

**FIRE PROTECTION BASELINE INSPECTION
ST. LUCIE**

INPUT FOR INSPECTION REPORT NO.: 50-389/03-02

INSPECTOR: S. Walker
Electrical Lead

INSPECTION DATES:

- Week 1 of onsite inspection - March 10 - 14, 2003
- Week 2 of onsite inspection - March 24 -28 , 2003

Type of Inspection: TRIENNIAL FIRE PROTECTION BASELINE INSPECTION: Fire Protection Features and Post-Fire Safe Shutdown Capability

A. INSPECTION REPORT INPUT

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems

.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 schedule, and conduit and tray drawings. The team walked down these 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:

1. V1474, Pressurizer Operated Relief Valve
2. V1475, Pressurizer Operated Relief Valve
3. V1476, Pressurizer Isolation Block Valve
4. V1477, Pressurizer Isolation Block Valve
5. MV-09-03, Feedwater Bypass Valve

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6. MV-09-04, Feedwater Bypass Valve
7. 2 HVE-13B, Control Room Booster Fan
8. V2501, VCT Discharge Outlet Valve
9. MV -07 -04, Containment Spray Isolation Valve
10. LP - 208, Lighting Panel 208
11. LP - 209, Lighting Panel 209
12. HCV - 3625, Safety Injection Block Valve
13. V3444, Shutdown Cooling Block Valve
14. PI-1107 / 1108, Pressurizer Pressure for Hot Shutdown Panel
15. LI-1104 / 1105, Pressurizer Level for Hot Shutdown Panel
16. LI-9113 / 9123, Steam Generator Level for Hot Shutdown Panel
17. SIAS Logic
18. MCC 2A5 / 2A6 and relative feeds, 480 Volt Motor Control Center
19. MCC 2B5 / 2B6 and relative feeds, 480 Volt Motor Control Center
20. Load Center 2A5 480 Volt Switchgear

b. Findings

No findings of significance were identified.

.04 Alternative Shutdown Capability

a. Inspection Scope

Electrical diagrams of power, control, and instrumentation cables required to support ASD were analyzed for fire induced faults that could defeat operation from the Main Control Room (MCR) or the Hot Shutdown Panel (HSP). 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 HSP 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 HSP to ensure that a fire in the "B" Emergency Switchgear Room would not adversely affect safe shutdown capability from the MCR.

b. Findings

No findings of significance were identified.

Drawings

2998-G-411, Reactor Auxiliary Building EI' 19'50 Conduit Layout, sh. 14, Rev. 8
2998-G-411, Reactor Auxiliary Building EI' 19'50 Conduit Layout, sh. 15, Rev. 6
2998-G-411, Reactor Auxiliary Building EI' 19'50 Conduit Layout, sh. 19, Rev. 5
2998-G-411, Reactor Auxiliary Building EI' 19'50 Conduit Layout, sh. 10, Rev. 6
2998-G-411, Reactor Auxiliary Building EI' 19'50 Conduit Layout, sh. 4, Rev. 5
2998-G-411, Reactor Auxiliary Building EI' 19'50 Conduit Layout, sh. 3, Rev. 6
2998-G-411, Reactor Auxiliary Building EI' 19'50 Conduit Layout, sh. 13, Rev. 5
2998-G-411, Reactor Auxiliary Building EI' 19'50 Conduit Layout, sh. 7, Rev. 9
2998-G-411, Reactor Auxiliary Building EI' 19'50 Conduit Layout, sh. 8, Rev. 8
2998-G-411, Reactor Auxiliary Building EI' 19'50 Conduit Layout, sh. 9, Rev. 8
2998-G-411, Reactor Auxiliary Building Electrical Pen Area Conduit Layout, sh. 20, Rev. 9
2998-G-410, Cable Vault Trays - Key Plan, sh. 6, Rev. 6
2998-G-394, Reactor Auxiliary Building EI' 43'0 Conduit, Trays & Grounding, sh. 1, Rev. 27
2998-G-392, Reactor Auxiliary Building EI' 19'6 Conduit, Trays & Grounding, sh. 1, Rev. 17
2998-G-374, Reactor Auxiliary Building Pen Area Conduit, Trays & Grounding, sh. 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, sh. 118, Rev. 14
2998-B-327, Pressurizer Relief Isolation Valve V-1476, sh. 120, Rev. 14
2998-B-327, LPSI Pump 2A Suction Valve V-3444, sh. 1531, Rev. 6
2998-B-327, LPSI Flow Control Valve HCV-3625, sh. 260, Rev. 16
2998-B-327, Pressurizer Relief Valve V-1475, sh. 1630, Rev. 10
2998-B-327, Pressurizer Relief Valve V-1474, sh. 1624, Rev. 10
2998-B-327, Pressurizer Level Channel L-1110, sh. 139, Rev. 13
2998-B-400, Lighting Panel Details, sh. 209, Rev. 8
2998-B-325, Bill of Material, sh. 026-01, Rev. 5
2998-B-327, Steam Generator 2A / 2B Pressure & Level, sh. 369, Rev. 12
2998-B-327, Pressurizer Pressure & Level, sh. 370, Rev. 12
2998-B-327, Measurement Channels F2212, P2212, P2215, T2229, T2221, sh. 150, Rev. 15
C-13172-412-522, Process Instruments Remote Nests Interconnection Diagram, sh. 1, Rev. 3
C-13172-412-523, Process Instruments Remote Nests Interconnection Diagram, sh. 1, Rev. 2

Calculations

2998-B-048, St. Lucie Unit 2, Appendix R Safe Shutdown Analysis Fire Area Report

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

Other Documents

Ebasco Specification - Electric Cables, Project 10 # FLO 298.292, dated 10/28/77

1/M-CE 917 Foxboro Specification 200 Control System Manual # 79N-36291, dated 8/20/98
DBD-ESF-2, Engineering Safety Features Actuation System, Rev. 1
DBD-CVCS-2, Chemical and Volume Control System, Rev. 1

Work Orders / Job Tasks

PC/M 174-295M, Reroute of Cable 21702C, Rev. 1, dated 10/29/95
W.O. 3201713801 , T.S. 044A S/G 2A Level Loop Calibration, dated 1/7/03
W.O. 3100661301 , T.S. 044A S/G 2A Level Loop Calibration, dated 8/8/01
W.O. 3101259101 , T.S. 044B S/G 2B Level Loop Calibration, dated 11/03/01
W.O. 3181734101 , T.S. F-2212 Charging Pump Flow Calibration, dated 4/24/02
W.O. 3101222101 , T.S. Charging Pump Discharge P-2212 Calibration, dated 9/7/01
W.O. 3201736501 , T.S. Press. Level (P1107/1108/1116) Calibration, dated 11/10/03
W.O. 3100693301 , T.S. Press. Level (P1107/1108/1116) Calibration, dated 7/12/01
W.O. 3261652901 , T.S. Pressurizer & Quench Tank Level (L1103/4/5/1116) Calibration, dated 1/10/03
W.O. 3100682601 , T.S. Pressurizer & Quench Tank Level (L1103/4/5/11) Calibration, dated 7/11/01

Procedures

2-OSP-100.16, Remote Shutdown Components 18 Month Functional Test, Rev. 2
2-IMP-69.02, ESFAS Monthly Channel Functional Test, Rev. 4A

Licensee Documents

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