

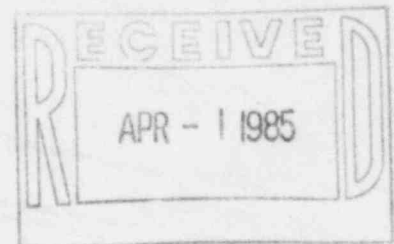


**GULF STATES UTILITIES COMPANY**

RIVER BEND STATION POST OFFICE BOX 220 ST. FRANCISVILLE, LOUISIANA 70775  
AREA CODE 504 635-6094 346-8651

March 22, 1985  
RBG- 20487  
File Nos. G9.5, G9.25.1.1

Mr. Robert D. Martin, Regional Administrator  
U. S. Nuclear Regulatory Commission, Region IV  
611 Ryan Plaza Drive, Suite 1000  
Arlington, Texas 76011



Dear Mr. Martin:

River Bend Station - Unit 1  
Docket No. 50-458  
Final Report/DR-271

On March 20, 1985, GSU notified Region IV by telephone that it had determined DR-271 concerning RTD splices in electrical penetrations supplied by Conax Corporation to be reportable under 10CFR50.55(e). The attachment to this letter is GSU's final 30-day written report pursuant to 10CFR50.55(e)(3) with regard to this deficiency.

Sincerely,

*L. Q. England*

*for* J. E. Booker  
Manager-Engineering,  
Nuclear Fuels & Licensing  
River Bend Nuclear Group

*JEB* PJD  
JEB/PJD/trp

Attachment

cc: Director of Inspection & Enforcement  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

NRC Resident Inspector-Site

INPO

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## ATTACHMENT

March 22, 1985

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### DR-271/RTD Splices in Electrical Penetrations Supplied By Conax Corporation

#### Background and Description of the Problem

The problem concerns deficient RTD splices in electrical penetrations as identified in Nonconformance and Disposition (N&D) No. 7736 and Engineering and Design Coordination Report (E&DCR) Nos. C-25,449, C-25,483, and C-26,072. Containment electrical penetrations, manufactured by Conax Corporation, were found to contain RTD splices on the inboard side which had unacceptable resistance between circuit leads. This problem was initially identified on penetration 1RCP\*LVI12 by means of N&D NO. 7736 6736 on July 14, 1984. Unacceptable resistance readings of 0.5 ohms or greater cause devices connected to RTDs to give erroneous readings, since these devices cannot generally compensate for such differences in resistance between circuit leads.

E&DCR No. C-25,449 was subsequently generated to repair RTD splices in penetration 1RCP\*LVI12, and E&DCR No. C-25,483 was later initiated to investigate and repair RTD splices in penetration 1RCP\*LVI15.

Because of the number of deficient RTD splices found, SWEC issued E&DCR No. C-26,072 to repair all RTD splices on penetrations 1RCP\*LVC19A, 20A, LV105A, 06A, 15, 15A, 21A, NMS10, and 13.

The apparent cause of the deficient RTD splices is attributable to poor mechanical connections of the AWG 16 twisted shielded triple (TST) stranded pigtail conductors to the solid conductor penetration feed-through conductor. This problem appears only on the inboard splices. The poor mechanical connections are hypothesized to occur because of the strain resulting from the method of support provided for the pigtail conductors. Outboard pigtail conductors are supported in a different manner, thus reducing strain on the outboard RTD splices.

#### Safety Implication

E&DCR No. C-26,072 was written to repair all inboard RTD splices, in addition to those mentioned above, with the assumption that they were all potentially deficient. No testing or measurements were required to determine whether or not RTD splices were, in fact, susceptible to the problems identified in N&D No. 7736. Of the nine Class 1E electrical penetrations reworked under this E&DCR, penetrations 1RCP\*LV105A and 06A contained safety-related circuits of Divisions I and II, respectively. It is conservatively assumed that RTD splices of these penetrations

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exhibited similar deficient splices. Port No. 6 of 1RCP\*LV105A contains the circuit between containment monitoring system (CMS) RTD 1CMS\*RTD41C and the drywell temperature recorder on remote shutdown panel 1RSS\*PNL101. Port No. 23 of 1RCP\*LV106A contains the circuit between CMS RTD 1CMS\*RTD42F and the containment temperature recorder in main control room panel 1H13\*P808. Both of the above mentioned recorders are redundant, and their circuits are also assumed to have deficient RTD splices at the penetration. Loss of this safety-related temperature information before, during, or after an accident deprives the plant operator, either in the control room or remote shutdown room, of information required to safely bring the plant to cold shutdown.

#### Corrective Action

The above-mentioned N&D and E&DCRs required repairing all RTD splices by installing new butt splices and soldering or by installing new crimp connectors. In all cases, repairs were tested to demonstrate acceptable electrical performance. These repairs result in more mechanically secure connections which should preclude this problem from recurring. Because no new penetrations with pigtailed attached are anticipated to be purchased, no action to prevent recurrence of this problem is required. Future modifications to penetrations would not be subject to this specific problem. In addition, this problem is not generic to other types of electrical conductor splices.