

ENCLOSURE 2

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket No.: 50-416
License No.: NPF-29
Report No.: 50-416/97-12
Licensee: Entergy Operations, Inc.
Facility: Grand Gulf Nuclear Station
Location: Waterloo Road
Port Gibson, Mississippi
Dates: June 22 through August 2, 1997
Inspectors: Jennifer Dixon-Herrity, Senior Resident Inspector
Kathy Weaver, Resident Inspector
Approved By: Dennis F. Kirsch, Chief, Project Branch F
Division of Reactor Projects

Attachment: Supplemental Information

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EXECUTIVE SUMMARY

Grand Gulf Nuclear Station
NRC Inspection Report 50-416/97-12

Operations

- Operations shift turnovers and briefings were thorough and professional. As a result of inspector concerns regarding work being performed in the vicinity of an operable safety train while the other train was degraded, the licensee elected to implement a protected division practice during similar situations in the future. (Section O1.1).
- The inspectors identified an example of inattention to detail in the failure of operators to question a ladder installed so that it was supported on a safety-related cable tray in containment for approximately 3 days (Section O2.1).
- The inspectors noted minor differences between the site requirements for the use of safety harnesses and the actual practices used in the field. The licensee had identified previous problems and appropriately addressed the topic of safety harnesses during safety meetings (Section O5.1).

Maintenance

- A violation was identified for the failure to perform a required engineering evaluation prior to resting an extension ladder on a safety-related cable tray in containment (Section O2.1).
- Maintenance workers were knowledgeable of the equipment and the scope of the work activities. However, workers demonstrated inattention to detail and poor safety practices by stepping on a safety-related 1-inch pipe, a valve stem, and seismic struts while performing maintenance (Section M1.1).
- Surveillance activities were performed properly, with no discrepancies. Technicians and operators demonstrated good self-checking techniques and communications (Section M1.2).
- One example of a poorly planned work order was identified by the licensee. The work order addressed the repair of one of four leaking Dresser couplings, while the condition identification had addressed all four. The work description was poorly written, resulting in maintenance craft repairing a coupling other than that intended by the planner (Section M1.3).
- The inspectors identified one diesel generator building watertight door seal that was in poor material condition because the caulk around the missile shields had degraded to the point that rainwater leaked in during a rain shower. No preventive maintenance had been implemented to ensure the condition of the caulk (Section M2.1).

- The licensee's identification of the failure of maintenance personnel to follow procedures during an instrument calibration was identified as a noncited violation (Section M8.1).

Engineering

- A weakness in engineering support to plant operations was identified by the inspectors. As a result, an informal, intuitive, consideration of the increase in risk was performed by operators in response to painting in the vicinity of Division 1 control room heating, ventilation, and air conditioning (HVAC) equipment when the other train was out of service (Section O1.1).
- The lack of a requirement in the details section of Procedure O1-S-07-43 to perform an engineering review prior to the installation of loose items on or against safety-related equipment was a weakness (Section O2.1).
- A modification developed to prevent spurious initiation of the safety relief valve low-low set logic was of adequate detail and tested to assure prevention of the problem. The inspectors determined that the licensee's plan to implement the modification on-line was conservative and observed that it did not affect plant operation (Section E1.1).

Plant Support

- The corrective actions for one condition report were narrowly focused in that the actions focused on an individual's responsibility to maintain an awareness of their dose, but did not address points brought out by the root cause, including the inability of the individual to hear or see the alarming dosimeter, a Technical Specification required monitoring device (Section R7.1).
- One example of a degraded security barrier was identified when inspectors noted a scaffold constructed next to the standby service pumphouse that could be used to gain access to the roof (Section S2.1).
- The inspectors identified that the licensee had not evaluated halogen lights used as temporary and permanent lighting in the plant as an ignition source. This was identified as an example of inadequate engineering technical work. The licensee appropriately resolved the concern by instituting temporary controls until the lights could be evaluated (Section F1.1).
- The emergency lighting adequately met the minimum regulatory requirements. (Section F2.1).

Report Details

Summary of Plant Status

The plant remained at or near 100 percent power throughout this inspection period.

I. Operations

O1 Conduct of Operations

O1.1 Consideration of Risk Related to Working in Both Safety Divisions Concurrently

a. Inspection Scope (71707)

Using Inspection Procedure 71707, the inspectors observed the shift turnover and shift briefing for control room operators.

b. Observations

During these observations, the inspectors observed that the turnovers and briefings were thorough and professional. During the morning briefing on July 22, 1997, the inspectors observed that the Division 2 standby diesel generator and standby service water were out of service for scheduled maintenance. The plant supervisor informed the relieving shift personnel that painters would be working in the Division 1 control room HVAC room. The inspectors questioned the operations manager to determine if the increased risk had been considered in allowing work in the Division 1 rooms while the same Division 2 systems would not be available in an emergency involving loss of offsite power due to the diesel outage. The operations manager explained that no formal risk analysis had been done, but that the control room reviewed such work before allowing it to occur and that risk was taken into account during this review. The inspectors were concerned that work was allowed to occur in one division of control room HVAC while the other division was degraded, because of the unavailability of the diesel generator without a more rigorous consideration of the magnitude of risk increase. The inspectors considered this to be an example of weak engineering support to plant operations.

The operations manager directed that the work being done that day be reviewed to determine what work was being done in both divisions to verify that this was not a concern. The licensee concluded that the type of work being done did not significantly increase risk. However, the licensee acknowledged that this was a concern and elected to start using the practice of maintaining a protected division, similar to that used during outages, for normal operations. The licensee indicated that implementation of protected division philosophy would include provisions to prevent work on both divisions from occurring concurrently, increasing the operator's sensitivity to work occurring in the protected division, and placing signs on the doors to identify the protected division.

The inspectors observed that work was not scheduled or allowed in both divisions at the same time after the concern was identified. Operations staff guidance for morning briefings included guidance for ensuring that work would not be performed on a protected division.

c. Conclusions

Operations shift turnovers and briefings were thorough and professional. The licensee elected to implement a protected division practice in the future. A weakness in engineering support to plant operations was identified by the inspectors. As a result, an informal, intuitive, consideration of the increase in risk was performed by operators in response to painting in the vicinity of Division 1 control room HVAC equipment when the other train was out of service.

O2 Operational Status of Facilities and Equipment

O2.1 Ladder in Containment

a. Inspection Scope (71707)

On June 30, 1997, while touring the containment building, the inspectors identified an untagged extension ladder leaning on a safety-related cable tray. The inspectors reviewed the licensee's response to this concern and reviewed the procedures that addressed ladders.

b. Observations and Findings

The inspectors questioned operators in the control room regarding a ladder left leaning against a safety-related cable tray on the 184 ft. 6 in. level of containment, next to the suppression pool makeup line. The operators had the ladder removed from containment. The ladder was used for work that was completed in the area on June 27, 1997, but operations personnel had not questioned why it was left leaning against the cable tray. The instrument and control superintendent initiated Condition Report (CR) 97-0750 to address the installation of the ladder without an engineering evaluation.

The inspectors reviewed the procedures addressing the control of loose material. Procedure O1-S-07-43, "Safe Handling of Loose Items Inside the Plant," Revision 1, stated that loose items should not be left unattended on operable safety-related components without prior approval of engineering. A note in paragraph 5.11, which defined structural elements, stated that cable trays could not be used for securing loose items without engineering approval. Procedure O1-S-07-43 also required that all equipment left in the plant be tagged with work incomplete tags when work was suspended.

The licensee reviewed the problem and identified the root cause as insufficient awareness of personnel of the impact of their actions concerning the requirements of Standard GGNS-CS-17 when securing items to nonstructural components. The licensee identified the failure of job scoping and the work package to identify the need for a loose item evaluation as a contributing cause. The corrective actions discussed included: (1) determining if scaffolding could be used to gain access to the components, (2) performing an operability evaluation for the cable tray for the time that the ladder was installed, (3) discussing the requirements of Standard GGNS-CS-17 with maintenance personnel, and (4) adding a note to associated tasks to require a loose items evaluation. The inspectors identified that the failure to adhere to the requirements of Procedure 01-S-07-43 resulted in the placement of a ladder against a safety-related cable tray without an engineering evaluation. This was a violation of 10 CFR Part 50, Appendix B, Criterion V (416/9712-01).

The inspectors observed that Standard GGNS-CS-17 provided controls to ensure a loose item was not left unattended on or around safety-related equipment, but failed to provide clear controls to ensure that an engineering evaluation was done prior to placing loose items on or against safety-related equipment. The note that was in Procedure 01-S-07-43 was part of the definition section.

c. Conclusions

A violation was identified for the failure to perform a required engineering evaluation prior to resting an extension ladder on a safety-related cable tray in containment. The lack of a requirement in the details section of Procedure 01-S-07-43 to perform an engineering review prior to the installation of loose items on or against safety-related equipment was a weakness. The failure of operators to question the ladder leaning against a safety-related cable tray in containment for approximately 3 days was an example of inattention to detail.

O5 Operator Training and Qualification

O5.1 Safety Belts

a. Inspection Scope (71707)

The inspectors observed installation of tags on the reactor core isolation cooling (RCIC) system, to support scheduled maintenance, and a training session dealing with industrial safety.

b. Observations and Findings

On July 16, 1997, the inspectors observed the installation of tags on the RCIC system to support a scheduled maintenance outage. The nonlicensed operators appropriately stopped work when they identified a breaker number discrepancy on

one of the tags. The error was made because of inaccurate information in the site component database. A request was made to change the database and the remainder of the tags were hung.

While hanging a tag in residual heat removal Room A, the operator put on a safety harness, but did not tie off the harness to the scaffolding after he got on the scaffold. The inspectors questioned the operator after he came down. He explained that he had wanted to minimize his time in the high radiation area, that there was a handrail nearby, and that he had only had to hang the tag and verify the valve position. The inspectors acknowledged the as-low-as-reasonably-achievable (ALARA) concern and that there had been a scaffold member that functioned as a handrail at the point the operator entered the scaffold. A similar valve in the residual heat removal Room B had to be tagged. In this case, the scaffold area was contaminated. Due to the unavailability of contaminated safety harnesses, the control room approved entrance onto the scaffold without safety harnesses, although the scaffold was tagged indicating that tie-off was required. On June 22, 1997, the inspectors observed a maintenance mechanic working on the Division 2 diesel air dryer, approximately 9 feet off the ground, without a safety harness. The inspector observed that there was no safety-related equipment that could have been damaged in either of the examples discussed.

On July 30, 1997, the inspectors observed as an operator briefed the shift on the topics to be addressed during safety meetings that were to be held that day for the rest of the site. One of the topics addressed was safety harnesses and when they were required. Based upon the questions asked by the operators, the inspectors concluded that the operators were not thoroughly aware of the details of the site procedures regarding safety harnesses. One of the questions raised referred to prior informal training received through e-mail. The operator recalled that this training allowed an individual to get on scaffolding without a safety harness if the work only took a few minutes (for example, checking or removing a tag). The inspectors discussed this concern with the safety coordinator and the operations superintendent. The safety coordinator recalled direction given to the operators allowing them to climb scaffolding ladders without a harness, as long as they did not let go of the ladder. The coordinator and superintendent acknowledged the issues of concern and planned to research the concerns. The licensee identified previous problems in this area and thoroughly addressed them during the stand down.

c. Conclusions

The inspectors observed minor differences between the site requirements for the use of safety harnesses and the actual practices used in the field. The licensee had identified previous problems and appropriately addressed the topic of safety harnesses during safety meetings.

II. Maintenance

M1 Conduct of Maintenance

M1.1 General Maintenance Comments

a. Inspection Scope (62707)

The inspectors observed portions of maintenance activities, as specified by the following work orders (WOs):

- WO 00165799: Reactor Core Isolation Cooling (RCIC) System; Repair Oil Leak Between Pump and Turbine
- WO 00177334: High Pressure Core Spray (HPCS) Diesel Generator; Replace Gaskets and Washers on Cylinder Head Cover Supports
- WO 00189384: Division 2 Diesel; Repair Leaking Dresser Couplings

b. Observations and Findings

In general, the inspectors found the performance of this work to be satisfactory. During interviews with the maintenance personnel, the inspectors found that workers were knowledgeable of the equipment and the scope of the work activities. However, the inspectors observed during the RCIC system work that on two occasions workers displayed inattention to detail by stepping on a safety-related, 1-inch, drain pipe. The weight of the workers on the pipe caused the pipe to flex. The inspectors notified the workers of this concern and the workers immediately moved away from the pipe. The inspectors observed that system engineers were observing and providing support during these work activities, but did not provide timely input to the workers that might have prevented them from using the 1-inch safety-related pipe as a step.

While observing the work that was going on in the Division 2 diesel room on July 22, 1997, the inspectors observed a mechanic standing on a seismic strut while working on the starting air dryer. The inspectors discussed the issue with the plant supervisor and a CR was initiated. On July 23, 1997, the inspectors observed a similar situation on the other starting dryer. A mechanical supervisor identified the concern at the same time and directed the individual to find another place to stand. The inspectors questioned a mechanical supervisor about the practice of standing on a valve stem to reach the dryer. The supervisor claimed that it was acceptable due to the size of the valve. The inspectors discussed the concern with the plant supervisor. The plant supervisor said that this was not a desired practice. The inspectors observed that the scaffold was built to support similar work on the Division 1 dryers on July 29, 1997.

c. Conclusions

Maintenance workers were knowledgeable of the equipment and the scope of the work activities. However, workers demonstrated inattention to detail and poor safety practices by stepping on a safety-related 1-inch pipe, a valve stem, and seismic struts while performing maintenance.

M1.2 General Surveillance Comments

a. Inspection Scope (61726)

The inspectors observed the performance of portions of the surveillance tests listed below:

- Procedure 06-IC-1D17-A-1001, "Fuel Handling Area Ventilation Exhaust Radiation Monitor Calibration," Revision 101
- Procedure 06-OP-1P75-M0002, "Standby Diesel Generator 12 Functional Test," Revision 102

b. Observations and Findings

The test procedure provided clear guidance, and measuring and test equipment was within its current calibration cycle. The equipment was properly removed from service and returned to service. The technicians and operators demonstrated good self-checking techniques and performed independent verifications of all lifted leads. The technicians and operators demonstrated caution while working inside the control room panels. The technicians and operators continuously kept the control room operators informed of applicable alarms associated with the surveillance activities. All as-found data was within the specified acceptance criteria. The technicians and operators demonstrated good communications.

c. Conclusions

Surveillance activities were performed properly with no discrepancies. Technicians and operators demonstrated good self-checking techniques and communications.

M1.3 Division 2 Diesel Generator Maintenance

a. Inspection Scope (62707)

The inspectors reviewed the work in progress during a planned outage for the Division 2 standby diesel generator, reviewed the work packages being used, and examined the actions taken in response to identified problems.

b. Observations

On July 23, 1997, the inspectors accompanied nonlicensed operators during the initial removal of clearance tags listed on Clearance Authorization 97-1107 for the Division 2 diesel generator. During this observation, the inspectors walked down the diesel generator with the system engineer and found that one of the jacket water Dresser couplings, which had not been repaired during the system outage, was leaking. Subsequently, the shift superintendent suspended removal of the clearance tags because the coupling leak had not been repaired. During interviews, the inspectors found that WO 189384, written to repair the coupling, did not clearly identify the work to be accomplished. This led the maintenance craft to believe that the work was to be performed on a different coupling than that intended by the planner. The inspectors found that Condition Identification (CI) 65212 had been initiated for four couplings which needed repair. WO 189384 had been written to address CI 65212. However, the work description and work scope in WO 189384 did not include all four leaking couplings. The work description identified in WO 189384 was poorly written, which ultimately led maintenance craft to work on the wrong coupling.

c. Conclusions

One example of a poorly planned WO was identified by the licensee. The WO addressed the repair of one of four leaking Dresser couplings, while the CI had addressed all four. The work description was poorly written, resulting in maintenance craft repairing a coupling other than that intended by the planner.

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 Door Seals

a. Inspection Scope (62707)

During tours of the plant, the inspectors observed various components to assess material condition and to check for any nonconforming conditions.

b. Observations

During a routine tour on July 8, 1997, the inspectors observed leakage around the diesel generator building Door Seal 1D310 and the concrete missile shields covering the Division 1 diesel generator bay equipment openings. In addition, the inspectors observed a gap between the Division 2 diesel generator building missile shield and the wall where the caulking appeared to be inadequately bonded to the concrete surfaces.

The licensee's design basis flood analysis determined that water leaking into the diesel generator building during a design basis rainfall would have a detrimental effect on safety-related systems. In response to this concern, watertight door seals were installed on the personnel entry doors.

The inspectors notified licensee personnel, and CR 97-0772 was initiated. Operations personnel initiated Standing Order 97-0014 that required sandbags be placed around Door 1D310 and the Division 1 and 2 diesel generator building missile shields in the event of severe precipitation. The licensee initiated CIs to repair the door seals and the caulk. The inspectors identified that no preventive maintenance had been implemented to ensure the condition of the caulk.

c. Conclusions

The inspectors identified one diesel generator building watertight door seal that was in poor material condition because the caulk around the missile shields had degraded to the point that rainwater leaked in during a rain shower. No preventive maintenance had been implemented to ensure the condition of the caulk.

M8 Miscellaneous Maintenance Issues (92702)

- M8.1 (Closed) Licensee Event Report (LER) 50-416/96007: inadvertent Division 2 RCIC system isolation due to improperly lifted leads. The licensee determined that the root cause of the event was failure to follow procedures. The step required that two leads be lifted, but only one lead was lifted. A contributing factor was that the procedure format contributed to the error. Instrument and controls technicians were given training by the event, the procedure was revised to correct the format errors, and the instrument and controls procedures were reviewed to determine if other procedures had similar errors. Nineteen procedures with similar formatting errors were identified and plans were in place to correct the formatting errors. The inspectors verified that the corrective actions described in the LER had been completed or planned and that they appropriately addressed the root cause. Failure to follow procedures is a violation of 10 CFR Part 50, Appendix B, Criterion V. This nonrepetitive, licensee-identified and corrected violation is being treated as a noncited violation, consistent with Section VII.B.1 of the NRC Enforcement Policy (NCV 416/5712-02).

III. Engineering

E1 Conduct of Engineering

E1.1 Modification of Low-Low Set Logic for Safety Relief Valves

a. Inspection Scope (37551)

The inspectors reviewed the modification package developed to modify the low-low set logic for the safety relief valves.

b. Observations and Findings

Spurious initiation of the safety relief valve logic had been a recurring situation at Grand Gulf and resulted in undue challenges to both the system and the plant. The most recent example was discussed in NRC Inspection Report 50-416/96-11. The root cause was identified as static electricity causing the Rosemount trip units, used to monitor reactor pressure, to spuriously trip. Through experiments, the licensee determined that a static discharge caused spurious initiation of the logic. The licensee learned that Kernkraftwerk Leibstadt AG (KKL), a General Electric BWR-6 plant in Switzerland, had a similar problem 10 years ago. KKL resolved their problems by installing a capacitor in the feedback circuit of the comparator which provided the trip function of the trip unit. The capacitor functioned to provide the comparator feedback circuit with a time delay to prevent spurious signals from actuating the trip unit. KKL had operated 10 years without recurrence since performing the modification.

The inspectors reviewed the modification package developed by the licensee. The package required that a 0.1 microfarad capacitor be installed in the feedback circuit of the comparator which provides the trip function of the trip unit. The inspectors reviewed the test results performed by the licensee to verify that the capacitor would not effect the function of the trip unit. The tests were thorough and the capacitor did not effect the trip unit's safety function, but eliminated spurious trips resulting from static electricity.

The inspectors observed that the licensee planned to implement the modification on-line. The licensee would first modify and test five spare trip units. The existing trip units would be replaced with the modified trip units in one channel. The licensee would test the units after installation by performing the surveillance normally used to test the logic. The removed trip units would then be modified and used to replace the units in another channel. This process would be used until all four channels have been replaced. The five units removed from the last channel would be modified and placed in the warehouse as spares under a new stock code. On August 6, 1997, subsequent to the end of the inspection period, the licensee successfully completed this modification.

c. Conclusions

A modification developed to prevent spurious initiation of the safety relief valve low-low set logic was of adequate detail and tested to assure prevention of the problem. The inspectors determined that the licensee's plan to implement the modification on-line was conservative and observed that it did not affect plant operation.

E8 Miscellaneous Engineering Issues (92903)

- E8.1 (Closed) LER 50-416/96003: reactor water cleanup system isolation due to high differential flow. The licensee determined that the root cause of the event was that the design of the valves does not provide adequate isolation capability for maintenance activities. An inadequate protective tagging procedure and the failure of management to ensure that long-term corrective actions were completed for the known problem were identified as contributing causes. The inspector observed that 23 of 25 valves had been modified to allow full isolation and reviewed the actions identified in the LER and determined that the completed or planned actions should address the causes. No regulatory requirement was violated by the actuation of this system.

IV. Plant Support

R1 Radiological Protection and Chemistry Controls

a. Inspection Scope (71750)

The inspectors observed the chemical addition to standby service water Train B.

b. Observations and Findings

On July 8, 1997, the inspectors observed as a chemist added chemicals to standby service water Train B to protect the piping from microbiological induced corrosion. The chemist performed the chemical addition in accordance with Procedure 04-1-03-P41-2, "SSW B Chemical Addition Run," Revision 0.

c. Conclusions

A chemical addition to standby service water Train B was adequately performed in accordance with procedures.

R7 Quality Assurance in Radiological Protection and Chemistry Activities

R7.1 Corrective Actions

a. Inspection Scope (71750)

The inspectors reviewed the actions taken in response to an individual not responding to an alarming dosimeter.

b. Observations and Findings

The inspectors reviewed the disposition to CR 97-0305, which documented the failure of a painter to exit the controlled access area in response to an alarming dosimeter. The inspectors reviewed the CR. The painter was working in a high radiation area. The painter checked his dosimeter, then moved into a new area. The dosimeter was set to alarm at 150 mRem. A supervisor heard the alarm and told the painter to leave soon after moving into that area. The dosimeter read 172 mRem at that point. The documented root cause was that the painter was wearing a respirator and could not see or hear the dosimeter alarming. The documented corrective action was that all painters were counseled on the CR and the importance of frequently checking their dose while inside the controlled access area. The health physics superintendent met with the painters and discussed the issue.

The inspectors discussed the disposition with the radiation control superintendent. The superintendent explained that the issue was one of personnel accountability. The superintendent was not aware of the dose rates or noise rates in the area. The inspectors questioned whether the corrective action taken had been too narrowly focused. Technical Specification 5.7.1 requires that an individual permitted to enter a high radiation area be provided with or accompanied by one or more of the following: (1) a radiation monitoring device that continuously indicates the radiation dose rate in the area, (2) a radiation monitoring device that continuously integrates the radiation dose rate in the area and alarms at a preset point, or/and (3) an individual qualified in radiation protection procedures with a radiation dose rate monitoring device who is responsible for providing positive control over the activities within the area. The licensee relied on the second option alone. The inspector was concerned that the CR review did not address whether providing an alarming dosimeter was the appropriate action for radiation protection to take in view of the inability of the individual to see or hear the dosimeter, as identified in the CR. The superintendent acknowledged the inspector's concern and stressed the importance of personnel accountability in maintaining dose ALARA. The inspector observed that there were no reported incidents similar to this event.

c. Conclusions

The corrective actions for one CR were narrowly focused in that the actions focused on an individual's responsibility to maintain an awareness of their dose, but did not address points brought out by the root cause, including the inability of the individual to hear or see the alarming dosimeter, a Technical Specification required monitoring device.

S2 Status of Security Facilities and Equipment

S2.1 Access to Standby Service System Building Roof

a. Inspection Scope (71750)

Using Inspection Procedure 7175C, the inspectors made frequent tours of the plant and observed the general condition of protected area barriers.

b. Observations

The inspectors observed that the protected area barriers were in good condition in all cases but one. On July 7, 1997, the inspectors were concerned that a scaffold constructed next to the Division 2 standby service water pumphouse could be used by an individual to gain access to the roof. The scaffolding members used to secure the scaffold were attached from the railing around the roof to the top of the scaffold. The inspectors were concerned that an individual may have access from the scaffold to the roof if they climbed up these support members. The inspectors discussed this concern with security. The security superintendent considered that this scenario would be exceedingly difficult and that roof access in this manner would be highly unlikely. The inspectors explained that the scaffold provided access that, although difficult, was not available in the designed configuration. The licensee considered the inspector's concerns and removed the scaffold.

c. Conclusions

One example of a degraded security barrier was identified when inspectors observed a scaffold constructed next to the standby service pumphouse that could be used to gain access to the roof.

F1 Control of Fire Protection Activities

F1.1 Halogen Lights

a. Inspection Scope (71750)

Using Inspection Procedure 71750, the inspectors made frequent tours of the plant and observed the general control of ignition sources and flammable materials.

b. Observations and Findings

The inspectors found that ignition sources and flammable materials were well controlled. On July 1, 1997, the inspectors observed that temporary halogen lights were installed in the residual heat removal system pump rooms to provide light for cameras to monitor components to maintain dose ALARA. The inspectors were concerned that this type of light had a tendency to get hot and could be a potential ignition source. The inspectors discussed this concern with the shift superintendent and questioned the use of halogen lights in unmanned areas and whether the potential of the light being an ignition source had been considered. The superintendent had personnel ensure that there were no combustible materials within five feet around the lights and had them unplugged when not in use until the concern could be resolved.

The fire protection coordinator explained that this situation had not been considered, but use of the lights had been approved by Underwriters Laboratories, Inc. The coordinator indicated that the site had not verified that the lights being used were not some of the lights that had been recalled. The coordinator issued a bulletin over the site e-mail system requesting that personnel ensure that the 5-foot clearance discussed above be maintained, that the lamp covers were not removed, and that the light units be firmly secured in place while in use. The coordinator reviewed manufacturer data and determined that the lights were ignition sources. The coordinator planned to test the lights and add precautions to site training.

c. Conclusions

The inspectors identified that the licensee had not evaluated halogen lights used as temporary and permanent lighting in the plant as an ignition source. This was identified as an example of inadequate engineering technical work. The licensee appropriately resolved the concern by instituting temporary controls until the lights could be evaluated.

F2 Status of Fire Protection Equipment and Facilities

F2.1 Emergency Lighting

a. Inspection Scope (71750)

The inspectors reviewed the emergency lighting at the site.

b. Observations and Findings

During a tour on July 3, 1997, the inspectors observed that there was emergency lighting in the Division 1 diesel generator room, but none was installed in Divisions 2 or 3. The inspectors discussed this difference with the shift superintendent. The superintendent researched the question and explained that the

Division 1 safe shutdown equipment had been identified as part of the minimum equipment needed to shut down the plant in the event of a control room fire and had been protected to ensure the ability to shut down the plant.

The inspectors reviewed the Final Safety Analysis Report and the regulations involving emergency lighting and discussed the issue with an instrument and controls supervisor. The inspectors determined that the licensee had met the minimum requirements of the regulations with respect to emergency lighting. However, the inspectors observed that Off-Normal Procedure 05-1-02-II-1, "Shutdown from the Remote Shutdown Panel," Revision 22, required personnel to enter the RCIC room if the turbine tripped and could not be reset. This equipment is risk significant in the station blackout accident scenario and would be required for safe shutdown. No safety-related emergency lighting (8-hour) was provided in this room. Personnel entry into residual heat removal rooms in the auxiliary building was also required when the residual heat removal system was placed in the shutdown cooling mode. No safety-related emergency lighting was provided in these rooms.

The inspectors reviewed the objective of emergency lighting identified in NRC Information Notice 95-36, Supplement 1, "Potential Problem with Post-Fire Emergency Lighting," dated June 10, 1997. It stated that the objective of the requirements and guidelines for emergency lighting was to ensure that, in the event of a fire, plant personnel can access and operate equipment and components that must be manually operated to effect safe plant shutdown.

c. Conclusions

The emergency lighting adequately met the minimum regulatory requirements.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on August 7, 1997, and, on August 18, 1997, discussed changes to the information previously presented. The licensee acknowledged the findings presented.

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

ATTACHMENT

PARTIAL LIST OF PERSONS CONTACTED

Licensee

D. Barfield, Manager, Mechanical/Civil Design, Nuclear Plant Engineering
C. Bottemiller, Superintendent, Plant Licensing
W. Cade, Operations Assistant, Plant Operations
B. Eaton, General Manager, Plant Operations
R. Ellis, I&C Supervisor, Maintenance
C. Ellsaesser, Manager, Performance and System Engineering
C. Hayes, Director, Quality Programs
C. Holifield, Licensing Engineer, Plant Licensing
T. Kriesel, Radiation Control Supervisor, Radiation Protection
E. Mathis, Operations Coordinator, Plant Operations
M. McDowell, Technical Assistant, Plant Operations
R. Moomaw, Manager, Plant Maintenance
B. Raines, Emergency Planner, Emergency Preparedness
M. Rohrer, Assistant Supervisor, Mechanical Maintenance
S. Saunders, Manager, Nuclear Plant Engineering
T. Tankersley, Senior Oversight Specialist, Corporate Assessments

NRC

J. Donahew, NRR Project Manager

INSPECTION PROCEDURES USED

37551	Onsite Engineering
61726	Surveillance Observations
62707	Maintenance Observation
71707	Plant Operations
71750	Plant Support Activities

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

- | | | |
|-----------------|-----|---|
| 50-416/97012-01 | VIO | Failure to perform a required engineering evaluation prior to resting an extension ladder on a safety-related cable tray (Section O2.1) |
| 50-416/97012-02 | NCV | Failure to follow maintenance procedure instructions (Section M8.1) |

Closed

- | | | |
|-----------------|-----|---|
| 50-416/97012-02 | NCV | Failure to follow maintenance procedure instructions (Section M8.1) |
| 50-416/96003 | LER | Reactor water cleanup system isolation due to high differential flow (Section E8.1) |
| 50-416/96007 | LER | Inadvertent Division 2 RCIC isolation due to improperly lifted leads (Section M8.1) |

LIST OF ACRONYMS USED

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| ALARA | as low as reasonable achievable |
| CI | condition identification |
| CR | condition report |
| HPCS | high pressure core spray |
| HVAC | heating, ventilation, and air conditioning |
| LER | licensee event report |
| NRC | Nuclear Regulatory Commission |
| RCIC | reactor core isolation cooling |
| WO | work order |