

ORGANIZATION: CONAX CORPORATION
BUFFALO, NEW YORK

REPORT NO.:	99900323/82-01	INSPECTION DATE(S)	10/11-15/82	INSPECTION ON-SITE HOURS:	45
CORRESPONDENCE ADDRESS: Conax Corporation ATTN: Mr. J. Adams President 2300 Walden Avenue Buffalo, New York 14225					
ORGANIZATIONAL CONTACT: Mr. R. L. Duroure, Manager of Quality Assurance TELEPHONE NUMBER: (716) 684-4500					
PRINCIPAL PRODUCT: Containment Electric Penetrations and Environmental Qualification Testing Services.					
NUCLEAR INDUSTRY ACTIVITY: Manufacture of electric penetrations, electric conductor seal assemblies (ECSA), adapter modules for other manufacturers' penetrations, heat sensing probes, and specialized cabling for nuclear power plants, and provides environmental test facilities capable of loss-of-coolant accident (LOCA) testing Class 1E equipment. Approximately 45% of corporate activity is devoted to nuclear product manufacture and testing.					
ASSIGNED INSPECTOR: <u>I. Barnes</u> for L. B. Parker, Reactive & Component Program Section (R&CPS)				12-2-82 Date	
OTHER INSPECTOR(S): J. R. Agee, Equipment Qualification Section (EQS)					
APPROVED BY: <u>I. Barnes</u> I. Barnes, Chief, R&CPS				12-2-82 Date	
INSPECTION BASES AND SCOPE: A. BASES: 10 CFR Part 21 and 10 CFR Part 50, Appendix B. B. SCOPE: This inspection was made as a result of the issue of a 10 CFR Part 50.55(e) report by Louisiana Power and Light (LP&L) concerning loose bolted connectors using "press-fit" pemnuts on containment electrical (cont. on next page)					
PLANT SITE APPLICABILITY: Docket Nos. 50-382, 50-482, 50-483, 50-486, 50-346, 50-445/446, 50-423, 50-374, 50-389, 50-404, 50-405.					

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DESIGNATED ORIGINAL
Certified by Rheanne Clark

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SCOPE: (Cont.) penetrations supplied by Conax Corporation for use at Waterford SES, Unit 3. Additionally, manufacturing process control and the equipment qualification program (EQP) were inspected. Areas inspected in the EQP included: evaluation of the test laboratory; examination of the design of the feedthrough/adapter module; and verification that qualification testing had been completed on the adapter module.

A. VIOLATIONS:

Contrary to paragraph 21.31 of 10 CFR Part 21, Conax Corporation (Conax) failed to specify that the provisions of 10 CFR Part 21 applied in a procurement document for irradiation services performed by Georgia Tech Neely Nuclear Research.

B. NONCONFORMANCES:

1. Contrary to Criterion V of Appendix B to 10 CFR Part 50 and paragraph 8.4.2 of Nuclear Quality Assurance (NQA) Procedure 8.4, Revision C, dated January 4, 1982, Exhibit A of NQA Procedure 14.1 was not Forms N-30 and N-30A as indicated.
2. Contrary to Criterion V of Appendix B to 10 CFR Part 50, paragraph 12.1.3(c) of NQA Procedure 12.1, Revision C, dated January 4, 1982, and the MS90 Calibration Record Logs: (a) procedures had not been written or approved by the Quality Control Manager for the calibration of the Veeco Helium Leak Detectors, and (b) serial numbers of equipment calibrated had not been recorded in the MS90 Calibration Record Logs.
3. Contrary to Criterion V of Appendix B to 10 CFR Part 50 and paragraph 15.13 of NQA Procedure 15.1, Revision A, dated June 12, 1980, a Material Disposition Report (MDR) was not prepared and affixed to Part No. 7769-20002-01, Unit 10-8 after failure in the dielectric test.

C. UNRESOLVED ITEMS:

None

D. OTHER FINDINGS OR COMMENTS:

1. Reactive Item

LP&L issued a 10 CFR Part 50.55(e) report concerning loose "press-fit" pemnuts. Conax has identified five sites with a potential for the problem; i.e., Millstone, Unit 3; North Anna, Units 3 and 4; St. Lucie,

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<p>Unit 2; LaSalle, Unit 2; and Waterford, Unit 3. Conax revised the design to avoid further problems by placing a continuous weld around the peripheral edge of the nut. New brackets were sent to North Anna, Units 3 and 4; Waterford, Unit 3; and Millstone, Unit 3. St Lucie, Unit 2 and La Salle, Unit 2 drawings were changed to reflect the new design.</p> <p>LP&L issued a supplement to the final 10 CFR Part 50.55(e) report concerning the workmanship of the welds used to correct the loose pemnut problem. Since welding was not being performed on domestic nuclear equipment nor were any domestic nuclear weldments inhouse at the time of the inspection, this problem will be addressed in a future inspection.</p> <p>2. <u>Manufacturing Process Control</u></p> <p>Three design specifications, purchase orders, 10 travelers, 8 production control procedures, 6 final (partial) data packages, associated drawings, and other documentation were reviewed from the production control, quality control, manufacturing testing, and document control areas.</p> <p>Nonconformances B.1 through B.3 were identified in this area of the inspection. In identifying nonconformance B.3, it was noted that two separate and distinct travelers existed for Part No. 7769-20002-01, Unit 10-8, both of which had been inspected and approved by Quality Control. The production release date of one traveler was September 17, 1982, with a dielectric test date of September 29, 1982. The production release date of the other traveler was September 30, 1982, with a dielectric test date of October 1, 1982. Subsequent to the NRC inspector's discovery of this, a note was added to the traveler with the dielectric test date of September 29, 1982, stating, "NOTE: Unit 10-8 FAIL DIELECTRIC TEST SCRAP 9-29-82," and the accepted column quantity changed from four to three. No change was made in the reject column quantity. During this portion of the inspection, it was also noted that on the traveler for Part No. 7769-21008 under "Draw Material from Stores," an incomplete part number was listed. The part number was listed as N-45076 when it should have been N-45076-01. Further examination of the assembly itself and its drawing revealed that the correct parts were being used.</p>		

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3. Implementation of 10 CFR Part 21

The NRC inspector observed posting with respect to 10 CFR Part 21 requirements at the vendor's facility. Procedure NQA 1.5 had been written for implementation of 10 CFR Part 21, but had not been implemented in regard to procurement paragraph 1.5.6 (see Violation, paragraph A).

4. Equipment Qualification Program

a. Equipment Qualification Testing Capability

The Conax equipment qualification laboratory was established to test and qualify Conax products for use in Class 1E applications in the nuclear power industry; however, the facility has been used to perform tests for other test laboratories, especially LOCA tests.

The Conax environmental qualification test laboratory is equipped to provide thermal aging, and LOCA testing at pressure, temperature, humidity, and chemical spray conditions as required by specifications and applicable IEEE Standards 323-1974, 317-1976, and 344-1975.

The laboratory subcontracts radiation aging and seismic testing to other test laboratories. The data acquisition capabilities of the laboratory are limited to a single data logger and three temperature recorders with overlapping ranges which possess the accuracies and resolutions to provide valid test data. Record logs are maintained; however, some of the annual inputs to the logs are data taken from the data logger for periods when the test is unattended. Hard copies of test data are filed in accordance with the Conax quality assurance records retention system.

b. Review of Feedthrough/Adapter Module Assemblies Design Documents

The feedthrough/adapter module assemblies were developed and qualified in accordance with parameters specified in Bechtel Material Requisition No. 7220-E-120(Q). Qualification testing was conducted in accordance with the requirements of IEEE Standards 317-1976, 323-1974, and 344-1975.

Important or critical materials in the feedthrough/adapter module assemblies included: (1) polysulfone - sealant; (2) Kapton - cable jacketing; (3) Viton - static seals; (4) Kerite - cable insulation;

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(5) GDI-30F - Kulka terminal blocks (a diallyl phthalate long glass fiber filled material); and (6) WCSF-N - Raychem heat shrinkable tubing (a polyolefin with nuclear grade adhesive).

These materials were chosen following extensive investigative testing for nuclear power plant uses. Each material was tested to determine fire resistance, combustion, radiation, and thermal aging characteristics. Each material exhibited favorable characteristics relative to individual design service requirements. Conax document No. IPS-325, "Design Qualification Material Test Report for Materials Used in Conax Electrical Penetration Assemblies and Electric Conductor Seal Assemblies," contains the test data and justification for selection of these materials.

c. Review of Qualification Test Data

The NRC inspector examined the test article and the raw data from which the Conax document No. IPS-861, "Design Qualification Report for Feedthrough/Adapter Module Assemblies for Amphenol Sams Penetrations, Midland Plant, Units 1 and 2, Bechtel Power Corporation P. O. 7220-E-120, Conax Corporation w/o 7-76900," was compiled. The document contains the qualification data for the feedthrough/adapter module for the Midland Nuclear Plant. The report demonstrates that the feedthrough/adapter module assemblies met the post-LOCA type test criteria in Section 6.4 of IEEE Standard 317-1976.

INSPECTOR L.B. PARKER
 SCOPE MANUFACTURING
PROCESS CONTROL

DOCUMENTS EXAMINED

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ITEM NO.	TYPE OF DOCUMENT	DOCUMENT NO.	REV.	DATE	TITLE / SUBJECT
1	PO	8859	3	9/23/82	FROM: SACRAMENTO MUNICIPAL UTILITY DISTRICT (RANCHO SECO) TO: CONAX CORP. FOR: FEEDTHROUGH MODULES, ELECTRICAL PENETRATION ASSY'S
2	DESIGN SPEC	E12.01.1	1	8/11/82	ELECTRICAL PENETRATION ASSEMBLIES FOR SACRAMENTO MUNICIPAL UTILITY DISTRICT (RANCHO SECO)
3	DOCUMENTATION CHECKLIST	FORM N-17 (REV. B)	B	9/23/82	FOR PO. 8859 CONAX WORK ORDER NO. 7-07300 RANCHO SECO. CONAX PROPOSAL NO. NP81-169A
4	DESIGN SPEC	LOU1564.258	6	3/26/81	EBASCO ORDER NO. NY-403496, WATERFORD STEAM ELECTRIC STATION CONTAINMENT ELECTRICAL PENETRATIONS CLASS 1E EQUIPMENT
5	PO	7220-E-120-AC	0	4/13/82	FROM: BECHTEL POWER CORPORATION FOR: ELECTRICAL PENETRATION ASSY. MODULES ANN ARBOR, MICH TO: CONAX CORP. REPLACEMENTS FOR MIDLAND UNITS 1 & 2
6	PO	7220-E-120-AC	2	10/4/82	same as item 5 except Rev. 2 of Material Requisition 7220-E-120(Q) attached
7	Material Requisition	7220-E-120(Q)	2	10/4/82	Technical Specification for Electrical Penetration Assembly Replacement Modules for the Midland Plant Units 1 and 2 Consumers Power Co.
8	Test PRO	IPS-858	B	9/30/82	Factory Test Procedure (Production) for Feedthrough/Adapter Module Assemblies for Ann Arbor SAMS Penetrations Midland Plant Unit 1 & 2 Bechtel Power Corp. P.O. 7220-E-120 CONAX Corp. w/o 7-76900
9	Final (Part) Data Pkg	W.O. 7-76900	-	9/29/82	For Bechtel Power Corp. Midland Control No. 7-43, 7-44, 7-45, 7-46, 7-48, 7-49, 7-50 Part No. 7769-10000-07, -08, -10, 12 8-28, 8-29, 8-30, 10-3, 10-4, 10-7, 11-46, 11-47, 11-48
10	Final (Part) Data Pkg	W.O. 7-76900	-	10/1/82	For Bechtel Power Corp. Midland Part No. 7769-10000-10 Control No. 10-8
11	IPS	375	A	9/21/82	Repair Procedure for Annulus Cable Jacket
12	DWG	N-45076	A	7/12/82	16 AWG INSULATED SOLID CONDUCTOR
13	TRV	7769-20002-01	--	9/17/82	FEEDTHROUGH/ADAPTER MODULE SUB/ASSEMBLY 6 SHEETS 7769-10000-10 Units 10-3, 10-4, 10-7, 10-8
14	TRV	7769-20002-01	--	9/30/82	FEEDTHROUGH/ADAPTER MODULE SUB/ASSEMBLY 6 SHEETS 7769-10000-10 Unit 10-8
15	TRV	7769-21008-01	--	9/29/82	FEEDTHRU ASSEMBLY 4 SHEETS (Production copy)

TYPE OF DOC:

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

LTR - LETTER
 W.O. - Work Order
 TRV - NUCLEAR OPERATION & INSPECTION RECORD (TRAVELER)

INSPECTOR L.B. PARKERDOCKET NO. 99900323SCOPE IMPLEMENTATION OF
PART 21, 10CFR

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ITEM NO.	TYPE OF DOCUMENT	DOCUMENT NO.	REV.	DATE	TITLE / SUBJECT
1	NUCLEAR QA PRO.	1.5	A	6/12/80	PROCEDURE TITLE: REPORTING OF DEFECTS AND NON-COMPLIANCES (3 PAGES)
2	INM	-	-	10/11/78	STATUS REVIEW MEETING WATERFORD UNIT NO.3 EBASCO & CONAX MENTIONS WELDED PEMNUTS
3	INM	-	-	10/17/78	FROM: G.M. RHODES WATERFORD 3 PEMNUT POTENTIAL PROBLEM TO: G.M. W.S. RAUTIO
4	PRO	IPS-374	-	9/5/78	PROCEDURE FOR RETROFITTING TERMINATION ASSEMBLY WITH REDESIGNED MOUNTING FLANGES.
5	LTR	-	-	9/5/78	FROM: S.M. DALE-CONAX WATERFORD SES, UNIT 3 ELECTRIC PENETRATIONS TO: R. VIDAL-EBASCO EBASCO P.O. NY-403496 CONAX W/6 7-3200
6	INM	-	-	10/25/78	FROM: G.M. RHODES STATUS OF PLANTS WITH PEMNUT (POTENTIAL) PROBLEM TO: W.S. RAUTIO
7	ENGINEERING REPORT	141	-	2/29/72	THE OKONITE COMPANY RAMSEY N.J. - SUBJ. AGING, EXPOSURE TO 200 MEGARADS OF GAMMA RADIATION AND ACCIDENT CONDITION QUALIFICATION TESTING OF POWER CABLES, CONTROL CABLES AND SPLICE (T-35 JACKETING TAPE)
8	INM	-	-	6/9/82	FROM: G.M. RHODES WATERFORD 3 SOUTHCO FASTNER PROBLEM TO: W.S. RAUTIO
9	CONAX DWG	7320-10001	F 2	1/20/82	LVP & INSTR. ELECTRIC PENETRATIONS FOR WATERFORD-UNIT #3
11	P.O.	56187-1		4/9/79	2 P/N 7508-10003 L.V.P. Penetrations to be irradiated From: Conax To: Georgia Tech
12	P.O.	56182		4/5/79	2 P/N 7508-10000 MVP Penetration 1 P/N 7508-10002 Inst. Penetration to be irradiated From: Conax To: Georgia Tech

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LTR - LETTER
 TRV - NUCLEAR OPERATION & INSPECTION RECORDS (TRAVELER)

INSPECTOR L.B. PARKER
 SCOPE MANUFACTURING
PROCESS CONTROL

DOCUMENTS EXAMINED

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ITEM NO.	TITLE OF DOCUMENT	DOCUMENT NO.	REV.	DATE	TITLE / SUBJECT
16	TRV	7769 20002-01	--	9/17/82	Sheet 4 of 6 change made to unit 10-8 dielectric test failed
17	TRV	N-3222002	--	8/8/81	Sealant 49 parts for Midland Order 7-76900
18	DWG	N-32220	-	2/29/81	Sealant
19	TRV	7769- 24008 -01	-	9/29/82	FEEDTHRU ASSEMBLY ASSEMBLY Unit 9-10
20	TRV	7769- 21008-01	-	9/29/82	FEEDTHRU ASSEMBLY Unit 9-9
21	NUCLEAR QA PRO	8.4	C	1/4/82	Operation and Inspection Record System Traveler
22	NUCLEAR QA PRO	12.1	C	1/4/82	Calibration of Measuring and Test Equipment
23	NUCLEAR QA PRO	15.1	A	6/12/80	Inspection Hold System
24	NUCLEAR QA PRO	14.1	B	6/12/80	Inspection, Test and Operating Status

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 PRO - PROCEDURE _____
 QA - QA MANUAL _____
 QC - QC DOCUMENT _____
 P.O. - PURCHASE ORDER _____
 INH - INTERNAL MEMO _____

LTR - LETTER _____
 TRV - SEE P&I _____

INSPECTOR J.R. Agee
 SCOPE Equipment Qualification

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ITEM NO.	TYPE OF DOCUMENT	DOCUMENT NO.	REV.	DATE	TITLE / SUBJECT
1	QUALIFICATION REPORT	IPS-465	B	12/9/79	Conax Design Qualification Report of Terminal Blocks for Conax Corporation and Detroit Edison Company
2	PO	7220	Z	7/1/82	Bechtel Material Penetration Assembly Replacement Modules 7220-E-120(Q)
3	DWG	7769-1000 C	C	3/25/82	FEEDTHRU/ADAPTER MODULE ASSEMBLY FOR MIDLAND
4	DWG	7769-0900			
5	QUALIFICATION REPORT	IPS-861	A	5/14/82	Design Qualification Report for Feedthrough/Adapter Module Assemblies for Phenol Sams Penetrations Midland Plant Unit 1 & 2, Bechtel Power Corporation P.O. 7220-E-120, Conax Corporation W/D 7-76900
6	QUALIFICATION REPORT	IPS-564s	AP16	7/30/80	Environmental Qualification Test Report of Raychem WCF-N Nuclear In-Line Cable Splice Assemblies
7	SPEC	X3AB03	3	6/11/81	Specification for Penetrations for the Georgia Power Co Alyia W. Vogie Nuclear Plant, Project Class 1E (ASHI III-119)

TYPE OF DOC: _____
 TEST REPORT _____
 DWG - DRAWING _____
 SPEC - SPECIFICATION _____
 PRO - PROCEDURE _____
 QAM - QA MANUAL _____
 QCD - QC DOCUMENT _____
 P.O. - PURCHASE ORDER _____
 INH - INTERNAL MEMO _____
 REPORT - QUALIFICATION REPORT _____

LTR - LETTER _____

INSPECTOR J.R. Adams
 SCOPE Equipment Qualification

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ITEM NO.	TYPE OF DOCUMENT	DOCUMENT NO.	REV.	DATE	TITLE / SUBJECT
8	PO	72-730	-	8/14/82	PO for 10,000' (foot) 19 PWB solid copper conductor Kapton insulated per Conax Draw. N-45066 and IPS-30 Rev. K.
9	SPEC	IPS-30	K	6/23/81	Specification for Polyimide Insulated Electrical Penetration Conductors.
10	Qualification Report	IPS-172	A		Gamma Irradiation and Outgassing Tests on Kapton and Polysulfone Sealants used in Conax Electrical Penetrations.
11	Qualification Report	IPS-325	D	8/16/79	Design Qualification Material Test Report for Materials Used in Conax Electrical Penetration Assemblies and Electric Conductor Seal Assemblies
12	Test	IPS-590	ORIG	9/14/80	Test Summary IEEE 383 Vertical Tray Flame Test on Kapton Insulation
13	Qualification Report	IPS-253	ORIG	9/23/82	Design Qualification Test Report of Low Voltage Instrumentation Service Classification Electrical Penetration Coaxial and Triaxial Feeder Module Assemblies for Chitron Power Station

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