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Vice President
Nuclear Operations

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May 15, 1987

U. S. Nuclear Regulatory Commission
Region II
101 Marietta St., N.W., Suite 2900
Atlanta, Georgia 30323

Attention: Dr. J. Nelson Grace, Regional Administrator

Dear Dr. Grace:

SUBJECT: Grand Gulf Nuclear Station
Unit 1
Docket No. 50-416
License No. NPF-29
Hydrogen Analyzers,
Qualification Concerns for
Internal Wiring
AECM-87/0098

This letter documents discussions held with members of NRC Staff on May 7, 1987. The discussions pertained to concerns regarding the environmental qualification of certain wiring associated with the containment and drywell atmospheric hydrogen analyzers installed at Grand Gulf Nuclear Station (GGNS).

A. BACKGROUND/DISCUSSION

1. As part of an overall effort to enhance GGNS environmental qualification (EQ) data files, reviews were made of the EQ files associated with the hydrogen analyzers. This review and associated field walkdowns revealed discrepancies between the EQ files and certain portions of wiring currently installed in the hydrogen analyzer system.
2. In general System Energy Resources, Inc. (SERI) staff followed the guidance of the NRC Generic Letter 86-15 as it pertains to the identification of a potential deficiency in the environmental qualification of equipment. The conference call with NRC Staff was arranged to discuss SERI actions on this matter.
 - a. Prompt Operability Determination. SERI Staff indicated high confidence that the affected components were operable. The key elements providing the basis for that conclusion were discussed with the NRC Staff. The Justification for Continued Operation (JCO) documented the key elements of that basis. Later in the day on May 7, subsequent to the subject conference call, SERI concluded that the affected components were operable based on the JCO.

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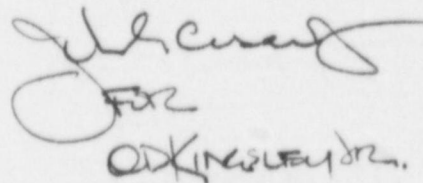
- b. Established Plan For Corrective Action. SERI described the expeditious actions taken to have sample wiring, identical to the installed wiring, tested to confirm acceptable performance under post-accident conditions. Wiring samples were delivered to the selected testing facility on May 8, and testing commenced on that date. Initial testing is now complete with satisfactory results obtained as summarized in B.2 below.
- c. Written Justification For Continued Operation. As noted in 2.a above, a written JCO was finalized on May 7. A summary of the JCO is provided in the Attachment.

B. CURRENT STATUS/FOLLOWUP ACTIONS

1. As noted above the affected components are considered operable. A JCO was developed and documented as summarized in the Attachment.
2. Qualification testing of the subject wire commenced on May 8, 1987 which would envelope the GGNS post-LOCA environment in addition to a service life of 5 years. Initial testing was completed on May 12, 1987, and the test results showed that this wire would withstand its normal and accident environment and would continue to perform its function post-LOCA in the Hydrogen Analyzers for a minimum service life of 5 years. Therefore, this wiring is considered to be environmentally qualified to 10CFR50.49 requirements for a period of at least 5 years. An environmental qualification documentation package is presently being formalized on this wiring for inclusion into the GGNS Environmental Qualification Files.
3. Further environmental qualification testing of the wire samples will be conducted to extend the qualified life of the wire.
4. In discussing this matter with the NRC Staff, the NRC Senior Resident Inspector raised some concerns regarding the timing of EQ deficiency identification and component operability determinations. As committed, SERI Nuclear Licensing will research the process used and discuss the results with the NRC Senior Resident Inspector.

This letter summarizes actions taken or intended by SERI in this matter. If additional information is required, please advise this office.

Yours truly,



ODK

ODK:rg
Attachment

cc: See next page

cc: Mr. T. H. Cloninger (w/a)
Mr. R. B. McGehee (w/a)
Mr. N. S. Reynolds (w/a)
Mr. H. L. Thomas (w/o)
Mr. R. C. Butcher (w/a)

SUMMARY OF
JUSTIFICATION FOR CONTINUED OPERATION
FOR GGNS HYDROGEN ANALYZERS
(MAY 7, 1987)

I. COMPONENT(S)

Component: GGNS Containment and Drywell Hydrogen Analyzers
Manufacturer: Comsip-Delphi Inc.
Identification Nos.: E61-J001A
E61-J001B
E61-J002A
E61-J002B

II. POTENTIAL QUALIFICATION DEFICIENCY

Wiring contained in the hydrogen analyzer "hot box" was identified as having undocumented qualification. The subject wire is:

Mfgr: Rockbestos
Type: SEW-2 (CSA)
Gauge: 14 AWG
Temp. Rating (UL): 200°C (392°F)
Insulation Material: Silicone Rubber

III. GGNS ENVIRONMENTAL QUALIFICATION REQUIREMENTS

The hydrogen analyzers are located in the Auxiliary Bldg. corridors where the post-LOCA environment is radiation harsh only. The operating environment of the wire is:

Total Radiation: 7.45×10^4 rads (Normal plus accident)
Temperature: 300°F (Maximum normal operating temp. within hot box)
No post-LOCA temp increase

IV. COMPONENT ANALYSIS

Comparative analyses of the wire have been conducted to determine whether the wire would perform its function post-LOCA.

- A. Comparison to Similar Qualified Wire - SERI has retained qualification documentation on Rockbestos Firewall SR wiring which is constructed of silicone rubber insulation. The GGNS documentation shows that this wire can withstand a total radiation dose of 2×10^6 rads and 300°F for greater than 5 years.
- B. Comparison to Similar Insulation Material - SERI conducted a review of documented industry material type testing for a similar silicone rubber wire insulation with a rating of 200°C. The results showed that similar silicone rubber wire can conservatively withstand 1.0×10^7 rads and 300°F for greater than 40 years.

V. JUSTIFICATION FOR CONTINUED OPERATION

Based on the above analysis of the existing Rockbestos SEW-2 wiring to similarly qualified Rockbestos Firewall SR wire and documented silicone rubber material characteristics, the subject wiring presently contained in the hydrogen analyzer hot boxes will perform its function under its expected post-LOCA environment.