

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos: 50-369, 50-370

License Nos: NPF-9, NPF-17

Report No: 50-369/99-10, 50-370/99-10

Licensee: Duke Energy Corporation

Facility: McGuire Nuclear Station, Units 1 and 2

Location: 12700 Hagers Ferry Road
Huntersville, NC 28078

Dates: March 22- 26, 1999

Inspector: E. Testa, P.E., Senior Radiation Specialist

Approved by: K. Barr, Chief, Plant Support Branch
Division of Reactor Safety

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Enclosure

EXECUTIVE SUMMARY

McGuire Nuclear Station, Units 1 and 2 NRC Inspection Report 50-369/99-10, 50-370/99-10

This special inspection included aspects of licensee health physics activities during the Unit 2 refueling outage.

Plant Support

- A non-cited violation was identified for failure to adequately post and properly control access to a Very High Radiation Area. (Section R1.1)
- A non-cited violation was identified for failure to implement adequate controls, including having adequate process controls, for the sump room when the area was a Very High Radiation Area. (Section R1.1)
- Material was labeled appropriately. (Section R1.1)
- Personnel dosimetry devices were appropriately worn. (Section R1.1)
- The licensee was maintaining exposures As Low As Reasonably Achievable. (Section R1.1)

Report Details

Plant Support

R1 Radiological Protection and Chemistry Controls

R1.1 Tour of Radiological Protected Areas

a. Inspection Scope (83750)

The inspectors reviewed personnel monitoring, radiological postings, high radiation area controls, posted radiation dose rates, contamination controls and container labeling. In addition, As Low As Reasonably Achievable (ALARA) work planning, prejob worker briefings, and job execution observations were performed. The inspectors reviewed licensee records of personnel radiation exposure and discussed ALARA program details, implementation and goals. Health physics facilities, the auxiliary building, outside radioactive waste storage areas, and the steam generator replacement building were toured. Requirements for these areas were specified in 10 CFR 20 and Technical Specifications.

b. Observations and Findings

Radiologically controlled areas including radioactive material storage areas (RMSAs), High Radiation Areas, and Locked High Radiation Areas were appropriately posted and radioactive material was appropriately stored and labeled.

Reviewed records showed that the licensee was tracking and trending personnel contamination events (PCEs). The licensee had tracked approximately 35 PCEs for the 1999 calendar year to date which included skin and clothing contaminations.

From review of two Unit 2 steam generator Radiation Work Permits (RWPs) and observations of prejob briefings and work activities in progress via closed circuit television, the inspectors verified appropriate dose control and acceptable work practices.

The inspectors reviewed selected Problem Investigation Process Reports (PIPs). PIP 0-M99-1315 stated that "Radiation Protection was not aware that the incore thimbles were being retracted to the incore sump room." This issue was reviewed by the inspector because of the very high radiation levels that can result from incore thimble retractions.

On March 15, 1999, prior to the incore thimble retractions, Maintenance personnel opened the 738' access door to the Unit 2 incore sump room and Radiological Control personnel performed a radiation survey of the sump room. Normally, the entrance doorway to the sump room is posted as a Very High Radiation Area and the door is locked shut with a special lock controlled by the Radiological Control organization. Following the radiation survey that showed the radiation levels in the sump room were well below

the regulatory limits for posting the area as a Very High Radiation Area, the Very High Radiation Area posting and the special lock were removed.

On March 17, 1999, the 738' access door was closed by Maintenance personnel. At that time, the door was bolted shut with two 3/4" bolts in anticipation of the incore thimble retraction. On March 19, 1999, technicians performed work at the seal table which involved retraction of the incore thimbles. During the time the thimbles were retracted, the radiation levels in the sump room were estimated by the licensee to range between 790 and 6800 Rads/hour depending on the amount of Cobalt 60 assumed to be in the thimbles. These levels exceeded the regulatory requirements for the establishment of Very High Radiation Area controls for the sump room. However, at the time of the thimble retraction, the sump room was not being controlled in accordance with regulatory requirements for a Very High Radiation Area. The radiological posting of the area was not upgraded to a Very High Radiation Area and the door was not secured with the special lock controlled by the Radiological Control organization. In addition, the inspectors identified that procedure IP/O/A3007/009B Revision 018 titled Movable Incore Detector Thimble Retraction and Insertion did not contain adequate process instructions to assure establishment of adequate radiological controls of the Very High Radiation Areas prior to subsequent movement of the incore thimbles.

The inspectors determined that the sump area was inadequately controlled, with work in progress, for approximately three and one half hours. Dose records of the employees assigned to work in the seal table area during thimble retraction were reviewed by the inspectors. Radiation Work Permit (RWP) 2811 was used for the seal table work. The highest radiation dose for workers on the RWP was 24 millirem. This low dose confirms that none of the workers entered the sump while the thimbles were retracted.

Following discussions with the inspectors, the licensee reclassified the PIP from action Category 3 to Category 2 which required an investigation and completion of a root cause.

The licensee was informed that the failure to adequately post and control the access to the sump room on March 19, 1999, during the thimble retraction when the area was a Very High Radiation Area constituted a violation of 10 CFR 20.1601. This failure to properly control access to the Very High Radiation area is a Severity IV violation that is being treated as an NCV, consistent with Appendix C of the NRC Enforcement Policy. This NCV is identified as NCV 50-370/99-010-01. This issue is in the licensee's corrective action program as PIP 0-M99-1315.

In addition, the licensee was also informed that failure to implement additional controls, including having adequate process controls, for the sump room prior to the thimble retraction on March 19, 1999, when the area was a Very High Radiation Area, was a violation of 10 CFR 20.1602. This failure is a Severity IV violation that is being treated as an NCV, consistent with Appendix C of the NRC Enforcement Policy. This NCV is identified as NCV 50-370/99-010-02. This issue is in the licensee's corrective action program as PIP 0-M99-1315.

The outage exposure goal was set at 135.435 person-rem. At the time of the inspection (March 26, 1999), the outage person-rem was about 64.103 person-rem. This was close to the predicted outage dose at that time.

The inspectors reviewed operational and administrative controls for entering the RCA and performing work. These controls included the use of radiation work permits (RWPs) to be reviewed and understood by workers prior to entering the RCA. The inspectors reviewed selected RWPs for adequacy of the radiation protection requirements based on work scope, location, and conditions. For the RWPs reviewed, the inspectors noted that appropriate protective clothing, and dosimetry were required. During tours of the plant, the inspectors observed the adherence of plant workers to the RWP requirements. Personal dosimetry was being worn in the appropriate location and workers were observed using friskers properly at RCA exit locations and exiting the protected area through exit portal monitors.

c. Conclusions

Two NCVs were identified for: (1) Failure to properly post and control access to a Very High Radiation Area and, (2) Failure to implement adequate controls, including having adequate process controls, for the sump room during the thimble retraction on March 19, 1999, when the area was a Very High Radiation Area. Radiological facility controls in radioactive material storage areas, health physics facilities, and waste storage buildings were found appropriate. Personnel dosimetry devices were appropriately worn. The licensee was maintaining exposures ALARA.

R8 Miscellaneous RP&C Issues

- R8.1 (Closed) Violation 50-369,370/98-07-09: Failure to establish procedural guidance for the abnormal vent path used for degassing the Unit 1 volume control tank to the environment. The inspectors reviewed the licensee's Reply to Notice of Violation dated September 4, 1998. The inspectors selectively reviewed the corrective actions including the procedure revisions and effluent release data. For the items reviewed, the inspectors found them as stated. This item is closed.

V. Management Meeting

Exit Meeting Summary

The inspectors presented the Inspection results to members of the licensee management on March 25, 1999.

A telephone exit was conducted with the licensee on April 15, 1999 for the purpose of informing the licensee that the input would be included in a separate report.

A telephone exit was conducted with the licensee on May 13, 1999 for the purpose of informing the licensee of the enforcement decision to issue the two NCVs.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

- * Barron, B., Vice President, McGuire Nuclear Station
- * Bhatnagar, A., Superintendent, Plant Operations
- * Boyle, J., Manager, Civil/Electrical/Nuclear Systems Engineering
- *%Byrum, W., Manager, Radiation Protection
- *#Cash, M., Manager, Regulatory Compliance
- * Dolan, B., Manager, Safety Assurance
- * Evans, W., Security Manager
- * Geddie, E., Manager, McGuire Nuclear Station
- * Peele, J., Manager, Engineering
- * Loucks, L., Chemistry Manager
- * Thomas, K., Superintendent, Work Control
- * Travis, B., Manager, Mechanical Systems Engineering

- * Attended March 25, 1999 exit
- # Attended April 15, 1999 telephone exit
- % Attended May 13, 1999 telephone exit

NRC

- * Resident attended the March 25, 1999 exit meeting.
- # Maintenance Branch Chief participated in the telephone exit on May 13, 1999

INSPECTIONS PROCEDURES USED

IP 83750: Occupational Radiation Exposure

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

- | | | |
|-----------------|-----|---|
| 50-370/99-10-01 | NCV | Failure to properly post and control access to a Very High Radiation Area (Section R1.1) |
| 50-370/99-10-02 | NCV | Failure to implement adequate controls, including having adequate process controls, for the sump room when the area was a Very High Radiation Area (Section R1.1) |

Closed

- | | | |
|---------------------|-----|---|
| 50-369,370/97-04-05 | VIO | Failure to establish procedural guidance for the abnormal vent path used for degassing the Unit 1 volume control tank to the environment (Section R8.1) |
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|-----------------|---|
| 50-370/99-10-01 | NCV Failure to properly post and control access to a Very High Radiation Area (Section R1.1) |
| 50-370/99-10-02 | NCV Failure to implement adequate controls, including having adequate process controls, for the sump room when the area was a Very High Radiation Area (Section R1.1) |