



UNITED STATES
NUCLEAR REGULATORY COMMISSION

REGION II
101 MARIETTA STREET, N.W., SUITE 2900
ATLANTA, GEORGIA 30323-0199

Report Nos. 50-369/95-23, 50-370/95-23

Licensee: Duke Power Company
442 South Church Street
Charlotte, NC 28424

Docket Nos.: 50-369 and 50-370

License Nos.: NPF-9 and NPF-17

Facility Name: William B. McGuire Nuclear Station Units 1 and 2

Inspection Conducted: September 25-29, 1995

Inspector: *Richard S. Baldwin*
Richard S. Baldwin

10/27/95
Date Signed

Accompanying personnel: Jonathan H. Bartley

Approved by: *Thomas A. Peebles*
Thomas A. Peebles, Chief
Operator Licensing and Human
Performance Branch
Division of Reactor Safety

10/27/95
Date Signed

SUMMARY

Scope:

This routine, announced inspection was conducted in the area of the licensed operator requalification program during the period of September 25-28, 1995. The purpose of the inspection was to (1) verify that the licensee's requalification program for reactor operators and senior reactor operators ensures safe power plant operation by evaluating how well the individual operators and crews had mastered training objectives; and (2) assess the licensee's effectiveness in ensuring that the individuals who are licensed to operate the facility, satisfy the conditions of their licenses as specified in 10 CFR 55.53.

Results:

The inspector concluded that, in the areas inspected, the licensee adequately conducted requalification activities.

The inspectors identified a weakness concerning the predictability of the active simulator examination bank (paragraph 2.b).

The inspectors identified a weakness in evaluator performance in the use of follow-up questions for active simulator examinations and job performance measures (paragraph 2.c).

The inspectors identified one strength in the area of Operations Management's participation during annual requalification evaluations (paragraph 2.c).

The inspectors identified a weakness in the area of operator performance in the use of the BOP light panel for safety system lineups and the use of AP/1/A/5500/01, "Steam Leak" (paragraphs 2.d.(1) and 2.d.(2)).

The inspectors identified a violation, with two examples, for failure to implement adequate corrective actions for prior violations (paragraph 2.e).

The inspectors identified a deviation, with one example, for failure to follow corrective actions for a prior violation (paragraph 2.e.(3))

The inspectors identified a violation, with two examples, for failing to adequately maintain PT/1/A/4450/04A, "Hydrogen Recombiners 1A and 1B Operability Test" (paragraph 3.b).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *J. Alexander, Medical Department Supervisor
- *L. Baker, Nurse, RN/Certified Occupational Health Nurse
- *A. Batts, System Engineer
- *D. Baxter, Support Operations Manager
- *R. Cross, Compliance Specialist
- *R. Deese, Safety Review Group
- *B. Dolan, Safety Assurance Manager
- *E. Geddie, Station Manager
- *P. Herran, Engineering Manager
- S. Helms, Nuclear Station Training Supervisor
- *J. Iddings, Shift Superintendent
- *S. Jolley, Manager of Safety and Health Services
- *R. Jones, Superintendent of Operations
- *A. Lindsey, Operations Training Manager
- *T. McMeekin, Site Vice President
- *J. Snyder, Regulatory Compliance Manager
- *J. Washam, Technical Specialist II Regulatory Compliance
- *R. White, Training Manager

Other licensee employees contacted included instructors, engineers, technicians, operators, and office personnel.

NRC Personnel

- *G. Maxwell, Senior Resident Inspector
- *M. Sykes, Resident Inspector

*Attended exit interview

Acronyms and initialisms used in this report are listed in the last paragraph.

2. Licensed Operator Requalification Program Evaluation (71001)

a. Summary

The NRC conducted a routine, announced inspection of the McGuire Nuclear Station licensed operator requalification program during the period of September 25-29, 1995. The purpose of the inspection was to (1) verify that the licensee's requalification program for ROs and SROs ensures safe power plant operation by evaluating how well the individual operators and crews had mastered training objectives; and (2) assess the licensee's effectiveness in ensuring that individuals who are licensed to operate the facility satisfy the conditions of their licenses as specified in 10 CFR 55.53. Based on a review of records and observation of examinations, those activities appeared to be satisfactorily conducted.

The NRC inspection team identified three weaknesses and one strength. The weaknesses involved (1) ability of the licensee's training department to formulate follow-up questions during performance of ASEs as well as during JPMs; (2) operator performance deficiencies in the use of the BOP light panel during safety system verification and realignment during system failure and the use of AP/1/A/5500/01, "Steam Leak," during a MSL break scenario; and (3) predictability of ASEs. The inspectors identified strong operations involvement in examination development and administration as a program strength.

b. Examination Development

The inspectors reviewed the training department's method for examination development. The inspectors noted that this program incorporated the use of dedicated operations personnel for review and validation of examinations. This practice promoted a good working relationship between the training and operations departments. This was viewed as a good practice.

The inspectors reviewed the licensee's ASE bank using the guidance of Inspection Procedure 71001, Appendix A. The inspectors found that the licensee did not vary the ASE initial conditions enough to preclude operators from anticipating some of the malfunctions. The licensee's ASE bank, which was available to the operators, consisted of 30 scenarios. Only 9 of these 30 scenarios contained equipment out of service in the initial conditions. As an example, Emergency Diesel Generator 1A was out of service for ASE-1 and ASE-28. Both of these scenarios progressed to a loss of all AC transient. Another example was ASE-19 which was the only scenario to have high reactor coolant system activity as an initial condition. ASE-19 progressed to a SG tube rupture with a MSL break outside containment on the ruptured SG. Although abnormal conditions in the initial conditions are desirable, efforts need to be made to ensure they do not render the scenario predictable. The predictability of the ASE bank was considered a weakness.

No violations or deviations were identified.

c. Examination Administration

The inspectors observed the training department evaluators and licensed operators during ASEs to determine if the scenarios were administered in accordance with procedural guidelines. Simulator crews consisted of five licensed operators; two ROs and three SROs. Each of the ROs was the reactor operator or the balance of plant operator, the three SROs were either the Shift Technical Advisor, the Control Room SRO, or the Operations Shift Manager. The inspectors observed three crews perform two scenarios each and a fourth crew perform one scenario.

The inspectors observed that the facility evaluators carefully

observed and recorded crew performance and individual discrepancies. Three training department evaluators and one operations department evaluator observed and conducted the required crew and individual evaluations per OTP 6-5, "Licensed Requalification Program." After the evaluators observed a crew perform a scenario, the evaluators discussed the strengths and weaknesses associated with individual and crew performance. The evaluators identified weaknesses but did not use follow-up questions during the active scenarios. During post scenario discussion, the evaluators would make assumptions as to why an operator took an inappropriate action. This practice of not asking the specific operator why he took an action, did not allow full evaluation of the individual being examined. The inspectors observed that the facility evaluators would carefully document individual performance during JPM evaluations; however, the evaluators did not regularly use follow-up questions to analyze areas of performance not expected. This practice did not allow determination of the root cause of an individual's or crew's weakness. The inspectors identified the evaluators' performance in the use of follow-up questions during the ASEs and JPMs as a weakness.

The inspectors noted an excellent and cooperative relationship between Operations, Operations Management, and the Training Department during observation of the annual operating examinations. The inspectors noted that Operations department assigns an operator as part of the examination development and evaluation team. This individual was responsible for maintaining Operations expectations and standards during the development and evaluation of crews and individuals. Additionally, the inspectors noted that Operations Management was present during all the active simulator scenarios. This presence demonstrated to the crews, the importance of the annual examinations and the role that Operations Management plays in their performance. The inspectors evaluated this participation of Operations and Operations Management as a strength.

No violations or deviations were identified.

d. Operator Performance

- (1) The inspectors observed RO response to a failure of automatic safety injection (SI) actuation. During the recovery from the failure, the ROs were observed using the BOP light panel. The inspectors noted that ROs were confused concerning the meaning of the group lights and what they represented for safety system lineups. The inspectors noted that recovery from the SI failure was slow. The inspectors identified this poor performance in the use of the BOP light panel as a weakness.
- (2) The inspectors observed all four crews respond to a MSL leak during scenario OP-MC-ASE-09 using the guidance of AP/1/A/5500/01, "Steam Leak." The AP required, if the steam leak was greater than 10 percent and could not be isolated the trip

the turbine. The AP required a trip of the reactor, followed by closing the MSIVs using individual valve pushbuttons, then subsequently transition to E-0, "Reactor Trip or Safety Injection." The inspectors and licensee evaluators observed that two of the four crews did not close the MSIVs using the individual pushbuttons. Instead, the two crews tripped the reactor, transitioned to E-0, and depended on the SI signal to close the MSIVs which in this scenario did not work. This resulted in an excessive cooldown occurring while the MSIVs remained open with the reactor tripped and a large steam leak in progress. The inspectors identified this poor performance in implementing AP/1/A/5500/01 as a weakness.

- (3) (CLOSED) IFI 50-369,370/93-300-01: Failure to incorporate the use of the plant paging system into simulator training exercises. During performance of simulator examinations vital information was not relayed to plant personnel via the plant paging system during key phases of emergencies. During this inspection, inspectors observed four crews to determine the extent of use of the plant paging system during annual requalification examinations. The inspectors determined that the corrective actions properly focused the operators in the use of the paging system during the performance of these examinations. Based on the satisfactory implementation of the corrective actions and review of these actions, this item is closed.

No violations or deviations were identified.

e. Medical Records

The inspectors reviewed the licensee's program for ensuring the medical fitness for its operators. The inspectors identified management oversight problems in the area of compliance with 10 CFR 55.25 requirements and inadequate corrective actions for conditions adverse to quality in accordance with 10 CFR 50 Appendix B, Criterion XVI. The inspectors identified a Violation with two examples concerning inadequate corrective actions relating to VIOs 93-300-03 and 94-17-01. Additionally, the inspectors identified a deviation in the area of adhering to committed corrective action relating to VIO 94-17-01.

- (1) (CLOSED) VIO 50-369, 370/93-300-03: Failure to report the medical status of certain licensed individuals.
(OPEN) VIO 50-369, 370/95-23-01: Inadequate corrective action for VIOs 93-300-03 and 94-17-01.

VIO 93-300-03 concerned the failure of the licensee to report changes in medical status within 30 days for operators that no longer met the minimum standards required by 10 CFR 55.33(a)(1) as measured by the standards of ANSI/ANS-4.3-1983. The inspectors reviewed records and corrective actions and determined

that the licensee's corrective action was not adequate. The inspectors found, on September 28, 1995, that the facility licensee again failed to report the change of medical status of an operator within 30 days as required by 10 CFR 55.25. On July 19, 1995, the facility licensee's physician made the determination that an operator's eyesight no longer met the minimum standards required by 10 CFR 55.33(a)(1). The NRC was not notified of this change in medical status until September 15, 1995. This failure to take adequate corrective action is considered an example of VIO 50-369, 370/95-23-01. Therefore, VIO 93-300-03 will be closed and will be tracked as VIO 50-369, 370/95-23-01, Inadequate corrective action for VIOs 93-300-03 and 94-17-01.

- (2) On September 28, 1995 the inspectors reviewed a letter from the facility licensee to the Commission, dated April 19, 1995, concerning a change in medical status of an operator. In this letter the facility licensee reported to the Commission on June 21, 1994, that an operator's medical status changed and requested a condition placed on the license. In this letter, the facility licensee stated that an internal audit was conducted on the operator's medical record and determined that the condition existed as early as April 10, 1991. The inspectors reviewed the corrective actions outlined in the licensee's response to VIO 94-17-01. The inspectors found that the licensee's corrective action did not fully correct the issue identified in the violation. This failure to promptly identify and correct this condition is another example of VIO 50-369, 370/95-23-01, "Inadequate corrective action for VIOs 93-300-03 and 94-17-01."
- (3) (CLOSED) VIO 50-369, 370/94-17-01: Failure to notify NRC within 30 days of a change in medical status of an operator.
- (OPEN) DEV 50-369, 370/95-23-02: Failure to meet Licensee corrective actions described in reply to VIO and 94-17-01.

VIO 94-17-01 concerned the failure of the medical staff to recognize a change in medical condition requiring a license condition and, therefore, did not report this to the NRC within the 30-day requirement, as is described in 10 CFR 55.25. The inspectors reviewed operator medical record evaluations performed since the last inspection and the licensee's corrective actions for VIO 94-17-01. The facility licensee described corrective actions to correct this deficiency in the response to the NOV dated December 30, 1994. In the response, the licensee stated that "Medical facility supervision reviewed the incident with all nursing personnel and implemented a double verification for operator medical exams, requiring a second nurse to review the examination results." On September 28, 1995 the inspectors reviewed recent medical records to determine if the corrective

action was being followed. The inspectors found four examples where the facility licensee did not use a second nurse to review the examinations. Although the four examples did not result in a violation of 10 CFR 55.25, this failure to follow corrective actions identified to the NRC indicates a deficiency with the corrective action process. This is an example of DEV 50-369, 370/95-23-02. Therefore, VIO 94-17-01 will be closed and this issue will be tracked as DEV 50-369, 370/95-23-02, Failure to meet Licensee corrective actions described in reply to VIO 94-17-01."

The inspectors identified a violation with two examples in the area of inadequate corrective action and a deviation in the area of not following corrective action described in the reply to a notice of violation. This violation indicates management oversight problems in the area of compliance with 10 CFR 55.25 requirements and following committed corrective actions described to the NRC.

3. Plant Operations (71707)

a. Reactor Trip Response

The inspectors responded to the Unit 1 Main Control Room on September 27, 1995, following a reactor trip announcement. The inspectors observed the conduct of the licensee staff while implementing the EOPs. The inspectors determined conduct in the control room was orderly and disciplined. The Control Room SRO promptly executed E-0, "Reactor Trip or Safety Injection," and transitioned to ES-0.1, "Reactor Trip Response," six minutes after the trip. The inspectors noted that the communications between the SRO and ROs were generally good. However, occasionally the Control Room SRO did not direct his communications to a specific operator as required by OMP 3-1, "Operations Communications Standards," Revision 2, paragraph 7.4. This caused both ROs to respond to the SROs direction and diverted their attention from actions in progress. This resulted in a slight delay in completing actions. Refer to the Resident Inspector Report No. 50-369, 370/95-24 for further details on the trip.

b. Hydrogen Recombiner Operability Test

Technical Specification 3.6.4.2 requires that two independent Containment Hydrogen Recombiner Systems shall be operable. Technical Specification 4.6.4.2.a required a functional test at least once per six months to determine operability. The TS 4.6.4.2.a surveillance requirement was accomplished using PT/1/A/4450/04A, "Hydrogen Recombiners 1A and 1B Operability Test," Revision 8. H2 Recombiners are an accident mitigation system designed to protect containment integrity after a Loss of Coolant Accident. Emergency Procedure EP/1/A/5000/G-1, Enclosure 4, gives directions for energizing the H2 Recombiners and verifying operation by checking H2 Recombiner and Reference Junction Temperatures at the "Hydrogen Recomb Heater Temp

Monitor Panel."

The inspectors noted on Wednesday, September 27, 1995, that the Unit 1 "Hydrogen Recomb Heater Temp Monitor Panel" indicated erroneous numbers and the Train A Reference Junction temperature was outside the required temperature band. This was significant because the EOPs require the operator to verify reference junction temperatures at 160 ± 1 °F and to adjust the H2 Recombiner power to maintain temperature 1225 to 1400 °F. The erroneous indications were due to individual segments of the digital indicators being out. This resulted in nonsense indications such as "J" which could be 3, 8 or 9, or "1" which could be 3, 7, 8 or 9. Unit 1, Train A Reference Junction temperature was cycling between 132 and 148 °F which was outside the allowable band. Train B Reference Junction temperature indicated 59.3 °F because both segments of the "1" in the hundreds digit were burned out. An error in Reference Junction temperature has a direct effect on H2 Recombiner temperature. If the Reference Junction temperature is 20 °F below setpoint (160 °F), then the H2 Recombiner temperature will indicate approximately 20 °F below the actual temperature. The licensee had previously identified the failed indications but not the discrepancy with the Train A Reference Junction temperature. The failed indications were documented in one work order and two work requests. Work Order #95051341, "Investigate/Repair H2 Temp Indication on 1VXPI9000," was initiated on July 2, 1995, scheduled to be worked on September 27, 1995, but was delayed due to the Unit 1 trip on that date. Work Request #95040215, "1VXPI9240, Repair temp indicators (4)," and 95040218, "2VXPI9240, Repair temp indicators (4)," were initiated on September 20, 1995. The licensee had not performed any engineering or operability evaluations for the H2 Recombiners based on the failed indications as of September 29, 1995.

The inspectors determined the licensee performed PT/1/A/4450/04A on September 13, 1995 with no discrepancies noted. Acceptance criteria 11.1 of PT/1/A/4450/04A required that "All recombinder instrumentation and controls function properly, as described in the procedure." The inspectors interviewed licensee personnel responsible for the test and determined that the technician identified a problem with the indications, reported them to the supervisor and discussed processing a work request. The technician did not record the malfunctioning indications and documented that acceptance criteria 11.1 was satisfied. In follow-up telephone conversations, licensee representatives stated that they felt acceptance criteria 11.1 was met because the procedure required reading 700 °F and not the full range of numerals. The inspectors determined that the acceptance criteria did not adequately specify which "instrumentation and controls" needed to function properly to satisfy the surveillance. The inspectors reviewed the requirements of TS 4.6.4.2.a and determined that the TS was satisfied by acceptance criteria 11.2 and 11.3. This failure to adequately specify instrumentation requirements in acceptance criteria 11.1 is an example of VIO 50-369, 370/95-23-02.

The inspectors reviewed PT/1/A/4450/04A and determined it did not contain adequate instructions to ensure the requirements of TS 4.6.4.2.a were met. The TS and PT/1/A/4450/04A required the operator to take actions based on reaching a H2 Recombiner temperature of 700 °F and to "NOT allow the heater temperature, as determined by any one thermocouple, to exceed 1400 °F." The inspectors reviewed PT/1/A/4450/04A and found that it did not require verification that Reference Junction temperature was 160 ± 1 °F. As discussed previously, the failure of the Reference Junction temperature directly affects the indicated H2 Recombiner temperature. Failure to verify Reference Junction temperature could result in the licensee basing H2 Recombiner operability determinations on inaccurate indications. This failure to provide adequate procedural guidance is another example of VIO 50-369, 370/95-23-03.

The inspectors concluded that although the H2 Recombiners met the TS operability requirements, the inadequate operability test and the failure to perform operability evaluations until prompted by the NRC indicate a potential programmatic problem.

4. Action on Previous Inspection Findings (92901)

- a. (CLOSED) VIO 50-369,370/93-300-02: "Failure to adhere to the requirements of 10 CFR 50," Appendix B, regarding the use of procedures. During performance of simulator scenarios, the candidates used a document entitled "Guidelines for Inoperability." This document was not a controlled document and was also being used in the control room. The inspectors determined that the procedure in question was removed from the control room and was no longer accessible to operators. The inspectors also determined that the licensee performed a complete inventory of control room reference documents. Based on the satisfactory implementation of the corrective actions and review of these actions, this item is closed.
- b. (CLOSED) VIO 50-369,370/94-17-02: "Failure of licensed operators to perform a complete plant tour when reactivating a license." This item concerned the failure of the licensee to ensure that the individuals who return to active status, perform the necessary plant tours as required by 10 CFR 55.53(f). The root cause of this problem was identified as an inadequate procedure. OMP-12-2, "Maintenance of an NRC License," did not adequately address the requirement for licensed operators to perform a complete plant tour prior to returning to active status. The inspector reviewed the revised procedure and found that it contained specific guidance on the requirements for conducting a plant tour. A checklist was included in the procedure which specified which areas of the plant must be toured prior to reactivation of a license. Additionally, the inspector reviewed the reactivation paperwork for two operators and found these to have met the requirements of OMP-12-2. Based on the satisfactory implementation of the corrective actions and review of these actions, this item is closed.

5. Exit Meeting

The inspection scope and findings identified below were summarized on September 29, 1995, with those persons listed in paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection findings in the Summary and listed below. The licensee did not identify as proprietary any of the material provided to or reviewed by the inspectors during this inspection.

One unresolved item was identified which concerned the Unit 1 H2 Recombiners. The licensee was informed by telephone on October 10, 1995, that in lieu of the unresolved item, a violation had been documented since it was determined that the H2 Recombiners were operable and the deficiencies were in the operability test procedure. Refer to paragraph 3.b.

Dissenting comments were not received from the licensee.

The following items were discussed in detail:

<u>Type</u>	<u>Item Number</u>	<u>Status</u>	<u>Description</u>
IFI	50-369,370/93-300-01	Closed	Failure to incorporate the use of the plant paging system into simulator training exercises (paragraph 2.d).
VIO	50-369,370/93-300-02	Closed	Failure to adhere to the requirements of 10 CFR 50, Appendix B, regarding the use of procedures (paragraph 4.a).
VIO	50-369,370/93-300-03	Closed	Failure to report the medical status of certain licensed individuals. The inadequate corrective action for this item will be tracked as VIO 50-369,370/95-23-01 (paragraph 2.e.(1)).
VIO	50-369,370/94-17-01	Closed	Failure to notify the NRC within 30 days of a change in medical status of an operator. The inadequate corrective action for this item will be tracked as VIO 50-369,370/95-23-01 (paragraph 2.e.(2)).
VIO	50-369,370/94-17-02	Closed	Failure of licensed operators to perform a complete plant tour when reactivating a license (paragraph 4.b).

VIO 50-369,370/94-23-01	Open	Failure to take adequate corrective action, 3 examples (paragraphs 2.e.(1), and 2.e.(2)).
DEV 50-369,370/93-23-02	Open	Failure to meet Licensee corrective actions described in reply to VIO 94-17-01 (paragraph 2.e.(3)).
VIO 50-369,370/93-23-03	Open	Failure to adequately maintain PT/1/A/4450/04A, "Hydrogen Recombiner 1A and 1B Operability Test," (paragraph 3.b).

6. List of Acronyms and Initialisms

ASE	Active Simulator Examination
BOP	Balance of Plant
CFR	Code of Federal Regulation
EOP	Emergency Operating Procedure
H2	Hydrogen
IFI	Inspector Follow-up Item
JPM	Job Performance Measure
MSIV	Main Steam Isolation Valve
MSL	Main Steamline
OTP	Operations Training Procedure
NOV	Notice of Violation
NRC	Nuclear Regulatory Commission
RO	Reactor Operator
SG	Steam Generator
SI	Safety Injection
SRO	Senior Reactor Operator
TS	Technical Specification
VIO	Violation

November 6, 1995

Anthony J. Thompson, Esquire
Shaw, Pittman, Potts & Trowbridge
2300 N Street, NW
Washington, DC 22037-1128

Subject: Region I Reorganization

Dear Mr. Thompson:

On October 1, 1995 Region I reorganized to develop a more efficient structure and to reduce the layers of management in the office. As a result of that reorganization, Ronald R. Bellamy, Ph.D. has been assigned as Chief of the newly formed Decommissioning and Laboratory Branch. He will have management responsibility for Heritage Minerals, Inc. Marie Miller will continue as project manager. You may contact Dr. Bellamy at (610) 337-5200 and the project manager at (610) 337- 5205.

Your cooperation with me during my time as Chief of the Site Decommissioning Section is appreciated. I will assure that Dr. Bellamy is fully informed regarding the status of your project as I assume my new duties as Chief of the Nuclear Materials Safety Branch (R&D, Academic).

Sincerely,

Original Signed By:
John D. Kinneman

John D. Kinneman, Chief
Nuclear Materials Safety Branch 2

John Lord
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A.J. Thompson

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