

APPENDIX B
U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report No. 50-458/91-28

Operating Licenses No. NPF-47

Licensee: Gulf States Utilities
P.O. Box 220
St. Francisville, Louisiana 70775

Facility Name: River Bend Station (RBS)

Inspection At: RBS, St. Francisville, Louisiana

Inspection Conducted: November 18-22, 1991

Inspectors: L. D. Gilbert, Reactor Inspector, Materials &
Quality Programs Section, Division of Reactor Safety
W. M. McNeill, Reactor Inspector, Materials &
Quality Programs Section, Division of Reactor Safety

Approved: Annuel Barnes 1/2/92
I. Barnes, Chief, Materials and Quality Programs
Section, Division of Reactor Safety Date

Inspection Summary

Inspection Conducted November 18-22, 1991 (Report 50-458/91-28)

Areas Inspected: Routine and nonroutine, announced inspection of procurement control, the inservice inspection program, and action on previously identified inspection findings.

Results: Inspection of procurement control identified that the licensee was effectively implementing its program requirements for procurement of safety-related items. A deviation was, however, identified (paragraph 4.2) pertaining to inadequate reviews of procurement documents for fire protection materials (i.e., Quality Class-2Q, "QA Program Applicable"). Errors were also noted in the identity of documents referenced by technical and quality checklists and mini-specifications that were applicable to procurements of this quality class of materials, further indicating that reviews of Quality Class-2Q procurement documents were not sufficiently comprehensive. Three unresolved items were also identified (paragraph 3) as a result of fire protection issues identified by staff from the Office of Nuclear Reactor Regulation during a visit to RBS on October 7-8, 1991.

The licensee's procedures for control of the inservice inspection (ISI) and repair and replacement programs were found to be well written, explicit, and appropriately controlled. Review of the feedwater system and a portion of the reactor recirculation system found that the welds listed in the ISI plan were consistent with the requirements of the 1980 Edition through the 1981 Winter Addendum of Section XI of the ASME Boiler and Pressure Vessel Code. One minor anomaly was noted during this review pertaining to the identification of an incorrect weld number in a relief request that had been submitted to the NRC.

1. PERSONS CONTACTED

GSU

- *J. Deddens, Senior Vice President
- *P. Graham, Plant Manager
- *K. Suhrke, General Manager, Engineering and Administration
- *J. Booker, Manager, Nuclear Industry Relations
- *W. Odell, Manager, Oversight
- *L. England, Director - Nuclear Licensing
- *M. Sankovich, Manager, Engineering
- *J. Blakely, Supervisor, ASME XI
- *K. Giadrosich, Supervisor, Quality Engineering
- *D. Lorfing, Supervisor, Nuclear Licensing
- *T. Hoffman, Supervisor, Civil/Structural Design
- *J. Cook, Technical Specialist
- *R. Carlyle, Inservice Inspection Coordinator
- *F. Lenox, Jr., Technical Specialist
- *J. Maher, Nuclear Licensing Engineer
- *i. Malik, Supervisor, Operations QA
- *R. Kerar, Fire Protection Engineer
- *R. Jackson, Technical Specialist
- J. Bowser, Engineer
- M. Feltner, Licensing Engineer
- W. Goebel, Engineer
- G. Kimmell, Director Quality Services
- T. LaRocque, Quality Assurance Engineer
- B. Mutz, Quality Control Inspector
- G. Svestka, Engineer
- J. Walker, Material Foreman

Cajun Electric

*W. Curran, Site Representative

The Hartford Steam Boiler Inspection and Insurance Company

T. McGovern, Authorized Nuclear Inservice Inspector

The inspectors also interviewed other employees during the inspection.

*Denotes attendance at exit interview conducted on November 22, 1991.

2. ACTION ON PREVIOUSLY IDENTIFIED INSPECTION FINDINGS (92701 AND 92702)

2.1 (Closed) Inspector Followup Item (458/9029-06): Inspection of defect indication in N4A feedwater nozzle safe-end weld.

The inspectors reviewed the ultrasonic examination data from the 1991 mid-cycle examination of the N4A feedwater nozzle, which was submitted to the NRC via GSU Letter RBG-35,679 dated September 26, 1991. The data identified that the defect indication was 7.8 inches in length and 0.4 inches in depth (36 percent through wall), which represented increases in depth and length, respectively, of 0.07 inches and 0.175 inches since the previous refueling outage, RF-3. The actual crack growth rate was below the assumed rate, and continued operation to RF-4 was found to be acceptable (reference NRC letter dated September 26, 1991). The licensee plans to repair the N4A nozzle safe end weld during RF-4, which will eliminate the need for additional followup inspection with respect to the defect indication. This item is considered closed.

2.2 (Closed) Unresolved Item (458/9009-01): Clarification of the quality assurance experience of the Manager of Nuclear Oversight with respect to ANSI/ANS 3.1-1978 requirements.

The inspectors reviewed an internal memorandum (GSU-SQS-90-0254) dated April 26, 1990. This memorandum identified that the previous work experience of the Manager of Nuclear Oversight was quality assurance related and in the nuclear power field for at least 4 years, thus indicating that the manager was appropriately qualified. This item is considered closed.

2.3 (Closed) Violation (458-89200-03): Failure to perform a documented evaluation of technical information received from vendors.

The inspectors verified that the licensee had conducted a review of service information memorandums that had been received from Transamerica Delaval/Enterprise Engine, the vendor for the Division I and Division II emergency diesel generators, to assure that the documents had been processed in accordance with vendor technical information (VTI) procedural requirements. It was additionally confirmed that the licensee had obtained and incorporated into the VTI system, power pointers and maintenance instructions that were applicable to the General Motors EMD Division III emergency diesel generator. Arrangements had also been made with M/K Power Systems, the authorized distributor of General Motors EMD parts and services to the nuclear industry, for the mailing of updated documents. This violation is considered closed.

2.4 (Closed) Violation (458/89200-04): Failure to take necessary actions to assure a timely response was provided to Nuclear Licensing for 76 examples of regulatory correspondence.

The inspectors verified that the licensee had completed its engineering review of NRC information notices issued prior to 1989. Nuclear licensing was found to be currently monitoring status of reviews and to have adopted a standard

review period as a means for ensuring more timely reviews. This violation is considered closed.

3. VISIT TO RIVER BEND STATION BY OFFICE OF NUCLEAR REACTOR REGULATION (NRR) STAFF ON THE SUBJECT OF FIRE PROTECTION

On October 7-8, 1991, NRR staff visited the River Bend Station in order to collect data in regard to the use of Thermo-Lag fire barrier material. During the visit, four issues were identified which were subsequently provided to Region IV for followup. The subject material of the issues is documented in Attachment 2 to this report. A copy of Attachment 2 was provided to the licensee on November 20, 1991, during the course of this inspection. Three of the issues (i.e., Issues 1, 2, and 4) are summarized below and are considered unresolved items pending NRC inspection. The remaining issue, Issue 3, was addressed during this inspection, the results of which are documented in paragraph 4 below.

Issue 1: Use of acceptance criteria for fire barrier qualification tests that were not consistent with the acceptance criteria contained in Generic Letter 86-10 (458/9128-01).

Issue 2: Three installed fire barrier configurations containing unprotected structural steel were observed which did not appear to comply with the requirements of Appendix R to 10 CFR Part 50 (458/9128-02).

Issue 4: Additional or supplemental licensee event reports (LERs) were not submitted for nonconforming fire barrier conditions discovered after submittal of LER 87-005 (458/9128-03).

4. PROCUREMENT AND CONTROL (38701 AND 38702)

The objectives of this inspection were to ascertain whether the licensee is implementing a quality assurance program to ensure that procurement activities and control of the receipt of materials are in conformance with regulatory requirements, licensee commitments, and industry guides and standards.

4.1 Procurement Program Review

The procurement program was reviewed (see Attachment 1) to establish the mechanics utilized by the licensee in the procurement process. The inspectors found that the program generally provided for engineering establishment of technical and quality requirements in purchase requisitions by use of a technical and quality checklist or a mini-specification. Quality assurance reviewed purchase requisitions and the applicable forms referenced in the requisition. The approved technical and quality requirements identified in purchase requisitions were then transcribed into purchase orders. Checklists and specifications were not referenced in purchase orders. Receiving inspection requirements were established by quality assurance during review of the applicable procurement documents and identified within the same documents.

4.2 Review of Issue 3 in Attachment 2

The inspectors performed a confirmatory inspection of the NRR findings contained in Issue 3 of Attachment 2, in order to both verify that the information was complete and to allow assessment of the procurement and receipt inspection documents.

4.2.1 Inconsistencies in Thickness Tolerances for Prefabricated Thermo-Lag Panel

The NRR staff noted inconsistencies between two specifications (i.e., 228.410 and 211.161) regarding thickness tolerances for prefabricated Thermo-Lag panels. The inspectors reviewed Specification 228.410, "Specification for Furnishing and Installation of Thermal Insulation Outside the Drywell," Revision 2, and ascertained that the specification itself did not define thickness tolerances for prefabricated Thermo-Lag panels. The tolerances (0.500 inches, + 0.250 inches, - 0.00 inches, for 1-hour panels; 1.00 inches, + 0.500 inches, - 0.00 inches, for 3-hour panels) were actually found in Note 2 of Drawing 12210-EE-34YA-3, which was referenced by Specification 228.410 as an applicable drawing. Review of Specification 211.161, "Nonengineered Item Data Sheet," Revision 2, confirmed the NRR observation that the stated plus tolerances were, respectively, 0.125 inches and 0.250 inches for 1-hour and 3-hour panels.

The inspectors were informed by licensee staff that nonengineered item data sheets were used only as reference documents in determination of procurement requirements. The inspectors reviewed the requirements for 1-hour boards contained in Purchase Order (PO) 89-B-70587 and noted that a maximum thickness was not stated for the materials (i.e., the materials were ordered as 1/2 inch, 1 hour, 1/2 inch minimum, Thermo-Lag 330 boards). Review of Specification 228.410, Revision 2, identified that Thermal Science, Inc. (TSI) Technical Note 20684, "Thermo-Lag 330 Fire Barrier System Installation Procedures Manual," was a referenced document. This document indicated that the manufacturer's panel thickness tolerances were identical to the tolerances specified by Drawing 12210-EE-34YA-3. The inspectors ascertained by review of Maintenance Work Orders (MWOs) R124621 and R130692, which pertained to repair of Thermo-Lag insulation, that the inspection plan in the two MWOs required witnessing of reinstallation of replacement materials to assure conformance to Specification 228.410 and Drawing 12210-EE-34YA.

The inspectors concluded that the inconsistencies in panel thickness tolerances between Specification 211.161 and Drawing 12210-EE-34YA were not technically significant. This conclusion was based on the manufacturing and installation thickness tolerance requirements being identical, and Specification 211.161 thickness tolerance requirements not being identified in procurement requirements.

4.2.2 Inconsistencies in Receipt Inspection Attributes for Thermo-Lag Materials

The NRR staff reviewed receipt inspection reports for four POs for Thermo-Lag materials and noted inconsistencies in the assigned receipt inspection attributes. It was additionally ascertained that an incorrect specification had been cited. The inspectors reviewed the receipt inspection reports for POs 89-B-7056, 89-L-73580, 91-D-71460, and 91-4-80590, which pertained to procurement of Thermo-Lag 330-1 subliming compound. It was noted from this review that the inconsistencies in receipt inspection attributes pertained primarily to: (a) variations in requirements for inspection of material temperature during shipping, and (b) differences in methods used to express shelf-life requirements in the POs. The inspectors noted that POs 89-B-7056 and 89-L-73580 contained an instruction for quality control to verify that the temperature recorders shipped with the material did not register less than 32 degrees F. POs 91-D-71460 and 91-4-80590 did not, however, require a similar verification to be performed. The inspectors considered the omission of this requirement for the latter two POs to be indicative of an inadequate review process, in that the manufacturer identified in TSI Mechanical Note 20684 that this material must be stored above 32 degrees F and below 100 degrees F. The inspectors did note that the temperature recorder charts had been reviewed by quality control personnel with respect to verifying that the material exceeded 32 degrees F in shipment, despite the review not being identified as an inspection attribute.

The inspectors also observed that the technical and quality checklists that were used to define the requirements for the four POs specified packaging, shipping, handling, and storage requirements to be ANSI N45.2.2, Level B. The temperature range that is applicable to Level B is 40 degrees F to 140 degrees F, which would permit exceeding the 100 degrees F maximum temperature specified by the vendor for the material. The failure to identify the 100 degrees F limiting temperature for storage, coupled with receipt inspection not being required to verify that this maximum temperature limit was not exceeded in shipment, are considered additional examples of an inadequate procurement document review process for this category of materials.

The inspectors visited the warehouse where the Thermo-Lag 330-1 compound procured by PO 91-4-80590 was stored. It was observed that the facility was suitable for storage of the material, in that the building was equipped with heating and air conditioning. The inspectors noted during review of the documentation for this PO that review of vendor shelf life information had not been identified as a receipt inspection attribute. The material was identified by TSI Technical Note 20684 to have a warranted shelf life of 6 months. PO 91-4-80590 required a shelf life statement to be furnished by the vendor, with the shelf-life expiration date to be calculated by adding shelf life to the date of manufacture or cure date. It was observed by the inspectors that the vendor shelf-life statement incorrectly utilized the

shipping date rather than the manufacturing date for the beginning of the material shelf life. The failure to include shelf life as a receipt inspection attribute represents another example of inadequate review of procurement documents.

The inspectors reviewed the procurement documents for the four POs and noted that the technical and quality checklists identified Specification 228.410, Revision 2, as the applicable specification for POs 89-B-7056 and 89-L-73580, and Specification 229.180, Revision 2, as the applicable specification for POs 91-D-71460 and 91-4-80590. Review of Specification 229.180, Revision 2, which pertained to penetrations, did not identify any requirements for fire-barrier materials and appeared to be an incorrect listing.

The inspectors reviewed Procedure QAI-2.2, "QA Review of Procurement Documents and Identification of Receipt Inspection Requirements," Revision 9, in order to ascertain the extent of the guidance given with respect to this category of materials (i.e., Quality Class 2Q - items for non-safety-related systems which are subject to all or portions of the quality assurance program). The inspector noted that the procedure was limited in the scope of instructions given for handling Quality Class 2Q items.

4.2.3 Summary

The failure to identify the minimum and maximum storage temperature requirements of TSI Technical Note 20684 in procurement documents for Thermo-Lag 330-1 materials is an apparent deviation from the commitments made in Sections 17.2.4.2 and 17.2.4.3 in the Updated Safety Analysis Report (458/9128-04). The listing of incorrect documents in technical and quality checklists and mini-specifications (see paragraph 4.3 below) are additional indicators that the reviews performed of Quality Class 2Q procurements have not been sufficiently comprehensive.

This inspection was performed as the result of the identification by NRR staff (see Issue 3, Attachment 2) of weaknesses in the procurement and receipt inspection of fire-protection materials. The inspection included both review of Issue 2 and 3 and a sample of procurement actions in its scope.

4.3 Review of a Sample of Recent Procurements

The inspectors reviewed the procurement activities and receiving inspection activities associated with a sample of 10 recent POs (see Attachment 1). Within the sample of 10 POs, 3 pertained to procurement of fire-protection system items. The inspectors found that vendor catalogue numbers were used for purchasing, with the exception of the pipe plugs, structural steel, and bolting. These latter items used industry standards for purchasing of stock materials.

Receiving inspection verified, generally, use of a qualified vendor and inspection for shipping damage, workmanship, cleanliness, identification, and documentation verification. Documentation verification included review of the vendor certification and applicable material test report(s), and shelf-life statement.

There were five mini-specifications used in the sampled POs. These five mini-specifications were reviewed in terms of the design information that had been cross referenced. The inspectors found that two of the mini-specifications (pertaining to fire protection system items) had errors in Section XII in regard to the referenced drawings and manuals. Mini-Specification Nos. S-2Q-E-07253-0 for a toggle switch and 2Q-E-07263-0 for a light both referenced the same drawing (0242.141-000-550C) and vendor manual (3242.814-100-029A). Neither the drawing nor the vendor manual were correct. The correct reference for the switch should have been Vendor Manual No. 3242.414-000-029A with no drawing number and the correct reference for the light should have been Drawing No. 0242.433-000-550A with no vendor manual number.

With the exception of the above observation, which is another indicator of inadequate review of fire protection procurement documents, the procurement and receiving activities were found by the inspectors to be in accordance with approved procedures and effective in accomplishing the goals.

5. INSERVICE INSPECTION (73051)

The purpose of the inspection was to ascertain whether the licensee's program pertaining to inservice inspection (ISI) is complete and in conformance with regulatory requirements and the licensee's commitments.

The inspectors reviewed the licensee's programs for inservice inspection and repair and replacement and found that the procedures for control of these activities were well written, explicit, and appropriately controlled. The documents reviewed are listed in Attachment 1 to this report.

The licensee discussed with the inspectors the status of the River Bend Station ISI Plan for the first 10-year interval. ISI Plan, Revision 3, was approved by NRC on April 3, 1990. Revision 4 of the ISI Plan, which was revised for clarification and correction of typographical errors, was submitted to NRC for review on April 2, 1991. Additionally, Revision 5 of the ISI Plan had been prepared and the revision was in the licensee's review cycle. The licensee submitted the summary report for RF-3 on March 1, 1991. The report stated that 47.4 percent of the inservice inspection examinations had been completed by the end of RF-3. The licensee has scheduled an additional 2201 inservice inspection examinations for the next refueling outage, RF-4. The end of RF-4 coincides with the end of the second period of the three periods in the first 10-year interval. The licensee indicated that the additional examinations will increase the total to 66 percent complete at the end of RF-4.

The inspectors reviewed a sample of welds listed in the ISI Plan, Revision 4, for conformance with the selection criteria specified in the ASME Boiler and Pressure Vessel Code, Section XI. The two piping systems selected for this review were the feedwater system and the reactor recirculation system. The inspectors verified that the welds listed in the ISI Plan were consistent with the requirements of the 1980 Edition through the 1981 Winter Addendum of Section XI of the ASME Boiler and Pressure Vessel Code for the Class 1 piping in the feedwater system and a portion of the Class 1 piping in the reactor recirculation piping system. In addition, the inspectors reviewed the referenced relief requests for the feedwater and reactor recirculation piping welds for consistency with the relief requests granted by NRC for Revision 3 of the ISI Plan. The inspectors identified one minor anomaly, in that the licensee inadvertently identified a wrong weld number in Relief Request No. RR0007. The inspectors noted that the ISI Plan referenced Relief Request No. RR0007 for performing the volumetric examination of Weld No. 1RCS*800B-FWA09-1'. However, this weld number was not identified in Relief Request No. RR0007. This relief request identified those welds where a complete examination could not be accomplished due to the location of integral attachments, branch connections, and ASME Code plates. The licensee informed the inspectors that Weld No. 1RCS*800B-SW07ABLA, a 12-inch segment of the longitudinal weld intersecting Pipe Weld NO. 1RCS*800B-SW07, had been listed in error in the relief request. The correct weld should have been Weld No. 1RCS*800B-FWA09-LA, a 12-inch segment of this same longitudinal weld which intersects the pipe weld (Weld No. 1RCS*800B-FWA09) at the other end of the longitudinal weld. The obstruction that interfered with completing the required 100 percent volumetric examination on the two segments of the longitudinal weld was an ASME Code plate, which was located adjacent to Weld No. 1RCS*800B-FWAC0-LA. The licensee stated that the weld number in the relief request would be corrected and the ISI plan would be reviewed against the relief requests for similar errors.

6. EXIT INTERVIEW

An exit interview was conducted on November 22, 1991, with those personnel denoted in paragraph 1 in which the inspection findings were summarized. No information was presented to the inspectors that was identified by the licensee as proprietary.

ATTACHMENT 1

LIST OF DOCUMENTS REVIEWED

ISI Procedures

- RBNP-042, "River Bend Station ASME Section XI Program, Organization, and Responsibilities," Revision 3
- MSP-0035, "Repair/Replacement Program," Revision 0A
- QAD-19, "ASME Program: Section III and Section XI," Revision 7
- QAD-17, "Quality Assurance Records," Revision 6
- INS-17-001, "ASME Section XI ISI Documentation Control," Revision 1
- INS-17-003, "ASME Section XI ISI Evaluation Program," Revision 0
- INS-17-004, "Inspection of Carbon Steel Piping for Erosion/Corrosion Control," Revision 2
- INS-17-005, "ASME Section XI System Pressure Test Program," Revision 1
- INS-17-007, "ASME Section XI ISI Component Weld/Bolt Examinations," Revision 1
- ISI-18-001, "ISI Forms Control," Revision 0
- ISI-18-002, "ISI Plan Program," Revision 0
- ISI-18-003, "RBS Erosion/Corrosion Examination Package," Revision 0
- ISI-18-004, "ASME Section XI System Pressure Test Data Package," Revision 1
- ISI-18-006, "ISI Component Weld/Bolt Package," Revision 0
- ISI-18-007, "ISI Ultrasonic Testing Calibration Blocks," Revision 0
- ISI-18-008, "Formulation of the NIS-1 Form Data Package and Inservice Inspection Summary Report," Revision 1
- QCI-3.41, "Qualification of Contract Nondestructive Testing (NCE) Personnel and Surveillance of NDE Activities," Revision 0 with Change Notices CN-3.41-0-1 and -2.

Procurement Procedures

- QAD-4, "Procurement Document Control," Revision 8
- QAD-7, "Control of Purchased Material, Equipment and Services," Revision 7
- QAI-2.2, "QA Review of Procurement Documents and Identification of Receipt Inspection Requirements," Revision 9

QAI-2.4, "QA Evaluation of Supplier's/Contractor's QA Program," Revision 8 with Interim Procedure Changes (IPCs) 1 and 2

QAI-2.7, "Quality Surveillance of Suppliers," Revision 5

QAI-2.11, "Qualified Supplier List," Revision 7

QAI-2.19, "Vendor Quality Assurance Manual Review," Revision 2

QCI-3.0, "Receiving Inspection," Revision 11

RBNP-003, "Procurement of Materials and Services," Revision 5 with IPCs 1 and 2

Eng-3-006, "River Bend Station Design and Modification Request Control Plan," Revision 8

Eng-3-007, "Instructions and Requirements for Use of the River Bend Q-List," Revision 1

Eng-3-0-19, "River Bend Station Processing of Unsatisfactory Receiving Inspection Reports," Revision 1 with IPC 1

EDP-EQ-01, "Technical, Quality and Documentation Requirements for Procurement Documents," Revision 3 with IPC 1 through 4

EDP-EQ-10, "Control and Maintenance of The River Bend Q-List," Revision 1

EDP-EQ-12, "Quality and Safety Classification of Equipment," Revision 0

EDP-EQ-15, "Shelf Life Guidelines," Revision 0

MHP-15-001, "Materials Receiving and Inspection," Revision 2

MHP-15-003, "Handling of Materials Receiving Discrepancy Reports," Revision 0

MHP-15-007, "Warehouse Receipt and Control of Procurement Documents and Supplier Generated Documentation," Revision 1 with IPC 1

MHP-15-011, "Shelf Life Program," Revision 3

Purchase Orders

91-G-73172, ASME Class 2 pipe plugs

91-G-73174, ASME Class 1 structural steel

91-G-73168, ASME Class 1 bolting

91-G-73161, Calibration services

91-H-73596, O-rings

91-H-73589, ASME Class 2 tube unions

91-H-73607, Valve reed switch

91-H-73689, Fire pump water heater

91-G-73159, Fire panel switch and light

91-G-73209, Fire insulation blanket

SUMMARY OF ISSUES

Facility: River Bend Station, Unit 1
 Licensee: Gulf States Utilities
 Docket No.: 50-458
 Trip Dates: October 7-8, 1991
 Review Team: Loren Plisco, NRR and Steven West, NRR

1. During November and December 1990, the licensee conducted fire tests intended to qualify proposed upgrades for River Bend Station Thermo-Lag fire barriers that deviate from approved installation procedures. These tests are addressed in Information Notice 91-47, "Failure of Thermo-Lag Fire Barrier Material to Pass Fire Endurance Test." NRC's acceptance criteria for fire barrier qualification, which were detailed in Generic Letter 86-10, stipulate that the temperature on the fire barrier's unexposed surface should not exceed 250°F above ambient temperature. The licensee, however, used 325°F above ambient temperature as its acceptance criterion for the upgrade fire tests. A copy of Generic Letter 86-10 was provided to the licensee during the site visit and they acknowledged familiarity with the generic letter. However, the licensee could not provide the basis for their acceptance criteria or explain the deviation from the NRC's acceptance criteria. The use of incorrect acceptance criteria could impact the acceptability of the proposed fire barrier upgrades. This concern was expressed to the licensee. If the licensee uses erroneous acceptance criteria, they may violate Appendix R to 10 CFR Part 50 and GSU facility operating license no. NPF-47, which states that GSU shall comply with the requirements of the fire protection program. (Generic Letter 86-10 provided detailed NRC guidance on qualification fire testing, including specific acceptance criteria.)
2. Three fire barrier configurations were observed during the plant tour that the licensee could not justify by either fire tests or analyses. These were (1) a large horizontal barrier separating Fire Area PH1 from Fire Area PT1 in G tunnel, (2) a large cable tray enclosure in F tunnel, and (3) an instrument rack enclosure at elevation 98 of the control building. In addition, structural steel forming parts of the barriers were not protected to provide fire resistance equivalent to that required of the barriers. These configurations do not appear to comply with the requirements of Appendix R to 10 CFR Part 50. Moreover, Section 9.5.1.2.14 of the RBS USAR states: "Exposed structural steel which is part of the barriers is fireproofed." (Generic Letter 86-10 provided detailed NRC guidance on qualification fire testing and analyzing deviations between tested and field configurations.)

3. Inconsistencies were found in the thickness tolerances for prefabricated Thermo-Lag panels between two specifications reviewed. For example, Purchase Specification 22B.410 (Drawing 12210-EE-34YA-3) identified the thickness tolerances as 0.500," +0.250," -0.00" for 1-hour panels and 1.00," +0.500," -0.00" for 3-hour panels. Conversely, Specification 211.161 (nonengineered item data sheet) identified the thickness tolerances as 0.500," +0.125," -0.00" for 1-hour panels and 1.00," +0.250," -0.00" for 3-hour panels. Panel thickness can impact fire rating, capacity derating, and seismic analysis.

Thermo-Lag materials received at RBS are inspected by a QC inspector against inspection attributes assigned by the receipt engineer. The results of the receipt inspection, which address items such as physical condition upon receipt and shelf life requirements, are documented in a receipt inspection report. Receipt inspection reports 90RIR00096 (Purchase Order 89L73580, Rev. 0), 91RIR00223 (Purchase Order 91071460), and 91RIR00454 (Purchase Order 91480590) for Thermo-Lag trowel grade material and the receipt inspection report (number not noted) for Purchase Order 89M006304 for Thermo-Lag prefabricated panels were reviewed. Inconsistencies were noted in the inspection attributes assigned to the four purchases. In several cases, the incorrect specification was cited. In addition, some specific material requirements were not verified. For example, trowel grade Thermo-Lag 330-1 has minimum (32°F) and maximum (100°F) allowable temperature limitations. A temperature recorder is used to verify that the limits were not exceeded during shipment. The licensee inspects and records the minimum temperature experienced in transit, but not the maximum temperature. The weaknesses may not be limited to Thermo-Lag, but may be generic in nature at RBS.

4. During performance of surveillance test procedures, the licensee identified Thermo-Lag fire barriers that did not meet acceptance criteria due to surface cracks, wear conditions, and incomplete construction. In response to these deficiencies, the licensee declared the subject barriers inoperable and established fire watch patrols in accordance with RBS Technical Specification 3.7.7.a. By letter dated March 25, 1987, the licensee submitted LER 87-005 to report the nonconforming conditions pursuant to 10 CFR Part 50.73. Subsequently, the licensee identified additional significant fire barrier deficiencies including removal of the inner layer of stress skin and ribs from the preformed panel. On July 29, 1988, the licensee conducted a 3-hour fire endurance test on a cable tray assembly covered with one-inch Thermo-Lag panels with the stress skin and ribs removed. The test results, which are documented in ITL Report 88-07-5982 and the licensee's Condition Reports 88-0687 and 88-0608, show that the "as-installed" barrier failed on temperature rise in less than two hours.

Although the licensee identified significant additional nonconforming conditions and declared additional barriers inoperable, as evidenced by numerous condition reports prepared after submittal of LER 87-005, and conducted an unsuccessful qualification fire test of an "as-installed" fire barrier configuration, which resulted in the licensee declaring all RBS fire barriers inoperable, the licensee did not submit additional LERs or supplemental LERs to report the nonconforming conditions. This may be a violation of 10 CFR Part 50.73. During the site visit, the licensee informed the review team that it believed the reportability aspect of the nonconforming conditions discovered after submittal of LER 87-005 were still covered by LER 87-005.

bcc w/enclosures:
bcc to DMD (IE01)

bcc distrib. by RIV:

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