



Cable Evaluation and

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Development Laboratory

**TEST 17-2 / PROJECT 4482A
TEST REPORT
G&W HPFF 345kV SPLICE IEEE-404 QUALIFICATION TEST**

DATE: June 22, 2017

TEST SITE: The Okonite Company
959 Market Street
Paterson, NJ 07513

TEST DATES: March 3, 2017 to June 16, 2017

Cable Construction: 3000kcm compact segmental copper conductor, carbon black tapes, 600 mils of impregnated paper polypropylene insulation (LPP), shield tapes, stainless steel skid wires, 165/210 sec oil, HPFF, 345kV High Pressure Fluid-Filled (HPFF) Pipe Type cable - with G&W designed splice.

Joint Construction: See G&W attached drawings and instructions

Factory Order: 02-X2463-1

Marker Numbers: 40689872 - 40689913

Discussion: The cable construction has been qualified as per AEIC CS2-14 (Test 15-3). All electrical tests were carried out with the sample installed in a pipe filled with dielectric fluid at 200psig. The test sample was terminated using Okonite's G&W ATA-180NC 345kV porcelain terminals.

Following are summaries of the various tests. Applicable sections of IEEE-404 are noted in parentheses following each heading.

Power Factor Test @Room Temperature and 200psig

%Power factor was measured at different intervals during testing (see chart).

Qualification High Voltage Time Test (7.4.1)**Comments**

Date: June 5, 2017
 Conductor Temperature: 24°C
 Applied Voltage: 498 kV AC (2.5 times operating voltage)
 Duration: 24 Hours **PASSED**

Impulse Test at 105°C (7.4.3)

Date Performed: June 8, 2016 **PASSED**
 Conductor temperature: 105°C
 Impulse: 1.83 X 45 μs†
 BIL: +/- 1300 kV

1300kV Step - 10 Positive Impulses **PASSED**
 10 Negative Impulses

†Actual wave

Note: As per IEEE 82, sample conditioning impulses of 50%, 65%, and 80% of the intended test level were applied to the test sample prior to the intended initial test level and again whenever polarity was reversed.

AC Integrity Test*

Date: June 9, 2017
 Conductor Temperature: 25°C
 Applied Voltage: 342kV AC (1.67 times operating voltage + 10kV)
 Duration: 15 minutes **PASSED**

* Performed as per AEIC CS2-2014 Section 12.6.5.3

The splice met all requirements as specified in IEEE 404-2012 standard.

Work performed and report written by: Michael A. Perez
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Approved by: Frank J. Krajick
 Frank J. Krajick - Director
 Cable Evaluation & Development Laboratory

Test # _____ 17-2 FO# 02-2463-1 Marker# 40689872 - 40689913
 Cable 3000 Cu, 600mil LPP HPFF 345kV with G&W splice Description
 AC Test Set Bridge ID 239 2-AC-8
2-SC-7 (Cn) 49.4 pF Bridge Factor 0.1 Standard Capacitor ID

To Determine Sample Capacitance (Cx) use: $C_x = C_N \times \text{Bridge Factor} \times \text{Bridge Reading}$

Volts/mil kV	.125Eo 25	40	60 36	80 48	100 60	150 80	Eo 199	1.2Eo 239
Initial %PF								
Date: 5/30/17	Room Temp: 20.7°C			Shield Temp: 20.5°C				
%DF	0.103	-	0.104	0.104	0.105	0.105	0.107	0.107
Bridge Reading	748.53	-	748.53	748.53	748.54	748.55	748.58	748.6

Volts/mil kV	.125Eo 25	40	60 36	80 48	100 60	150 80	Eo 199	1.2Eo 239
Prior to Impulse to BIL								

Date: 6/6/17	Room Temp: 19°C		Shield Temp: 23.8°C					
%DF	0.102	-	0.102	0.103	0.103	0.103	0.104	0.104
Bridge Reading	748.66	-	748.66	748.67	748.68	748.68	748.71	748.73

Volts/mil kV	.125Eo 25	40	60 36	80 48	100 60	150 80	Eo 199	1.2Eo 239
After Completion of Impulse to BIL and 15-minute AC Test								
Date: 6/10/17	Room Temp: 27.6°C		Shield Temp: 25.5°C					
%DF	0.101	-	0.101	0.101	0.101	0.101	0.101	0.102
Bridge Reading	748.42	-	748.42	748.41	748.41	748.41	748.43	748.43

