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September 25, 1997

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Mr. James Lieberman, Director
Office of Enforcement
U. S. Nuclear Regulatory Commission
One White Flint North, 11555 Rockville Pike
Rockville, MD 20852-2738

Subject: Oconee Nuclear Station
Docket Nos. 50-269, 50-270, 50-287
Reply to Notice of Violation and Proposed
Imposition of Civil Penalty

By letter dated August 27, 1997, the NRC issued a Notice of Violation and Proposed Imposition of Civil Penalty in the amount of \$330,000. The August 27, 1997, NRC letter addresses enforcement issues resulting from an April 21, 1997, unisolable Reactor Coolant System (RCS) leak on Oconee Unit 2 and a May 3, 1997, event on Oconee Unit 3 which resulted in degradation of the High Pressure Injection (HPI) System during a cooldown. A Severity Level II violation with a proposed civil penalty of \$220,000 is cited for failing to meet Technical Specification operability requirements for the Unit 3 HPI System. A Severity Level III problem with a proposed civil penalty of \$110,000 is cited for two instances of failing to establish adequate measures to identify and correct conditions adverse to quality regarding the augmented inspection program for the HPI System and past indications of HPI line thermal stratification. In addition, four Level IV violations are cited.

Duke Energy Corporation (Duke) accepts these violations. Pursuant to 10 CFR 2.201 and 10 CFR 2.205, attached is the Reply to Notice of Violation and Proposed Imposition of Civil Penalty. A check for \$330,000 is enclosed as full payment for the imposed civil penalty.

As discussed at the July 23, 1997, predecisional enforcement conference, Duke completed thorough investigations of both events and has implemented comprehensive corrective actions to address the root causes of the violations resulting from these events. In addition, Duke is committed to completing the longer-term corrective actions discussed at the July 23, 1997, meeting and documented in a Duke letter to the NRC Staff (Staff) dated July 28, 1997.

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This is the first time a Duke reactor has been cited with a Level II violation. The HPI System is a very important safety system, from both a deterministic and probabilistic perspective. The fact that a small reference leg leak in the common Letdown Storage Tank (LDST) level design resulted in operation outside of Technical Specification requirements is unacceptable to Duke management and is inconsistent with our commitment to safely operate our nuclear units.

Duke has taken several actions to address the breakdown in the HPI System augmented inspection program. Any degradation in the RCS pressure boundary is very significant to Duke, and actions have been taken to assure that this important inspection program is properly implemented, today, and in the future. Corrective actions have also been taken to assure that new data on thermal stratification is properly evaluated. As described in the attached Reply to Notice of Violation, Duke has also taken action to address the four Level IV violations addressed in the August 27, 1997, NRC letter.

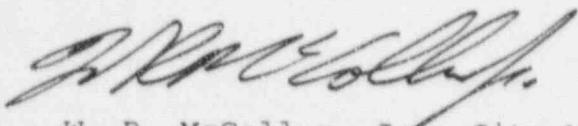
Recent Oconee performance has not met the expectations of Duke management. In addition to addressing the specific enforcement issues associated with the April 21, 1997, and May 3, 1997, events, Duke described its plans to improve Oconee performance at the July 23, 1997, predecisional enforcement conference. These plans were reviewed with Region II and NRR management again at an August 7, 1997, meeting where Duke presented its assessment of Oconee performance. Duke requested, and the Regional Administrator agreed, to hold bimonthly meetings with Region II to review performance trends at Oconee. The next scheduled meeting is November 13, 1997, at the Region II office in Atlanta.

NRC Inspection Report 50-269, -270, -287/97-10 indicated that the NRC is concerned with a number of events or problems that have recently occurred at Oconee. These include two Keowee Hydro Unit problems which resulted in an NRC Augmented Inspection Team (AIT), a Unit 2 trip due to a voltage regulator problem, and operation of Unit 1 at reduced power due to high vibration on one reactor coolant pump. Duke believes that superior performance cannot be attained and maintained without minimizing the number of events at a station. The performance improvement plans being implemented at Oconee are focused on achieving and maintaining superior performance. Oconee will continue to keep the staff apprised of progress in this area via the bimonthly performance meetings with Region II and ongoing dialogue with the resident inspectors.

The August 27, 1997, letter also clarified some of the apparent violations discussed at the July 23, 1997,

predecisional enforcement conference. At this meeting, Duke presented additional information regarding the operator response to the May 3, 1997, event, the QA classification of the LDST level instruments, previously considered modifications to the LDST level instruments, and the reporting of the May 3, 1997, event under 10 CFR 50.72. Duke agrees with the staff's evaluation of the additional information provided at the predecisional enforcement conference. Regarding the reporting requirements of 10 CFR 50.72, which are documented as a non-cited violation, Duke appreciates the additional information provided by the staff in Enclosure 2 to its August 27, 1997, letter. Duke will review this information and revise its internal procedures, as appropriate, to assure that reporting requirements are satisfied during an event.

Very Truly Yours,

A handwritten signature in dark ink, appearing to read "W. R. McCollum, Jr.", written in a cursive style.

W. R. McCollum, Jr., Site Vice President
Oconee Nuclear Site

NRC Document Control Desk
September 25, 1997
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cc: Mr. L. A. Reyes, Regional Administrator
U. S. Nuclear Regulatory Commission, Region II

Mr. D. E. LaBarge, Project Manager
Office of Nuclear Reactor Regulation

Mr. M. A. Scott
Senior Resident Inspector
Oconee Nuclear Site

Document Control Desk
Washington, DC 20555

Attachment 1
Reply to Notice of Violation
Violation A of Violations Assessed a Civil Penalty

Restatement of the Violation

Technical Specification (TS) 3.2.1, "High Pressure Injection and Chemical Addition Systems," requires that the reactor shall not be critical unless two high pressure injection (HPI) pumps per unit are operable except as specified in TS 3.3.

TS 3.3.1.a(1), "High Pressure Injection System," requires that when the reactor coolant system (RCS), with fuel in the core, is in a condition with temperature above 350 degrees Fahrenheit (°F) and reactor power less than 60 percent full power, two independent trains, each comprised of an HPI pump and a flow path capable of taking suction from the borated water storage tank and discharging into the RCS automatically upon Engineered Safeguards Protective System actuation, shall be operable. TS 3.3.1-c(1) further requires that when reactor power is greater than 60 percent full power that the remaining HPI pump shall be operable.

Contrary to the above, between at least May 1 and May 2, 1997, with fuel in the Oconee Unit 3 core and RCS temperature greater than 350°F, the licensee failed to maintain the HPI system operable, as required by TSS. Specifically, the licensee operated with the HPI system outside of the letdown storage tank (LDST) level versus pressure analyzed limitation curve which resulted in all of the HPI pumps being inoperable and unable to perform their safety-related function if called upon to operate, due to inadequate net positive suction head.

This is a Severity Level II violation.
Civil Penalty - \$220,000

Reply to the Notice of Violation

1. The reason for the violation:

Duke accepts this violation.

The past inoperability of the HPI System was due to a small leak in the reference leg of the tank level instrumentation.

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Violation A of Violations Assessed a Civil Penalty

This leak caused the tank to be partially drained. This resulted in the indicated level being 56" greater than the actual level on May 3, 1997.

In the Oconee design, LDST level and pressure must be maintained within certain limits to assure that the suction source for the HPI pumps properly swaps from the LDST to the BWST during an accident. If level or pressure is not within the correct operating region, it is possible for the LDST hydrogen cover gas to be drawn into the suction of the HPI pumps leading to gas binding of the pumps. The level error of 56" could have led to gas binding of the pumps during a postulated accident and therefore the system was considered inoperable for some period of time since the last successful instrument calibration on February 22, 1997.

The root cause for the violation is a combination of a design weakness of a common reference leg for the LDST level instruments and a leaking instrument fitting due to inadequate work practices. A contributing cause was the failure to adequately apply available operating experience.

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

- a) Detailed Failure Investigation Process (FIP) and Significant Event Investigation Team (SEIT) investigations were completed. The FIP Team's focus was to determine the root cause of the reference leg fitting leak and any significant contributing factors associated with system design and operation. The SEIT evaluated the conditions and practices that allowed the two HPI Pumps to become damaged.
- b) LDST instrument modifications on all three units were completed. Separate reference legs were added for each LDST level transmitter. A redundant pressure transmitter was also added.
- c) The Unit 3 HPI System was repaired, inspected, flushed, and tested.
- d) Per the Unit 1 JCO, the Unit 1 LDST level reference legs were monitored until Unit 1 was shut down on June 13, 1997.

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Violation A of Violations Assessed a Civil Penalty

e) The applicability of this event to other tank level instruments was evaluated. No other problems were identified.

f) The following work practice changes were implemented:

- Procedure IP/0/A/5090/002 (which replaces procedure SI/0/A/5090/002) has been changed to include detailed instructions for the removal and reinstallation of test tee caps.
- A communication package to all maintenance personnel who disassemble and reassemble cubing fittings, including test tee caps, was transmitted with documentation of its receipt and understanding entered into the Duke training process. This communication package clearly established the requirement that IP/0/A/5090/002 would be utilized for all activities that involved any disassembly/reassembly or removal/reinstallation of tubing fittings including test tee caps. The Operations Test Group, who also remove and install test tee caps, received the communication and training package.
- Continuing training for Maintenance personnel, conducted in a classroom setting, has included detailed training on this subject and event.
- Management and peer group observations included specific attention to ensuring that tubing fitting activities are performed as instructed in procedure IP/0/A/5090/002.
- Model work orders governing activities that include disassembly/reassembly and removal/reinstallation of tubing fittings (approximately 1400) have been changed to list IP/0/A/5090/002 as a procedure to be used.

3. Steps that will be taken to avoid further violations:

- a) A reliability study of the HPI System is underway and will be submitted to the staff by December 31, 1997. This study will be looking at the system performance from both a deterministic and probabilistic perspective. Three

Attachment 1
Reply to Notice of Violation
Violation A of Violations Assessed a Civil Penalty

broad areas will be analyzed with respect to system reliability:

- What are the main reliability aspects of the HPI System for PRA events of interest?
 - What are the main reliability aspects of the HPI System for design basis, or deterministic, events of interest?
 - What are the main reliability aspects of the HPI System during normal operation?
- b) A design basis audit will be performed on both the HPI and LPI systems. This audit will address the following:
- Design basis attributes of the systems.
 - System and component testing and inspection programs.
 - Interconnections between HPI and LPI Systems and interconnections with other systems.
- c) An assessment of past operating experience (OE) is underway. Approximately 1500 OE documents, including Significant Event Reports (SERs), Significant Operating Event Report (SOERs), and Information Notices (INs), from 1982 to 1992 are being reviewed. The current status is that 378 items have been reviewed and no problems have been found. The completion date is scheduled for April 30, 1998.
- d) ONS will continue to monitor and assess field activities involving tubing fittings to ensure continuous and comprehensive adherence to the requirements that have been established.

4. The date when full compliance will be achieved:

Oconee Nuclear Station is in full compliance with the HPI System Technical Specification requirements. The remaining corrective actions will provide further assurance that events similar to the one cited in this violation do not occur in the future.

Attachment 2
Reply to Notice of Violation
Violation B(1) of Violations Assessed a Civil Penalty

Restatement of Violation B(1)

10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material, and equipment, and nonconformances, are promptly identified and corrected.

Contrary to the above, as of April 21, 1997, the licensee failed to establish measures to assure that cracks in High Pressure Injection (HPI) safe end nozzles, adjacent HPI piping, and nozzle thermal sleeves, which are significant conditions adverse to quality, were promptly identified and corrected. Consequently, the licensee did not promptly identify and correct a crack in the safe end weld of HPI makeup nozzle 2A1 of Oconee Unit 2 that resulted in an unisolable, reactor coolant leak on April 21, 1997.

This is a Severity Level III problem.
Civil Penalty - \$110,000

Reply to the Notice of Violation

1. The reason for the violation:

Duke accepts this violation.

A detailed root cause analysis was performed to determine the reason for the breakdown in the augmented inspection program for the HPI nozzles. The cause for not meeting the augmented inspection commitment requirements was a deficiency in the implementation of the change management process. The organization responsible for determining and initiating the changes to satisfy the commitment requirements did not verify the effectiveness of their actions. Specifically, the implementing Non-Destructive Examination (NDE) procedures were not revised and/or other actions taken which were necessary to ensure that (1) the inspections would be performed on the required frequency, (2) Ultrasonic Testing (UT) would be performed in all areas as required, and (3) the thermal sleeve gaps would be properly reported and evaluated. These inspections were performed under the guidance of B&W from 1983 to 1990, however, documentation of the rationale for the inspections has not been located. Duke assumed responsibility for the inspection program in 1990. The

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Reply to Notice of Violation
Violation B(1) of Violations Assessed a Civil Penalty

examination procedures that existed at that time were inadequate. ASME Section XI ISI code requirements permit certain extension adjustments for specified examination and inspection intervals. The Duke ISI program is implemented per an ISI plan which uses these extension adjustments as necessary. HPI nozzle augmented inspections were erroneously included as part of the ISI plan and were deferred under that plan. This was contrary to specific commitments to do augmented inspections at specific outages. An informal process for handling commitment items in 1983 was found to be a contributing cause. This process did not provide sufficient guidance for the documentation of actions taken and independent verification. The current commitment process is formal and provides assurance that the root and contributing causes for this violation will not recur.

2. The corrective steps that have been taken and the results achieved:
 - a) The FIP team thoroughly investigated the cause of the leak.
 - b) All thermal sleeve gap RT results since 1983 were reviewed.
 - c) Unit 3 was shutdown to inspect the nozzle components.
 - d) The thermal sleeve and safe end for the 2A1 and 3A1 HPI normal injection line were replaced with a new design.
 - e) Per the Unit 1 JCO, additional administrative precautions were implemented until Unit 1 was shut down on June 13, 1997.
 - f) The Unit 1 exams confirmed the JCO bases. There were no change in gaps, and no recordable UT indications from the Unit 1 examinations.
 - g) Augmented inspections of the HPI nozzle components for all 3 units were performed. These inspections exceeded Generic Letter 85-20 requirements, primarily in the number of components examined.

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- h) The current commitment management process has been verified to be effective in minimizing the potential for this type of error. The current commitment management process is significantly improved from what was used in the 1980s.
- i) A review performed by the Augmented Inspection Review Team and members of the QA Technical Services (QATS) group of all other augmented inservice inspection commitments from 1980 through 1994 indicated that all other commitments have been met. This review started with 439 documents obtained from a word search of our Electronic Licensing Library. QATS reviewed this list of documents and identified commitments that had the potential for requiring augmented inspections. In those cases where it was identified that augmented inspections were required, QATS reviewed the Oconee ISI Plan to ensure that the augmented inspections had been listed for examination.
- j) A detailed root cause analysis was conducted by an Augmented ISI Inspection Review Team team. Report SA-97-20(ON) (ENG) and PIP 97-1507 document the results of this investigation.
- k) The ISI plan was revised to identify each specific nozzle component, its inspection procedure, and the specific outages for inspections. Inspections will be performed every other outage for the remainder of this ISI period. This inspection frequency is based upon original GL 85-20 requirements, adjusted for longer fuel cycles, with conservatism applied. The revised augmented inspection program is in place to support activities during the upcoming Unit 1 RFO. Inspections will be performed per the ISI Program submittal of August 6, 1997, and September 10, 1997. Findings from these inspections will be evaluated before submittal of the next period's plan.
- l) RT and UT procedures (and acceptance criteria) have been developed and were used during the June 1997 examinations of the Unit 1 nozzles.

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Reply to Notice of Violation
Violation B(1) of Violations Assessed a Civil Penalty

- m) A near-term assessment of Engineering, Maintenance, and Operations was performed to prioritize key areas for improvements related to inservice inspections. Report SA-97-28(ON)(PA) documents the results of this assessment.
3. The corrective steps that will be taken to avoid further violations:
- a) An assessment of other programmatic engineering commitments will be completed by October 31, 1997. This assessment will verify the effectiveness of our implementation of regulatory commitments that resulted in an ongoing engineering commitment.
 - b) Duke's General Office will independently audit the effectiveness of the corrective actions for the augmented inspection program (PIP 97-1507) implemented at Oconee. This audit will be completed by December 31, 1997.
 - c) Analysis of data from temporary instrumentation will be used to evaluate warming line flow and Operations procedures to minimize HPI nozzle component thermal stresses. The completion date is scheduled for two months after the 1EOC18, 2EOC17, and 3EOC18 refueling outages.
 - d) An assessment of past operating experience (OE) is underway. Approximately 1500 OE documents, including Significant Event Reports (SERs), Significant Operating Event Report (SOERs), and Information Notices (INs), from 1982 to 1992 are being reviewed. The current status is that 378 items have been reviewed and no problems have been found. The completion date is scheduled for April 30, 1998.
4. The date when full compliance will be achieved:
- Oconee Nuclear Station is in full compliance.

Attachment 2
Reply to Notice of Violation
Violation B(2) of Violations Assessed a Civil Penalty

Restatement of Violation

Contrary to the above, as of April 21, 1997, the licensee failed to take corrective action for temperature differentials that the licensee measured in June 1990 in the safety-related HPI makeup piping. These temperature differentials were indicative of thermal stratification in the HPI makeup piping, which is a condition adverse to quality in that such stratification could contribute to HPI pipe cracking.

This is a Severity Level III problem.
Civil Penalty - \$110,000

Reply to the Notice of Violation

1. The reason for the violation:

Duke accepts this violation.

The root cause for this violation is a lack of formality in the open item tracking system and the turnover process between responsible engineers in the early 1990s. This lack of formality resulted in this issue not being appropriately addressed.

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

- a) Current processes to track open engineering issues to resolution are rigorous. Specifically, a similar issue today would result in the following actions:
 - A Problem Investigation Process (PIP) would be initiated.
 - Operability would be assessed and if necessary, a formal operability evaluation would be documented.
 - Corrective actions would be generated to resolve the issue.
 - Immediate engineering management would track the open corrective actions.
 - Corrective actions greater than 6 months old would be evaluated by senior engineering management.

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Violation B(2) of Violations Assessed a Civil Penalty

- b) Thermocouples were installed on HPI/makeup (MU) and emergency nozzles on Units 1 and 2. Due to similarities in the design of Units 2 and 3, thermocouples were installed on the Unit 3 HPI/MU nozzles but were not installed on the Unit 3 emergency HPI nozzles. Readings from the thermocouples are automatically recorded at appropriate intervals on stand alone personal computers specifically installed for this task. Each computer software allows 'real time' analysis and diagnostic functions.
- c) A computer point was added for each unit's Operator Aid Computer (OAC) that allows a more accurate indication of total make-up flow via existing HPI flow meters. The addition of the thermocouples and the computer points allows trending of thermocouple data versus total make-up flow. This provides a vehicle for assessing thermal fatigue causing events, and providing Operations with recommendations to mitigate such events.
- d) An operability evaluation was completed (PIP 97-1368) on the HPI/MU piping and nozzles for the transients detected by the thermocouples in June of 1990. The results of that evaluation concluded the cumulative usage factor was less than one and that the system remained operable.
- e) Currently, HPI piping and nozzle thermocouple data is analyzed and compared to the 1990 data to ensure that the inputs to the operability analysis remain valid. In addition, operating recommendations, based on the same thermocouple data, are being forwarded to the Operations Section at Oconee to mitigate fatigue causing events resulting from plant operational transients.
- f) Internal company studies, initiated prior to the HPI event, identified a need to focus on piping pressure boundary issues. As a result of that study a team was formed. This team is known as the SIIM team (Structural Integrity Issues Management). This team is composed of the RCS System Engineer, Piping Component Engineer, and the Class 1 Stress Analyst from each of the Duke

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nuclear sites. This team concept provides a forum for anticipation, screening, and reconciliation of thermal fatigue issues for all of the Duke nuclear sites. In line with this need, a Class 1 stress analyst was hired at Oconee to augment the existing staff.

g) Duke's GL 85-20 response was updated in a submittal to the Staff on August 6, 1997, and September 10, 1997, and provided additional information on the revised augmented inspection plan.

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

a) As noted previously, temperature and flow data is being collected on the HPI lines. This data will be used to:

- Confirm the augmented inspection program for the HPI nozzles/injection lines.
- Develop appropriate boundary conditions for thermal fatigue analyses.
- Modify plant operation to minimize the number of thermal cycles on the HPI lines.

b) The thermocouples and the temperature data recording systems will be in place for Oconee Unit 1 until 1EOC18, for Unit 2 until 2EOC17, and for Unit 3 until 3EOC18. Completion of a final report, which includes the topics noted above, is scheduled to be complete approximately two months after the noted outages.

c) An Engineering Support Program document for the HPI/MU nozzles is scheduled for completion by December 15, 1997. This document will supplement inspection requirements per GL 85-20 with conservative adjustments for longer fuel cycles. Inspections will be performed per the ISI Program submittal of August 6, 1997, and September 10, 1997. RT and UT procedures (and acceptance criteria) to be used for future inspections have already been developed and were used during the June 1997 examinations of the Unit 1 HPI/MU nozzles.

Attachment 2
Reply to Notice of Violation
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- d) The Class 1 analysis of the HPI/MU lines will be completed by December 31, 1997. This analysis will include transients recorded via thermocouples in 1990 and any additional transients discovered via the presently installed thermocouples. A revised submittal to Bulletin 88-08 is scheduled to follow the analysis by March 1, 1998.
- e) As a result of investigations performed by the internal Duke Failure Investigative Process (FIP) team for the HPI leakage event, a contributing cause of the leak has been identified as a leaking HPI check valve. As a result, all of the HPI MU/RCS boundary check valves will be replaced with a valve design that is less susceptible to leakage. The Units 2 and 3 valves have already been replaced. The Unit 1 valves are scheduled for replacement during the upcoming U1EOC17 outage. The Unit 1 modification will include replacement of the HPI piping between the check valves and the nozzle.
- f) To confirm the condition of the Unit 1 HPI/MU safe-ends and thermal sleeves, video inspections, similar to those performed on Units 2 and 3, will be performed as a part of replacing the check valves.
- g) A design basis audit will be performed on both the HPI and LPI systems. This audit will be completed by December 31, 1997. The audit will address the following:
- Design basis attributes of the systems.
 - System and component testing and inspection programs.
 - Interconnections between HPI and LPI Systems and interconnections with other systems.

4. The date when full compliance will be achieved:

Oconee Nuclear Station is in full compliance.

Attachment 3
Reply to Notice of Violation
Violation A of Violations Not Assessed a Civil Penalty

Restatement of Violation

TS 6.1.1.1, requires, in part, lines of authority, responsibility, and communication shall be established and defined for the highest management levels through intermediate levels to and including all operating organization positions. These relationships shall be documented and updated.

TS 6.4, "Station Operating Procedures," requires, in part, that the station be operated and maintained in accordance with approved procedures. TS 6.4.1.a requires, in part, that procedures be provided for normal startup, operation, and shutdown of the complete facility and of all systems and components involving nuclear safety of the facility.

Operation Management Procedure (OMP) 2-1, "Duties and Responsibilities of On Shift Operations Personnel," Revision (Rev.) 40 implements, in part, TS 6.1.1.1 and TS 6.4.1.a. Enclosure 4.5 of this procedure, "Responsibilities of the Reactor Operators," describes the responsibilities of the Operator at the Controls and the Balance of Plant Operator. Step 2 of the section on shared responsibilities states: "The Reactor Operators assigned to any Control Room are charged with the responsibility of operating their assigned unit. They are to operate the plant with a questioning attitude, keeping nuclear safety and 'Operations Conservatism' in mind." Step 9 of the shared responsibilities delineated in Enclosure 4.5 further states: "All Reactor Operators shall ensure that his/her normal or selected instruments monitoring their associated parameters are responding as expected for the existing condition."

Contrary to the above, the licensee failed to operate the station in accordance with approved procedures prescribing operator responsibilities and authorities in that between 7:45 a.m. and 9:12 a.m., on May 3, 1997, the Reactor Operators (RO) failed to ensure that LDST indication was responding as expected for the reactor cooldown. Specifically, level indication remained constant; however, during a reactor cooldown, with the pressurizer being maintained at a constant level, the LDST level is expected to be constantly decreasing. as was demonstrated during the previous shift, when the operations crew repeatedly added water to the LDST.

This is a Severity Level IV violation.

Attachment 3
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Violation A of Violations Not Assessed a Civil Penalty

Reply to the Notice of Violation

1. The reason for the violation:

Duke accepts this violation.

The reason for the violation is that management's expectations for monitoring the plant, though emphasized in Operations Management Procedures (OMPs) and training, were, in practice, not specific enough regarding plant monitoring and balancing reactor coolant inventory. Techniques and standards for plant monitoring need improvement. Furthermore, tools used to assist the operator in the monitoring of the plant (i.e. computer programs) need improvement.

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

Corrective actions focused on three areas:

- Clarifying and emphasizing expectations for plant monitoring,
- Providing operator aids to allow better plant monitoring, and
- Adding temporary defenses in these areas until longer term actions are in place.

a) Regarding clarified expectations:

The Oconee Operations Shift Managers (OSMs) met and developed a set of "OPS Core Values" emphasizing expectations in key areas for which recent performance indicated further emphasis was needed. These "core values" are: plant monitoring, pre-job briefings, procedure quality and use, STAR & QV&V, and log keeping. These key areas of performance are emphasized by Operations management in shift briefings, communications, job observations, etc. Operations also continued its "culture change" to a rule-based approach, including shift management emphasis of brief "Do What We Say We Do" topics during shift briefings. These topics summarize formal requirements and expectations for about fifty selected areas, including those of interest in this event.

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To clarify and emphasize management expectations regarding control room rounds and monitoring of the plant, OMP 2-1, "Duties of Licensed Operators," was revised to require at least three complete control room rounds per shift. To ensure lessons from this event were quickly communicated, the Superintendent of Operations and Shift Operations Manager provided special training to all Operations personnel including a description of the event, the root causes, details of reactor coolant inventory balancing problems, clarified expectations (OPS Core Values), and the short-term and long-term corrective actions.

b) Regarding better operator aids:

As an aid for operator tracking of LDST conditions, a computer graphic display of LDST level, pressure, and limits has been implemented. This aid will be refined and incorporated into an improved overall program for reactor coolant inventory monitoring. To improve reactor coolant inventory monitoring, Oconee Operations and Engineering have developed an on-line inventory balance monitoring program. This program will be enhanced as both Engineering and Operations identify new ways to improve this monitoring aid.

c) Regarding temporary defenses:

Operations is providing additional on-shift management oversight of plant shutdown and startup evolutions. These oversight activities will focus on excellent procedure use and adherence and attention to plant conditions. Provisions have been made, through an OMP revision, to set up this additional management oversight for each startup and shutdown, and to provide supplemental monitoring of reactor coolant inventory parameters.

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

- Expectations for procedure use and adherence will be addressed in improved training in this area during 1997/1998 operator requalification training. Expectations for procedure use and adherence will be emphasized as a condition of employment. This training will be completed by May 31, 1998.
- As part of Duke's overall human performance improvement initiative, the Operations employees' Control Room Improvement Team is evaluating changes to improve plant monitoring expectations and techniques and will implement improvements on a continuing basis. This evaluation includes a review of practices at other plants, INPO guidance, etc. This planned corrective action will be completed by December 31, 1997.

4. The date when full compliance will be achieved:

Oconee Nuclear Station is in full compliance.

Attachment 4
Reply to Notice of Violation
Violation B of Violations Not Assessed a Civil Penalty

Restatement of Violation

TS 6.1.1.1, requires, in part, lines of authority, responsibility, and communication shall be established and defined for the highest management levels through intermediate levels to and including all operating organization positions. These relationships shall be documented and updated.

TS 6.4, "Station Operating Procedures," requires, in part, that the station be operated and maintained in accordance with approved procedures. TS 6-4-1.a requires, in part, that procedures be provided for normal startup, operation, and shutdown of the complete facility and of all systems and components involving nuclear safety of the facility.

Licensee Operation Management Procedure (OMP) 2-1, "Duties and Responsibilities of On Shift Operations Personnel," Revision (Rev.) 40 implements, in part, TS 6.1.1.1. Enclosure 4.5, Step 3 of the section on the responsibilities of the Operator at the Controls (OATC) states: "Under the direction of the Control Room SRO, the OATC shall have the responsibility for the operation of the assigned unit." Step 4 of this section further states, in part: "The OATC shall provide surveillance of operations and instrumentation monitored from the Control Room to ensure the safe operation of the Unit."

Licensee Operations Procedure OP/3/A/1104/49, "Low Temperature Overpressure Protection (LTOP)," Rev. 6, implements, in part, TS 6.4. Step 2.8 of the procedure, requires, in part, that a dedicated LTOP operator be assigned whenever RCS temperature is less than or equal to 325°F, the RCS is closed (no LTOP vent path is established), an HPI pump is operating and capable of injecting into the RCS via 3HP-120 (Reactor Coolant Volume Control), and the 3HP-120 travel stop is inoperable. Enclosure 4.3, "Dedicated LTOP Operator Guidelines," Step 1.3, states: "Prevention of low temperature overpressurization is the only responsibility and duty of the dedicated low temperature overpressure protection operator."

Contrary to the above, the licensee failed to operate the station in accordance with approved procedures in that at 11:58 p.m., on May 2, 1997, LTOP operation was established with the OATC as the designated dedicated LTOP operator. This resulted in the dedicated LTOP operator having responsibilities for operation of the assigned unit in addition to his responsibility to prevent low temperature overpressurization.

Attachment 4
Reply to Notice of Violation
Violation B of Violations Not Assessed a Civil Penalty

Reply to the Notice of Violation

1. The reason for the violation:

Duke accepts this violation.

The cause of this event was the failure of Operations management and supervision to consistently reinforce adherence to expectations. For example, the procedure for use of a dedicated LTOP operator stated that the LTOP operator would have no other functions. However, a slightly different practice of using a supplemental RO to relieve other control board functions was being utilized. Therefore, expectations were not clear for the dedicated LTOP operator.

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

Operating Procedures OP/1,2&3/A/1104/49 (Low Temperature Overpressure Protection) were revised to explicitly prohibit OATC-as-dedicated-LTOP-operator activities such as answering the phone and logging, etc., which could distract from monitoring and controlling primary plant conditions. Operations personnel have reviewed the training package for this procedure change.

Operations is providing additional on-shift management oversight of plant shutdown and startup evolutions to ensure excellent procedure use and adherence and attention to plant conditions. Provisions have been made, through an OMP change, to set up this additional management oversight for each startup and shutdown, and to provide supplemental monitoring of reactor coolant inventory parameters.

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

Attachment 4
Reply to Notice of Violation
Violation B of Violations Not Assessed a Civil Penalty

- Expectations for procedure use and adherence will be addressed in improved training in this area during 1997/1998 operator requalification training. Expectations for procedure use and adherence will be emphasized as a condition of employment. This training will be completed by May 31, 1998.
 - As part of Duke's overall human performance improvement initiative, the Operations employees' Control Room Improvement Team is evaluating changes to improve plant monitoring expectations and techniques and will implement improvements on a continuing basis. This evaluation includes review of practices at other plants, INPO guidance, etc. This planned corrective action will be completed by December 31, 1997.
4. The date when full compliance will be achieved:
Oconee Nuclear Station is in full compliance.

Attachment 5
Reply to Notice of Violation
Violation C of Violations Not Assessed a Civil Penalty

Restatement of Violation

Technical Specification 6.4, 'Station Operating Procedures,' requires that the station be operated and maintained in accordance with approved procedures. TS 6.4.1.e requires, in part, that procedures be provided for preventative or corrective maintenance which could affect nuclear safety.

Licensee Procedure SI/O/A/5090/001, "Tube Fitting and Tubing Installation," Rev. 0, Enclosure 4.12, 'Tube Cap Installation,' provides guidance for the proper installation of tube caps, but includes a note that states the procedure is for guidance only and did not have to be used as long as the technician was knowledgeable of the practices.

Contrary to the above, on October 21, 1996, and February 22, 1997, the licensee failed to use procedural guidance provided by SI/O/A/5090/001 for the installation of instrument tubing caps, which was required to be used because the technicians performing the maintenance activities were not knowledgeable of tube fitting and tube installation practices.

This is a Severity Level IV violation.

1. Reason for the violation:

Duke accepts this violation.

The root cause of this violation is inadequate work practice guidance which resulted in personnel not checking fittings for material condition and foreign substances.

Procedure SI/O/A/5090/001, "Tube Fitting and Tubing Installation," was developed to provide written guidance for the installation of tubing fittings including test tee caps. This procedure, which is very extensive, was defined by ONS Maintenance Management as being applicable only to new installations or major repair/replacement work.

For day to day work involving the disassembly and reassembly of tubing fittings during routine corrective maintenance,

Attachment 5
Reply to Notice of Violation
Violation C of Violations Not Assessed a Civil Penalty

preventive maintenance, and surveillances, procedure SI/O/A/5090/002, "Parker CPI, Swagelok, and Hi-Seal Tube Fitting Removal and Reconnection" was developed. However, SI/O/A/5090/002 did not contain instructions applicable to the removal and reinstallation of test tee caps, only instructions for disassembly and reassembly of other types of tubing fittings. This omission was a result of both the lack of detailed guidance from fitting manufacturers on removing and reinstalling test tee caps and the understanding that routine access was considered "skill of the craft". For this reason the guidance available in SI/O/A/5090/001 was not used to remove and reinstall the test tee caps involved in the LDST event.

2. The corrective steps taken and the results achieved:

- a. Procedure IP/O/A/5090/002 (which replaces procedure SI/O/A/5090/002) has been changed to include detailed instructions for the removal and reinstallation of test tee caps.
- b. A communication package was provided to all maintenance personnel who disassemble and reassemble tubing fittings, including test tee caps. This communication package clearly established the requirement that IP/O/A/5090/002 would be utilized for all activities that involved any disassembly/reassembly or removal/reinstallation of tubing fittings including test tee caps. The Operations Test group, who also remove and install test tee caps, received the communication and training package.
- c. Continuing training for Maintenance personnel, conducted in a classroom setting, has included detailed training on this subject and event.
- d. Management and peer group observations include specific attention to ensuring that tubing fitting activities are performed as instructed in procedure IP/O/A/5090/002.
- e. Model work orders governing activities that include disassembly/reassembly and removal/reinstallation of

Attachment 5
Reply to Notice of Violation
Violation C of Violations Not Assessed a Civil Penalty

tubing fittings (approximately 1400) have been changed to list IP/O/A/5090/002 as a procedure to be used.

3. Steps that will be taken to avoid further violations:

OMS will continue to monitor and assess field activities involving tubing fittings to ensure continuous and comprehensive adherence to the requirements that have been established. The procedural instructions for removing and reinstalling test tee caps are "information only" steps. The instructions are to be followed exactly as written but sign-offs are not required. It is Duke's intent to make the instructions for removing and reinstalling test tee caps a skill-of-the-craft activity.

4. Date of full compliance:

Duke is in full compliance at this time.

Attachment 6
Reply to Notice of Violation
Violation D of Violations Not Assessed a Civil Penalty

Restatement of Violation

10 CFR 50, Appendix B, Criterion III, Design Control, requires, in part, that measures be established to assure that applicable regulatory requirements and the design basis for systems, structures, and components which affect the safety-related functions of those systems that prevent or mitigate the consequences of postulated accidents, are correctly translated into specifications, drawings, procedures, and instructions.

Contrary to the above, as of May 3, 1997, the licensee failed to assure that the design basis for the valves in the Unit 1, 2, and 3 LDST instrument lines, which were safety-related, were correctly translated into station procedures. Specifically, design configuration control was not maintained for six of twelve valves on the LDST instrumentation lines in that the valve labeling was not as shown on their respective drawings.

This is a Severity Level IV violation.

1. Reason for the violation:

Duke accepts this violation.

The subject valves (along with all other instrument valves at ONS) were not labeled when they were originally installed. The labeling was done as part of a special project conducted in the late 1980's to early 1990's. The labeling was done by sending a work order to the field with a "marked-up" Instrument Detail drawing with instructions to "hang tags per the drawing". This was normally done by two technicians using double verification techniques. However, as is allowed by station policy, double verification can be waived for ALARA reasons. The valves in question are located in an increased radiation field and so a single technician labeled the valves without double or separate verification.

Attachment 6
Reply to Notice of Violation
Violation D of Violations Not Assessed a Civil Penalty

2. The corrective steps taken and the results achieved:

- a. The mislabeled valves have been properly labeled.
- b. A review of the PIP data base to determine the history of the mislabeling problem was conducted. It was concluded that, while some mislabeling had been discovered, there did not appear to be a wide spread problem. Our present policy of correcting labeling problems upon discovery and documenting the problems in a PIP is considered sufficient. Therefore, no specific review of plant labeling will be conducted.

3. Steps that will be taken to avoid further violations:

The position of ONS instrument valves is controlled by drawings, procedures, and work orders (governed by Maintenance Directive 4.4.13). ONS Maintenance will develop valve checklists for critical applications of instrument valves and applications where mispositioning would not be readily apparent or positively controlled through other means. It is the current practice of ONS Maintenance that no instrument valve will be manipulated without specific documentation, correct component verification, double verification, and positive control of both the removal-from-normal and return-to-normal of the valve. The development of the checklists and continued reemphasis and communication of our policy regarding instrument valves is in progress.

4. Date of full compliance:

Duke is in full compliance.