APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-313/90-16
50-368/90-16

Operating Licenses: DPR-51
NPF-6

Dockets: 50-313
50-368

Licensee: Entergy Operations, Inc. (EOI)
Route 3, Box 137G
Russellville, Arkansas 72801

Facility Name: Arkansas Nuclear One (ANO), Units 1 and 2

Inspection At: ANO Site, Russellville, Arkansas

Inspection Conducted: June 18-29, 1990

Team Leader: James E. Cummins 8/2/90
J. E. Cummins, Reactor Inspector, Operational Programs Section, Division of Reactor Safety — Date

Inspectors: J. E. Bess, Reactor Inspector, Operational Programs Section Division of Reactor Safety
H. F. Bundy, Reactor Inspector, Test Programs Section, Division of Reactor Safety
D. R. Hunter, Senior Reactor Inspector, Operational Programs Section, Division of Reactor Safety

Approved: 8/6/90
J. E. Gagliardo, Chief, Operational Programs Section, Division of Reactor Safety — Date

Inspection Summary

Inspection Conducted June 18-29, 1990 (Report 50-313/90-16; 50-368/90-16)

Areas Inspected: Nonroutine, announced review of licensee activities related to selected diagnostic evaluation team and maintenance team inspection findings, review of selected licensee event reports, and inspection of licensee's surveillance program and records.

Results: Within the areas inspected, no violations or deviations were identified. Two unresolved items were identified (1) impact of previous surveillance testing deficiencies (Section 3), and (2) out-of-tolerance condition involving core exit thermocouples (Section 5).

Based on the limited scope of this inspection, it appeared that the licensee was putting together the necessary personnel and programs, with adequate leadership, to operate and maintain the ANO plants in a safe and efficient manner and that the licensee was intent on enhancing operational safety.

DETAILS

1. PERSONS CONTACTED

ANO EXIT MEETING ATTENDEES

E. C. Ewing, General Manager, Technical Support and Assessment
D. A. Daniels, Manager, Plant Assessments
R. A. Fenech, Plant Manager Unit 2
J. J. Fisicaro, Manager, Licensing
R. H. Scheide, Nuclear Safety and Licensing Specialist
J. D. Vandergrift, Plant Manager, Unit 1
J. McWilliams, Executive Assistant to Director, Nuclear Operations
R. D. Gillespie, Manager, Central Support
C. B. Fite, Supervisor, In-House Events Analysis
E. E. Rogers, Superintendent, Maintenance Engineering
J. D. Bailey, Technical Assistant, Unit 2, Maintenance Manager
K. L. Coates, Maintenance Manager, Unit 2
R. A. Barnes, Project Manager, Engineering Backlog
C. L. Tyrone, Manager, Materials Engineering
R. Lane, Manager, Engineering Standards and Programs
A. Jacobs, Supervisor, Surveillance Testing
R. Wewers, Superintendent, Work History
E. D. Wentz, Operations Training Superintendent
R. N. Jonannes, Project Manager (Outages), Unit 1
R. J. King, Supervisor, Licensing
D. C. Mims, Systems Engineer Manager, Unit 2
R. A. Sessoms, Plant Manager, Central
M. R. Harris, Project Manager (Outage), Unit 2
J. L. Taylor-Brown, Quality Control, Quality Engineering Manager
J. Mueller, Maintenance Manager, Unit 1

NRC EXIT MEETING ATTENDEES

W. F. Smith, Senior Resident Inspector, Waterford-3
R. Mullikin, Projects Engineer, RIV
J. P. Jaudon, Deputy Director, Division of Reactor Safety, RIV
C. C. Warren, Senior Resident Inspector, ANO
C. Poslusny, Project Manager, NRR
T. W. Alexion, Project Manager, NRR
B. Haag, Resident Inspector, ANO

The inspectors also contacted other members of the licensee's staff not identified above to discuss issues and ongoing activities.

2. PLANT STATUS

Recently the ANO licensee has made a number of changes that will impact the operation and maintenance of the nuclear plants. These changes include an infusion of new people into the organization at the upper and middle management levels, organizational restructuring, and the development and implementation of new programs. One of the most significant changes was the recent unitization of the ANO plants. Unitization made the operation and maintenance of Units 1 and 2 independent at the plant manager level and provided unit dedicated operations personnel, maintenance personnel, system engineers, maintenance engineers, planners, and schedulers. With unitization, the scope of responsibility for individuals was narrowed to enhance the development of a sense of ownership and pride in the personnel assigned to each unit. Also, in order to make maintenance activities more efficient, the licensee has implemented rotating shifts in the maintenance department for craft personnel.

Based on the limited scope of this inspection, it appeared that the licensee was putting together the necessary personnel and programs, with adequate leadership, to operate and maintain the ANO plants in a safe and efficient manner and that the licensee was intent on enhancing operational safety.

Many of the recent changes that will have a direct impact on the management, operation, and maintenance of the ANO plants were in the early stages of implementation at the time of the inspection. As a consequence, the inspectors concluded that it was too early to evaluate the long-term effects of most of these changes.

3. FOLLOWUP OF DIAGNOSTIC EVALUATION TEAM AND MAINTENANCE INSPECTION TEAM FINDINGS (92701)

During this inspection, the inspectors reviewed licensee activities related to findings identified by the diagnostic evaluation team (DET) inspection performed August 21 through September 15, 1989, and licensee activities related to similar findings of the maintenance team inspection (NRC Inspection Report 50-313/88-36; 50-368/88-36) performed November 14 through December 2, 1988.

Each of the DET findings reviewed is discussed below. The NRC DET finding tracking number, the DET report paragraph (in parentheses) in which the item are discussed, and the description of the item (from NRC tracking list) are provided, followed by a discussion of licensee's activities related to the item.

3.1 E-26 (3.5.5.4.2) and M-12 (3.3.2.3)

The sizing of the Unit 1 high pressure injection motor operated valves (MOVs) was marginal and replacement was delayed.

The licensee stated that in early 1987, the design engineering staff recommended replacing the referenced valves during the planned refueling outage in late 1988. However, during the outage various problems such as manpower, design, and procurement caused the modifications to be deferred.

Findings

Since the DET, Limitorque informed ANO that the thrust rating for the high pressure injection valves had been increased (determined through testing by other utilities). With this increased thrust rating, the licensee stated that the ratings of the actuators were no longer considered marginal.

As part of the ongoing commitment to I.E. Bulletin 85-03 and Generic Letter 89-10, the "Motor Operated Valve Testing Program Calculation Preparation Guideline" was developed by the licensee. This guideline identified and evaluated the pertinent design parameters for the valve/actuator configuration. Design engineering felt that this guideline served as a mechanism to identify valves and actuators that were marginally sized and allowed the MOV assembly to meet the guideline specifications and perform its safety-related function. The licensee issued a project scoping report to identify all Unit 1 valves and actuators requiring modification. The licensee stated that ANO was in compliance with the requirements of Generic Letter 89-10. In addition, the licensee was implementing an enhancement modification program which will increase the thrust range of each valve to ensure proper operation. The enhancement program is scheduled to be completed during Unit 1 Refueling 10 (February 1992).

Another concern of the DET pertained to some valves failing to operate properly because of inadequate stem lubrication. An example of this was Valve CV-1227 failing to open during surveillance testing. This failure was attributed to lack of adequate stem lubrication.

To address this concern, the licensee issued Interoffice Correspondence ANO 89-09456 to clarify the type of stem lubricant to be used for specific situations. This memorandum stated that Velan, the valve manufacturer, had recommended Exxon Nebula EPI for use as stem lubricant.

ANO presently stocks Exxon Nebula EPO (which is the same grease, but one grade lighter) for use in limitorque valve operators. This grease presently meets the Electric Power Research Institute guidelines. To ensure that the correct stem lubricant was being used in the field Preventive Maintenance Engineering Evaluation No. 005 was revised to specify that Exxon Nebula EPO grease was to be used exclusively to lubricate valve stems.

This item is considered closed.

3.2 E-27 (3.5.5.4.2) and M-11 (3.3.2.3)

The DET identified several deficiencies in the calculations for DC MOVs. Calculations reviewed by the DET were incomplete because of several design criteria being incorrectly assumed to be insignificant or not applicable. For example, the battery end-of-life voltage was not considered and the resistance values for the thermal overload heaters were not included.

Findings

The licensee performed recalculation of DC MOV voltage and determined that no operability concerns existed. To ensure that future calculations contained all pertinent information, the licensee revised the program so that valve specific or system specific voltage calculations were incorporated into the design reviews of DC MOVs. The inspector randomly selected recalculations from Units 1 and 2 and verified that the licensee had addressed the concerns of the availability of DC voltages at actuator motor terminals. The inspector determined by reviewing Calculation No. 89E-0102-01, Revision 2, that the licensee had included thermal overload heater resistance values. The licensee appeared to have a program in place to correctly calculate DC MOV voltage.

This item is considered closed.

3.3 E-28 (3.5.5.4.3)

The licensee was slow to implement the Institute of Nuclear Power Operations SOER-86-03 in spite of several check valve failures.

Findings

The licensee stated that appropriate program changes had been made so that inspections of check valves as recommended by SOER-86-03 were being performed. The design review scope was being completed and a completed SOER 86-03 program will be in place by late 1990. The program was being implemented in accordance with Procedure 1092.036, "Check Valve Inspection Program." The procedure was being revised to include the following:

- Addition of the check valve design evaluation in the reference section.
- Addition to the instruction to include the collection of dimensional information for internal valve parts.

The licensee stated that 300 check valves (for both units) were to receive a 100 percent visual inspection. The number of check valves to be inspected and the number of valves that have been inspected is shown below for each unit.

	Number of Valves to be Inspected	Number of Valves Inspected
Unit 1	129	48
Unit 2	171	88

To implement the recommedations of SOER 86-03, the licensee has established an inspection program that will complete the check valve inspection during four refueling outages.

The number of valves inspected for Unit 1 listed above is representative of one refueling and one forced outage. Therefore, the visual inspection of the check valves for Unit 1 will be completed during the next three refueling outages. The visual inspection for Unit 2 check valves will be completed during the next two refueling outages.

To ensure that the visual inspections are completed as scheduled, 25 percent of the check valves identified in their inspection program are scheduled to be visually inspected during four refueling outages. The licensee stated that they were ahead of this schedule.

To implement the recommendations of SOER-86-03 which pertain to check valve design, the licensee hired an engineering company to perform a comprehensive design evaluation program for check valves. The licensee as part of this program has prioritized a list of check valves identified by system and valve part number. The licensee reviewed and analyzed available maintenance data and developed inspection recommendations which were based on wear and damage in disk and seat areas, including hinge pins and bushings, disk studs, stud nuts, and antirotation pins.

This item is considered closed.

3.4 M-1 and M-3 (3.3.1)

Organizational changes in the maintenance department were too recent for complete evaluation. Craft personnel was apprehensive about the timing of the organization split, and the effect on overtime, routine activities, and work priorities.

Findings

Document reviews and interviews revealed that a number of initiatives were completed or in progress to address the maintenance department organization and staffing. The actions were designed to provide unitized maintenance activities, enhanced engineering support for maintenance, a supervisor-to-

worker ratio of about 6 to 1, and increased involvement of the supervisors in field activities. The implementation of the support functions and the development of the administrative controls for the areas such as maintenance engineering, support engineering, and system engineering were in progress at the time of the inspection.

The overall upgrade of the maintenance department organization and staffing was included in the licensee's business plan. The long-term implementation of the licensee's comprehensive corrective action in this area will be monitored as part of the ongoing NRC inspection program.

This item is considered closed.

3.5 M-2 and M-4 (3.3.1)

There was some apprehension by maintenance managers because they perceive that they do not have full control over their resources. It was not clear if staffing would be adequate to address (1) weaknesses in technical support, (2) manage and reduce job order backlog, (3) implement new PM programs, and (4) completion of planned split of crafts between Units 1 and 2.

Findings

Document reviews and interviews revealed that the licensee had implemented unitization (Units 1 and 2) and a two-shift plant maintenance schedule in order to provide more efficient and effective completion of maintenance activities. The routine overtime for all the maintenance disciplines was about 10 percent or less. The licensee was involved in the improvement of the technical support of maintenance, implementing an enhanced PM program, and the reduction and maintenance of a reduced job order backlog.

Management and supervision were monitoring performance indicators on a routine basis and monthly reports were provided to management.

The overall improvement of the maintenance department organization, staffing, and controls was included in the licensee's business plan. The long-term implementation of the icensee's corrective action in this area will be monitored as part of the ongoing NRC inspection program.

This item is considered closed.

3.6 M-6 (3.3.2)

Corrective maintenance was weak overall. Longstanding repetitive problems existed, including poor tracking, poor trending, inadequate root cause analysis, a lack of plant engineering involvement, poor maintenance history records, and a lack of corrective action timeliness.

Findings

Many of the licensee's recent organizational and personnel changes directly impact corrective maintenance. It appeared to the inspectors that many of these changes will strengthen the licensee's corrective maintenance programs and enhance operational safety. However, many of the programs were recently implemented or were still being developed making an evaluation at the time of this inspection impractical.

Pending further performance-based inspection of all elements of the licensee's corrective maintenance activities, this item will remain open.

3.7 M-7 (3.3.2.1)

There were instances of inadequate corrective maintenance of electrical components (nine examples including wiring diagram discrepancies).

Findings

The examples of inadequate electrical maintenance included problems related to wiring discrepancies, 480V AC K-line breakers, control room emergency ventilation system, 125V DC grounds, cracked weld in service water pump breaker, pressurizer pressure instrument, loose electrical connections, fuse control, and Tuf-Loc bearings in 4.16 kV breakers. At the time of this inspection, the license's evaluation and/or corrective actions for all of the examples of inadequate corrective maintenance of electrical components was incomplete. The DET concluded that generic weaknesses including non-aggressive root cause determination and poor managment oversight contributed to these instances of inadequate corrective maintenance of electrical equipment.

Followup of the corrective actions for the specific examples cited, as well as the generic aspects of this issue, will be performed as a part of the followup of DET finding M-6 (3.3.2) discussed above.

This item is considered closed.

3.8 M-8 (3.3.2.2)

There were five examples of inadequate corrective maintenance of mechanical components, common element was a lack of management and supervisor persistence in identifying root cause and pursuing corrective actions.

Findings

The examples of inadequate mechanical maintenance included main steam safety valve failure to reseat, repetitive reactor building cooler valve failures, shutdown cooling flow bypass valve, decay heat removal cooler outlet valves, and instrument air systems problems. At the time of this inspection, the licensee's evaluation and/or corrective actions for all of the examples of inadequate corrective maintenance of mechanical components was incomplete.

The DET concluded that the generic weaknesses contributed to these instances of inadequate corrective maintenance. These generic weaknesses related to root cause analysis, timeliness of corrective action, documentation of maintenance activities, engineering involvement, equipment failure trending, and a willingness to live with known equipment problems.

Followup of the corrective actions for the specific examples cited, as well as the generic aspects of this issue, will be performed as a part of the followup of DET finding M-6 (3.3.2) discussed above.

This item is considered closed.

3.9 M-9 (3.3.2.3)

Despite an extensive program for periodically inspecting MOVs, the overall program for ensuring reliable MOV operation was found to be weak.

Findings

The MOV program for ANO, Unit 1 and Unit 2, was delineated in Administrative Procedure 1025.011, "Motor Operated Valve (MOV) Maintenance Program," Revision 0. The procedure addressed design basis reviews, switch settings, diagnostic testing, and retest requirements. The licensee has implemented a program to meet the recommendations of Generic Letter 89-10.

The total MOVs required to be in the diagnostic testing program in accordance with Generic Letter 89-10 (as defined by Procedure 1025.011) was 271 for both units. The status of the valve testing at the time of this inspection is shown below.

	Total MOVs	MOVs Baseline Testing Completed
Unit 1	110	99
Unit 2	161	116

The licensee stated that all MOVs are scheduled to have baseline/static testing performed within three refueling outages starting with Unit 1, Refueling 9, scheduled to start in October 1990 and Unit 2, Refueling 8, scheduled to start in February 1991. Differential pressure testing will commence with the above outages and is expected to be completed in a minimum of four refueling outages.

Design basis recalculation was ongoing. The status of this recalculation was as follows:

Unit 1 - 110 MOVs	102 MOVs have had differential pressure recalcualtions performed
	101 MOVs have had setpoint recalucations performed

Unit 2 - 161 MOVs

152 MOVs have had differential pressure recalculations performed

145 MOVs have had setpoint recalculations performed

The design engineering group responsible for development of design basis calculations of MOVs thrust and actuator setpoint limits continued to expand the I.E. Bulletin 85-03 design scope to support maintenance.

The original I.E. Bulletin 85-03 scope has been expanded significantly since mid-1986 to include several hundred valves in both units. Consequently, Generic Letter 89-10 will add more valves to the program. The licensee stated that the existing program satisfied most of the requirements of Generic Letter 89-10, but the program was being expanded to ensure that all the recommendation of the generic letter were being met.

The MOV program appeared to be headed in a positive direction.

This item is considered closed.

3.10 M-10 (3.3.2.3)

The DET determined that on at least one occasion MOV failure occurred because a MOV pinion gear set screw vibrated loose. The team also found that none of the current procedures had been revised to ensure that the pinion gear set screw lockwire was installed following maintenance.

Findings

The licensee stated that in accordance with the recommendations of Limitorque Maintenance Update 89-1, procedures were being revised to include a section on motor pinion gear installation. The revised section in the procedures will include items covered in the maintenance update such as:

- spot drilling motor shaft,
- staking set screws, and
- key installation and staking.

The following procedures were being revised to include the recommendations of the maintenance update:

(1) Procedure 1403.040, "Unit 1 and Unit 2 MOVATs Testing and Maintenance of Limitorque SMB-0 through 4 Actuators," Revision 4,

(2) Procedure 1403.039, "Unit 1 and Unit 2 MOVAT Testing and Maintenance of Limitorque SMB-00 Actuator," Revision 5, and

(3) Procedure 1403.038, "Unit 1 and Unit 2 MOVAT Testing and Maintenance of Limotorque SMB-000 Actuator."

All modifications to MOVs will be done in accordance with the revised procedures. Post-maintenance inspections will be revised to include verification that the set screw is secure following the overhaul of MOVs.

The inspector reviewed draft procedures and verified that instructions for securing the MOV pinion set screws had been included in the procedure.

This item is considered closed.

3.11 M-14 (3.3.3)

Preventive maintenance (PM) program was weak overall. It was inadequate for some equipment, including safety-related components. The program was behind schedule. Thermography was only in formative stages.

Findings

Since the DET, the licensee transferred the responsibility for control and implementation of the preventive maintenance program from ANO engineering to nuclear operations.

The key elements of an effective PM program appeared to be in place and functioning, such as a computerized PM schedule and a dedicated coordinator for each unit. However, establishment of all the procedures, identified by the licensee, as being necessary to the program, had not been completed as indicated in the table below.

	Required	Approved	Percentage Complete
PM Engineering Evaluations	173	166	96%
PM Procedures	392	296	76%
PM Tasks	3184	1715	54%

The licensee's PM program is scheduled to be fully implemented October 31, 1990. Pending further performance based NRC inspection of all elements of the licensee's PM activities, this item will remain open.

3.12 M-15 (3.3.3.1)

The technical review of PM procedures was cursory. Craft input into PM procedure development was ignored and the procedures lacked human factors considerations.

Findings

The licensee has established and revised Administrative Procedure 1000.006, "Procedure Review, Approval and Revision Control," Revision 32, to involve appropriate groups (e.g., engineering, craft, and quality control) in the PM procedure development and validation process. The inspector determined by discussions with licensee personnel, craft, and review of in-process procedure development documents, that craft, engineering, and other appropriate groups participated in the PM procedure development process.

Individuals verify by signature on a comment control form that their review comments have been resolved. In addition, craft personnel were required to perform a procedure validation of new procedures in their area of responsibility.

This item is considered closed.

3.12 M-16 (3.3.3.2)

Five examples were noted of weak PMs on equipment (Electrical-4, Mechanical-1).

Findings

The inspector reviewed the licensee's disposition of each of the five examples: 480V K-line breakers, molded case breakers, protective relay testing, safety-related breakers, and safety-related air operated valves. The inspector determined that the licensee's actions on these items were appropriate. The adequacy of PM activities including procedures will be inspected during routine inspections and as part of the followup of Item M-14 above.

This item is considered closed.

3.14 M-17 (3.3.4)

The large number of maintenance job orders was excessive and had significantly increased within the last 8 months. The lack of concerted action by management, unavailability of spare parts, and the lack of meaningful tracking mechanisms and clear goals for managing and reducing the backlog were significant contributors to the backlog problem.

Findings

The licensee identified and prioritized each item on the job order (JO) backlog list. Changes in the licensee's organization have resulted in increased management attention in this area, and unitization has provided unit dedicated managers, engineers, craft, planners, and schedulers to better cope with the backlog.

From March 16 through June 17, 1990, the Unit 2 maintenance nonoutage JO backlog was reduced from 1085 to 642 for a net reduction of 443. From March 23 through June 18, 1990, the Unit 1 maintenance nonoutage JO backlog was reduced from 1045 to 909 for a net reduction of 136.

The licensee has established an engineering backlog project for the purpose of eliminating the engineering backlog which should enhance processing of those backlogged JOs waiting on engineering resolution.

This item is considered closed.

3.15 M-18 (3.3.5.1)

Six weaknesses were noted in maintenance planning. Work packages did not always reference the appropriate drawings and craft did not always verify correct drawings.

Findings

Specific weaknesses that were noted by the DET in the planning of maintenance and in the preparation of work packages are repeated below, followed by licensee activities that should help strengthen the weaknesses.

- Rework of jobs was not tracked or defined.

  The inspector reviewed a draft copy of a maintenance rework procedure that the licensee was developing. The purpose of this procedure was to establish a program to reduce rework and recurring maintenance by identifying rework, focusing management attention on controlling it, and determining corrective action leading to elimination of rework.

- Required spare parts were not adequately staged.

  The licensee has assigned a material coordinator to the planning department in each unit to order material and ensure it is available. Spare parts were not necessarily staged, but were identified and dedicated when JOs were prepared.

- Drawing and procedure revisions were not always identified as part of the work package.

  The licensee has proceduralized the process for ensuring that the latest drawings and procedures are used on the job. Procedures that were upgraded included the Scheduling Desk Guide and Procedure 1025.003, "Conduct of Maintenance," Revision 34.

- Post-maintenance review of JOs was not always conducted.

  Procedure 1000.122, "Control of Maintenance," Revision 34 required a review of the completed JO. The inspector reviewed a random sample of JOs and determined that appropriate personnel had signed that post-maintenance review had been performed.

- Multiple JOs were issued for the same activity, contributing to the maintenance backlog when work was delayed.

  Planner's Desk Guide, Section A.2.1, required the planner to check the problem description of the component against the Station Information Management System JO/job request inquiry screen for duplicate job requests on another JO/job request with which the job request can be combined.

The inspector reviewed the licensee's planning process and it appeared to be comprehensive and thorough in providing quality instructions to the field. In addition, recent unitization should strengthen the planning process.

This item is considered closed.

3.16 M-19 (3.3.6)

There were no specific procedures or guidelines for general post-maintenance testing.

Findings

The licensee developed and approved Maintenance Administrative Procedure 1025.033, "Control of Postmaintenance Testing," Revision 0. This procedure was scheduled to become effective July 16, 1990. This procedure provided criteria for the selection and documentation of post-maintenance tests. In addition, the licensee was developing general post-maintenance test guidelines for specific components such as pumps, valves, and motors. These guidelines were intended to assist the planners in determining the scope of required post-maintenance testing.

Section 6.2 of the MTI report stated that the post-maintenance test procedure was not always explicitly identified on the JO. The above licensee procedure changes will provide guidelines and requirements that enhance the delineation of post-maintenance test requirements.

This item is considered closed.

3.17 M-20 and M-21 (3.3.7)

Unavailability of spare parts and spare parts control were predominant contributors to existing maintenance problems.

Shelf-life control problems (three examples) were noted.

Findings

Document reviews and interviews revealed that the area of material management was included in the licensee's business plan. The start date for the majority of the program items was early 1990. However, enhanced procedures were provided in the past to control the materials released from the warehouse to ensure the item was qualified or dedicated prior to use in a safety-related application. The improvements made to date associated with the request and release of spare parts have resulted in a substantial improvement in the availability of spare parts and the support for day-to-day plant operations and maintenance.

The inspector's review of the area of shelf-life controls with the licensee representatives during this inspection, identified a number of concerns. Shelf-life control problems were noted during the maintenance team inspection. The licensee had partially completed a "best effort" review of the materials in the warehouse stock and identified the following:

Total population - about 6300 items
Reviewed to date - about 4900 items
Shelf-life controls needed - about 1315 new items
Expired shelf-life - about 28 items
Issued to field with expired shelf-life - 6 issue tickets

The licensee had not documented and evaluated the instances of items with expired shelf-life being issued to the field as a condition adverse to quality within the established corrective action program - condition report (CR). The licensee issued a CR (CR-C-99-055) on June 22, 1990, to evaluate the six instances (CR-C-99-055) where materials (Molykote-2 Powder) were issued to the field for use. The preliminary review by the licensee revealed that the powder was used as a packing and stem lubricant on six components including one active safety-related valve. The application associated with the active valve was deemed to be acceptable. Additionally, the valve had successfully passed the required post-maintenance testing (MOVATs).

The need to enhance the procedures in this area was discussed with the licensee. The licensee initiated a temporary procedure change effective on June 26, 1990, to Procedure 1033.010, "Shelf-life Control," Revision 1, to address shelf-life deficiencies and the issuance of a CR if required. Materials management also issued a memorandum, dated June 26, 1990, to use authorization team personnel to address shelf-life deficiencies and items not presently in the shelf-life program. The actions provided the documented disposition and evaluation of the materials identified during the ongoing shelf-life review program scheduled for completion by December 31, 1990.

The inspectors reviewed the disposition of the three specific examples associated with shelf-life control problems identified in the DET inspection. Regarding the Amerace/Agastat time delay relays the inspectors reviewed CR-C-89-050, dated April 3, 1989, which documented the engineering evaluations

and specific corrective actions to resolve the matter for ANO 1 and 2. The licensee identified a total of 262 Amerace/Agastat relays of which 249 were manufactured prior to 1979. The evaluation identified 115 relays (86 on Unit 1 and 29 on Unit 2) which provided an active safety-related function. The licensee planned to replace these relays during the next scheduled refueling outages on Unit 1 (1990) and Unit 2 (1991).

Document reviews and interviews revealed that the other two items identified by the DET had not been addressed specifically; however, a review of the specific items by the licensee during the inspection revealed that the Dow Corning 55 O-ring lubricant and tape, which had been issued to the field for use, was within the shelf-life requirements and acceptable.

The inspector concluded that the procedures and practices, as enhanced during the inspection period, should prevent the issuance of a component to the field in that stores transactions required the involvement of the use authorization team to ensure the issuance of acceptable materials for use in safety-related applications.

The licensee's business plan addressed ehnancements in the areas of materials engineering, organization and staffing, materials information system, commercial grade item dedication, shelf-life controls, inventory controls, and procedures. These programmatic enhancements and overall implementation will be monitored as part of the ongoing NRC inspection program at ANO.

This item is considered closed.

3.18 M-25 (3.3.10)

Failure to identify, define, trend repetitive equipment problems. Nuclear Plant Reliability Data System (NPRDS) was not used effectively.

Findings

The licensee was in the early stages of the development of the maintenance history, tracking, and trending programs (including staffing). This program improvement was addressed within the business plan including the development and utilization of the data and an analysis of trend reports by an assessment group.

The evaluation and utilization of the NPRDS data was in the process of being formulated and implemented. The licensee was reviewing and using the NPRDS data to a degree; however, the formal program for the handling of the NPRDS was being developed.

The completion of the maintenance history, tracking, and trending programs (including staffing); the analysis of the trend reports; and the effective utilization of the NPRDS data will remain open pending further review during a subsequent inspection.

3.19 M-26 (3.3.10)

The DET noted weaknesses relative to the maintenance engineering function, including an absence of systems engineers, lack of timely plant engineering or design engineering involvement, poor documentation, and difficulty in retrieving maintenance history.

Findings

Document reviews and interviews revealed that the licensee had included the overall upgrade of the design engineering and technical support within the business plan. The licensee was in the early stages of providing maintenance and system engineers and the appropriate training for the engineers.

The onsite organization included an engineering support group which was specifically addressing the maintenance history area and developing a tracking and trending program.

The licensee had developed an engineering backlog elimination project. The backlog (about 2200 items) was screened by the licensee and entered into a computerized database. About 45 items were identified as requiring additional reviews. Three of the items were identified as potential licensing, or safety issues, and received additional evaluation:

- EAR 86-C971, piping design conditions,
- EAR 87-0917, waste gas system down-grading, and
- EAR 88-2386, Unit 2 radiation monitors alarm requirements.

The items were being evaluated for consideration of CRs at the time of the inspection.

Three specific areas of concern were identified during the maintenance team inspection. These were associated with control panel cable insulation damage, high background readings on three radiation monitoring instruments, and a deficient vibration and loose parts monitoring system. The licensee identified three backlog items associated with each area which were to be evaluated further and dispositioned within the backlog project.

The transfer of the engineering backlog to a specific project permitted the engineering groups to concentrate on the operating plant. Additionally, the licensee planned to move the offsite engineering functions onsite the later part of 1990.

The full implementation of the maintenance engineering and system engineering functions; the evaluation of the engineering backlog project; and the completion of the maintenance history, tracking, and trending programs (including staffing) will be monitored as part of the ongoing NRC inspection program.

This item is considered closed.

3.20 0-10 (3.2.4.2)

The DET noted that the material condition of the plant was poor.

Findings

The inspectors toured Units 1 and 2 to ascertain the material condition of the plant. Tours were conducted in the turbine building, auxiliary building, and control room.

Housekeeping throughout the plant was good. There were some minor items identified by the inspector and brought to the licensee's attention. These included determintated differential pressure gauges not having an equipment deficient tag attached; unidentified cable hanging from a cable tray; an unrestrained spare electrical breaker; and tools, gloves, and other items laying around in various places in the radiological control area. The items identified by the inspectors did not appear to have safety significance.

Section 2.2 of the MTI report stated that housekeeping varied from good in visible areas to poor in less traveled areas. Abandoned tools, eqiupment, and consumable materials were observed in most areas.

Based on the inspectors plant walkdown observations stated above, the inspectors housekeeping concern no longer existed. Housekeeping is part of the routine NRC inspection effort.

This item is considered closed.

3.21 0-11 (3.2.4)

The DET found that plant equipment problems did not receive adequate attention. Numerous equipment problems existed for an extended period of time.

Findings

Since the DET, ANO has implemented organizational changes to ensure that equipment problems are addressed in a timely manner. An operation and scheduling liaison is now responsible for coordinating the daily activities of the operation departments.

Prior to the DET, maintenance activities were controlled by each shift supervisor. This arrangement resulted in a lack of continuity of work activities from week to week. With the addition of the operation and scheduling liaison, work activities are now prioritized. In the new organization structure, the operation department is involved in priortizing scheduling, and tracking all maintenance activities.

The licensee had repaired most of the equipment on the out-of-service list. At the end of this inspection, no equipment had been on the out-of-service list pre-1990. The licensee appeared to be taking an aggressive approach to repairing and maintaining equipment in operable condition.

This item is considered closed.

3.22 O-24 (3.2.7) and O-26 (3.2.7.4)

Operator training program was well organized and comprehensive, but instructors were strained because of the workload.

There were delays in updating system training manuals and lesson plans including two examples relative to the service water and pressurizer systems.

Findings

Document reviews and interviews revealed that the licensee had added five consultants to complete the ANO operator examination question banks. Following the completion of the operator examination question bank update, the plans were to utilize the individuals for updating system training manuals as necessary. The licensee stated that the lesson plans were routinely updated prior to use.

The areas of operations training upgrade, on-the-job training, and training system maintenance were included in the licensee's business plan. The upcoming NRC administered licensed operator requalification examinations for ANO, Unit 2, scheduled for August 1990, will pursue this matter further.

This item is considered closed.

S-10 (3.4.3), "Surveillance Program"

The licensee failed to perform several Technical Specification (TS) surveillances in 1988.

Findings

The licensee's actions to preclude recurrence were addressed in the action plan summary for Business Plan Item C.1. These actions were appropriate and comprehensive. The short-term actions appeared to be effective in that the inspector did not identify further missed surveillances. The inspector also reviewed Memorandum ANO-90-2-00374 which regarded actions to prevent recurrence for a licensee identified missed surveillance on March 31, 1990. It elaborated on the business plan action items. The inspector discussed these actions with the incumbent of the newly established position of surveillance testing supervisor. All questions were satisfactorily answered. Short-term actions involved establishing the surveillance testing group under the nuclear standards department to assume "ownership" of TS surveillances. Additional cues were incorporated into the surveillance testing program to ensure performance of conditional surveillances. Also, the surveillance testing supervisor was placed in the review cycle for any changes to the TS surveillance program.

The enhancements to the ANO surveillance program discussed above appear to remedy the weaknesses that contributed to the several surveillance testing deficiencies reported in the licensee event reports identified in Attachment 1. Determination of potential enforcement issues which may be involved in these licensee event reports will be tracked as Unresolved Item 313/9016-01; 368/9016-01.

As discussed in Section 5 of this report, the inspector found the surveillance test procedures marginally acceptable. The licensee had independently arrived at this conclusion and was in the process of implementing a procedure upgrade program. The work was to be performed by contract personnel under the direction of the surveillance testing supervisor. The licensee expected work to begin in July 1990 and continue for 2 years.

4. ONSITE FOLLOW-UP OF LICENSEE EVENT REPORTS (LER) (92700)

The inspectors reviewed the LERs discussed below to determine if licensee responses to the events were adequate and verified that selected stated corrective actions had been taken.

(Closed) LER 50-368/89-022-00: "Inadequate Post Maintenance Test Controls Resulted in Deenergizing a 4160 VAC Engineered Safety Features Electric Bus Unexpectedly While Performing Post Maintenance Testing on an Auxiliary Relay"

The licensee revised the work planning process to require each corrective maintenance job order to include an impact statement. The impact statement described the significance and potential effect of the scope of work and subsequent testing.

As a result of the confusion on reporting requirements for this type actuation, the 10 CFR 50.72 notification was not made in a timely manner. To clarify the 10 CFR 50.72 notification requirements, the licensee issued guidance to operations personnel.

This LER is considered closed.

(Closed) LER 50-313/89-039-01: "Penetration Room Ventilation System Rendered Inoperable Due to the Failure of the Access Door to the Upper North Electrical Penetration Room"

The licensee repaired the door and made it operable, and added the door to the operations daily rounds log so that degradation of the door would be readily detected.

This LER is considered closed.

(Closed) LER 50-313/89-034-01: "Control Room Emergency Air Conditioning System Rendered Inoperable by Removing ANO-2 Equipment from Service Due to Inadequate Guidance with Respect to Equipment Common to Both Units"

The Systems Information Management System database was used by planners in preparing job orders to perform maintenance or surveillances. The licensee modified this database to flag equipment or components common to both units so that any job order affecting common equipment required approval from both ANO-1 and -2 operations prior to being worked.

This LER is considered closed.

(Closed) LER 368/89-018-00: "Maintenance Activities in Two Plant Protection System Channels Simultaneously Resulted in an Unexpected Automatic Actuation of the Plant Protection System."

The cause of this event was determined to be personnel error. The shift supervisor allowed maintenance activities to be performed in two plant protection system (PPS) channels simultaneously. The licensee's corrective actions included:

- Instructing control room personnel not to allow maintenance activities to be performed in two PPS channels simultaneously.

- Issuance of Administrative Procedure 1015.17, "Equipment Status and Control," to ensure adequate tracking of the status of equipment required to be operable by TS. This procedure also provided additional assurance that equipment will not be removed from service when required to be operable by TS.

This LER is considered closed.

(Closed) LER 313/89-040-00: "Two Emergency Diesel Generator Actuations Due to Loss of Power to a 480V Engineered Safeguards Bus Caused by Personnel Error"

Two events occurred on December 5 and 6, 1989, respectively, during the attempted restoration of the electrical system to normal following the completion of maintenance activities. During the December 1989 event, the 480V Engineered Safeguards Buses B5 and B6 were crossconnected prior to the loss of power, and caused a momentary loss of decay heat removal (DHR). The automatic start of the associated emergency diesel generator occurred and the operators restored the DHR system to operation within 9 minutes.

The licensee's corrective actions included operations personnel briefings by management, operating procedure reviews, and specific training regarding the 480V breaker operations and the Breaker B5-B6 interlocks. These actions were taken to ensure that personnel follow the approved procedures and should prevent recurrence of this type event.

The inspector reviewed Operations Administrative Procedure 1015.01, "Decay Heat Removal and LTOP System Control," Revision 9 (August 18, 1989), to ascertain that guidance was provided regarding the time for the recovery of DHR. The procedure addressed the matter, requiring a daily determination of the "time to boiling and core uncovery." The procedure also addressed reactor coolant heatup rates and the required makeup water for DHR. Step 3.7 addressed the restart of a DHR pump as a result of an undervoltage condition. Interviews revealed that the procedure steps required some time to initiate and a time delay, within the procedure guidance was acceptable. The inspector has no further questions regarding this matter.

This LER is considered closed.

(Closed) LER 313/89-010-00: "Reactor Shutdown Due to a Nonisolable Leak in a Reactor Coolant System Strength Boundary Caused by a Weld Defect"

The event occurred on May 17, 1989, upon discovery of a nonisolable leak upstream of RCS Loop "B" Old Leg Drain Valve RBD-8B.

The corrective actions included the implementation of a temporary modification to install welded caps in place of the valve in May 1989, review of the weld failure by a vendor laboratory, and the subsequent replacement of the valve in December 1989 when a suitable replacement valve was available.

The vendor report dated December 5, 1989, indicated that fatigue was involved in that the weld was subject to vibration at 100 cycles per second from the reactor coolant pump impeller during normal operating conditions. Document reviews and interviews indicated that the valve replacement activity was acceptable and should prevent recurrence. The inspector discussed the final resolution with the licensee and noted that a revision to the LER may need to be considered. The inspector had no further questions regarding this matter.

This LER is considered closed.

(Closed) LER 313/88-024-00: "Inadvertant Jarring of Relay Sensitive to Mechanical Shocks Results in the Closure of DHR Suction Valve and Loss of DHR System Flow"

The event apparently occurred when an individual jarred a panel housing the control relays for DHR Suction Valve CV-1050, resulting in the loss of DHR flow. The DHR system was returned to service within 12 minutes.

The licensee completed an evaluation of the event cause and related events and determined the need to modify the control circuitry for the isolation Valves CV-1050 and CV-1410. The proposed change provided the replacement of unreliable relays and added a bypass feature on the main control board.

Interviews revealed that the modification was planned for implementation during the upcoming refueling outage on Unit 1 with the reactor coolant and DHR systems at atmospheric pressure with the reactor vessel head removed. The inspector has no further questions regarding this matter.

This LER is considered closed.

5. SURVEILLANCE PROCEDURES AND RECORDS (61700)

The purpose of this inspection was to ascertain whether the surveillance of safety-related systems and components was being conducted as required by the TS and in accordance with approved procedures. Pursuant to this objective, the inspector reviewed the following licensee documents:

- Procedure 1000.009, "Surveillance Test Program Control," Revision 23,
- Procedure 1001.009, "Master Test Control List," Revision 17,
- TS to procedure matrix (347S/347F1) - "Sorted by MTUNIT AND MTREF," dated Jun 19, 1990,
- Eighty-four day schedule - June 10, 1990, to September 8, 1990, printed June 10, 1990,
- Surveillance weekly schedule - June 18-24, 1990, for Unit 1 and site, and
- Surveillance weekly schedule - June 18-24, 1990, for Unit 2 and Common.

The inspector then selected certain TS surveillance requirements and reviewed the associated procedure and an appropriate number of data packages for each procedure. Also, it was verified that selected test personnel had appropriate training and educational qualifications. The TS surveillance requirements, together with the associated procedures reviewed by the inspectors, are tabulated in Attachment 2.

The inspector determined that the required surveillances were being scheduled and performed as required. However, because many of the procedures failed to state the TS requirements, it was difficult to determine if all criteria were satisfied. The TS to procedure matrix appeared to be complete and accurate to the extent the inspector was able to determine procedure responsiveness to TS requirements. General comments on procedure quality were as follows:

- Many of the packages did not describe the TS requirements which were addressed. The JO had a block for TS reference, but it was usually incomplete. Frequently, the procedure did not mention the TS requirements which were being addressed.

- Acceptance criteria were often not clear or nonexistent. Also, identification of acceptance criteria when they existed was not consistent.

- The description section was often a system description. A description of test methods would be more informative.

The inspector learned that the licensee had previously identified general procedure deficiencies and planned on implementing a procedure upgrade program in July 1990. The inspector reviewed a draft procedure review checklist that was to be used in the upgrade program. It appropriately addressed most of the inspector's concerns, with the exception of potential upgrade of the description section.

There was an apparent improvement in the quality of the microfilming process compared to that documented in NRC Inspection Report 50-313/88-22; 50-368/88-22. None of the records quality problems identified by the inspector could be attributed to the microfilming process. However, there was an apparent problem involving submittal of poor quality pages in data packages by the technical staff. Numerous pages were stamped "poor original." Several pages were difficult to read, even on the display screen. Some pages were illegible. However, the office services manager identified these pages as secondary records. The inspector was advised that the records quality problem will be addressed as a part of the surveillance procedure upgrade program.

The recently revised procedures appeared to incorporate appropriate administrative controls in general. However, there appeared to be a weakness in the program for followup on equipment found out-of-tolerance. An out-of-tolerance equipment list was usually used. It contained questions regarding operability and reportability. It was also used for trending. However, there was no requirement to use this list. In one instance, eight core exit thermocouples (CETs) were found out-of-tolerance, but there was no disposition of this problem documented in the package. The surveillance testing supervisor agreed that this was an apparent weakness and stated that the process of dispositioning as-found out-of-tolerance equipment would be reevaluated. The licensee's resolution of this apparent weakness in administrative controls and technical disposition of the out-of-tolerance condition involving the CETs will be tracked as Unresolved Item 313/9016-02.

A number of minor documentation errors were identified by the inspector. None of these invalidated test results. They were identified to appropriate technical personnel for followup.

The following are typical of the comments the inspector had on the data packages reviewed:

- Description section was uninformative with regard to what test was accomplished (Procedures 1304.037, JO No. 00813788).

- JO TS reference was incomplete. (JO Nos. 00813788, 00814686, 00777988, 00806096, 00789226, 00795807, 00790701, and 0078836).

- Purpose and scope does not discuss TS (Procedures 1304.037, Revision 22; 1402.090, Revision 1; 1304.031, Revision 7; 1306.15, Revision 9; 2305.01, Revision 6; 2304.041, Revision 11; 2304.089, Revision 0; 2305.03, Revision 7; 1092.82, Revision 0).

- Acceptance criteria were not included in procedure (Procedure 1304.037, Revision 22).

- Steps 8.7.5 and 9.9 were not signed off (Procedure 1304.040, JO No. 00812664).

- Some pages were illegible (e.g., Procedures 1304.41, JO Nos. 00795721; 1304.42, 00795722; 1304.043, 00795723; 1304.044, 00795725; 1304.164, 00801403; 1408.029, 00782096; 1502.003, completed October 15, 1988; 1307.48, 00769943; 1307.48, 00776841; 1105.005, 00795752; and 1306.015, 00798390).

- For Procedure 1304.166, JO No. 00801407, the JO work description and work exceptions blocks reference Procedure 1304.165. However, the exam method block correctly references Procedure 1304.166, which was attached. Also, the data in Step 8.2.3.G on page 4 was out-of-tolerance. However, the out-of-tolerance list incorrectly referenced Step 8.2.3.F.

- The TS was referenced, but not to actual step in procedure (Procedure 1305.06, Revision 10).

- The acceptance criteria were not referenced to specific TS (Procedure 1305.06, Revision 10).

- The environmental qualification data/record (Form 1025.06C) was not completed for Instrument 2LE5641-2 as required by the procedure (Procedure 2304.24, JO No. 00789213).

- For Procedure 1408.029, JO No. 00782096, which was performed on March 29, 1989, CETs 005, B07, C06, G05, 006, E07, F03, and G02 were found out-of-tolerance. No out-of-tolerance sheet, or other documentation was initiated in accordance with Administrative Procedure 1000.009, Revision 23, Step 6.5.1 to disposition these deficiencies. As discussed above, resolution of this issue will be tracked as Unresolved Item 313/9016-04.

- In Attachment E, Section A, of Procedure 1502.003, Revision 8, performed on October 15, 1988, Step 31.0 should not have been marked "N/A."

No violations or deviations were identified.

6. EXIT INTERVIEW

An exit interview was conducted on June 29, 1990, with those individuals identified in paragraph 1. At the exit interview, the inspectors briefed the scope of the inspection and summarized the findings. None of the information briefed was identified by the licensee as proprietary.

ATTACHMENT 1

LERs RELATED TO SURVEILLANCE TESTING

313/87-006	Failure to perform PRVS survey
313/89-017	CV-1428 and CV-1429 not IST tested
313/89-023	Power range amps not calibrated
313/89-026	Failure to perform surveillance of fire barriers
313/89-027	SW system vulnerable to single failure
313/89-033	Pwr range NI not calibrated within required frequency
313/89-047	RCS temperature increase >250°F with OX. > TS limit
368/86-015	Missed fire barrier surveillance
368/86-017	Failure to perform Type C testing
368/88-017	Failure to schedule surveillance test for CCU
368/88-020	Reactor trip due to spurious SAIS signal
368/88-021	Missed channel calibration of CPC
368/89-001	Inop log power channel due to personnel error
368/89-002	Missed surveillance on CCUs
368/89-009	EDG FOTS not tested IAW TS
368/89-010	Exceeded surveillance period for LPSI and RWT valves
368/89-017	Less than required log pwr NI channels operable
368/89-025	Missed fire barrier surveillance
368/90-001	Missed Cont bldg TS surveillance

ATTACHMENT 2

ANO PROCEDURES AND RECORDS REVIEWED

TS	Description	Procedure Number
	Unit 1	
Table 4.1-1, Item 2	Test CRD trip breaker	1304.037, Revision 22 1304.038, Revision 23 1304.039, Revision 23 1304.040, Revision 23
Table 4.1-1, Item 4	Calibrate power range amplifier	1304.037, Revision 22 1304.038, Revision 23 1304.039, Revision 23 1304.040, Revision 23
Table 4.1-1, Item 13	Calibrate high reactor building pressure channel	1304.037, Revision 22 1304.038, Revision 23 1304.039, Revision 23 1304.040, Revision 23 1304.041, Revision 18 1304.042, Revision 18 1304.043, Revision 18 1304.044, Revision 17 1304.164, Revision 0 1304.165, Revision 0 1304.166, Revision 0 1304.167, Revision 0
Table 4.1-1, Item 45	Calibrate reactor building sump level instrument	1304.024, Revision 9
Table 4.1-1, Item 61	Calibrate CETs	1408.029, Revision 0
Table 4.1-2, Item 5	Test refueling system interlocks	1502.003, Revision 8
Table 4.1-2, Item 8	Test reactor building isolation trip	1305.06, Revision 10
Table 4.1-2, Item 16	Flow check RCS vent paths	1102.01, Revision 42, Supplement 1
4.3.2	Leak test RCS at 2285 psig prior to criticality	1102.001, Revision 42 QCIR #M-89-0514 QCIR #M-89-0550

4.4.2.1	Inspect reactor building tendons	1402.090, Revision 1
4.5.1.1.1	Demonstrate actuation of high pressure injection system for core cooling	1305.06, Revision 10
4.5.2.1.1(b)	Flow test reactor building spray nozzles	1104.05, Revision 23, Supplement 1
4.6.3	Verify functioning of emergency lighting system	1307.48, Revision 1
4.8.1(e)(1)	For each EFW train, verify each auto valve actuates to its correct position on receipt of actuation signal	1105.005, Revision 14, Supplement 2
4.12.2	Calibrate hydrogen concentration instruments	1304.031, Revision 7
4.23.1c	Demonstrate fire hose stations operable by verifying valve operability and conducting hose hydrostatic test	1306.15, Revision 9
	UNIT 2	
4.1 2.2c	Verify each actuated valve in the boron injection flow path actuates to its correct position on a SIAS test signal	2305.01, Revision 6
4.1.3.1.2	Determine operability of each full length CEA not fully inserted and each inserted part length CEA by movement of at least 5 inches in any one direction	2105.09, Revision 8
Table 4.3-1, Item 8	Calibrate steam generator (SG) Level-low reactor protection trip	2304.041, Revision 11
Table 4.3-2, Item 8b	Calibrate emergency feed-	2304.089, Revision 0

	water actuation for SG level and pressure (A/B)-low and deltaP (A/B)-high	
4.4.4.2	Verify the summed power consumption of the two proportional heater groups is $\geq$ 150 KW	2307.09, Revision 4
4.4.6.1b	Calibrate containment sump level monitoring system	2304.24, Revision 6
4.5.1d.1	Verify each SIT isolation valve opens automatically when RCS pressure exceeds 700 psig	2104.01, Revision 15 Supplement 3
4.6.2.1c.1	For each containment spray system, verify each auto valve in the flow path actuates to its correct position on CSAS and RAS test signals	2305.03, Revision 7
4.6.4.3b	Verify a flow rate of at least 4500 cfm per containment recirculation fan	1092.82, Revision 0
4.7.3.1b	Verify that each auto service water valve servicing safety-related equipment actuates to its correct position on CCAS, MSIS, and RAS test signals	2305.03, Revision 7
4.7.10.1.1e.1 and 3	Perform a system functional test on the fire suppression water system	2307.12, Revision 14
4.8.1.1.1b	Demonstrate required independent circuits between offsite transmission network and onsite Class 1E distribution system operable	2307.006, Revision 2