

ORGANIZATION: ANACONDA WIRE & CABLE COMPANY
MARION, INDIANA

REPORT NO.: 99900230/83-01	INSPECTION DATE(S): 11/28-12/2/83	INSPECTION ON-SITE HOURS: 59
CORRESPONDENCE ADDRESS: Anaconda Wire & Cable Company ATTN: Mr. P. S. Cardello Vice President of Engineering 31 Great Valley Parkway Malvern, Pennsylvania 19355		
ORGANIZATIONAL CONTACT: Mr. W. D. Wilkens, Manager, Technical Services TELEPHONE NUMBER: (215) 647-5440		
PRINCIPAL PRODUCT: Insulated wire and cable.		
NUCLEAR INDUSTRY ACTIVITY: The Anaconda Wire & Cable Company (AWC) manufactures wire and cable for the nuclear industry at their York, Pennsylvania, and Marion, Indiana, plants. Approximately 5 percent of the two plants business is for the nuclear industry. AWC has conducted some equipment qualification thermal aging and flame tests in their engineering labs located at the Marion plant.		
ASSIGNED INSPECTOR:	<i>G. T. Hubbard</i> G. T. Hubbard, Equipment Qualification Section (EQS)	<i>1-17-84</i> Date
OTHER INSPECTOR(S): F. V. Thome, Sandia National Laboratories		
APPROVED BY:	<i>H. S. Phillips</i> H. S. Phillips, Chief, EQS	<i>1-17-84</i> Date
INSPECTION BASES AND SCOPE:		
A. <u>BASES</u> : 10 CFR Part 50, Appendix B.		
B. <u>SCOPE</u> : This inspection consisted of: (1) verification of the implementation of your corrective action on the nonconformance of NRC Inspection Report No. 99900230/81-01; (2) a review of the 18 criteria of 10 CFR Part 50, Appendix B, described in AWC's proposed Engineering Quality Assurance Manual (EQAM); and (3) a technical evaluation of past equipment qualification (EQ) efforts.		
PLANT SITE APPLICABILITY:		
Not identified.		
DESIGNATED ORIGINAL Certified By <i>Rheanne Clark</i>		

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<p>A. <u>VIOLATIONS:</u></p> <p>None</p> <p>B. <u>NONCONFORMANCES:</u></p> <p>Contrary to Criterion V of Appendix B to 10 CFR Part 50, AWC's proposed quality assurance (QA) program for nuclear-related EQ, as described in the draft EQAM, did not establish detailed documented procedures to control the following activities that could affect the quality of EQ testing:</p> <ol style="list-style-type: none">1. Documented procedures were not established that clearly define how engineers, test technicians, and auditors are qualified; what qualification records are maintained; and who retains the records.2. Documented procedures were not established that define how contract design and test specification requirements are controlled to assure that appropriate requirements are included in EQ engineering analyses, test plans, procedures, and reports.3. Documented procedures were not established which define how subcontract procurement requirements (technical, quality, and etc.) are controlled and transmitted to the purchasing department so that subcontract purchase orders (POs) invoke the appropriate requirements on subcontractors performing testing services.4. Documented procedures were not established which define, in detail, how responsible organizations prepare, review, approve, and control the documents and their changes which prescribe activities affecting EQ activities.5. Documented procedures were not established which define how receiving inspection would be accomplished on test specimens returning from subcontractors that had performed some EQ activity on the test specimens. <p>C. <u>UNRESOLVED ITEMS:</u></p> <p>None</p>		

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D. STATUS OF PREVIOUS INSPECTION FINDINGS:

(Closed) Nonconformance (Report 81-01): The manager of engineering was not represented at three of the weekly meetings of the Material Review Board (MRB) held in May and June 1981.

The NRC inspector examined the MRB minutes for the years of 1981-1983 and determined that representatives of engineering, manufacturing, and QA have attended the weekly MRB meetings since July 1981. The inspector also verified the usage of an attendance form that assures a representative from each of the three organizations is present at each weekly meeting.

E. OTHER FINDINGS OR COMMENTS:

1. Quality Assurance Manual: The proposed QA program for nuclear-related EQ is established in the draft EQAM and is established in accordance with the applicable 18 criteria of 10 CFR Part 50, Appendix B. The NRC inspector's discussions with AWC's engineering and QA personnel determined that AWC's manufacturing and production is controlled by their approved topical report (TR) TR No. AWC-75-A, "Quality Assurance for Generating Station Cables"; however, their prior EQ activities have not been controlled by either the TR or any other formal documented QA program. The NRC inspector's discussions with AWC personnel and review of a customer PO file determined that AWC's EQ activities have been performed as generic tests prior to any PO receipt from a customer. When a PO is received by AWC and it requires a cable qualification test program or test data supporting qualification, AWC provides the appropriate generic test reports, without certification of cable qualification, to the customer in support of his requirements. Since AWC has performed generic tests prior to PO receipt, and AWC does not certify cable qualification, the NRC inspector was unable to directly link any incoming PO requirements for 10 CFR Part 50, Appendix B, and 10 CFR Part 21 to AWC EQ test efforts. The proposed QA program will be used to control future EQ activities when it is implemented. The inspector's review and evaluation of the EQAM identified the nonconformance discussed in paragraph B.
2. Supplemental Procedures Review: The NRC inspector reviewed and evaluated the draft, "Qualification Test Technical Manual"; six procedures; and one lab notebook which contained numerous engineering lab procedures. This review and evaluation determined that formal documented procedures for the control of future EQ activities had not been established and/or proposed in several areas (see examples of the nonconformance described in paragraph B).

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3. QA Program Implementation Review: Since AWC had implemented no formal documented QA program for the control of their EQ activities and the evaluated program was only proposed at the time of this inspection, a QA program implementation review was not performed. This review will be performed during a future NRC inspection once AWC implements a QA program for controlling EQ activities.

4. Technical Review of Qualification Reports: The NRC inspector reviewed and evaluated 18 Franklin Research Center (FRC) test reports and 4 AWC reports that supplemented FRC reports and determined that:

- a. AWC Loss of Coolant Accident (LOCA)/High Energy Line Break (HELB) tests have been performed by FRC from 1969 thru 1981;
- b. Thermal aging (TA) tests were performed by FRC until early 1978 when AWC began performing TA tests in their own engineering labs;
- c. Radiation aging tests have been performed by the same subcontractor either by contract to FRC until early 1978 or by contract to AWC since that time;
- d. Almost all flame tests have been performed by AWC in their flame test center;
- e. LOCA/HELB tests conducted by FRC and documented in FRC reports dated November 1975 thru January 1978 consisted of single transient peak temperature/pressure profiles;
- f. LOCA/HELB tests conducted by FRC and documented in reports dated July 1978 and later consisted of double transient peak temperature/pressure profiles;
- g. Details of TA testing conducted by AWC is not reflected in the FRC reports;
- h. Based on the team's calculations, using a 1 electron volt activation energy, the AWC conducted TA tests provide a calculated service life of 40 years at 60°C service temperature;
- i. The test reports (FRC and AWC supplements) provided true representation of actual test occurrences; and
- j. Cable test failures occurring during testing were evaluated and documented by either FRC or AWC.

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<p>The NRC inspector did not review and evaluate AWC's TA and flame test documentation during this inspection. These areas will be evaluated in detail during a future NRC inspection at AWC.</p> <p>The NRC inspector reviewed only one AWC PO to FRC during the inspection; therefore, the inspectors were unable to determine what specific requirements had been imposed on FRC by AWC for most of the test reports issued by FRC. The manager, technical services, did state that he was not aware of any instance when AWC had imposed 10 CFR Part 50, Appendix B, and 10 CFR Part 21 requirements on FRC. He did state that, since late 1982, AWC was now imposing these requirements on their radiation subcontractor. For the same reasons as above (only one PO available for review), detailed technical requirements imposed on FRC for testing were not determined during the inspection. During a future NRC inspection at FRC, AWC's POs to FRC will be reviewed and a determination will be made as to whether or not FRC complied with AWC's imposed technical and QA requirements.</p> <p>The NRC inspector determined that FRC reports state, where appropriate, that the test programs conducted are based on the guidelines of IEEE-STD-323/1974 and 383/1974. The reports generally conclude, when tests are successful, that all cables demonstrate satisfactory performance during the exposures simulated . . . and have a substantial margin of life FRC does not certify that any tested cables fully meet all requirements of IEEE-STD-323/1974 or 383/1974. AWC uses the FRC reports as data supporting a customer's requirement that cables meet the requirements of such documents as IEEE-STD-323/1974 and 383/1974. If the customer has questions concerning the report, TA, radiation aging, flame testing, and/or any other area of concern, the customer is usually provided further documentation in a letter from the AWC's senior technical consultant. The inspector determined that AWC does not certify that their cables meet such qualification requirements as IEEE-STD-323/1974 and 383/1974 but only provides data for the customers to use in determining cable qualification. During future NRC inspections of AWC's customers, evaluations will be performed to see how the customers establish cable qualification.</p> <p>No nonconformances were identified.</p>		

PERSONS CONTACTED

Company Anaconda Wire and Cable Co.

Dates November 28, 1983

Docket/Report No. 99900230/83-01

Inspector

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PERSONS CONTACTED

Company Anaconda Wire & Cable Co.

Dates December 2, 1983

Docket/Report No. 99900230/83-01

Inspector

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Pre-Inspection Conference

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Company Anaconda Wire and Cable Co.

Dates November 28 - December 2, 1983

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Company Anaconda Wire & Cable Co

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INSPECTOR G.T. Hubbard

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DOCUMENTS EXAMINED

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ITEM NO.	TYPE OF DOCUMENT	DOCUMENT NO.	REV.	DATE	TITLE / SUBJECT
1	QAM		DRAFT 3	11/1/83	Proposed Engineering Quality Assurance Manual
2	FORM	WC-1964	12/82 DRAFT	12/82	Qualification of QA Audit Personnel for Nuclear Facilities (4)
3	Manual		2	11/14/83	Qualification Test Technical Manual
4	PRO	SPS-100	6	3/9/82	Anaconda Marion Manufacturing Specification Order Write-up Procedure
5	PRO	SP1903		9/29/77	Sales Order Flow
6	PRO	SP1911		1/16/81	Engineering Change Notice Control
7	PRO	2.4		June 83	Proposed LOCA Test Procedures for Qualification Testing of Electrical Cables
8	File			1983	Material Review Board Minutes
9	File			1982	Material Review Board Minutes
10	File			1981	Material Review Board Minutes
11	PO	10407-F-122225		7-30-80	Customer P.O.
12	PO	00241-041-1X		5/14/81	Customer P.O.
13	RPT	F-C4350-3		7/76	Tests of Electrical Cables Subjected to Thermal Aging, Gamma Radiation & a Loss of Coolant Accident Simulation
14	File			-	P.O. 10407-F-122225 File
15	RPT			10/25/83	Test Report on Thermal & Radiation Aging Switchboard Wire

TYPE OF DOC:

DWG - DRAWING
 SPEC - SPECIFICATION
 PRO - PROCEDURE
 QAM - QA MANUAL
 QCD - QC DOCUMENT
 P.O. - PURCHASE ORDER
 INH - INTERNAL MEMO

LTR - LETTER

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RPT - Report

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INSPECTOR Frank V. Thome

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1	QAM		Draft 3	11/1/83	Proposed Engineering Quality Assurance Manual
2	PRO		Draft 2	11/14/83	Proposed Qualification Test Technical Manual
3	PRO	SPS-100	6	3/9/82	Manufacturing Specification Order Write-up Procedure
4	PRO	SP-1903	-	9/29/77	Sales Order Flow
5	PRO	SP-1911		1/16/81	Engineering Change Notice Control
6	PRO	2040-1		3/1/83	Flame Propagation Test - 210,000 Btu/hr
7	PRO	2040-1		3/1/83	Flame Propagation Test - Natural or Propane Gas
8	PRO	2054		3/1/83	Flame Propagation Test - Propane Gas
9	PRO	2055		3/1/83	Flame Propagation Test - Propane Gas
10	PRO	-		7/25/83	PCEC Lab Procedures (Master)
11	RPT	FIRL F- A5374		8/24/81	Qual Test of Electrical Cable (with splices) in LOCA
12	RPT	ANACONDA F-A5374		1981 9/14/81	Qual Test of Cable (with splices) in LOCA
13	RPT	FIRL F- C4836-2		1978 1/14/78	Qual Test of Class 1E Cable in LOCA
14	RPT	FIRL F- C2525		1969 10/1/69	Qual Tests of Cable under Post-Accident Service
15	RPT	FIRL F- C2935		10/1970	Test of Cables under Post-Accident Service

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16	PO	5-72417		3/20/80	PO To Conduct PWR/BWR LOCA Test on 7 cables
17	LTR	EM-029		10/28/77	Customer Job 10407, Request of Certif. of Qual Cable Life & Qual Procedures
18	LTR			11/3/83	Customer Job 10407, Spec. Change Notice from Anaconda
19	RPT	FIRL F- C3341		1/1973	Qualification Test of Cables
20	RPT	FIRL S- C3341		1/1973	Qual Test of Cables
21	RPT	FIRL F- C4271		11/75	
22	RPT	Anaconda		12/5/1975	
23	RPT	FIRL F- C4379		3/1976	
24	RPT	FIRL F- C4350-1		7/1976	
25	RPT	FIRL F- C4350-2		7/1976	
26	RPT	FIRL FIRL F- C4350-3		7/1976	
27	RPT	FIRL F- C4350-4		7/1976	
28	RPT	FIRL F- C4350-5		7/1976	
29	RPT	Anaconda		4/1977	

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