GULF STATES UTILITIES COMPANY
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April 23, 1985
RBG- 20777
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-263

On March 22, 1985, GSU notified Region IV by telephone that it had determined DR-263 concerning thermocouple extension cable (NGS-01) supplied by Rockbestos Company 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,

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

PJD
JEB/PJD/lp

Attachment

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

NRC Resident Inspector-Site

INPO

85-244

IE-27
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ATTACHMENT

April 23, 1985
RBG- 20777

DR-263/THERMOCOUPLE EXTENSION
CABLE (NGS-01) SUPPLIED BY ROCKBESTOS COMPANY

Background and Description of the Problem

The deficiency concerns production test failures of thermocouple extension wire (NGS-01) supplied by Rockbestos Company as identified in Nonconformance and Disposition Report (N&D) Nos. Z046 and Z049.

Purchase Specification No. 241.243 requires that production testing be in accordance with ICEA Standard S-19-81, S-66-524, or S-68-516. Frequency of testing requires one physical and aging test report per 50,000 ft of ordered cable. The vendor manufactured two shipments of cable, each of which exceeded 50,000 ft, and furnished only one test report per shipment.

N&D No. Z049, which superseded N&D No. Z046, required that samples of each shipment be returned to the vendor for production testing. N&D No. A049 was subsequently issued in turn, superseding N&D No. Z049, to identify a test failure which occurred on one shipment's cable sample and to prescribe corrective action.

The cause of the problem regarding test frequency appears to have resulted from the wording contained in the ICEA standards. The ICEA standards require frequency of testing based on the quantity of cable ordered, not necessarily manufactured. Invariably, manufactured quantities include aditional lengths for test samples and scrap and manufacturing tolerances; they result in delivered cable lengths equal to the ordered quantity plus or minus this tolerance.

The cause of the test failure could not be precisely determined. Failure resulted during the elongation test on an unaged sample, which indicated 145-percent elongation rather than the minimum specified requirement of 250 percent. Possible causes could be speed of separation of the test equipment, minor variations in molecular structure of the insulation, physical stresses imposed on the insulation during removal of the test sample, etc.

The problem is limited to this random occurrence. There are no known cable shipments which have not had factory production tests performed in accordance with purchase specification requirements.

Safety Implication

Cables 1LMSNRX447 and 1LMSZRX404 are connected to differential temperature switches 1E31*N605A and 1E31*TDSN605E. Cables 1LMSNUX404 and 1LMSNUX408 are connected to differential temperature switch 1E31*TDS605C. Cable 1LMSZBX445 is connected to temperature switches 1E31*TDSN605B and 1E31*N605F.

A single wire ground in the thermocouple extension wire may not cause any adverse effects on the temperature switch operation, since the thermocouples are wired in an ungrounded system. When two wires are short circuited or grounded, however, the temperature switch sees only one thermocouple, and it may operate incorrectly at normal condition. Switch failures caused by cable failures may result in incorrect operation of equipment.

A short circuit failure of safety-related Division 1 cables 1LMSNRX447 and 1LMSZRX404 will operate temperature switches 1E31*TDS605A and 1E31*TDSN605E. Operation of E31*TDSN605A causes reactor water cleanup system's containment penetration outboard isolation valves 1G33*F004, 1G33*F034, 1G33*MOVF039, and 1G33*MOVF054 to close, rendering the reactor water cleanup system out of service. After a predetermined time delay from temperature switch E31*TDSN605E, reactor core isolation cooling system isolation valves 1E51*F031 and 1E51*MOVF064 close and pump turbine 1E51*C002 trips, thus rendering the RCIC system out of service.

Corrective Action

N&D No. A049 also required the replacement of the subject cable on Category I circuits with cable that had successfully passed the required production tests. Because the subject cables had not met the specification requirements, they were considered suspect and potentially susceptible to ground and short circuit failures during their qualified life.