U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-483/86010(DRP)

Docket No. 50-483 License No. NPF-30

Licensee: Union Electric Company
Post Office Box 149 - Mail Code 400
St. Louis, MO 63166

Facility Name: Callaway Plant, Unit 1

Inspection at: Callaway Site, Steedman, MO

Inspection Conducted: April 15 through May 31, 1986

Inspectors: B. H. Little

C. H. Brown

W. L. Forney for P. R. Wohld

6/19/86
Date

Approved by: W. L. Forney, Chief
Reactor Projects Section 1A

6/19/86
Date

Inspection Summary

Inspection on April 15 through May 31, 1986 (Report No. 50-483/86010(DRP))
Areas Inspected: A routine unannounced safety inspection by the resident inspectors and one Region III inspector of licensee actions on previous inspection findings, licensee event reports followup, followup on regional requests, TMI NUREG-0737 items closure, inspection of licensee events, monthly surveillance, operational safety verification, monthly maintenance, Cycle 2 startup.
Results: Two unresolved items relating to EQ of Limitorque Valves discussed in Paragraph 4. Two violations were identified in Paragraph 6., failure to maintain intermediate head safety injection operable, and failure to notify the NRC within four hours of an event.

## DETAILS

1. Persons Contacted

D. F. Schnell, Vice President, Nuclear
S. E. Miltenberger, General Manager, Nuclear Operations
*G. L. Randolph, Manager, Callaway Plant
C. D. Naslund, Manager, Operations Support
A. P. Neuhalfen, Manager, Quality Assurance
*J. D. Blosser, Assistant Manager, Operations & Maintenance
*J. R. Peevy, Assistant Manager, Technical Services
P. T. Abbleby, Assistant Manager, Support Services
W. F. Powell, Assistant Manager, Materials
M. E. Taylor, Superintendent, Operations
D. E. Young, Superintendent, Maintenance
W. R. Robinson, Superintendent, I&C
R. R. Roselius, Superintendent, Health Physics
V. J. Shanks, Superintendent, Chemistry
J. A. Ridgel, Superintendent, Radwaste
G. J. Czeschin, Superintendent, Planning & Scheduling
W. H. Sheppard, Superintendent, Outages
J. M. Price, Superintendent, Training
G. R. Pendergraff, Superintendent, Security
J. E. Davis, Superintendent, Compliance
D. W. Capone, Manager, Nuclear Engineering
W. R. Campbell, Assistant Manager, Nuclear Engineering
A. C. Passwater, Superintendent, Licensing
T. H. McFarland, Superintendent, Design Control
R. D. Affolter, Superintendent, Systems Engineering
D. C. Poole, Consultant
W. H. Stahl, Supervisor, Engineering
*B. K. Stanfield, Assistant Engineer
*S. Petzel, Engineer
*W. R. Bledsoe, Engineer, Compliance

*Denotes those present at one or more exit interviews.

In addition, a number of equipment operators, reactor operators, senior reactor operators, and other members of the quality control, operations, maintenance, health physics and engineering staffs were contacted.

2. Licensee Actions on Previous Inspection Findings (92701)

(Closed) Open Item (483/84-48-01(DRP)): Licensee plans for modification of the pressurizer power operated relief valves (PORV). Based on problems identified during testing of the PORVs at Wolf Creek Generating Station, and the similarity of the Callaway and Wolf Creek Units, Westinghouse issued a Field Change Notice (FCN) No. SCPM 10712 for Callaway to inspect and record measurements of annular orifice gaps formed by the valve body

and valve cage. Valve modification (machining of the cage rib) is subject to inspection findings of inadequate clearances. The licensee included this FCN in Callaway Modification Package CMP-84-0651A, and accomplished the work during the Cycle 1 refueling outage.

The licensee's inspection determined that machining of the valve's cage rib was required. The work was accomplished under Work Request Nos. 54996 and 54997. The inspector reviewed the applicable WRs including the quality control inspection records. The inspector determined that the specified work was completed and the valves were successfully tested.

(Closed) Open Item (483/85006-01(DRSS)): During inspection 50-483/84-16, the licensee agreed to calibrate their gaseous and liquid effluent monitors with appropriate gaseous and liquid sources during the first refueling outage. These calibrations would be in addition to the solid source calibrations currently performed. The monitors involved include the radwaste building monitor GH-RE-10B, the unit vent gas monitor GT-RE-21B, and the liquid radwaste effluent monitor HB-RE-18.

Inspection in this matter included the review of Callaway vendor procedures HTP-ZZ-04154, HTP-ZZ-04155 and HTP-ZZ-04156 and the calibration reports issued by Radiological and Chemical Technology, Inc.

The licensee's calibration of the gaseous and liquid effluent monitors has been completed.

(Open) Unresolved Item (483/85007-01(DRS)): Closure surveillance testing of normally closed check valves that perform a safety function in the closed position. Per a previous agreement (as reported in Inspection Report No. 50-483/86012(DRS)) the licensee provided a list of all safety related check valves at the Callaway Plant for inspector review. A preliminary, onsite review of the check valve list was done in an attempt to categorize each valve as tested or not and to determine at least one obvious closure requirement for each valve. The results of this review indicate that there are a number of check valves not being closure tested that should be.

In the listing total of 225 safety related check valves, the review results were as follows:

<u>There are 143 check valves not tested for closure</u>

8 - Prevent reverse flow through an idle pump in parallel pump combinations.

22 - Isolate seismic/non-seismic pipe boundaries or different pipe classes (such as those which define the LOCA/non-LOCA pipe boundaries).

8 - Direct auxiliary feedwater flow to the proper steam generator during postulated accident conditions.

10 - Prevent overpressurization of auxiliary feedwater pump suction piping.

4 - Prevent blowdown from one interconnected steam generator to another during steam fault conditions.

23 - Had no apparent safety related closure requirement.

25 - Did not appear to be properly listed as safety related (apparent listing error) or the valve is not used (internals removed).

43 - Were not identified either as having or not having a closure safety function during the inspection because their function was not apparent from a cursory drawing review.

There are 65 valves tested for closure

10 - Are normally open check valves which are tested per the ASME Code, Section XI, closure stroke test requirements.

31 - Are tested to provide a high/low piping interface isolation (includes WASH 1400, Event V valves).

14 - Are leak tested for containment isolation.

10 - Are tested per the concerns raised by the inspector under this unresolved item.

Others (17)

2 - Are visually inspected for "free swing" on a periodic basis.

13 - Are fire protection system check valves which are covered by separate fire protection requirements and inspections.

2 - Are essential service water check valves that are not tested but the failure of which would be readily identified by the affect on normal system operation.

The inspector emphasized that the onsite check valve review was only a "quick look" and that an in-depth evaluation is needed by qualified system engineers. The licensee agreed to perform and document a review of the check valves on the list for their required closure functions and closure test requirements. The staff indicated that this would be available for inspector review in approximately 90 days.

No violations or deviations were identified.

3. Licensee Event Reports (LERs) Followup (92700)

Through direct observations, discussions with licensee personnel, and the review of records, the following LERs were reviewed to determine that the

events were documented and evaluated, reportability requirements were fulfilled, and appropriate corrective measures had been implemented.

(Closed) LER 85-010-00: Reactor Trip on Partial Loss of Feedwater Flow. On February 21, 1985, a reactor trip and associated actions occurred due to low steam generator water levels. The low water levels occurred when power was secured to a feedwater control panel which in turn resulted in one main feedwater pump shutting down. The remaining feedwater pump does not have the capacity for 100% reactor power. The loss of power to the control panel was due to the failure of the supply transformer. The transformer was replaced and a plant recovery was made. The transformer was found to contain foreign material and a procedure was issued to inspect and clean the transformers on an 18-month schedule. The transformer maintained the design safety function of isolation, therefore, a Part 21 report was not issued.

(Closed) LER 85-021-00: Inadequate Seismic Qualification of Class IE Batteries. On April 4, 1985, the licensee was notified of a potential problem relative to the spacing between the Class IE batteries and the battery racks. The immediate corrective action was to insert spacers between the end cells and the battery rack end stringers. The licensee and contractor evaluated the corrective action and considered the spacers a permanent fix.

(Closed) LER 85-023-00: Inadvertent Engineered Safety Features Actuation. At three different times, April 13, April 17, and May 6, 1985; inadvertent containment purge isolation and control room ventilation isolation signals were received. The cause was a faulty vacuum transducer in a radiation monitor. With a joint effort between the monitor vendor and several plants that had experienced similar problems, a more reliable transducer was developed and installed. The modification has apparently solved the problem.

(Closed) LER 85-025-02: Intermediate Range Hi Flux Reactor Trip. On May 6, 1985, a reactor trip and associated actions occurred during a reactor startup (power 0% and in Mode 2) due to a intermediate range high flux signal. The spurious signal was caused by a fuse blowing in the neutron monitoring channel. The vendor determined that a faulty switch caused the fuse to blow. The switch replacement appears to have solved the problem, but the failure mode of the switch and other possible causes that would overload the fuse are still being evaluated.

(Closed) LER 85-026-00: High Negative Flux Rate Reactor Trip. On June 7, 1985, a reactor trip occurred from 100% due to a high negative flux rate. The negative rate was generated due to rod drop when four rod control power supplies failed (thyristor bank insulator failure) during trouble-shooting an immovable control rod. The failed equipment was replaced and the review shows the failure to be an isolated occurrence and no further action was to be taken. The immovable control rod was due to a loose terminal screw.

(Closed) LER 85-042-00: Inadvertent Reactor Trip. On October 2, 1985, a reactor trip from 100% power occurred due to personnel error. Instrument and Control personnel were performing test ISP-BB-OT002, "RTD Calibration Verification" (a one time test) when an abnormal resistance reading was found on the No. 4 RCS loop, the loop was in test condition, and trouble-shooting was commenced. Loop No. 1 RTD terminal block test point was erroneously taken from the prints. When the troubleshooting process checked these terminals a signal was induced in loop No. 1 RCS protection which completed the 2 out of 4 logic for the reactor trip from over Temperature Delta T and Over Power Delta T signals. The failure to notify the shift supervisor before commencing troubleshooting was a failure to follow plant policy procedures. The error in reading the print contributed to the event. The test procedure did not allow troubleshooting if a problem was located. The test procedure also had an error which resulted in the abnormal resistance reading. The personnel involved were counseled on procedure and policy compliance.

No citation was issued since under the Enforcement Policy this was considered a Technical Specification violation of lesser severity which was identified and satisfactorily corrected by the licensee, and no further violations of a similar nature have occurred. This item is considered closed.

(Closed) LER 85-043-00: Technical Specification Hourly Firewatch Patrol Missed. The Technical Specification 3.7.10.2 requires hourly firewatch patrols to be established within one hour. On October 3, 1985, the hourly patrol was not established for one hour and twenty-five minutes in the south electrical cable chase due to a misunderstanding of the firewatch personnel. The firewatch personnel were retrained on T/S requirements for the firewatch patrols. Also the operations personnel, if possible, verify the patrol is established before taking a fire protection system out of service.

No citation was issued since under the Enforcement Policy this was considered a T/S violation of lesser severity which was identified and satisfactorily corrected by the licensee, and no further violations of a similar nature have occurred. This item is considered closed.

(Closed) LER 85-045-00: Technical Specification 3.7.10.2 Violation Due to Personnel Error. On October 16, 1985, a portion of the sprinkler system for the auxiliary building 2000 feet elevation cable trays was not identified as inoperable during surveillance testing. Therefore, a continuous firewatch per Technical Specification 3.7.10.2 was not established for about 17 hours, although a hourly firewatch did patrol these areas for this time period. The delay was due to electricians and engineers failing to communicate and recognize that sprinkler alarms were also present on the multiplexer that was being worked. The sprinkler system was inoperable due to a failed "supervision actuation module" which indicated the loss of the ability to actuate the pre-actuation sprinkler system in these areas.

The surveillance procedure MSE-KC-FW001, "Technical Specification (T/S) Fire Detection Functional and Supervisory Operability Test", has been revised to include the alarms that should be actuated or cleared during the applicable steps of the procedure. The maintenance department was provided a set of the electrical prints for the fire protection systems and the electricians received training on the fire protection system. The fire detection in these areas, which provide an alarm in the control room, were functional during the time the above sprinkler system was inoperable.

No citation was issued since under the Enforcement Policy this was considered a Technical Specification violation of lesser severity which was identified and satisfactorily corrected by the licensee, and no further violations of a similar nature have occurred. This item is considered closed.

(Closed) LER 85-047-00: Operation with a Condition Prohibited by Technical Specifications. On October 18, 1985 at 1145 CST, the plant entered Technical Specification 3.0.3 due to both centrifugal charging pumps (CCPs) being inoperable. "A" CCP had been taken out of service for maintenance and later "B" CCP's room cooler fan was discovered to have broken drive belts. The "A" CCP was made operable in less than an hour and preparations for a plant shutdown were suspended. The belts were replaced the following day. This was considered to be caused by equipment failure.

No citation was issued since under the Enforcement Policy this was considered a Technical Specification violation of lesser severity which was identified and satisfactorily corrected by the licensee, and no further violations of a similar nature have occurred. This item is considered closed.

(Closed) LER 85-050-00: Inadvertent Engineered Safety Features Actuation. On November 27, 1985, a control room ventilation isolation and a containment purge isolation occurred. The cause appeared to be a fuse failure at the microprocessor for the containment purge radiation monitor and a tripped breaker supplying power to the monitor's flow pump. The containment was not being purged at the time and the redundant monitor remained operable. Troubleshooting found no equipment damage. The fuse was replaced and the breaker closed with no further problem.

(Closed) LER 86-008-00: Technical Specification Violation. On April 3, 1986, while the plant was in Mode 5 (Cold Shutdown), the licensee determined that Train "A" Control Room Emergency Ventilation System (CREVS) had been inoperable since March 18, 1986. The "A" Train became inoperable when the air conditioning unit was deenergized to permit inspection and repair of the CREVS fire dampers. Technical Specification (T/S) 3.7.6, Action Statement requires that when in Mode 5 or 6; "With one Control Room Emergency Ventilation System inoperable, restore the inoperable system to OPERABLE status within 7 days or initiate and maintain operation of the remaining OPERABLE Control Room Emergency Ventilation System in the recirculation mode".

On April 3, 1986, in response to a work request by maintenance personnel to commence work on the fire dampers, control room personnel found that the air conditioning unit ("A" Train) had been tagged out since March 18, 1986, without having placed the "B" Train CREVS in the recirculation mode. This action should have been taken by March 25, 1986. Control room personnel immediately placed the "B" Train CREVS in the recirculation mode and documented the violation on Incident Report No. 86-096.

The licensee's evaluation of the event determined the root cause to be operations personnel's initial failure to correctly assess the "operability" impact of tagging out the air conditioning unit. Consequently, the "A" Train was not declared "inoperable" (no entry in the equipment out of service logs).

To prevent recurrence, a procedural change was written to require an independent review of WPAs, Equipment Out of Service Logs, Temporary Modifications and Locked Components for each ascending mode change. Also, personnel involved were re-instructed concerning T/S operability requirements. This event has been included in the licensed operator requalification program, "Lessons Learned".

The inspector determined that, once identified by the licensee, action was promptly taken to correct the condition and report the violation. During the period that the air conditioning unit was out of service, control room temperatures were maintained below 84 degree F (the temperature specified in T/S 4.7.6.a.). The Train "B" CREVS and Train "A" pressurization and filtration systems were operable and would have protected control room personnel from airborne contamination if needed. The event posed no threat to public health and safety.

No citation was issued since under the Enforcement Policy this was considered a Technical Specification violation of lesser severity which was identified and satisfactorily corrected by the licensee, and no further violations of a similar nature have occurred. This item is considered closed.

(Closed) LER 86-015-00: Auxiliary Feedwater Actuation System (AFAS): When PK51 Feeder Breaker Was Inadvertently Tripped. On April 23, 1986, while in Mode 1 with reactor power at 31%, the control room received numerous alarms on the annunciator boards. Letdown and makeup to the volume control tank was lost, excess letdown and AFAS was initiated. Plant conditions were determined to be stable, and no reactor trip occurred.

The licensee control room personnel's initial investigation determined that a non-vital power breaker PK51 had been manually opened. Based on no work having been authorized involving PK51, the event was considered as possible tampering. The control room personnel promptly notified the shift security supervisor and the plant manager. After hearing public address (PA) instructions for the shift security officer to contact the control room, the NRC resident inspector responded by going to the control room.

The inspector observed licensee's immediate response to the event which included additional security measures being implemented. The inspector was advised of licensee's planned investigation in this matter.

On April 24, 1986, a radchem technician acknowledged to the licensee that he had inadvertently opened breaker PK51 on April 23, 1986. The technician was a contract employee during the recent Cycle 1 refueling outage and following the outage he was hired by Union Electric.

The NRC senior resident inspector and Region III security specialist interviewed members of the licensee's staff, including the technician involved in the event. The inspectors were satisfied that the information provided by the technician, with regard to operating switch PK51, was in agreement with control room observations during the event.

The licensee's investigation determined that the event resulted from unauthorized operation of breaker PK51. The technician's action, although well meaning, highlighted existing weaknesses in the licensee's "new hire" indoctrination program. Specifically, organizational interface, departmental authority/responsibility, and administrative controls on work and safety practices.

The licensee has implemented a radwaste "Indoctrination Checklist for New Personnel", and revised the general employee training program to assure responsibility/authority for equipment operation is stressed. This incident will be included in the licensee's requalification training program.

The inspector determined that the licensee response was prompt and thorough and that action has been taken to prevent recurrence.

No other violations were identified other than those noted above that were identified, reported and corrected by the licensee.

4. Followup on Regional Requests (92701)

a. Temporary Instruction (TI) 2515/75, "Inspection of Limitorque Motor Valve Operator Wiring"

An inspection was performed to ascertain the environmental qualification (EQ) of wiring used in Limitorque Motor Valve Operators. The inspection included the following:

Physical inspection of Limitorque operator wiring to determine what wiring is actually installed in the operators.

Review of licensee's environmental qualification documentation to ensure qualification of wiring is adequately established.

Review of licensee's action relative to IE Information Notice (IN) 86-03, "Potential Deficiencies In Environmental Qualification of Limitorque Motor Valve Operator Wiring".

Physical Inspection: On May 22, 1986, the inspector performed an in plant inspection of four Limitorque Motor Valve Operators. The inspector selected the below listed valves based on a review of SNUPPS Final Safety Analysis Report (FSAR), Table 3.11(B)-3, "Identification of Safety-Related Equipment and Components". Three valves selected are located in the reactor containment building and one is located in the lower piping penetration room of the reactor auxiliary building. The inspector was accompanied by representatives from licensee's Quality Assurance, Quality Control, Engineering, and Maintenance Departments.

| VALVE NO. | DESCRIPTION |
|---|---|
| EP-HV-8808B | Safety Injection Tank Outlet Isolation Valve "B" |
| EP-HV-8808C | Safety Injection Tank Outlet Isolation Valve "C" |
| BB-HV-8037B | Pressurizer Relief Tank (PRT) Outlet Isolation Valve |
| EM-HV-8835 | Safety Injection Discharge to Cold Leg Injection Isolation Valve |

Inspection Findings:

| VALVE NO. | *TERMINAL WIRING | *FIELD WIRING |
|---|---|---|
| EP-HV-8808B | Raychem Flamtrol | G34<br>C02, C03, C04<br>G2A |
| EP-HV-8808C | Raychem Flamtrol | G34<br>C02, C03, C04<br>G2A<br>BRAND Rex #43 |
| BB-HV-8037-B | Rockbestos Firewall III | G31<br>C07 |
| EM-HV-8835 | Raychem Flamtrol | G31<br>C02, C04 |

*Each motor operator contained some terminal and field wires which either lacked identification markings or with unreadable markings. However, these wires were similar (size/color) to other wires identified by markings. In addition, limit switch space heater wiring was unmarked, approximately 20 AWG size. SNUPPS Report of Independent Review of EQ Programs (Response to NUREG 0588) states: "In all cases, the limit switch space heater is connected in a Class IE circuit. Since the heater failure mode will result in an open circuit, it is considered that the heaters need not be qualified. However, Limitorque has performed an accident test

on a heater to demonstrate that the heater remains operative following seismic aging and a simulated LOCA (i.e., it would not fail in a manner detrimental to plant safety.)

Review of Licensee's EQ Documentation

The inspector reviewed the below listed EQ Test Reports and determined that the operator wiring in the four operators inspected had been environmentally qualified.

| EQ TEST REPORT NOS. | TERMINAL WIRING |
|---|---|
| Franklin Institute Research Laboratories Test Nos. E-031.2, E-031.3 | Raychem Flamtrol |
| Rockbestos Test Report Nos. E-057-020-03, E-057-021-06, E-057-036-02, E-057-050-02 | Rockbestos Firewall III |
| | FIELD WIRING |
| Rockbestos Test Report Nos. E-057-020-03, E-057-021-06, E-057-036-02, E-057-050-02 | C02, C03, C04, C07 |
| ANACONDA Test Report No. E-58-0005-03 | G2A, G31, G34 |
| BRAND Rex Test Report No. E-057B-0014-02 | BRAND Rex |

The inspector reviewed licensee plant walkdown sheets to determine if licensee's identification of operator wiring was in agreement with the inspectors findings for the four operators inspected. The licensee's quality records of plant walkdowns included inspections performed through Startup Work Requests (SWRs) and Quality Control (QC) checklists. The licensee records were in agreement with the inspector's findings.

Licensee's Response to IE Information Notice 86-03

In January 1986, the licensee performed a Quality Assurance (QA) surveillance on EQ of Limitorque Motor Valve Operator wiring (QA Surveillance Report No. P8601-12). The surveillance determined that each operator was field inspected prior to initial plant startup using a Startup Work Request (SWR). QA sample inspection of approximately 10% of the SWRs determined that the operator wiring was environmentally qualified.

Union Electric Nuclear Engineering (UENE) in response to Information Notice 86-03 performed a review of all SWRs relating to the field inspection of Limitorque Valve Operators. This review identified six valves as having suspect internal wiring. Nuclear Engineering

memorandum No. 558, dated March 11, 1986, requested site engineering to perform a field inspection to identify the installed wiring. The results of the field inspection was as follows:

| VALVE NOS. | WIRING | EQ STATUS |
|---|---|---|
| BB-HV-8000A | Rockbestos | Qualified |
| BB-HV-8000B | Raychem | Qualified |
| EJ-HV-8701A | Raychem | Qualified |
| EJ-HV-8716A,B | Not Identifiable | Questionable |
| EJ-HV-8809B | Techbestos 14 AWG 600-V | Questionable |

The licensee has replaced the operator wiring associated with EJ-HV-8716A,B and EJ-HV-8809B with environmentally qualified wiring and has requested Westinghouse response regarding the EQ status of the wiring removed.

The inspector determined that the licensee was responsive to IE Information Notice 86-03 and took prompt corrective action to ensure that the installed operator wiring is environmentally qualified. The licensee's evaluation of the EQ status of the wiring replaced is in progress. This matter is unresolved pending further NRC review. Unresolved Item No. 483/8610-01(DRP)

Motor Operated Valves (MOV) Conduit Seals

On May 28, 1986, the licensee advised the inspector that an engineering department review of construction documentation was unable to establish that all required containment MOV conduit seals were in place. The licensee performed the review in response to conduit seal deficiencies identified at the Wolf Creek Plant. The licensee determined that although work authorizing documents had been issued, there was no sign offs for work accomplishment.

On May 23, 1986, while the plant was in Mode 5 (Cold Shutdown), the licensee issued Work Request Nos. 60511 through 60519 to install containment MOV conduit seals in accordance with Bechtel Drawing M-2Y007 (Conduit Seals for Containment MOVs). This action was taken to assure existing EQ status of the MOVs prior to pending plant startup. The licensee stated that external visual inspection could not readily verify conduit sealing in accordance with the design drawing, as drawing M-2Y007 requires or does not require the use of sealant depending on the actual field routing of the conduit. The licensee's evaluation of this matter is continuing and plans to perform a field inspection during the next shutdown.

The licensee reviewed Bechtel Drawing M-2Y007, SNUPPS Report of Independent Review of EQ Programs, and WR Nos. 60511 through 60519. The inspector also interviewed licensee maintenance personnel that performed the conduit sealing work. Based on this review, the inspector determined that the containment MOVs conduit seals have been installed in accordance with Bechtel Drawing M-2Y007. However,

the acceptability of conduit seals prior to May 23, 1986, could not be determined. This matter is unresolved pending further NRC review. Unresolved Item No. 483/86010-02(DRP)

b. Temporary Instruction (TI) 2515/77, "Licensee Response to Selected Safety Issues (Biofouling of Cooling Water Heat Exchangers)

An inspection was performed to assess licensee's programs for detection and prevention of biofouling of cooling water heat exchangers. The inspection included a review of applicable procedures and interviews with licensee's maintenance, chemistry, engineering, and operations personnel.

Prior to the initial startup, the licensee detected tube damage due to biofouling in the main generator hydrogen coolers which was attributed to stagnant water conditions prior to plant startup. No additional biofouling has been experienced. The licensee has implemented procedures; ETP-ZZ-03002, "Performance Testing of Plant Heat Exchangers" and ETP-ZZ-03003, "Monitoring of Plant Heat Exchangers". The licensee also maintains 1 PPM chlorine in the service water system as a preventive measure. The licensee provides procedures and operator training relating to degraded heat exchanger performance.

No violations or deviations were identified.

5. TMI NUREG-0737 Items Closure (92705)

The following TMI NUREG-0737 line items are considered to be closed:

II.B.3.3
II.B.3.4
II.F.1
II.F.2A
II.F.2B
II.F.2C

A review of Inspection Report Nos. 84-10(DRMSP), 84-16(DRMSP), 86004(DRSS), and others was made and discussions were held with the applicable inspectors to verify that these line items were completed. The item identification is included here as a correlation for NUREG-0737 tracking system as the previous closeouts were for the Safety Evaluation Report tracking system or other numbering systems.

No violations or deviations were identified.

6. Inspection of Licensee Events-Inoperable Intermediate Head Safety Injection (IHSI) System (92700)

a. Background

On April 13, 1986, the licensee advised the senior resident inspector that on April 12, 1986, while in Mode 3 (Hot Standby), the plant was placed in a condition prohibited by Technical Specification (T/S) 3.5.2, when the IHSI system was inadvertently isolated. The inspector was given a copy of Incident Report No. 86.109 which documented the violation. The inspector was also briefed on the event, the cause and immediate action taken, and of licensee's planned investigation in this matter.

An inspection was performed to assess the event, root cause/contributing factors, and licensee corrective measures. The inspection included a review of event reports, operating logs, administrative and surveillance procedures, personnel interviews, and meetings with licensee management.

b. Inspection Findings

On April 12, 1986, at 0402 CST, the safety injection (SI) cold leg isolation valve EM-HV-8835 was closed to perform surveillance test OSP-EP-V0003 (Section XI Accumulator Safety Injection Valve Operability). Technical Specification (T/S) Limiting Condition for Operation 3.5.2 specified that the IHSI system be operable in Mode 3. T/S Surveillance Requirements 4.5.2 specifies that EM-HV-8835 (Safety Injection Cold Leg Isolation Valve) be open. EM-HV-8835, being closed, isolated the common discharge path from both SI pumps to the cold leg injection, putting the plant in a condition prohibited by Technical Specifications.

On April 12, 1986, at 1010 CST, the reactor operator, while taking the required daily log readings, observed that EM-HV-8835 was closed. The reactor operator immediately informed the shift supervisor (S/S). The S/S declared both SI Trains inoperable and entered T/S 3.0.3 and had valve EM-HV-8835 opened. The S/S issued Incident Report No. 86-109 documenting the violation.

On May 7, 1986, the inspector met with the licensee to assess licensee's investigation, evaluation of cause, and corrective actions regarding the IHSI system isolation. The licensee discussed their findings of root cause and contributing factors and of corrective action taken and planned. The cause of the event was attributed to personnel scheduling and performance errors as follows:

Scheduling

Scheduling Personnel - Scheduled the performance of OSP-EP-V0003, "as required in Mode 3 prior to RCS pressure reaching 1000 psig".

Compliance Personnel - Identified OSP-EP-V0003 on an attachment to the Mode 3 Change Letter, "to be performed in Mode 3 as conditions permit".

The task performance review considered the operability requirement of the safety injection accumulators but failed to recognize the Surveillance Task Sheet (STS) task performance mode requirements, which specified Mode 4 only.

c. Performance

Operations personnel erroneously authorized and performed OSP-EP-V0003 in Mode 3. Several errors were made regarding the authorization and performance as follows:

(1) OSP-EP-V0003 - Initial condition specified performance of the test in Mode 4. Operations personnel issued a Temporary Change Notice (TCN) changing Mode 4 to Mode 3. APA-ZZ-00101 (Preparation, Review, Approval and Control of Plant Procedures) provides for temporary procedure changes, "which clearly does not change the intent". Management Directive UO 86-59 issued March 4, 1986, reemphasized(s) control of TCNs and identified that "significant changes to initial conditions are changes which are changing the intent".

(2) Operations personnel changed the Surveillance Task Sheet No. ST-00070 Task Performance Mode from "Mode 4 only" to Mode 3. This change did not receive the required review and approval as specified in APA-ZZ-00340 (Surveillance Program Administration).

(3) Operations personnel's failure to be cognizant of the overall plant effect of closing EM-HV-8835. (The isolation of a required safety system).

(4) In addition to issuing an Incident Report, the licensee classified the event as a 30 day Licensee Event Report (10 CFR 50.73). However, a four hour report to NRC Operations Center should also have been made in accordance with 10 CFR 50.72(b)(2)(iii). This report was not made. Failure to notify the NRC within four hours is a violation of 10 50.72(b)(2)(iii). No. 483/86010-03(DRP).

d. Licensee's Corrective Action to Prevent Recurrence Included:

(1) For future outages, outage scheduling will schedule OSP-EP-V0003 in Mode 4 as a Mode 3 restraint.

(2) Progressive discipline has been initiated for appropriate outage personnel. Outage Planning and Scheduling personnel have been advised concerning outages involvement in this event.

(3) An outage procedure currently in draft form will specifically address use of the STS "Task Performance Mode" for scheduling surveillances.

(4) Future mode change letters will reflect only required task performance conditions and T/S requirements for mode changes.

(5) The TCN that allowed performance of the OSP in Mode 3 was voided.

(6) Progressive discipline has been initiated for operations personnel involved in this event and the necessity to comply with programmatic controls has been reemphasized.

(7) Management will reemphasize the existing administrative controls for revisions to task sheets and surveillance procedures to appropriate plant personnel.

(8) Appropriate personnel will receive guidance concerning reporting requirements of 10 CFR 50.72.

The inspector determined that the violation, once identified by the licensee, was promptly corrected, documented, and received a high level of attention. Based on the short duration of the violation, plant conditions of low temperature and pressure with low stored heat energy and the availability of backup emergency core cooling systems, the event posed no significant threat to the public or plant safety. However, the event highlighted significant performance errors. These errors included; inadequate task reviews, failure to adhere to licensee administrative procedures, and failure to be cognizant of the overall plant effect resulting from surveillance testing.

The licensee's failure to maintain the IHSI system "operable" while in Mode 1, 2, and 3 is a violation of Callaway Plant Technical Specifications Limiting Condition for Operating 3.5.2. No. 483/86010-04(DRP).

7. Monthly Surveillance (61726)

The inspectors reviewed or observed selected portions of Technical Specification required surveillance testing during power operations and prior to mode changes relative to the startup from the refueling outage.

Items which were considered during the inspections included whether adequate procedures were used to perform the testing, test instrumentation was calibrated, test results conformed with Technical Specifications and procedural requirements, and the test was performed within the required time limits. The inspector determined that the test results were reviewed by someone other than the personnel involved with the performance of the test, and that any deficiencies identified during the testing were reviewed and resolved by appropriate management personnel.

No violations or deviations were identified.

8. Operational Safety Verification (71707)

The inspectors observed control room operations, reviewed applicable logs, and conducted discussions with control room operators throughout the inspection period. The inspector verified the operability of selected safety related systems, reviewed tagout records, and verified proper return to service of affected components. Tours of the reactor, auxiliary, and turbine buildings were conducted. During these tours, observations were made relative to plant equipment conditions, fire hazards, fire protection, adherence to procedures, radiological control and conditions,

housekeeping, security, tagging of equipment, ongoing maintenance and surveillance, containment integrity, and availability of safety related equipment.

No violations or deviations were identified.

9. Monthly Maintenance (62703)

Selected portions of the plant maintenance activities on safety related systems and components were observed or reviewed to ascertain that the activities were performed in accordance with approved procedures, regulatory guides, industry codes and standards, and that the performance of the activities conformed to the Technical Specifications.

The following items were considered during these inspections: the limiting conditions for operation were met while components or systems were removed from service; approvals were obtained prior to initiating the work; activities were accomplished using approved procedures and were inspected as applicable; functional testing and/or calibrating were performed prior to returning the components or systems to service; parts and materials that were used were properly certified; radiological controls were implemented as necessary; and, fire prevention controls were implemented.

No violations or deviations were identified.

10. Cycle 2 Startup (61702, 61705 through 61710)

The initial criticality of the Cycle 2 core was observed by the inspector on April 15, 1986. The startup was performed per ETP-ZZ-ST002, "Engineering Test for Initial Criticality". Selected portions of the following tests/ procedures were observed during their performance and the results were reviewed after the evaluation of data was completed.

ETP-ZZ-00007 Reactimeter Dynamic Checkout

ETP-ZZ-ST004 All Rod Out Boron Endpoint

ETP-SR-ST001 All Rods Out Flux Map

ESP-ZZ-00009 Moderator Temperature Coefficient Measurement

ESP-BB-03015 Reactor Coolant Flow Measurements

ESP-ZZ-00006 Incore/Excore Calibration

ETP-ZZ-ST005 Rod Bank Worth Measurement

The moderator temperature coefficient was slightly positive for all rods out. The rod withdrawl restriction will continue for 4000 MWD/MTV burnup of the core. The other tests indicated the results were about where they were expected. The mode changes were observed and requirement check sheets were reviewed. Selected requirements for mode changes were verified to have been performed.

No violations or deviations were identified.

11. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain wheter they are acceptable items, violations, or deviations. Two unresolved items disclosed during the inspection are discussed in Paragraph 4.

12. Exit Interview

The inspector met with licensee representatives (denoted under Persons Contacted) at intervals during the inspection period. The inspector summarized the scope and findings of the inspection. The licensee representatives acknowledged the findings as reported herein. The inspector also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspector during the inspection. The licensee did not identify any such documents/processes as proprietary.

13. Enforcement Conference

An Enforcement Conference was held on June 3, 1986, at the NRC Region III office, Glen Ellyn, Illinois between Mr. D. F. Schnell and members of the NRC Region III staff. During the meeting the Licensee presented facts relative to the event on April 12, 1986, discussed in Paragraph 6 above. The Licensee presented background information, corrective action to prevent recurrence, and potential mitigating facts which the NRC will use to determine the appropriate escalated enforcement action.