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DUKE POWER

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Director, Office of Enforcement
U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Subject: Oconee Nuclear Station
Docket Nos. 50-269, 50-270, 50-287
Inspection Report No. 50-269/91-32
Reply to Notice of Violation

On February 3, 1992 the Nuclear Regulatory Commission (NRC) issued a Notice of Violation (NOV) and Proposed Imposition of Civil Penalties to Duke Power Company's (Duke) Oconee Nuclear Station. Duke has thoroughly reviewed the circumstances of the violations and concludes that it is not appropriate to contest the violations. Therefore, this letter forwards our reply to the NOV as required under 10 CFR 2.201. Payment of the proposed civil penalty is being issued under separate cover.

Duke considers this enforcement action to be a very serious matter. Consequently, Duke has implemented extensive corrective actions in response. As outlined in our Section 2.201 reply, Duke has directed its attention on the implementation of long term corrective actions which have been developed to ensure that similar incidents do not recur.

Although our reply discusses corrective actions for each of the cited violations, we would like to highlight some areas of concentration. Duke has taken a number of steps to enhance the performance of our Operators. The roles and responsibilities of Operators, Unit Supervisors, and Control Room Supervisors have been redefined and reinforced to reflect their primary duties and the expectations of how these duties are to be carried out. Additionally, an Operator Quality Team has been established which has led to improvements in control room workload, shift turnover, pre-job and mid-shift briefings, and the work flow interface with the control room. Some of these steps were noted in the recently completed Shutdown Risk inspection.

It is recognized by Duke that a shutdown plant requires as much attention as an operating plant. The significance and number of events that occur during shutdown activities has become a concern to the both industry and the agency. Duke shares these concerns and has taken the steps outlined in this response to ensure that the proper attention and vigilance is given to shutdown activities.

We are not pleased with our performance in these events. However, we believe that we have taken the proper steps and have highly qualified personnel that are dedicated to assuring that Oconee is operated safely, efficiently, and in accordance with regulatory requirements. We are confident that our corrective actions have begun and will continue to lead to enhanced performance in the future.

I declare under penalty of perjury that the statements set forth herein are true and correct to the best of my knowledge.

Very truly yours,

J. W. Hampton

Attachments

cc: Mr. S. D. Ebneter
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Mr. L. A. Wiens
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Mr. P. E. Harmon
NRC Senior Resident Inspector
Oconee Nuclear Station

Violation 269/91-32, Severity Level III

A. Technical Specification 6.4.1 requires that the station be operated and maintained in accordance with approved procedures.

10 CFR Part 50, Appendix B, Criterion V (Instructions, Procedures, and Drawings), and the licensee's accepted Quality Assurance Program (Duke Power Company, Topical Report, Quality Assurance Program, Duke-1-A), Section 17.2.5 (Instructions, Procedures, and Drawings), require that activities affecting quality be prescribed by procedures of a type appropriate to the circumstances and that such activities be accomplished in accordance with these procedures.

The licensee failed to develop adequate procedures and failed to adhere to established procedures, as evidenced by the following violations:

1. TT/1/A/251/11, VOTES Testing of LPI Header MOVS, step 12.1.2, references OP/1/A/1104/04, Low Pressure Injection System, for aligning the low pressure injection system in the decay removal mode.

   Contrary to the above, OP/1/A/1104/04, as referenced in TT/1/A/251/11, was inadequate in that it did not contain guidance for aligning the low pressure injection system in the decay heat removal mode. Because of this, on September 7, 1991, the low pressure injection system was aligned in the decay heat removal mode without admitting cooling water to the decay heat cooler. This resulted in an unmonitored reactor coolant system heat-up.

2. PT/1/A/600/01, Periodic Instrument Surveillance, required periodic verification for proper operation of various instruments and systems including reactor coolant system temperature at shift changes (every 12 hours).

   Contrary to the above, the PT/1/A/600/01 requirement of recording reactor coolant temperature at shift change (every 12 hours) was inadequate in that the time interval was too long to ensure that all applicable requirements were being met. Because of this inadequacy, on September 7, 1991, reactor coolant temperature increased from approximately 110 degrees F to 187 degrees F over approximately a four-hour period without being detected by the control room operators. This resulted in reactor coolant exceeding the 140 degree F maximum temperature specified in TT/1/A/251/11, VOTES Testing of LPI Header MOVS.

3. TT/1/A/251/11, VOTES Testing of LPI Header MOVS, specifies in subsection 6.3 of section 6.0, Limit and Precaution that reactor coolant temperature is not to exceed 140 degrees F during the performance of the VOTES test.

   Contrary to the above, on September 7, 1991, activities were not accomplished in accordance with this procedure in that the 140 degrees F maximum reactor coolant temperature was exceeded by 47 degrees F.

4. Operations Management Procedure (OMP) 2-1, Duties and Responsibilities of Reactor Operators, Non-Licensed Operators, and the Senior Reactor Operator in the Control Room, requires the reactor operator to provide surveillance of operations and instrumentation monitored from the control room to ensure the safe operation of the unit. During shutdown periods, the reactor operator shall ensure that continuous safe shutdown conditions exist. OMP 2-1 also requires that the control room senior reactor operator's primary concern is to ensure the safe operation of the unit from the control room.

   Contrary to the above, on September 7, 1991, the control room reactor operators did not ensure that continuous safe shutdown conditions existed in that, over a period of four hours, reactor coolant temperature increased approximately 77 degrees F when it was expected to be maintained constant at 110 degrees F. Additionally, the control room senior reactor operator's primary responsibility of ensuring the safe operation of the unit was not met in that critical safety parameters were not monitored by subordinate reactor operators.

5. OMP 1-18, Communications and EOP Implementation Standard, requires that all operations personnel are responsible for ensuring that effective communication is used during normal and abnormal plant operations. Additionally, when performing a normal evolution, that is, a process that changes the status of a system in the plant, a brief explanation of the evolution, its purpose, action to be taken, and desired outcome shall be given.

   Contrary to the above, on September 7, 1991, communications were ineffective in that, in response to the reactor coolant system heat-up, when the control room operators elected to place the A Train LPI system in operation, the operators did not notify the VOTES test personnel that the train had been placed in service. This resulted in the subsequent loss of decay heat cooling when the test personnel cycled one of the system valves closed, interrupting system flow.

Response to Violation A - 1 through 5:

1. Admission or denial of the alleged violations:

   Each violation is admitted as stated.

2. The reasons for the violations, if admitted, and if denied, the reasons why:

   The Low Pressure Injection (LPI) system operating procedure, OP/1/A/1104/04, did not provide information for realigning flow from one operating train of LPI to another when in the normal decay heat removal mode of operation or instructions relative to aligning low pressure service water (LPSW) to the decay heat coolers. The alignment had historically been considered a "skill of the operator". Considering the number of tasks involved in making the realignment and to ensure consistency, the availability of a procedure governing these tasks would have been appropriate.

   The Periodic Instrument Surveillance procedure, PT/1/A/600/01, did not adequately address monitoring of critical parameters during shutdown operations. The required surveillance of the Reactor Coolant System (RCS) temperature was scheduled at shift change (every 12 hours). Since the RCS heatup event occurred during a four-hour time frame, it has been recognized that the surveillance procedure was not as stringent as needed.

   In temporary test procedure TT/1/A/251/11, VOTES Testing of LPI Header Motor Operated Valves (MOVs), a limit and precaution was noted that the RCS temperature was not to exceed 140 degrees F during performance of the VOTES test. This procedure was originally written for performance of VOTES testing under full flow conditions, and as such this procedure was not in effect at the time of the event. Control of RCS temperature was an operator responsibility however. As discussed above, the surveillance procedure's requirement to verify the RCS temperature was once per shift change (12 hours). The cold shutdown temperature high alarm setpoint of 190 degrees F was not reached during the RCS heatup; a lower setpoint would have identified the heatup due to a lack of cooling water much sooner.

   Although two additional reactor operators had been provided to manage the outage workload at the time, the management of the total control room workload was ineffective. The Unit Supervisor and Control Room SRO failed to control or limit the reactor operators involvement in tasks other than their primary responsibilities. Management procedures were inadequate in that they failed to identify a single individual as having responsibility for monitoring core parameters.

After the RCS heatup was discovered, the control room operators did not have positive control over the valve testing that was continuing on the 1A LPI train. Station procedures did not require control room personnel to have positive control over the remote testing of MOVs in a system not removed from service.

3. The corrective steps that have been taken and the results achieved:

Immediate corrective actions:

Decay heat removal capability was re-established and Low Pressure Injection (LPI) temperature was reduced to 120 degrees F.

An additional SRO was assigned to the Control Room to monitor the safe operation of the unit for the remainder of the outage.

The Operations Superintendent and Shift Operations Manager met with each Operations shift to explain the duties of the additional SRO and expectations regarding supervisor and operator responsibilities in the control room.

Subsequent corrective actions:

Procedure changes were made to the Units 1 and 2 LPI system operating procedure, OP/1104/04, to provide guidance to the operators for changing operating LPI trains while in decay heat removal mode and for adjusting LPSW flows. In addition, AP/1700/07, Loss of Low Pressure Injection, for all three units was revised to address loss of LPSW flow to the LPI coolers as a loss of decay heat removal capability.

PT/600/1, Periodic Instrument Surveillance, was revised for all three units to require recording of reactor vessel level, pressurizer level, LPI pump suction temperature and neutron detectors count rate every 2 hours when the RCS temperature is less than 200 degrees F and every hour if the reactor coolant system is in "mid-loop" operations.

The cold shutdown temperature high alarm setpoint was changed to alarm at 125 degrees F for Units 1 and 2. In addition, the Controlling Procedure for Cold Shutdown, OP/0/A/1102/11, was revised to include operator guidance for maintenance of LPI temperature during shutdown conditions.

An Operator Quality Team was established to evaluate issues such as Command and Control, Communication Practices, Lines of Responsibility, Duties of the Operator At The Controls, Duties of the SROs, and Quality Standards. As a result of the Quality Team recommendations, the following items are now addressed in the Operations Management Procedure (OMP) 2-1:

- pre-job briefings and middle of shift briefings (regroup and discuss what is going on, especially when things change)
- improving work flow/interface with the Control Room (unit supervisor will be the primary contact for activities requiring Control Room involvement)

In addition, Operations philosophy has been broadened to specifically address:

- limiting licensed operators and corresponding work load in the control room at a given time (work load control)
- enhancing shift turnover practices (early turnover/isolated turnover)
- Operations staff roles (Quality Coordinators rather than schedule coordinators)

Operations Management Procedure (OMP) 2-1 was revised to designate an Operator at the Controls (OATC), who has primary responsibility for monitoring critical plant parameters. The duties of the OATC, the Unit Supervisor and the Control Room Supervisor were delineated as well as the proper chain of command and communication channels. This revision also more clearly described the roles of the Unit Supervisor and the Control Room Supervisor when giving directions to the Control Room Operators.

Station Directive 3.1.2, Activities Affecting Station Operation, was revised to document the administrative methods to control the testing of safety related valves. Section 7.0 describes methods for operating control room remote-operated valves for hydraulically isolated systems and for in-service systems. This provides for Operations Staff preview and requires constant communications with control room personnel while cycling valves in systems not removed from service.

A list of activities previously considered to be "skill of the operator" has been developed. This list is being evaluated to determine whether the development of procedures for these tasks is appropriate. This is considered to be an ongoing process.

These actions have resulted in improved command and control activities in the control room, as demonstrated during the Unit 3 forced outage and the Unit 2 refueling outage. In addition, improvements were noted by the NRC Shutdown Risk Inspection team during their recent inspection.

4. The corrective steps that will be taken to avoid further violations:

The Unit 3 LPI system operating procedure, OP/1104/04, will be revised to provide guidance to the operators for changing operating LPI trains while in decay heat removal mode and for adjusting LPSW flows.

The cold shutdown temperature high alarm setpoint will be changed to 125 degrees F on Unit 3.

The corrective actions listed in Section 3 for Items 2, 4 and 5 should prevent future violations.

5. The date when full compliance will be achieved:

OP/3/A/1104/04 will be revised before the Unit 3 EOC 13 refueling outage, currently scheduled for July, 1992.

The cold shutdown temperature high alarm setpoint will be changed before the Unit 3 EOC 13 refueling outage, currently scheduled for July, 1992.

The corrective actions for Items 2, 4 and 5 have been completed.

Violation 269/91-32, Severity Level III

B. 10 CFR Part 50, Appendix B, Criterion XIV (Inspection Test and Operating Status), and the licensee's accepted Quality Assurance Program (Duke Power Company, Topical Report, Quality Assurance Program, Duke-1-A), Section 17.2.14 (Inspection Test and Operating Status), require that, in order to assure that equipment status be clearly evident and to prevent inadvertent operation, nuclear safety-related structures, systems and components which are in an other than operational status be identified as such.

Contrary to the above, on September 7, 1991, equipment status was not evident for Train A of the LPI system. The system was not in an operational status (the system was being tested) and was not identified as such. The system was lost soon after being called into service for decay heat removal in response to the elevated reactor coolant system temperature. System flow was lost due to continued testing of the train when a valve was cycled shut by test personnel who were not in contact with the control room.

Response to Violation B:

1. Admission or denial of the alleged violation:

This violation is admitted as stated.

2. The reasons for the violation, if admitted, and if denied, the reasons why:

After the RCS heatup was discovered, the control room operators did not have positive control over the valve testing that was continuing on the 1A LPI train. Station procedures did not require control room personnel to have positive control over the remote testing of MOVs in a system not removed from service.

3. The corrective steps that have been taken and the results achieved:

Station Directive 3.1.2, Activities Affecting Station Operation, was revised to document the administrative methods to control the testing of safety related valves. Section 7.0 describes methods for operating control room remote-operated valves for hydraulically isolated systems and for in-service systems. This provides for Operations Staff preview and requires constant communications with control room personnel while cycling valves in systems not removed from service.

4. The corrective steps that will be taken to avoid further violations:

   The corrective actions listed in Section 3 should prevent future violations.

5. The date when full compliance will be achieved:

   The corrective actions have been completed.

Violation 269/91-32, Severity Level III

C. Technical Specification 6.4.1 requires that the station be operated and maintained in accordance with approved procedures.

10 CFR Part 50, Appendix B, Criterion V (Instructions, Procedures, and Drawings), and the licensee's accepted Quality Assurance Program (Duke Power Company, Topical Report, Quality Assurance Program, Duke-1-A), Section 17.2.5 (Instructions, Procedures, and Drawings), require that activities affecting quality be prescribed by procedures of a type appropriate to the circumstances and that such activities be accomplished in accordance with these procedures.

The licensee failed to develop adequate procedures and failed to adhere to established procedures, as evidenced by the following violations:

1. OP/1/A/1102/01, Unit Startup from Cold Shutdown to RCS Temperature and Pressure of 250 degrees F and 350 psig, step 2.5, references OP/1/A/1104/04, Low Pressure Injection System, which requires that the low pressure injection system be aligned in the "switchover mode" of operation as outlined in enclosure 3.9, LPI ES to Switchover Mode Valve Checklist, prior to exceeding 125 psig reactor coolant system pressure.

   Contrary to the above, on September 19, 1991, activities were not accomplished in accordance with this procedure in that the low pressure injection system was not aligned in the "switchover" mode prior to exceeding 125 psig reactor coolant system pressure. This resulted in the overpressurization of portions of the low pressure injection system and the loss of approximately 12,400 gallons of primary coolant from the system.

2. Operations Management Procedure (OMP) 2-1, Duties and Responsibilities of Reactor Operators, Non-Licensed Operators, and the Senior Reactor Operator in the Control Room, requires the reactor operator to provide surveillance of operations and instrumentation monitored from the control room to ensure the safe operation of the unit. During shutdown periods, the reactor operator shall ensure that continuous safe shutdown conditions exist. OMP 2-1 also requires that the control room senior reactor operator's primary concern is to ensure the safe operation of the unit from the control room.

Contrary to the above, on September 19, 1991, the control room reactor operators did not ensure that continuous safe shutdown conditions existed, and the control room senior reactor operator's primary responsibility of ensuring the safe operation of the unit was not met in that procedures were not followed and reactor system pressure was increased above 125 psig, overpressurizing the low pressure injection system and spilling 12,400 gallons of primary coolant to the auxiliary building floor. Specifically, 1) the control room SRO was distracted by the outage workload and was not fulfilling his responsibilities pertaining to monitoring overall plant operations and ensuring procedures were followed, 2) the unit supervisor was not sufficiently involved in the control room routine on the day of the event so as to have an understanding of the impact of outage work on operator performance and plant operations, 3) there was inadequate oversight of control room operations by the unit supervisor due to his lack of control room tours during the subject shift, and 4) the reactor operator commenced the reactor coolant system pressurization without first reviewing the procedure.

3. OMP 1-18, Communications and EOP Implementation Standard, requires that all operations personnel are responsible for ensuring that effective communication is used during normal and abnormal plant operations. Additionally, when performing a normal evolution, that is, a process that changes the status of a system in the plant, a brief explanation of the evolution, its purpose, action to be taken, and desired outcome shall be given.

Contrary to the above, on September 19, 1991, communications were ineffective and a brief of the evolution was not conducted in that the unit supervisor bypassed the control room SRO when communicating by telephone to the reactor operator to raise reactor coolant system pressure. Additionally, the unit supervisor made the communication without reviewing plant status and conducting a briefing with the operating staff. This resulted in the low pressure injection system not being aligned in the "switchover" mode prior to raising reactor coolant system pressure above 125 psig.

Response to Violation C - 1 through 3:

1. Admission or denial of the alleged violations:

   Each violation is admitted as stated.

2. The reasons for the violations, if admitted, and if denied, the reasons why:

   The startup procedure contains a flow chart to assist the user in maintaining the "big picture". This flow chart was not used by the Unit Supervisor, the Control Room SRO, or the reactor operators. In addition, the outage schedule showed a timeframe for the LPI system to be placed into the switchover mode, but this was also not used.

   A message was relayed through several chains of command to increase Reactor Coolant System (RCS) pressure to 300 psig. As the message was relayed, no one questioned whether the action was appropriate by procedure. The operator who energized the pressurizer heaters believed that someone else had checked the startup procedure and that he was cleared to increase pressure to 300 psig.

   As a result of the 9/7/91 event, a Control Room SRO was assigned to monitor overall plant operations, concentrating on the safety of the plant and critical safety parameters while shutdown. The control room SRO failed to maintain this "big picture" perspective when he became involved in several different outage-related jobs. Although he questioned the reactor operator at two different times as to why the RCS pressure was being increased, he did not ensure that all procedural requirements had been met.

   The Unit Supervisor failed to provide adequate oversight of control room operations in that he did not tour the control room and did not assess the level of distractions which may have impacted operator performance. Upon receiving the Operations staff clearance to increase RCS pressure to 300 psig for reactor coolant pump runs, the Unit Supervisor did not verify plant conditions/status. He should have provided supervisory guidance on the planned evolution and the procedure steps to be utilized. A proper pre-job briefing could have prevented this event.

   In addition, the Unit Supervisor made the notification to increase pressure by phone, which bypassed the Control Room SRO who was responsible for maintaining the "big picture" during the startup activities.

3. The corrective steps that have been taken and the results achieved:

Immediate corrective actions:

The RCS was depressurized by using Pressurizer Auxiliary Spray per the Controlling Procedure for Unit Shutdown.

The LPI system was determined to be operable by performing an engineering evaluation.

Subsequent corrective actions:

Supplemental training was provided to licensed operators on each shift in the procedures used for shutdown, startup, and prolonged operation at cold shutdown. This training was conducted by Operations Staff personnel with special emphasis on procedural guidance for maintaining RCS inventory and decay heat removal capability during shutdown and drained down operations.

An Operator Quality Team was established to evaluate issues such as Command and Control, Communication Practices, Lines of Responsibility, Duties of the Operator At The Controls, Duties of the SROs, and Quality Standards. As a result of the Quality Team recommendations, the following items are now addressed in the Operations Management Procedure (OMP) 2-1:

- pre-job briefings and middle of shift briefings (regroup and discuss what is going on, especially when things change)
- improving work flow/interface with the Control Room (unit supervisor will be the primary contact for activities requiring Control Room involvement)

In addition, Operations philosophy has been broadened to specifically address:

- limiting licensed operators and corresponding work load in the control room at a given time (work load control)
- enhancing shift turnover practices (early turnover/isolated turnover)
- Operations staff roles (Quality Coordinators rather than schedule coordinators)

Operations Management Procedure (OMP) 2-1 was revised to designate an Operator at the Controls (OATC), who has primary responsibility for monitoring critical plant parameters. The duties of the OATC, the Unit Supervisor and the Control Room Supervisor were delineated as well as the proper chain of command and communication channels. This revision also more clearly described the roles of the Unit Supervisor and the Control Room Supervisor when giving directions to the Control Room Operators.

The Operations Superintendent and Shift Operations Manager met with each Operations shift to explain the duties of the OATC, Unit Supervisor and the Control Room Supervisor, and to reinforce the expectations of how these duties were to be carried out.

In addition to the above, the Controlling Procedures for Unit Startup on Units 1 and 2 were revised to clearly state that the LPI system must be placed in switchover mode prior to increasing the RCS pressure above 125 psig.

4. The corrective steps that will be taken to avoid further violations:

   The corrective actions listed in Section 3 should prevent future violations.

5. The date when full compliance will be achieved:

   The corrective actions have been completed.

Violation 269/91-32, Severity Level III

D. 10 CFR Part 50, Appendix B, Criterion XVI (Corrective Action), and the licensee's accepted Quality Assurance Program (Duke Power Company, Topical Report, Quality Assurance Program, Duke-1-A), Section 17.2.16 (Corrective Action), collectively require that conditions adverse to quality be promptly identified and corrected, and that station personnel are responsible for taking appropriate corrective action whenever any deficiency in the implementation of the requirements of the (operational quality assurance) program is determined.

Contrary to the above, corrective action implementation was inadequate in that corrective actions taken by facility management in response to the September 7, 1991 reactor coolant system heat-up event were not effectively implemented to ensure that deficiencies in operator and supervisor responsibilities and watchstanding practices were corrected. Specifically, station management did not succeed in ensuring that all operations personnel understood station management's expectations with respect to the corrective action. This failure led to continued lapses in the overview of shift operations, in particular, the lack of the unit supervisor and control room senior reactor operator overview of plant status, which directly resulted in the September 19-20, 1992, overpressurization of the LPI system and subsequent spill of 12,400 gallons of primary coolant to the auxiliary building.

Response to Violation D:

1. Admission or denial of the alleged violation:

The violation is admitted as stated.

2. The reasons for the violation, if admitted, and if denied, the reasons why:

This violation occurred because the communication of management expectations regarding supervisor and operator responsibilities in the control room and the understanding of the "chain of command" was ineffective. Station management did not obtain sufficient feedback from the Operations personnel to ensure that the message had been received and understood as intended.

As a result, the control room personnel were not focused on critical safety functions during shutdown, as had been expected following the actions taken in response to the September 7, 1991 event.

3. The corrective steps that have been taken and the results achieved:

A management representative possessing an SRO license was placed on shift to provide continuous management oversight from 9/20/91 through 10/18/91. The unit startup occurred without any further incidents.

In order to provide for continuous management overview of plant operation, OMP 2-1 was revised to describe the responsibilities of the Shift Supervisor. These responsibilities include the overall safe operation of the station, ensuring that his shift operates the plant in a manner consistent with the high standards of quality expected of the Operations Group, ensuring that Operations expectations are communicated and understood by the members of his shift team, and for providing Management Overview of the way that his shift conducts business on a day to day basis.

As described previously, an Operator Quality Team was organized to address areas in Operations in which difficulties had been experienced. The establishment of this team, comprised of Non-licensed Operators, Reactor Operators and Senior Reactor Operators from each shift, increased the degree of "buy-in" by the members of the shift teams.

These actions have resulted in improved command and control activities in the control room, as demonstrated during the Unit 3 forced outage and the Unit 2 refueling outage. In addition, improvements were noted by the NRC Shutdown Risk Inspection team during their recent inspection.

4. The corrective steps that will be taken to avoid further violations:

The corrective actions listed in Item 3 should prevent future violations.

5. The date when full compliance will be achieved:

The corrective actions have been completed.