LOW VOLTAGE CABLE INSULATION TEST

CUSTOMER SAMPLE FORMS COMPANY
PAGE
ADDRESS
JOB # FORMS-ALL
USER SAMPLE FORMS COMPANY
OWNER REPRESENTATIVE
TELEPHONE
DATE 5/7/2008 TEMPERATURE °F HUMIDITY % EQPT. LOCATION
SUBSTATION CABLES
POSITION GENERAL

MANUFACTURER
DATE MANUFACTURED
INSULATION TYPE 1: ☐ TW ☐ THW ☐ THHW ☐ XHHW ☐ THHN
EQUIPMENT TEMPERATURE °C
INSULATION TYPE 2: ☐ RH ☐ RHW
OTHER

TEST VOLTAGE kVDC
TEMPERATURE CORRECTION FACTOR TO 20°C, TCF INS. TYPE 1 INS. TYPE 2

IDENTIFICATION	NO. & COND. SIZE	FROM		PHASE									
		TO		A - GND	B - GND	C - GND	N - GND	A - B	B - C	C - A	A - N	B - N	C - N
			RDG										
			20°C										
			RDG										
			20°C										
			RDG										
			20°C										
			RDG										
			20°C										
			RDG										
			20°C										
			RDG										
			20°C										
			RDG										
			20°C										
			RDG										
			20°C										
			RDG										
			20°C										
			RDG										
			20°C										

ALL INSULATION VALUES ARE IN MEGOHMS

COMMENTS:

DEFICIENCIES:

EQPT. INVENTORY NO.
TESTED BY:

CABLE POLARIZATION INDEX (PI)TEST

CUSTOMER SAMPLE FORMS COMPANY PAGE

ADDRESS JOB # FORMS-ALL

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OWNER REPRESENTATIVE TELEPHONE

DATE 5/7/2008 TEMPERATURE °F HUMIDITY % EQPT. LOCATION

SUBSTATION CABLES POSITION GENERAL

CABLE SOURCE CABLE TERMINATION POINT

OPERATING VOLTAGE kV INSTALLED IN LENGTH FT

MANUFACTURER INSULATION TYPE INSULATION THICKNESS MILS

SIZE KCMIL NO. OF CONDUCTORS CONDUCTOR MATERIAL

RATED VOLTAGE kV ◉ GROUNDED ○ UNGROUNDED ◉ BELTED ○ SHIELDED AGE

PHASE IDENTIFICATION: PHASE A PHASE B PHASE C

CONNECTED EQUIPMENT CABLE TEMPERATURE °C

TEST VOLTAGE kVDC TEST VOLTAGE MULTIPLIER, K1 1.00 K2 = (K1)(TCF)

TEMPERATURE CORRECTION FACTOR TO 20°C, TCF TEST CONDUCTED ◉ BEFORE ○ AFTER HIGH POTENTIAL TEST

K = INSULATION RESISTANCE CONSTANT IN MEGOHMS 20,000 d = INSIDE DIAMETER OF INSULATION

D = OUTSIDE DIAMETER OF INSULATION $R = [K \text{ Log}_{10} (\frac{D}{d})] (\frac{1000}{L \text{ (ft)}})$

MINUTES	PHASE A MEGOHMS				PHASE B MEGOHMS				PHASE C MEGOHMS			
	RDG	RANGE MULT	K2	20°C	RDG	RANGE MULT	K2	20°C	RDG	RANGE MULT	K2	20°C
0.25												
0.50												
0.75												
1.00												
1.25												
1.50												
1.75												
2.00												
2.50												
3.00												
4.00												
5.00												
6.00												
7.00												
8.00												
9.00												
10.00												
P.I. NO.*												

* POLARIZATION INDEX = 10 MINUTE READING / 1 MINUTE READING

MINIMUM DESIGN INSULATION RESISTANCE, R = MEGOHMS

COMMENTS:

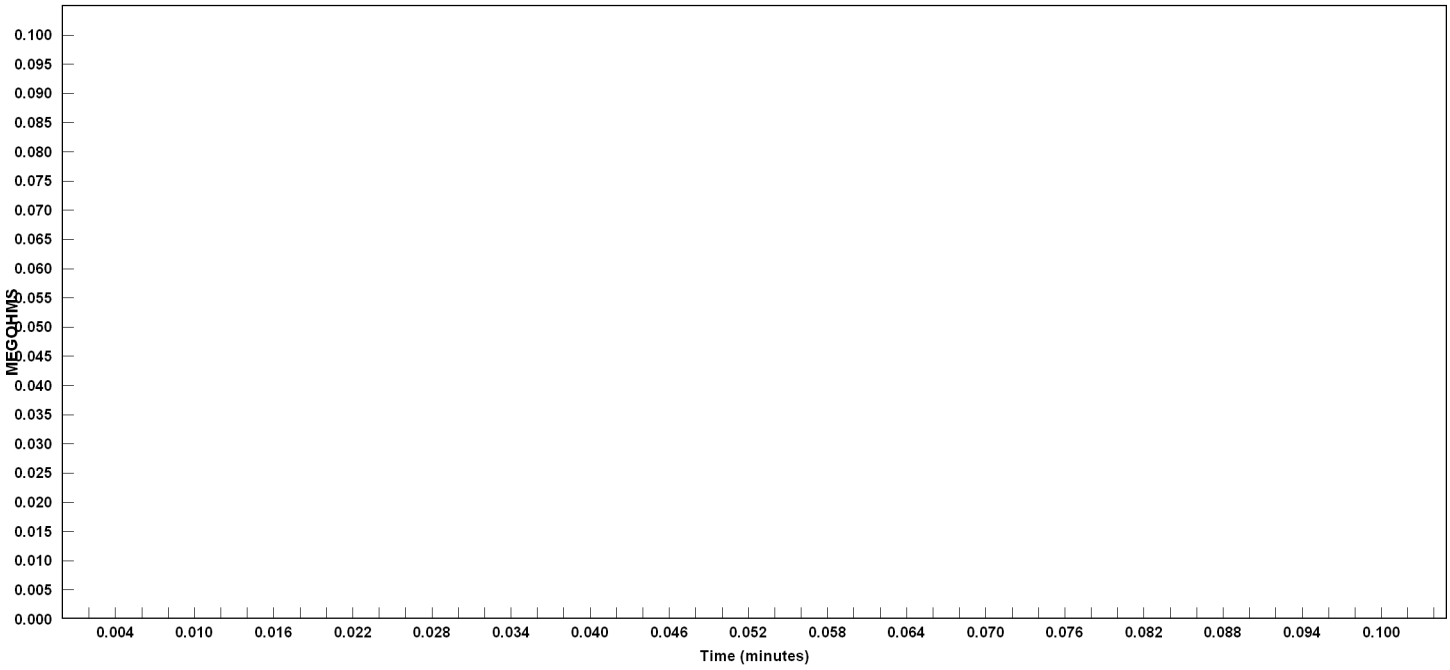
DEFICIENCIES:

EQPT. INVENTORY NO. TESTED BY:

CABLE POLARIZATION INDEX (PI)TEST

PAGE _____

POLARIZATION CURVE



Phase A: Red Square

Phase B: Blue Circle

Phase C: Green Triangle

VLF CABLE TEST

CUSTOMER SAMPLE FORMS COMPANY PAGE

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OWNER REPRESENTATIVE TELEPHONE

DATE 5/7/2008 TEMPERATURE °F HUMIDITY % EQPT. LOCATION

SUBSTATION CABLES POSITION GENERAL

OPERATING VOLTAGE kV INSTALLED IN ☐ CONDUIT ☐ TRAY LENGTH FT CABLE TEMPERATURE °C

MANUFACTURER INSULATION TYPE INSULATION THICKNESS MILS

SIZE MCM NO. OF CONDUCTORS CONDUCTOR MATERIAL ☐ CU ☐ AL

RATED VOLTAGE kV ☐ GROUNDED ☐ UNGROUNDED ☐ RESISTANCE GROUND ☐ SHIELDED ☐ UNSHIELDED ☐ CONCENTRIC NEUTRAL ☐ BELTED (PILC) AGE

CABLE SOURCE CABLE TERMINATION POINT

CONNECTED EQUIPMENT ISOLATE CABLE ☐ Y ☐ N ☐ ARRESTERS ☐ POT FUSES

NUMBER OF MANHOLES NUMBER OF TERMINATIONS NUMBER OF SPLICES

TERMINATION / SPLICES ☐ HAND TAPED ☐ 3-M TERM. KIT ☐ RAYCHEM KIT ☐ OTHER

RMS TEST VOLTAGE kV BREAKDOWN ☐ YES ☐ NO PLANNED TEST DURATION ☐ 1 MIN ☐ 15 MIN ☐ 30 MIN ☐ 60 MIN START TIME

TEST FREQUENCY Hz TIME TO FAILURE MIN

SHIELD RESISTANCE A-B OHMS B-C OHMS C-A OHMS

WAVE SHAPE ☐ SINE ☐ COSINE / RECTANGULAR ☐ OTHER END TIME

TEST TYPE ☐ WITHSTAND ☐ PASS / FAIL ☐ DIAGNOSTIC SEE COMMENT BELOW

☐ PHASE A OR ☐ PHASE A, B, C ☐ PHASE B ☐ PHASE C

TESTS (MINUTES)	MEGOHMS	NANO FARADS	MICRO AMPS	MEGOHMS	NANO FARADS	MICRO AMPS	MEGOHMS	NANO FARADS	MICRO AMPS
1									
5									
10									
15									
20									
25									
30									
45									
60									

COMMENTS:

DEFICIENCIES:

EQPT. INVENTORY NO. TESTED BY:

TAN DELTA CABLE TEST

CUSTOMER SAMPLE FORMS COMPANY PAGE

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DATE 5/7/2008 TEMPERATURE °F HUMIDITY % EQPT. LOCATION

SUBSTATION CABLES POSITION GENERAL

OPERATING VOLTAGE kV INSTALLED IN ☐ CONDUIT ☐ TRAY LENGTH FT CABLE TEMPERATURE °C

MANUFACTURER INSULATION TYPE INSULATION THICKNESS MILS

SIZE MCM NO. OF CONDUCTORS CONDUCTOR MATERIAL ☐ CU ☐ AL

RATED VOLTAGE kV ☐ GROUNDED ☐ UNGROUNDED ☐ RESISTANCE GROUND ☐ SHIELDED ☐ UNSHIELDED ☐ CONCENTRIC NEUTRAL ☐ BELTED (PILC) AGE

CABLE SOURCE CABLE TERMINATION POINT

CONNECTED EQUIPMENT ISOLATE CABLE ☐ Y ☐ N ☐ ARRESTERS ☐ POT FUSES

NUMBER OF MANHOLES NUMBER OF TERMINATIONS NUMBER OF SPLICES

TERMINATION / SPLICES ☐ HAND TAPED ☐ 3-M TERM. KIT ☐ RAYCHEM KIT ☐ OTHER

SYSTEM VOLTAGE BREAKDOWN ☐ YES ☐ NO PLANNED TEST DURATION PER STEP START TIME

TEST FREQUENCY TIME TO FAILURE MIN ☐ 1 MIN ☐ 5 MIN ☐ 10 MIN

END TIME

WAVE SHAPE ☐ SINE ☐ COSINE / RECTANGULAR ☐ OTHER

TEST TYPE ☐ WITHSTAND ☐ PASS / FAIL ☐ DIAGNOSTIC

☐ PHASE A OR ☐ PHASE A, B, C ☐ PHASE B ☐ PHASE C

TEST VOLTAGE kV ☐ 5kV CABLE	☐ 15 kV CABLE	TAN DELTA	NANO FARADS	MICRO AMPS	TAN DELTA	NANO FARADS	MICRO AMPS	TAN DELTA	NANO FARADS	MICRO AMPS
1.0	2									
1.5	3.5									
2.0	5									
2.4	7									

COMMENTS:

DEFICIENCIES:

EQPT. INVENTORY NO. TESTED BY:

CABLE HIGH POTENTIAL TEST

CUSTOMER SAMPLE FORMS COMPANY PAGE

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OWNER REPRESENTATIVE TELEPHONE

DATE 5/7/2008 TEMPERATURE °F HUMIDITY % EQPT. LOCATION

SUBSTATION CABLES POSITION GENERAL

CABLE SOURCE CABLE TERMINATION POINT

OPERATING VOLTAGE kV INSTALLED IN LENGTH FT

MANUFACTURER INSULATION TYPE INSULATION THICKNESS MILS

SIZE KCMIL NO. OF CONDUCTORS CONDUCTOR MATERIAL

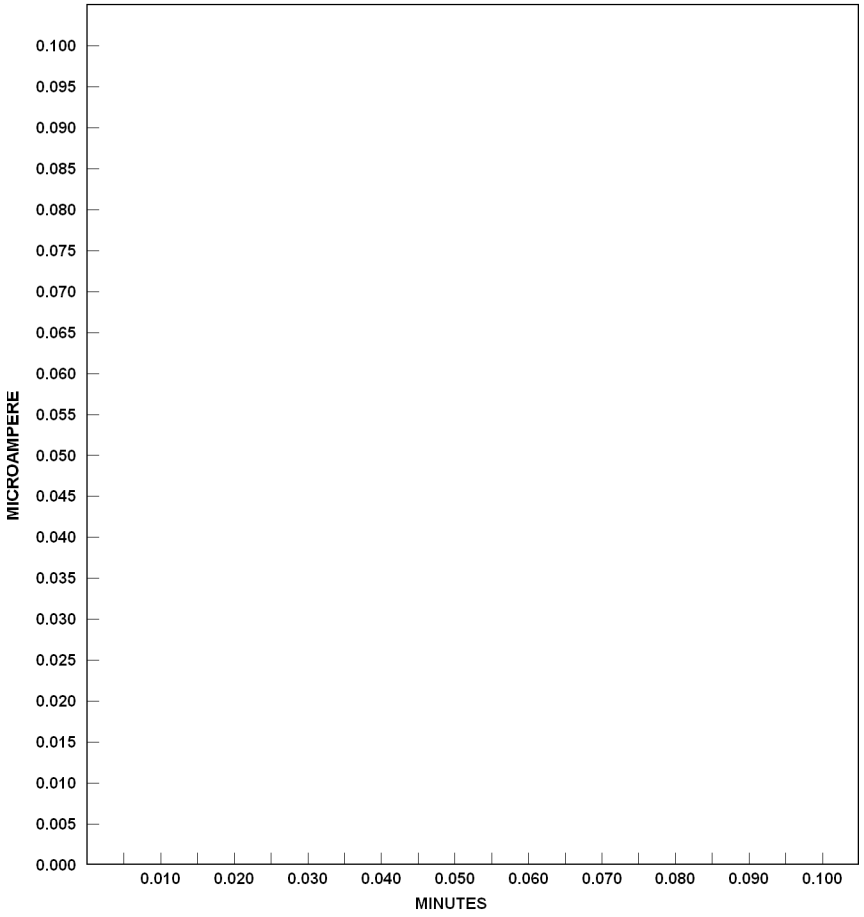
RATED VOLTAGE kV ◉ GROUNDED ○ UNGROUNDED ◉ BELTED ○ SHIELDED AGE

CONNECTED EQUIPMENT

TIME MINUTES	TEST VOLTAGE	PHASE A µA	PHASE B µA	PHASE C µA
0.25				
0.50				
0.75				
1.00				
1.25				
1.50				
1.75				
2.00				
3.00				
4.00				
5.00				
6.00				
7.00				
8.00				
9.00				
10.00				
11.00				
12.00				
13.00				
14.00				
15.00				
16.00				
17.00				
18.00				
19.00				
20.00				
21.00				
22.00				
23.00				
24.00				
25.00				
DECAY TO 5kV; SECS				
SHIELD RESIST.- OHMS				

PHASE IDENTIFICATION

PHASE A: BROWN PHASE B: ORANGE PHASE C: YELLOW



COMMENTS:

DEFICIENCIES:

EQPT. INVENTORY NO. TESTED BY:

CABLE HIGH POTENTIAL TEST

CUSTOMER SAMPLE FORMS COMPANY PAGE

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OWNER REPRESENTATIVE TELEPHONE

DATE 5/7/2008 TEMPERATURE °F HUMIDITY % EQPT. LOCATION

SUBSTATION CABLES POSITION GENERAL

CABLE SOURCE CABLE TERMINATION POINT

OPERATING VOLTAGE kV INSTALLED IN LENGTH FT

MANUFACTURER INSULATION TYPE INSULATION THICKNESS MILS

SIZE KCMIL NO. OF CONDUCTORS CONDUCTOR MATERIAL

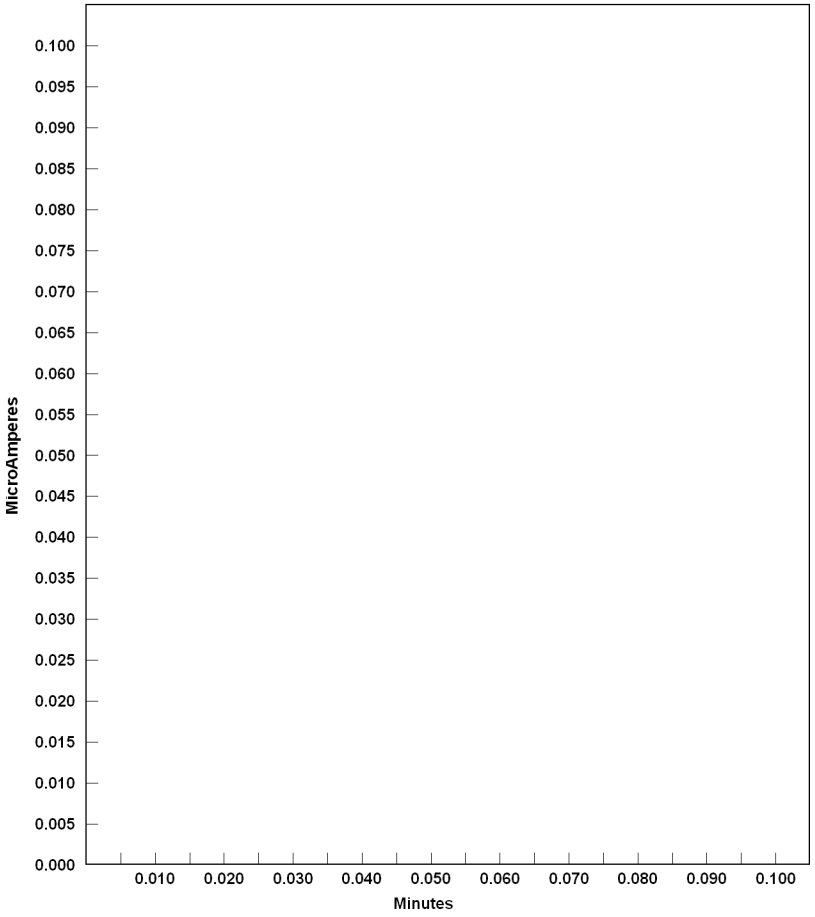
RATED VOLTAGE kV ◉ GROUNDED ○ UNGROUNDED ◉ BELTED ○ SHIELDED AGE

CONNECTED EQUIPMENT

TEST VOLTAGE	TIME (min.)	PHASE A µA	TIME (min.)	PHASE B µA	TIME (min.)	PHASE C µA
4						
8						
12						
16						
20						
24						
26						
26						
26						
26						
26						
26						
26						
26						
0						
DECAY TO 5kV; SECS				0.00	0.00	0.00
TOTAL TIME for the TEST						

PHASE IDENTIFICATION

PHASE A: RED PHASE B: WHITE PHASE C: BLUE



COMMENTS:

DEFICIENCIES:

EQPT. INVENTORY NO. TESTED BY:

CABLE HIGH POTENTIAL TEST AND INSULATION RESISTANCE

Your Company Logo

CUSTOMER SAMPLE FORMS COMPANY PAGE

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OWNER REPRESENTATIVE TELEPHONE

DATE 5/7/2008 TEMPERATURE °F HUMIDITY % EQPT. LOCATION

SUBSTATION CABLES POSITION GENERAL

CABLE SOURCE CABLE TERMINATION POINT

OPERATING VOLTAGE kV INSTALLED IN LENGTH FT

MANUFACTURER INSULATION TYPE INSULATION THICKNESS MILS

SIZE KCMIL NO. OF CONDUCTORS CONDUCTOR MATERIAL

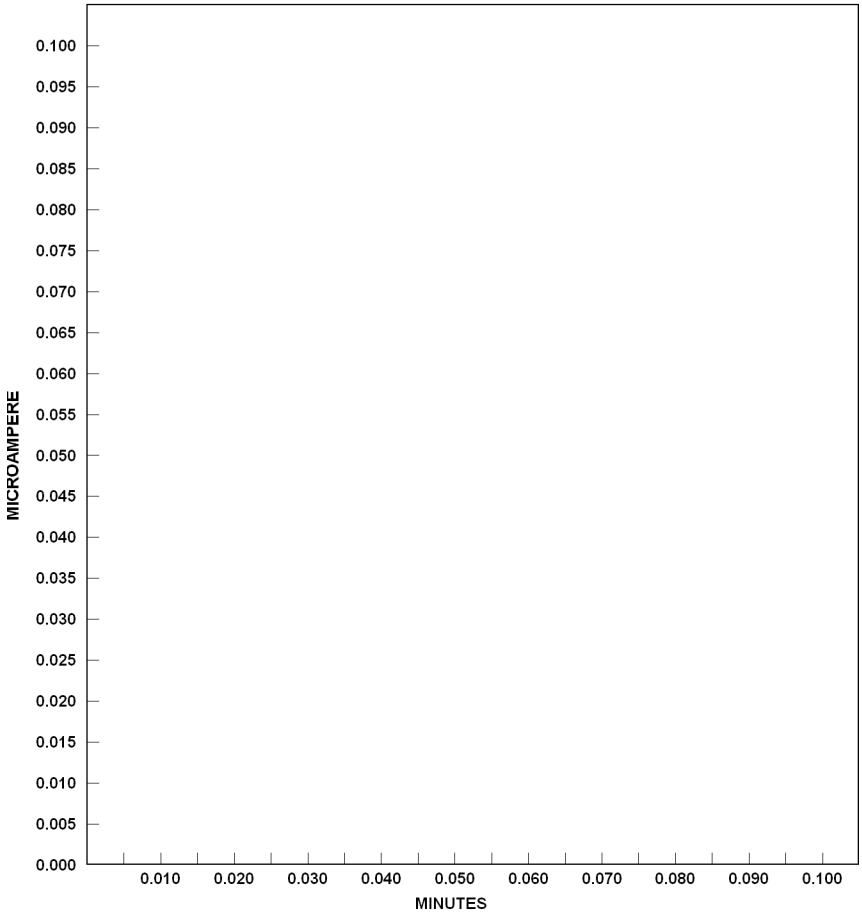
RATED VOLTAGE kV ◉ GROUNDED ○ UNGROUNDED ◉ BELTED ○ SHIELDED AGE

CONNECTED EQUIPMENT

TIME MINUTES	TEST kV	PHASE A µA	PHASE B µA	PHASE C µA
0.25				
0.50				
0.75				
1.00				
1.25				
1.50				
1.75				
2.00				
3.00				
4.00				
5.00				
6.00				
7.00				
8.00				
9.00				
10.00				
11.00				
12.00				
13.00				
14.00				
15.00				
16.00				
17.00				
18.00				
19.00				
20.00				
21.00				
22.00				
23.00				
24.00				
25.00				
DECAY TO 5kV; SECS				
SHIELD RESIST.- OHMS				
INSULATION RESISTANCE		GIGA-OHMS @ 0.000	kV 0.000	0.000

PHASE IDENTIFICATION

PHASE A: BROWN PHASE B: ORANGE PHASE C: YELLOW



COMMENTS:

DEFICIENCIES:

EQPT. INVENTORY NO. TESTED BY:

TIME DOMAIN REFLECTOMETER

CUSTOMER SAMPLE FORMS COMPANY PAGE

ADDRESS JOB # FORMS-ALL

USER SAMPLE FORMS COMPANY

OWNER REPRESENTATIVE TELEPHONE

DATE 5/7/2008 TEMPERATURE °F HUMIDITY % EQPT. LOCATION

SUBSTATION CABLES POSITION GENERAL

Select the Memory Locations to Download

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12 ☐ 13 ☐ 14 ☐ 15 ☐

Time

MEMORY LOCATION	WAVE TYPE	METER RANGE	PULSE WIDTH (ns)	GAIN (dB)	VELOCITY FACTOR	TRACE STYLE	DATE

COMMENTS:

DEFICIENCIES:

EQPT. INVENTORY NO. TESTED BY:

BUS DUCT INSULATION TEST

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SUBSTATION CABLES POSITION GENERAL

MANUFACTURER TYPE VOLTAGE CLASS
VERTICAL RATING A HORIZONTAL RATING A NEUTRAL RATING A GROUND RATING A
CONFIGURATION 3 WIRE ◯ 4 WIRE ◯ 5 WIRE ◯ CONDUCTOR COPPER ◯ ALUMINUM ◯ DATE MANUFACTURED
CATALOG NO. SERIAL NO. CURRENT WITHSTAND RATING kA

TEST VOLTAGE kVDC EQUIPMENT TEMPERATURE °C TEMPERATURE CORRECTION FACTOR TO 20°C, TCF

IDENTIFICATION	FROM	PHASE									
	TO	A - GND	B - GND	C - GND	N - GND	A - B	A - C	B - C	A - N	B - N	C - N

ACTUAL READING / SHADING INDICATES TEMPERATURE CORRECTED VALUES ALL INSULATION VALUES ARE IN MEGOHMS

COMMENTS:

DEFICIENCIES:

EQPT. INVENTORY NO. TESTED BY:

SWITCHBOARD BUS CONNECTION TEST

CUSTOMER SAMPLE FORMS COMPANY PAGE

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USER SAMPLE FORMS COMPANY

OWNER REPRESENTATIVE TELEPHONE

DATE 5/7/2008 TEMPERATURE °F HUMIDITY % EQPT. LOCATION

SUBSTATION CABLES POSITION GENERAL

NAMEPLATE DATA

MANUFACTURER SERIAL NO. TYPE

CATALOG NO. DRAWING NO. VOLTAGE CLASS

PHASE AMPACITY A WITHSTAND RATING kA CONDUCTOR ○ CU ○ AL

IDENTIFICATION	FROM / TO	RESISTANCE IN MICRO-OHMS				
		phA	phB	phC	phN	G

COMMENTS:

DEFICIENCIES:

EQPT. INVENTORY NO. TESTED BY: