street, Niantic, CT		Job #	21-268		
Owner/User	York Correctional Facility		Temperature	20°C		
Address	201 West Main Street, Niantic, CT		Date Last Inspection	5/3/2016		
Equipment Location	23 KV Switchboard					
Circuit Identification	52-U1					
Relay Identification	Directional Unit 67V	CT Ratio	NA	PT Ratio	200:1	

Relay Information

Manufacturer	ABB	Type	47H	Catalog Number	412N0175
Control Voltage	125 VDC	Tap Range	90 V - 120 V		
Use	Directional V	Curve	Inst		
Relay Type	Solid State	Inst Range	70% - 98%		
		Instruct Book	7.4.1.7-2		

Settings

	ICS	Inst Setting	Tap Setting	Time Dial	Pickup	Dropout				
Specified										
As Found	NA	NA	NA	Inst	100 V	90%				
As Left	NA	NA	NA	Inst	100 V	90%				

Visual Inspection

Cover Gasket	<input checked="" type="checkbox"/>	Foreign Material	<input checked="" type="checkbox"/>	Spiral Spring	<input type="checkbox"/>	Disc Clearance	<input type="checkbox"/>
Glass	<input checked="" type="checkbox"/>	Moisture	<input checked="" type="checkbox"/>	Bearing Condition	<input type="checkbox"/>	Rust	<input checked="" type="checkbox"/>

Routine Maintenance

Glass Cleaned	<input checked="" type="checkbox"/>	Relay Cleaned	<input checked="" type="checkbox"/>	Taps Tight	<input checked="" type="checkbox"/>	Insulation Resist.	<input type="checkbox"/>
Case Cleaned	<input checked="" type="checkbox"/>	Connections Tight	<input checked="" type="checkbox"/>	Contacts Cleaned	<input checked="" type="checkbox"/>	Trip Circuit	<input checked="" type="checkbox"/>

Remarks The Trip circuit was not tested at this time.

Tap 1 is A phase pickup, Tap 2 is C phase pickup

Test Operations (Time in Seconds)

	Timing Tests				Instantaneous		ICS			A Phase Dropout	C Phase Dropout	
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In			
	Tap 1	Tap 2	A 50%	C 50%								
As Found	106.92	107.24	0.04	0.04	NA	NA	NA	NA	NA	89.24 V	89.71 V	
As Left	106.92	107.24	0.04	0.04	NA	NA	NA	NA	NA	89.24 V	89.71 V	

As Found												
As Left												

Remarks

Customer	State of CT	Date	6/29/2021	Test #	R32 of <input type="text"/>
Address	201 West Main Street, Niantic, CT		Job #	21-268	
Owner/User	York Correctional Facility	Temperature	20°C		
Address	201 West Main Street, Niantic, CT		Date Last Inspection	5/3/2016	
Equipment Location	23 KV Switchboard				
Circuit Identification	52-U1				
Relay Identification	Directional Over Current	CT Ratio	150:5	PT Ratio	NA

Relay Information

Manufacturer	ABB	Type Phase	50D	Type Ground	NA
Control Voltage	125 VDC	Tap Range Phase	1 X - 10 X Rating	Tap Range Ground	NA
Use	DIR Overcurrent	Curve Phase	Definite	Curve Ground	NA
Relay Type	Solid State	Inst Range Phase	NA	Inst Range Ground	NA
		Instruct Book Phase	7.2.1.7-3	Instruct Book Ground	NA

Settings

	Instantaneous				Tap Setting				Time Dial Setting				
	ICS	AØ	BØ	CØ	G	AØ	BØ	CØ	G	AØ	BØ	CØ	G
Specified													
As Found	NA	NA	NA	NA	NA	1 X	1 X	1 X	NA	0.1	0.1	0.1	NA
As Left	NA	NA	NA	NA	NA	1 X	1 X	1 X	NA	0.1	0.1	0.1	NA

Visual Inspection

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Cover Gasket	X	X	X	NA	Moisture	X	X	X	NA	Disc Clearance	NA	NA	NA	NA
Glass	X	X	X	NA	Spiral Spring	NA	NA	NA	NA	Rust	X	X	X	NA
Foreign Material	X	X	X	NA	Bearing Condition	NA	NA	NA	NA					

Routine Maintenance

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Glass Cleaned	X	X	X	NA	Connections Tight	X	X	X	NA	Insulation Resist.	NA	NA	NA	NA
Case Cleaned	X	X	X	NA	Taps Tight	X	X	X	NA	Trip Circuit	*	*	*	NA
Relay Cleaned	X	X	X	NA	Contacts Cleaned	X	X	X	NA					

Remarks The Trip circuit was not tested at this time. Phase Catalog Number- 468T2575, Rating 0.8 amps

Test Operations as Found (Time in Seconds)

	Timing Tests				Instantaneous		ICS		
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In
	Tap 1	Tap 2	300%	400%					
A Phase	0.83	NA	0.098	0.098	NA	NA	NA	NA	NA
B Phase	0.83	NA	0.098	0.098	NA	NA	NA	NA	NA
C Phase	0.84	NA	0.098	0.098	NA	NA	NA	NA	NA
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA

Test Operations as Left (Time in Seconds)

	Timing Tests				Instantaneous		ICS		
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In
	Tap 1	Tap 2	300%	400%					
A Phase	0.83	NA	0.098	0.098	NA	NA	NA	NA	NA
B Phase	0.83	NA	0.098	0.098	NA	NA	NA	NA	NA
C Phase	0.84	NA	0.098	0.098	NA	NA	NA	NA	NA
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA

Submitted By

Equipment Used

Customer	State of CT	Date	6/29/2021	Test #	R33	of	
Address	201 West Main Street, Niantic, CT			Job #	21-268		
Owner/User	York Correctional Facility			Temperature	20°C		
Address	201 West Main Street, Niantic, CT			Date Last Inspection	5/5/2016		
Equipment Location	23 KV Switchboard						
Circuit Identification	52-SDF1						
Relay Identification	Phase Overcurrent	CT Ratio	100:5	PT Ratio	NA		

Relay Information

Manufacturer	ABB	Type Phase	51 I	Type Ground	NA
Control Voltage	125 VDC	Tap Range Phase	1.5 - 6 amps	Tap Range Ground	NA
Use	Overcurrent	Curve Phase	Inverse	Curve Ground	NA
Relay Type	Solid State	Inst Range Phase	2 X - 20 X	Inst Range Ground	NA
		Instruct Book Phase	7.2.1.7-14	Instruct Book Ground	NA

Settings

	Instantaneous				Tap Setting				Time Dial Setting				
	ICS	AØ	BØ	CØ	G	AØ	BØ	CØ	G	AØ	BØ	CØ	G
Specified													
As Found	NA	20 X	20 X	20 X	NA	6	6	6	NA	8	8	8	NA
As Left	NA	20 X	20 X	20 X	NA	6	6	6	NA	8	8	8	NA

Visual Inspection

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Cover Gasket	X	X	X	NA	Moisture	X	X	X	NA	Disc Clearance	NA	NA	NA	NA
Glass	X	X	X	NA	Spiral Spring	NA	NA	NA	NA	Rust	X	X	X	NA
Foreign Material	X	X	X	NA	Bearing Condition	NA	NA	NA	NA					

Routine Maintenance

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Glass Cleaned	X	X	X	NA	Connections Tight	X	X	X	NA	Insulation Resist.	NA	NA	NA	NA
Case Cleaned	X	X	X	NA	Taps Tight	X	X	X	NA	Trip Circuit	*	*	*	NA
Relay Cleaned	X	X	X	NA	Contacts Cleaned	X	X	X	NA					

Remarks The Trip circuit was not tested at this time. Phase Catalog Number- 443T1241

The main breaker will trip before the feeder breakers because of settings, a coordination study should be performed

Phase times: 300%- 4.8 seconds, 400%- 3.9 seconds, Instantaneous was tested at the 4 tap for pickup.

Test Operations as Found (Time in Seconds)

	Timing Tests				Instantaneous		ICS		
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In
	Tap 1	Tap 2	300%	400%					
A Phase	6.02	NA	4.71	3.78	81.7	OK	NA	NA	NA
B Phase	6.02	NA	4.70	3.77	81.4	OK	NA	NA	NA
C Phase	6.02	NA	4.70	3.77	81.2	OK	NA	NA	NA
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA

Test Operations as Left (Time in Seconds)

	Timing Tests				Instantaneous		ICS		
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In
	Tap 1	Tap 2	300%	400%					
A Phase	6.02	NA	4.71	3.78	81.7	OK	NA	NA	NA
B Phase	6.02	NA	4.70	3.77	81.4	OK	NA	NA	NA
C Phase	6.02	NA	4.70	3.77	81.2	OK	NA	NA	NA
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA

Submitted By Stan MacMillan

Equipment Used MTS-5000

Customer	State of CT	Date	6/29/2021	Test #	R34 of	
Address	201 West Main Street, Niantic, CT		Job #	21-268		
Owner/User	York Correctional Facility		Temperature	20°C		
Address	201 West Main Street, Niantic, CT		Date Last Inspection	5/3/2016		
Equipment Location	23 KV Switchboard					
Circuit Identification	52-SDF1					
Relay Identification	Ground Overcurrent	CT Ratio	50:5	PT Ratio	NA	

Relay Information

Manufacturer	ABB	Type	50	Catalog Number	418S0541
Control Voltage	125 VDC	Tap Range	1 X - 10 X Rating	Rating	0.8 amps
Use	50G overcurrent	Curve	Inst		
Relay Type	Solid State	Inst Range	NA		
		Instruct Book	7.2.1.7-5		

Settings

	ICS	Inst Setting	Tap Setting	Time Dial					
Specified									
As Found	NA	NA	1.6 X	INST					
As Left	NA	NA	1.6 X	INST					

Visual Inspection

Cover Gasket	X	Foreign Material	X	Spiral Spring	NA	Disc Clearance	NA
Glass	X	Moisture	X	Bearing Condition	NA	Rust	X

Routine Maintenance

Glass Cleaned	X	Relay Cleaned	X	Taps Tight	X	Insulation Resist.	NA
Case Cleaned	X	Connections Tight	X	Contacts Cleaned	X	Trip Circuit	*

Remarks The Trip circuit was not tested at this time.

Test Operations (Time in Seconds)

	Timing Tests				Instantaneous		ICS					
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In			
	Tap 1	Tap 2	300%	NA								
As Found	1.42	NA	0.013	NA	NA	NA	NA	NA	NA			
As Left	1.42	NA	0.013	NA	NA	NA	NA	NA	NA			

As Found												
As Left												

Remarks

Customer	State of CT	Date	6/29/2021	Test #	R35 of <input type="text"/>
Address	201 West Main Street, Niantic, CT		Job #	21-268	
Owner/User	York Correctional Facility		Temperature	20°C	
Address	201 West Main Street, Niantic, CT		Date Last Inspection	5/5/2016	
Equipment Location	23 KV Switchboard				
Circuit Identification	52-SDF2				
Relay Identification	Phase Overcurrent	CT Ratio	100:5	PT Ratio	NA

Relay Information

Manufacturer	ABB	Type Phase	51 I	Type Ground	NA
Control Voltage	125 VDC	Tap Range Phase	1.5 - 6 amps	Tap Range Ground	NA
Use	Overcurrent	Curve Phase	Inverse	Curve Ground	NA
Relay Type	Solid State	Inst Range Phase	2 X - 20 X	Inst Range Ground	NA
		Instruct Book Phase	7.2.1.7-14	Instruct Book Ground	NA

Settings

	Instantaneous				Tap Setting				Time Dial Setting				
	ICS	AØ	BØ	CØ	G	AØ	BØ	CØ	G	AØ	BØ	CØ	G
Specified													
As Found	NA	20 X	20 X	20 X	NA	6	6	6	NA	7	7	7	NA
As Left	NA	20 X	20 X	20 X	NA	6	6	6	NA	7	7	7	NA

Visual Inspection

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Cover Gasket	X	X	X	NA	Moisture	X	X	X	NA	Disc Clearance	NA	NA	NA	NA
Glass	X	X	X	NA	Spiral Spring	NA	NA	NA	NA	Rust	X	X	X	NA
Foreign Material	X	X	X	NA	Bearing Condition	NA	NA	NA	NA					

Routine Maintenance

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Glass Cleaned	X	X	X	NA	Connections Tight	X	X	X	NA	Insulation Resist.	NA	NA	NA	NA
Case Cleaned	X	X	X	NA	Taps Tight	X	X	X	NA	Trip Circuit	*	*	*	NA
Relay Cleaned	X	X	X	NA	Contacts Cleaned	X	X	X	NA					

Remarks The Trip circuit was not tested at this time. Phase Catalog Number- 443T1241

The main breaker will trip before the feeder breakers because of settings, a coordination study should be performed

Phase times: 300%- 4.6 seconds, 400%- 3.4 seconds, Instantaneous was tested at the 4 tap for pickup.

Test Operations as Found (Time in Seconds)

	Timing Tests				Instantaneous		ICS		
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In
	Tap 1	Tap 2	300%	400%					
A Phase	6.01	NA	4.34	3.48	81.7	OK	NA	NA	NA
B Phase	6.01	NA	4.32	3.47	81.7	OK	NA	NA	NA
C Phase	6.00	NA	4.33	3.47	81.7	OK	NA	NA	NA
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA

Test Operations as Left (Time in Seconds)

	Timing Tests				Instantaneous		ICS		
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In
	Tap 1	Tap 2	300%	400%					
A Phase	6.01	NA	4.34	3.48	81.7	OK	NA	NA	NA
B Phase	6.01	NA	4.32	3.47	81.7	OK	NA	NA	NA
C Phase	6.00	NA	4.33	3.47	81.7	OK	NA	NA	NA
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA

Submitted By

Equipment Used

Customer	State of CT	Date	6/29/2021	Test #	R36 of	
Address	201 West Main Street, Niantic, CT		Job #	21-268		
Owner/User	York Correctional Facility		Temperature	20°C		
Address	201 West Main Street, Niantic, CT		Date Last Inspection	5/5/2016		
Equipment Location	23 KV Switchboard					
Circuit Identification	52-SDF2					
Relay Identification	Ground Overcurrent	CT Ratio	50:5	PT Ratio	NA	

Relay Information

Manufacturer	ABB	Type	50	Catalog Number	418S0541
Control Voltage	125 VDC	Tap Range	1 X - 10 X Rating	Rating	0.8 amps
Use	50G overcurrent	Curve	Inst		
Relay Type	Solid State	Inst Range	NA		
		Instruct Book	7.2.1.7-5		

Settings

	ICS	Inst Setting	Tap Setting	Time Dial					
Specified									
As Found	NA	NA	1.6 X	INST					
As Left	NA	NA	1.6 X	INST					

Visual Inspection

Cover Gasket	X	Foreign Material	X	Spiral Spring	NA	Disc Clearance	NA
Glass	X	Moisture	X	Bearing Condition	NA	Rust	X

Routine Maintenance

Glass Cleaned	X	Relay Cleaned	X	Taps Tight	X	Insulation Resist.	NA
Case Cleaned	X	Connections Tight	X	Contacts Cleaned	X	Trip Circuit	*

Remarks The Trip circuit was not tested at this time.

Test Operations (Time in Seconds)

	Timing Tests				Instantaneous		ICS					
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In			
	Tap 1	Tap 2	300%	NA								
As Found	1.41	NA	0.005	NA	NA	NA	NA	NA	NA			
As Left	1.41	NA	0.005	NA	NA	NA	NA	NA	NA			

As Found												
As Left												

Remarks

Customer	State of CT	Date	6/29/2021	Test #	R37 of <input type="text"/>
Address	201 West Main Street, Niantic, CT		Job #	21-268	
Owner/User	York Correctional Facility		Temperature	20°C	
Address	201 West Main Street, Niantic, CT		Date Last Inspection	5/5/2016	
Equipment Location	23 KV Switchboard				
Circuit Identification	52-SDF3				
Relay Identification	Phase Overcurrent	CT Ratio	100:5	PT Ratio	NA

Relay Information

Manufacturer	ABB	Type Phase	51 I	Type Ground	NA
Control Voltage	125 VDC	Tap Range Phase	1.5 - 6 amps	Tap Range Ground	NA
Use	Overcurrent	Curve Phase	Inverse	Curve Ground	NA
Relay Type	Solid State	Inst Range Phase	2 X - 20 X	Inst Range Ground	NA
		Instruct Book Phase	7.2.1.7-14	Instruct Book Ground	NA

Settings

	Instantaneous				Tap Setting				Time Dial Setting				
	ICS	AØ	BØ	CØ	G	AØ	BØ	CØ	G	AØ	BØ	CØ	G
Specified													
As Found	NA	20 X	20 X	20 X	NA	6	6	6	NA	7	7	7	NA
As Left	NA	20 X	20 X	20 X	NA	6	6	6	NA	7	7	7	NA

Visual Inspection

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Cover Gasket	X	X	X	NA	Moisture	X	X	X	NA	Disc Clearance	NA	NA	NA	NA
Glass	X	X	X	NA	Spiral Spring	NA	NA	NA	NA	Rust	X	X	X	NA
Foreign Material	X	X	X	NA	Bearing Condition	NA	NA	NA	NA					

Routine Maintenance

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Glass Cleaned	X	X	X	NA	Connections Tight	X	X	X	NA	Insulation Resist.	NA	NA	NA	NA
Case Cleaned	X	X	X	NA	Taps Tight	X	X	X	NA	Trip Circuit	*	*	*	NA
Relay Cleaned	X	X	X	NA	Contacts Cleaned	X	X	X	NA					

Remarks The Trip circuit was not tested at this time. Phase Catalog Number- 443T1241

The main breaker will trip before the feeder breakers because of settings, a coordination study should be performed

Phase times: 300%- 4.6 seconds, 400%- 3.4 seconds, Instantaneous was tested at the 4 tap for pickup.

Test Operations as Found (Time in Seconds)

	Timing Tests				Instantaneous		ICS		
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In
	Tap 1	Tap 2	300%	400%					
A Phase	5.99	NA	4.30	3.47	80.9	OK	NA	NA	NA
B Phase	5.99	NA	4.29	3.45	81.1	OK	NA	NA	NA
C Phase	5.99	NA	4.29	3.45	81.0	OK	NA	NA	NA
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA

Test Operations as Left (Time in Seconds)

	Timing Tests				Instantaneous		ICS		
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In
	Tap 1	Tap 2	300%	400%					
A Phase	5.99	NA	4.30	3.47	80.9	OK	NA	NA	NA
B Phase	5.99	NA	4.29	3.45	81.1	OK	NA	NA	NA
C Phase	5.99	NA	4.29	3.45	81.0	OK	NA	NA	NA
Ground	NA	NA	NA	NA	NA	NA	NA	NA	NA

Submitted By

Equipment Used

Customer	State of CT	Date	6/29/2021	Test #	R38 of	
Address	201 West Main Street, Niantic, CT		Job #	21-268		
Owner/User	York Correctional Facility		Temperature	20°C		
Address	201 West Main Street, Niantic, CT		Date Last Inspection	10/29/2018		
Equipment Location	23 KV Switchboard					
Circuit Identification	52-SDF3					
Relay Identification	Ground Overcurrent	CT Ratio	50:5	PT Ratio	NA	

Relay Information

Manufacturer	ABB	Type	51 I	Catalog Number	443S1241
Control Voltage	125 VDC	Tap Range	1.5 - 6 amps		
Use	51G overcurrent	Curve	Inverse		
Relay Type	Solid State	Inst Range	2 tap - 20 tap		
		Instruct Book	7.2.1.7-1		

Settings

	ICS	Inst Setting	Tap Setting	Time Dial					
Specified									
As Found	NA	12 X	2	5					
As Left	NA	12 X	2	5					

Visual Inspection

Cover Gasket	<input checked="" type="checkbox"/>	Foreign Material	<input checked="" type="checkbox"/>	Spiral Spring	NA	Disc Clearance	NA
Glass	<input checked="" type="checkbox"/>	Moisture	<input checked="" type="checkbox"/>	Bearing Condition	NA	Rust	<input checked="" type="checkbox"/>

Routine Maintenance

Glass Cleaned	<input checked="" type="checkbox"/>	Relay Cleaned	<input checked="" type="checkbox"/>	Taps Tight	<input checked="" type="checkbox"/>	Insulation Resist.	NA
Case Cleaned	<input checked="" type="checkbox"/>	Connections Tight	<input checked="" type="checkbox"/>	Contacts Cleaned	<input checked="" type="checkbox"/>	Trip Circuit	*

Remarks The Trip circuit was not tested at this time.

Trip times: 200%- 2.9 seconds, 400%- 2.4 seconds

Test Operations (Time in Seconds)

	Timing Tests				Instantaneous		ICS					
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In			
	Tap 1	Tap 2	300%	400%								
As Found	1.99	NA	2.98	2.40	24.3	OK	NA	NA	NA			
As Left	1.99	NA	2.98	2.40	24.3	OK	NA	NA	NA			

As Found												
As Left												

Remarks

Customer	State of CT	Date	6/29/2021	Test #	R39 of	
Address	201 West Main Street, Niantic, CT		Job #	21-268		
Owner/User	York Correctional Facility		Temperature	20°C		
Address	201 West Main Street, Niantic, CT		Date Last Inspection	5/6/2016		
Equipment Location	23 KV Switchboard					
Circuit Identification	52-BT					
Relay Identification	Sync Check	CT Ratio	NA	PT Ratio	200:1	

Relay Information

Manufacturer	ABB	Type	25S	Catalog Number	424J2105
Control Voltage	125 VDC	Tap Range	0 - 80 Volts	Rating	1 second
Use	Sync Check	Curve	Definite		
Relay Type	Solid State	Inst Range	NA		
		Instruct Book	7.3.1.7-1		

Settings

	ICS	Inst Setting	Tap Setting	Time Dial					
Specified									
As Found	NA	NA	30 V	0.5 X					
As Left	NA	NA	30 V	0.5 X					

Visual Inspection

Cover Gasket	<input checked="" type="checkbox"/>	Foreign Material	<input checked="" type="checkbox"/>	Spiral Spring	<input type="checkbox"/>	Disc Clearance	<input type="checkbox"/>
Glass	<input checked="" type="checkbox"/>	Moisture	<input checked="" type="checkbox"/>	Bearing Condition	<input type="checkbox"/>	Rust	<input checked="" type="checkbox"/>

Routine Maintenance

Glass Cleaned	<input checked="" type="checkbox"/>	Relay Cleaned	<input checked="" type="checkbox"/>	Taps Tight	<input checked="" type="checkbox"/>	Insulation Resist.	<input type="checkbox"/>
Case Cleaned	<input checked="" type="checkbox"/>	Connections Tight	<input checked="" type="checkbox"/>	Contacts Cleaned	<input checked="" type="checkbox"/>	Trip Circuit	<input checked="" type="checkbox"/>

Remarks The Trip circuit was not tested at this time.

Test Operations (Time in Seconds)

	Timing Tests				Instantaneous		ICS			Phase Angle Diff +	Phase Angle Diff -	Slip
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In			
	Tap 1	Tap 2	100%	NA								
As Found	29.88	NA	0.48	NA	NA	NA	NA	NA	NA	14.16°	14.21°	0.17 Hz
As Left	29.88	NA	0.48	NA	NA	NA	NA	NA	NA	14.16°	14.21°	0.17 Hz

As Found												
As Left												

Remarks

Customer	State of CT	Date	6/29/2021	Test #	R40 of <input type="text"/>
Address	201 West Main Street, Niantic, CT		Job #	21-268	
Owner/User	York Correctional Facility		Temperature	20°C	
Address	201 West Main Street, Niantic, CT		Date Last Inspection	5/6/2016	
Equipment Location	23 KV Switchboard				
Circuit Identification	52-BT				
Relay Identification	Phase Overcurrent	CT Ratio	150:5	PT Ratio	NA

Relay Information

Manufacturer	ABB	Type Phase	51 I	Type Ground	51 S
Control Voltage	125 VDC	Tap Range Phase	1.5 - 6 amps	Tap Range Ground	0.5 - 2 amps
Use	Overcurrent	Curve Phase	Inverse	Curve Ground	Short
Relay Type	Solid State	Inst Range Phase	2 X - 20 X	Inst Range Ground	2 X - 20 X
		Instruct Book Phase	7.2.1.7-14	Instruct Book Ground	NA

Settings

	Instantaneous				Tap Setting				Time Dial Setting				
	ICS	AØ	BØ	CØ	G	AØ	BØ	CØ	G	AØ	BØ	CØ	G
Specified													
As Found	NA	20 X	20 X	20 X	2 X	6	6	6	0.6	7	7	7	10
As Left	NA	20 X	20 X	20 X	2 X	6	6	6	0.6	7	7	7	10

Visual Inspection

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Cover Gasket	X	X	X	NA	Moisture	X	X	X	NA	Disc Clearance	NA	NA	NA	NA
Glass	X	X	X	NA	Spiral Spring	NA	NA	NA	NA	Rust	X	X	X	NA
Foreign Material	X	X	X	NA	Bearing Condition	NA	NA	NA	NA					

Routine Maintenance

	AØ	BØ	CØ	G		AØ	BØ	CØ	G		AØ	BØ	CØ	G
Glass Cleaned	X	X	X	NA	Connections Tight	X	X	X	NA	Insulation Resist.	NA	NA	NA	NA
Case Cleaned	X	X	X	NA	Taps Tight	X	X	X	NA	Trip Circuit	*	*	*	NA
Relay Cleaned	X	X	X	NA	Contacts Cleaned	X	X	X	NA					

Remarks The Trip circuit was not tested at this time. Phase Catalog Number- 443T1241
 Ground Catalog Number- 443S4141
 The main breaker will trip before the feeder breakers because of settings, a coordination study should be performed
 Phase times: 300%- 4.6 seconds, 400%- 3.4 seconds, Instantaneous was tested at the 4 tap for pickup.
 Ground Times: 300%- 0.85 seconds, 400%- 0.65 seconds.

Test Operations as Found (Time in Seconds)

	Timing Tests				Instantaneous		ICS		
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In
	Tap 1	Tap 2	300%	400%					
A Phase	5.98	NA	4.34	3.49	80.5	OK	NA	NA	NA
B Phase	5.98	NA	4.33	3.48	80.9	OK	NA	NA	NA
C Phase	5.97	NA	4.32	3.48	80.4	OK	NA	NA	NA
Ground	0.60	NA	0.84	0.68	1.21	OK	NA	NA	NA

Test Operations as Left (Time in Seconds)

	Timing Tests				Instantaneous		ICS		
	Pickup Tests		P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In
	Tap 1	Tap 2	300%	400%					
A Phase	5.98	NA	4.34	3.49	80.5	OK	NA	NA	NA
B Phase	5.98	NA	4.33	3.48	80.9	OK	NA	NA	NA
C Phase	5.97	NA	4.32	3.48	80.4	OK	NA	NA	NA
Ground	0.60	NA	0.84	0.68	1.21	OK	NA	NA	NA

Submitted By

Equipment Used

Customer	State of CT	Date	6/29/2021	Test #	R41 of	
Address	201 West Main Street, Niantic, CT		Job #	21-268		
Owner/User	York Correctional Facility		Temperature	20°C		
Address	201 West Main Street, Niantic, CT		Date Last Inspection	5/6/2016		
Equipment Location	23 KV Switchboard					
Circuit Identification	52-BT					
Relay Identification	Ground Over Voltage	CT Ratio	NA	PT Ratio	200:5	

Relay Information

Manufacturer	ABB	Type	59G	Catalog Number	410E1175
Control Voltage	125 VDC	Tap Range	3 - 18 volts		
Use	Ground O/V	Curve	Inverse		
Relay Type	Solid State	Inst Range	NA		
		Instruct Book	7.4.1.7-9		

Settings

	ICS	Inst Setting	Tap Setting	Time Dial					
Specified									
As Found	NA	NA	12 V	5					
As Left	NA	NA	12 V	5					

Visual Inspection

Cover Gasket	<input checked="" type="checkbox"/>	Foreign Material	<input checked="" type="checkbox"/>	Spiral Spring	NA	Disc Clearance	NA
Glass	<input checked="" type="checkbox"/>	Moisture	<input checked="" type="checkbox"/>	Bearing Condition	NA	Rust	<input checked="" type="checkbox"/>

Routine Maintenance

Glass Cleaned	<input checked="" type="checkbox"/>	Relay Cleaned	<input checked="" type="checkbox"/>	Taps Tight	<input checked="" type="checkbox"/>	Insulation Resist.	NA
Case Cleaned	<input checked="" type="checkbox"/>	Connections Tight	<input checked="" type="checkbox"/>	Contacts Cleaned	<input checked="" type="checkbox"/>	Trip Circuit	*

Remarks The Trip circuit was not tested at this time.

Trip times: 200%- 5.8 seconds, 400%- 4.2 seconds

Test Operations (Time in Seconds)

	Pickup Tests		Timing Tests		Instantaneous		ICS					
	Tap 1	Tap 2	P.U. %	P.U. %	Pickup	Drop Out	Pickup	Drop Out	Seal In			
			200%	400%								
As Found	12.04	NA	6.49	4.82	NA	NA	NA	NA	NA			
As Left	12.04	NA	6.49	4.82	NA	NA	NA	NA	NA			

As Found												
As Left												

Remarks

Customer	State of CT	Date	6/29/2021	Test #	VB1	of	
Address	201 West Main Street, Niantic, CT		Temp	29°C	Job #	21-268	
Owner/User	York Correctional Facility		Date Last Inspection	5/3/2016			
Address	201 West Main Street, Niantic, CT		Last Inspection Job #	16-200			
Equipment Location	Bldg 10A 23kV Switchboard						
Breaker Identification	Utility Main						

Breaker Informantion

Manufacturer	Westinghouse	Cat # / Type	270 VCP-W25	Voltage	27kV	Amps	1200	Age	93
Serial Number	9301006	Type of Op Mech	StoEngy	Int Rating	25kA	Other			

Test Results

Insulation Resistance	A-G	B-G	C-G	
5000 Volts	100k+	100k+	100k+	
(in Megohms)	A-B	B-C	C-A	
	100k+	100k+	100k+	
	A-A	B-B	C-C	
	100k+	100k+	100k+	
Contact Resistance	AØ	BØ	CØ	(in Micro-ohms)
As Found	39	22	37	
As Left	39	22	37	
Over Potential Test	AØ - G	BØ - G	CØ - G	
45kV	Ok	Ok	Ok	
Bottle Integrity Test	AØ L - L	BØ L - L	CØ L - L	
45kV	Ok	Ok	Ok	

	Inspected	Cleaned/Lube
Overall Cleanliness	X	X
Insulating Members	X	X
Mech Connections	X	X
Structural members	X	X
Cubicle	X	X
Shutter Mechanism	X	X
Racking Device	X	X
Cubicle Wiring	X	X
Heaters	X	X
Panel Lights	X	X
Pri Contact Fingers	X	X
Sec Contact Assembly	X	X
Main Contacts	X	X
Breaker Wiring	X	X
Mechanical Lube	X	X
Ground Connection	OK	
Contact Sequence	A - B - C	
Counter	00889	

Adjustments

	Manufact. Recommend.	As Found	As Left
Erosion Indicator	>0.125	Ok	Ok
Main Contact Gap	Ind Vis	Ok	Ok

Remarks

Style 8237A11G02
 Wiring Diagram 691C386H14
 VB Serial #'s AØ 9212C57398 BØ 9212C61121 CØ 9212C61101

Equipment Used	AC HiPot, Ductor, Megger	Equipment Serial #	100601, 071206, 121001
Submitted By	Jim Drury	Test Crew	JD

Customer	State of CT	Date	6/29/2021	Test #	VB2	of	
Address	201 West Main Street, Niantic, CT		Temp	29°C	Job #	21-268	
Owner/User	York Correctional Facility		Date Last Inspection	5/5/2016			
Address	201 West Main Street, Niantic, CT		Last Inspection Job #	16-200			
Equipment Location	Bldg 10A 23kV Switchboard						
Breaker Identification	BKR 52-SDF1						

Breaker Information

Manufacturer	Westinghouse	Cat # / Type	270 VCP-W25	Voltage	27kV	Amps	1200	Age	93
Serial Number	93010103	Type of Op Mech	StoEngy	Int Rating	25kA	Other			

Test Results

Insulation Resistance	A-G	B-G	C-G	
5000 Volts	100k+	100k+	100k+	
(in Megohms)	A-B	B-C	C-A	
	100k+	100k+	100k+	
	A-A	B-B	C-C	
	100k+	100k+	100k+	
Contact Resistance	AØ	BØ	CØ	(in Micro-ohms)
As Found	38	39	37	
As Left	38	39	37	
Over Potential Test	AØ - G	BØ - G	CØ - G	
45kV	Ok	Ok	Ok	
Bottle Integrity Test	AØ L - L	BØ L - L	CØ L - L	
45kV	Ok	Ok	Ok	

	Inspected	Cleaned/Lube
Overall Cleanliness	X	X
Insulating Members	X	X
Mech Connections	X	X
Structural members	X	X
Cubicle	X	X
Shutter Mechanism	X	X
Racking Device	X	X
Cubicle Wiring	X	X
Heaters	X	X
Panel Lights	X	X
Pri Contact Fingers	X	X
Sec Contact Assembly	X	X
Main Contacts	X	X
Breaker Wiring	X	X
Mechanical Lube	X	X
Ground Connection	OK	
Contact Sequence	A - B - C	
Counter	00114	

Adjustments

	Manufact. Recommend.	As Found	As Left
Erosion Indicator	>0.125	Ok	Ok
Main Contact Gap	Ind Vis	Ok	Ok

Remarks

Style 8237A11G02
 Wiring Diagram 691C386H14
 VB Serial #'s AØ 9226004 BØ 9218037 CØ 9226010

Equipment Used	AC HiPot, Ductor, Megger	Equipment Serial #	100601, 131202, 090902
Submitted By	Jim Drury	Test Crew	JD

Customer	State of CT	Date	6/29/2021	Test #	VB3	of	
Address	201 West Main Street, Niantic, CT		Temp	29°C	Humidity	69%	
Owner/User	York Correctional Facility		Date Last Inspection	5/6/2016			
Address	201 W Main St Niantic, CT		Last Inspection Job #	16-200			
Equipment Location	Bldg 10A 23kV Switchboard						
Breaker Identification	BKR 52-SDF2 / Moved to 52-SDF3						

Breaker Information

Manufacturer	Westinghouse	Cat # / Type	270 VCP-W25	Voltage	27kV	Amps	1200	Age	93
Serial Number	93010102	Type of Op Mech	StoEngy	Int Rating	25kA	Other			

Test Results

Insulation Resistance	A-G	B-G	C-G	
5000 Volts (in Megohms)	100k+	100k+	100k+	
	A-B	B-C	C-A	
	100k+	100k+	100k+	
	A-A	B-B	C-C	
	100k+	100k+	100k+	
Contact Resistance	AØ	BØ	CØ	(in Micro-ohms)
As Found	39	39	39	
As Left	39	39	39	
Over Potential Test	AØ - G	BØ - G	CØ - G	
45kV	Ok	Ok	Ok	
Bottle Integrity Test	AØ L - L	BØ L - L	CØ L - L	
45kV	Ok	Ok	Ok	

	Inspected	Cleaned/Lube
Overall Cleanliness	X	X
Insulating Members	X	X
Mech Connections	X	X
Structural members	X	X
Cubicle	X	X
Shutter Mechanism	X	X
Racking Device	X	X
Cubicle Wiring	X	X
Heaters	X	X
Panel Lights	X	X
Pri Contact Fingers	X	X
Sec Contact Assembly	X	X
Main Contacts	X	X
Breaker Wiring	X	X
Mechanical Lube	X	X
Ground Connection	OK	
Contact Sequence		
Counter	00078	

Adjustments

	Manufact. Recommend.	As Found	As Left
Erosion Indicator	>0.125	Ok	Ok
Main Contact Gap	Ind Vis	Ok	Ok

Remarks

Style 8237A11G02
 Wiring Diagram 691C386H14
 VB Serial #'s AØ 9226014 BØ 9218038 CØ 9226015

Equipment Used	AC HiPot, Ductor, Megger	Equipment Serial #	100601, 131202, 090902
Submitted By	Jim Drury	Test Crew	JD

Customer	State of CT	Date	6/29/2021	Test #	VB5	of	
Address	201 West Main Street, Niantic, CT		Temp	29°C	Humidity	69%	
Owner/User	York Correctional Facility		Date Last Inspection	5/6/2016			
Address	201 W Main St Niantic, CT		Last Inspection Job #	16-200			
Equipment Location	Bldg 10A 23kV Switchboard						
Breaker Identification	23kV Tie Breaker						

Breaker Information

Manufacturer	Westinghouse	Cat # / Type	270 VCP-W25	Voltage	27kV	Amps	1200	Age	93
Serial Number	93010104	Type of Op Mech	StoEngy	Int Rating	25kA	Other			

Test Results

Insulation Resistance	A-G	B-G	C-G	
5000 Volts	100k+	100k+	100k+	
(in Megohms)	A-B	B-C	C-A	
	100k+	100k+	100k+	
	A-A	B-B	C-C	
	100k+	100k+	100k+	
Contact Resistance	AØ	BØ	CØ	(in Micro-ohms)
As Found	48	44	38	
As Left	48	44	38	
Over Potential Test	AØ - G	BØ - G	CØ - G	
45kV	Ok	Ok	Ok	
Bottle Integrity Test	AØ L - L	BØ L - L	CØ L - L	
45kV	Ok	Ok	Ok	

	Inspected	Cleaned/Lube
Overall Cleanliness	X	X
Insulating Members	X	X
Mech Connections	X	X
Structural members	X	X
Cubicle	X	X
Shutter Mechanism	X	X
Racking Device	X	X
Cubicle Wiring	X	X
Heaters	X	X
Panel Lights	X	X
Pri Contact Fingers	X	X
Sec Contact Assembly	X	X
Main Contacts	X	X
Breaker Wiring	X	X
Mechanical Lube	X	X
Ground Connection	OK	
Contact Sequence		
Counter	00180	

Adjustments

	Manufact. Recommend.	As Found	As Left
Erosion Indicator	>0.125	Ok	Ok
Main Contact Gap	Ind Vis	Ok	Ok

Remarks

Style 8237A11G02
 Wiring Diagram 691C386H14
 VB Serial #'s AØ 9218041 BØ 9226001 CØ 9226005

Equipment Used	AC HiPot, Ductor, Megger	Equipment Serial #	100601, 131202, 090902
Submitted By	Jim Drury	Test Crew	JD