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**CONAX buffalo**  
**corporation**

2300 WALDEN AVE. • BUFFALO, NY 14225 • 716 684-4500 • TELEX: 91-275 • CABLE: CONAXCO

 A CONAX COMPANY

March 5, 1985

Director  
Office of Inspection and Enforcement  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555

Subject: Corrective Action of Defect  
Conax Power Lead ("PL") Gland Assemblies  
Qualified for Nuclear Service

Reference: 1. Conax Notification of Potential Defect 8/31/84 (Attached)  
2. Conax IPS-1233, Orig. (Enclosed)

Gentlemen:

In accordance with Reference No. 1 (attached), Conax has completed its evaluation of the potential reported defect of the subject Power Lead Gland Assemblies. The results are documented in Conax Report IPS-1233, "Power Lead (P/L) Gland Assembly Design Engineering Investigation" (Reference #2, enclosed), as summarized below.

I Cause:

The primary cause of the reported potential defect was determined to be an "over compression" of the power lead gland sealant during factory assembly, which eventually lead to a reduction in conductor cross sectional area at the conductor-sealant interface, and eventual conductor separation. This "over compression" was determined to have been caused by both the method with which thread lubricant was applied and the tools used to torque the gland midlock cap to the body during factory production.

All threads of the Vermont Yankee assembly component parts were lubricated prior to final assembly by dipping them in a freon/vydx solution (2 coats). The Perry assemblies were lubricated prior to final assembly by brushing on the freon/vydx solution (1 coat). Conax has determined that the dipping technique results in a thicker coat of lubricant material as compared to the brushing method, which would reduce thread friction during the torquing assembly process and subsequently transfer more of the applied torque to be translated into sealant compression.

Compounding this process, the torque wrench used to assemble both the Vermont Yankee and Perry glands indicated applied torque through a "dial type" indicator gauge. This wrench design would therefore

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March 5, 1985

allow torquing in excess of the required production parameters without automatically halting the operation, as would a presettable ratchet type wrench. The torquing operation was therefore not adequately controlled to within the tolerance specified in the factory assembly procedure. When the Vermont Yankee glands were evaluated, there was a strong indication that many of them may have been initially overtorqued during the factory assembly process.

Also, a contributing factor to the cause of the reported possible defect was determined to be the overextended service temperature to which the Vermont Yankee glands were exposed. By attempting to operate their power lead glands at a service temperature of 260°F, rather than the Conax recommended, (and previously qualified) service temperature of 150°F, Vermont Yankee had caused the already overcompressed sealants to thermally expand, thereby further contributing to the eventual conductor separation mechanism.

II Corrective Action:

All of the Vermont Yankee Power Lead glands were removed from service and returned to Conax.

Forty-one (41) Power Lead Glands were returned to Conax by Perry for evaluation. Based on that evaluation, it was determined that the Perry Power Lead Glands did not contain the same possible defect reported by Vermont Yankee and would therefore be acceptable, provided they were operated at the original required normal operating service temperature (not to exceed 144°F).

III Preventative Action


Conax will revise all drawings and assembly procedures to specify that one (1) coat of the thread lubricant shall be applied only by the brushing technique and not the dipping methodology.

Conax will remove all dial indicator type torque wrenches from factory assembly service and will replace them with presettable ratchet type torque wrenches. In addition, Conax will revise all assembly procedures to permit only the use of the ratchet type torque wrench.

For further clarification of our position or any additional information, please contact me directly.

Very truly yours,

CONAX BUFFALO CORPORATION

  
Robert A. Fox  
President

RAF/cas

Director  
Office of Inspection and Enforcement  
U. S. Nuclear Regulatory Commission  
Page 3

March 5, 1985

cc: Boyce H. Grier, Director, Region 1  
Office of Inspection and Enforcement  
U. S. Nuclear Regulatory Commission  
631 Park Ave.  
King of Prussia, PA 19406

Mr. Richard Pagodin  
Engineering Support Supervisor  
Vermont Yankee Nuclear Power Corporation  
P. O. Box 157  
Vernon, VT 05354

Mr. George Hengerly  
Yankee Atomic Electric Company  
1671 Worcester Rd.  
Framingham, MA 01701

Mr. Paul Martin  
General Supervisory Engineer PAQS  
The Cleveland Electric Illuminating Company  
Perry Nuclear Power Plant, Units 1 and 2  
P. O. Box 85  
Perry, OH 44081

CONAX BUFFALO CORPORATION: M. W. Connell  
J. E. Adams  
W. S. Rautio  
D. P. Jensen  
W. C. Federick  
R. E. Dulski  
R. L. Durore  
R. E. Farchmin  
S. M. Dale  
G. P. Wittmann

Attachment (1)  
Enclosure (1)

SMD



CONAX CORPORATION, 2300 WALDEN AVENUE, BUFFALO, NEW YORK 14225 TEL. 716-684-4500 TELEX — 91-275

August 31, 1984

Director  
Office of Inspection and Enforcement  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Subject: Notification of a Potential Defect  
Conax Power Lead (PL) Gland Assemblies Qualified For Nuclear Service

Gentlemen:

Your attention is directed to our telephone communication with your Mr. Harry Kisteo of Regional Office 1 on August 29, 1984 concerning reasonable indication of a defect. A conditioned situation exists which Conax has designated a potential defect.

This formal communication is submitted as timely evidence of our compliance to the requirements of 10 CFR Part 21, Paragraph 21.21, b(2), with the following information being provided to the extent known to date per items i through viii of paragraph 21.21, b(3), of 10 CFR Part 21.

I) Reporting Individual:

W. S. Rautio  
President  
Conax Buffalo Corporation  
2300 Walden Avenue  
Buffalo, New York 14225  
(716) 684-4500

II) A. Component Identification

Conax Qualified Nuclear Service Power Lead Gland Assemblies

Conax Part Numbers: 7D92-11000-01, -02, -03, -04  
7D92-11001-01, -02, -03, -04, -05  
N-11150-01  
N-11151-01

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B. Facility Identification

- i. Vermont Yankee Nuclear Plant  
Governor Hunt Road  
Vernon, VT 05354
- ii. Perry Nuclear Power Plant, Units 1 & 2  
Perry, Ohio 44081  
(P.O. Box 85)

III) Component Supplier

Conax Buffalo Corporation  
2300 Walden Avenue  
Buffalo, New York 14225

IV) Nature of Potential Defect

The nature of the potential defect, as designated by Conax, is a loss of electrical continuity, resulting from a gradual reduction in the cross-sectional area of the conductors in the internal sealant area of the gland and eventually leading to total conductor separation in some cases. The phenomea appears to be related to time, temperature, and initial assembly torquing and may be unique to Vermont Yankee's normal operating environment.

The result of phenomea could affect the electrical performance of safety related equipment into which these assemblies have been installed.

V) Date of Information

This potential defect was brought to my attention in a meeting held on August 27, 1984 by S. M. Dale, Chief Engineer of our Industrial Products Division and W. C. Frederick, Manager of our Nuclear Products Division.

VI) Number and Location of Components

- A. Forty-six (46) Power Lead Gland Assemblies, as follows, were supplied to Vermont Yankee Nuclear Plant in July, 1984

26 pcs - 2 conductor/16 AWG (Conax P/N N-11150-01)  
20 pcs - 8 conductor/14 AWG (Conax P/N N-11151-01)

- B. Eight hundred and twenty-one (821) Power Lead Gland Assemblies, as follows, were supplied to Perry Nuclear Power Plant, Units 1 and 2, in March thru June of 1984.



69 pcs - 2 conductor/14 AWG (Conax P/N 7D92-11000-01)  
128 pcs - 4 conductor/14 AWG (Conax P/N 7D92-11000-02)  
57 pcs - 6 conductor/14 AWG (Conax P/N 7D92-11000-03)  
9 pcs - 8 conductor/14 AWG (Conax P/N 7D92-11000-04)  
294 pcs - 2 conductor/16 AWG (Conax P/N 7D92-11001-01)  
55 pcs - 4 conductor/16 AWG (Conax P/N 7D92-11001-02)  
3 pcs - 4 conductor/16 AWG (Conax P/N 7D92-11001-03)  
9 pcs - 8 conductor/16 AWG (Conax P/N 7D92-11001-04)  
197 pcs - 4 conductor/16 AWG (Conax P/N 7D92-11001-05)

VII) Corrective Action

Both Vermont Yankee Nuclear Plant and Perry Nuclear Power Plant, Units 1 and 2, were notified on August 27, 1984 concerning the potential defect and of our requirement to report to the NRC. At that point, Vermont Yankee had already removed all their Power Lead Gland Assemblies from service. Within the next 180 days, Conax will complete an evaluation of the parameters that may cause this potential defect and will advise the Perry Nuclear Power Plant of the results.

VIII) Recommendations and Advice

Until the causes of the potential defect are determined, Conax is unable to fully evaluate the existence of a safety hazard for the Perry Nuclear Power Plant. Conax will provide information as it becomes available to the Perry Nuclear Power Plant for their assessment of the situation. Conax recommends that the Power Lead Glands not be utilized in any safety related circuits until the evaluation is complete.

For further clarification of our position or any additional information, please contact me directly.

Very truly yours,

CONAX BUFFALO CORPORATION

  
Wilbur S. Rautio  
President

WSR/ct

cc: Boyce H. Grier, Director, Region 1  
Office of Inspection and Enforcement  
U. S. Nuclear Regulatory Commission  
631 Park Avenue  
King of Prussia, PA 19406

Mr. Richard Pagodin  
Engineering Support Supervisor  
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