

ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

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License No.: NPF-29
Report No.: 50-416/97-02
Licensee: Entergy Operations, Inc.
Facility: Grand Gulf Nuclear Station
Location: Waterloo Road
Port Gibson, Mississippi
Dates: February 3-7, 1997
Inspector: Michael P. Shannon, Radiation Specialist
Approved By: Blaine Murray, Chief, Plant Support Branch
Division of Reactor Safety

ATTACHMENT: Supplemental Information

EXECUTIVE SUMMARY

Grand Gulf Nuclear Station NRC Inspection Report 50-416/97-02

This routine, announced inspection focused upon the licensee's radiation protection program during normal operating conditions. Areas inspected included: external and internal exposure control programs; calibration of portable radiation protection instrumentation and whole body counting equipment; radiation protection department self-assessments; and quality program radiation protection activities.

Plant Support

- Overall, an effective external exposure control program was implemented. High radiation area controls were good and radiation work permits were written in a clear consistent manner. Housekeeping within the controlled access area was very good (Section R1.1).
- The internal exposure control program was effectively maintained. No problems were identified with the calibration of the whole body counter. An adequate air sampling program was maintained. However, the use of continuous air monitors of radiological work would aid job coverage (Section R1.2).
- Staff turnover meetings were informative and provided the staff with the knowledge of daily activities (Section R1.3).
- Effective controls to prevent the spread of radioactive contamination were implemented. The radioactive source leak testing and inventory programs were good. A very good program for the calibration of portable radiation protection instrumentation was in place. Some radiation survey maps posted outside individual areas of the plant were difficult to read (Section R1.4).
- A very good quality programs' audit and surveillance program was in place. The quality program auditor was well qualified to perform radiation protection audits and surveillances. Quality program surveillances provided a good cross-sectional look at the radiation protection program. A large percentage of radiological condition reports were open longer than procedural expectations for closeout (Section R7.1).

Report Details

III. Engineering

E2 Engineering Support of Facilities and Equipment

E2.1 Updated Final Safety Analysis Report Review

a. Inspection Scope

The inspector reviewed selected topics presented in Section 12.5, "Health Physics Program," of the Updated Final Safety Analysis Report to ensure agreement with commitments.

b. Observations and Findings

A recent discovery of a licensee operating their facility in a manner contrary to the Updated Final Safety Analysis Report description highlighted the need for a special focused review that compares plant practices, procedures and/or parameters to the Updated Final Safety Analysis Report descriptions. While performing the inspection discussed in this report, the inspector reviewed the applicable portions of the Updated Final Safety Analysis Report that related to the areas inspected. In addition, the inspector reviewed the draft changes to Section 12.5 and noted no problems. The inspector verified that the Updated Final Safety Analysis Report wording was consistent with the observed plant practices, procedures, and/or parameters.

c. Conclusion

No deviations to the commitments in Section 12.5 of the Updated Final Safety Analysis Report were identified.

IV. Plant Support

R1 Radiological Protection and Chemistry Controls

R1.1 External Exposure Controls

a. Inspection Scope (83750)

Selected radiation workers and radiation protection personnel involved in the external exposure control program were interviewed. A number of tours of the controlled access area, including the containment building, were performed. The following items were reviewed:

- Controlled access area entry/exit controls
- Control of high radiation areas and high radiation area keys
- Radiation work permits
- Job coverage by radiation protection personnel
- Housekeeping within the radiological controlled area
- Dosimetry use

b. Observations and Findings

All personnel observed by the inspector used the whole body friskers properly. Radiation protection technicians stationed at the controlled access area control point responded properly to whole body contamination frisker alarms and provided proper guidance to station workers.

All Technical Specifications required locked high radiation area doors were locked and properly posted. Locked high radiation area flashing lights were operational. The inspector reviewed the high radiation area key issue process and performed an inventory of high radiation area keys. No problems were identified with the issuance of high radiation area keys. During the inventory of high radiation area keys, the inspector noted four locked high radiation area keys stored in the control room were labeled as keys for the drywell. The inspector noted the drywell was locked and posted as a very high radiation area. The inspector determined the control room locked high radiation keys were mislabeled. The licensee took appropriate, timely action and corrected the labeling issue. The inspector noted that locked high radiation area keys were not inventoried on any set frequency. The radiation protection operations supervisor confirmed this observation. The inspector noted that not defining a key inventory frequency was atypical. Radiation protection management stated they would review the key inventory process.

The inspector reviewed randomly selected radiation work permits and determined that they were written in a clear consistent manner. The instructions were broken into two sections: worker instructions and special instructions. The inspector concluded that this approach clarified the workers' radiological restrictions and was a program strength.

The inspector attended the prejob as low as is reasonably achievable briefing and observed the task involving the calibration of a main steam monitor located on the 166-foot elevation of the auxiliary building. The inspector noted that a 30 curie, cesium 137 radiation source was used for this task. Radiation Work Permit 97-01-004 was used for this task. The inspector noted that the lead instrument and controls technician explained the task in detail to all personnel involved. The health physics instrument specialist explained the radiological controls and hold points involved with the task. Industry and site lessons learned events were discussed. All personnel were attentive and asked appropriate questions.

Housekeeping within the controlled access area was very good. All trash and laundry containers were properly maintained.

All personnel observed by the inspector wore their dosimetry properly and knew to contact radiation protection personnel if their electronic dosimeter alarmed.

c. Conclusions

Station personnel used the whole body friskers properly. All Technical Specifications required locked high radiation area doors were locked and properly posted. Radiation work permits were written in a clear consistent manner. The as low as is reasonably achievable prejob briefing observed provided individuals involved with the task a clear understanding of the radiological controls. Housekeeping within the controlled access area was very good. All personnel observed wore their dosimetry properly.

R1.2 Internal Exposure Controls

a. Inspection Scope (83750)

Selected radiation protection personnel involved with the internal exposure control program were interviewed. The following items were reviewed:

- Air sampling program, including the use of continuous air monitors and filtration units
- Respiratory protection program
- Whole body counting program, including the calibration of the counter
- The internal dose assessment program

b. Observations and Findings

No problems associated with the whole body counting or internal dose calculations were identified. Three positive whole body counts, which exceeded the licensee's administrative limit (10 millirem), occurred during this inspection. The highest committed effective dose equivalent was 18 millirem. Selected internal dose calculations were verified by the inspector to have been performed correctly.

Nine full-faced negative pressure respirators had been issued during 1996 for radiological work. The inspector reviewed selected total effective dose equivalent/as low as is reasonably achievable evaluations, which were performed to ensure compliance with the requirements of 10 CFR Part 20, Subpart H, and concurred with the licensee's conclusions.

The inspector reviewed the whole body counting calibration program, including daily calibration response checks for the Model ND-9000 whole body counter. The licensee performed annual calibrations and daily background and calibration checks of this equipment. The licensee used a mixed gamma isotope standard to calibrate the whole body counter. The inspector determined that this standard represented typical plant related isotopes. No problems were identified with the whole body counting calibration and daily calibration response programs.

No problems were identified with the air sampling program. All air sampling equipment observed in the field had current calibration dates and was calibrated response checked in accordance with plant procedures. The use and positioning of air filtration units were appropriate for limiting radiological airborne hazards. The licensee used continuous air monitors, in most general areas of the controlled access area, for trending airborne conditions. However, the inspector noted that continuous air monitors were not used to aid in job coverage. The use of continuous air monitors provides real time airborne activity conditions. The licensee acknowledged the inspector's observation and stated that they are in the process of evaluating portable continuous air monitors for job coverage.

c. Conclusions

The internal exposure control program was effectively implemented. No problems were identified with the calibration of the whole body counter. An adequate air sampling program was maintained. However, the use of continuous air monitors for radiological work would aid job coverage.

R1.3 Planning and Preparation

a. Inspection Scope (83750)

Radiation protection department personnel involved in radiation protection planning and preparation were interviewed. Additionally, the adequacy of radiation protection instrumentation, protective clothing, and consumable item supplies to support radiological work was reviewed.

b. Observations and Findings

The inspector attended a radiation protection staff shift turnover meeting and noted a good exchange of information between radiation protection management and the staff. Major radiological work tasks, which included site and industry lessons learned, were discussed. The inspector noted that all personnel were attentive and had the opportunity to ask questions.

No problems were identified with the adequacy of radiation protection instrumentation, protective clothing, and consumable item supplies to support radiological work.

c. Conclusions

Staff turnover meetings were informative and provided the staff with the knowledge of daily activities.

R1.4 Control of Radioactive Materials and Contamination; Surveying and Monitoring

a. Inspection Scope (83750)

Areas reviewed included

- Control of radioactive material and contaminated areas
- Radioactive source leak testing and inventory
- Portable instrumentation calibration and calibration response checking programs
- Adequacy of the surveys necessary to assess personnel exposure

b. Observations and Findings

The licensee provided good controls to prevent the spread of radioactive contamination. Contaminated areas were well posted and marked with tape or rope. Step-off pads were placed at the entrances/exits to these areas. The inspector observed radiation worker activities, while exiting contaminated areas, and noted use of good health physics practices. All containers, including vacuums, were properly labeled and controlled.

The inspector reviewed selected source leak testing and inventory records for the last 18 months. Additionally, the inspector inventoried selected sources to ensure labeling and posting controls were proper. No problems were identified with the radioactive source leak testing and inventory programs.

The inspector reviewed the licensee's radiation protection portable instrumentation program and noted that Grand Gulf Nuclear Station calibrated radiation protection portable instrumentation, with the exception of neutron monitoring instrumentation, for all the Entergy sites. The inspector determined that all calibrations were performed utilizing radioactive sources with activities traceable to the National Institute of Standards and Technology. Calibration response checks were performed on a daily basis and instrumentation that failed these checks was evaluated in a timely manner.

The University of Arkansas calibrated Entergy's portable neutron instrumentation using a moderated californium 252 source. During the review of calibration records, the inspector identified that the University of Arkansas had not recorded instrument

the inspector identified that the University of Arkansas had not recorded instrument "as found" data as required by the contract. The licensee corrected this issue with the University of Arkansas during the inspection. No other problems were identified.

The inspector reviewed a number of radiological surveys and noted that, in general, survey maps located in the radiation protection files were written in a clear, consistent manner and were easy to read and understand. However, some radiation survey maps posted outside individual areas of the plant for worker information were written in yellow grease pencil, making it extremely difficult to read on a white background. The licensee issued a standing order to all radiation protection personnel requiring the use of a black grease pencil on field radiological information maps.

c. Conclusions

Good controls to prevent the spread of radioactive contamination were implemented. The radioactive source leak testing and inventory programs were effectively maintained. A very good program for the calibration of portable radiation protection instrumentation was in place. Radiation survey maps located in the radiation protection files were written clearly. However, some radiation survey maps posted outside individual areas of the plant were difficult to read.

R4 Staff Knowledge and Performance in Radiological Protection and Chemistry

A number of work activities performed in the controlled access area were observed by the inspector. No major problems were identified with staff knowledge and performance of radiological protection procedures and work practices.

R7 Quality Assurance in Radiological Protection and Chemistry Activities

R7.1 Quality Program Audits and Surveillances and Radiation Department Self-Assessments and Radiological Condition Reports

a. Inspection Scope (83750)

Selected personnel involved with the performance of quality program audits and surveillances and radiation department self-assessments were interviewed. The following items were reviewed:

- Qualifications of personnel who performed quality program audits and surveillances
- Quality program audits performed since November 1, 1996
- Quality program surveillances performed since November 1, 1996

- Radiation protection department self-assessments performed since November 1, 1996
- Radiological condition reports written since November 1, 1996

b. Observations and Findings

The inspector reviewed the qualifications of the lead quality programs specialist assigned to oversee radiation protection department activities. The inspector noted that the quality programs specialist had a number of years of operational health physics experience and was qualified as a National Registry of Radiation Protection Technologist. The inspector determined that this individual was well qualified to perform radiation protection audits and surveillances.

No radiation protection audits were scheduled during this inspection. However, the inspector reviewed the audit schedule and determined that it covered the appropriate program areas to provide management with a good overview of the radiation program. During discussions with the quality program specialist, the inspector concluded that program trends were independently reviewed by the quality program department to help define the audit scope. Additionally, the Institute of Nuclear Power Operation's nuclear network was queried on a daily basis looking for common radiological issues which might affect Grand Gulf Nuclear Station. Radiation protection management was appropriately involved in the development of the audit scope.

Five quality program radiation protection surveillances were performed during this inspection. The inspector determined that these surveillances provided a good cross-sectional look of the radiation protection program. Two condition reports were written during one of the surveillances. The inspector determined that the corrective actions were timely and appeared to be appropriate to prevent a similar reoccurrence.

The inspector noted that the last radiation protection department self-assessment was performed during June 1996, and no self-assessments were performed during the refueling outage which was completed in the fall of 1996. The licensee was in the process of developing a department self-assessment schedule during this inspection.

The inspector noted that there were 38 open radiological condition reports as of February 6, 1997. Thirty have exceeded the licensee's procedural expectation (60 days) for close out. Three were open greater than 5 months. The inspector reviewed selected recommended corrective actions and determined that they appeared to be appropriate to resolve a repeat occurrence. The licensee stated that they would review the open condition reports for timely close out.

c. Conclusions

The quality program auditor was well qualified to perform radiation protection audits and surveillances. The 1997 audit schedule covered the appropriate program areas to provide management with a good overview of the radiation program. Radiation protection management was appropriately involved in the development of the audit scope. Quality program surveillances provided a good cross sectional look of the radiation protection program. The last radiation protection department self-assessment was performed during June 1996. A large percentage of radiological condition reports were open greater than 60 days.

V. Management Meetings

X1 Exit Meeting Summary

The inspector presented the inspection results to members of licensee management at an exit meeting on February 7, 1997. The licensee acknowledged the findings presented. No proprietary information was identified.

ATTACHMENT

PARTIAL LIST OF PERSONS CONTACTED

Licensee

B. Eaton, General Manager
R. Benson, Health Physics Supervisor
D. Coulter, Quality Programs Auditor
N. Edney II, Radiation Controls Supervisor
C. Holifield, Licensing Engineer
K. Hughey, Director
T. Kreisel, Radiation Controls Superintendent
D. Landrum, Health Physics ALARA Specialist
M. Larson, Senior Licensing Specialist
M. McDowell, Operations Superintendent
T. Moncure, Senior Health Physics Technician
R. Mooman, Maintenance Manager
B. Roberson, Health Physics Supervisor
T. Tankersley, Assessor
J. Watts, Health Physics Specialist

NRC

K. Weaver, Resident Inspector

INSPECTION PROCEDURE USED

83750 Occupational Radiation Exposure

LIST OF DOCUMENTS REVIEWED

Station Procedure CHPIP-02.04, Revision 4, "Calibration of Portable Dose Rate Instruments"

Station Procedure CHPIP-02.09, Revision 0, "Calibration of Portable Neutron Meters"

Radiation Protection Instruction 08-S-02-20, Revision 15, "Establishing and Posting Controlled Areas"

Radiation Protection Instruction 08-S-02-64, Revision 7, "Leak Testing of Sealed Sources"

Radiation Protection Instruction 08-S-02-60, Revision 13, "Receipt Survey"

Radiation Protection Instruction 08-S-07-83, Revision 7, "Operation and Calibration of the ND-9000 Whole Body Counter"

Administrative Procedure 01-S-08-2, Revision 103, "Exposure and Contamination Control"

Administrative Procedure 01-S-08-6, Revision 101, "Radioactive Material Control"

Administrative Procedure 01-S-03-10, Revision 0, "GGNS Condition Report"

Summary of all Radiation Protection Condition Reports Written since
November 1, 1996

1997 Quality Programs Annual Audit Schedule

Quality Surveillance Report GIN 96-02717, dated November 4, 1996

Quality Surveillance Report GIN 96-02720, dated November 4, 1996

Quality Surveillance Report GIN 96-03070, dated December 16, 1996

Quality Surveillance Report GIN 97-00005, dated December 18, 1996

Quality Activity Monitoring Report GIN 97-00127, dated January 21, 1997

Radiation Work Permit 96-01-030, Revision 0

Radiation Work Permit 96-03-023, Revision 0

Radiation Work Permit 97-01-004, Revision 0