



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

Report Nos. 50-369/92-18 and 50-370/92-18

Licensee: Duke Power Company
12700 Hagers Ferry Road
Huntersville, NC 28078-8985

Facility Name: McGuire Nuclear Station 1 and 2

Docket Nos. 50-369 and 50-370 License Nos. NPF-9 and NPF-17

Inspection Conducted: June 21, 1992 - July 18, 1992

Inspector: W. A. Miller, Jr. Date: 8-4-92
For P. K. Van Doorn

Inspector: W. A. Miller, Jr. Date: 8-4-92
For T. A. Cooper

Approved by: G. A. Belisle Date: 8/5/92
G. A. Belisle, Section Chief
Division of Reactor Projects

SUMMARY

Scope: This routine, resident inspection was conducted in the areas of plant operations, surveillance testing, maintenance observations, Licensee Event Report followup, evaluation of licensee self-assessment capability, design changes and modifications, and system engineering programs.

Results: In the areas inspected, one non-cited violation with two examples involving the use of informal procedures to work on safety-related equipment was identified (paragraphs 2.d and 4.b).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

D. Baxter	Support Operations Manager
A. Beaver	Operations Manager
J. Boyle	Work Control Superintendent
D. Bumgardner	Unit 1 Operations Manager
*B. Caldwell	Training Manager
T. Curtis	System Engineering Manager
*J. Foster	Station Health Physicist
F. Fowler	Human Resources Manager
G. Gilbert	Safety Assurance Manager
P. Guill	Compliance Engineer
B. Hamilton	Superintendent of Operations
B. Hasty	Emergency Planner
*P. Herran	Engineering Manager
*L. Kunka	Compliance Engineer
*T. McConnell	Station Manager
*T. McMeekin	Site Vice President
R. Michael	Station Chemist
M. Nazar	Instrument/Electrical Section Manager
*T. Pederson	Safety Review Supervisor
N. Pope	I & E Superintendent
R. Sharpe	Regulatory Compliance Manager
J. Silver	Unit 2 Operations Manager
B. Travis	Component Engineering Manager
*R. White	Mechanical Maintenance Superintendent

Other licensee employees contacted included craftsmen, technicians, operators, mechanics, security force members, and office personnel.

NRC Resident Inspectors

P. K. VanDoorn
*T. A. Cooper

*Attended exit interview

2. Plant Operations (71707)

a. Observations

The inspection staff reviewed plant operations during the report period to verify conformance with applicable regulatory requirements. Control room logs, shift supervisors' logs, shift turnover records and equipment removal and restoration records were routinely reviewed. Interviews were conducted with plant operations, maintenance, chemistry, health physics, and performance personnel.

Activities within the control room were monitored during shifts and at shift changes. Actions and/or activities observed were conducted as prescribed in applicable station administrative directives. The complement of licensed personnel on each shift met or exceeded the minimum required by Technical Specifications (TS). The inspectors also reviewed Problem Investigation Reports (PIRs) and Operations Incident Reports (OIRs) to determine whether the licensee was appropriately documenting problems and implementing corrective actions.

Plant tours taken during the reporting period included, but were not limited to, the turbine buildings, the auxiliary building, electrical equipment rooms, cable spreading rooms, and the station yard zone inside the protected area.

During the plant tours, ongoing activities, housekeeping, fire protection, security, equipment status and radiation control practices were observed.

b. Unit 1 Operations

The unit began the inspection period at 100 percent power, operating at steady-state conditions. On June 25, 1992, the unit tripped from 100 percent power. The trip was caused by the inadvertent removal and subsequent replacement of a fuse in the solid state protection system during the performance of routine panel preventive maintenance.

The unit returned to power operation on June 26, 1992, and attained full power operation on June 27, 1992. Steady-state, 100 percent power operation has continued since that time.

c. Unit 2 Operations

The unit began the inspection period in Mode 5, Cold Shutdown. Examination and plugging of steam generator tubes was in progress.

The unit resumed power operations on June 25, 1992, and attained 100 percent, steady-state operations on June 26, 1992. The unit has remained at 100 percent power since that time.

d. Use of Informal Procedures

On July 7, 1992, the inspector noted that an instruction concerning the issuance of the keys to the annulus ventilation doors was attached to OMP 1-11, Immediate Training Sheet, in the main control room. This instruction included directions for the issuance of the keys and sign-offs to be made every time the key was issued. This instruction also included details concerning compensatory actions for open doors. This instruction was not in the format of a procedure, yet was being used to control a function that affects the operability of a safety-related system.

The inspector spoke to operations management on the subject and on July 9, 1992, the informal instruction was replaced with a revision to Station Directive (SD) 3.1.8, Reactor Building Access and Material Control.

Licensee Procedure SD 4.2.1, Handling of Station Procedures, attachment 4, is used to determine whether an activity requires a procedure. The informal instruction for the control of the key to the annulus ventilation doors was not prepared using the guidance in this attachment prior to its issuance. By the guidance in this attachment, a procedure was required for this function.

Failing to follow the procedural guidance for the issuance of this informal instruction is an example of NCV 369,370/92-18-01: Failure to Follow the Guidance for the Issuance of a Safety-Related Procedure. This NRC identified violation is not being cited because criteria specified in Section VII.B of the NRC Enforcement Policy were satisfied.

e. Drill Observation

The inspectors had previously highlighted a weakness in implementing the new organization into the emergency plan (see NRC Inspection Report No. 369,370/92-15). The weakness involved poor teamwork in developing accident mitigation strategies. The inspector witnessed a drill on July 14, 1992, to followup on this concern. The licensee demonstrated good teamwork and aggressive broad based mitigation efforts. In particular, the engineering group participation was significantly improved. The licensee conducted a thorough critique which identified areas for improvement. The licensee plans to conduct one more drill before the new organization is fully implemented in the emergency plan.

One example of a non-cited violation was identified in the area of the use of informal procedures.

3. Surveillance Testing (61726)

a. Observed

Selected surveillance tests were analyzed and/or witnessed by the resident inspection staff to ascertain procedural and performance adequacy and conformance with the applicable TS.

Selected tests were witnessed to ascertain that current written approved procedures were available and in use, that test equipment in use was calibrated, that test prerequisites were met, that system restoration was completed and acceptance criteria were met.

The selected test listed below was reviewed or witnessed in detail:

<u>PROCEDURE</u>	<u>EQUIPMENT/TEST</u>
PT/2/A/4403/07	Unit 2 Nuclear Service Water Flow Balance

4. Maintenance Observations (62703)

a. Observation

Routine maintenance activities were reviewed and/or witnessed by the resident inspection staff to ascertain procedural and performance adequacy and conformance with the applicable TS.

The selected activities witnessed were examined to ascertain that, where applicable, current written approved procedures were available and in use, that prerequisites were met, that equipment restoration was completed and maintenance results were adequate.

The selected maintenance activities listed below were reviewed or witnessed in detail:

<u>WORK REQUEST/WORK ORDER</u>	<u>ACTIVITY</u>
06598E PM	Perform Preventative Maintenance on Component Cooling Water Pump and Motor 1B2
92048795 - 03	Repair 1KC0014 Check Valve - Stuck Open

b. Use of Informal Procedures

On July 7, 1992, while observing maintenance personnel perform a pump coupling alignment on the 1B2 component cooling (KC) pump, the inspector noted that the referenced corrective maintenance procedure did not contain a data sheet that could be used with the laser Optalign alignment tool. This was documented in a procedure discrepancy form, dating from January 1992.

The work package contained an informal instruction for the use of the Optalign tool. Included in this instruction was a data sheet for recording alignment readings and for performing calculations necessary to realign the pump coupling. This instruction was formatted as a procedure, but had not been reviewed and approved.

Discussions with maintenance personnel disclosed that the instruction had originally been written as a procedure. Later, the licensee decided to use it as a tool reference instead.

In the instruction was a note, stating that the procedure was to be used as a guide and if a corrective maintenance procedure existed for the equipment, it's data sheets were to be used for the alignment. However, there was nothing to prevent using the data sheets attached to the instruction if the corrective maintenance procedure did not exist or if the procedure data sheets were not adequate for use with the Optalign equipment.

Licensee procedure SD 4.2.1, Handling of Station Procedures, attachment 4, is used to determine whether a function requires a procedure. The use of the Optalign equipment falls under the skill of the craft and training programs. However, the licensee generated tool reference included data sheets that were being

used to calculate alignments. These alignments impact the operability of safety related equipment. Consequently, the tool reference is functioning as a procedure, and must have appropriate review and approvals. The inspector noted that the task being performed at the time of the observation did not require the completion of any alignment calculations, as the pump coupling was in alignment.

By using this informal guide as a procedure on safety-related equipment, the guidance of SD 4.2.1 was not being met. This is a second example of NCV 369,370/92-18-01: Failure to Follow the Procedure for the Issuance of a Safety-Related Procedure. This NRC identified violation is not being cited because criteria specified in Section VII.B of the NRC Enforcement Policy were satisfied.

c. Work Management System (WMS) and Maintenance Activity Planning Package (MAPP) Programs

The inspector reviewed two programs being used in the maintenance area by the licensee. WMS replaced the Work Request system on June 15, 1992. This system is being used by the licensee at all of their nuclear and non-nuclear facilities. The system is computer based and has a large number of fields which can be used to store data.

Using WMS, a search can be made for mode dependent work requirements. Previously using the WR system, this search had to be conducted manually. WMS can also be used to access the computerized material's inventory to check on availability for the required task. A five year history will be maintained on-line in order to identify repetitive tasks. A tape archive will be maintained for jobs older than five years.

This system has recently been implemented. It is more versatile than the WR system, but whether this is a benefit has yet to be determined.

The licensee is also using the MAPP program to deal with large, cumbersome tasks. MAPP is a program which can be used to extensively prestage large jobs. The MAPP includes reviewing aspects of work safety, work scope, schedule, budget, work force, facilities, materials and equipment, radiation protection, organization, success criteria, and work requests. This program has been used successfully for major jobs on the turbine, steam generator, and reactor vessel head. It is also planned to be used on Reactor Coolant

Pump maintenance during the upcoming outage.

The MAPP program is informal, with no procedural guidance or requirements. The supervisor charged with the task essentially decides how the program will be implemented. Because of the time intensive nature of the planning process, the MAPP system may not be viable on emergency projects.

One example of a non-cited violation was identified in the area of the use of informal procedures.

5. Licensee Event Report (LER) Followup (90712,92700)

- a. The below listed LER was reviewed to determine if the information provided met NRC requirements. The determination included: adequacy of description, verification of compliance with Technical Specifications and regulatory requirements, corrective action taken, existence of potential generic problems, reporting requirements satisfied, and the relative safety significance of each event.

(Closed) LER 369/91-17: Control Area Ventilation System was Inoperable due to a Design Deficiency. This event involved the effect of running a non-safety-related Smoke Purge Exhaust Fan on operability of the Control Area Ventilation System (VC). The licensee committed to conduct an engineering evaluation of all possible VC interactions. The inspector conducted a followup inspection of this study through discussions with team members and review of the report issued as a result of the study.

The review appeared to be in depth and included a review of all system components, maintenance activities, procedures and testing. No other reportable problems were identified. A number of corrective actions were identified. These included documentation errors, periodic maintenance program enhancements, operations procedure enhancements, one section of piping seismically upgraded and one equipment change. The equipment change involves changeout of non-safety-related solenoids on outside air fan suction dampers to safety-related. The licensee concluded that this was a valuable review and intends to conduct a similar review for the Annulus Ventilation System. The licensee also intends to improve the station expert involvement in design basis reviews.

The inspector questioned whether the lessons learned relative to weaknesses in operations procedures were to be incorporated into the procedure development process since this was not a commitment in the report. The operations representative indicated this would be accomplished, however, nothing had been formalized to date. The representative indicated that the NRC would be informed of the specifics of this corrective action.

In summary, the review was thorough and resulted in valuable equipment, documentation and procedural enhancements.

No violations or deviations were identified.

6. Evaluation of Licensee Self-Assessment Capability (40500)

The licensee implemented a lower tier corrective action program in each of the site groups in late 1991. This was in response to concerns expressed by NRC and licensee self-assessment processes that some problems had not been documented and evaluated. A subsequent licensee evaluation identified weaknesses in root cause evaluations and failure to prevent recurring problems. In response, the licensee is developing a new corrective action program and conducting root cause analysis training. The inspector discussed the new program with the Safety Assurance Manager, reviewed a proposed station directive relative to the new program, reviewed the root cause training course and discussed the status of root cause training with the licensee.

The licensee has titled the new computerized program the Problem Investigation Process (PIP). This program will eventually incorporate all the lower tier programs and the present upper tier PIR program. This is planned to be completed by the end of calendar year 1992. In addition, detailed computer trending capabilities are planned for 1993. The licensee plans to backload data from all past PIRs into the computer data base. The program will provide detailed guidance for sorting upper tier and lower tier events with upper tier getting a more in depth root cause analysis. Lower tier events will receive an "apparent root cause" evaluation. Root cause guidelines will be included. The new program will also incorporate the Failed Surveillance Analysis program and the maintenance group's root cause procedure. Both tiers will allow for immediate and preventive corrective actions. This program cannot be fully judged since it is yet to be implemented. However, the new program appears to have the potential for more consistent and improved evaluations and improved trending analysis.

The root cause training program appears in depth. It includes training in techniques for task analysis, change analysis, barrier analysis, event and causal factor analysis, understanding human behavior and performance, root cause analysis documentation and interviewing. The training includes actual event analysis. To date, 190 on-site personnel have been trained.

No violation or deviations were identified.

7. Design Changes and Modifications (37700)

The licensee issued a new station modification program on July 2, 1992 which was required due to the recent reorganization. Corporate design engineering has transferred to the site and the old Project Services group which processed modifications was incorporated into the on-site engineering group. All phases of the program have changed including Minor Modifications (MMs), Nuclear Station Modifications (NSMs) and Station Problem Reports (SPRs). The inspector discussed these changes with licensee engineering personnel and reviewed the new program. The SPR program is the initiating process which determines the need for modifications. The new SPR program will be under the control of system Engineering. The new process provides for a much more detailed evaluation of cost/benefit. Also, a multi-disciplined team will do the review. This is intended to help prevent false starts on modifications and subsequent wasted engineering effort. Alternatives will also be stressed such as procedure changes which may in effect be less complicated. The SPR process can lead to MMs or NSMs.

The MM program now includes all editorial changes unlike the previous program which handled the changes via SPRs. This in effect streamlines the editorial change process. The scope of MMs has been expanded somewhat to include some items which would previously have been NSMs. An example would be individual component changeouts such as changing a pneumatic transmitter to an electrical transmitter.

The licensee will eliminate interim drawings through the use of preimplementation packages. The licensee has also set a goal of faster turnaround in updating drawings. The new program requires operations to be notified prior to performing functional checkout. Forms have been reduced in number and complexity.

The new NSM process establishes single point responsibility for modifications from initiation to completion, unlike the previous system which had handoffs at various stages. Development of an NSM will be accomplished by a multi-disciplined team.

These programs appear to be well defined and contain adequate guidance relative to 10 CFR 50.59 evaluations. The programs also appear to be more streamlined and less vulnerable to interface problems. In addition, the programs provide for a more thorough review at key stages. Further inspection will be conducted to determine adequacy of implementation of the new program.

No violations or deviations were identified.

8. System Engineering Program (40500, 62703)

The licensee has implemented an expanded System Engineer (SE) Program as part of a recent reorganization. The inspector held discussions with licensee management and reviewed the new program manual which was issued July 6, 1992.

The program now includes all safety-related systems and most of the other systems. Expanded duties include the typical SE functions which include but are not limited to the following:

- Serve as the site reference point for system information.
- Provide technical assistance and consultation.
- Develop comprehensive technical understanding of the system, including all major supporting components and structures.
- Develop comprehensive knowledge of past and present station functions affecting the system including operations, maintenance, testing and modifications.
- Develop and maintain thorough system files.
- Develop contacts within appropriate groups to solve system problems and to integrate and optimize functions performed on the system.
- Balance system availability versus reliability.
- Monitor the condition and operation of the system.
- Perform a comprehensive initial inspection during operation to identify material condition and equipment problems per System Engineering Initial Walkdown Guide.
- Conduct periodic walkdowns/inspection(s) per System Engineering Periodic Walkdown Guide to stay aware of

system operational alignments and conditions.

- Monitor and trend important parameters, including surveillance test results and system unavailability.
- Support the modification process.
- Manage system problems and related issues.
- Administer assigned programs.

The SEs primary focus is upon operating groups such as operations and chemistry and upon system functions. The SEs have a lead role in the SPR program.

The SE Program is complimented by a Component Engineer (CE) Program. The CEs primary focus is on maintenance groups and component functions. The CEs also have a lead role in the MM and Temporary Modifications (TM) programs. However, both groups evaluate SPRs, MMs and TMs. The engineering manual requires regular interfacing between the groups.

In summary, the new SE program appears to be a major commitment to the SE concept and should be a positive contributor to optimal system operations, if properly implemented.

No violations or deviations were identified.

9. Exit Interview (30703)

The inspection scope and findings identified below were summarized on July 20, 1992, with those persons indicated in paragraph 1 above. The following items were discussed in detail:

NCV 369, 370/92-18-01: Failure to Follow the Procedure for the Issuance of a Safety-Related Procedure (Paragraphs 2.d and 4.b).

The licensee representatives present offered no dissenting comments, nor did they identify as proprietary any of the information reviewed by the inspectors during the course of their inspection.