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U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-001

Subject: Reply to a Notice of Nonconformance 99900227/2015-201-03

Ref: Docket No.: 99900227 Report Number: 2015-201

Dear Sir/Madam

Based on the results of a Nuclear Regulatory Commission (NRC) inspection conducted at General Cable's facility in Willimantic, CT, on February 2, 2015, through February 6, 2015, certain activities were not conducted in accordance with NRC requirements which were contractually imposed on General Cable by NRC licensees. In accordance with the NRC Requirements, the response to the nonconformance is stated below:

1) Reason For The Noncompliance:

Contrary to Criterion III, "Design Control," of Appendix B to 10 CFR, General Cable failed to take measures to review for suitability that ensures that original type testing performed for safety-related cables envelop customer qualification requirements. General Cable failed to adequately evaluate whether qualification testing performed by Franklin Research Center conformed to the specified testing requirements. Additionally, General Cable failed to adequately verify that all instruments, and other measuring and testing devices used in activities affecting quality were properly controlled, calibrated, and adjusted at specified periods to maintain accuracy within necessary limits.

Specifically, qualification report F-C5120-1, "Qualification tests of electrical cables in a simulated steam line break and loss-of-coolant accident (LOCA) environment," for Class 1E cable qualified cables to IEEE 323-1974 and IEEE 383, states that all qualification testing was performed August through December 1979. However, the Hipotronics AC dielectric test set, which was the sole test equipment used for dielectric testing, was calibrated January 21, 1980. There is no documented evidence that the AC dielectric test set was calibrated before the five minute AC high potential withstand test to ensure that the insulation met the requirements post steam line break and LOCA environment.

2) Corrective Steps That Have Been Taken:

In all reports, the calibration is defined as being "project specific." This statement implies that the M&TE are calibrated for each specific project rather than being taken from a general pool of calibrated M&TE. The term "project specific" is not defined in the reports and only the test dates are provided. The problem with the calibration of the M&TE

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falling within the "Period of Test Program" is in question. The following are the "Period of Test Program" for the subject test report.

- Report F-C5120-1, August through December 1979, Project C5120

The M&TE used for the Dielectric Withstand Tests for specimens contained in the F-C5120-1 report has been questioned as to their proper calibration for the post-DBE final Dielectric Withstand Test. It was stated in the NRC Nonconformance that only a Hipotronics AC Dielectric Test Set was utilized for testing but in reality two (2) test instruments, a Beckman Instruments Breakdown Test Set and a Hipotronics AC Dielectric Test Set, are listed in the report as shown in Table 1 that were available to be used. These two Dielectric Test Sets are capable of performing the required tests.

Table 1 - Dielectric Withstand Test M&TE (information from F-C5120-1)

Beckman Instruments Breakdown Test Set	Instrument Number	4217507
	Type/Model Number	1600
	Serial Number	77145
	Range/Features	10KV AC/DC, 10mA AC/DC
	Accuracy	3.0% of Full Scale
	Calibration F-C5120-1	10/15/1979 - 4/14/1980
Hipotronics AC Dielectric Test Set	Instrument Number	18299
	Type/Model Number	715-10
	Serial Number	76-26386
	Range/Features	0-15KV AC, 750mA
	Accuracy	2.0% at $\frac{2}{3}$ of Span
	Calibration F-C5120-1	1/21/1980 - 1/21/1981

A testing timeline was constructed based on the Franklin Report and General Cable's recent experiences with the qualification of 60 year cables. The testing timeline supports completion of testing in December 1979 as shown in Table 2.

- Irradiation of the test samples was performed at Isomedix between 10/13/79 and 11/4/1979.
- Upon FRC receipt of the irradiated cables inspection and evaluation prior to installation in the test chambers would have been performed. This probably occurred during the week of 11/12/79.
- The cables would then be installed in the test chambers and instrumentation connected. This probably occurred during the second half of November 1979.
- The 33 day LOCA was likely started during the second half of November 1979 in order to be completed in the second half of December 1979.
- The Mandrel Bend and Dielectric Withstand Tests required by IEEE 383-1974 would likely have been completed before the New Year (1980) since the test program ended in December 1979 per the Franklin Report.
- The Dielectric Withstand Test would have been accomplished using the Beckman Test Set which was in calibration. This test set was capable of performing all the required testing for all cable test specimens.
- The Hipotronics Test Set was listed but not used based on M&TE calibrated for each specific project. The reason for listing the Hipotronics Test Set is unknown. Our experience is that the test laboratories keep alternate instruments on hand if any unforeseen instrument breakdown occurs.

- The Hipotronics Test Set calibration time falls outside of the qualification test duration, August-December 1979.
- If an un-calibrated M&TE was used, it would have been discussed in the report. This conclusion is based on other detailed descriptions of anomalies in the reports for conditions that did not meet test requirements.

Table 2 – Reconstructed Test Schedule

	October 1979				November 1979				December 1979					January 1980			
	1	8	15	29	4	12	19	26	3	10	17	24	31	7	14	21	28
Irradiation at Isomedix			←				→										
Shipment to FRC							↔										
DBE Test Installation at FRC							↔										
30 Day DBE Test at FRC								←				→					
Dielectric Withstand Tests at FRC												←		→			

Based on the reconstructed dates of testing and the Franklin Report statements that the testing was conducted during August-December 1979 “the Period of Test Program”, the dielectric testing had to be performed in December 1979 as being the last test in qualification.

3) Corrective Steps That Will Be Taken:

It is the position of General Cable that the use of the Beckman Instruments Breakdown Test Set (ID 4217507) was used for all testing and was within the “project specific” period. The calibration of the Beckman Instruments Breakdown Test Set (ID 4217507) Dielectric Withstand Test M&TE is within the correct range meeting the requirements of 10CFR50, Appendix, B, Criteria 12. The Hipotronics AC Dielectric Test Set (ID 18299) calibrated after “the Period of Test Program” was not used for the required testing; the reason for its listing in the report is unknown.

4) Date When The Corrective Action Will be Completed

N/A

Please let me know if you require any further clarification.

Yours faithfully,



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cc. Chief, Electrical Vendor Inspection Branch, Division of Construction Inspection and Operational Programs, Office of New Reactors