Forms

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF001
Form No. 334b

Revised: 2005-02-02

Maintenance Standard Report Form

NAMEPLATE AND DESCRIPTION

Equipment Type:		**ID Number:**
Substation/Location:	**Manufacturer:**	**Serial Number:**

Date: _____
(YYYY-MM-DD)

Completed By: _____

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF003
Form No. 8b

Revised: 2005-07-19

Maintenance Standard Report Form

BATTERIES

Location/Substation:	Manufacturer:	Work Order Number:	ID Number:

Complete the following information. Note deficiencies and corrections in Remarks.

				Check if Okay (3)	
Number of Cells		Room Ventilated (Y/N)		Free of Corrosion	
Pilot Cell ID		Ventilation Type (Ther., Manual, Timer)		Terminals	
Pilot Cell Temperature	^{o}C	Exhaust Fan Operational (Y/N)		Accessories	
Charger Float Voltage	V	Cells Cleaned (Y/N)		Separators	
Charger Float Current	A	Liquid Level OK (Y/N)		Plates	
Charger Equalize Voltage	V	De-Ionized Water Added (Y/N)		Casing (Jar)	
Impedance Test Performed (Y/N)		Regular Equalizing Carried Out (Y/N)		Rack	
Results Downloaded to ProActiv?					

If an impedance test was performed, attach a copy of the results printout. Cell voltage need not be recorded in this case.

Cell No.	Volts	Specific Gravity	Cell No.	Volts	Specific Gravity	Cell No.	Volts	Specific Gravity	Cell No.	Volts	Specific Gravity
1			16			31			46		
2			17			32			47		
3			18			33			48		
4			19			34			49		
5			20			35			50		
6			21			36			51		
7			22			37			52		
8			23			38			53		
9			24			39			54		
10			25			40			55		
11			26			41			56		
12			27			42			57		
13			28			43			58		
14			29			44			59		
15			30			45			60		

Remarks:

(attach copies of MSF018 for additional comments as required)

Type of Maintenance: _____ **Date:** _____ **Inspected By:** _____

(YYYY-MM-DD)

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF004
Form No. 102

Revised: 2008-04-03

Maintenance Standard Report Form

BATTERY CHARGERS

Substation/Location:	**Work Order Number:**	**ID Number:**
Manufacturer:		**Serial Number:**

Complete the following. Note deficiencies and corrections in Remarks.

Type or Style/Model	_____	Equalize Voltage	_____ Volts
AC Supply Voltage (in cabinet)	_____ Volts	DC Voltage Positive-Ground	_____ Volts
AC Panel Breaker Rating	_____ Amps	DC Voltage Negative-Ground	_____ Volts
Float Voltage	_____ Volts	Current Limit Setting	_____ Amps
Float Current	_____ Amps		

Mark the appropriate block with an X

	Yes	**No**
Copy of Charger Manual On-Site	☐	☐
Breakers, Contactors, Switches and Relays Functioning Properly	☐	☐
Alarms Operational	☐	☐
Dust Cleaned From Rectifier	☐	☐
Ground Leakage on DC Bus	☐	☐
Wiring Connections Tight	☐	☐
Component Mounting Bolts Tight	☐	☐
Excessive Heat or Noise	☐	☐
Charger Securely Mounted	☐	☐
Charger Functioning Properly	☐	☐
Ground Test Performed	☐	☐

Remarks:

(attach copies of MSF018 for additional comments as required)

Type of Maintenance: _____ **Date:** _____ **Inspected By:** _____

(YYYY-MM-DD)

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF005
Form No. 227

Revised: 2012-07-30

Maintenance Standard Report Form

CIRCUIT BREAKERS

Substation/Location:	**Work Order Number:**	**ID Number:**	
Manufacturer:	**Serial Number:**	**Type:**	**Rated Voltage:**

Check each item with a √ for OK, X to indicate a problem, N/A for not applicable, or N/D for not done. All entries must be completed during a Maintenance IV, unless otherwise indicated. Initial each entry. Once work is done, the Maintenanceman and the Maintenance Supervisor must sign it off.

#	Type of Maint. I	Type of Maint. III	Task	Status or Results	Initial
			General		
1,2,3	X	X	Appropriate Documentation Reviewed		
6	X		ID Number Installed (N/A for Maintenance IV)		
7	X	X	Nameplate Information Recorded		
8	X	X	Counter: Start Value		
			Finish Value		
9	X	X	External Visual Inspection		
10	X	X	Check for Presence of Abnormal Noise or Heat		
11	X	X	Leveled, Grounded and Anchored		
12		X	CT Operation Verified Via Ammeters		
13		X	Painting Done as Required		
			Oil Filled Units Only		
14	X	X	PCB Level Checked; Recorded (PPM)		
15	X	X	Check Oil Level/Leaks		
16	X	X	Check Breather		
17	X	X	Oil Dielectric		
			SF6 Units Only		
18	X	X	Gas Pressure/Density Check (psi) Phase 1:		
			Phase 2:		
			Phase 3:		
			Ambient Temp. (°C):		
			General		
19	X	X	Heaters Operational		
20	X	X	Operating Mechanism Cleaned and Lubricated		
21	X	X	External Mechanism Check		
22	X	X	Breaker Operated Locally and Remotely		
23	X	X	Megger Test Results — °C / kV / MΩ		
			Phase to Phase:		
			Phase to Ground:		
			Across Open Contacts:		
24	X	X	Ductor Test Results (micro-ohms) — **Across Contacts** / **Bushing-Bushing**		
			Phase 1:		
			Phase 2:		
			Phase 3:		
25	X	X	Motion Analyzer Test Results — Opening Velocity (ft/sec)		
			Closing Velocity (ft/sec)		
			Contact Wipe (In.)		
			Stroke (In.)		
			Contact Part Time (cycles)		

W.O. Number: _____ MSF005

#	Type of Maint. I	Type of Maint. III	Task				Status or Results	Initial
						Reclose Time (cycles)		
						Trip Free Time (cycles)		
						Overtravel (cycles)		
26	X	X	Visual Check of Bushings and Bushing Gaskets					
27	X		Power Factor Test	No. 1:		No. 4:		
				No. 2:		No. 5:		
				No. 3:		No. 6:		
28	X		CT Ratio Test (N/A for Maintenance IV)					
29	X		CT Polarity Test (N/A for Maintenance IV)					
30	X		Megger Results: Secondary Winding	°C	kV	MΩ		
Bulk Oil and Minimum Oil Units Only								
31			Oil Filtered					
32			Oil Removed for Inspection					
33			Tank/Interrupter Chamber Opened for Inspection					
34			Internal Components Cleaned and Tank Flushed					
35			Internal Visual Inspection					
36			Energy Absorbing Components Sound and Secure					
37			Tank Liners Inspected					
38			Moving Contacts Inspected					
39			Interrupter and Grading Resistor Examined/Cleaned					
40			Contact Synchronization Checked					
41			Internal Operating Mechanism Check					
42			Internal CTs Inspected					
43			Oil Level Indicators					
44			Gaskets and Seals Inspected					
45		X	Conduits and Wiring Okay					
46		X	Internal Heaters and Thermostats Checked					
48			Interrupting Chamber Refilled with Oil					
49			Oil Dielectric (kV)					
Metal Clad Units Only								
50	X	X	Box Barriers Okay					
51	X	X	Insulating Parts Clean					
52		X	Primary Contacts Inspected					
53	X		Primary Contact Wipe					
54	X		Primary Contact Gap					
55			Arcing Contacts Okay					
56			Arcing Contact Wipe					
57			Arc Chutes Inspected and Cleaned					
58		X	Blow Out Devices Inspected					
59	X	X	Interlocks Operating Properly					
60		X	Mechanism Cleaned and Lubricated					
61		X	Operating Mechanism Wipes, Clearances and Gaps					
62	X	X	Lifting Mechanism and Limit Switches Okay					
63		X	Breaker Checked in ‘test’ and ‘operate’ Positions					
SF6 Units Only								
64			Interrupters Opened					
65			Poles Refilled With Sf6 Gas					
66			Check for SF6 Leaks using Sniffer and/or Leak Check					
67		X	Pole Unit Heaters Inspected					
68	X		External Capacitors Checked					
Units With Air Compressors Only								
69	X	X	Pneumatic Mechanism Checked					
70	X	X	Connections Tight					
71	X	X	Pneumatic Mechanism Wiring Inspected					
72		X	Condensation Drained From Compressor Tank					
73	X	X	Compressor Oil Level Checked					

W.O. Number: _____ MSF005

#	Type of Maint. I	Type of Maint. III	Task			Status or Results	Initial
74		X	Compressor Oil Changed				
75		X	Air Filter Cleaned				
76	X	X	Safety Valves and Pressure Switches Operational				
77	X	X	Condition and Tightness of Belts				
78	X	X	Inflation Time Checked — Cutoff Pressure (psi):				
			Inflation Time (sec):				
79		X	Operation Rundown (N/A for Maint. IV) — Operations before low pressure cutoff:				
			Operations after low-pressure cutoff:				
80	X	X	Motor Load Current (A)				
81	X	X	Rate of Air Leakage Okay				
82		X	Minimum Pneumatic Mechanism Voltages (N/A for Maint. IV) — Trip:				
			Close:				
83		X	Pneumatic Mechanism Dimensional Checks				
84	X	X	Pressure Vessel Permit Expiry Date (yyyy-mm-dd)				
85		X	Tank Repaired				
			ASEA Minimum Oil Units Only				
86			Burning of Plug Contact Checked				
87	X		Extinguishing Chamber and Fixed Contact Checked				
88			Gas Discharge Valves Checked				
89	X		Breaker Dismantled, Cleaned and Inspected				
90	X		Breaker Trips on Trip Coils Checked				
			General				
91			Final Megger Test Results	°C	kV	MΩ	
			Phase to Phase:				
			Phase to Ground:				
			Across Open Contacts:				
92			Final Ductor Test Results (micro-ohms) — Phase1:				
			Phase 2:				
			Phase 3:				
93			Final Motion Analyzer Test Results — Opening Velocity (ft/sec)				
			Closing Velocity (ft/sec)				
			Contact Wipe (In.)				
			Stroke (In.)				
			Contact Part Time (cycles)				
			Reclose Time (cycles)				
			Trip Free Time (cycles)				
			Overtravel (cycles)				
94			Operating Mechanism Checks				
95	X		Bushing Connectors Tight				
96		X	Oil Sample Taken (Bulk Oil Units Only)				
97	X	X	Avantis Updated				
98	X	X	Documentation Distributed				
99	X	X	Deficiencies Flagged in Avantis				

Remarks:

(attach copies of MSF018 as required for further remarks)

Type of Maintenance: _____ **Date:** _____ **Inspected By:** _____

(YYYY-MM-DD)

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF006
Form No. 167a

Revised: 2007-10-01

Maintenance Standard Report Form
RECLOSERS

Substation/Location:	Work Order No.:	Manufacturer:	Control:	ID Number:

Section 1: Check each item with a √ for OK, X to indicate a problem, N/A for not applicable, or N/D for not done. All entries must be completed during a Maintenance IV, unless otherwise indicated. Initial each entry. Once work is done, the Maintenanceman and the Maintenance Supervisor must sign it off.

#	Type of Maint.		Task	Status or Results	Initial
	I	III			
1,2,3	X	X	Maintenance History, Standards and Manufacturer's Information Reviewed		
6	X	X	ID Number Installed		
7	X	X	Nameplate Information Recorded		
8	X	X	Counter: Start Value		
			Finish Value		
9	X	X	External Visual Inspection		
10	X	X	Check Presence of PCB; Record Level (PPM) Lab Sample Taken: Yes ☐ No ☐		
11	X	X	Leveled, Grounded and Anchored (N/A for Maintenance IV)		
12	X	X	Check Oil Levels and Leaks		
13	X	X	Oil Dielectric (kV)		
14	X	X	Bushings and External CTs		
15	X	X	External Mechanism Checks		
16	X*		Meggered Unit		
17	X*		Ductored Unit		
18	X*		CT Ratio Tests		
19	X*		CT Polarity Test		
20	X*		Functional Checks Performed		
21	X*		Tank Lowered for Inspection		
22			Oil Filtered or Removed		
23			Tank and Components Cleaned		
24	X*		Internal Visual Inspection		
25	X*		Liners and Foam Pads		
26			Tank Repaired as Required		
27			Moving Contacts Inspected		
28			Interrupters and Contacts Disassembled, Inspected and Repaired		
29			Bushings Disassembled and Repaired and Gaskets Replaced		
30			Hydraulic Control Units Cleaned		
31	X*		Closing Coil: Resistance (Ohms)		
			Voltage (kV)		
32	X*		Closing Contacts: Inspected		
			Fuse Rating Checked		
33	X*		Trip Coil: Inspected		
			Coil Size		
34			Mechanism Dropped and Checked		
35	X*		Hydraulic Fluid Levels		
36	X*		Single Operation to Lockout on "F"		
37	X*		Hydraulic Settings and Ratings Match Nameplates		
38	X		Visual of Components on Head, Frame and Mechanism		
39			Electrical Check of Components on Head, Frame and Mechanism		
40	X*		Operating Levers and Counter		
41			Internal Mechanism Checks		
42		X	Head and Auxiliary Gaskets		
43	X*		Final Ductor Test Results (micro-ohms):	**Across Contacts** / **Bushing-Bushing**	
			Phase 1		
			Phase 2		
			Phase 3		

MSF006

#	Type of Maint.		Task			Status or Results	Initial
	I	III					
44	X*		Tank Lip Painted and Bolts Sealed or Lubricated as Required				
45			Oil Filled to Correct Level				
46			Re-Check Oil Dielectric (kV)				
48	X	X	Manually Operated to Expel Air				
49			Control Cable Electrical Check				
50	X	X	Control Cable and Connector				
51	X	X	Devices and Cards Secure				
52		X	Control Accessories				
53	X	X	Quick Battery Check (N/A for Maintenance IV)				
54			Battery Discharge Test				
55	X*	X	Terminations Clean and Tight				
56	X	X	Position Indicator and Lights				
57	X	X	Auxiliary Switches and Relays				
58	X	X	Charging Motor Brushes, Commutator and Mounting				
59	X	X	Charging Motor Current (A)				
60	X	X	Capacitive Trip Devices				
61	X	X	Reclose Block Switch Reset				
62	X	X	Ammeter Sockets and Wiring				
63a	X*	X	CTs, Relays and Ammeters Numbered; Meter Operation Checked; Multiplier Labeled				
63b	X*	X	CT Ratio				
64	X*	X	Cabinet Heaters				
65	X	X	Ground Trip Switch				
66	X	X	Final Megger Test Results:	°C	kV	MΩ	
			3Φ - Ground				
			2Φ – 1&3Φ				
			1Φ Cont.				
			2Φ Cont.				
			3Φ Cont.				
67	X	X	Functional Check				
68	X	X	Control Settings Recorded				
69	X		Recloser at Correct Height				
70	X	X	Painting				
71	X	X	PCB Sticker Installed				
72	X	X	Risers, Disconnects and Switches (N/A for Maintenance IV)				
73	X	X	Documentation Distributed				
74	X	X	Maintenance Record Updated in Avantis				
75	X	X	Deficiencies Flagged in Avantis				

*** - Required for new installation only**

Section 2: Complete the following.

Recloser Settings: Operations to Lockout _____
Fast Operations _____
Time Delay Curve (Hydraulic) _____
Reclosing Interval Delays:
First _____ Second _____ Third _____
Fast Operations on Ground Trip (Hydraulic) _____
Ground Trip Plugs (Electronic): 1 _____ 2 _____
Ground Trip Mechanism (Hydraulic) set for:
Inverse _____ Definite _____ Time Delay _____

Phase Trip Plugs (Electronic): 1st _____ 2nd _____
Reset Delay Interval: _____ seconds
Minimum Trip Resistor (Electronic): Phase _____ Ground _____
Ground Trip Solenoid (Hydraulic): Series _____ Parallel _____
Overcurrent Relay Tap Block: Phase _____ Ground _____
Overcurrent Relay Time Dial: Phase _____ Ground _____
Overcurrent Relay Instantaneous: Phase _____ Ground _____
Checked Settings on all Relays _____

Enter Details of Faults Found and Corrective Actions: _____

(attach copies of MSF018 for additional comments as required)

Maint. Type: _____ **Date** _____ **Maintenanceman** _____ **Supervisor** _____
(YYYY-MM-DD)

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF007
Form No. 357

Maintenance Standard Report Form

Revised: 2005-02-16

AIR-BREAK, FUSE AND DISCONNECT SWITCHES

Substation/Location:	**Work Order Number:**	**ID Number:**	
Manufacturer:	**Serial Number:**	**Rated Amps:**	**Rated Volts:**

Check blocks to indicate type of switch:

Group Operated	☐	High-Speed Ground Switch	☐	Vertical Base Mounting	☐
Hook Stick Operated	☐	Vertical Break	☐	Horizontal Base Mounting	☐
Motor Operated	☐	Side Break	☐	Inverted Base Mounting	☐
Grounding Switch	☐	Center Break	☐	Power Fuses	☐

Mark the appropriate block with an X:

	Yes	No
Adjustments Made (Give Details in Remarks)	☐	☐
Structure Solid and True	☐	☐
Silicone Grease Used on Insulators	☐	☐
Conducto-lube Applied to Contacts	☐	☐
Lubricant Applied Where Required	☐	☐
Hook Stick Operated: Latching Mechanism Operational	☐	☐
Grounding Switches: Mechanical Interlock Operational	☐	☐
Motor Operated: Control Fuses and/or Circuit Breakers of Proper Rating	☐	☐
High-Speed Ground Switches: Protection Scheme Operated to Close Switch	☐	☐
Switch Base and Handle Properly Grounded	☐	☐
Gradient Control Mat Properly Installed	☐	☐
All Nuts, Bolts and Pins in Place and Tight	☐	☐
Control Cabinet (where applicable) Clean, Dry and Tidy	☐	☐
Power Fuse Blown	☐	☐
Signs of Carbon or Tracking	☐	☐

Check:

Blade and Jaw Contacts _____
Alignment _____
Arcing Horns _____
Insulators _____
Static Strip on Polyethylene _____
Bearings (where applicable)
Terminal Connections _____
Ground Connections _____
Switch Mechanism and Hardware _____
Motor Operated Switches:
Manual and Electrical Operation _____
Control Wiring Connections _____
Limit and Auxiliary Switches _____
Motor Cutout Switch _____
Contactors _____
Heater _____
Lubrication _____
High Speed Ground Switches:
Jaw Insulator Column _____
Heater in Trip Coil Housing _____

Normal In-Service Blade Position: Open ☐ Closed ☐
Work Done With Switch: Completely De-energized ☐ Partially De-energized ☐

Remarks:

Type of Maintenance ____ **Date** _____ **Inspected By** _____
(YYYY-MM-DD)

Substation/Location:	**Work Order Number:**	**ID Number:**

Manufacturer:	**Serial Number:**	**Type:**	**Rated Amps:**	**Rated Volts:**

Notes: - A separate form should be used for each cubicle.
- This form does not include maintenance on the breaker. Breaker maintenance is reported on MSF005.

Check:

Bus Bars _____
Bus Supports _____
Barriers _____
Arc Chutes _____
Insulators _____
Cables and Terminations _____
Potheads _____
PT Carriage _____
Heaters, Thermostats and Vents _____
Control Switches _____
Paint _____

Megger Test:
Phase to Phase
_____ _____ _____

Phase to Ground
_____ _____ _____

Mark the appropriate block with an X:

	Yes	No
Cubicle, Bus and Insulators Cleaned	☐	☐
Air Filters Cleaned (if applicable)	☐	☐
Bus Insulated as Required	☐	☐
All Nuts and Bolts Tight	☐	☐
Cubicle Covers in Place	☐	☐
Door Operating Properly	☐	☐
Breaker Moves In and Out Freely	☐	☐
Ground Bus Connections Tight	☐	☐
Mechanism Lubricated	☐	☐
All Relays and Meters Operating	☐	☐
Control Wiring Connections Tight	☐	☐
Safety Interlocks Operational	☐	☐
CT Checks: Ratio	☐	☐
Continuity	☐	☐
Ground	☐	☐
Polarity	☐	☐
Roof and Doors Watertight	☐	☐
Cubicle Vermin Proof	☐	☐
Circuit Breaker Checked	☐	☐
Automatic Shutters Operational	☐	☐
Levering or Lifting Mechanism Operating Properly	☐	☐
Control and Relaying Checked by Supervising Engineer – Commissioning or his Delegate	☐	☐

Remarks:

NEWFOUNDLAND POWER
A FORTIS COMPANY

Revised: 2010-10-27

MSF009
Form No. 353

Maintenance Standard Report Form
POWER TRANSFORMERS

Substation/Location:	**Work Order Number:**		**ID Number:**
Manufacturer:	**Serial Number:**	**Rated Voltage (kV):**	**KVA:**

Complete the following:

Dew Point (if required): _____ °C
Oil Dielectric: _____ kV
PCB Level _____ PPM

Megger Test (in oil):
Core – Ground _____ at 250V
Two-Winding Transformers
a) H – L&G _____ at _____ V
b) L – H&G _____ at _____ V
c) H&L – G _____ at _____ V
Three-Winding Transformers
a) H – LT&G _____ at _____ V
b) L – HT&G _____ at _____ V
c) T – HL&G _____ at _____ V
d) H&L – T&G _____ at _____ V
e) H&T – L&G _____ at _____ V
f) L&T – H&G _____ at _____ V
g) HL&T – G _____ at _____ V

Weather Conditions and Temperature at Time of
Oil Testing and Meggering _____
_____

If Tank was Open to Atmosphere:
Time Duration Open _____
Weather Conditions While Open _____
_____

Voltage Connection _____
Megger Test Control Wiring For:
Oil Level Gauge _____ at 250V
Oil Temperature Gauge _____ at 250V
Winding Temperature Gauge _____ at 250V
Gas Detector Relay _____ at 250V
Pressure Relief Device _____ at 250V

Oil Temperature _____ °C
Oil Temperature Alarm Setting _____ °C
Oil Temperature Trip Setting _____ °C
Temperature Gauge Setting to Start Fans:
1st Stage _____ °C 2nd Stage _____ °C
Winding Temperature _____ °C
Winding Temperature Alarm Setting _____ °C
Winding Temperature Trip Setting _____ °C
Oil Level Gauge Reading _____

Mark the appropriate block with an X:

	Yes	No
Tank Opened	☐	☐
Humidity Absorbent Packet Installed in Gas Detector Relay	☐	☐
Core Exposed to Atmosphere	☐	☐
Spill Pan Free of Oil	☐	☐
Vacuum Pulled	☐	☐
Oil Sample Obtained for Gas Analyses	☐	☐
Tank Ground Connections Tight	☐	☐
Evidence of Oil Leakage	☐	☐
Lubricant Applied to Off-Load Tapchanger Handle	☐	☐
All Nuts and Bolts Tight	☐	☐
All Gauges in Good Physical Condition	☐	☐
Fan Motor Drains Open	☐	☐
Fan and Exerciser Operating Properly	☐	☐
Conduits Properly Fastened	☐	☐
Control Wiring in Good Condition	☐	☐
Transformer Protection Devices Inspection Completed	☐	☐
All Junction Boxes Inspected	☐	☐
Oil Added	☐	☐
Pressure Relief Device on Transformer	☐	☐
If So, Operation Indicator and Alarm Switch Required Resetting	☐	☐
Internal Inspection of Transformer Made	☐	☐
If So, Complete Remainder of This Section		
Loose or Damaged Parts	☐	☐
Tools or Debris Found	☐	☐
Explosion Vent Lower Diaphragm Intact	☐	☐
Main Tank Oil-Level Gauge Checked	☐	☐
Spray Nozzles Installed	☐	☐
Bushing Leads in Good Condition	☐	☐
CT Leads and Control Wiring Good and in Place	☐	☐
Tapchanger Leads Good and Connections Tight	☐	☐
All Nuts and Bolts in Place and Tight	☐	☐
Core Laminations and Supports in Place	☐	☐
Off-Load Tapchanger in Good Condition	☐	☐
Terminal Board structure Good	☐	☐
Any Sign of Carbon or Tracking	☐	☐
Shipping Braces (if any) Removed	☐	☐
CTs, PTs and Auxiliary Transformers Properly Mounted	☐	☐
Coils and Insulation in Good Condition	☐	☐
Bottom of Tank Free From Debris or Loose Parts	☐	☐
Any Sign of Moisture	☐	☐
Cracks in Tank Wall, Especially in Welding	☐	☐

MSF009

Damage Marks on Tank Wall ☐ Links Checked for Proper Connections and Tightness ☐ ☐

Check if Okay:

Physical Condition	_____	Line Connections	_____	Cabinet Heaters	_____
Paint	_____	Alarms Operational	_____	Breather	_____
Bushings	_____	Gaskets	_____	Silica Gel	_____
Lightning Arresters	_____	Control Wiring Terminal Connections	_____	Fans	_____
Bushing Oil Level	_____	Control Cabinet	_____	Foundation	_____

Ratio Test:

Tap Position	H1 Phase H1 - ____ ___ - ____	H2 Phase H2 - ____ ___ - ____	H3 Phase H3 - ____ ___ - ____	Tap Position	H1 Phase H1 - ____ ___ - ____	H2 Phase H2 - ____ ___ - ____	H3 Phase H3 - ____ ___ - ____
1				18			
2				19			
3				20			
4				21			
5				22			
6				23			
7				24			
8				25			
9				26			
10				27			
11				28			
12				29			
13				30			
14				31			
15				32			
16				33			
17							

Remarks:

MSF009

Type of Maintenance _____ **Date** _____ **Inspected By** _____

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF010
Form No. 354

Revised: 2010-01-05

Maintenance Standard Report Form
TAPCHANGERS

Substation/Location:	**Work Order Number:**	**ID Number:**

Manufacturer:	**Serial Number:**	**Type:**

Complete the following:

Counter Reading:
Start _____ Finish _____
Oil Dielectric:
Tapchanger Compartment _____kV
Diverter (if separate) _____kV
PCB Level: _____ PPM

Oil Level Gauge Reading:
Tapchanger Compartment _____kV
Diverter (if separate) _____kV
Motor Megger Test _____ Mega-Ohms
Motor Current _____ Amps

Mark the appropriate block with an X:

		Yes	No
Operated:	Manually	☐	☐
	Electrically	☐	☐
Evidence of Oil Leakage Outside		☐	☐
Evidence of Oil Leakage Between Tanks		☐	☐
Evidence of Moisture in Compartment(s)		☐	☐
Oil Filtered		☐	☐
Oil Replaced		☐	☐
Compartment(s) Flushed With Clean Oil		☐	☐
Gears, Shafts, Bearings, etc., Lubricated		☐	☐
All Control Features Operational		☐	☐
Tap Position Indicator Operational		☐	☐
Drag Hand Reset Operational		☐	☐
Limit Switches Operational		☐	☐
All Nuts and Bolts Tight		☐	☐
All Pins Properly in Position		☐	☐
Pressure Relief Device on Tapchanger		☐	☐
If So, Operation Indicator and/or Alarm Switch Required Resetting		☐	☐
Control Cabinet Clean and Dry		☐	☐
Oil Sample Obtained		☐	☐

Check:

Insulating Barriers	____
Arc Chutes	____
Contacts	____
Gears	____
Cams	____
Chain Drive (where applicable)	____
Mechanical Stops	____
Brake Operation	____
Operations Counter	____
Gaskets	____
Relief Vent and/or Breather	____
Oil Filter (if applicable)	____
Contactors	____
Relay Contacts	____
Auxiliary Switches	____
Cabinet Heaters and Thermostat	____
Cabinet Light and Receptacle	____
Wiring Connections Tight	____

Remarks:

Type of Maintenance ____ **Date** _____ **Inspected By** _____

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF011
Form No. 351b

Revised: 2005-09-13

Maintenance Standard Report Form

POTENTIAL TRANSFORMERS

Substation/Location:	Work Order Number:	ID Number:
Manufacturer:	Serial Number:	Type:

Enter details of faults found and corrective actions in the Remarks section.

Section 1: Check each item with a 3for OK, X to indicate a problem, N/A for not applicable, or N/D for not done. All entries must be completed during Maintenance IV, unless otherwise indicated. Initial each entry. Once work is done, the Maintenanceman and the Maintenance Supervisor must sign it off.

#	Type of Maint.		Task				Status or Results	Initial
	I	III						
1	X		ID Number Installed (N/A for Maintenance IV)					
2	X		Nameplate Information Recorded					
3	X	X*	External Visual Inspection					
4	X	X	PCB Labeled and Tested (PPM)					
5	X	X	Thermo Scan Information Reviewed					
6	X	X*	Oil Indicators and Levels					
7	X	X*	Evidence of Oil Leaks					
8	X	X*	Megger Test Results:	°C	kV	MΩ		
			H-Ground:					
			L-Ground:					
			H-Low:					
9	X	X*	Power Factor H–Ground (%)					
10	X		Ratio Tested Okay					
11			Oil Dielectric (kV)					
12			Moisture Sensitive Components Placed In Oil While Out					
13			Internal Cleaning and Inspection					
14			Bushings, Gaskets, etc. Okay					
15			Welding Done As Required					
16			Drying Carried Out					
17			Maximum Time That Moisture Sensitive Components Were Out of Oil (hrs)					
18	X		Continuity Checks Okay					
19			Final Megger Test:	°C	kV	MΩ		
			H-Ground:					
			L-Ground:					
			H-Low:					
20			Final Power Factor Test H-Ground (%)					
21			Final Ratio Test					
22	X	X*	High Voltage Terminals Clean and Tight					
23	X	X	Secondary Junction Box Okay					
24	X	X*	Tank Rust-Free and Painted					
25	X	X*	Ground Terminal Clean and Secure					
26	X	X	Secondary Wiring and Connectors					
27	X	X	Secondary Fuses					
28	X		Back Energized 15 Minutes at _____kV					
29	X	X	Mounting, Grounding and Risers Okay (N/A for Maintenance IV)					
30	X	X	Secondary Voltages Checked Okay (N/A for Maintenance IV)					
31	X	X	Primary Fuse and Fuse Holder Okay (N/A for Maintenance IV)					
32	X	X	No Abnormal Noises Present (N/A for Maintenance IV)					
34	X	X	Maintenance Entered in Avantis					
35	X	X	Forms Distributed as Required					

MSF011

*** Only if unit can be taken out of service.**

Section 2: Record primary voltage injection ratio test for installation check:

Secondary Winding	Tap Connection	Nameplate Ratio	Voltage Applied H1-H2	Voltage Measured	Ratio
X					
Y					

Remarks: _____

Maint. Type: ___ **Date:** _____ **Maintenanceman:** _____ **Supervisor:** _____
(YYYY-MM-DD)

MSF011

(attach copies of MSF018 as Required for Further Remarks)

Maint. Type: ___ Date: _____ Maintenanceman: _____ Supervisor: _____
(YYYY-MM-DD)

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF012
Form No. 230b

Revised: 2005-09-13

Maintenance Standard Report Form

VOLTAGE REGULATORS

Substation/Location:	Work Order No.:	Control:	ID Number:

Amps:	Volts:	Manufacturer:

Check each item with √ for OK, X to indicate a problem, N/A for not applicable, or N/D for not done. Initial each entry. Maintenance III procedures are indicated in column 2. Maintenance IV requires all steps to be completed, unless indicated otherwise.

#	Maint. I	Maint. III	Task	Status/ Results	Initial
1	X		ID Number Installed (N/A for Maintenance IV)		
2	X		Nameplate Information Recorded		
4	X	X	Counter Reading: Start:		
			Finish:		
5	X	X	Control Panel Settings: Set Point (V):		
			Bandwidth (V):		
			Time Delay (s):		
			Real Compensation (Ohms):		
			Reactive Compensation (Ohms):		
6	X	X	General Condition (N/A for Maintenance IV)		
7		X	Unit Operated Two Steps Up and Down (N/A for Maintenance IV)		
8	X	X	Oil Indicators and Levels		
9			Oil Level Indicators Replaced		
10	X	X	Evidence of Oil Leaks		
11	X		PCB Labeled, Level (ppm)		
12	X	X	Oil Dielectric (kV)		
13	X		Continuity Between Bushings		
14	X		Megger Test: Megger Reading (MΩ):		
			Megger Voltage (Volts):		
			Insulation Temperature (^{o}C):		
15	X*		Regulator Tank Removed		
16	X*		Internal Components Cleaned		
17	X		Internal Inspection		
18	X		Windings and Control Wiring		
19	X		All Contacts OK		
20	X		Nuts and Connections Tight		
21	X		Visual of Contact Operation		
22	X		Drive Mechanism OK		
23	X		Position Indicator Assembly		
24	X	X	Neutral Position Indicators		
25	X		Surge Bypass Device		
26	X		Bushings and Associated Parts		
27	X		All Gaskets and Seals Tight		
28	X		Time Unit Out of Oil (hrs)		
29	X*		Repeat Megger Test: Megger Reading (MΩ):		
			Megger Voltage (Volts):		
			Insulation Temperature (^{o}C):		
30	X*		Motor Current (amps)		
31	X		Ratio Test Carried Out (Attach TTR Results)		
32	X		PT Ratio Test Carried Out (Attach TTR Results)		
33	X		CT Ratio Test Carried Out (Attach TTR Results)		
35	X	X	Control Functions Checked		
36	X	X	Position Indicator Functions		

MSF012

#	Maint. I	Maint. III	Task	Status/ Results	Initial
37	X		Spot Painted as Required		
38	X*		Enclosure Rust-Free, Repaired and Repainted. Welding Done as per MS###.		
39	X		Bushings Identified		
40	X	X	Position Indicator Cleaned and Lubricated		
41	X		Ground Terminal Clean and Tight		
42	X	X	Control Cable		
43	X		Unit Left in Neutral		
44	X		PT Tapped For _____kV		
45	X		Breather Plugs Installed or Removed as Appropriate		
46		X	Mounting, Grounding and Risers (N/A for Maintenance IV)		
47	X		Disconnects and Bypass (N/A for Maintenance IV)		
48	X		Regulator Tested in Test Bay Date:_____		
49	X	X	Maintenance Entered in Avantis		
50	X	X	Documentation Distributed		
51	X	X	Deficiencies Flagged in Avantis		

Transformer Ohmmeter Test:

Lower	Resistance (mΩ)	Difference	Raise	Resistance (mΩ)	Difference
1L			8R		
Neutral			9R		
1R			10R		
2R			11R		
3R			12R		
4R			13R		
5R			14R		
6R			15R		
7R			16R		

PT Internal Tap Position	PT Control Panel Tap Position	Nameplate Ratio	Measured PT Ratio	Calculated PT Ratio
_____	_____	_____: 1	_____Volts	_____: 1
		CT Nameplate Ratio	Measured CT Ratio	Calculated Ratio
		_____: 1	_____Amps	_____: 1

Enter details of faults found and corrective actions:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____(Attach copies of MSF018 for additional comments as required)

Maint. Type ____ Date _____ Maintenanceman _____ Supervisor _____

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF013
Form No. 352

Revised: 2005-09-13

Maintenance Standard Report Form

CURRENT TRANSFORMERS

Substation/Location:	**Work Order Number:**		**ID Number:**
Manufacturer:	**Serial Number:**	**Type:**	**Maximum Rated Amps:**

Check each item with a 3for OK, X to indicate a problem, N/A for not applicable, or N/D for not done. All entries must be completed during Maintenance I or III, unless otherwise indicated. These units never require a Maintenance IV. Initial each entry. Once work is done, the Maintenanceman and the Maintenance Supervisor must sign it off.

#	Task	Status or Results	Initial
1	ID Number Installed (N/A for Maintenance III)		
2	Nameplate Information Recorded (N/A for Maintenance III)		
3	External Visual Inspection		
4	Primary Bushings Cleaned*		
5	Painting as Required*		
6	PCB Level Checked; Label Installed (PPM)		
7	Unit Properly Grounded, Securely Mounted		
8	Check Oil Level Gauge (If Applicable)		
9	Megger Test Results* Primary-GND:		
	Secondary-GND:		
	Ratio:		
10	Ratio Continuity Checked*		
11	Ratio Checked On All Taps*		
12	Polarity Checked (N/A for Maintenance III)		
13	Secondary Current Checked		
14	Check for Abnormal Noise (N/A for Maintenance I)		
17	Avantis Updated		
18	Documentation Distributed		

*** Perform only if unit is de-energized.**

Remarks:

(attach copies of MSF018 as Required for Further Remarks)

Maint. Type: ___ **Date:** _____ **Maintenanceman:** _____ **Supervisor:** _____
(YYYY-MM-DD)

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF014
Form No. 356

Revised: 2005-02-16

Maintenance Standard Report Form

POWER CABLES AND ACCESSORIES

Substation/Location:	Work Order Number:	Line Voltage:	ID Number:

Complete the following:

Single Phase ☐ or Three Phase ☐

Megger Test:
Phase to Ground _____
Phase to Phase _____

Oil Filled Cables:
Reservoir Pressures _____ _____ _____
Ambient Temperature _____ °C
Alarm Settings: High _____ Low _____

Mark the appropriate block with an X:

	Yes	No
Trench/Ducts Clean and Free From Defects	☐	☐
Any Sign of Arcing or Tracking	☐	☐
Cables and Potheads Properly Grounded and/or Insulated	☐	☐
Evidence of Oil Leaks	☐	☐
Evidence of Compound Leaks	☐	☐
Primary Connections Clean and Tight	☐	☐
Grounding Connections Complete and Tight	☐	☐
Any Sign of Deterioration or Damage	☐	☐
Pothead Bushings in Good Condition	☐	☐
Cables Adequately Supported	☐	☐

Remarks:

Type of Maintenance: ____ **Date:** _____ **Inspected By:** _____
(YYYY-MM-DD)

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF015
Form No. 362

Revised: 2005-02-16

Maintenance Standard Report Form

MISCELLANEOUS EQUIPMENT

Substation/Location:	**Division:**

Mark the appropriate blocks with an X to indicate the equipment covered by this report:

	Yes	No
Structure	☐	☐
Buswork	☐	☐
Insulators	☐	☐
Yard Lighting	☐	☐
Lightning Arresters	☐	☐
ID Number _____		
Metering Tank	☐	☐
Company Number _____		
Foundations	☐	☐
Grounding	☐	☐
Control Cables	☐	☐
Control Building	☐	☐
Yard	☐	☐
Station Service Transformer	☐	☐
AC and DC Distribution	☐	☐
Other	☐	☐
Specify _____		
_____		

Mark the appropriate block with an X:

Structures:	Yes	No
All Nuts and Bolts in Place and Tight	☐	☐
Sufficient Back-Filling Around Footings	☐	☐
Structure Solid and True	☐	☐
Paint Condition Good	☐	☐
Crossarms in Good Condition	☐	☐

Buswork:		
Ample Phase-to-Phase & Phase-to-GND Clearances	☐	☐
Bus Securely Supported	☐	☐
Insulators Good and Clean	☐	☐
Dissimilar Metals Used	☐	☐
All Nuts and Bolts in Place and Tight	☐	☐

Insulators:		
Any Sign of Contamination or Flashover	☐	☐
Any Cracked or Broken Porcelain	☐	☐
All Pins in Place	☐	☐

Lightning Arresters:		
Securely Mounted	☐	☐
Any Broken or Cracked Porcelain	☐	☐
Line and Ground Connections Tight	☐	☐
Cement in Flanges in Good Condition	☐	☐

Metering Tank:		
Securely Mounted	☐	☐
Vent Plug Removed	☐	☐
Primary and Secondary Connections Tight	☐	☐
Any Sign of Oil Leakage	☐	☐
Bushings in Good Condition	☐	☐
Paint Condition Good	☐	☐
Tank Properly Grounded	☐	☐

Yard Lighting:	Yes	No
Fixtures Securely Mounted	☐	☐
All Lights Operating Properly	☐	☐
Lenses and Enclosures in Good Condition	☐	☐

Foundations:		
Level	☐	☐
Any Sign of Breakage or Moving	☐	☐

Station Service Transformer:		
Any Sign of Oil Leakage	☐	☐
Bushings in Good Condition	☐	☐
Paint Condition Good	☐	☐
Tank Properly Grounded	☐	☐
Secondary Leads Enter Bushing Terminal Connectors at the Top (if outside)	☐	☐
Oil Dielectric _____kV (if requested)		

Grounding:		
Any Damaged or Broken Wire	☐	☐
Grounding Done as per Current Practices	☐	☐
All Equipment Grounded as Required	☐	☐
All Connections Tight	☐	☐

Control Cables:		
In Place and Properly Protected	☐	☐
Connections Tight	☐	☐
Any Sign of Corrosion at Terminals	☐	☐

AC and DC Distribution:		
Panels Mounted Securely	☐	☐
Breakers Installed Correctly	☐	☐
Wiring Connections Tight	☐	☐
Cables/Conduits Properly Connected/Supported	☐	☐
Current Loading Within Panel Rating	☐	☐
Any Sign of Corrosion on Breaker Terminals	☐	☐
Any Sign of Overheating	☐	☐
Battery Charger and/or Other Such Essential Equipment on Separate Breaker	☐	☐

MSF015

Mark the appropriate block with an X:

Control Building:

Paint Condition Good Inside and Outside	☐	☐
Doors and Windows Fit Properly	☐	☐
Locks Operating Properly	☐	☐
Building Free of Water Leaks	☐	☐
Lights, Receptacles and Switches Operational	☐	☐
Thermostats and Heaters Operational	☐	☐
Toilet and/or Wash Basin Operational	☐	☐
Ventilators Operational (if existing)	☐	☐

Yard:

Fence and Gates in Good Condition and Properly Grounded	☐	☐
All Usual Precautions Taken to Prevent Unauthorized Entry (barbed wire on top of fence and no gap under fence)	☐	☐
Locks Operating Properly	☐	☐
Trenches in Good Condition and Covers in Place	☐	☐
Yard Clean and Tidy	☐	☐
High Voltage Danger Signs in Place	☐	☐
Crushed Stone as per Specifications	☐	☐
Adequate Snow Clearing (in winter)	☐	☐

Remarks:

Type of Maintenance ___ **Date** _____ **Inspected By** _____
(YYYY-MM-DD)

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF016
Form No. 167b

Revised: 2011-05-24

Maintenance Standard Report Form
NU-LEC RECLOSERS

Substation/Location:	Work Order No.:	Manufacturer:	Control:	ID Number:

Check each item with a √ for OK, X to indicate a problem, N/A for not applicable, → indicates a value required or N/D for not done. Initial each entry. Once work is done, the Maintenanceman and the Maintenance Supervisor must sign it off. Complete all steps for a Maintenance A, B, III, or Maintenance V, unless otherwise indicated. This unit never requires a Maintenance IV.

Proc. #	Task			Status or Results	Initial
1,2,3	Maintenance History, Standards and Manufacturer's Information Reviewed				
6	ID Number Installed				
7	Nameplate Information Recorded				
8	Counter: Start Value → Finish Value →				
9	Cubicle Louvers and Water Drainage Holes Free; Unit Cleaned				
10	Rubber Door Seal Checked				
11	Install AC Supply Cord				
12	Check Cabinet Receptacle Polarity				
13	Cabinet Thermostat and Heaters Checked				
14	Megger Test Results: →	°C	kV	MΩ	
	3Φ- Ground				
	2Φ – 1&3Φ				
	1Φ Cont.				
	2Φ Cont.				
	3Φ Cont.				
15	Ductor Test Results (micro-ohms): →		Phase 1		
			Phase 2		
	Circle whether ductored via **lead** or **bushing**		Phase 3		
16	Check Sharepoint For Latest File Versions				
17	Ensure Proper Computer Software Version Installed				
18	Record Existing Firmware →				
18	Load and Record Latest Firmware →				
19	Load EMC Test Settings File for Testing				
20	Load IOEX File; Record File Name →				
21	Load DNP3 File; Record File Name →				
22	Load OCP File; Record File Name →				
23	Print and Install New OCP label				
	OCP File Load Checks				
24	Setting Group A,B,C,D and Indication				
25	Ground Fault Protection				
26	Live Load Blocking				
27	Local ON				
27	Remote ON				
28	Auto Reclose ON				
28	Auto Reclose OFF				
29	Hold Off ON				
29	Hold Off OFF				
30	Check for English (USA) and Imperial Units				
31	Control Cable Check				
32	Check and Record SF6 psi →				
33	Contact Life Check; Record Values (ΦA, ΦB, ΦC) →				

Maintenance Type: _____ **Date:** _____ **Maintenanceman:** _____ **Supervisor:** _____
(YYYY-MM-DD)

MSF016

34	Battery Labelled and Date Recorded →		
35	Record Amp Hour Rating of Battery →		
36	Battery Tested		
37	Battery Replaced		
	Function Checks		
38	Local Trip		
39	Close Isolate Switch		
41	Local Close		
40	Trip Isolate Switch		
42	Mechanical Trip by External Trip Lever		
43	Local Close Fails With HOLD OFF ON (Hot Line Tag)		
44	Low Gas Alarm Checked		
	IOEX Checks		
44	Trip Nulec From IOEX		
45	Close Nulec From IOEX		
46	No Close From IOEX with HOLD OFF ON (Hot Line Tag)		
47	Close From IOEX with AUTO RECLOSE OFF		
48	A Contact		
49	B Contact		
50	Protection On / Off		
	Primary Injection Checks		
51	Phase A , B, C and Ground Primary Current Minimum Trip**s**		
52	Trip and Reclose Sequence Correct and Goes to Lockout		
53	Phase Target, Check Event Log For Correct Phase Max Fault Value		
54	Display Shows Correct Phase and Ground Amps		
55	Verify When Reclose is Off Unit Goes to Lockout, No Reclose		
56	Operation of Cold Load Function Checked		
57	Inrush Restraint Function Checked		
58	Reset after Elapsed Time on Successful Reclose		
59	Ground Trip Block Functional		
60	Substation Equipment Designation Attached		
61	Laminated Operating Procedures in Cabinet		
62	Documentation Distributed		
63	Maintenance Record Updated in Avantis		
64	Deficiencies Flagged in Avantis		

Enter Details of Faults Found and Corrective Actions:

(add copies of MSF018 for additional comments as required)

Maint. Type: _____ **Date** _____ **Maintenanceman** _____ **Supervisor** _____

(YYYY-MM-DD)

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF017
Form No.

Revised: 2005-02-16

Maintenance Standard Report Form

BATTERY DISCHARGE

Substation/Location:	Manufacturer:	Work Order Number:	ID Number:

Time:								
Start O/C Volts:								
Bank Load Volts:								
Load Current:								
Discharge Time:								
Electrolyte Temp.:								
Pilot Cell SPG:								

		Volts at Specified Time Interval							
Cell #	**SPG at Start**								
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
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35									
36									
37									
38									
39									

Date: _____
(YYYY-MM-DD)

Completed By: _____

MSF017

Cell #	SPG at Start	Volts at Specified Time Interval							
40									
41									
42									
43									
44									
45									
46									
47									
48									
49									
50									
51									
52									
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58									
59									
60									

Remarks: _____

MSF018

Maintenance Standard Report Form

GENERAL COMMENTS

Revised: 2005-02-16

Work Order No.:	**ID Number:**

Date: _____
(YYYY-MM-DD)

Completed By: _____

MSF018

RETURN CONTAINERS TO:	REPORT & INVOICE TO:	REPORT TO:
Phone: _____	Glenn Samms Newfoundland Power Box 8910, 55 Kenmount Road St. John's, NF A1B 3P6 Phone: (709) 737-5702	Phone: _____
Fax: _____	Fax: (709) 737-2926	Fax: _____

P.O. # _____ **Sampled By:** _____

Sample Location (Substation/PH/PP)		**Notes:**	
Equipment / Company Number			
Serial Number (Nameplate)			
Manufacturer (Nameplate)			
Date of Manufacture (Nameplate)			
Model Number /Type (Nameplate)			
Voltage Rating (Nameplate)			
Fluid Volume (Nameplate)			
Pole (Tank) ☐ 1 2 3	Tank No. 1	Tank No. 2	Tank No. 3
Phase	☐ A ☐ B ☐ C	☐ A ☐ B ☐ C	☐ A ☐ B ☐ C
Interrupting Rating (KA) (KVA) (MVA)			
Amp Rating			
Present Counter Reading			
Oil Temperature			
No. of switching operations since last internal inspection			
Number of fault operations since last internal inspection			
Present Accumulated Fault Count (ACC)	%		
Date of last internal inspection			
Date oil was last filtered			
Date oil was last replaced			
Sample Date			
DGA Syringe Sample No.			
Oil Quality Sample No.			
Status:	☐ Routine	☐ Routine	☐ Routine
Lab Use Only			

All Tests below are Required for BOA Diagnostics	Optional Tests
☐ Dissolved Gas Analysis (D-3612) ☐ Particle Counts ☐ Moisture in Oil (D-1533B) ☐ Dielectric Breakdown (D-1816) ☐ Interfacial Tension (D-971) ☐ Acid Number (D-974) ☐ Color (D-1500)	☐ PCB (EPA-8080) ☐ Metals (D-3635 ICP) ☐ Microscopy ☐ Other _____

Instructions: All DGA samples are taken using a glass syringe or stainless steel cylinder. All oil quality tests samples are taken using a 1 qt plastic bottle. OCBs containing more than 350 gallons of oil require one gallon of oil to be flushed through the fill/drain valve prior to collecting samples. OCBs containing less than 350 gallons of oil require one quart of oil to be flushed through the fill/drain valve prior to collecting samples.

☐ Routine Test ☐ Retest ☐ This is a Return to Service Test

RETURN CONTAINERS TO:	REPORT & INVOICE TO:	REPORT TO:
Phone: _____ Fax: _____	Glenn Samms Newfoundland Power Box 8910, 55 Kenmount Road St. John's, NF A1B 3P6 Phone: (709) 737-5702 Fax: (709) 737-2926	Phone: _____ Fax: _____

P.O. # _____ **Sampled By:** _____

Sample Location	(Substation/PH/PP)			
Equipment Number				
Bank and Phase				
Serial Number	(Nameplate)			
Manufacturer	(Nameplate)			
Date of Manufacture	(Nameplate)			
Where Manufactured	(Nameplate)			
kVA Rating	(Nameplate)			
Primary kV	(Nameplate)			
Secondary kV	(Nameplate)			
Tertiary kV	(Nameplate)			
Fluid Volume	(Nameplate)			
Fluid Preservation	(Nameplate)			
Cooling	(Nameplate)			
Core & Coil Weight	(Nameplate)			
Oil Filtered/Unit Serviced	(Yes/No)			
Reason for test				
Winding Temperature				
Top Oil Temperature				

Sample Date				
Syringe No.				
Bottle No.				
Status:				
Lab Use Only				

All Tests below are Required for TCA Diagnostics			
☐	Dissolved Gas Analysis (D-3612)	☐	Interfacial Tension (D-971)
☐	Particle Profile	☐	Color (D-1500)
☐	Moisture in Oil (D-1533B)	☐	Power Factor (D-924)
☐	Dielectric Breakdown (D-1816)	☐	Oxidation Inhibitor
☐	Acid Number (D-974)	☐	Furfurals

Instructions: All DGA samples are taken using a glass syringe or stainless steel cylinder. All oil quality test samples are taken using a 1 qt plastic bottle. Flush one gallon of oil through the drain valve prior to collecting samples.

☐ Routine Test ☐ Retest ☐ This is a Return to Service Test

RETURN CONTAINERS TO:	REPORT & INVOICE TO:	REPORT TO:
	Glenn Samms Newfoundland Power Box 8910, 55 Kenmount Road St. John's, NF A1B 3P6	
Phone: _____ Fax: _____	Phone: (709) 737-5702 Fax: (709) 737-2926	Phone: _____ Fax: _____

P.O. # _____ **Sampled By:** _____

Sample Location	(Substation/PH/PP)			
Equipment Number				
Bank and Phase				
Serial Number	(Nameplate)			
Manufacturer	(Nameplate)			
Model	(Nameplate)			
Tank/Compartment				
Breathing/Ventilation				
Selector Contact Type				
Transfer Contact Type				
LTC Location				
Tap to Tap Rating				
Current Rating				
Fluid Volume				
Counter				
Oil Filtered/Unit Serviced	(Yes/No)			
Reason for test				
Xfrmr Oil Temperature				
LTC Oil Temperature				

Sample Date				
Syringe No.				
Bottle No.				
Status:				
Lab Use Only				

All Tests below are Required for TASA Diagnostics	
☐ Dissolved Gas Analysis (D-3612)	☐ Acid Number (D-974)
☐ Particle Profile	☐ Interfacial Tension (D-971)
☐ Moisture in Oil (D-1533B)	☐ Color (D-1500)
☐ Dielectric Breakdown (D-1816)	

Instructions: All DGA samples are taken using a glass syringe or stainless steel cylinder. All oil quality test samples are taken using a 1 qt plastic bottle. LTCs containing more than 350 gallons of oil require one gallon of oil to be flushed through the fill/drain valve prior to collecting samples. LTCs containing less than 350 gallons of oil require one quart of oil to be flushed through the fill/drain valve prior to collecting samples.

☐ Routine Test ☐ Retest ☐ This is a Return to Service Test

ALPH-10 POWER FACTOR INSULATION TEST
"TWO WINDING TRANSFORMERS"

APPARATUS INFORMATION

DATE: / / (MM/DD/YY)

COMPANY:

TRANSFORMER LOCATION: DESIGNATION:

TRANSFORMER NAME PLATE DATA

MFGR: S/N: YEAR:

TYPE: KVA FORM:

HIGH SIDE KV: ____ Y ____ △ ____ LOW SIDE KV: ____ Y ____ △ ____

MEGGER LIMITED
TYPE: 01-A10 TWO WINDING XFRMS

ENVIRONMENT

WEATHER:

AIR TEMP: ^{0}C

OIL TEMP: ^{0}C

WINDING TEMP: ^{0}C

REL. HUMIDITY: %

	TEST CONNECTIONS				EQUIVALENT 10KV TEST RESULTS						
TEST NO.	H.V.	CxRED		Menu Select	Voltage (V)	Current (mA)	Power (mW)	Power Factor (%) Measured	Power Factor (%) Correct to 20^{0}C	CAP. (pf)	Insulation Rating
1	High	Low		1R[G+B]							
2	High	Low		5G[R+B]							
*3	High	Low		6R+G[B]							
**4	High	Low		1R[G+B]							
5	Low	High		5G[R+B]							
6	Low	High		6R+G[B]							

* Compare the Capacitance and Watts readings of this test to the sum of the Capacitance and Watts readings for Test No's 1+2+4. Ideally they should be the same.
** Compare the results of this test with the results of Test No. 1. Ideally they should be the same.
*** Compare the Capacitance and Watts readings of this test against the sum of the Capacitance and Watts readings for Test No's 5&6. Ideally they should be the same.

OIL RESULTS:

DIELECTRIC STRENGTH TEST

STD USED: 1816 ☐ 877 ☐

AVG. BREAKDOWN	STD. DEV.	VOLTAGE (KV)

INSULATION POWER FACTOR

TEST RESULTS

CURRENT (mA)	Power (mW)	Power Factor % Measured	Power Factor % Corr to 20^{0}C	CAP. (pf)	Insulation Rating

REASON FOR TESTING: OIL CELL S.N.

WORK ORDER NO: ALPH-10 S/N:

TESTED BY: LAST DATE TESTED: / / (MM/DD/YY)

CHECKED BY: DATE CHECKED: / / (MM/DD/YY)

COMPANY:

DEPARTMENT: SHEET NO:

REMARKS:

OIL CIRCUIT BREAKERS

Capacitance and Power Factor Tests

COMPANY	DATE
TEST LOCATION	TESTED BY
BREAKER IDENT.	TEST SET NO.
BREAKER SERIAL NO.	AIR TEMPERATURE
BREAKER MFR. TYPE	OIL TEMPERATURE
BREAKER KV AMPS	% RH
BUSHING MFR. TYPE KV	WEATHER

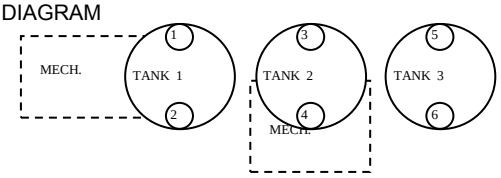
CIRCUIT BREAKER OVERALL TESTS

TEST NO.	CB	INSULATION TESTED	ϕ	TEST MODE	TEST CONNECTIONS BUSHINGS				TEST KV	CAPACI - TANCE C(PF)	% POWER FACTOR			10KV		2.5KV		INSULATION RATING
					ENG	GND	GAR	UST			MEASU RED	20^0C %PF	CORR FCTR	mA	watts	mA	watts	
1	OPEN	C_{1G}		GST GND	1													
2		C_{2G}		GST GND	2													
3		C_{3G}		GST GND	3													
4		C_{4G}		GST GND	4													
5		C_{5G}		GST GND	5													
6		C_{6G}		GST GND	6													
7	CLOSED	$C_{1G} + C_{2G}$		GST GND	1&2													
8		$C_{3G} + C_{4G}$		GST GND	3&4													
9		$C_{5G} + C_{6G}$		GST GND	5&6													

BUSHING & OIL TESTS

TEST NO.	BUSHING NO.	BUSHING SER. NO.	ϕ															
10	1			UST	1			TAP										
11	2			UST	2			TAP										
12	3			UST	3			TAP										
13	4			UST	4			TAP										
14	5			UST	5			TAP										
15	6			UST	6			TAP										
16		TANK 1 OIL		UST														
17		TANK 2 OIL		UST														
18		TANK 3 OIL		UST														

DIAGRAM



Note: Circuit breaker open: bushing tests (Test No. 1, 2, 3, 4, 5 and 6).
Circuit breaker closed: Tank tests (Test No. 7, 8 and 9)

REMARKS;

INSULATION RATING KEY

G = GOOD
D = DETERIORATED
I = INVESTIGATE
B = BAD (REMOVE OR RECONDITION)

INSULATION TESTED

1 TO 6 = BUSHING TERMINALS
G = GROUND

Note: No. in ENG columm is bushing energized, all other bushings must be floating.

TANK LOSS INDEX

TANK 1 = $W_7 - (W_1 + W_2)$ =
TANK 2 = $W_8 - (W_3 + W_4)$ =
TANK 3 = $W_9 - (W_5 + W_6)$ =

Note: Subscripts are test no's. index may be positive or negative

AVO INTERNATIOINAL
P.O. Box 9007
Valley Forge, PA 19484-9007

TWO WINDING TRANSFORMER

Capacitance and Power Factor Tests

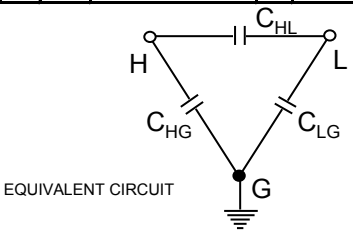
COMPANY	DATE
TEST LOCATION	TESTED BY
XFMR IDENT.	TEST SET NO.
XFMR SERIAL NO.	AIR TEMPERATURE
XFMR MFR. TYPE KVA	OIL TEMPERATURE
HIGH KV SGL ☐ Y ☐ Δ ☐	% RH
HIGH KV BUSH	WEATHER
LOW KV SGL ☐ Y ☐ Δ ☐	TERTIARY KV SGL ☐ Y ☐ Δ ☐
LOW KV BUSH	TERTIARY BUSH

TRANSFORMER OVERALL TESTS

TEST #	INSULATION TESTED	TEST MODE	TEST CONNECTIONS (WINDINGS)				TEST KV	CAPACITANCE C(PF)	% POWER FACTOR			EQUIV. 10KV		EQUIV. 2.5KV		INSUL-ATION RATING
			ENG	GND	GAR	UST			MEASURED	20^0C %PF	CORR FCTR	Ma	WATTS	Ma	WATTS	
1	$C_{HG} + C_{HL}$	GST GND	H	L												
2	C_{HG}	GST	H		L											
3	C_{HL}	UST	H			L										
4	C_{HL}	<>	TEST 1 MINUS TEST 2				<>									
5	$C_{LG} + C_{HL}$	GST GND	L	H												
6	C_{LG}	GST	L		H											
7	C_{HL}	UST	L			H										
8	C_{HL}	<>	TEST 5 MINUS TEST 6				<>									
9	$C_{HG'}$	<>	C_{HG} MINUS HIGH BUSH.				<>									
10	$C_{LG'}$	<>	C_{LG} MINUS HIGH BUSH.				<>									

BUSHING TESTS

TEST #		BUSHING SER. NO.	ϕ	UST													
HI kV	11		A	UST													
	12		B	UST													
	13		C	UST													
	14		N	UST													
LO kV	15		A	UST													
	16		B	UST													
	17		C	UST													
	18		N	UST													
	19	OIL TEST		UST													



EQUIVALENT CIRCUIT

INSULLATION RATING KEY
G = GOOD
D = DETERIORATED
I = INVESTIGATE
B = BAD (REMOVE OR RECONDITION)

REMARKS

H = HIGH - VOLTAGE WINDING
L = LOW - VOLTAGE WINDING
G = GROUND
N = NEUTRAL BUSHING

Test No. 4, 8, 9, 10 are calculated intercheck values.

NOTE: SHORT EACH WINDING ON ITSELF
letter in ENG columm = winding energized.

AVO INTERNATIOINAL
P.O. Box 9007
Valley Forge, PA 19484-9007

THREE WINDING TRANSFORMER

Capacitance and Power Factor Tests

COMPANY	DATE
TEST LOCATION	TESTED BY
XFMR IDENT.	TEST SET NO.
XFMR SERIAL NO.	AIR TEMPERATURE
XFMR MFR. TYPE KVA	OIL TEMPERATURE
HIGH KV SGL ☐ Y ☐ Δ ☐	% RH
HIGH KV BUSH	WEATHER
LOW KV SGL ☐ Y ☐ Δ ☐	TERTIARY KV SGL ☐ Y ☐ Δ ☐
LOW KV BUSH	TERTIARY BUSH

TRANSFORMER OVERALL TESTS

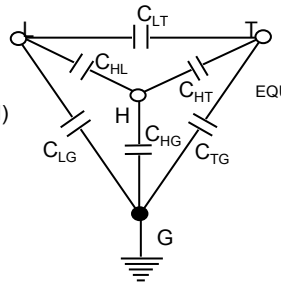
TEST #	INSULATION TESTED	TEST MODE	TEST CONNECTIONS (WINDINGS)				TEST KV	CAPACITANCE C(PF)	% POWER FACTOR			EQUIV. 10KV		EQUIV. 2.5KV		INSUL-ATION RATING
			ENG	GND	GAR	UST			MEASUR-ED	20^0C %PF	CORR FCTR	Ma	WATTS	Ma	WATTS	
1	$C_{HG} + C_{HL}$	GST	H	L	T											
2	C_{HG}	GST	H		L&T											
3	C_{HL}	UST	H	T		L										
4	C_{HL}	<>	TEST 1 minus TEST 2				<>									
5	$C_{LG} + C_{LT}$	GST	L	T	H											
6	C_{LG}	GST	L		T&H											
7	C_{LT}	UST	L	H		T										
8	C_{LT}	<>	TEST 5 minus TEST 6				<>									
9	$C_{TG} + C_{HT}$	GST	T	H	L											
10	C_{TG}	GST	T		H&L											
11	C_{HT}	UST	T	L		H										
12	C_{HT}	<>	TEST 9 minus TEST 10				<>									
13	$C_{HG'}$	<>	C_{HG} minus HIGH BUSH.				<>									
14	$C_{LG'}$	<>	C_{LG} minus LOW BUSH.				<>									
15	$C_{TG'}$	<>	C_{TG} minus TERTIARY BUSH.				<>									

BUSHING TESTS

TEST #		BUSHING SER. NO.	ϕ	UST														
HI kV	16		A	UST														
	17		B	UST														
	18		C	UST														
	19		N	UST														
LO kV	20		A	UST														
	21		B	UST														
	22		C	UST														
	23		N	UST														
T kV	24		A	UST														
	25		B	UST														
	26		C	UST														
	27		N	UST														
	28	OIL TEST		UST														

INSULLATION RATING KEY
G = GOOD
D = DETERIORATED
I = INVESTIGATE
B = BAD (REMOVE OR RECONDITION)

Test No. 4, 8, 12, 13, 14 & 15 are calculated intercheck values.



EQUIVALENT CIRCUIT

REMARKS

H = HIGH - VOLTAGE WINDING
L = LOW - VOLTAGE WINDING
G = GROUND
N = NEUTRAL BUSHING

NOTE: SHORT EACH WINDING ON ITSELF
Letter in ENG columm = winding energized.

AVO INTERNATIOINAL
P.O. Box 9007
Valley Forge, PA 19484-9007

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF026
Revised 2006-01-12

Maintenance Standard Report Form
TAP CHANGER RECORDING FORM

SUBSTATION TRANSFORMER: _____ TRANSFORMER COMPANY NUMBER: _____

SCC VOLTAGE REQUIRED: _____ SCADA TIME: _____ LOCAL TIME: _____

VOLTAGE REDUCTION - PROCEED *ONLY* AFTER RECEIVING INSTRUCTION FROM THE SCC OPERATOR

SCC Operator: _____ Time of Instruction:_____

1. **Take these readings (if available) IMMEDIATELY BEFORE changing any tap position**:

LOCAL TIME	MEGAWATTS	XFMR AMPS	VOLTAGE	TAP POSITION

2. **Take these readings (if available) IMMEDIATELY AFTER initial tap position changes to get to voltage required**:

LOCAL TIME	MEGAWATTS	XFMR AMPS	VOLTAGE	TAP POSITION

3. **Take these readings (if available) at 15 MINUTE INTERVALS to keep the required voltage**:

LOCAL TIME	MEGAWATTS	XFMR AMPS	VOLTAGE	TAP POSITION

RETURN TO NORMAL - PROCEED *ONLY* AFTER RECEIVING INSTRUCTION FROM THE SCC OPERATOR

SCC Operator: _____ Time of Instruction: _____

4. **Take these readings (if available) IMMEDIATELY AFTER tapchanger returns to final position for NORMAL voltage**:

LOCAL TIME	MEGAWATTS	XFMR AMPS	VOLTAGE	TAP POSITION

5. **Multi-meter leads removed from control panel? Yes No (please circle)**
6. **Equipment returned to its original operating state? Yes No (please circle)**

Signature: _____ Date Completed: _____

PLEASE MAKE ANY COMMENTS OR REMARKS ON THE REVERSE OF THIS FORM
SEND COMPLETED FORM TO SYSTEM CONTROL CENTER SUPERINTENDANT

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF027
Revised 2011-02-08

Maintenance Standard Report Form
VOLTAGE TRANSDUCER CHECK FORM

SUBSTATION: _____ EQUIP MONITORED: _____ TRANSDUCER SERIAL No: _____

NOTE: Please review test procedure MST018 before completing this form

1. **AC VOLTAGE MEASUREMENT (Range: 110 to 125 Volts, 1 Decimal Place X.X):**

AC VOLTAGE (Vin)

2. **DC VOLTAGE MEASUREMENT/CALCULATION (Range: 0 to 5 Volts, 3 decimal places, X.XXX):**

VDC meas	VDC calc	% ERROR

3. **SCADA VOLTAGE READING (Ask SCADA Tech. to force poll RTU or Gateway to refresh readings):**

RESULTS

4. a) **PANEL METER VOLTAGE READING:**

RESULTS

4. b) **RELAY VOLTAGE READING:**

RESULTS

Required Equations:

Voltage Transducer Full Scale: **150 VAC in = 1 mA or 5 VDC across RTU point**
Calculated VDC out: **VDCcalc = (Vin/150)*5**
Measured VDC out: **Step 2**

Calculated VDC out should equal measured VDC out across transducer or RTU input

Percent Error Calculation: **% Error = (VDCmeas – VDCcalc) / VDCcalc*100**
NOTE: If % Error is 1% or less, then transducer is ok

Signature: _____ Date Completed: _____

SCC operator and/or SCADA Technician: _____

1. **PLEASE MAKE ANY COMMENTS OR REMARKS ON THE REVERSE OF THIS FORM**
2. **COMPLETED FORM TO BE SCANNED AND FORWARDED TO PLANNER**
3. **PLANNER WILL ENTER A WORK REQUEST TO OPERATIONAL SUPPORT FOR ADDITIONAL INVESTIGATION IF THE TRANSDUCER PASSED THE TEST**

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF028
Revised 2011-03-29

Maintenance Standard Report Form
POWER TRANSDUCER CHECK FORM

SUBSTATION: _____ EQUIP MONITORED: _____ TRANSDUCER SERIAL No: _____

NOTE: Please review test procedure MST019 before completing this form

1. a) **AC VOLTAGE MEASUREMENTS (Range: 110 to 125 Volts, 1 Decimal Place X.X):**

AC VOLTAGE VALUE		
Phase A	Phase C	V Avg

1. b) **AC CURRENT MEASUREMENTS (Range: 0 to 5 Amps, 3 Decimal Places X.XXX):**

AC CURRENT VALUE			
Phase A	Phase B	Phase C	I Avg

2. **DC VOLTAGE MEASUREMENT/CALCULATION (Range: 0 to 5 Volts, 3 Decimal Places X.XXX):**

TRANSDUCER VDC OUTPUTS		
Output Watt (VDCw)	Output VAR (VDCv)	VDCt

3. **SCADA POWER READINGS (Ask SCADA Tech. to force poll RTU or Gateway to refresh readings):**

MW	MVAR

4. **CALCULATIONS:**

VA Expected (VAcalc)	VA Measured (VAmeas)	% Error

5. a) **PANEL METER READINGS:**

MVA	MVA Multiplier

5. b) **RELAY READINGS:**

3 Phase MW	3 Phase MVAR

Required Equations:

Expected VDC out of transducer: **$VDCt = SQRT((VDCw)^2+(VDCv)^2)$**
Percent Error: **%Error = (VAmeas – VAcalc) / VAcalc * 100**
NOTE: If % Error is 5% or less, then transducer is ok

Expected VA input: **VAcalc = (VDCt * 1500) / 5**
Measured VA input: **VAmeas = 3*Vavg*Iavg**

Signature: _____ Date Completed: _____

SCC Operator and/or SCADA Technician: _____

1. **PLEASE MAKE ANY COMMENTS OR REMARKS ON THE REVERSE OF THIS FORM**
2. **IF TRANSDUCER PASSED RECORD ADDITIONAL WORK FOR OPERATIONS SUPPORT GROUP ON AVANTIS WORK REQUEST. 3. COMPLETED FORM TO BE SCANNED AND FORWARD TO PLANNER**

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF029
Revised 5-30-2006

Padmount Information Form

Company Number: _____ **Serial Number:** _____

Manufacturer: _____ **Manufacture Date:** _____

Old Company No.: _____
(If Applicable)

Rating (kVA): _____ Weight (kg): _____ Oil Capacity (litres): _____

Primary Voltage (kV): _____ Secondary Voltage (kV): _____

Primary Connections: Elbows ☐ Open Lugs ☐

Primary Configuration: Delta ☐ Wye ☐ Single Phase ☐

PCB Level (PPM): _____

Lab Tested ☐ Clor-N-Oil ☐ White Label ☐

Tests:

	Pass	Fail
Dielectric Oil	☐	☐
Ratio	☐	☐
Megger	☐	☐

Notes:

_____

_____

_____

_____

Tested By: _____ **Date:** _____

Keyed in Avantis: ☐

Cape Broyle Substation

MSF030 - CAB
Revised: 2006/12/08

Maintenance Standard Report Form

SWITCHGEAR PARTIAL DISCHARGE TESTING

Substation/Location: **Cape Broyle Substation**	**Manufacturer:** **Temperature: _____°C**	**Work Order Number:** **Weather: Wet or Dry**

Form to be completed for Partial Discharge tests using UltraTEV.
Please indicate (√) LED status color for each cubicle. (G - Green A - Amber R - Red)

Cubicle	Front					Back					Comments
	Ultrasonic		TEV			Ultrasonic		TEV			
	G	R	G	A	R	G	R	G	A	R	
CAB-FLD-B											
CAB-G-B											
CAB-SS											

Type of Maintenance: _____ **Date: _____** **Inspected By: _____**
(YYYY-MM-DD)

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF030 - GFS
Revised: 12/8/2006

Maintenance Standard Report Form

SWITCHGEAR PARTIAL DISCHARGE TESTING

Substation/Location: **Grand Falls Substation**	**Manufacturer:** **Temperature: _____°C**	**Work Order Number:** **Weather: Wet or Dry**

Form to be completed for Partial Discharge tests using UltraTEV.
Please indicate (√) LED status color for each cubicle. (G - Green A - Amber R - Red)

Cubicle	Front					Back					Comments
	Ultrasonic		TEV			Ultrasonic		TEV			
	G	R	G	A	R	G	R	G	A	R	
GFS-132-B											
GFS-T4-B											
GFS-06-B											
GFS-01-B											
GFS-05-B											
GFS-03-B											
GFS-04-B											
GFS-T5-B											
GFS-SS											

Type of Maintenance: _____ **Date: _____** **Inspected By: _____**
(YYYY-MM-DD)

Greenhill Substation

MSF030 - GRH
Revised: 2006/12/08

Maintenance Standard Report Form

SWITCHGEAR PARTIAL DISCHARGE TESTING

Substation/Location: **Greenhill Substation**	**Manufacturer:** **Temperature: _____°C**	**Work Order Number:** **Weather: Wet or Dry**

Form to be completed for Partial Discharge tests using UltraTEV.
Please indicate (√) LED status color for each cubicle. (G - Green A - Amber R - Red)

Cubicle	Front					Back					Comments
	Ultrasonic		TEV			Ultrasonic		TEV			
	G	R	G	A	R	G	R	G	A	R	
GRH-66KV											

Type of Maintenance: _____ **Date: _____** **Inspected By: _____**
(YYYY-MM-DD)

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF030 - HCP
Revised: 2006/12/08

Maintenance Standard Report Form

SWITCHGEAR PARTIAL DISCHARGE TESTING

Substation/Location: **Horse Chops Substation**	**Manufacturer:** **Temperature: _____°C**	**Work Order Number:** **Weather: Wet or Dry**

Form to be completed for Partial Discharge tests using UltraTEV.
Please indicate (√) LED status color for each cubicle. (G - Green A - Amber R - Red)

Cubicle	Front					Back					Comments
	Ultrasonic		TEV			Ultrasonic		TEV			
	G	R	G	A	R	G	R	G	A	R	
HCP-SS-C											
HCP-SS-F											
HCP-SS											
HCP-G-B											
HCP-EX											

Type of Maintenance: _____ **Date: _____** **Inspected By: _____**
(YYYY-MM-DD)

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF030 - HUM
Revised: 2006/12/08

Maintenance Standard Report Form

SWITCHGEAR PARTIAL DISCHARGE TESTING

Substation/Location: **Humber Substation**	**Manufacturer:** **Temperature: _____°C**	**Work Order Number:** **Weather: Wet or Dry**

Form to be completed for Partial Discharge tests using UltraTEV.
Please indicate (√) LED status color for each cubicle. (G - Green A - Amber R - Red)

Cubicle	Front					Back					Comments
	Ultrasonic		TEV			Ultrasonic		TEV			
	G	R	G	A	R	G	R	G	A	R	
HUM-03-B											
HUM-05-B											
HUM-T2-B											
HUM-07-B											
HUM-01-B											
HUM-BTB-1											
HUM-06-B											
HUM-02-B											
HUM-T1-B											
HUM-04-B											

Type of Maintenance: _____ **Date: _____** **Inspected By: _____**
(YYYY-MM-DD)

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF030 - KBR
Revised: 2006/12/08

Maintenance Standard Report Form

SWITCHGEAR PARTIAL DISCHARGE TESTING

Substation/Location: **Kings Bridge Substation**	**Manufacturer:** **Temperature: _____°C**	**Work Order Number:** **Weather: Wet or Dry**

Form to be completed for Partial Discharge tests using UltraTEV.
Please indicate (√) LED status color for each cubicle. (G - Green A - Amber R - Red)

Cubicle	Front					Back					Comments
	Ultrasonic		TEV			Ultrasonic		TEV			
	G	R	G	A	R	G	R	G	A	R	
KBR-AUX											
KBR-01-B											
KBR-02-B											
KBR-08-B											
KBR-04-B											
KBR-T1-B											
KBR-T2-B											
KBR-03-B											
KBR-07-B											
KBR-06-B											
KBR-05-B											
KBR-TB-3-5											
KBR-12-B											
KBR-11-B											
KBR-10-B											
KBR-09-B											
KBR-T3-B											
KBR-TB-3-4											

Type of Maintenance: _____ **Date: _____** **Inspected By: _____**
(YYYY-MM-DD)

Lookout Brook Substation

MSF030 - LBK
Revised: 2006/12/08

Maintenance Standard Report Form

SWITCHGEAR PARTIAL DISCHARGE TESTING

Substation/Location: **Lookout Brook Substation**	**Manufacturer:** **Temperature: _____°C**	**Work Order Number:** **Weather: Wet or Dry**

Form to be completed for Partial Discharge tests using UltraTEV.
Please indicate (√) LED status color for each cubicle. (G - Green A - Amber R - Red)

Cubicle	Front					Back					Comments
	Ultrasonic		TEV			Ultrasonic		TEV			
	G	R	G	A	R	G	R	G	A	R	
LBK-FLD-B											
LBK-G3-B											
LBK-G2-B											

Type of Maintenance: _____ **Date: _____** **Inspected By: _____**
(YYYY-MM-DD)

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF030 - LOK
Revised: 2006/12/08

Maintenance Standard Report Form

SWITCHGEAR PARTIAL DISCHARGE TESTING

Substation/Location: **Lockston Substation**	**Manufacturer:** **Temperature: _____°C**	**Work Order Number:** **Weather: Wet or Dry**

Form to be completed for Partial Discharge tests using UltraTEV.
Please indicate (√) LED status color for each cubicle. (G - Green A - Amber R - Red)

Cubicle	Front					Back					Comments
	Ultrasonic		TEV			Ultrasonic		TEV			
	G	R	G	A	R	G	R	G	A	R	
LOK-SPARE											
LOK-G1-B											
LOK-EX1											
LOK-EX2											
LOK-G2-B											
LOK-01-B											
LOK-T1-B											
LOK-FBL-B											

Type of Maintenance: _____ **Date: _____** **Inspected By: _____**
(YYYY-MM-DD)

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF030

Revised: 2009-06-23

Maintenance Standard Report Form

METERING TANKS

Substation/Location:	Work Order No.:	ID Number:	
Amps:	**Volts:**	**Manufacturer:**	**Serial #:**

Check each item with a ✓ for OK, X to indicate a problem, N/A for not applicable, or N/D for not done. Initial each entry.

#	Task			Status or Results	Initial
1	Maintenance history reviewed				
2	Maintenance standards reviewed				
3	Manufacturer information reviewed				
4	Nameplate info recorded				
5	External visual inspection				
6	Chlor-N-Oil Test				
7	PCB Lab Test Results (If Necessary)				
8	Checked Oil Levels & Leaks				
9	Initial Oil Dielectric _____ kV				
10	Meggered OK				
11	CT Ratio Test				
12	PT Ratio Test				
13	Oil removed for inspection				
14	Tank & components cleaned				
15	Tank vents cleaned				
16	Internal visual inspection				
17	Tank repaired & prepared for painting				
	Bushings & gaskets				
	Cover gasket				
	Secondary terminals gasket				
	Secondary terminations clean, tight and identified				
	Bushing & ground terminals clean and tight				
18	HV Bushings identified				
19	Drain valve present & secure				
20	Finish refilling to correct level				
25	Final Megger Test Results:	°C	kV	MΩ	
	3ϕ - Ground				
	2ϕ-1&3ϕ				
	PT HV-LV				
	CT HV-LV				
	PT LV-Ground				
	CT LV-Ground				
26	Final Oil Dielectric _____ kV				
27	Final CT Ratio				
28	Final PT Ratio				
30	Painting				
31	PCB Sticker Installed for _____ ppm				
32	ID # Installed				
33	Shipping plugs installed and identified prior to shipping				
34	Documentation distributed				

MSF019

CT Ratio Test Results: Test Method_____

	Result	Initial		Result	Initial
H1A/H2A – C1A/C3A			H1A/H2A – C1A/C2A		
H1B/H2B – C1B/C3B			H1B/H2B – C1B/C2B		
H1C/H2C – C1C/C3C			H1C/H2C – C1C/C2C		

PT Ratio Test Results: Test Method_____

	Result	Initial		Result	Initial
H1A/H0 – V1A/V2A			*H1B/H0 – V1B/V2B		
H1C/H0 – V1C/V2C					

*This test applies only if unit is 3 element. PT's will have to be isolated to perform this test if unit is 3 element.

Enter details of faults found and corrective actions:

(attach copies of MSF018 for additional comments as required)

Maint. Type: _____ **Date:** _____ **Maintenanceman:** _____ **Supervisor** _____
(YYYY-MM-DD)

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF030 - MOB
Revised: 2006/12/08

Maintenance Standard Report Form

SWITCHGEAR PARTIAL DISCHARGE TESTING

Substation/Location: **Mobile Substation**	**Manufacturer:** **Temperature: _____°C**	**Work Order Number:** **Weather: Wet or Dry**

Form to be completed for Partial Discharge tests using UltraTEV.
Please indicate (√) LED status color for each cubicle. (G - Green A - Amber R - Red)

Cubicle	Front					Back					Comments
	Ultrasonic		TEV			Ultrasonic		TEV			
	G	R	G	A	R	G	R	G	A	R	
MOB-G-FLD-B											

Type of Maintenance: _____ **Date: _____** **Inspected By: _____**
(YYYY-MM-DD)

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF030 - MUN
Revised: 2006/12/08

Maintenance Standard Report Form

SWITCHGEAR PARTIAL DISCHARGE TESTING

Substation/Location: **Memorial Substation**	**Manufacturer:** **Temperature: _____°C**	**Work Order Number:** **Weather: Wet or Dry**

Form to be completed for Partial Discharge tests using UltraTEV.
Please indicate (√) LED status color for each cubicle. (G - Green A - Amber R - Red)

Cubicle	Front					Back					Comments
	Ultrasonic		TEV			Ultrasonic		TEV			
	G	R	G	A	R	G	R	G	A	R	
MUN-T2-B											
MUN-10											
MUN-09-B											
MUN-08-B											
MUN-07											
MUN-PT											
MUN-TIE											
MUN-06-B											
MUN-05-B											
MUN-04-B											
MUN-03-B											
MUN-02-B											
MUN-01-B											
MUN-SS											
MUN-T1-B											

Type of Maintenance: _____ **Date: _____** **Inspected By: _____**
(YYYY-MM-DD)

Port Aux Basques Substation

MSF030 - PAB
Revised: 2006/12/08

Maintenance Standard Report Form

SWITCHGEAR PARTIAL DISCHARGE TESTING

Substation/Location: **Port Aux Basques Substation**	**Manufacturer:** **Temperature: _____°C**	**Work Order Number:** **Weather: Wet or Dry**

Form to be completed for Partial Discharge tests using UltraTEV.
Please indicate (√) LED status color for each cubicle. (G - Green A - Amber R - Red)

Cubicle	Front					Back					Comments
	Ultrasonic		TEV			Ultrasonic		TEV			
	G	R	G	A	R	G	R	G	A	R	
PAB-G8-B											
PAB-G4-B											
PAB-G1-B											
PAB-G2-B											
PAB-T2-B											
PAB-G5-B											
PAB-G3-B											
PAB-T1-B											
PAB-G10-B											

Type of Maintenance: _____ **Date: _____** **Inspected By: _____**
(YYYY-MM-DD)

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF030 - PBK
Revised: 2006/12/08

Maintenance Standard Report Form

SWITCHGEAR PARTIAL DISCHARGE TESTING

Substation/Location: **Pierres Brook Substation**	**Manufacturer:** **Temperature: _____°C**	**Work Order Number:** **Weather: Wet or Dry**

Form to be completed for Partial Discharge tests using UltraTEV.
Please indicate (√) LED status color for each cubicle. (G - Green A - Amber R - Red)

Cubicle	Front					Back					Comments
	Ultrasonic		TEV			Ultrasonic		TEV			
	G	R	G	A	R	G	R	G	A	R	
PBK-G-FLD-B											
PBK-SS											
PBK-G-B											

Type of Maintenance: _____ **Date: _____** **Inspected By: _____**
(YYYY-MM-DD)

Pepperrell Substation

MSF030 - PEP
Revised: 2006/12/08

Maintenance Standard Report Form

SWITCHGEAR PARTIAL DISCHARGE TESTING

Substation/Location: **Pepperrell Substation**	**Manufacturer:** **Temperature: _____°C**	**Work Order Number:** **Weather: Wet or Dry**

Form to be completed for Partial Discharge tests using UltraTEV.
Please indicate (√) LED status color for each cubicle. (G - Green A - Amber R - Red)

Cubicle	Front					Back					Comments
	Ultrasonic		TEV			Ultrasonic		TEV			
	G	R	G	A	R	G	R	G	A	R	
PEP-01-B											
PEP-02-B											
PEP-03-B											
PEP-04-B											
PEP-T1-B											
PEP-TB-1-3											
PEP-TB-1-2											
PEP-S/S											

Type of Maintenance: _____ **Date: _____** **Inspected By: _____**
(YYYY-MM-DD)

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF030 - PHR
Revised: 2006/12/08

Maintenance Standard Report Form

SWITCHGEAR PARTIAL DISCHARGE TESTING

Substation/Location: **Petty Harbour Substation**	**Manufacturer:** **Temperature: _____°C**	**Work Order Number:** **Weather: Wet or Dry**

Form to be completed for Partial Discharge tests using UltraTEV.
Please indicate (√) LED status color for each cubicle. (G - Green A - Amber R - Red)

Cubicle	Front					Back					Comments
	Ultrasonic		TEV			Ultrasonic		TEV			
	G	R	G	A	R	G	R	G	A	R	
PHR-T1-B											

Type of Maintenance: _____ **Date: _____** **Inspected By: _____**
(YYYY-MM-DD)

Pitman's Pond Substation

MSF030 - PIT
Revised: 2006/12/08

Maintenance Standard Report Form

SWITCHGEAR PARTIAL DISCHARGE TESTING

Substation/Location: **Pitman's Pond Substation**	**Manufacturer:** **Temperature: _____°C**	**Work Order Number:** **Weather: Wet or Dry**

Form to be completed for Partial Discharge tests using UltraTEV.
Please indicate (√) LED status color for each cubicle. (G - Green A - Amber R - Red)

Cubicle	Front					Back					Comments
	Ultrasonic		TEV			Ultrasonic		TEV			
	G	R	G	A	R	G	R	G	A	R	
PIT-LA											
PIT-G-B											
PIT-AUX-SS											
PIT-R&M											

Type of Maintenance: _____ **Date: _____** **Inspected By: _____**
(YYYY-MM-DD)

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF030 - RBK
Revised: 2006/12/08

Maintenance Standard Report Form

SWITCHGEAR PARTIAL DISCHARGE TESTING

Substation/Location: **Rattling Brook Substation**	**Manufacturer:** **Temperature: _____°C**	**Work Order Number:** **Weather: Wet or Dry**

Form to be completed for Partial Discharge tests using UltraTEV.
Please indicate (√) LED status color for each cubicle. (G - Green A - Amber R - Red)

Cubicle	Front					Back					Comments
	Ultrasonic		TEV			Ultrasonic		TEV			
	G	R	G	A	R	G	R	G	A	R	
RBK-SPARE											
RBK-G1-B											
RBK-G1-FLD-B											
RBK-G2-B											
RBK-G2-FLD-B											
RBK-T1-B2											
RBK-T1-B1											
RBK-AUX-SS											
RBK-SS											

Type of Maintenance: _____ **Date: _____** **Inspected By: _____**
(YYYY-MM-DD)

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF030 - RRD
Revised: 2006/12/08

Maintenance Standard Report Form

SWITCHGEAR PARTIAL DISCHARGE TESTING

Substation/Location: **Ridge Road Substation**	**Manufacturer:** **Temperature: _____°C**	**Work Order Number:** **Weather: Wet or Dry**

Form to be completed for Partial Discharge tests using UltraTEV.
Please indicate (√) LED status color for each cubicle. (G - Green A - Amber R - Red)

Cubicle	Front					Back					Comments
	Ultrasonic		TEV			Ultrasonic		TEV			
	G	R	G	A	R	G	R	G	A	R	
RRD-SS											
RRD-06-B											
RRD-01-B											
RRD-T1-B											
RRD-TB-2-3											
RRD-05-B											
RRD-04-B											
RRD-T2-B											
RRD-03-B											
RRD-02-B											
RRD-TIE-2-3-D											
RRD-T3-B											
RRD-07-B											
RRD-08-B											
RRD-09-B											
RRD-10-B											
RRD-TB-3-4											

Type of Maintenance: _____ **Date: _____** **Inspected By: _____**
(YYYY-MM-DD)

NEWFOUNDLAND POWER
A FORTIS COMPANY

MSF030 - SBK
Revised: 2006/12/08

Maintenance Standard Report Form

SWITCHGEAR PARTIAL DISCHARGE TESTING

Substation/Location: **Sandy Brook Substation**	**Manufacturer:** **Temperature: _____°C**	**Work Order Number:** **Weather: Wet or Dry**

Form to be completed for Partial Discharge tests using UltraTEV.
Please indicate (√) LED status color for each cubicle. (G - Green A - Amber R - Red)

Cubicle	Front					Back					Comments
	Ultrasonic		TEV			Ultrasonic		TEV			
	G	R	G	A	R	G	R	G	A	R	
SBK-SS											
SBK-T1-B											
SBK-EX											

Type of Maintenance: _____ **Date: _____** **Inspected By: _____**
(YYYY-MM-DD)

Seal Cove Substation

MSF030 - SCV
Revised: 2006/12/08

Maintenance Standard Report Form

SWITCHGEAR PARTIAL DISCHARGE TESTING

Substation/Location: **Seal Cove Substation**	**Manufacturer:** **Temperature: _____°C**	**Work Order Number:** **Weather: Wet or Dry**

Form to be completed for Partial Discharge tests using UltraTEV.
Please indicate (√) LED status color for each cubicle. (G - Green A - Amber R - Red)

Cubicle	Front					Back					Comments
	Ultrasonic		TEV			Ultrasonic		TEV			
	G	R	G	A	R	G	R	G	A	R	
SCV-EX1 & AUX											
SCV-G1-B											
SCV-EX2 & AUX											
SCV-G2-B											
SCV-T1-B											

Type of Maintenance: _____ **Date: _____** **Inspected By: _____**

Seal Cove Substation

(YYYY-MM-DD)

St Johns Main Substation

MSF030 - SJM
Revised: 2006/12/08

Maintenance Standard Report Form

SWITCHGEAR PARTIAL DISCHARGE TESTING

Substation/Location: **St Johns Main Substation**	**Manufacturer:** **Temperature: _____°C**	**Work Order Number:** **Weather: Wet or Dry**

Form to be completed for Partial Discharge tests using UltraTEV.
Please indicate (√) LED status color for each cubicle. (G - Green A - Amber R - Red)

Cubicle	Front					Back					Comments
	Ultrasonic		TEV			Ultrasonic		TEV			
	G	R	G	A	R	G	R	G	A	R	
SJM-02-B											
SJM-03-B											
SJM-04-B											
SJM-06-B											
SJM-07-B											
SJM-08-B											
SJM-09-B											
SJM-11-B											
SJM-T1-B											
SJM-T2-B											
SJM-AUX											
SJM-S/S											
SJM-TB-1-2											
SJM-TB-1-3											
SJM-TIE-1-3-D											
SJM-10-B											
SJM-13-B											
SJM-14-B											
SJM-15-B											

Type of Maintenance: _____ **Date: _____** **Inspected By: _____**
(YYYY-MM-DD)

Stamps Lane Substation

MSF030 - SLA
Revised: 2006/12/08

Maintenance Standard Report Form

SWITCHGEAR PARTIAL DISCHARGE TESTING

Substation/Location: **Stamps Lane Substation**	**Manufacturer:** **Temperature: _____°C**	**Work Order Number:** **Weather: Wet or Dry**

Form to be completed for Partial Discharge tests using UltraTEV.
Please indicate (√) LED status color for each cubicle. (G - Green A - Amber R - Red)

Cubicle	Front					Back					Comments
	Ultrasonic		TEV			Ultrasonic		TEV			
	G	R	G	A	R	G	R	G	A	R	
SLA-07-B											
SLA-SPARE											
SLA-T2-B											
SLA-05-B											
SLA-03-B											
SLA-04-B											
SLA-T1-B											
SLA-02-B											
SLA-01-B											
SLA-06-B											
SLA-AUX METERING											
SLA-SPARE											

Type of Maintenance: _____ **Date: _____** **Inspected By: _____**
(YYYY-MM-DD)

Walbournes Substation

MSF030 - WAL
Revised: 2006/12/08

Maintenance Standard Report Form

SWITCHGEAR PARTIAL DISCHARGE TESTING

Substation/Location: **Walbournes Substation**	**Manufacturer:** **Temperature: _____°C**	**Work Order Number:** **Weather: Wet or Dry**

Form to be completed for Partial Discharge tests using UltraTEV.
Please indicate (√) LED status color for each cubicle. (G - Green A - Amber R - Red)

Cubicle	Front					Back					Comments
	Ultrasonic		TEV			Ultrasonic		TEV			
	G	R	G	A	R	G	R	G	A	R	
WAL-SS											
WAL-05-B											
WAL-01-B											
WAL-INCOMING1											
WAL-02-B											
WAL-BTB-1 & 2											
WAL-03-B											
WAL-INCOMING2											
WAL-04-B											
WAL-06-B											
WAL-07-B											
WAL-TIE-2-3											

Walbournes Substation

Type of Maintenance: _____ **Date: _____** **Inspected By: _____**
(YYYY-MM-DD)

NEWFOUNDLAND POWER
A FORTIS COMPANY

Revised: 2010-10-27

MSF031

Page 1 of 2

Maintenance Standard Report Form

TRANSFORMER PROTECTION DEVICES

Substation/Location:	**Work Order Number:**	**Transformer ID Number:**
Date:	**Work Performed by:**	**Temperature: _____ºC** **Weather: Wet: ☐ Dry: ☐**

Power Transformer:

Conduits Inspected (Y/N):_____ ***Water or Corrosion(Y/N):_____*** ***Remarks:*** (Use Reverse)

Voltage Measurement Across: (Ensure meter set to DC volts)
Coil of Transformer Gas Trip Aux. Relay _____ mV
Trip Coil of Transformer Low Voltage Breaker _____ mV

Megger Test For Gas Detector Relay: **(250V for 5 min.)**

Building to Device	Cabinet to Device (If Applicable)	Building to Cabinet (If Applicable)
Lead #1 to GND _____ Ω	Lead #1 to GND _____ Ω	Lead #1 to GND _____ Ω
Lead #2 to GND _____ Ω	Lead #2 to GND _____ Ω	Lead #2 to GND _____ Ω
Across Contacts _____ Ω	Across Contacts _____ Ω	

Megger Test for Winding Temp. Gauge: **(250V for 1 min.)**

Building to Device	Cabinet to Device (If Applicable)	Building to Cabinet (If Applicable)
Lead #1 to GND _____ Ω	Lead #1 to GND _____ Ω	Lead #1 to GND _____ Ω
Lead #2 to GND _____ Ω	Lead #2 to GND _____ Ω	Lead #2 to GND _____ Ω
Across Contacts _____ Ω	Across Contacts _____ Ω	

Megger Test for Oil Temp. Gauge: **(250V for 1 min.)**

Building to Device	Cabinet to Device (If Applicable)	Building to Cabinet (If Applicable)
Lead #1 to GND _____ Ω	Lead #1 to GND _____ Ω	Lead #1 to GND _____ Ω
Lead #2 to GND _____ Ω	Lead #2 to GND _____ Ω	Lead #2 to GND _____ Ω
Across Contacts _____ Ω	Across Contacts _____ Ω	

Megger Test for Pressure Relief Device: **(250V for 1 min.)**

Building to Device	Cabinet to Device (If Applicable)	Building to Cabinet (If Applicable)
Lead #1 to GND _____ Ω	Lead #1 to GND _____ Ω	Lead #1 to GND _____ Ω
Lead #2 to GND _____ Ω	Lead #2 to GND _____ Ω	Lead #2 to GND _____ Ω
Across Contacts _____ Ω	Across Contacts _____ Ω	

Tap Changer (If Applicable):

Megger Test For Gas Detector Relay: **(250V for 5 min.)**

Building to Device	Cabinet to Device (If Applicable)	Building to Cabinet (If Applicable)
Lead #1 to GND _____ Ω	Lead #1 to GND _____ Ω	Lead #1 to GND _____ Ω
Lead #2 to GND _____ Ω	Lead #2 to GND _____ Ω	Lead #2 to GND _____ Ω
Across Contacts _____ Ω	Across Contacts _____ Ω	

Megger Test for Pressure Relief Device: **(250V for 1 min.)**

Building to Device	Cabinet to Device (If Applicable)	Building to Cabinet (If Applicable)
Lead #1 to GND _____ Ω	Lead #1 to GND _____ Ω	Lead #1 to GND _____ Ω
Lead #2 to GND _____ Ω	Lead #2 to GND _____ Ω	Lead #2 to GND _____ Ω
Across Contacts _____ Ω	Across Contacts _____ Ω	

All Wiring Returned to Original Termination Points (Y/N): _____

NEWFOUNDLAND POWER
A FORTIS COMPANY

Revised: 2010-10-27

MSF031

Maintenance Standard Report Form

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TRANSFORMER PROTECTION DEVICES

Transformer ID Number: _____

Remarks:

RELAY TEST FORM

Company ID #	_____	I nom	_____	Device/Range	_____
Manufacturer	_____	V rating	_____	Device/Range	_____
Model	_____	Serial #	_____	Device/Range	_____
Style	_____				

Equipment	Contacts	Targets	Magnets	Settings	Taps	Connections	Calibration	Function Testing	Inputs	Checked By	Date	Comments

Codes for Contacts:
BC - Burnished Contacts
CP - Contacts Pitted
CC - Contacts Corroded
CA - Contacts Adjusted
CR - Contacts Replaced
RO - Removed Oxide

Codes for Targets:
RT - Repaired Targets

Codes for Damping Magnets:
CM - Cleaned foreign Material

Codes for Connections:
TC - Tightened Connection

Codes for Function Testing:
ST - Static Test only

Codes for Calibration:
CI - Calibrate for Timing
PU - Calibrate for Pick Up
PA - Calibrate for Phase Angle
CV - Calibrate for Voltage

Codes for Inputs:
VA - Voltage Input Incorrect
IA - Current Input Incorrect
FA - Frequency Input Incorrect

Date: _____
Completed by: _____