



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-8064**

June 12, 2001

Randal K. Edington, Vice President - Operations
River Bend Station
Entergy Operations, Inc.
P.O. Box 220
St. Francisville, Louisiana 70775

SUBJECT: RIVER BEND STATION - NRC INSPECTION REPORT 50-458/01-05

Dear Mr. Edington:

On May 18, 2001, the NRC completed a 1-week onsite team triennial fire protection baseline inspection at your River Bend Station. The enclosed report presents the results of this inspection. We discussed the preliminary results of the onsite inspection with you, and other members of your staff on May 18, 2001. On June 4, 2001, we conducted a telephonic exit with Mr. B. Mashburn, and other members of your staff to present the results of the inspection.

The inspection involved an examination of the effectiveness of activities conducted under your license as they related to the implementation of your NRC-approved fire protection program and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of selected examinations of procedures and representative records, observations of activities, and interviews with personnel.

No findings of significance were identified.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/NRC/ADAMS/index.html> (the Public Electronic Reading Room).

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,
/RA/

Jeffrey L. Shackelford, Chief
Engineering and Maintenance Branch
Division of Reactor Safety

Docket: 50-458
License: NPF-47

Entergy Operations, Inc.

-2-

Enclosure:
NRC Inspection Report
50-458/01-05

cc w/enclosure:
Executive Vice President and
Chief Operating Officer
Entergy Operations, Inc.
P.O. Box 31995
Jackson, Mississippi 39286-1995

Vice President
Operations Support
Entergy Operations, Inc.
P.O. Box 31995
Jackson, Mississippi 39286-1995

General Manager
Plant Operations
River Bend Station
Entergy Operations, Inc.
P.O. Box 220
St. Francisville, Louisiana 70775

Director - Nuclear Safety
River Bend Station
Entergy Operations, Inc.
P.O. Box 220
St. Francisville, Louisiana 70775

Wise, Carter, Child & Caraway
P.O. Box 651
Jackson, Mississippi 39205

Mark J. Wetterhahn, Esq.
Winston & Strawn
1401 L Street, N.W.
Washington, DC 20005-3502

Manager - Licensing
River Bend Station
Entergy Operations, Inc.
P.O. Box 220
St. Francisville, Louisiana 70775

Entergy Operations, Inc.

-3-

The Honorable Richard P. Ieyoub
Attorney General
Department of Justice
State of Louisiana
P.O. Box 94005
Baton Rouge, Louisiana 70804-9005

H. Anne Plettinger
3456 Villa Rose Drive
Baton Rouge, Louisiana 70806

President
West Feliciana Parish Police Jury
P.O. Box 1921
St. Francisville, Louisiana 70775

Ronald Wascom, Administrator
and State Liaison Officer
Department of Environmental Quality
P.O. Box 82135
Baton Rouge, Louisiana 70884-2135

Electronic distribution from ADAMS by RIV:

Regional Administrator (**EWM**)

DRP Director (**KEB**)

DRS Director (**ATH**)

Senior Resident Inspector (**MSP**)

Branch Chief, DRP/B (**WDJ**)

Senior Project Engineer, DRP/B (**RAK1**)

Section Chief, DRP/TSS (**PHH**)

RITS Coordinator (**NBH**)

Scott Morris (**SAM1**)

NRR Event Tracking System (**IPAS**)

RBS Site Secretary (**position vacant**)

| SRI:EMB | SRI:EMB | RI:EMB | RI:PBB | C:EMB |
|----------------|---------------|------------|----------|---------------|
| RPMullikin/lmb | MFRunyan | PAGoldberg | JDHanna | JLShackelford |
| /RA/ | /RA/ | /RA/ | /RA/ | /RA/ |
| 06/06/01 | 06/11/01 | 06/05/01 | 06/06/01 | 06/07/01 |
| C:PBB | C:EMB | | | |
| WDJohnson | JLShackelford | | | |
| /RA/ | /RA/ | | | |
| 06/07/01 | 06/12/01 | | | |

OFFICIAL RECORD COPY

ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket: 50-458

License: NPF-47

Report No.: 50-458/01-05

Licensee: Entergy Operations, Inc.

Facility: River Bend Station

Location: 5485 U.S. Highway 61
St. Francisville, Louisiana

Dates: May 14 - 18, 2001

Inspectors: R. P. Mullikin, Senior Reactor Inspector
Engineering and Maintenance Branch

M. F. Runyan, Senior Reactor Inspector
Engineering and Maintenance Branch

P. A. Goldberg, Reactor Inspector
Engineering and Maintenance Branch

J. D. Hanna, Resident Inspector
Division of Reactor Projects

Accompanying Personnel: J. L. Taylor, Reactor Inspector
Engineering and Maintenance Branch

F. J. Wyant, Contractor
Sandia National Laboratories

Approved By: Jeffrey L. Shackelford, Chief
Engineering and Maintenance Branch
Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000458/01-05; on 05/14-18/2001; Entergy Operations, Inc.; River Bend Station; Triennial Fire Protection Inspection.

This report covers a 1-week onsite inspection by a team of four regional inspectors and one contractor from Sandia National Laboratories during May 14-18, 2001. The inspectors used NRC Inspection Procedure 71111.05 to evaluate the licensee's implementation of their NRC-approved fire protection program. However, certain associated circuit issues, which are the subject of an ongoing, voluntary industry initiative, were not reviewed in this inspection. This portion of the inspection procedure was not performed in order to permit the industry to develop an approach and methodology to resolving the associated circuits issues that the NRC can endorse and to provide for licensees to implement the resolution methodology once approved.

The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at <http://www.nrc.gov/NRR/OVERSIGHT/index.html>.

Cornerstones: Initiating Events and Mitigating Systems

No findings of significance were identified.

Report Details

1. **REACTOR SAFETY**

1R05 Fire Protection

The purpose of this inspection was to review the River Bend Station fire protection program for selected risk significant fire areas with emphasis on verification that the post-fire safe shutdown capability and the fire protection features provided for ensuring that at least one post-fire safe shutdown success path is maintained free of fire damage. The inspection was performed in accordance with the new NRC regulatory oversight process using a risk-informed approach for selecting the fire areas and attributes to be inspected. The team used the River Bend Station's individual plant examination of external events to choose several risk-significant areas for detailed inspection and review. The fire areas chosen for review during this inspection were:

- Fire Area AB-1 (west side crescent area)
- Fire Area AB-2 (HPCS & HPCS hatch area)
- Fire Area C-15 (Division I standby switchgear room)
- Fire Area C-17 (control building ventilation room)
- Fire Area ET-1 (B-tunnel east)

For each of these fire areas, the team focused their inspection on the fire protection features and on the systems and equipment necessary for the licensee to achieve and maintain safe shutdown conditions.

.1 Systems Required to Achieve and Maintain Post-Fire Safe Shutdown

a. Inspection Scope

The team reviewed the licensee's piping and instrumentation diagrams and the list of safe shutdown equipment documented in the River Bend Station post-fire safe shutdown analysis to verify whether the licensee's shutdown methodology had properly identified the components and systems necessary to achieve and maintain safe shutdown conditions for equipment in the fire areas selected for review. The team focused on the following functions that must be ensured to achieve and maintain post-fire safe shutdown conditions: (1) reactivity control capable of achieving and maintaining cold shutdown reactivity conditions, (2) reactor coolant makeup capable of maintaining the reactor coolant inventory, (3) reactor heat removal capable of achieving and maintaining decay heat removal, and (4) supporting system capable of providing all other services necessary to permit extended operation of equipment necessary to achieving and maintaining hot shutdown conditions.

A review was also conducted to ensure that all required electrical components in the selected systems were included in the licensee's safe shutdown analysis. The team identified the systems required for each of the primary safety functions necessary to shut down the reactor. These systems were then evaluated to identify the systems that interfaced with the fire areas inspected and were the most risk significant for reaching both hot and cold shutdown. The following systems were selected for review:

- Main steam system safety relief valves/automatic depressurization system
- Reactor core isolation cooling system
- High pressure core spray system
- Low pressure core spray system
- Residual heat removal system
- Standby service water system

b. Findings

No findings of significance were identified.

.2 Fire Protection of Safe Shutdown Capability; Fire Protection Systems, Features, and Equipment

a. Inspection Scope

For the selected fire areas, the team evaluated the adequacy of fire suppression and detection systems, fire area barriers, penetration seals, and fire doors to ensure that at least one train of safe shutdown equipment was free of fire damage. To do this, the team observed the material condition and configuration of the installed fire detection and suppression systems, fire barriers, and construction details and supporting fire tests for the installed fire barriers. In addition, the team reviewed the license documentation, such as exemptions and National Fire Protection Association code deviations to verify that the fire barrier installations met license commitments.

The team evaluated on a sample basis, the adequacy of separation provided for the power and control cabling of redundant trains of safe shutdown equipment. The evaluation focused on the cabling of selected components for the safety relief valve/automatic depressurization system, reactor core isolation cooling system, high pressure core spray system, high pressure core spray system, low pressure core spray system, residual heat removal system, and standby service water system. Additionally, two other valves, making up a high-low pressure interface boundary in the residual heat removal system were also investigated. This evaluation included a sampling of components whose inadvertent operation due to fire may adversely affect post-fire safe shutdown capability.

b. Findings

No findings of significance were identified.

.3 Post-Fire Safe Shutdown Circuit Analysis

a. Inspection Scope

The team, on a sample basis, verified that safety-related and nonsafety-related cables for equipment in the five selected fire areas had been analyzed to show that they would not prevent safe shutdown because of hot shorts, open circuits, or shorts to ground.

Additionally, the team verified, on a sample basis, that circuit breaker coordination and fuse protection were acceptable as a means of protecting the power sources of the designated alternate safe shutdown equipment.

b. Findings

No findings of significance were identified.

.4 Alternative Safe Shutdown Capability

a. Inspection Scope

The team performed a review to determine if the licensee had appropriate procedures in place and had identified the plant components and systems required to achieve and maintain safe shutdown conditions. The team reviewed the capability of the identified systems and components and the adequacy of the procedures that were identified as required to achieve alternative safe shutdown. The team then reviewed procedures and system operating capabilities to verify they were adequate to perform plant cooldown to hot and cold shutdown conditions from outside of the control room. The team's methodology was to focus on the overall adequacy of the identified systems, components, and use of procedures to perform actions necessary to increase core shutdown margin, control reactor pressure, provide reactor coolant makeup, and remove core decay heat. The team also reviewed the adequacy of process monitoring and needed support system functions.

The team reviewed, on a sample basis, the transfer of control from the control room to the alternative location to determine if it could be affected by fire-induced circuit faults (e.g., the provision of separate fuses and power supplies for alternative shutdown control circuits).

b. Findings

No findings of significance were identified.

.5 Operational Implementation of Alternative Shutdown Capability

a. Inspection Scope

The team performed a walkdown of the actions defined in Abnormal Operating Procedure AOP-0031, "Shutdown From Outside the Main Control Room," Revision 16A. This procedure documented the method for performing an alternative shutdown of the plant from the remote shutdown panel and by manipulating certain equipment locally in the plant. The team reviewed the ability of operators to perform the procedural actions within applicable plant shutdown time requirements, equipment labeling consistency with the procedure, and that the safe shutdown equipment was accessible.

The team reviewed the training program for licensed and nonlicensed personnel to verify it included training on the alternative safe shutdown capability. Additionally, the

team randomly selected several individuals from all of the available operations crews and reviewed each licensed operator's training record to ensure that they had received the most recent requalification training on alternative shutdown. The team also verified that personnel required to achieve and maintain the plant in hot shutdown following a fire using the alternative shutdown could be provided from normal onsite staff exclusive of the fire brigade.

The team also reviewed the associated data packages from the most recent performance (where applicable). These reviews were performed to verify that: (1) the licensee conducted periodic operational surveillance tests of the plant alternative shutdown transfer capability, instrumentation, and control functions; and (2) the surveillances performed were adequate to show that, if called upon, the plant alternative shutdown capability would be functional upon transfer to it. The team's review of communications and emergency lighting associated with these procedures are documented in Sections .6 and .7 of this report.

b. Findings

No findings of significance were identified.

.6 Communications

a. Inspection Scope

The team reviewed the adequacy of the communication system to support plant personnel in the performance of alternative safe shutdown functions and fire department duties. The licensee credited the plant radios and the normal telephone system for post-fire safe shutdown actions that require prompt control room operator response. In addition, the plant paging and public address system and the sound powered phone communication systems are installed throughout the plant.

The team determined that there were no preventative maintenance tasks and procedures to verify whether radios and telephones were available and operational for emergency use by operators and fire department members. However, the licensee stated that surveillance testing is not necessary since the radios and telephones have a high frequency of normal use.

b. Findings

No findings of significance were identified.

.7 Emergency Lighting

a. Inspection Scope

The team reviewed the emergency lighting system required for safe shutdown activities in the selected fire areas to verify it would provide for adequate access to perform manual actions required to achieve and maintain hot shutdown conditions. The team

also reviewed the adequacy of emergency lighting for performing actions required in Procedure AOP-0031, which included access and egress routes. The team reviewed repetitive tasks for testing and test data trending to verify that the individual battery operated units were capable of supplying sufficient illumination. The team reviewed vendor data, which determined the maximum temperatures at which the battery-powered lighting units would operate for 8 hours, in order to verify operability under maximum ambient temperatures. The team reviewed vendor documentation to verify that the battery power supplies were rated with at least an 8-hour capacity. The team also verified whether routine preventive maintenance was being performed to assure that the 8-hour battery powered lights were being maintained in an operable manner.

b. Findings

No findings of significance were identified.

.8 Cold Shutdown Repairs

a. Inspection Scope

The team reviewed licensee procedures to determine which repairs were required to achieve cold shutdown and whether repair material was available onsite.

b. Findings

No findings of significance were identified.

.9 Compensatory Measures

a. Inspection Scope

The team verified that adequate compensatory measures were in place by the licensee for out-of-service, degraded or inoperable fire protection and post-fire safe shutdown equipment, systems or features (e.g., detection and suppression systems, or passive fire barrier features).

b. Findings

No findings of significance were identified.

4. **OTHER ACTIVITIES (OA)**

4OA2 Identification and Resolution of Problems

a. Inspection Scope

The team reviewed a sample of condition reports to verify that the licensee was identifying fire protection-related issues at an appropriate threshold and entering those issues into the corrective action program.

b. Findings

No findings of significance were identified.

.4OA6 Meetings, including Exit

On May 18, 2001, at the conclusion of the team's onsite inspection, the team debriefed Mr. R. Edington and other licensee staff members on the preliminary inspection results.

On June 4, 2001, a tele-conference exit meeting was held with Mr. B. Mashburn and other licensee staff members, during which the team leader characterized the results of the inspection. The licensee's management acknowledged the findings presented.

The licensee was asked whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT

PARTIAL LIST OF PERSONS CONTACTED

Licensee

R. Barnes, Supervisor - Engineering
B. Biggs, Coordinator – Safety & Regulatory Affairs
E. Borazanci, Senior Engineer
R. Brian, Director – Engineering, Nuclear
M. Cooper, Licensing Specialist IV - Arkansas Nuclear One
R. Edington, Vice President – Operations
B. Ellis, Senior Engineer
J. Fowler, Manager – Quality Assurance
H. Grimes, Senior Engineer
R. Kerar, Senior Engineer
R. King, Director – Nuclear Safety Assurance
J. Leavines, Manager – Licensing
J. Maher, Senior Engineer
B. Mashburn, Manager – Programs & Components
J. McGhee, Manager – Operations
D. Mims, General Manager – Plant Operations
E. Roan, Senior Lead Technical Specialist
T. Robinson, Technical Specialist IV
R. Northrup, SRO / STA
D. Williamson, Senior Licensing Specialist

NRC

M. Peck, Senior Resident Inspector
M. Schneider, Resident Inspector

LIST OF DOCUMENTS REVIEWED

The following documents were selected and reviewed by the team to accomplish the objectives and scope of this inspections:

DRAWINGS

| <u>Drawing Number</u> | <u>Title</u> | <u>Revision</u> |
|-----------------------|---|-----------------|
| 12210-ESK-7SWP35 | Elementary Diagram 120VAC Control Ckt Remote Shutdown Transfer Relays | 2 |
| 12210-ESK-2A | Instruction Drawing ESK Identification System | 4 |

| <u>Drawing Number</u> | <u>Title</u> | <u>Revision</u> |
|-----------------------|--|-----------------|
| 12210-ESK-2B | Instruction Drawing Wire Number Ident. System | 5 |
| 12210-ESK-2D | Instruction Drawing Wire Number Ident. System | 4 |
| 828E239AA Sh 1 | Elementary Diagram Remote Shutdown System | 20 |
| 828E239AA Sh 10 | Elem. Diag. Remote Shutdown System | 13 |
| 828E534AA Sh 8 | Elementary Diagram Residual Heat Removal System | 26 |
| 828E534AA Sh 9 | Elementary Diagram Residual Heat Removal System | 28 |
| 828E534AA Sh 17 | Elementary Diagram Residual Heat Removal System | 25 |
| 828E534AA Sh 22 | Elementary Diagram Residual Heat Removal System | 24 |
| 828E537AA Sh 9 | Elem. Diagram HPCS Power Supply System | 23 |
| 851E225AA Sh 11 | Elem. Diag. Automatic Depressurization Sys. | 14 |
| 851E225AA Sh 12 | Elem. Diag. Automatic Depressurization Sys. | 14 |
| 851E225AA Sh 13 | Elem. Diag. Automatic Depressurization Sys. | 14 |
| 851E225AA Sh 14 | Elem. Diag. Automatic Depressurization Sys. | 14 |
| 944E113 | Assembly Remote Shutdown VB | 12 |
| 12210-EE-7CK-4 | External Connection Diag PGCC Termination Cabinet 1H13*P702 Bay D | 4 |
| 12210-EE-36BV-5 | Wiring Diagram Elec Pen. Termin Cab. 1RCP*TCR15A and 1RCP*TCA15 | 5 |
| 12210-EE-36CU-4 | Wiring Diagram Elec Pen. Termin Cab. 1RCP*TCR15A and 1RCP*TCA15 | 4 |
| CE-001A | Appendix R Safe-Shutdown Analysis - Emergency Lighting Control Building El. 98'-0" | 2 |
| CE-001B | Appendix R Safe-Shutdown Analysis - Emergency Lighting Control Building El. 116'-0" | 2 |
| CE-001C | Appendix R Safe-Shutdown Analysis - Emergency Lighting Control Building El. 98'-0" | 2 |
| CE-001F | Appendix R Safe-Shutdown Analysis - Emergency Lighting Diesel Generator Bldg El. 98'-0" | 2 |
| CE-001K | Appendix R Safe-Shutdown Analysis - Emergency Lighting Auxiliary Building El. 141'-0" | 2 |

| <u>Drawing Number</u> | <u>Title</u> | <u>Revision</u> |
|-----------------------|--|-----------------|
| CE-001Q | Appendix R Safe-Shutdown Analysis - Emergency Lighting Standby Cooling Tower El. 118'-0" | 2 |
| CE-001U | Appendix R Safe-Shutdown Analysis - Emergency Lighting Turbine Building El. 67'-65" | 2 |
| CE-001V | Appendix R Safe-Shutdown Analysis - Emergency Lighting T-Tunnel El. 123'-6" | 2 |
| CE-001W | Appendix R Safe-Shutdown Analysis - Emergency Lighting Switchgear Building El. 98'-0" | 2 |
| CE-100J | Appendix R Safe-Shutdown Analysis - Emergency Lighting Auxiliary Building El. 114'-0" | 2 |
| EB-003AB | Fire Area Boundaries - Plant Plan View - Elevations 65'-0" to 90'-0" | 3 |
| EB-003AC | Fire Area Boundaries - Plant Plan View - Elevations 83'-0" to 106'-0" | 3 |
| EB-003AD | Fire Area Boundaries - Plant Plan View - Elevations 109'-0" to 148'-0" | 3 |
| EB-003AE | Fire Area Boundaries - Plant Plan View - Elevations 113'-0" through 186'-3" | 3 |
| EB-003M | Fire Protection Arrangement Sh-12 | 6 |
| EB-003N | Fire protection Arrangement Sh-13 | 7 |
| EB-003P | Fire Protection Arrangement Sh-14 | 6 |
| EB-59A | Fire Protection - Tunnels SH-1 | 5 |
| EE-001AA | 480V One Line Diagram Standby Bus 1EJS*LDC 1A & 2A | 10 |
| EE-001AC | Start Up Electrical Distribution Chart | 21 |
| EE-001SA | 480V One Line Diagram 1E22*S00 2 Control Building | 11 |
| EE-001TA | 480V One Line Diagram 1EHS*MCC2A & 2L Auxiliary Building | 15 |
| EE-001TB | 480V One Line Diagram EHS*MCC2C & 2D Auxiliary Building | 9 |
| EE-001TC | 480V One Line Diagram 1EHS*MCC2E Auxiliary Building | 9 |

| <u>Drawing Number</u> | <u>Title</u> | <u>Revision</u> |
|-----------------------|--|-----------------|
| EE-001TD | 480V One Line Diagram 1EHS*MCC2G & 2H Auxiliary Building | 10 |
| EE-001TE | 480V One Line Diagram 1EHS*MCC2J & 2K Auxiliary Building | 15 |
| EE-001TG | 480V One Line Diagram 1EHS*MCC2F Auxiliary Building | 13 |
| EE-001YA | 480V One Line Diagram 1EHS*MCC16A Standby Cooling Tower No. 1 | 9 |
| EE-001YB | 480V One Line Diagram 1EHS*MCC8B Standby Switchgear | 7 |
| EE-001ZD | 125 VDC One Line Diagram 1ENB*MCC1 Auxiliary Building | 5 |
| EE-001ZG | 125VDC One Line Diagram Standby Bus A 1ENB*SWG01A, 1ENB*PNL02A, 03A | 15 |
| EE-001ZH | 125VDC One Line Diagram Standby Bus B 1ENB*SWG01B, 1ENB*PNL02B, 03B | 16 |
| EE-003A | Wiring Diagram 1RSS*PNL102 Control Building | 11 |
| EE-003KW | Wiring Diagram 1C61*PNLP001 Bay D Control Building | 6 |
| EE-003LY | Wiring Diagram 1C61*PNLP001 Bays A and B Control Building | 13 |
| EE-007AE | External Connection Diagram PGCC Termination Cabinet H13-P743 Bay E | 13 |
| EE-007AS | External Connection Diagram PGCC Termination Cabinet 1H13*P746 Bay A | 10 |
| EE-007BX | External Connection Diagram PGCC Termination Cabinet 1H13*P751 Bays A & B | 10 |
| EE-007CU | External Connection Diag PGCC Termination Cabinet 1H13*P712 Bay B | 8 |
| EE-007DE | External Connection Diagram PGCC Termination Cabinet 1H13*P710 Bay B | 9 |
| EE-007DQ | External Connection Diagram PGCC Termination Cabinet 1H13*P713 Bay B | 7 |
| EE-007DV | External Connection Diagram PGCC Termination Cabinet 1H13*P714 Bay B | 6 |

| <u>Drawing Number</u> | <u>Title</u> | <u>Revision</u> |
|-----------------------|---|-----------------|
| EE-007EA | External Connection Diagram PGCC Termination Cabinet 1H13*P715 Bay B | 9 |
| EE-007EB | External Connection Diagram PGCC Termination Cabinet 1H13*P715 Bay D | 8 |
| EE-007G | External Connection Diagram PGCC Termination Cabinet 1H13*P731 Bay B | 11 |
| EE-008AR | 4160V Wiring Diagram Standby Bus 1ENS*SWG1A | 16 |
| EE-008BE | 4160V Wiring Diagram 1E22*S004 | 9 |
| EE-008BF | 4160V Wiring Diagram 1E22*S004 | 11 |
| EE-009HT | 480V Misc Wiring Diagram 1EHS*MCC2H | 12 |
| EE-009KG | 480V Misc Wiring Diagram 1EHS*MCC2E & 1VPS- PNL11B | 8 |
| EE-009NG | 480V Wiring Diagram EHS-MCC2E Auxiliary Building | 7 |
| EE-009NP | 480V Wiring Diagram EHS-MCC2F Auxiliary Building | 8 |
| EE-009NV | Misc Wiring Diagram 1EHS*MCC2G Auxiliary Bldg | 10 |
| EE-009PE | 480V Wiring Diagram 1EHS*MCC2K Auxiliary Building | 7 |
| EE-009PR | 480V Wiring Diagram 1EHS*MCC8B STBY SWGR RM 1B | 8 |
| EE-009PX | 480V Misc Wiring Diagram EHS*MCC8A | 12 |
| EE-009QC | 480V Misc Wiring Diagram 1EHS-MCC8B | 11 |
| EE-009QW | 480V Wiring Diagram 1EHS*MCC16A Standby Cooling Tower Area | 15 |
| EE-009RA | 480V Wiring Diagram 1EHS*MCC16B Standby Cooling Tower Area | 7 |
| EE-009RT | 480V Misc Wiring Diagram 1EHS*MCC16A Standby Cooling Tower Area | 12 |
| EE-009ZA | 480V Wiring Diagram 1E22*S002 Stby SWGR Rm | 10 |
| EE-010B | 125VDC Wiring Diagram Stby 1ENB*MCC1 Auxiliary Bldg | 6 |
| EE-010E | 125VDC Misc Wiring Diagram Stby 1ENB*MCC1 | 7 |
| EE-010W | 125V DC Wiring Diagram Stby 1ENB*PNLS Cont Rm & Dsl Gen Bldg | 12 |

| <u>Drawing Number</u> | <u>Title</u> | <u>Revision</u> |
|-----------------------|--|-----------------|
| EE-014CC | Wiring Diagram Stby Diesel Gen Control Pnl 1E22*PNLS001 | 10 |
| EE-034YD | Appendix "R" Raceway Fire Protection Details | 5 |
| EE-036BH | Wiring Diagram Elec Pen. Termin Cab. 1RCP*TCR12A and 1RCP*TCA12 | 7 |
| EE-10A | 125VDC Wiring Diagram Stby 1ENB*MCC1 Auxiliary Bldg | 5 |
| EE-10D | 125VDC Misc Wiring Diagram 1ENB*MCC1 | 9 |
| EE-18AE | Wiring Diagram - Fire and Smoke Detection Sys. - Auxiliary Building | 7 |
| EE-18F | Wiring Diagram - Fire & Smoke Detection - Control Bldg El 98' - 0" | 4 |
| EE-18G | Wiring Diagram - Fire and Smoke Detection - Control Bldg - El 115'-0" & 116' - 0" | 4 |
| EE-18L | Wiring Diagram - Fire & Smoke Detection Sys. - Tunnels El. 67'-6" | 5 |
| EE-1VA | 480V One Line Diagram 1EHS*MCC8A Standby Switchgear | 8 |
| EE-1WB | 480V One Line Diagram 1EHS*MCC16B Standby Cooling Tower No. 1 | 10 |
| EE-36BD | Wiring Diagram Elec Pen. Termin Cab. 1RCP*TCR12A and 1RCP*TCA12 | 5 |
| EE-3KV | Wiring Diagram 1RSS*PNL101 Control Building | 11 |
| EE-3LX | Wiring Diagram 1C61*PNLP001 Bay C Control Building | 7 |
| EE-6DB-5 | Wiring Diagram NSSS Miscellaneous Details | 5 |
| EE-7B | External Connection Diagram PGCC Termination Cabinet 1H13*P730 Bay B | 10 |
| EE-7CQ | External Connection Diagram PGCC Termination Cabinet 1H13*P703 Bay D | 6 |
| EE-7CV | External Connection Diag PGCC Termination Cabinet 1H13*P712 Bay D | 9 |
| EE-7DU | External Connection Diagram PGCC Termination Cabinet 1H13*P714 Bays A & B | 7 |

| <u>Drawing Number</u> | <u>Title</u> | <u>Revision</u> |
|-----------------------|--|-----------------|
| EE-7DW | External Connection Diagram PGCC Termination Cabinet 1H13*P714 Bays D & E | 10 |
| EE-7DZ | External Connection Diagram PGCC Termination Cabinet 1H13*P715 Bays A & E | 7 |
| EE-8AQ | 4160V Wiring Diagram Standby Bus 1ENS*SWG1A | 15 |
| EE-8AS | 4160V Wiring Diagram Standby Bus 1ENS*SWG1A | 9 |
| EE-8AX | 4160V Wiring Diagram Standby Bus 1ENS*SWG1B | 12 |
| EE-8AY | 4160V Wiring Diagram Standby Bus 1ENS*SWG1B | 12 |
| EE-8AZ | 4160V Wiring Diagram Standby Bus 1ENS*SWG1B | 10 |
| EE-9HJ | 480V Misc Wiring Diagram 1EHS*MCC2F | 9 |
| EE-9HK | 480V Misc Wiring Diagram 1EHS*MCC2F | 9 |
| EE-9HV-7 | 480V Misc Wiring Diagram 1EHS*MCC2H | 7 |
| EE-9NC-6 | 480V Wiring Diagram 1EHS*MCC2D Auxiliary Building | 6 |
| EE-9NE | 480V Misc Wiring Diagram 1EHS*MCC2D Auxiliary Building | 7 |
| EE-9NH | 480V Wiring Diagram 1EHS*MCC2E Auxiliary Building | 6 |
| EE-9NJ | 480V Wiring Diagram 1EHS*MCC2E Auxiliary Building | 8 |
| EE-9NK-6 | 480V Wiring Diagram 1EHS*MCC2E & Details Auxiliary Building | 6 |
| EE-9NL | 480V Misc Wiring Diagram 1EHS*MCC2E Auxiliary Building | 8 |
| EE-9NR | 480V Wiring Diagram 1EHS*MCC2F Auxiliary Building | 9 |
| EE-9NT | 480V Wiring Diagram 1EHS*MCC2G Auxiliary Building | 7 |
| EE-9NW | 480V Wiring Diagram 1EHS*MCC2H Auxiliary Bldg | 5 |
| EE-9PB | 480V Wiring Diagram 1EHS*MCC2J Auxiliary Building | 7 |
| EE-9PC | 480V Misc Wiring Diagram 1EHS*MCC2J Auxiliary Building | 7 |
| EE-9PM | 480V Wiring Diagram 1EHS*MCC8A STBY SWGR RM 1A | 13 |

| <u>Drawing Number</u> | <u>Title</u> | <u>Revision</u> |
|-----------------------|---|-----------------|
| EE-9PN | 480V Wiring Diagram 1EHS*MCC8A STBY SWGR RM 1A | 9 |
| EE-9PQ | 480V Wiring Diagram 1EHS*MCC8B STBY SWGR RM 1B | 10 |
| EE-9RU | 480V Misc Wiring Diagram 1EHS*MCC16B Standby Cooling Tower Area | 5 |
| EE-9SY | 480V Wiring Diagram 1EHS*MCC2L Auxiliary Building | 10 |
| EE-9SZ | 480V Misc Wiring Diagram 1EHS*MCC2L Auxiliary Building | 15 |
| EE-9ZC | 480V Misc Wiring Diagram 1E22*S002 Stby SWGR Rm | 4 |
| ES-29A | Floor Framing Plan El. 98'-0" - Diesel Generator Building | 11 |
| ES-66A | Floor Framing Plan & Dets. El. 95'-9" - Auxiliary Building | 11 |
| ES-66B | Floor Framing Plan & Dets El 114'-0" -Auxiliary Building | 9 |
| ES-66C | Floor Framing Plan & Dets El 141'-0" - Auxiliary Building | 11 |
| ES-66D | Roof Framing Plan & details - Auxiliary Building | 8 |
| ES-70B | Flr Frmg Plan & Dets - El 115'-0", 116'-0" & 128'-0" Control Building | 10 |
| ES-70C | Floor Framing Plan & Dets El 135'-0" - Control Building | 10 |
| ES-70H | Electrical Tunnel Framing & Dets - Control Building | 10 |
| ESK-06CSH01 | Elementary Diagram 480V Control Circuit HPCS Pump Suction Valves | 8 |
| ESK-06CSH03 | Elementary Diagram 480V Control Ckt HPCS Pmp Inj Shutoff & Min FI to Suppr Pool V | 6 |
| ESK-06ICS01 | Elementary Diagram 480V AC Control Circuit RCIC Vacuum Breaker Isolation Valves | 8 |
| ESK-06ICS02 | Elementary Diagram 480V AC Control Circuit RCIC Steam Supply Isolation Valves | 10 |
| ESK-06RHS04 | Elementary Diagram 480V Control Circuit Residual Heat Removal System | 12 |
| ESK-06RHS06 | Elem Diag - 480V Control Ckt Residual Heat Removal System | 11 |

| <u>Drawing Number</u> | <u>Title</u> | <u>Revision</u> |
|-----------------------|---|-----------------|
| ESK-06RHS22 | Elementary Diagram 480V Control Ckt Residual Heat Removal System | 10 |
| ESK-06SWP09 | Elem Diag - 480V Control Ckt Service Wtr Sys MOV's | 12 |
| ESK-06SWP10 | Elementary Diagram 480V Control Circuit Service Water System MOV's | 19 |
| ESK-11ICS01 | Elementary Diagram 125VDC Control Circuit RCIC Psuct from Cnds Stor Tk | 7 |
| ESK-11ICS09 | Elementary Diagram 125VDC Control Circuit RCIC Injection Shutoff Valve | 5 |
| ESK-11ICS10 | Elementary Diagram 125VDC Control Ckt RCIC Turb Trip & Throt V | 8 |
| ESK-11SWP02 | Elementary Diagram - 125V Control Ckt Standby Service Water Aux Control | 12 |
| ESK-11SWP04 | Elementary Diagram - 125V Control Ckt Standby Service Water Aux Control | 14 |
| ESK-11SWP05 | Elementary Diagram 125V Cont Ckt Standby Service Water Aux Control | 8 |
| ESK-2C | Instruction Drawing Wire Number Identification System | 8 |
| ESK-2G | Instruction Drawing Location Symbols | 13 |
| ESK-2H | Instruction Drawing Location Symbols | 11 |
| ESK-2J | Instruction Drawing 4160V Switchgear Details | 6 |
| ESK-2K | Instruction Drawing General Notes, Symbols & Abbreviations | 7 |
| ESK-5CSL01 | Elem Diagram - 4.16 KV SWGR Low Press Core Spray Pump | 13 |
| ESK-5RHS01 | Elementary Diagram 4.16 KV SWGR Residual Heat Removal Pump 1E12*PC002A | 15 |
| ESK-5RHS02 | Elem Diagram - 4.16 KV SWGR Residual Heat Removal Pump 1E12*PC002B | 12 |
| ESK-5RHS03 | Elementary Diagram 4.16 KV SWGR Residual Heat Removal Pump 1E12*PC002C | 13 |
| ESK-5SWP04 | Elementary Diagram 4.16 KV SWGR Standby Service Water Pump P2A | 25 |

| <u>Drawing Number</u> | <u>Title</u> | <u>Revision</u> |
|-----------------------|---|-----------------|
| ESK-5SWP05 | Elem. Diag. - 4.16 KV SWGR Standby Service Water Pump P2B | 20 |
| ESK-5SWP06 Sh 1 | Elem. Diag. - 4.16 KV SWGR Standby Service Water Pump P2C | 25 |
| ESK-5SWP06 Sh 2 | Elem. Diag. - 4.16 KV SWGR Standby Service Water Pump P2C | 2 |
| ESK-5SWP07 | Elem. Diag. - 4.16 KV SWGR Standby Service Water Pump P2D | 17 |
| ESK-6CSL01 | Elementary Diagram 480V Control Circuit Low Pressure Core Spray MOV's | 5 |
| ESK-6RHS01 | Elementary Diagram 480V Control Ckt Residual Heat Removal System | 6 |
| ESK-6RHS03 | Elem Diag - 480V Cont Ckt Residual Heat Removal System | 7 |
| ESK-6RHS05 | Elem Diag - 480V Cont Ckt Residual Heat Removal System | 7 |
| ESK-6RHS10 | Elem Diag. - 480V Control Ckt Residual Heat Removal System | 12 |
| ESK-6RHS14 | Elem Diag - 480V Cont Ckt Residual Heat Removal System | 6 |
| ESK-6RHS17 | Elem Diag - 480V Control Ckt Residual Heat Removal System | 6 |
| ESK-6SWP15 | Elementary Diagram 480V Control Circuit Service Water System MOV's | 12 |
| ESK-6SWP16 | Elementary Diagram 480V Control Ckt Service Water System MOV's | 13 |
| ESK-7SVV03 | Elementary Diagram 125VDC Control Ckts Main Steam SRV | 7 |
| ESK-7SVV04 | Elementary Diagram 125VDC Control Ckts Main Steam SRV | 6 |
| ESK-7SWP33 | Elementary Diagram - 120VAC Control Ckt Remote Shutdown Transfer Relays | 6 |

PROCEDURES

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|---|-----------------|
| ADM-0023 | Conduct of Maintenance | 12 |
| AOP-0031 | Shutdown from Outside the Main Control Room | 16A |
| AOP-0052 | Fire Outside the Main Control Room in Areas Containing Safety Related Equipment | 10 |
| LI-102 | Corrective Action Process | 00 |
| OSP 0039 | Remote Shutdown Switch Verification | 3 |
| RBNP-038 | Site Fire Protection Program | 06 |
| RBNP-030 | Initiation and Processing of Condition Reports | 14 |
| SOP 0027 | Remote Shutdown System | 15 |

PREVENTIVE MAINTENANCE TASKS

| <u>Number</u> | <u>Date</u> |
|--------------------|--------------------|
| 10561 (MAI 320431) | January 21, 1999 |
| MAI 235263 | May 11, 1999 |
| MAI 323279 | May 27, 1999 |
| MAI 316936 | June 3, 1998 |
| MAI 326789 | August 15, 1999 |
| MAI 329806 | October 29, 1999 |
| 10561 (MAI 340988) | March 20, 2001 |
| 11042 (MAI 335295) | September 6, 2000 |
| 6216 (MA 337924) | September 29, 2000 |

Repetitive Task Documents

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------|---------------------------------------|-----------------|
| 11042 | 130 Week Battery Replacement Schedule | 2 |
| 11043 | 156 Week Battery Replacement Schedule | 2 |
| 11044 | 208 Week Battery Replacement Schedule | 2 |
| 11045 | 286 Week Battery Replacement Schedule | 2 |
| 11046 | 312 Week Battery Replacement Schedule | 2 |

CONDITION REPORTS

| | | |
|------------------|------------------|------------------|
| CR-RBS-1996-0996 | CR-RBS-1999-1786 | CR-RBS-2000-0059 |
| CR-RBS-2000-1109 | CR-RBS-2000-1490 | CR-RBS-2000-1600 |
| CR-RBS-2000-2054 | CR-RBS-2000-2126 | CR-RBS-2001-0049 |
| CR-RBS-2001-0093 | CR-RBS-2001-0099 | CR-RBS-2001-0347 |
| CR-RBS-2001-0355 | CR-RBS-2001-0410 | CR-RBS-2001-0582 |
| CR-RBS-2001-0612 | CR-RBS-2001-0609 | CR-RBS-2001-0613 |
| CR-RBS-2001-0615 | | |

Operating Experience Documents

OE\IN\9536.SAI, "IN 95-36: Potential Problems with Post-Fire Emergency Lighting"
OE\IN\9536.SA2, "IN 95-36: Potential Problems with Post-Fire Emergency Lighting"

Smoke Detector Surveillances

Surveillance Test Number STP-000-3603, completed April 10, 2000
Surveillance Test Number STP-250-4529, completed October 12, 2000
Surveillance Test Number 250-4530, completed September 21, 2000
Surveillance Test Number 250-4534, completed August 17, 2000
Surveillance Test Number 250-4535, completed September 6, 2000
Surveillance Test Number 250-4536, completed July 27, 2000
STP-250-4538R00EC-A, completed August 25, 1998
Surveillance Test Number 250-4539, completed November 28, 2000

Calculations

| <u>Number</u> | <u>Title</u> | <u>Revision</u> |
|---------------------------|--|-----------------|
| Calc. E200, Attach. 3 | Time-Current Characteristic Curves | 1 |
| Calc. No. G13.18.2.6*34 | To Determine No. of SRV Actuations from LSV Air Receiver Tanks 1LSV*TK6A, *TK6B | 0 |
| Calc. No. G13.18.3.6*5 | Appendix 2.A. 125 VDC Distribution Panel 1ENB*PNL02B | 1 |
| Calc. No. G13.18.3.6*5 | Appendix 11 Resolution of Problems for Selective Coordination of Protective Devices in Appendix R Circuits | 1 |
| Calc. No. G13.18.14.0*529 | Reactor Level response to a Fire in the Control Room | 1 |

Engineering Reports

97-0204, "Reduce total of Appendix R emergency lights to 100," Revision 0

98-0296, "Revise replacement frequency for Appendix R emergency light batteries," Revision 0

Vendor Documents

3242.423-292-004B, Eagle Picher Application Manual

Pyrotronics Ionization Fire/Smoke Detector Model DI-3 and DI-A3 Engineer and Architect Specifications

Pyrotronics Photoelectric Smoke Detectors Models DP-3 and DP-3T Engineer and Architect Specifications

RBS Criterion No. 240.201A, Appendix C, "10CFR50 Appendix R Post-Fire Safe Shutdown Equipment List and Logic Diagrams," Revision 3

MISCELLANEOUS DOCUMENTS

Audit No. 99-03-I-PFPP, "RBS QA Audit of RBS Plant Fire Protection Program," May 4, 1999

Audit No. 00-02-I-PFPP, "RBS Quality Assurance Audit of the Plant Fire Protection Program," May 4, 2000

Audit No. QA-9-2001-RBS-1, "RBS Quality Assurance Audit of the Plant Fire Protection Program," February 19, 2001

National Fire Protection Association (NFPA) Code 72E-1978, "Automatic Fire Detectors"

River Bend Station Post-Fire safe Shutdown Analysis, Volumes 1-5, Revision 3

Criterion No. 240.201A, Appendix C, "10 CFR 50, Appendix R Post-Fire Safe Shutdown Equipment List and Logic Diagrams"

Fire Protection Impairment Status, May 10 and 15, 2001

Operations Policy #006, Revision 11

Penetration Seal Typical Details, Typical Detail EL-1, March 15, 1996

Penetration Seal Typical Details, Typical Detail OP-1, March 15, 1996