



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

Report Nos.: 50-259/91-38, 50-260/91-38, and 50-296/91-38

Licensee: Tennessee Valley Authority
6N 38A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

Docket Nos.: 50-259, 50-260, and 50-296

License Nos.: DPR-33, DPR-52, and DPR-68

Facility Name: Browns Ferry Units 1, 2, and 3

Inspection at Browns Ferry Site near Decatur, Alabama

Inspection Conducted: September 16 - October 16, 1991

Inspector: Paul J. Kellogg, Jr.
C. A. Patterson, Senior Resident Inspector

10/31/91
Date Signed

Accompanied by: E. Christnot, Resident Inspector
W. Bearden, Resident Inspector
K. Ivey, Resident Inspector

Approved by:

Paul J. Kellogg,
Paul J. Kellogg, Section Chief,
Inspection Programs,
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10/31/91
Date Signed

SUMMARY

Scope: This routine resident inspection included maintenance observation, operational safety verification, Unit 3 restart activities, reportable occurrences, and action on previous inspection findings.

Results: Two NRC identified non-cited violations were identified. The first violation involved failure to complete the detailed post trip report and submit to the Plant Operations Review Committee within five days as required by plant procedure, paragraph 4. The inspector identified this problem when reviewing the report 12 days after the event. The preliminary trip report was reviewed within 12 hours of the trip but had not received other reviews required by procedure. The licensee changed the procedure to integrate the post trip review into the incident investigation report.

The second violation was for missing information in licensee event reports. The inspector identified this during closeout review of the reports. The missing information was submitted in later revisions and recent reports did not have similar problems. The licensee revised their incident investigation procedure to require Category I reports, such as reactor trips, to be completed within five days, and Category II reports which require reports to the NRC to be completed in 10 days.

An unresolved item was identified concerning dual labeling of a drywell blower power supply, paragraph 3. The inspector identified a power supply breaker labeled as blower 2B-3 on both reactor motor operated valve boards 2B and 2A.

An unresolved item was identified concerning fuse labeling and identification, paragraph 3. The inspector identified, after a plant operator pulled the wrong fuses for a hold order, that fuse unique identifiers were not being used by plant personnel. Fuse unique identifiers were established as part of a Nuclear Performance Plan Program concerning fuse labeling and identification. There was a general lack of training and awareness by plant operations staff concerning this program.

An inspector followup item was identified concerning licensee contractor stop work orders related to Unit 3 procurement activities, paragraph 4.

An inspector followup item was identified concerning foreign material and indications observed during Unit 3 vessel inspection, paragraph 4e.

REPORT DETAILS

1. Persons Contacted

Licensee Employees:

*D. Nauman, Senior Vice President, Nuclear Power
*J. Bynum, Vice President, Nuclear Operations
*O. Zeringue, Vice President, Browns Ferry Operations
*H. McCluskey, Vice President, Browns Ferry Restart
*J. Scalice, Plant Manager
 J. Swindell, Unit 3 Restart Operations Manager
 M. Herrell, Operations Manager
*J. Rupert, Project Engineer
*M. Bajestani, Technical Support Manager
*R. Jones, Operations Superintendent
 A. Sorrell, Maintenance Manager
 G. Turner, Site Quality Assurance Manager
 P. Carier, Site Licensing Manager
 J. McCarthy, Restart Licensing Manager
*P. Salas, Compliance Supervisor
*J. Corey, Site Radiological Control Manager

Other licensee employees or contractors contacted included licensed reactor operators, auxiliary operators, craftsmen, technicians, and public safety officers; and quality assurance, design, and engineering personnel.

NRC Personnel:

P. Kellogg, Section Chief
*C. Patterson, Senior Resident Inspector
*E. Christnot, Resident Inspector
 W. Bearden, Resident Inspector
 K. Ivey, Resident Inspector

*Attended exit interview

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

2. Maintenance Observation (62703)

Plant maintenance activities were observed and/or reviewed for selected safety-related systems and components to ascertain that they were conducted in accordance with requirements. The following items were considered during these reviews: LCOs maintained, use of approved procedures, functional testing and/or calibrations were performed prior to returning components or systems to service, QC records maintained, activities accomplished by qualified personnel, use of properly certified parts and materials, proper use of clearance procedures, and implementation of radiological controls as required.



Work documentation (MR, WR, and WO) were reviewed to determine the status of outstanding jobs and to assure that priority was assigned to safety-related equipment maintenance which might affect plant safety. The inspectors observed the following maintenance activities during this reporting period:

a. Diesel Generator Outage

The inspectors observed and reviewed licensee activities associated with the scheduled outage of the Unit 1/2 B DG. The DG was declared inoperable at approximately 4:00 a.m. on September 22, 1991, and an LCO entered in accordance with TS requirements. Work performed included required annual, 3 year, and 6 year mechanical preventative maintenance and inspections. Additional work was performed including conducting a DG Battery Discharge Test, cylinder head removal for liner seal replacement, cooler eddy current testing, and calibration of associated instrumentation. The required post maintenance testing was performed and the 1/2 B DG declared operable at 3:00 p.m. on September 27, 1991, over 24 hours before the expiration of the 7 day LCO.

The inspectors noted that the scheduled DG outage was preplanned and carried out in a careful and efficient manner. A high level of management attention was evident from the start of the outage as demonstrated by the extent of discussions held during daily Plan Of The Day meetings and by frequent management presence at the work location.

b. SNM and Spent Fuel Pool Cleanup

No violations or deviations were identified in the Maintenance Observation area.

3. Operational Safety Verification (71707)

The NRC inspectors followed the overall plant status and any significant safety matters related to plant operations. Daily discussions were held with plant management and various members of the plant operating staff. The inspectors made routine visits to the control rooms. Inspection observations included instrument readings, setpoints and recordings, status of operating systems, status and alignments of emergency standby systems, verification of onsite and offsite power supplies, emergency power sources available for automatic operation, the purpose of temporary tags on equipment controls and switches, annunciator alarm status, adherence to procedures, adherence to LCOs, nuclear instruments operability, temporary alterations in effect, daily journals and logs, stack monitor recorder traces, and control room manning. This inspection activity also included numerous informal discussions with operators and supervisors.

General plant tours were conducted. Portions of the turbine buildings, each reactor building, and general plant areas were visited.

Observations included valve position and system alignment, snubber and hanger conditions, containment isolation alignments, instrument readings, housekeeping, power supply and breaker alignments, radiation and contaminated area controls, tag controls on equipment, work activities in progress, and radiological protection controls. Informal discussions were held with selected plant personnel in their functional areas during these tours.

a. Unit 2 Status

After recovering from a reactor trip (see section 3.e. below) the unit was tied to the grid at 10:05 p.m. on September 16, 1991. Power operation continued until September 21, 1991, when the generator was removed from the grid to repair an EHC leak. The unit was synchronized back to the grid at 10:45 p.m. on September 21, 1991. The unit remained at power during the remainder of the report period.

b. Housekeeping in Cable Spreading Room

During a routine tour on September 25, 1991, the inspector identified some housekeeping concerns in the B cable spreading room. The inspector toured the cable spreading room from the Unit 2 side, traversed along the wall, and exited the Unit 3 side. The following items were found:

- gloves in cables trays
- conduit fittings in cable trays
- paper in cable trays
- crimping tool in a cable tray
- numerous unterminated wires not labeled or identified
- pieces of sheet metal adrift
- tape in cable trays
- one group of cables near the Unit 3 exit door unsupported on the floor
- various pieces of supports unanchored and adrift

These items were discussed with the Unit 2 SOS and operations management. The housekeeping items were immediately addressed and a work request initiated for the unsupported cables. The inspector discussed that the entire cable spreading room needed to be examined and the assignment of housekeeping responsibilities for different areas of the plant reviewed. The inspector has observed extensive improvement in housekeeping, painting, and material condition of other areas of the plant.

c. Labeling and Indication Problem

A labeling and indication problem was identified in a 4160 volt shutdown board room. A ventilation damper for drywell blower 2A-3 on 2A 480 volt MOV board indicated both open and closed. On the same MOV board, breaker compartment 8A for primary isolation breaker for drywell blower 2B-3 was in the off position. The inspector toured the back of the control room panels with the SOS

and blower 2A-3 was off and not running indicating a possible problem with the damper open limit switch indication. Blower 2B-3 was running but the identification label indicated the power supply was 480 volt MOV board 2B and not 2A. The 2B 480 volt MOV board was inspected and a power supply breaker was found in the closed position. This indicated a breaker labeling problem with compartment 8A on 2A 480 volt MOV board. The blower power supply had been changed due to a cable separation problem and the old breaker identification label was not removed. These items were discussed with operations management and why the items were not discovered by routine tours of plant areas by operations personnel. Operations management stated this would be reviewed further. This is identified as UNR 260/91-38-01, Dual Labeling of Drywell Blower Supply. The inspector will review the design change to determine why the labeling problem occurred.

d. Failure of High Pressure Fire Protection Pipe

The inspector noted during routine control room monitoring that at approximately 6:15 a.m., October 8, 1991, the HPFP system pressure dropped significantly, an electrical motor driven emergency fire pump started and the raw service water reactor building roof tank isolated. This was later identified by the operators as a catastrophic failure of a section of 14 inch diameter HPFP piping located in the area of the cooling towers. This resulted in system pressure dropping to approximately 25 psig, which in turn caused a Unit 3 reactor building star type HPFP deluge valve to trip. This caused a wet down of the second floor of the Unit 3 reactor building. Discussion with the licensee indicated that the trip of the star valve was not unexpected. There had been several similar occurrences in the Unit 2 reactor building prior to a modification which changed the Unit 2 HPFP from a star type valve deluge to a pre-action system. The licensee also indicated that a cause analysis would be performed to determine the cause of the failure of the 14 inch diameter pipe. The inspector will review this analysis as part of the routine inspection program.

e. Unit 2 Scram Report

On September 14, 1991, at 6:33 p.m., Unit 2 automatically scrammed due to low RPV water level. The unit had been operating steady state at 99.8% power immediately prior to the trip. The trip occurred when a soldered elbow joint separated in the 3/8 inch copper line which supplies control air to 2-FCV-2-190, Steam Packing Exhaust Bypass Flow Control Valve. With the existing design, loss of control air to the valve operator resulted in the valve failing closed. This caused a significant reduction in the available condensate flow to the operating condensate booster pumps with two of three operating condensate booster pumps tripping due to low suction pressure. This resulted in two of three operating reactor feed pumps also tripping on low suction pressure. Although the operator responded by immediately reducing reactor power through manually decreasing recirculation flow the reactor scrammed when RPV water level reached 11.2 inches.

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Control room personnel entered 2-E01-1, RPV Control, and declared an unusual event.

On September 26, 1991, the inspector reviewed the Form PMI-57, Preliminary Scram Report and Form PMI-58, Detailed Scram Report for Unit 2 scram number 155 which constitutes the above event. These reports are required in accordance with PMI-15.8, Unit Trip, Reactor Transient, and Plant Transient Analysis. The inspector noted that these reports attributed the scram to an unexpected equipment failure and further stated that all safety systems operated as designed and that total plant response was satisfactory. Metallurgical analysis of the failed joint indicated that it was marginally bonded and had been exposed to external loads beyond normal operating conditions. Although many corrective actions were completed or planned as the result of this event, there were three actions which are significant and noteworthy:

A walkdown was performed of selected control air lines in areas of high traffic or maintenance activities. 1366 soldier joints were visually inspected and tested for leaks. Eleven soldered joints, of those checked, were identified as leaking. The licensee is continuing with additional inspection of soldered joints.

The licensee plans to determine the correct failure mode for 2-FCV-2-190 on loss of control air. This evaluation is to determine if the valve should fail closed or to some other desired position and is due to be completed by November 15, 1991.

During the event all low pressure condensate heaters isolated on high level due to flashing and swell following loss of extraction steam. This has been a recurring problem and represents an undesirable complication during a similar event due to isolation of condensate flow. The licensee is to evaluate this problem and recommend corrective actions by November 15, 1991.

The inspector noted that the Preliminary Scram Report was issued within 12 hours of the event. However, the Detailed Scram Report had received no review by TVA management personnel as of September 26, 1991, eight working days following the scram. Paragraph 4.1.2 of PMI-15.8 requires that the Detailed Scram Report be completed by the Scram Frequency Reduction Coordinator or his representative and submitted to PORC within five working days. The inspector noted that the original copy of the Form PMI-58 had been signed by the Scram Frequency Reduction Coordinator on September 20, 1991, but had none of the other required review signatures. The issuance of the required report may have been held up by the pending issuance of Incident Investigation Report, II-B-91-148, which also covered this event. The licensee failed to disposition the Form PMI-58 within the required period specified in PMI-15.8.



The licensee made procedure changes to integrate the scram report with the incident investigation. The incident investigation was required to be completed in five days. This NRC identified violation is not being cited because criteria specified in Section V.A of the NRC enforcement policy were satisfied. The violation is identified NCV 260/91-38-02, Late Detailed Scram Report.

f. Incorrect Fuse Pulling

On September 22, 1991, during tagging of the B DG for an annual maintenance outage, incorrect potential transformer fuses were pulled. This caused an automatic transfer of the 4160 volt shutdown board to its alternate supply, several control room indications to alarm, six valves to close, and the hydrogen-oxygen analyzer system pumps to trip. Review of the event indicated fuse identification and training problems.

1). Fuse Identification Problem

The AOU pulling the fuses pulled the normal supply-side PT fuses instead of the line PT fuses. This caused a trip of normal supply breaker 1616 and automatic transfer of 4160 volt shutdown board B to its alternate power supply by closing breaker 1714. Both of the PT fuses are in breaker compartment three. The incorrect fuses pulled are in the back of breaker compartment and near the top. The fuses that should have been pulled are in the front of the breaker compartment near the bottom. Both sets of fuses are accessed by opening a panel cover. The holdorder tag was identified as "BKR 1822 line side PT fuses 4 KV SID Bd B Compt 3."

The inspector questioned if the fuses were adequately labeled to prevent this type of error. On the back side of the breaker cabinet a fuse identification label was in place. The label contains a unique identifier for the PT fuses. No label was on the front of the breaker cabinet. However, by using the fuse unique identifier on the back side of the breaker compartment one should have been able to determine if this was the correct fuse to pull. The inspector also noted the hold order tag did not identify the fuse to pull with the unique identifier.

2). Fuse Unique Identifiers

The inspector discussed usage of fuse unique identifiers with operations management and SSS on shift. Although this program was established before to Unit 2 restart as part of a NPP commitment concerning fuse labeling and identification, operations personnel were in general unaware of fuse unique identifiers and were not using them in hold order preparations. The inspector reviewed two drawing sticks containing fuse tabulations and electrical drawings. An electrical board index refers the user to an electrical

board breaker compartment number or load which references an electrical drawing. From the drawing the fuses are identified by unique identifiers.

3). Lack of Experience in Pulling Fuses

In discussions with operations management it was learned that the personnel who pulled the fuses were AUOs. They are not licensed by the NRC. In the past, fuse pulls have been made by ASOS which are licensed SROs. Licensee management stated for the immediate future ASOS would accompany AUOs when pulling fuses on 4160 volt boards.

Review of fuse labeling and identification problem will be identified as UNR 259, 260, 296/91-38-03. The inspector will review the NPP commitment, training, and usage of fuse unique identifiers.

One non-cited violation was identified in the operational safety verification area.

4. Unit 3 Restart Activities (30702)

The inspector reviewed and observed the licensee's activities involved with the Unit 3 restart. This included reviews of procedures, post-job activities, completed field work; observation of pre-job field work, in-progress field work, and QA/QC activities; attendance at craft level progress meetings, restart program meetings, and management meetings; and periodic discussions with both TVA and contractor personnel, skilled craftsmen, supervisors, managers and executives.

a. Restart Equipment List

To support the integrated restart recovery for Unit 3 a REL was developed. The REL is a common database compiled from various Unit 2 lists and program reviews. The REL has sorts for Appendix R, EQ, Seismic, Electrical Issues and others. The REL will be used to plan the unit walkdowns. The area walkdowns are in progress to be followed by system walkdowns. The system walkdowns are end to end walkdowns of a system and will identify any additional components not already identified by blue walkdown tags during the area walkdowns. Following completion of the walkdowns, the REL will be updated to reflect actual plant conditions. A sort of a particular program such as EQ will then be used in the final development of the program.

With the revision of the REL will be creation of the Unit 3 Q-list. First, for each system a set of system requirement calculations will be developed to provide input for the Q-list. Next, the Q-list will be reconciled with the integrated walkdown data and the Unit 2 Q-list. The Q-list will then be placed in the EMS, a computer database, instead of hardbound binders.



To provide confidence that the REL and walkdowns are a quality product, contract QC does a 95/95 review. This review is a 95% confidence level that the items are 95 percent correct. Also, on the spot QC checks are performed when junction box covers are opened briefly to take data. This prevents leaving covers open for extended periods and prevents workorders from remaining open to long.

The inspector concluded that the methodology provides a logical method for obtaining the actual status of the plant configuration.

b. Electrical and Instrumentation Walkdown Procedure Reviews

The inspector reviewed the electrical and instrumentation walkdown procedures. These consisted of BC-003, Walkdown Instruction for Electrical Equipment, Devices and Components - By Area; BC-004, Walkdown Instruction for Electrical Cable and Raceway System; BC-008, Walkdown Instruction for Consolidated Cable Routing System Validation; BC-011, Walkdown Instruction for Mechanical and Instrumentation and Control System; BC-013, Walkdown Instruction for Fire Barriers, (Penetrations, Dampers, Doors, Floors/Walls); and BC-016, General Requirements for Integrated Walkdowns.

Procedure BC-011 was reviewed for instrumentation and control purposes and BC-013 was reviewed for fire barriers involving electrical conduit and cable tray. Procedure BC-016 gives the step by step process to be followed by the personnel performing the walkdowns. This process includes the preparation and the performance of the applicable walkdown to completion using the criteria indicated. After the completion of the field verification walkdown, a sanity check is performed. This requires the Lead Discipline Engineer to perform a completeness check of the package information and contents to ensure that the walkdown package was complete per the applicable walkdown instruction requirements, that applicable attribute data sheets are correctly filled out, and that as-built drawings and sketches are complete and legible. The package contents were also checked to insure that records generated by the walkdowns are in a permanent medium, such as ink, printed, and photocopy. This will ensure legible microfilm and prevent erasure.

The next step in the process was the data/drawing verification referred to as the 95/95 program. The 95/95 Program Group verifies selected attributes of completed walkdown packages for accuracy of data/drawings using the 95/95 sampling program, or similar criteria in accordance with the applicable quality control instructions. The 95/95 program is a sampling method in which statistically selected samples of attributes found in the completed walkdown packages are randomly drawn and verified. For some types of walkdown activities, an individual certified in accordance with ANSI N45.2.6 may be used either for 100% verification or as a member of the walkdown team instead of

sampling. The last step of the process involves transmittal of the completed walkdown package to the program/discipline engineering groups through document control.

The inspector noted from this review that the procedures adequately addressed the criteria for an as-built electrical walkdown program. The program contains review processes, and also contains methods for addressing discrepancies before, during, and after completion of the walkdowns. The inspector concluded from this review that procedures were in place to adequately control the electrical walkdown program.

c. Electrical Walkdown Observations

The inspector observed and reviewed the licensee's activities involving electrical walkdowns. These activities were governed by applicable procedures which were approved by management. The electrical walkdowns consisted of two separate activities, the electrical area and cable. The electrical area walkdowns consisted of identifying electrical components. The electrical cable walkdown involved such items as vertical drop, terminal boxes, bend radius and cable routing. The individual activities were divided into walkdown packages which documented the as constructed status of components and cables. The inspector observed a walkdown team verifying components on the rod drive HCUs. The inspector reviewed completed walkdowns performed on electrical cables from a RMOV electrical board to the recirculation motor generator board and from the Unit 3 I&C bus to the voltage regulating transformers. The inspector concluded from these observations and reviews that the in field verification was performed in accordance with applicable procedures.

d. Procurement Activities

The inspector was informed that two self generated stop work orders were issued involving Bechtel procurement activities. One order involved the use of qualified suppliers lists and the other involved issuing a component for the fire protection system. The first order dealt with TVA's qualified suppliers list and Bechtel's list. TVA instituted a requirement that Bechtel use TVA's list first and then Bechtel's list. If an item cannot be obtained from the use of both lists then Bechtel will generate new procurement documentation. The second order involved release of Q-list items to the field by Bechtel. The item was used in the HPFP system for the Stone and Webster building and Bechtel's procedure for releasing items had not been approved by TVA. The inspector concluded that both actions were necessary and the licensee acted in a conservative manner. This is identified as an IFI 259,260,296/91-38-04, Procurement Stop Work Orders.

e. Unit 3 Vessel Inspection

The inspector periodically observed and reviewed the licensee's IVVI activities. This activity was being performed by GE personnel and consisted of video cameras, video monitors, and video recording equipment. The majority of the activities

observed involved the IVVI of the jet pumps. Eight objects were identified in the jet pump area such as a nail, a piece of small piping, a Chicago fitting, and a pipe cap.

A crack indication was identified on the number five jet pump riser support. The inspector was later informed by licensee representatives that this indication was evaluated as a crack. Additional indications were also identified on the in vessel core spray system piping. The inspector discussed NRC BU 80-13 and its requirements with licensee operations and engineering personnel. The indications were videotaped and reviewed by a special GE representative. Additional IVVI was scheduled for other locations of the vessel such as the IRM tubes. This is identified as an IFI 259,260,296/91-38-05, Foreign Material and Indications Observed in the Reactor Vessel.

No violations or deviations were identified in the Unit 3 restart activities area.

5. Reportable Occurrences (92700)

The LERs listed below were reviewed to determine if the information provided met the requirements of 10 CFR 50.73. The determinations included compliance with reporting requirements; adequacy of the event description and the corrective actions taken; the existence of potential generic problems; and the relative safety significance of each event. Additional in-plant reviews and discussions with plant personnel, as appropriate, were conducted.

10 CFR 50.73, Licensee Event Report System, Paragraph (b) Contents, provides specific requirements for the contents of LERs. The requirements include a narrative description specifying plant operating conditions before the event; an assessment of the safety consequences and implications of the event; a description of any corrective actions planned as a result of the event; and reference to any previous similar events at the same plant that are known to the licensee. During the review of LERs an inspector noted three examples where the LERs did not meet the requirements of 10 CFR 50.73(b) for content. The individual LERs are addressed below.

- a. (CLOSED) LER 259/90-18, Nine Firewatch Observations Were Performed Late Due to Personnel Error Thereby Exceeding Technical Specification Requirements, Revisions 0 and 1.

On December 11, 1990, the Security Micro Access Computer (MAC)-540 malfunctioned and automatically shutdown into a degrade mode. This required a security officer to be dispatched to lock vital area doors to ensure unauthorized access did not occur. Locking of the vital area doors prevented a firewatch from entering battery board room number 1. This prevented a TS required hourly firewatch tour from being performed on time. As immediate corrective actions, the licensee reprogrammed the MAC-540 computer, the security officer searched for and found the firewatch. This allowed the firewatch to continue the hourly

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firewatch tour. An additional eight TS required firewatch tours were performed late because of the delay.

The inspector reviewed Revisions 0 and 1 of the LER, dated January 10, 1991 and February 13, 1991, respectively. The licensee attributed the root cause of this event to personnel error because of inadequate time scheduled for firewatch tour contingencies. Contributing problems included timeliness of actions and communication problems by personnel involved in the incident. In addition, the licensee determined that the MAC-540 system was susceptible to electrical spikes and failures due to aging of the electronic components. The licensee implemented corrective actions for this event including placing firewatches on a compressed schedule to ensure the performance of TS required hourly firewatch tours; retraining firewatches to ensure they understand their responsibility for communicating with security personnel if a computer failure occurred; and installing an uninterruptable power supply for the MAC-540 system as an interim measure. A new power supply is planned to be installed as part of the security upgrade program. The inspector reviewed the licensee's corrective actions and concluded that they addressed the root cause of these events.

During the review of this LER, the inspector noted that revision 0 did not contain all of the information required by 10 CFR 50.73. Specifically, the LER did not include plant operating conditions before the event, an assessment of safety consequences, a description of corrective actions, or reference to previous similar events. The LER stated that an investigation was being conducted and committed to issue a supplement to the LER. The incident investigation (II-B-90-147) which was conducted for this issue was signed by the event manager on December 20, 1990, within 14 days of the event; however, the investigation was not signed by the Site Director until January 11, 1991. It is possible that the corrective actions were not established within 30 days of the event and, therefore, could be provided in a revised LER. The remaining information was available to be included in revision 0 of the LER. The failure to meet the content requirements of 10 CFR 50.73 for this LER is example one of three for NCV 259, 260, 296/91-38-06, Failure To Meet LER Requirements. This NRC identified violation is not being cited because criteria specified in Section V.A. of the NRC enforcement policy was satisfied. A sampling of recent LERs indicated they contain the required information. Additionally LERs now receive review by a Plant Evaluation Review Panel, prior to submission. No additional concerns were identified during the review of this LER.

- b. (CLOSED) LER 259/91-04, Unplanned Start of Unit 1 and 2 Diesel Generators Resulting From Personnel Error During Performance of Common Accident Signal Logic Surveillance Instruction, Revisions 0 and 1.

On April 11, 1991, emergency DGs 1A, 1B, 1C, and 1D and their associated EECW pumps unexpectedly auto-started during a



performance of 1/2-SI-4.9.A.3.a, Common Accident Signal Logic. While performing an annunciator check for the test a non-licensed AOU placed the keylock switch for common accident signal A-A (CASA-A) to the test position when the procedure required placing the keylock switch for common accident signal A-1 (CASA-1) in the test position. This action resulted in the start of the DGs and associated EECW pumps. The root cause of this event was personnel error.

The inspector reviewed Revisions 0 and 1 of the LER, dated May 11, 1991, and June 17, 1991, respectively. In response to the event, the licensee took actions to return the DGs and EECW pumps to standby readiness; the AOU was counseled; and larger keylock switch identification labels were installed. In addition, this event was reviewed by operations personnel. The inspector verified that the corrective actions had been completed.

During the review of this LER, the inspector noted that Revision 0 did not contain all of the information required by 10 CFR 50.73. Specifically, the LER did not include plant operating conditions before the event, an assessment of the safety consequences, or a description of corrective actions. The LER stated that an investigation was being conducted and committed to issue a supplement to the LER. The incident investigation (II-B-91-088), which was conducted for this event, was signed by the event manager on April 22, 1991, within 11 days of the event. However, the investigation was not signed by the Site Director until May 31, 1991. It is possible that the corrective actions were not established within 30 days of the event and, therefore, could be provided in a revised LER. The remaining information was available to be included in Revision 0 of the LER. The failure to meet the content requirements of 10 CFR 50.73 for this LER is example 2 of NCV 259, 260, 296/91-38-06, Failure To Meet LER Requirements. No additional concerns were identified during the review of this LER.

c. (CLOSED) LER 259/91-07, Emergency Diesel Generators Auto-Started Due to a Degraded Voltage Condition 4KV Shutdown Board.

On May 31, 1991, emergency DGs A and B automatically started due to a degraded voltage condition on 4 KV Shutdown Boards A and B, respectively. The shutdown boards are fed from the USST. The event occurred because the winding selection switch of the USST 1B automatic tap changer was set to monitor the lighter loaded winding of the transformer. As a result, when the tap changer responded to lower the voltage of this winding, the voltage of the heavier loaded winding dipped below the degraded voltage setpoint of the 4 KV shutdown boards.

The inspector reviewed the LER, dated July 1, 1991, and concluded that it met the reporting requirements of 10 CFR 50.73. The licensee attributed the root cause of the event to inadequate procedure control. There was no procedure in place to require the loading of the USST with the automatic tap changer to be checked



periodically to ensure that the heavier loaded winding was monitored.

Licensee corrective actions included a revision of 0-GOI-300-1, Operations Routine Sheets. A note was added to Appendix 1J, Unit 2 ASOS Daily Electrical Log, to provide a daily check to ensure that the USST winding selector switch is set to monitor the heavier loaded winding. Additionally, operations personnel were given live time training on this event. The inspector verified that the licensee's corrective actions were completed. No concerns were identified during the review of this LER.

- d. (CLOSED) LER 260/91-09, Inadvertent MSIV Closure During Surveillance Testing, Revisions 0 and 1.

On April 12, 1991, the outboard MSIVs closed during the performance of a SI. Prior to the beginning of the SI, a relay associated with the MSIV isolation logic had been removed and was scheduled for replacement. The removal of the relay placed the MSIVs in a 1-out-of-2 isolation signal condition. In accordance with the SI, a reactor vessel water level transmitter was isolated at the manifold. The transmitter high side subsequently began to depressurize through valve packing leaks. This simulated a low-low-reactor water level signal which completed the isolation logic to close the outboard MSIVs.

The inspector reviewed Revisions 0 and 1 of the LER, dated May 11, 1991, and June 26, 1991, respectively. The licensee determined that the root cause of this event was personnel error. Personnel involved with the impact evaluation for the removed relay failed to adequately assess its effect on the MSIV isolation logic. Immediate corrective actions were taken to terminate the SI and return the reactor water level transmitter to service. Operations, Maintenance, and System Engineering personnel were required to review the event. In addition, the licensee committed to implement a design change to provide a means to monitor MSIV pilot solenoid circuit continuity prior to Unit 2, cycle 7 operation. The inspector concluded that the licensee's corrective actions addressed the root causes of this event.

During the review of this LER, the inspector noted that Revision 0 did not contain all of the information required by 10 CFR 50.73. Specifically, the LER did not include an assessment of safety consequences, a description of corrective actions, or reference to previous similar events. The LER stated that an investigation was being conducted and committed to issue a supplement to the LER. The incident investigation (II-B-90-147) which was conducted for this event was completed and signed by the Site Director on April 30, 1991, within 18 days of the event. All information for the event was available to be included in Revision 0 of the LER. The failure to meet the content requirements of 10 CFR 50.73 for this LER is example 3 of NCV 259, 260, 296/91-38-06, Failure To Meet LER Requirements. No additional concerns were identified during the review of this LER.



e. (CLOSED) LER 260/91-16, Unplanned ESF Actuation Due To A Blown Fuse Caused By A Failed Relay.

On August 19, 1991, a blown fuse in the PCIS logic circuitry resulted in unplanned actuations of various engineered safety features. All actuations occurred as designed.

The root cause of this event was determined to be the failure of a GE type CR120A relay in the PCIS circuitry due to a faulted coil. The licensee's immediate corrective actions consisted of replacing the blown fuse and the faulted relay coil. The licensee determined that problems were occurring with GE CR120A relays that were approaching the end of their predicted service life of 15 to 20 years.

LERs 260/91-01, 260/91-05, and 260/91-08 also indicated that GE type CR120A relays have experienced end of life coil failure. As a result of these events, the licensee committed to replace GE type CR120A relays used in normally energized, safety-related applications for Unit 2 during the Unit 2, Cycle 6 refueling outage. Units 1 and 3 relay coils are scheduled to be replaced prior to each respective unit's startup. As a result of this event, the licensee accelerated the time for replacement of the relay coils in applications where a relay failure could result in a plant shutdown to prior to the Unit 2, Cycle 6 refueling outage.

The inspector reviewed the LER, dated September 18, 1991, and concluded that it met the reporting requirements of 10 CFR 50.73.

One non-cited violation was identified in the reportable occurrence area.

6. Action on Previous Inspection Findings (92701, 92702)

(CLOSED) IFI 259, 260, 296/88-05-06, Potential Single Failure -Two Sets of Two Dampers from Two Trains are Actuated by One Relay.

This item involved a design deficiency in the secondary containment system. Four ventilation dampers located in the equipment bay between the inner and outer doors are required to close on an initiation signal from either of two trains of the SBGT system. Each of the two signals actuate a single relay which closes all four dampers. The single failure of this relay would prevent operation of all four dampers. The licensee committed to modify the logic to meet the single failure criteria during the Unit 2, Cycle 6 refueling outage. Until then the licensee committed to implement compensatory measures to manually close the dampers prior to opening the inside air lock doors.

In a previous inspection (IR 90-03), an inspector verified that the compensatory measures were included in approved plant procedures and left this item open pending completion of the modifications.



During this review, the inspector concluded that the compensatory measures that are in place and incorporated into approved plant procedures should provide adequate controls for this issue until the modifications can be made. This IFI is no longer necessary.

7. Exit Interview (30703)

The inspection scope and findings were summarized on October 21, 1991, with those persons indicated in paragraph 1 above. The inspectors described the areas inspected and discussed in detail the inspection findings listed below. The licensee did not identify as proprietary any of the material provided to or reviewed by the inspectors during this inspection. Dissenting comments were not received from the licensee.

| <u>Item Number</u> | <u>Description and Reference</u> |
|----------------------|--|
| 260/91-38-01 | NCV, Late Detailed Scram Report, paragraph 3. |
| 260/91-38-02 | UNR, Dual Labeling of Drywell Blower Power Supply Breaker, paragraph 3. |
| 259,260,296/91-38-03 | UNR, Fuse Labeling and Identification Problems, paragraph 3. |
| 259,260,296/91-38-04 | IFI, Procurement Stop Work Orders, paragraph 4. |
| 259,260,296/91-38-05 | IFI, Foreign Material and Indications Observed in the Reactor Vessel, paragraph 4. |
| 259,260,296/91-38-06 | NCV, Failure to Meet LER Requirements, paragraph 5. |

Licensee management was informed that 5 LERs, and 1 IFI were closed.

8. Acronyms and Initialisms

| | |
|------|---------------------------------------|
| ANSI | American National Standards Institute |
| ASOS | Assistant Shift Operations Supervisor |
| AUO | Auxiliary Unit Operator |
| CFR | Code of Federal Regulations |
| DG | Diesel Generator |
| EECW | Emergency Equipment Cooling Water |
| EHC | Electro-Hydraulic Control |
| EMS | Engineering Management System |
| EOI | Emergency Operating Instructions |
| EQ | Environmental Qualification |
| ESF | Engineered Safety Feature |
| FCV | Flow Control Valve |



| | |
|------|--------------------------------------|
| GE | General Electric |
| GOI | General Operating Instruction |
| HCU | Hydraulic Control Unit |
| HPFP | High Pressure Fire Protection |
| IFI | Inspector Followup Item |
| IRM | Intermediate Range Monitor |
| IR | Inspection Report |
| IVVI | In Vessel Visual Inspection |
| KV | Kilovolt |
| LCO | Limiting Condition for Operation |
| LER | Licensee Event Report |
| MAC | Micro Access Computer |
| MOV | Motor Operated Valve |
| MR | Maintenance Request |
| MSIV | Main Steam Isolation Valve |
| NCV | Non-Cited Violation |
| NPP | Nuclear Performance Plan |
| NRC | Nuclear Regulatory Commission |
| PCIS | Primary Containment Isolation System |
| PMI | Plant Manager Instruction |
| PORC | Plant Operations Review Committee |
| PSIG | Pounds Per Square Inch Gauge |
| PT | Potential Transformer |
| QA | Quality Assurance |
| QC | Quality Control |
| REL | Restart Equipment List |
| RMOV | Reactor Motor Operated Valve |
| RPV | Reactor Pressure Vessel |
| SBGT | Standby Gas Treatment System |
| SI | Surveillance Instruction |
| SNM | Special Nuclear Material |
| SRO | Senior Reactor Operator |
| SSS | Shift Support Supervisor |
| TS | Technical Specification |
| TVA | Tennessee Valley Authority |
| UNR | Unresolved Item |
| USST | Unit Service Station Transformer |
| WO | Work Order |
| WR | Work Request |