Rel 48

NPS

SEVERITY LEVEL
A. ☐ 3 working days
B. ☐ 10 calendar days
C. ☑ 30 calendar days
D. ☐ Other

CONDITION REPORT

DUE: 7-10-03 Date

CR NO. 03-1306

PTN ☒ PSL ☐ JB ☐

PAGE 1 OF 48

CR Administrator

ORIGINATOR

1. SYSTEM #/NAME N/A UNIT 00
COMPONENT NAME N/A
DISCOVERY DATE/TIME N/A /N/A
CR ORIGINATOR D. LAFLEUR
COMPONENT ID N/A
LOCATION (BLDG/ELEV) N/A
EVENT DATE/TIME N/A /N/A
DEPT/PHONE LIC. /7150

2. (ATTACH ADDITIONAL PAGES AS NECESSARY)
PROBLEM (WHAT HAPPENED, HOW WAS THE ISSUE DISCOVERED, WHAT ACTIVITIES, PROCESSES AND PROCEDURES WERE INVOLVED, PHYSICAL CONDITION EXISTING AT THE ISSUE LOCATION, WHY IS THIS ISSUE OR EVENT A CONCERN, HAVE YOU SEEN THIS ISSUE OCCUR BEFORE)
OEF 03-054 PSL NRC TRIENNIAL FIRE PROTECTION INSPECTION

ORIGINATOR

REGULATION OR REQUIREMENT IMPACTED NONE

IMMEDIATE CORRECTIVE ACTION TAKEN, ADDITIONAL CORRECTIVE ACTIONS COMPLETED NONE

NOTIFICATIONS NONE

3. ORIGINATOR REQUESTS COPY OF CLOSED CONDITION REPORT ☒ YES ☐ NO
SUPERVISOR NOTIFICATION: _____ / _____ ☒ N/A
PRINT SIGNATURE

NPS

4. OPERABILITY/REPORTABILITY DETERMINATION:
☐ A. OPERABILITY ASSESSMENT REQUIRED (3 WORK DAYS)
☐ B. POTENTIALLY REPORTABLE (ATTACH ENS WORKSHEET, IF USED)
☑ C. NO OPERABILITY CONCERN/NOT REPORTABLE
☐ D. OTHER _____
OUTAGE RELATED? ☐ YES ☑ NO
MODE HOLD? ☐ YES ☑ NO
FOR ENTRY INTO MODE _____

COMMENTS: _____

NPS/VPNE A. Newton / _____ DATE/TIME 6-7-03 / 0625
PRINT SIGNATURE

PGM

5. CONDITION REPORT ASSIGNED TO: ENC
COMMENTS: _____
☐ Significance Level 1 - Root Cause Analysis
☐ Significance Level 2 - Apparent Cause
☑ Significance Level 3 - Correction Only
☐ PGM Closeout
☐ Trend Only
☐ Potential Human Performance Issue
Affected Dept. _____

PGM/VPNE _____ DATE 6/10/3

VICE PRES., NUCLEAR ENGINEERING

CR + ARR + QA RECORDS WHEN CLOSED. PLEASE ENSURE ALL RESPONSES AND ATTACHMENTS ARE LEGIBLE

H-4-3

CONDITION REPORT # 03-1306 PAGE 2 OF 48

6. FUNCTIONAL FAILURE: ☐ YES ☒ NO BY: [illegible] / [illegible]
PRINT SIGNATURE

ENDY SCE — N/A

ASSIGNEE

7. INVESTIGATION: ANALYSIS, CORRECTIVE ACTIONS. GENERIC IMPLICATIONS. DISPOSITION DETAILS, WORK INSTRUCTIONS (ATTACH ADDITIONAL PAGES AS NECESSARY)

Disposition Pages 45 - 48.

CAUSE CODES: 1) _____ 2) _____ 3) _____ HU ERROR AFFECTS OTHER DEPT ☐ YES ☒ NO

AFFECTED DEPARTMENT _____

8. DOCUMENTATION INITIATED: (N/A if not applicable)

PWO N/A

PMA! Page 47

RTS/PCR N/A

EVALUATION REQUIRED FOR:

EQ	☐ YES	☑ NO
10CFR50.59	☐ YES	☑ NO
10CFR21	☐ YES	☑ NO
ASME SECTION XI	☐ YES	☑ NO

9. NONCONFORMING/DEGRADED PLANT CONDITION DISPOSITION: N/A ☑ REWORK ☐ REPAIR ☐ USE-AS-IS ☐ OTHER ☐ _____

REVIEW / APPROVAL

10. DISPOSITION SIGNATURES: (N/A if not applicable)

PREPARER [illegible] / [illegible] / 6004 DATE 7/2/03
PRINT SIGNATURE DEPT. PHONE

OTHER DEPT. HEAD CONCUR See Page 48 / _____ DATE _____
PRINT SIGNATURE

ANII/SEC XI REVIEWER N/A / _____ DATE _____
PRINT SIGNATURE

PNSC/FRG REVIEW ☐ YES ☒ NO

FRG/PNSC REVIEW (If required in Block 10) MTG# _____ CHAIRMAN _____ DATE _____

NUCLEAR NETWORK ☐ YES ☒ NO MODE RESTRICTION RELEASED ☐ YES ☐ NO ☒ N/A

DEPARTMENT HEAD M. SP CHAVIANO / SPC DATE 7/9/03
PRINT SIGNATURE

APPROVAL:

VP/PGM/MGR K. K. Mohrbacher for ATZ DATE 7/15/2003

ADMIN

EVENT CODES: 1) 06 2) _____ 3) _____ EXPLAIN OTHER: _____

CRs ARE QA RECORDS WHEN CLOSED. PLEASE ENSURE ALL RESPONSES AND ATTACHMENTS ARE LEGIBLE

CONDITION REPORT REVIEW CHECKLIST

This checklist is provided as an aid in dispositioning and reviewing Condition Reports. Personnel preparing the CR disposition should review the checklist to ensure that CR program requirements are met. Personnel performing the independent review shall verify that required CR disposition attributes have been addressed by completing the applicable portions of the checklist. CRs that have not addressed all program requirements shall be corrected prior to closeout.

ALL CONDITION REPORTS:			
ENSURE THAT:	YES	NO	N/A
All blocks and spaces are filled in	☑	☐	☐
All pages identify the CR and page number (consecutively)	☑	☐	☐
The disposition addresses the identified condition	☑	☐	☐
The disposition addresses requirements specified in Block 5	☑	☐	☐
Concurrence has been obtained by all affected departments (note: Planning concurrence required for open WO used to track corrective action)	☑	☐	☐
Cause codes are appropriate for Significance Level 1 and 2 CRs	☐	☐	☑
Open corrective actions are tracked by PMAI, RTS or WO and traceable to the CR	☑	☐	☐
Work Orders properly reference the CR and are attached	☐	☐	☑
50.59 screening has been completed for NCR use-as-is or repair dispositions	☐	☐	☑
ISI/IST/ANII review have been obtained if required	☐	☐	☑
Corrective Actions are timely based upon the significance of the event	☑	☐	☐

SIGNIFICANCE LEVEL 1 CONDITION REPORTS:			
ENSURE THAT:	YES	NO	N/A
Root Cause Analysis completed in accordance with procedure requirements	☐	☐	☐
If RCA not completed, then PMAI assigned for completion (example: a detailed metallurgical analysis is necessary to determine root cause)	☐	☐	☐
The problem is clearly stated (Problem Statement)	☐	☐	☐
The data and evidence considered is identified	☐	☐	☐
Industry Operating Experience is appropriately considered	☐	☐	☐
Potential failure modes are identified, if applicable	☐	☐	☐
Tools and techniques used are appropriately selected and identified	☐	☐	☐
Root cause and contributing causes are identified and appear appropriate	☐	☐	☐
Corrective actions address the root cause and contributing causes	☐	☐	☐
Corrective Action(s) to Prevent Recurrence (CAPRs) are clearly designated as such	☐	☐	☐
Corrective actions are timely AND COMPLETE	☐	☐	☐
Generic implications are addressed, and corrective actions assigned as appropriate	☐	☐	☐
Extent of Condition is addressed, and corrective actions assigned as appropriate	☐	☐	☐
Potential repeat occurrence is addressed, and corrective actions assigned for identified issues	☐	☐	☐
Monitoring and follow-up is addressed to ensure that corrective actions are effective	☐	☐	☐
Root cause analysis is performed by qualified individuals (Ref: RCA Training Matrix)	☐	☐	☑
For equipment failures, a review of PM's or run to failure is documented	☐	☐	☑

SIGNIFICANCE LEVEL 2 CONDITION REPORTS:			
ENSURE THAT:	YES	NO	N/A
The disposition addresses the problem identified in Block 2	☐	☐	☐
The apparent cause of the problem is clearly identified	☐	☐	☐
Corrective actions address the cause and minimize recurrence	☐	☐	☐
Extent of Condition is addressed, and corrective actions assigned as appropriate	☐	☐	☐
Potential repeat occurrence is addressed, and corrective actions assigned for identified issues	☐	☐	☑
For equipment failures, a review of PM's or run to failure is documented	☐	☐	☑

SIGNIFICANCE LEVEL 3 CONDITION REPORTS:			
ENSURE THAT:	YES	NO	N/A
Corrective actions adequately address the immediate concern	☑	☐	☐

Review performed by: A PINEDA / A Pineda Ext 6752 Date: 7/8/03
Print/Signature

Operating Experience Feedback CR Transmittal Form

Turkey Point Licensing Department

OEF# 03-054
Source Doc. **PSL NRC Triennial Fire Inspection**

This Condition Report has been generated in response to the attached Operating Experience Feedback (OEF) item. If you have any questions about this process, contact David Lafleur -OEF Coordinator at ext. 7150.

The following are the minimal expectations for processing of this OEF CR. The dispositioner of this CR should indicate response to each of the following actions by initialing each item (N/A if not applicable) and signing the bottom of this form.

Initial	Action
	1) The following concern should be addressed in the disposition of this CR as well as the generic concerns listed below: **FP is requested to evaluate the findings of this Insp. Report for lessons learned as applies to FP.**
	2) The CR Dispositioner is expected to assess and coordinate interdepartmental review and responses to the issue if required.
	3) Analysis/Evaluation was performed to determine if the same or similar event(s)/situation(s) could happen at PTN.
	4) Review of plant components, procedures and processes was performed to determine if the same or similar event(s) situation(s) could happen at PTN. Per CAA
	5) All information attached to this CR is included in the CR closeout document.
	6) Any change to a procedure based on an SOER, SER or IN is to be referenced in the Reference or Commitment section of the procedure. Per CAA response.
	7) All PMAIs generated from this CR will designate David Lafleur as the PMAI originator.

All of the above items have been completed as indicated above.

(Dispositioner Signature)	(Print Name)	(Date)
	JS Peterson	2/2/03

OEF 2003-054

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET SW SUITE 23T85
ATLANTA, GEORGIA 30303-8931

CR# 03-1306 PG 5 OF 48

May 12, 2003

Florida Power and Light Company
ATTN: Mr. J. A. Stall, Senior Vice President
Nuclear and Chief Nuclear Officer
P. O. Box 14000
Juno Beach, FL 33408-0420

SUBJECT: ST. LUCIE NUCLEAR PLANT - NRC TRIENNIAL FIRE PROTECTION INSPECTION REPORT 50-335/03-02 AND 50-389/03-02

Dear Mr. Stall:

On March 28, 2003, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your St. Lucie Nuclear Plant, Units 1 and 2. The enclosed inspection report documents the inspection findings, which were discussed on March 28, 2003, with Mr. D. Jernigan and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

This report documents two findings that, combined, have potential safety significance greater than very low significance, however, a safety significance determination has not been completed. These findings did not present an immediate safety concern, however, a fire watch is in place as a compensatory measure.

In addition, the report documents one NRC-identified finding of very low safety significance (Green), which was determined to involve a violation of NRC requirements. However, because of the very low safety significance and because it was entered into your corrective action program, the NRC is treating this finding as a non-cited violation (NCV) consistent with Section VI.A of the NRC Enforcement Policy. Also, two licensee-identified violations which were determined to be of very low safety significance are listed in this report. If you contest any NCV in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at St. Lucie Nuclear Plant.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure, and your response (if any) 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/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA: D. Charles Payne for:/

Charles R. Ogle, Chief
Engineering Branch 1
Division of Reactor Safety

Docket Nos.: 50-335, 50-389
License Nos.: DPR-67, NPF-16

Enclosure: Inspection Report 50-335, 389/03-02
w/Attachment: Supplemental Information

cc w/encl:
W. Jefferson
Site Vice President
St. Lucie Nuclear Plant
Florida Power & Light Company
Electronic Mail Distribution

R. E. Rose
Plant General Manager
St. Lucie Nuclear Plant
Electronic Mail Distribution

T. Patterson
Licensing Manager
St. Lucie Nuclear Plant
Electronic Mail Distribution

Don Mothena, Manager
Nuclear Plant Support Services
Florida Power & Light Company
Electronic Mail Distribution

Mark Dryden
Administrative Support & Special Projects
Florida Power & Light Company
Electronic Mail Distribution

(cc w/encl cont'd - See page 3)

(cc /encl cont'd)
Rajiv S. Kundalkar
Vice President - Nuclear Engineering
Florida Power & Light Company
Electronic Mail Distribution

M. S. Ross, Attorney
Florida Power & Light Company
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William A. Passetti
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Craig Fugate, Director
Division of Emergency Preparedness
Department of Community Affairs
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J. Kammel
Radiological Emergency
Planning Administrator
Department of Public Safety
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Douglas Anderson
County Administrator
St. Lucie County
2300 Virginia Avenue
Ft. Pierce, FL 34982

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.:	50-335, 50-389
License Nos.:	DPR-67, NPF-16
Report No.:	50-335/03-02 and 50-389/03-02
Licensee:	Florida Power and Light Company (FPL)
Facility:	St. Lucie Nuclear Plant
Location:	6351 South Ocean Drive Jensen Beach, FL 34957
Dates:	March 10 - 14, 2003 (Week 1) March 24 - 28, 2003 (Week 2)
Inspectors:	R. Deem, Consultant, Brookhaven National Laboratory P. Fillion, Reactor Inspector F. Jape, Senior Project Manager M. Thomas, Senior Reactor Inspector (Lead Inspector) S. Walker, Reactor Inspector G. Wiseman, Senior Reactor Inspector
Approved by:	Charles R. Ogle, Chief Engineering Branch 1 Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000335/2003-002, 05000389/2003-002; Florida Power and Light Company; 3/10-28/2003; St. Lucie Nuclear Plant, Units 1 and 2; Triennial Fire Protection

The report covered a two-week period of inspection by regional inspectors and a consultant. One Green non-cited violation (NCV) and two unresolved items with potential safety significance greater than Green were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG 1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- TBD. The St. Lucie fire hazards analysis failed to consider and evaluate the combustibility of 380 gallons of transformer silicone dielectric insulating fluid in each of six transformers installed in three Unit 2 fire areas. Three of the six transformers were located in the Train B Switchgear Room (Fire Area C), which was one of the fire areas selected by the team for this inspection. As a result, the transformers' contribution to fire loading and their effects on safe shutdown capability had not been assessed as required by the Fire Protection Program.

  This finding is unresolved pending completion of a significance determination. The finding is greater than minor because it affected the mitigating systems cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. When assessed with the inadequate equipment physical protection finding (also discussed in this report), the finding may have potential safety significance greater than very low significance. (Section 1R05.02.b.1)

- TBD. The physical protection of equipment relied upon for safe shutdown (SSD) of Unit 2 during a fire in the Train B Switchgear Room (Fire Area C) was not adequate. The Train A 480V vital load center 2A5, and its associated electrical cables, was located in the Train B Switchgear Room without adequate spatial separation or fire barriers as required by the Fire Protection Program. Local, manual operator actions (which had not been reviewed and approved by NRC) would be used to achieve and maintain SSD of Unit 2 in lieu of providing adequate physical protection for load center 2A5 and its associated electrical cables.

  This finding is unresolved pending completion of a significance determination. The finding is greater than minor because fire damage to the unprotected cables could prevent operation of SSD equipment from the main control room and because it affects the mitigating systems cornerstone objective. When assessed with the silicone oil-filled transformer finding (also discussed in this report), the

finding may have potential safety significance greater than very low significance. (Section 1R05.02.b.2)

- Green. The inspectors identified a non-cited violation for the licensee's failure to comply with 10 CFR 50, Appendix R, Criterion III.G.2. This finding is related to a lack of spacial separation or barriers to protect cables in containment which could result in spurious opening of the pressurizer power operated relief valve (PORV) during a fire.

  This finding is greater than minor because it affected the mitigating systems cornerstone objective of equipment reliability, in that, spurious opening of the PORV during post-fire safe shutdown would adversely affect the ability to achieve and maintain the reactor in a hot shutdown condition. The finding is of very low safety significance because the initiating event likelihood was low, manual fire suppression capability remained unaffected and all mitigating systems except for the PORV and block valve were unaffected. (Section 4OA5)

B. Licensee-Identified Violations

Two violations of very low safety significance (previously identified by the licensee) were reviewed by the inspection team. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and corrective action tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

1. **REACTOR SAFETY**
Cornerstones: Initiating Events, Mitigating Systems and Barrier Integrity

1R05 FIRE PROTECTION

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

a. Inspection Scope

The team evaluated the licensee's fire protection program against applicable requirements, including Operating License Condition (OLC) 2.C.20, Fire Protection; Title 10 of the Code of Federal Regulations Part 50 (10 CFR 50), Appendix R; 10 CFR 50.48; Appendix A to Branch Technical Position (BTP) Auxiliary Systems Branch (ASB) 9.5-1, Guidelines for Fire Protection for Nuclear Power Plants; related NRC Safety Evaluation Reports (SERs); the Plant St. Lucie (PSL) Updated Final Safety Analysis Report (UFSAR); and plant Technical Specifications (TS). The team evaluated all areas of this inspection, as documented below, against these requirements. The team reviewed the licensee's Individual Plant Examination for External Events (IPEEE) and performed in-plant walk downs to choose three risk-significant fire areas for detailed inspection and review. The three fire areas selected were:

- Unit 2 Fire Area B, Cable Spreading Room (Fire Zone 52)
- Unit 2 Fire Area C, Train B Switchgear Room (Fire Zone 34) and Electrical Equipment Supply Fan Room (Fire Zone 48)
- Unit 2 Fire Area I, Cable Loft (Fire Zone 51 West), Personnel Rooms (Fire Zone 21), PASS and Radiation Monitoring Room (Fire Zone 32), Instrument Repair Shop (Fire Zone 33I), and Train B Electrical Penetration Room (Fire Zone 23)

The team reviewed the licensee's fire protection program (FPP) documented in the PSL UFSAR (Appendix 9.5A, Fire Protection Program Report); safe shutdown analysis (SSA); fire hazards analysis (FHA); safe shutdown (SSD) essential equipment list; and system flow diagrams to identify the components and systems necessary to achieve and maintain safe shutdown conditions. The objective of this evaluation was to assure the SSD equipment and post-fire SSD analytical approach were consistent with and satisfied the Appendix R reactor performance criteria for SSD. For each of the selected fire areas, the team focused on the fire protection features, and on the systems and equipment necessary for the licensee to achieve and maintain SSD in the event of a fire in those fire areas. Systems and/or components selected for review included: pressurizer power operated relief valves (PORVs); boric acid makeup pumps 2A and 2B; boric acid gravity feed valves V2508 and V2509; auxiliary feedwater (AFW); charging pumps and volume control tank (VCT) outlet valve V2501; shutdown cooling; heating, ventilation, and air conditioning (HVAC); atmospheric dump valves (ADVs); and component cooling water (CCW). The team also reviewed the licensee's maintenance program to determine if a sample of manual valves used to achieve SSD were included.

b. Findings

No findings of significance were identified.

.02 Fire Protection of Safe Shutdown Capability

a. Inspection Scope

For the selected fire areas, the team evaluated the frequency of fires or the potential for fires, the combustible fire load characteristics and potential fire severity, the separation of systems necessary to achieve SSD, and the separation of electrical components and circuits located within the same fire area to ensure that at least one train of redundant SSD systems was free of fire damage. The team also inspected the fire protection features to confirm they were installed in accordance with the codes of record to satisfy the applicable separation and design requirements of 10 CFR 50, Appendix R, Section III.G, and Appendix A of BTP ASB 9.5-1. The team reviewed the following documents, which established the controls and practices to prevent fires and to control combustible fire loads and ignition sources, to verify that the objectives established by the NRC-approved FPP were satisfied:

- UFSAR, Appendix 9.5A, Fire Protection Program Report
- PSL Individual Plant Examination of External Events (IPEEE)
- Administrative Procedure 1800022, Fire Protection Plan
- Administrative Procedure 0010434, Plant Fire Protection Guidelines
- Electrical Maintenance Procedure 52.01, Periodic Maintenance of 4160 Volt Switchgear

The team toured the selected plant fire areas to observe whether the licensee had properly evaluated in-situ compartment fire loads and limited transient fire hazards in a manner consistent with the fire prevention and combustible hazards control procedures. In addition, the team reviewed fire protection inspection reports, corrective action program (CAP) condition reports (CRs) resulting from fire, smoke, sparks, arcing, and overheating incidents for the years 2001-2002 to assess the effectiveness of the fire prevention program, and to identify any maintenance or material condition problems related to fire incidents.

The team reviewed the fire brigade response, training, and drill program procedures. The team reviewed fire brigade initial and continuing training course materials to verify that appropriate training was being conducted. In addition, the team evaluated fire brigade drill training records for the operating shifts from August 2001 - February 2003. The reviews were performed to determine whether fire brigade drills had been conducted in high fire risk plant areas and whether fire brigade personnel qualifications, drill response, and performance met the requirements of the licensee's FPP.

The team walked down the fire brigade staging and dress-out areas in the turbine building and fire brigade house to assess the condition of fire fighting and smoke control equipment. The team examined the fire brigade's personal protective equipment, self-contained breathing apparatuses (SCBAs), portable communications equipment, and various other fire brigade equipment to determine accessibility, material condition and

operational readiness of equipment. Also, the availability of supplemental fire brigade SCBA breathing air tanks, and the capability for refill, was evaluated. In addition, the team examined personnel evacuation pathways to verify that emergency exit lighting was provided to the outside in accordance with the National Fire Protection Association (NFPA) 101, Life Safety Code, and the Occupational Safety and Health Administration (OSHA) Part 1910, Occupational Safety and Health Standards. This review included an examination of backup emergency lighting units along pathways to, and within, the dress-out and staging areas in support of fire brigade operations during a fire-induced power failure.

Team members walked down the selected fire areas to compare the associated fire fighting pre-fire strategies and drawings with as-built plant conditions. This was done to verify that fire fighting pre-fire strategies and drawings were consistent with the fire protection features and potential fire conditions described in the UFSAR Fire Protection Program Report. Also, the team performed a review of drawings and engineering calculations for fire suppression-caused flooding associated with the floor and equipment drain systems for the Train B Switchgear Room, the electrical equipment supply fan room, and the train B electrical penetration room. The review focused on ensuring that those actions required for SSD would not be inhibited by fire suppression activities or leakage from fire suppression systems.

The team reviewed design control procedures to verify that plant changes were adequately reviewed for the potential impact on the fire protection program, SSD equipment, and procedures as required by PSL Unit 2 Operating License Condition 2.C.(20). Additionally, the team performed an independent technical review of the licensee's plant change documentation completed in support of 2002 temporary system alteration (TSA) 2-02-006-3, which placed two exhaust fans in a fire damper opening between the Cable Spreading Room and the Train B Switchgear Room. This TSA was evaluated in order to verify that modifications to the plant were performed consistent with plant design control procedures.

b. Findings

1. Inadequate Fire Hazards Analysis

Introduction: A finding was identified in that six silicone oil-filled transformers were not identified or evaluated in the FHA as contributors to fire loading and fire ignition frequency or their effects on the SSD capability of Unit 2. These transformers were located in three separate fires areas including the Train B Switchgear Room, which was one of the fire areas selected for evaluation during this inspection. This finding is an unresolved item (URI) pending completion of the significance determination process (SDP).

Description: During a pre-inspection plant walk down on February 26, 2003, the team found six oil-filled transformers installed in three Unit 2 fire areas/fire zones. [One transformer in Fire Area A/Fire Zone 37 (Train A Switchgear Room); three transformers in Fire Area C/Fire Zone 34 (Train B Switchgear Room); and two transformers in Fire Area QQ/Fire Zone 47 (Turbine Building Switchgear Room).] The team found the oil in the transformers had not been evaluated in the FHA as contributors to fire loading or

their effects on SSD capability, as required by the FPP. Each indoor medium-voltage power transformer is cooled and insulated by about 380 gallons of Dow Corning 561, a dimethyl silicone-type insulating fluid. This finding was entered into the licensee's CAP as CR 03-0637. The team also noted that the licensee had several opportunities over the past six years but failed to recognize this condition. [A 1997 UFSAR Combustible Loading Update evaluation (PSL-ENG-SEMS-97-070) and a 2001 PSL triennial fire protection audit (QA Audit Report QSL-FP-01-07).]

The team also identified that the transformer insulating fluid had not been annually sampled to confirm its dielectric strength as recommended by the I-T-E Unit Substation Transformers Instruction Manual. The licensee determined that, except for four tests conducted during the period 1990-1992, there were no records of the transformer fluid being sampled and tested. This issue regarding failure to sample the transformer fluid in accordance with the vendor's manual was entered into the CAP as CR 03-0978.

Analysis: The team determined that this finding was associated with the "protection against external factors" and "equipment performance" attributes. It affected the objective of the mitigating systems cornerstone to ensure the availability, reliability, and capability of systems that respond to initiating events, and is therefore greater than minor. In combination with other findings identified in this report, the team determined the finding had potential safety significance greater than very low safety significance because the higher fuel loading in the associated fire areas/zones could increase the duration and severity of postulated fires in those areas beyond that previously analyzed. However, this finding is unresolved pending completion of a significance determination.

Enforcement: 10 CFR 50.48 states, in part, that each operating nuclear power plant must have a fire protection program that satisfies Criterion 3 of 10 CFR 50, Appendix A. PSL Unit 2 Operating License NPF-16, Condition 2.C.(20) states, in part, that the licensee shall implement and maintain in effect all provisions of the approved FPP as described in the UFSAR, and supplemented by licensee submittals dated July 14, 1982, February 25, 1983, July 22, 1983, December 27, 1983, November 28, 1984, December 31, 1984, and February 21, 1985 for the facility; and as approved in the NRC Safety Evaluation Report Supplement 3 dated April 1983, and supplemented by NRC letter dated December 5, 1986. The approved FPP is maintained and documented in the PSL UFSAR, Appendix 9.5A, Fire Protection Program Report.

The Fire Protection Program Report states, in part, that the PSL fire protection program implemented the philosophy of defense-in-depth protection against fire hazards and effects of fire on SSD equipment. The PSL fire protection program is guided by the plant FHA and by credible fire postulations. Further, it stated that the FHA performed for PSL Unit 2 considered potential fire hazards and their possible effect on SSD capability.

Contrary to the above, the licensee failed to meet 10 CFR 50.48 and their FPP commitments, in that, they did not adequately evaluate the combustible fire loading in the FHA for Fire Area A/Fire Zone 37, Fire Area C/Fire Zone 34, and Fire Area QQ/Fire Zone 47. Specifically, 380 gallons of in-situ combustible transformer silicone dielectric insulating fluid in each of six transformers located in Unit 2 was not considered nor evaluated in the FHA as contributors to fire loading and its possible effects on SSD

capability. Pending determination of the finding's safety significance, this finding is identified as URI 50-389/03-02-01, Failure to Evaluate the Combustible Loading of Oil-Filled Transformers in the FHA and the Effect on SSD Capability in the Event of a Fire in Unit 2.

2. Inadequate Protection of Equipment and Cables Required for Safe Shutdown

Introduction: A finding was identified in that physical protection of the Train A 480V vital load center 2A5, and its associated electrical cables, located in the Train B Switchgear Room (Fire Area C) did not meet the requirements of 10 CFR 50, Appendix R, Criterion III.G.2. Instead, the licensee substituted the use of local, manual operator actions, which had not received NRC approval, to achieve and maintain SSD. This is a URI pending completion of the SDP.

Description: On January 22, 2003, the licensee identified that PSL relied on manual operator actions outside the MCR for SSD in non-alternative shutdown fire areas (i.e., areas designated as complying with 10 CFR 50, Appendix R, Criterion III.G.2) and that the manual actions did not have prior NRC approval. The licensee documented this issue in CR 03-0153. The team reviewed the local, manual operator actions for the Criterion III.G.2 areas selected for this inspection (Fire Area C and Fire Area I). The finding related to physical protection deficiencies in Fire Area C is discussed in this section of the inspection report. The finding related to physical protection deficiencies relative to Fire Area I is discussed in Section 4OA7 of this inspection report.

The team found that 480V vital load center 2A5 (a Train A component) and its associated electrical cables were located in the Train B Switchgear Room without adequate spatial separation or fire barriers. Load center 2A5 provides power to boric acid makeup (BAM) pumps 2A and 2B via motor control center (MCC) 2A6. MCC 2B5, also located in the Train B Switchgear Room, provides power to the boric acid gravity-feed motor operated valves V2508 and V2509. The licensee's SSA stated that the BAM pumps and the boric acid gravity feed valves were redundant to each other for achieving and maintaining SSD. However, rather than providing adequate physical protection for redundant trains of systems necessary to achieve and maintain SSD (as specified for Appendix R, Criterion III.G.2 areas), the licensee substituted the use of manual operator actions outside the MCR. The use of local manual operator actions, in fire areas designated as complying with the provisions of Appendix R, Criterion III.G.2, requires prior NRC review and approval. These local manual actions had not received NRC approval.

Analysis: The team determined that this finding was associated with the "equipment performance" attribute of the mitigating systems cornerstone. It affected this cornerstone's objective to ensure the availability, reliability, and capability of systems that respond to initiating events, and is therefore greater than minor. In combination with other findings in this report, the team determined that this finding had potential safety significance greater than very low, safety significance because fire damage to the unprotected cables could prevent operation of SSD equipment from the MCR and challenge the operators' ability to maintain adequate reactor coolant system inventory and reactor coolant pump seal flow during a fire in the B Switchgear Room. However, this finding is unresolved pending completion of a significance determination.

Enforcement: The licensee's Fire Protection Program commits to 10 CFR 50, Appendix R, Section III.G. Criterion III.G.2 states in part, that,

"...where cables or equipment, including associated non-safety circuits that could prevent operation or cause maloperation due to hot shorts, open circuits, or shorts to ground, of redundant trains of systems necessary to achieve and maintain hot shutdown conditions are located within the same fire area outside of primary containment, one of the following means of ensuring that one of the redundant trains is free of fire damage shall be provided: (1) separation of cables and equipment of redundant trains by a fire barrier having a 3-hour rating; (2) Separation of cables and equipment of redundant trains by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards. In addition, fire detectors and an automatic, fire suppression system shall be installed in the fire area; (3) enclosure of cable and equipment of one redundant train in a fire barrier having a 1-hour rating. In addition, fire detectors and an automatic, fire suppression system shall be installed in the fire area."

Contrary to the above, on March 28, 2003, the team found that the licensee failed to protect redundant equipment (powered by Train A load center 2A5 and Train B MCC 2B5) located within the Train B Switchgear Room (Fire Area C) with an adequate fire barrier or to provide 20 feet of separation. Pending determination of the finding's safety significance, this finding is identified as URI 50-389/03-02-02, Failure to Provide Adequate Protection for Redundant Safe Shutdown Equipment and Cables in the Event of a Fire in the Unit 2 Train B Switchgear Room.

.03 Post-Fire Safe Shutdown Circuit Analysis

a. Inspection Scope

The team reviewed how systems would be used to achieve inventory control, reactor coolant pump seal protection, core heat removal and reactor coolant system (RCS) pressure control during and following a postulated fire in the fire areas selected for review. Portions of the licensee's Appendix R Safe Shutdown Analysis Report which outlined equipment and components in the chosen fire areas, power sources, and their respective cable functions and system flow diagrams were reviewed. Control circuit schematics were analyzed to identify and evaluate cables important to safe shutdown. The team traced the routing of cables through fire areas selected for review by using cable schedules, and conduit and tray drawings. The team walked down the chosen fire areas to compare the actual plant configuration to the layout indicated on the drawings. The team evaluated the above information to determine if the requirements for protection of control and power cables were met. The licensee's circuit breaker and fuse coordination study was reviewed for adequate electrical scheme protection of equipment necessary for safe shutdown. The following equipment and components were reviewed during the inspection:

- V1474 and V1475, Pressurizer PORVs
- V1476 and V1477, Pressurizer Isolation Block Valves
- MV-09-03 and MV-09-04, Feedwater Bypass Valves
- 2HVE-13B, Control Room Booster Fan

- V2501, Volume Control Tank Discharge Outlet Valve
- MV-07 -04, Containment Spray Isolation Valve
- LP-208, Lighting Panel 208
- LP-209, Lighting Panel 209
- HCV-3625, Safety Injection Block Valve
- V3444, Shutdown Cooling Block Valve
- PI-1107/1108, Pressurizer Pressure for Hot Shutdown Panel
- LI-1104/1105, Pressurizer Level for Hot Shutdown Panel
- LI-9113/9123, Steam Generator Level for Hot Shutdown Panel
- Safety Injection Actuation System Logic
- 2A5/2A6 and related feeds, 480V Motor Control Center
- 2B5/2B6 and related feeds, 480V Motor Control Center
- Load Center 2A5 480V Switchgear

b. Findings

No findings of significance were identified.

.04 Alternative Post-Fire Safe Shutdown Capability

a. Inspection Scope

The Cable Spreading Room (Fire Area B), one of two alternative shutdown (ASD) fire areas listed in the licensee's SSA, was selected for detailed inspection of post-fire SSD capability. Emphasis was placed on verification that hot and cold shutdown from outside the control room could be implemented, and that transfer of control from the MCR to the hot shutdown control panel (HSCP) and other equipment isolation locations, could be accomplished within the performance goals stated in 10 CFR 50, Appendix R, Section III.L.3. This review also included a comparison of actions in procedures with the licensee's thermal hydraulic time line analysis.

Electrical diagrams of power, control, and instrumentation cables required for ASD were analyzed for fire-induced faults that could defeat operation from the MCR or the HSCP. The team reviewed the electrical isolation and protective fusing in the transfer circuits of components (e.g., motor operated valves) required for post-fire SSD at the HSCP to verify that the SSD components were physically and electrically separated from the fire area. The team also examined the electrical circuits for a sampling of components operable at the HSCP to ensure that a fire in the B Switchgear Room would not adversely affect SSD capability from the MCR. The team's review was performed to verify that adequate isolation capability of equipment used for SSD implementation was in place, accessible, and that the HSCP was capable of controlling all the required equipment necessary to bring the unit to a SSD.

b. Findings

No findings of significance were identified.

.05 Operational Implementation of Post-Fire Safe Shutdown Capability

a. Inspection Scope

The team reviewed off-normal operating procedures 2-ONP-100.02, Control Room Inaccessibility, Rev. 13B [the licensee's procedure for ASD] and 2-ONP-100.01, Response to Fire, Rev. 9 [the licensee's procedure for post-fire SSD from the MCR]. The review focused on ensuring that all required functions for post-fire SSD and the corresponding equipment necessary to perform those functions were included in the procedures. The review also examined the consistency of the operator's shutdown procedures with other procedure-driven post-fire SSD activities (i.e., fire fighting activities).

b. Findings

No findings of significance were identified. The licensee identified that manual operator actions outside the MCR were used in lieu of physical protection of equipment and cables relied on for SSD during a fire, without obtaining prior NRC approval. Findings related to this issue are discussed in Section 1R05.02.b.2 of this inspection report for Fire Area C, and in Section 4OA7 of this inspection report for Fire Area I.

.06 Communications

a. Inspection Scope

The team reviewed plant communication capabilities to verify that they were adequate to support unit shutdown and fire brigade duties. This included verifying that site paging (PA), portable radios, and sound-powered phone systems were consistent with the licensing basis and would be available during fire response activities. The team reviewed the licensee's communications features to assess whether they were properly evaluated in the licensee's SSA (protected from exposure fire damage) and properly integrated into the post-fire SSD procedures. The team also walked down sections of the post-fire SSD procedures to verify that adequate communications equipment would be available to support the SSD process. In addition, the team reviewed the periodic testing of the site fire alarm and PA systems, the maintenance checklists for the sound-powered phone circuits and amplifiers, and the inventory surveillance of post-fire SSD operator equipment to assess whether the maintenance/surveillance test program for the communications systems was sufficient to verify proper operation of the systems.

b. Findings

No findings of significance were identified.

.07 Emergency Lighting

a. Inspection Scope

The team compared the installation of the licensee's emergency lighting systems to the requirements of 10 CFR 50, Appendix R, Criterion III.J, to verify that 8-hour emergency

lighting coverage was provided in areas where manual operator actions were required during post-fire SSD operations, including the ingress and egress routes. The team's review also included verifying that emergency lighting requirements were evaluated in the licensee's SSA and properly integrated into the post-fire SSD procedures as described in the UFSAR, Appendix 9.5A, Section 3.7. During plant walk downs of selected areas where local manual operator actions would be performed, the team inspected area emergency lighting units (ELUs) for operability and checked the aiming of lamp heads to determine if adequate illumination was available to correctly and safely perform the actions directed by the procedures. The team also inspected emergency lighting features along access and egress pathways that would be used during SSD activities for adequacy and personnel safety. The team checked a sample of ELU battery power supplies to verify that they were rated with at least an 8-hour capacity. In addition, the team reviewed the manufacturer's information and the licensee's periodic maintenance tests to verify that the ELUs were being maintained and tested in accordance with the manufacturer's recommendations.

b. Findings

No findings of significance were identified.

.08 Cold Shutdown Repairs

a. Inspection Scope

The team reviewed the licensee's SSA and existing plant procedures to determine if any repairs were necessary to achieve cold shutdown, and if needed, the equipment and procedures required to implement those repairs was available onsite.

b. Findings

No findings of significance were identified.

.09 Fire Barriers and Fire Area/Zone/Room Penetration Seals

a. Inspection Scope

The team walked down the selected fire zones/areas to evaluate the adequacy of the fire resistance of barrier enclosure walls, ceilings, floors, and cable protection. The team selected several fire barrier features for detailed evaluation and inspection to verify proper installation and qualification. These features included fire barrier penetration fire stop seals, fire doors, fire dampers, fire barrier partitions, and Thermo-Lag electrical raceway fire barrier system (ERFBS) enclosures.

The team observed the material condition and configuration of the selected fire barrier features and also reviewed construction details and supporting fire endurance tests for the installed fire barrier features. This review was performed to verify that the observed fire barrier penetration seal and ERFBS configurations conformed with the design drawings and tested configurations. The team also compared the penetration seal and ERFBS ratings with the ratings of the barriers in which they were installed.

The team reviewed licensing documentation, engineering evaluations of Generic Letter 86-10 fire barrier features, and NFPA code deviations to verify that the fire barrier installations met design requirements and license commitments. In addition, the team reviewed surveillance and maintenance procedures for selected fire barrier features to verify the fire barriers were being adequately maintained.

b. Findings

No findings of significance were identified.

.10 Fire Protection Systems, Features, and Equipment

a. Inspection Scope

The team reviewed flow diagrams, electrical schematic diagrams, periodic test procedures, engineering technical evaluations of NFPA code deviations, valve lineup procedures, and cable routing data for the power and control circuits of the electric motor-driven fire pumps and the fire protection water supply system yard mains. The team assessed the common fire protection water delivery and supply components to determine if they could be damaged or inhibited by fire-induced failures of electrical power supplies or control circuits and subsequent possible loss of fire water supply to the plant. Additionally, team members walked down the fire protection water supply system piping and actuation valves for the selected fire areas to assess the adequacy of the system material condition, consistency of the as-built configuration with engineering drawings, and operability of the system in accordance with applicable administrative procedures and NFPA standards.

The team walked down accessible portions of the fire detection and alarm systems in the selected fire areas to evaluate the engineering design and the operation of the installed configurations. The team also reviewed engineering drawings for fire detector spacing and locations in the three selected fire areas for consistency with the licensee's fire protection plan, engineering evaluations for NFPA code deviations, and the requirements in NFPA 72A and 72D.

The team also walked down the selected fire zones/areas with automatic sprinkler suppression systems to verify the proper type, placement and spacing of the heads/nozzles as well as the lack of obstructions for effective functioning. The team examined vendor information, engineering evaluations for NFPA code deviations, and design calculations to verify that the required suppression system density for each protected area was available.

The team reviewed the manual suppression standpipe and fire hose system to verify adequate design, installation, and operation in the selected fire areas. The team examined design flow calculations and evaluations to verify that the required fire hose water flow and sprinkler system density for each protected area were available. The team checked a sample of manual fire hose lengths to determine whether they would reach the SSD equipment. Additionally, the team observed placement of the fire hoses and extinguishers to confirm consistency with the fire fighting pre-plan drawings.

b. Findings

No findings of significance were identified.

4. Other Activities

4OA2 Problem Identification and Resolution

a. Inspection Scope

The team reviewed a sample of licensee audits, self-assessments, and CRs to verify that items related to fire protection and to SSD were appropriately entered into the licensee's CAP in accordance with the PSL quality assurance program and procedural requirements. The items selected were reviewed for classification and appropriateness of the corrective actions taken or initiated to resolve the issues. Included in this review was CR 03-0153, which involved using manual operator actions to achieve SSD for fire areas (e.g., Fire Area I) where prior NRC approval was required. The team assessed the manual operator actions used for Fire Area I against the guidance provided in Enclosure 2 of NRC Reactor Oversight Process (ROP) Procedure 71111.05, Fire Protection, dated March 6, 2003. In addition, the team reviewed the licensee's applicability evaluations and corrective actions for selected industry experience issues related to fire protection. The operating experience (OE) reports were reviewed to verify that the licensee's review and actions were appropriate.

b. Findings

No findings of significance were identified. One licensee-identified finding (related to the use of manual operator actions in Fire Area I without prior NRC approval) involved a violation of NRC requirements. The enforcement considerations for this violation are discussed in Section 4OA7 of this inspection report.

4OA3 Event Followup

.01 (Closed) LER 50-335, 389/00-01, Outside Design Bases Appendix R Hi-Lo Pressure Interface and Separation Issues.

On March 9, 2000, the licensee identified seven cases where the plant was not in compliance with 10 CFR 50, Appendix R, Criterions III.G.2.d and III.G.2.f. The first case, involving the pressurizer PORVs, applied to Units 1 and 2, is related to URI 50-335,389/99-08-03, and is discussed in Section 4AO5 of this report. The other six cases apply to Unit 2 only, and are discussed below.

a. Shutdown Cooling Valves

Shutdown cooling (SDC) system valves, V3652 and V3481, isolate the SDC piping from the RCS while the plant is operating. The SDC piping is not rated for RCS normal operating pressure. Hence, these valves are procedurally de-energized in the closed position during normal plant operation. Only one valve needs to remain closed to effectively isolate the SDC piping from RCS pressure. The licensee found that the

power cables for these valves were routed through a pull box (JB-2031), located in the annulus region of containment, which also contained other three-phase power cables. During a fire, one or both of these motor-operated valves could spuriously open due to fire-induced cable-to-cable short circuits. Should both valves open when the RCS is at normal operating pressure, a pressure relief valve would open and RCS coolant would flow from the RCS to the containment sump causing a loss of coolant accident (LOCA). SDC valve V3545 is a normally open motor-operated valve in series with V3652 and V3481 which could be closed by the operator to re-isolate the SDC piping. However, the power cables for V3545 also could be damaged by the fire. The licensee corrected the problem by installing new power cables using armored cable. The inspectors confirmed implementation of the modification through review of plant modification PCM01028. This finding is more than minor because it could adversely affect the equipment reliability objective of the mitigating systems and barrier integrity cornerstones. Using Appendix F of the SDP, the inspector determined that the finding was of very low safety significance (Green) because the likelihood of an LOCA event occurring was very low and cables for systems used to mitigate a LOCA were located outside containment. This licensee-identified finding is another example of the violation discussed in Section 4OA5 of this inspection report. This issue is closed.

b. Pressurizer Pressure Instrumentation Affected by Tray-Conduit Interaction

The licensee identified that cable tray L2224, located in containment, lacked 20-foot separation or a radiant heat shield to prevent interaction with conduits 25018Y and 23091A during a fire as required by 10 CFR 50, Appendix R, Criterion III.G.2. Pressurizer pressure instruments PT-1105, PT-1106 and PT-1107 were routed in cable tray L2224; and pressure instruments PT-1103, PT-1104 and PT-1108 were routed in conduits 25018Y and 23091A. Instruments PT-1107 and PT-1108 would be used to achieve and maintain SSD during a fire. The licensee corrected this finding by protecting conduits 25018Y and 23091A with a radiant heat shield 20 feet on either side of cable tray L2224 (plant modification PCM99104, Supplement 1). The inspector evaluated the consequences and ramifications of these instruments failing high or low, as well as the availability of pressurizer pressure instruments which would remain unaffected by the fire. This finding is more than minor because it could adversely affect the equipment reliability objective of the mitigating systems cornerstone. Using Appendix F of the SDP, the inspector determined that the finding was of very low safety significance (Green) because the affected instrumentation would not lead to any transient or a change in core damage frequency. This licensee-identified finding is another example of the violation discussed in Section 4OA5 of this inspection report. This issue is closed.

c. Pressurizer Level Instrumentation Affected by Tray-Conduit Interaction

The licensee identified that cable tray L2213, located in containment, lacked 20-foot separation or a radiant heat shield to prevent interaction with conduits 23320D and 23090A during a fire as required by 10 CFR 50, Appendix R, Criterion III.G.2. Pressurizer level instruments LT-1110X and LT-1105 were routed in cable tray L2213; and level instruments LT-1110Y and LT-1104 were routed in conduits 23320D and 23090A. Instruments LT-1110X & Y would be used to achieve and maintain SSD during a fire. The inspector determined that level failing low was the most limiting effect of a

fire-induced fault with these cables. Low indicated pressurizer level would initiate several automatic actions, some cause level to rise while others cause level to fall. The loss of pressurizer heaters dominates the situation and would cause actual pressurizer level and pressure to decrease. Low pressurizer pressure would initiate a reactor trip and a safety injection (SI) actuation. Safety injection flow would increase actual pressurizer level. Because actual pressurizer level cannot be determined, the operator may not secure the safety injection pumps resulting in the pressurizer completely filling. The post-fire SSD procedure directs the operator to place the PORVs in override due to concerns about spurious opening. Therefore, once the pressurizer completely fills, the associated pressure increase would be relieved by the safety relief valves. This finding is more than minor because it could adversely affect the equipment reliability objective of the mitigating systems and barrier integrity cornerstones. Using Appendix F of the SDP, the inspector determined that the finding was of very low safety significance (Green) because the likelihood of a stuck open safety valve event occurring was very low, manual suppression systems for fires in containment were in a normal state, and cables for systems used to mitigate this event were located outside containment. This licensee-identified finding is another example of the violation discussed in Section 4OA5 of this inspection report. This issue is closed.

d. Pressurizer Level Instrumentation Affected by Conduit to Conduit Interaction

The licensee identified that two conduits in containment, containing cables for redundant channels of pressurizer level instrumentation, did not have 20-foot separation or radiant heat shield protection as required by 10 CFR 50, Appendix R, Criterion III.G.2. The conduits were located in the containment annulus at an elevation where there were no ignition sources other than the cables themselves. The licensee corrected the separation problem by installing a radiant heat shield on one of the conduits (plant modification PCM99104, Supplement 1). The inspector determined that self-induced cable ignition of low voltage, low energy, instrument circuits, was not a credible event. The inspector noted even if a fire occurred within a conduit, the fire would not affect another conduit. The inspector determined that, given the particular configuration at issue, it could not credibly adversely affect any reactor safety cornerstone. No new findings were identified in the inspector's review. This finding constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC's Enforcement Policy. The licensee documented the problem in CR 99-1963, Rev. 2 and CR 00-0386. This issue is closed.

e. Circuits Related to Automatic Pressurizer Pressure Control Affected by Conduit to Conduit Interaction

The licensee identified that certain conduits in containment, containing cables for the pressurizer PORV and the auxiliary spray isolation valves, did not have 20-foot separation or radiant heat shield protection as required by 10 CFR 50, Appendix R, Criterion III.G.2. The licensee's SSA considered these two systems to be separate and independent, and would be used in the post-fire SSD procedures as diverse methods to reduce RCS pressure when necessary. The conduits were located in the containment annulus at an elevation where there were no ignition sources other than the cables themselves. The licensee corrected the separation problem by installing a radiant heat shield on one of the conduits (plant modification PCM99104, Supplement 2). The

inspector determined that a fire in one conduit could not credibly expand to affect other nearby conduits. The inspector determined that, given the particular configuration at issue, it could not credibly adversely affect any reactor safety cornerstone. No new findings were identified in the inspector's review. This finding constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC's Enforcement Policy. The licensee documented the problem in CR 99-1963, Rev. 2 and CR 00-0386. This issue is closed.

f. Radiant Heat Shields Not Installed per Accepted Appendix R Deviation

The licensee identified that radiant heat shields had not been installed directly below two groups of cable trays, running above the 45-foot elevation grating inside containment [in the space between the containment wall and the bioshield], as required by a NRC-approved deviation in the Unit 2 Operating License. Examples of cable trays involved were instrumentation trays L2223 (Train A) and L2224 (Train B). The licensee corrected the problem by installing the missing radiant heat shields [plant modification PCM01028]. Train B cables were in trays near the containment wall, and Train A cables are in trays near the bioshield. At certain locations, these cable trays are only separated by seven feet. This finding is more than minor because a fire could adversely affect the equipment reliability objective of the mitigating systems cornerstone by damaging redundant trains of SSD equipment. The finding was considered to have very low safety significance (Green) using Appendix F of the SDP because:

- Fire brigade capability for a fire in containment was not impaired.
- In-situ ignition sources are negligible and transient ignition sources and combustibles are not present during normal plant operation.
- Only the top tray in each group contains power cables carrying sufficient energy (480V) for IEEE 383 cables to self-ignite. These trays are solid metallic bottom and cover-type trays. This construction inherently limits the spread of an internal tray fire, and provides a shield limiting the radiant heat energy release. Most of these power cables are not energized during normal plant operation.
- A very similar configuration in the Unit 1 containment was analyzed by the licensee, reviewed by the NRC in great detail, and found to be an acceptable configuration. The Unit 1 study had a safety factor of at least two, which provides a margin to account for geometry and other unknown differences between the two units.

This licensee-identified finding is another example of the violation discussed in Section 4OA5 of this inspection report. This issue is closed.

.02 (Closed) LER 50-335/00-04, Pressurizer Level Instrumentation Conduit Separation Outside Appendix R Design Bases

The licensee identified that a Unit 1 cable tray in containment containing pressurizer level instrumentation, lacked 20-foot separation or a radiant heat shield to prevent interaction with conduit containing redundant pressurizer level instrumentation, as required by 10 CFR 50, Appendix R, Criterion III.G.2. A fire in the cable tray could result in damage to all pressurizer level instrumentation causing the pressurizer to completely fill and causing the safety valves to lift. [This is essentially the same issue as discussed for Unit 2 in Section 4OA3.01.c above.] This finding is more than minor because it could

adversely affect the equipment reliability objective of the mitigating systems and barrier integrity cornerstones. Using Appendix F of the SDP, the inspector determined that the finding was of very low safety significance (Green) because the likelihood of a stuck open safety valve event occurring was very low, manual suppression systems for fires in containment were in a normal state, and cables for systems used to mitigate this event were located outside containment. This licensee-identified finding involved a violation of 10 CFR 50, Appendix R, Criterion III.G.2 requirements. The enforcement considerations for this violation are discussed in Section 4OA7. This LER is closed.

4OA5 Other Activities

.01 (Closed) URI 335,389/99-08-03, PORV Cabling May Not be Protected from Hot-Shorts Inside Containment (LER 50-335,389/00-01)

Introduction: A Green NCV was identified for failure to provide 20-foot separation or radiant heat shield protection for the pressurizer PORV cables inside containment as required by 10 CFR 50, Appendix R, Criterion III.G.2.

Description: During an NRC fire protection inspection (Inspection Report 50-335, 389/99-08, dated January 31, 2000), the inspectors identified that the PORV cables inside containment were not protected from fire-induced cable-to-cable short circuits. The licensee's SSA referred to a study which documented that spurious opening of the PORV due a cable-to-cable short circuit was not credible. Because the study could not be located at the time of the inspection, the inspectors initiated this URI to track the issue. Subsequently, the licensee determined that either pressurizer PORV could spuriously open as a result of fire-induced short circuits in a cable tray in containment. In addition, cables for the associated PORV block valve were routed in the same cable tray and could be damaged by the same fire. Cables for one PORV and its block valve were routed in a tray near the containment wall. Cables for the other PORV and its block valve were routed in a tray near the bioshield. The condition applied to both units. The licensee reported this finding in LER 50-335, 389/00-01. The licensee corrected this problem by installing new PORV cables using armored cable [plant modification PCM00059 (Unit 1) and PCM99104, Rev. 4 (Unit 2)].

Analysis: The finding was a performance deficiency because it represented a violation of 10 CFR 50, Appendix R, Criterion III.G.2 requirements. It was considered greater than minor because it affects the "equipment performance" attribute of the mitigating systems and barrier integrity cornerstones. Using Appendix F of the SDP, the inspector determined that the finding was of very low safety significance (Green) because the initiating event likelihood was relatively low, manual suppression of fires in the containment was in the normal state, and other mitigating systems were unaffected because their associated cables were outside of containment.

Enforcement: The licensee's Fire Protection Program commits to 10 CFR, Appendix R, Criterion III.G. For noninerted containments, Criterion III.G.2.d. and III.G.2.f, state, in part "one of the following fire protection means shall be provided:

- Separation of cables and equipment and associated non-safety circuits of redundant trains by a horizontal distance of more than 20-feet with no intervening combustibles or fire hazards;
- Separation of cables and equipment and associated non-safety circuits of redundant trains by a noncombustible radiant energy shield."

Contrary to the above, the cabling for redundant trains of pressurizer PORVs, and their associated block valves did not meet this requirement. Because the failure to protect these cables is of very low safety significance, has been entered into the CAP (CR 00-0386) and the problem has been corrected through a plant modification, this violation is being treated as an NCV consistent with Section VI.A of the NRC Enforcement Policy. This finding is identified as NCV 50-335,389/03-02-03, Cables in Containment Fail to Meet 10 CFR 50, Appendix R, Criterion III.G.2 Requirements.

4OA6 Meetings

On March 28, 2003, the team presented the inspection results to Mr. D. Jernigan and other members of your staff, who acknowledged the findings. The team confirmed that proprietary information is not included in this report.

4OA7 Licensee-Identified Violations

The following findings of very low safety significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as NCVs.

- 10 CFR 50, Appendix R, Criterion III.G.2, requires in part, that, where cables or equipment, including associated non-safety circuits that could prevent operation or cause maloperation due to hot shorts, open circuits, or shorts to ground, of redundant trains of systems necessary to achieve and maintain hot shutdown conditions are located within the same fire area outside of primary containment, one of the following means of ensuring that one of the redundant trains is free of fire damage shall be provided: (1) separation of cables and equipment of redundant trains by a fire barrier having a 3-hour rating; (2) separation of cables and equipment of redundant trains by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards; (3) enclosure of cable and equipment of one redundant train in a fire barrier having a 1-hour rating.

  Manual operator actions to respond to maloperations are not listed as an acceptable method for satisfying this requirement.

  Contrary to the above, the licensee did not provide adequate protection to ensure that redundant trains of systems and equipment necessary to achieve and maintain SSD were maintained free of fire damage in the event of a fire in Fire Area I. In lieu of providing adequate physical protection, the licensee used manual operator actions outside the MCR without obtaining prior NRC approval. This finding was entered into the licensee's CAP as CR 03-0153.

- 10 CFR 50, Appendix R, Criterion III.G.2, Fire protection of safe shutdown capability, requires in part that, for cables that could prevent operation or cause maloperation due to hot shorts, open circuits or shorts to ground, of redundant trains of systems necessary to achieve and maintain hot shutdown conditions and located inside noninerted containments, one of the following fire protection means shall be provided: (1) separation of cables of redundant trains by a horizontal distance of more than 20-feet with no intervening combustibles or fire hazards; or (2) separation of cables of redundant trains by a non-combustible radiant energy shield.

  Contrary to the above, since the requirement became effective, the required fire protection was not provided for redundant cables, in that, there was a lack of 20-foot separation or a radiant heat shield between a cable tray and a conduit in Unit 1 containment. This finding has been entered into the licensee's CAP (CR 99-1963, Rev. 2, and CR 00-0386), corrected by plant modifications, and is of very low safety significance for reasons given in Section 4OA3.02.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

D. Albritton, Senior Reactor Operator
P. Barnes, Fire Protection Engineering Supervisor
R. De La Espriella, Site Quality Manager
B. Dunn, Site Engineering Manager
K. Frehafer, Licensing Engineer
J. Hoffman, Design Engineering Manager
D. Jernigan, Site Vice President
R. Lamb, Senior Reactor Operator
G. Madden, Licensing Manager
R. Maier, Protection Services Manager
R. McDaniel, Fire Protection Supervisor
T. Patterson, Operations Manager
R. Rose, Plant General Manager
V. Rubano, Engineering Special Projects Manager
S. Short, Electrical Engineering Supervisor

NRC Personnel

C. Ogle, Branch Chief
R. Rodriguez, Nuclear Safety Intern (Trainee)
T. Ross, Senior Resident Inspector
S. Sanchez, Resident Inspector

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-389/03-02-01	URI	Failure to Evaluate the Combustible Loading of Oil-Filled Transformers in the FHA and the Effect on SSD Capability in the Event of a Fire in Unit 2 (Section 1R05.02.b.1)
50-389/03-02-02	URI	Failure to Provide Adequate Protection for Redundant Safe Shutdown Equipment and Cables in the Event of a Fire in the Unit 2 Train B Switchgear Room (Section 1R05.02.b.2)

Opened and Closed

50-335,389/03-02-03	NCV	Cables in Containment Fail to Meet 10 CFR 50, Appendix R, Criterion III.G.2 Requirements (Section 4OA5)

Attachment

Closed

50-335,389/99-08-03	URI	PORV Cabling May Not be Protected from Hot-Shorts Inside Containment (Section 4OA5.01)
50-335,389/00-001	LER	Outside Design Bases Appendix R Hi-Lo Pressure Interface and Separation Issues (Section 4OA3.01)
50-335/00-004	LER	Pressurizer Level Instrumentation Conduit Separation Outside Appendix R Design Bases (Section 4OA3.02)

Discussed

None

Attachment

APPENDIX

LIST OF DOCUMENTS REVIEWED

Section 1R05: Fire Protection

Procedures:

2-ADM-03.01, Unit 2 Power Distribution Breaker List, Rev. 6C
2-ONP-100.01, Response to Fire, Rev.9
2-ONP-100.02, Control Room Inaccessibility, Rev.13B
2-M-0018D, Mechanical Maintenance Safety-Related PM Program (Dampers), Rev. 11
Administrative Procedure 0005729, Fire Protection Training, Qualification, and Requalification, Rev. 17
Administrative Procedure 0010239, Fire Protection System Impairment, Rev. 13B
Administrative Procedure 0010434, Plant Fire Protection Guidelines, Rev. 37C
Administrative Procedure 1800022, Fire Protection Plan, Rev. 35
EMP 50.10, Self-Contained Emergency Lighting Unit Maintenance and Inspection, Rev. 9
EMP 52.01, Periodic Maintenance of 4160 Volt Switchgear, Rev. 14
General Maintenance Procedure 2-M-0018F, Safety-Related PM Program (Fire PMs), Rev. 25B
Protection Services Guidelines, PSG-15.01, Monitoring Fire Protection System Failures, Rev. 0
QI-3-PSL-1, Design Control, Rev. 11
0-OSP-15.11, Fire Protection System Quarterly Alignment Verification, Rev. 6
0-OSP-15.17, Fire Protection System Triennial Flow Test, Rev. 1
2-OSP-100.16, Remote Shutdown Components 18 Month Functional Test, Rev. 2
2-IMP-69.02, ESFAS Monthly Channel Functional Test, Rev. 4A

Drawings:

2998-G-078, Sheets 107, 108, 109, 110, Unit 2 Reactor Coolant System, Rev. 1
2998-G-078, Sheets 121A, 121B & 122, Unit 2 Chemical and Volume Control System, Rev. 16
2998-G-078, Sheets 130A, 130B, 131, 132, Unit 2 Safety Injection System, Rev. 12
2998-G-079, Sheets 1, 2 & 7, Unit 2 Main Steam System, Rev. 20
2998-G-080, Sheets 2A & 2B, Unit 2 Feedwater and Condensate System, Rev. 25
2998-G-082, Sheets 1 & 2, Unit 2 Circulating and Intake Cooling Water System, Rev. 37
2998-G-083, Sheets 1 & 2, Unit 2 Component Cooling Water System, Rev. 28
2998-G-084, Unit 2 Flow Diagram Domestic & Make-up Water Systems, Rev. 33
2998-G-088, Sheet 1, Unit 2 Containment Spray and Refueling Water System, Rev. 35
2988-G-275 series, 480 V. Switchgear One Line Wiring Diagrams, Rev. 4
2988-G-424, Reactor Auxiliary Building Fire Detectors and Emergency Lights, Rev 9.
2988-G-890, Reactor Auxiliary Building Plumbing and Drainage Plan, Rev. 8
2988-G-891, Reactor Auxiliary Building Plumbing and Drainage Plan El. 43', Rev. 10
2998-B-733, Unit 2 Fire Protection Penetration Schedule, Rev. 6
2998-G-785, Reactor Auxiliary Building Room and Door Schedule, Rev. 8
2998-G-882, HVAC Equipment Schedule and Details, Rev. 1
2998-16082, Air Balance Inc. SL-2121 List of Materials, 319 ALV & 319 ALH Fire Dampers, Rev. 0
8770-B-327, Control Wiring Diagrams for Fire Water Pumps, Rev. 14

2998-G-424, Sheet 7, Unit 2 Reactor Containment Fire Detectors and Emergency Lights, Rev 1
2998-G-879, Sheets 1 & 2, Unit 2 HVAC Flow and Control Diagrams, dated 10/20/89
2998-G-411, Reactor Auxiliary Building El' 19'50 Conduit Layout, Sheet 14, Rev. 8
2998-G-411, Reactor Auxiliary Building El' 19'50 Conduit Layout, Sheet 15, Rev. 6
2998-G-411, Reactor Auxiliary Building El' 19'50 Conduit Layout, Sheet 19, Rev. 5
2998-G-411, Reactor Auxiliary Building El' 19'50 Conduit Layout, Sheet 10, Rev. 6
2998-G-411, Reactor Auxiliary Building El' 19'50 Conduit Layout, Sheet 4, Rev. 5
2998-G-411, Reactor Auxiliary Building El' 19'50 Conduit Layout, Sheet 3, Rev. 6
2998-G-411, Reactor Auxiliary Building El' 19'50 Conduit Layout, Sheet 13, Rev. 5
2998-G-411, Reactor Auxiliary Building El' 19'50 Conduit Layout, Sheet 7, Rev. 9
2998-G-411, Reactor Auxiliary Building El' 19'50 Conduit Layout, Sheet 8, Rev. 8
2998-G-411, Reactor Auxiliary Building El' 19'50 Conduit Layout, Sheet 9, Rev. 8
2998-G-411, Reactor Auxiliary Building Electrical Pen Area Conduit Layout, Sheet 20, Rev. 9
2998-G-410, Cable Vault Trays - Key Plan , Sheet 6, Rev. 6
2998-G-394, Reactor Auxiliary Building El' 43'0 Conduit, Trays & Grounding, Sheet 1, Rev. 27
2998-G-392, Reactor Auxiliary Building El' 19'6 Conduit, Trays & Grounding, Sheet 1, Rev. 17
2998-G-374, Reactor Auxiliary Building Pen Area Conduit, Trays & Grounding, Sheet 1, Rev. 11
2998-G-076, Reactor Auxiliary Building Misc. Plans & Sections, Rev. 19
2998-G-071, General Arrangement Reactor Auxiliary Building Plan Sheet 3, Rev. 24
2998-G-272A, Combined Main and Auxiliary One Line Diagrams, Rev. 7
2998-B-327, Pressurizer Relief Isolation Valve V-1477, Sheet 118, Rev. 14
2998-B-327, Pressurizer Relief Isolation Valve V-1476, Sheet 120, Rev. 14
2998-B-327, LPSI Pump 2A Suction Valve V-3444, Sheet 1531, Rev. 6
2998-B-327, LPSI Flow Control Valve HCV-3625, Sheet 260, Rev. 16
2998-B-327, Pressurizer Relief Valve V-1475, Sheet 1630, Rev. 10
2998-B-327, Pressurizer Relief Valve V-1474, Sheet 1624, Rev. 10
2998-B-327, Pressurizer Level Channel L-1110, Sheet 139, Rev. 13
2998-B-400, Lighting Panel Details, Sheet 209, Rev. 8
2998-B-325, Bill of Material, Sheet 026-01, Rev. 5
2998-B-327, Steam Generator 2A/2B Pressure & Level , Sheet 369, Rev. 12
2998-B-327, Pressurizer Pressure & Level , Sheet 370, Rev. 12
2998-B-327, Measurement Channels F2212, P2212, P2215, T2229, T2221, Sheet 150, Rev. 15
C-13172-412-522, Process Instruments Remote Nest Interconnection Diagram, Sheet 1, Rev. 3
C-13172-412-523, Process Instruments Remote Nest Interconnection Diagram, Sheet 1, Rev. 2

Calculations and Evaluations

2998-B-048, St. Lucie Unit 2, Appendix R Safe Shutdown Analysis Fire Area Report
2998-B-049, St. Lucie Unit 2 Essential Equipment List, Rev. 6
2998-2-FJE-98-002, Review of Circuit Breaker and Fuse Coordination for St. Lucie Unit 2 Appendix R Essential Equipment List Circuits, Rev. 0
PSL-2-FJE-90-0020, St. Lucie Unit 2 2A & 2B EDG Electrical Loads, Rev. 7
PSL-1FJM-91-001, PSL-1 RAB Electrical Equipment Rooms HVAC Computer Model Data Inputs and Outputs, Rev. 1
PSL-FPER-00-004, Disposition of Unit 2 Fire Detection System Nonconformance, Rev. 1
PSL-BFSM-98-004, Hose Station Supply Piping (Standpipe) Hydraulic Analysis, Rev. 0
PSL-ENG-97-070, UFSAR Combustible Loading Update for Unit 2, Rev. 0

PSL-FPER-99-008, Two-sided Cable Tray Fire Stop Redesign, Rev. 1
PSL-FPER-99-011, Disposition of Unit 2 NFPA Code Nonconformance, Rev. 1
PSL-FPER-00-0126, Evaluation of Fire Barrier Rating for Barriers Containing Two-sided Fire Stops, Rev.0
Calculation to determine the capacity of diked areas surrounding Unit 2 transformers 2A5, 2B5 and 2B2, dated March 12, 2003
Evaluation to determine compliance with DC 561 Technical Manual "Use Restrictions" for Unit 2 transformers 2A5, 2B5 and 2B2, dated March 10, 2003

Design Basis Documents:

Component Functions for Pressurizer Wide Range Pressure Instrument Loop, Section 7.22
Component Functions for Pressurizer Instrument Loop P-1100X&Y, Section 7.23
Component Functions for Pressurizer Pressure/Safety Injection Instrument Loop, Section 7.28
DBD-ESF-2, Engineering Safety Features Actuation System, Rev. 1
DBD-CVCS-2, Chemical and Volume Control System, Rev. 1

Applicable Codes and Standards:

IEEE Standard 100, Standard Dictionary of Electrical and Electronics Terms, Fourth Edition
NFPA 13, Standard for the Installation of Sprinkler Systems, 1973 Edition
NFPA 14, Standard for the Installation of Standpipe and Hose Systems, 1973 Edition
NFPA 20, Standard for the Installation of Centrifugal Fire Pumps, 1972 Edition
NFPA 72A, Standard on Local Protective Signaling Systems, 1972 Edition
NFPA 72D, Standard for the Installation, Maintenance, and Use of Proprietary Protection Signaling Systems, 1973 Edition
NFPA 80, Standard on Fire Doors and Windows, 1973 Edition
NFPA 90A, Standard on Air Conditioning and Ventilating Systems, 1981 Edition
NUREG-1552, Supplement 1, Fire Barrier Penetration Seals in Nuclear Power Plants, dated January 1999
Underwriters Laboratories, Fire Resistance Directory, January 1998
OSHA Standard 29 CFR 1910, Occupational Safety and Health Standards,

Audit Reports:

QSL-FP-00-07, Annual Fire Protection Functional Area Audit
QSL-FP-01-07, Triennial Fire Protection Functional Audit
QSL-FP-02-05, Fire Protection Functional Audit

Condition Reports:

CR 98-0260, Evaluate Deviations from NFPA 72 Code
CR 98-0405, Evaluate Deviations from NFPA 13-1975 Code
CR 98-0563, Assess Currently Installed Fire Hose Nozzles in Both Units
CR 00-1514, Failure of 500KV Main Transformer, SEN 215
CR 01-0577, Circuit Breaker Failure and Fire, SEN 218
CR 01-2296, Assess Deviations from NFPA 72 Code addressed in QA Audit QSL-FP-01-07

CR 01-2459, 4-kV Breaker Failure, SER 5-01
CR 02-0396, Assess Qualifications of Thermo-Lag Walls at PSL
CR 02-1619, Potential Problems with Heat Collectors, NRC Information Notice 2002-24
CR 02-2081, Design Change Checklist
CR 02-2098, PSL CARS
CR 02-3145, Failure to Obtain FRG Review of Several Procedure Changes

Condition Reports Generated During this Inspection

CR 03-0153, Use of manual actions in Appendix R, III.G.2 areas without prior NRC approval
CR 03-0637, Silicone oil-filled transformers installed in Unit 2 interior rooms
CR 03-0847, Hot shutdown repairs using tools to achieve safe shutdown in the event of a fire
CR 03-0888, Update UFSAR to show previously approved Deviation C6 no longer required
CR 03-0942, Discrepancies between the SSA, EEL, and the breaker/fuse coordination study
CR 03-0964, Rubatex insulation installed in U2 intake (fire area R-R) not considered in the FHA
CR 03-0965, Combustible fire load for U1 and U2 intake fire areas different for each unit's FHA
CR 03-0966, Temp Mod did not sufficiently evaluate potential impact on fire protection
CR 03-0978, Transformers' oil not being sampled and tested in accordance with vendor manual
CR 03-0986, Discrepancies between SSA and EEL, determined that EEL was in error
CR 03-1010, Discrepancy between UFSAR and procedure regarding cold shutdown repairs

Work Orders/Job Tasks

WO 3201713801, T.S. 044A S/G 2A Level Loop Calibration, dated 1/7/03
WO 3100661301, T.S. 044A S/G 2A Level Loop Calibration, dated 8/8/01
WO 3101259101, T.S. 044B S/G 2B Level Loop Calibration, dated 11/03/01
WO 3181734101, T.S. F-2212 Charging Pump Flow Calibration, dated 4/24/02
WO 3101222101, T.S. Charging Pump Discharge P-2212 Calibration, dated 9/7/01
WO 3201736501, T.S. Pressurizer Level (P1107/1108/1116) Calibration, dated 11/10/03
WO 3100693301, T.S. Pressurizer Level (P1107/1108/1116) Calibration, dated 7/12/01
WO 3261652901, T.S. Pressurizer & Quench Tank Level (L1103/4/5/1116) Calibration, dated 1/10/03
WO 3100682601, T.S. Pressurizer & Quench Tank Level (L1103/4/5/11) Calibration, dated 7/11/01

Technical Manuals/Vendor Information

Dow Corning 561 Silicone Transformer Liquid, Material Safety Data Sheet 01496247, 1/27/97
Dow Corning 561 Silicone Transformer Fluid Technical Manual,10-453-97, 1997
Data Sheet Issue C Duraspeed, Automatic Sprinklers, Grinnell Sprinkler Corporation
Data Sheet Model F950, Upright and Pendent Sprinklers, Grinnell Sprinkler Corporation
Data Sheet Model L-205-EB, Industrial Electrical Non-Shock Fog Nozzles, Elkhart Brass Manufacturing Co. Inc.
IB-PD-1001, Gould Inc. I-T-E Unit Substation Transformers Instruction Manual
S2000, Protecto-wire Fire Systems Fire System 2000 Fire Alarm Control Panel, Rev. 1998
Sheet 5-4/14-8, Factory Mutual Research Approval Guide-Transformer Fluids

Attachment

Miscellaneous

0711206, Reactor Operator Lesson Pressurizer Pressure and Level Control, Rev.12
1/M-CE 917 Foxboro Specification 200 Control System Manual # 79N-36291, dated 8/20/98
Consumer Product Safety Commission (CPSC) Recall Alert, Invensys Building Systems Recall of Siebe Actuators in Building Fire/Smoke Dampers, dated October 2, 2002
Ebasco Specification - Electric Cables, Project 10 # FLO 298.292, dated 10/28/77
IPEEE Submittal for St. Lucie Units 1 and 2, Rev. 0, dated December 15, 1994
Fire Brigade Drill Training Reports for operating shifts, August 2001- February 2003
Letter from Ebasco to Florida Power and Light, on the subject of UL Qualification Test for Pullman Industries Internal Expansion Damper Assembly, dated April 16, 1986
NRC Supplemental Safety Evaluation Report SSER 3, for St. Unit 2
PC/M 174-295M, Reroute of Cable 21702C, Rev. 1
Pre-fire Strategy No. 4, A Switchgear Room, Fire Area A, Rev. 23
Pre-fire Strategy No. 6, Cable Spread Room, Fire Area B, Rev. 23
Pre-fire Strategy No. 7, B Switchgear Room, Fire Area C, Rev. 23
Pre-fire Strategy No. 8, Electrical Equipment Supply Fan Room, Fire Area C, Rev. 23
Pre-fire Strategy No. 25, Personnel Monitoring Area & Health Physics Area, Fire Area I, Rev. 23
Pre-fire Strategy No. 26, Electrical Penetration Room B, Fire Area I, Rev. 23
Pre-fire Strategy No. 57, Turbine Building, Fire Area QQ, Rev. 23
Technical Specifications, St. Lucie Unit 2, LCO 3.3.3.5
Technical Specifications, St. Lucie Unit 2, SR 4.3.3.5.1 / 4.3.3.5.2
UFSAR Section 8, Electrical Power
UFSAR Appendix 9.5A, Fire Protection Program Report
Underwriters Laboratories, Report File R4708, Fire Test of 3HR Curtain Type Fire Damper Utilizing an Alternate Method of Installation, Air Balance, Inc., dated December 5, 1984

LIST OF ACRONYMS

ADV	Atmospheric Dump Valve
AFW	Auxiliary Feedwater
ASB	Auxiliary Systems Branch
ASD	Alternative Shutdown
BAM	Boric Acid Makeup
BTP	Branch Technical Position
CAP	Corrective Action Program
CCW	Component Cooling Water
CFR	Code of Federal Regulations
CR	Condition Report
EEL	Essential Equipment List
ELU	Emergency Lighting Unit
ERFBS	Electrical Raceway Fire Barrier System
FHA	Fire Hazards Analysis
FPP	Fire Protection Program
HSCP	Hot Shutdown Control Panel
HVAC	Heating Ventilation and Air Conditioning
IPEEE	Individual Plant Examination for External Events
LER	Licensee Event Report
LOCA	Loss of Coolant Accident
LPSI	Low Pressure Safety Injection
MCC	Motor Control Center
MCR	Main Control Room
NCV	Non-Cited Violation
NFPA	National Fire Protection Association
NRC	Nuclear Regulatory Commission
OE	Operating Experience
OLC	Operating License Condition
OSHA	Occupational Safety and Health Administration
PORV	Power Operated Relief Valve
PSL	Plant Saint Lucie
QA	Quality Assurance
RCS	Reactor Coolant System
ROP	Reactor Oversight Process
SCBA	Self-Contained Breathing Apparatus
SDC	Shutdown Cooling
SDP	Significance Determination Process
SER	Safety Evaluation Report
SSA	Safe Shutdown Analysis
SSD	Safe Shutdown
TS	Technical Specifications
TSA	Temporary System Alteration
UFSAR	Updated Final Safety Analysis Report
UL	Underwriters Laboratory
URI	Unresolved Item
VCT	Volume Control Tank

Attachment

FPL

Leo Leon@FPL

05/13/2003 01:36 PM

To: Oscar Bello/PS/FPL@FPL, Joe J Mango/PS/FPL@FPL, Stats@FPLNUC
cc: Richard L Shaheen/PS/FPL@FPL, Mike Smith/PS/FPL@FPL, Jim B Patterson/PS/FPL@FPL, D C Dave Johnson/Ptn/Nuclear/FplNuc@FplNuc, J M Quintana/PS/FPL@FPL, Leo Leon/PS/FPL@FPL, Ed Benken/Psl/Nuclear/FplNuc@FplNuc, David Lafleur/Ptn/Nuclear/FplNuc@FplNuc, Jorge Mundulas/Ptn/Nuclear/FplNuc@FPLNuc, Wayne Reynolds/Psl/Nuclear/FplNuc@FplNuc
Subject: FYI NRC Inspection Report 2003-02

FYI Only: This inspection covered the 480 volt transformers with silicone oil. Marco Migliaro contacted us during that incident. Oscar Bello provided a great deal of support to plant engineering. Charlie Hancock (contractor) just completed the processing of the silicone oil for the plant. SAO substation just provided some support. See pages 9, 10, and 11 for the NRC Findings and comments. Leo

----- Forwarded by Leo Leon/PS/FPL on 05/13/03 01:24 PM -----

Sandy Trepanier@FPLNUC

05/13/03 11:24 AM

To: Andy Pawley/Psl/Nuclear/FplNuc@FplNuc, Ash Pell/Psl/Nuclear/FplNuc@FplNuc, Barb Johnson/Psl/Nuclear/FplNuc@FPLNuc, Barry Sculthorpe/Psl/Nuclear/FplNuc@FplNuc, Bob Symes/Juno/Nuclear/FplNuc@FplNuc, Brian Dunn/Psl/Nuclear/FplNuc@FplNuc, Ching Guey/Juno/Nuclear/FplNuc@FplNuc, Chris Wasik/Psl/Nuclear/FplNuc@FplNuc, David Lowens@Naesco@FplNuc, David Lafleur/Ptn/Nuclear/FplNuc@FplNuc, Dick Rose/Psl/Nuclear/FplNuc@FplNuc, Donna Calabrese/Psl/Nuclear/FplNuc@FplNuc, Ed Benken/Psl/Nuclear/FplNuc@FplNuc, Edgard A Hernandez/Psl/Nuclear/FplNuc@FplNuc, Eric Cartwright/Psl/Nuclear/FplNuc@FPLNuc, George Madden/Psl/Nuclear/FplNuc@FplNuc, Gregg Carlisle/Psl/Nuclear/FplNuc@FPL, Jack Hoffman/Psl/Nuclear/FplNuc@FplNuc, Art Stall/Juno/Nuclear/FplNuc@FplNuc, Jim Gallagher/Psl/Nuclear/FplNuc@FplNuc, Jim McNey/Psl/Nuclear/FplNuc@FplNuc, Jim Voorhees/Psl/Nuclear/FplNuc@FplNuc, John Luchka/Psl/Nuclear/FplNuc@FplNuc, Joseph Brannin/Juno/Nuclear/FplNuc@FplNuc, Karen Gutowski/Juno/Nuclear/FplNuc@FplNuc, Kelly Korth/Psl/Nuclear/FplNuc@FplNuc, Ken Frehafer/Psl/Nuclear/FplNuc@FplNuc, Lee Bearror/Psl/Nuclear/FplNuc@FplNuc, Leo Leon/PS/FPL@FPL, Olga Hanek/Ptn/Nuclear/FplNuc@FplNuc, PSL Nuclear Training Center/Psl/Nuclear/FplNuc@FplNuc, Richard Maier/Psl/Nuclear/FplNuc@FPLNUC, Richard Steinke/Psl/Nuclear/FplNuc@FplNuc, Rob De La Espriella/Psl/Nuclear/FplNuc@FplNuc, Roger Weller/Psl/Nuclear/FplNuc@FplNuc, Stanley Wisla/Ptn/Nuclear/FplNuc@FplNuc, Stavroula Mihalakea/Ptn/Nuclear/FplNuc@FplNuc, Steve Marchigiano/Psl/Nuclear/FplNuc@FplNuc, Subhash Khurana/Juno/Nuclear/FplNuc@FplNuc, Terri Taylor/Psl/Nuclear/FplNuc@FplNuc, Training Librarian-PTN/Ptn/Nuclear/FplNuc@FplNuc, Walter

Parker/Ptn/Nuclear/FplNuc@FplNuc, Bob
McDaniel/Psl/Nuclear/FplNuc@FplNuc
cc:
Subject: NRC Inspection Report 2003-02

PSL 1 & 2 - NRC Triennial Fire Protection Inspection Report 2003-02.

The subject inspection was conducted March 10-14, 2003 and March 24-28, 2003. One Green non-cited violation (NCV) and two unresolved items (URI) with potential safety significance greater than Green were identified. NRC 2003-02-03: Cables in containment fail to meet 10 CFR 50, Appendix R, Criterion III.G.2 regarding the lack of spacial separation or barriers to protect cables in containment which could result in spurious opening of the PORV during a fire. URI 2003-02-01: Failure to evaluate the combustible loading of oil-filled transformers in the FHA and the effect on SSD capability in the event of a fire in Unit 2. URI 2003-02-02: Failure to provide adequate protection for redundant safe shutdown equipment and cables in the event of a fire in the Unit 2 train B switchgear room.

NIR 2003-02.pdf

RULEMAKING ISSUE
(Notation Vote)

June 17, 2003 SECY-03-0100

FOR: The Commissioners

FROM: William D. Travers
Executive Director for Operations /RA/

SUBJECT: RULEMAKING PLAN ON POST-FIRE OPERATOR MANUAL ACTIONS

PURPOSE:

To obtain the Commission's approval to proceed with rulemaking to revise fire protection program requirements contained in Appendix R of 10 CFR Part 50 and associated guidance to resolve a regulatory compliance issue. This paper also requests the Commission's approval of the staff's plan to propose an interim enforcement policy to exercise enforcement discretion related to the fire protection compliance issue pending completion of rulemaking.

BACKGROUND:

NRC's fire protection requirements prescribe a defense-in-depth approach to protect safe shutdown functions through (1) fire prevention activities (limits on combustibles through design, construction, and administrative controls); (2) the ability to detect, control, and suppress a fire rapidly (fixed systems and trained fire brigades); and (3) physical separation of redundant safe shutdown trains (distance and fire barriers).

10 CFR 50.48 imposed the fire protection requirements of Appendix R, Paragraph III.G.2, for nuclear power plants licensed to operate before January 1, 1979. Appendix R, Paragraph III.G.2, specifies three methods, any of which is acceptable, to provide reasonable assurance that at least one means of achieving and maintaining safe shutdown conditions will remain available during and after any postulated fire in the plant. The three acceptable methods of protecting at least one shutdown train during a postulated fire when redundant trains are located in the same fire area are:

CONTACT: Dave T. Diec, NRR/DRIP/RPRP
415-2834

1. Separation of the redundant system by a passive barrier able to withstand a fire for at least 3 hours; or

2. Separation of the redundant system by a distance of twenty feet containing no intervening combustible material, together with fire detectors and an automatic fire suppression system; or

3. Separation of the redundant system by a passive barrier able to withstand a fire for one hour, coupled with fire detectors and an automatic fire suppression system.

Plants licensed to operate after January 1, 1979, are not required to specifically meet Appendix R regulations. For these plants, the staff reviewed the licensees' fire protection programs and commitments against the regulatory guidance in Branch Technical Position (BTP) CMEB 9.5-1 or the Standard Review Plan (NUREG-0800) which incorporated the provisions of Appendix R, Paragraph III.G.2. These commitments would then become part of the licensing basis for the post-1979 plants.

During recent inspections of licensee fire protection programs, concerns have arisen about licensee compliance with fire protection of redundant safe shutdown systems that are located in the same fire areas. The principal nature of the concerns is summarized as follows:

(a) Instead of providing separation and fire protection systems to protect the safe shutdown capability of redundant trains located in the same fire area, there are numerous instances where licensees are relying on "operator manual actions" that have not been approved by the NRC. "Operator manual actions" refer to those actions needed to achieve and maintain safe shutdown during a fire by using operators to perform field manipulations of components that would not ordinarily be necessary if the train were protected from fires as prescribed by the regulations or licensing commitments. Specifically, the staff is concerned that many of these licensees have implemented operator manual actions without NRC approval of an exemption to Appendix R (for pre-1979 plants) or a deviation to their fire protection program commitments (post-1979 plants).

(b) The staff is also concerned that in some instances, where operator manual actions are relied upon to ensure safe shutdown capability, these operator manual actions may not be feasible when factors such as complexity, timing, environmental conditions, staffing, and training are considered.

It is the staff's understanding that most of the unapproved operator manual actions came about during the resolution of the Thermo-Lag fire barrier issue in the mid-1990s. The staff believes that many licensees utilized operator manual actions rather than upgrade or replace the Thermo-Lag fire barriers that were originally installed to comply with Appendix R requirements. Furthermore, it is the staff's understanding that most of the licensees that rely on unapproved operator manual actions have done so by making changes to their fire protection program in accordance with the license condition, which allows changes to be made, without NRC approval, provided that the changes have no adverse impact on the ability to achieve or maintain safe shutdown in the event of a fire. The staff also notes that this change process is stipulated

in §50.48 (f)(3) for decommissioning plants. The current regulation requires such changes to be approved through the exemption or deviation process.

When the fire protection regulations were promulgated, it was recognized that there would be plant conditions and configurations where strict compliance with the prescriptive fire protection features specified in Appendix R or associated guidance would not significantly enhance the level of fire safety already provided by the licensee. In cases where a fire hazards analysis demonstrated that certain operator manual actions provided an equivalent level of fire safety to Appendix R or associated guidance, it was expected that licensees would seek NRC approval to use these specified operator manual actions in lieu of providing separation and fire protection systems to protect the safe shutdown capability (both pre- and post-1979 plants). The staff has granted exemptions to the technical requirements of Appendix R (pre-1979 plants) and approved deviations from associated guidance (post-1979 plants) that permitted specific operator manual actions as an acceptable alternative to the fire protection separation requirements. However, the staff had not envisioned that licensees would use their change process to implement a broader use of operator manual actions without NRC approval.

The staff sought advice from the Office of General Council (OGC) as to whether Appendix R, Paragraph III.G.2, permits licensees to rely on operator manual actions in lieu of fire barriers. OGC advised the staff that the regulation cannot be reasonably interpreted to permit reliance upon operator manual actions with respect to redundant safe shutdown. Therefore, any pre-1979 licensee that is using operator manual actions in lieu of fire barrier separation without an NRC-approved exemption is not in compliance with the regulations. *

Fire protection programs for post-1979 plants generally commit to Appendix R, Paragraph III.G.2 (or equivalent guidance) as part of their initial licensing basis. However, commitment to Appendix R, Paragraph III.G.2 (or equivalent) is not legally binding for post-1979 plants. Use of operator manual actions in lieu of fire barrier separation without NRC approval may or may not be a compliance issue depending on how the change was justified and analyzed under the licensee's change control process to demonstrate that the operator manual actions are feasible and the ability to achieve and maintain safe shutdown has not been adversely affected. However, because of the lack of regulatory criteria on the use of operator manual actions for post-fire safe shutdown, post-1979 licensees would have to develop and defend the criteria governing use of operator manual actions on a case-by-case basis, and demonstrate that they would not adversely impact the ability to achieve or maintain safe shutdown in the event of a fire, as stipulated in plant license conditions.

Regardless of whether or not operator manual actions can be implemented by the licensee without NRC approval, the staff is more concerned about the technical feasibility of such actions. In the past, when the NRC staff had specifically reviewed and approved post-fire operator manual actions (by exemption or deviation), the staff's approvals generally included the following feasibility considerations:

- Are procedures and/or training for the operator manual actions adequate? Is there adequate time, staffing, or diagnostic instrumentation, based on the progression of the fire or the thermal-hydraulic conditions of the reactor, to permit feasible use of the operator manual actions?

- Are operator manual actions conducted in locations with environmental conditions suited for the tasks to be performed (i.e., have temperature, radiation, lighting, accessibility, or other limiting habitability problems been analyzed)?

The staff intends to provide criteria for feasible operator manual actions for licensees' use in determining the acceptability of their plant-specific post-fire operator manual-actions.

DISCUSSION:

The staff has had extensive interactions and dialogue with the industry on the manual action compliance concerns over the last year, including exchanged correspondence, meetings with industry representatives, and a presentation by the staff on the issue at a Nuclear Energy Institute (NEI) fire protection forum. NEI has surveyed licensees as to the extent that unapproved operator manual actions are relied on in lieu of separation and fire protection systems when redundant trains are located in the same fire area. In a meeting with the staff on June 20, 2002, NEI indicated that the use of unapproved operator manual actions in the event of a fire is pervasive throughout the industry and that most licensees have at least some instances where they rely on operator manual actions without NRC approval (via exemption or deviation). However, the industry does not agree with the staff that this is a compliance issue and has stated that the use of operator manual actions to achieve safe shutdown is acceptable, without prior NRC approval, as long as the reliance on operator manual actions does not adversely affect the ability of a plant to achieve and maintain safe shutdown.

While use of unapproved operator manual actions may contribute to increases in risk from fires, results from staff inspections to date indicate that there is insufficient evidence that the generic use of these actions poses a safety issue. Therefore, the staff does not consider this an immediate safety issue that requires prompt action. Furthermore, the staff considers that enforcement may not be the best remedy for this situation. Furthermore, a concerted enforcement effort related to identifying and correcting manual action compliance on a plant specific basis creates a prospect of significant resource expenditure without clear safety benefits. Licensees faced with enforcement actions might flood the NRC with exemption or deviation requests, which could divert NRC resources from more significant safety issues and may not result in any net safety improvement if the operator manual actions are determined to be acceptable.

To resolve the regulatory compliance issue, the staff has evaluated the options in the attached rulemaking plan, and has concluded that generic guidance and acceptance criteria for feasible operator manual actions should be developed. The staff believes that it can develop generic acceptance criteria that, when used in conjunction with regulatory guidance, would provide licensees a way of assessing the acceptability of currently unapproved operator manual actions. Documenting compliance with manual action feasibility criteria would demonstrate that safety has been maintained and that the operator manual actions do not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire. Licensees could assess their plant specific operator manual actions against the generic criteria and determine what if any additional actions are necessary. However, implementation of this approach would require both rulemaking and interim enforcement policy approval by the Commission.

Specifically, the staff recommends that the Appendix R fire protection regulations and associated guidance be revised to permit the use of operator manual actions that meet certain acceptance criteria. The manual action acceptance criteria would be included in the rule language, with detailed supportive guidance in a regulatory guide. The staff has concluded that amending Appendix R and associated guidance to allow the use of feasible operator manual actions is a safe and acceptable method for protecting safe shutdown capability from a fire (in lieu of fire barrier separation). Furthermore, the staff believes that this rulemaking would have a positive effect on safety by establishing generic acceptance criteria for feasible operator manual actions. The criteria should provide a reasonable assurance that post-fire operator manual actions are uniformly evaluated by the licensee and should reduce variability and ambiguity in the licensing basis justifications for operator manual actions. By codifying the use of operator manual actions that meet feasibility criteria, the staff will define what operator manual actions can be utilized without adversely affecting the ability to achieve and maintain safe shutdown in the event of a fire. Upon establishment of generic criteria for feasible operator manual actions, licensees could then use their fire protection program change control process to adopt operator manual actions without NRC approval. This course of action would also permit licensees that currently rely on unapproved operator manual actions to achieve compliance through appropriate analysis and documentation against the feasibility acceptance criteria without NRC review and approval.

The staff notes that there may be policy concerns related to this recommended course of action. The proposed rulemaking would endorse the practice of using acceptable operator manual actions as substitute for fire barriers. This is a significant policy change in that NRC has previously preferred the use of physical fire barriers over the use of operator manual actions, given the choice. In addition, there is a policy concern regarding the use of operator manual actions as a resolution of the Thermo-Lag issue. There appears to have been a Commission expectation that Thermo-Lag, where found to be deficient, was to be resolved by replacement or upgrade rather than through the use of operator manual actions. The basis for this expectation is a statement made to Congress by Chairman Selin in March 1993 (discussed in the attached rulemaking plan). The staff has no safety concerns about using feasible operator manual actions as an alternative to deficient Thermo-Lag fire barriers where such actions have been previously approved by the staff or where the operator manual actions have been assessed by a licensee against generic acceptance criteria.

The staff's recommended approach is also justified based on an assessment against the agency's strategic performance goals.

- Amending Appendix R and associated guidance will maintain safety and increase public confidence by defining technically acceptable generic criteria for operator manual actions which can be used to assess the feasibility of existing or future operator manual actions employed by licensees.
- Development of generic criteria for feasible operator manual actions will be an efficient and effective method of providing quality and uniformity in licensee assessments and documentation of the acceptability of plant specific operator manual actions.
- Amending Appendix R and associated guidance to permit the use of feasible operator manual actions without the need for NRC approval should avoid unnecessary NRC and

licensee regulatory burden and resource expenditure associated with exemption or deviation processing.

- Amending Appendix R and associated guidance to permit the use of feasible operator manual actions should result in more effective use of resources by both licensees and the NRC with respect to resolving existing manual action compliance issues encountered during plant specific inspections.

To avoid any backfit issues with the recommended rulemaking, it would be proposed as a voluntary alternative to the current requirements of Appendix R, Paragraph III.G.2. However, the staff notes that the nuclear power industry may view the current regulation as permitting

operator manual actions for safe-shutdown, which has not been consistent with the staff's interpretation of the regulation.

ENFORCEMENT CONSIDERATIONS:

Even with Commission consent to proceed with rulemaking, licensees using unapproved operator manual actions would be in non-compliance until the rulemaking is processed and the regulations and guidance are formally revised. The staff expects that licensees continue to review and document the feasibility of operator manual actions. However, the rulemaking in progress will not suspend staff inspection and findings of non-compliance nor avoid potential enforcement proceedings and the related potential for exemption or deviation requests associated with operator manual actions. The staff recently issued a fire protection inspection procedure 71111.05, dated March 06, 2003, to provide guidance for inspectors to consistently document inspection findings. To address the potential unnecessary regulatory burden during the interim rulemaking period from a large number of exemption requests, the staff would need to adopt conforming enforcement changes, specifically, the staff will also need to propose an interim enforcement policy. Upon receiving the Commission approval of the attached rulemaking plan, the staff will develop an interim enforcement policy to allow discretion and will refrain from taking enforcement action for those licensees that rely on unapproved operator manual actions, provided these licensees have documented the feasibility of their operator manual actions in accordance with the staff's proposed preliminary generic acceptance criteria. Although the staff has had numerous interactions with the industry on the manual action compliance concerns over the last year and discussed on a high level what constitutes feasible operator manual actions, there has not been a focus on the details of manual action criteria. Therefore, should the Commission approve the attached rulemaking plan, the staff would engage stakeholders in at least one public meeting to discuss the detailed manual action feasibility criteria and how it would be used in interim enforcement policy. Shortly after the public meeting, a specific interim enforcement policy will be submitted to the Commission for approval. If the Commission approves the interim enforcement policy, it will be published in the *Federal Register* together with a Regulatory Information Summary (RIS). The RIS will convey the staff's regulatory position and expectations that licensees will review existing operator manual actions to verify that these actions are feasible. The RIS will also summarize for the industry and public the expected change in enforcement policy and where the agency is headed with fire protection rulemaking.

RESOURCES:

The staff estimates that the resources to conduct the rulemaking, develop the associated guidance, and process the interim enforcement policy are 3.0 full-time equivalents (FTE) over the period FY 2003 - 2004. The staff has budgeted 0.4 FTE for FY 2003 to prepare the rulemaking plan and manage the rulemaking. The initial Office of Research (RES) support to prepare the proposed rule is estimated to be 0.2 FTE and $60K in contract technical assistance. The resources, while currently not explicitly identified in the RES fire protection research plan, may be allocated from other fire research activities based on priority and timing. If the Commission approves the rulemaking plan, the staff will budget the remaining resources through the planning, budgeting and performance management (PBPM) process. In addition, contract technical assistance may be needed to revise the regulatory guidance in support of the rulemaking and develop the regulatory analysis. It is estimated that these items will cost no more than $50K in FY03 and $50K in FY04. The staff will address the need for any contract funding through the PBPM process.

COORDINATION:

OGC has no legal objection to the rulemaking plan. The Office of the Chief Financial Officer has reviewed this paper for resource implications and has no objection to its content. The Office of Enforcement (OE) concurs with the staff-recommended approach to an interim enforcement policy for licensees using unapproved fire protection related operator manual actions.

RECOMMENDATION:

That the Commission:

1. Approve the attached rulemaking plan to revise the reactor fire protection regulation and the associated guidance, as recommended in Option 3 of the rulemaking plan.

2. Approve the staff's approach to develop an interim enforcement policy relying on preliminary manual action acceptance criteria as discussed in the attached rulemaking plan.

3. Release the rulemaking plan to the public to facilitate staff interactions with external stakeholders.

/RA/

William D. Travers
Executive Director
for Operations

Attachment: Rulemaking Plan

Final Disposition

Problem Statement:

OEF 2003-054 documents the NRC Triennial Fire Protection Inspection Report for PSL. The purpose of this CR disposition is to assess these findings and extended aspects of the inspection scope and results as lessons-learned for PTN.

Analysis:

The OEF relates solely to fire protection and Appendix R safe shutdown capability, both of which are quality-related functions. Therefore, this ***CR is classified as QR.***

General

The NRC report documents two findings that, combined, are considered to have potential safety significance greater than very low significance, but no final determination has been made. One finding is that the Fire Hazards Analysis (FHA) did not consider the combustibility of 380 gallons of transformer silicone dielectric insulating fluid in transformers. Another finding concerns inadequate spatial separation where local manual operator actions were substituted (without NRC approval) for providing adequate physical separation. A fire watch is posted as an interim compensatory measure.

In addition, the report documents one finding of very low safety significance (Green), which was determined to involve a violation of NRC requirements. The finding is related to a lack of spatial separation or barriers to protect cables in containment, which could result in spurious opening of the pressurizer PORV during a fire. The finding is considered greater than minor because it affected the mitigating systems cornerstone objective of equipment reliability in that PORV spurious opening would adversely affect achieving hot standby.

Inadequate Fire Hazards Analysis

Review of the PTN FHA presented in UFSAR, Appendix 9.6A, Section 4.0 determined that major combustibles are appropriately identified and reckoned. Station transformers, lube oil storage facilities, hydrogen seal oil units and EDG fuel oil storage combustible liquid inventories are addressed. The switchgear and load centers are dry-type and have no significant combustible liquid inventory. Therefore, the FHA finding is not applicable to PTN.

Manual Actions

Manual actions are integral with the capability to achieve and maintain a safe shutdown condition in event of fire at PTN (0-ONOP-105 and 0-ONOP-016.10). The NRC discusses the PSL finding as though a rule is established and in force. However, the NRC rule making for manual actions (SECY-03-100) is still in review and is available via:

http://www.nrc.gov/reading-rm/doc-collections/commission/recent/2003/

It concludes that rulemaking is advisable to permit use of manual actions in lieu of fire barrier separation without NRC approval, as long as ability to achieve and maintain safe shutdown is not adversely impacted (license condition) and feasibility (time, facilities and personnel to perform the action) is demonstrated (See also Pages 38 through 44 herein).

Appendix R correspondence with the NRC focused on protection methods and features required to assure redundant safe shutdown functions could be performed in event of fire. Manual actions were mentioned as needed for clarity but were not an issue of focus. Indeed, what would have been the point? It is obvious from listings of functions protected that safe shutdown could not be achieved solely by those functions.

Manual actions are commonplace in the course of plant normal operation. Even EOPs credit local manual actions to mitigate design basis accidents where the rule-of-thumb was to perform the action in 10 minutes from inside the control room and 30 minutes if performed outside the control room. Manual actions were so ingrained in the operational philosophy that having to specifically request NRC permission for actions not prohibited was not considered to be required or necessary.

The NRC indicated in SECY-03-100 as well as in the PSL report that manual operator actions to respond to maloperations are not listed as an acceptable method for satisfying requirements [in Appendix R, Criterion III.G.2]. In this regard, PTN may be as "vulnerable" as PSL to a finding. However, a walk-through of all fire areas in the Pre-Fire Plans (0-ONOP-016.10) was performed as part of the 1999 Fire Protection Self-Assessment and assured that all actions could be performed with personnel credited, in the time-frames prescribed and with facilities available. This was addressed during the 2001 NRC Triennial Inspection with no related unresolved issues. Since then, there have been no apparent changes in plant configuration or operation that would undermine the results of the self-assessment. Nevertheless, it is considered prudent to review recent changes as part of the preparation for the 2004 inspection and follow with exemption request submittal while continuing to follow resolution of "manual actions" at the industry level.

Inadequate Separation of Redundant SSD Circuits

The "Green" finding was for using manual operator actions outside the control room in lieu of circuit protection without obtaining prior NRC approval and for redundant cables lacking either 20' separation or radiant energy shielding inside containment. The conditions were self-identified and the "Green" designation indicates very low safety significance.

To assure that all such noncompliance conditions for PTN are discovered would require a resource-intensive review of safe shutdown circuits throughout the plant. However, a wholesale review of safe shutdown circuits in outdoor areas was performed during the Thermo-Lag upgrade project, completing circa 2000. Protection was also upgraded for circuits indoors, including radiant energy shields inside containment. Despite design review guidance to address Appendix R and fire protection issues, such conditions could be inadvertently created as a result of plant modifications. Therefore, performing a review at least of the modifications since Thermo-Lag upgrade implementation would provide reasonable assurance of compliance with licensing commitments.

Nonconformance Evaluation:

The use of manual actions to achieve and maintain safe shutdown in event of fire is consistent with the UFSAR, Safe Shutdown Analysis and Pre-Fire Plans. Also, NRC rulemaking is in progress and currently not in force. Therefore, there are no nonconformance or operability concerns.

Plan-of-Action:

Applications from the lessons-learned from the PSL inspection report as well as insight from NRC rulemaking point toward enforcement action in cases where manual actions are used in lieu of fire barrier separation (Appendix R Section III.G.2) without prior NRC approval. Furthermore, the timeframe for when the NRC would begin issuing "cited violations" instead of "findings" is expected to occur prior to the PTN inspection scheduled to begin January 26, 2004. Therefore, it is recommended that the Safe Shutdown Analysis (5610-M-722) and Pre-Fire Plans (0-ONOP-016.10) be reviewed for manual actions credited to achieve safe shutdown, or mitigate maloperations due to spurious actuation, in lieu of Section III.G.2 as previously exempted. It is also recommended that this activity be performed in a timely manner to permit submittal of an exemption request prior to the NRC inspection at PTN.

Although there are currently no operability concerns or PTN-specific licensing concerns with the use of manual actions, a more literal enforcement by the NRC now, as compared to previous Appendix R inspections, necessitate a review for circumstances where manual actions are being credited in lieu of Appendix R Section III.G.2 criteria. Furthermore, since the NRC rulemaking is still in progress and the basis for self-evaluation (e.g., 10CFR50.59 criteria), it is considered prudent to self-identify such conditions and prepare an exemption request submittal for NRC approval prior to the 2004 triennial inspection.

Corrective Action(s):

All PMAIs generated from this CR shall designate David Lafleur as the PMAI originator.

1. Mechanical Design Engineering to review Pre-Fire Plans and Electrical Design Engineering to review the Safe Shutdown Analysis for crediting manual actions in lieu of protection per Appendix R Section III.G.2. **PMAI Due 11/3/03** PM03-07-160 161
2. Engineering to prepare an evaluation to support submittal of an exemption request. **PMAI Due 12/11/03** 162
3. Licensing to prepare an exemption request for submittal to the NRC. **PMAI Due 01/16/04** 163

Preparer: P S Dunston / [signature] Date: 7/7/03
Print Signature

Verifier: A PINEDA / [signature] Date: 7/8/03
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Concurrence: T. SWEENEY / [signature] Date: 7/9/03
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Concurrence: W.J PARKER / [signature] Date: 7/8/03
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Approver: J G DAVIS / [signature] Date: 7/9/03
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