

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-454/91002(DRP); 50-455/91002(DRP)

Docket Nos. 50-454; 50-455

Licenses No. NPF-37; NPF-66


Licensee: Commonwealth Edison Company  
Opus West III  
1400 Opus Place  
Downers Grove, IL 60515

Facility Name: Byron Station, Units 1 and 2

Inspection At: Byron Site, Byron, Illinois

Inspection Conducted: January 3 through February 11, 1991

Inspectors: W. J. Kropp  
D. R. Calhoun

Approved By:  Bruce L. Burgess, Chief  
Reactor Projects Section 1A

2/20/91  
Date

Inspection Summary

Inspection from January 3 through February 8, 1991 (Reports No. 50-454/91002(DRP); No. 50-455/91002(DRP)).

Areas Inspected: Routine, unannounced safety inspection by the resident inspectors of action on previous inspection findings, operational safety, onsite event followup, current material condition, radiological controls, security, LER followup, evaluation of licensee self-assessment capability, evaluation of Quality Assurance program, implementation of audit program, corrective action, maintenance activities, reliability centered maintenance, surveillance activities, installation and testing of modifications, on-site review.

Results: Of the sixteen areas inspected, no violations were identified. The following is a summary of the licensee's performance during this inspection period:

Plant Operations

The licensee's overall performance in this area continues to be good during this inspection period. The operations staff continues to maintain good professionalism in the control room with operators aware of plant status. Communications were considered good with improvement noted in the "repeat back" of directions to in-plant personnel.

### Safety Assessment/Quality Verification

The licensee's overall performance in this area was considered very good during this inspection period. The LERs reviewed were of good quality with regard to root cause analysis and corrective actions. The licensee's performance in self-assessment activities, audit program, field monitoring program and corrective actions was aggressive, with timely results providing useful tools for corporate and plant management. The two outages of Train A of the Essential Service Water system were well planned and coordinated with good management command and control evident.

### Maintenance and Surveillance

The licensee's performance was considered good during this inspection period. The maintenance activities associated with the two Train A Essential Service system outages were considered very good. Teamwork between the Operations, Maintenance, and Technical station staffs was evident.

### Engineering and Technical Support

The licensee's performance in this area was considered adequate during this inspection period, based on the review of modification packages and the On-Site Review performed for the Essential Service Water outages.

## DETAILS

### 1. Persons Contacted

#### Commonwealth Edison Company (CECo)

- \*R. Pleniewicz, Station Manager
- \*K. Schwartz, Production Superintendent
- \*R. Ward, Technical Superintendent
- \*J. Kudalis, Service Director
- M. Snow, Operating Engineer, Unit 0
- T. Didier, Operating Engineer, Unit 1
- D. Prisby, Quality Control Supervisor, Quality Control
- T. Gierich, Assistant Superintendent, Work Planning
- \*T. Higgins, Assistant Superintendent, Operating
- J. Schrock, Operating Engineer, Administrative
- \*D. Brindle, Regulatory Assurance Supervisor
- D. St. Clair, Project Engineer, ENC
- \*P. Johnson, Technical Staff Supervisor
- \*T. Tulon, Assistant Superintendent, Maintenance
- D. Winchester, Quality Assurance Superintendent
- M. Rauckhorst, PWR Projects Principal Engineer
- \*E. Zittle, Regulatory Assurance Staff

\*Denotes those attending the exit interview conducted on February 11, 1991, and at other times throughout the inspection period.

The inspectors also had discussions with other licensee employees, including members of the technical and engineering staffs, reactor and auxiliary operators, shift engineers and foremen, and electrical, mechanical and instrument maintenance personnel, and contract security personnel.

### 2. Action on Previous Inspection Findings (92701 & 92702)

- a. (Closed) Violation 454/87027-01; 455/87025-01: Failure to perform adequate reviews and evaluations to assure an adequate design was used in the Emergency Diesel Generator's electrical overspeed trip circuitry. The inspector reviewed the licensee's corrective actions and actions to prevent further violations and determined the actions to be appropriate. Actions to preclude further violations included training of engineering personnel and the flow of safety significant information. Even though these actions have not been completed, the scheduled completion date of October 31, 1991 was considered acceptable. The inspector has no further concerns in this area.
- b. (Closed) Open Item 454/90017-02; 455/90016-02: Sufficient controls did not exist to ensure the material condition of the post accident neutron flux instruments were maintained at a level commensurate with other post accident instruments. The licensee revised procedures 1/2 BOS 3.3.6-1 and 1/2 BOS XFP-M1 to provide for channel checks for post accident neutron monitoring every 92 days. Also, due to the

sporadic readings of the instrumentation a Nuclear Work Request, B7R937, was issued to search and identify any loose connections. The inspector has no other concerns in this area.

- c. (Closed) Open Item 454/90017-03; 455/90016-03: Review of Discrepancy Record (DR) 90-148 that addresses root cause, corrective action, and action to preclude the installation of wrong material in environmental qualified (EQ) components. The inspector reviewed the root cause, corrective action and action to preclude recurrence and determined the licensee's actions as adequate to preclude future issuance and use of unqualified material in EQ components. The inspector has no other concerns in this area.
- d. (Closed) Open Item 454/90024-03; 455/90024-04: The use of PRA and Priority Levels in the selecting of check valves for inspection or diagnostic testing. The licensee will revise corporate directive, NOD-TS.9, "Check Valve Program Directive", to clarify the basis for combining Priority Levels 1 through 5 into three groups (Priority Level 1-2, Priority Level 3-4, and Priority Level 5) and the utilization of PRA on a system basis when available as a tool in the identification of check valves for inspection or diagnostic testing. The inspector has no further concerns in this area.
- e. (Closed) Violation 455/90023-01: The licensee failed to declare the 2A AFW pump inoperable and enter the appropriate Technical Specification action statement when two pipe struts were removed on the essential service water suction piping for pre-outage modification work. The inspector has reviewed the licensee's corrective actions and the corrective action to avoid further violations. The licensee identified four actions that will be implemented by June 1, 1991 to prevent further violations in this area. These planned actions appeared to be adequate and the inspector has no further questions in this area.
- f. (Closed) Violation 455/90023-02: The licensee had placed fuel assemblies in the wrong spent fuel rack and due to inadequate clearance damaged the reactor upper internals. The inspector reviewed the licensee's corrective actions and actions to avoid further violations. The licensee has established a corporate task force to review fuel handling equipment, policies and procedures. The task force is expected to complete the review by April 1, 1991, with a schedule to be developed shortly thereafter to implement the task force recommendations. The inspector has no other concerns in this area.
- g. (Closed) Unresolved Item 455/90024-02: Review of modifications performed during the last Unit 1 refueling outage to ensure necessary procedure revisions were accomplished. The inspector reviewed eight modifications installed during the last Unit 1 refueling outage (January - March, 1990) and identified that the necessary procedure revisions were accomplished. For further details see paragraph 5.a of this report. The inspector has no other concerns in this area.

### 3. Plant Operations

Unit 1 operated at power levels up to 100% in the load following mode since December 4, 1990.

Unit 2 operated at power levels up to 100% in the load following mode since December 21, 1990.

#### a. Operational Safety (71707)

During the inspection period, the inspectors verified that the facility was being operated in conformance with the licenses and regulatory requirements and the licensee's management responsibilities were effectively carried out for safe operation. Verification was based on routine direct observation of activities and equipment performance, tours of the facility, interviews and discussions with licensee personnel, independent verification of safety system status and limiting conditions for operation action requirements (LCOARs), corrective action, and review of facility records.

On a sampling basis the inspectors verified proper control room staffing and access, operator behavior, and coordination of plant activities with ongoing control room operations; verified operator adherence with the latest revisions of procedures for ongoing activities; verified operation as required by Technical Specifications (TS); including compliance with LCOARs, with emphasis on engineered safety features (ESF) and ESF electrical alignment and valve positions; monitored instrumentation recorder traces and duplicate channels for abnormalities; verified status of various lit annunciators for operator understanding, off-normal condition, and compensatory actions; examined nuclear instrumentation (NI) and other protection channels for proper operability; reviewed radiation monitors and stack monitors for abnormal conditions; verified that onsite and offsite power was available as required; observed the frequency of plant/control room visits by the station manager, superintendents, assistant operations superintendent, and other managers; and observed the Safety Parameter Display System (SPDS) for operability. No problems were noted.

#### b. Onsite Event Follow-up (93702)

At 12:41 p.m. on January 23, 1991, the Shift Control Room Engineer (SCRE) received a report of a fire in a trash compactor just east of the turbine building. The station's fire alarm was sounded and the station's fire brigade responded in a timely manner. The Byron Fire Department (BFD) was also called and responded to the fire. The BFD was on stand-by, if assistance was required. The BFD arrived on-site at 12:55 p.m. Since the fire could not be extinguished by the station's fire brigade within 10 minutes after arriving at the scene of the fire, an Unusual Event was declared at 1:00 p.m.. The fire was extinguished at 1:49 p.m. and the Unusual Event terminated. The cause of fire could not be determined by the station or the BFD.



c. Current Material Condition (71707)

The inspectors performed general plant as well as selected system and component walkdowns to assess the general and specific material condition of the plant, to verify that Nuclear Work Requests (NWRs) had been initiated for identified equipment problems, and to evaluate housekeeping. Walkdowns included an assessment of the buildings, components, and systems for proper identification and tagging, accessibility, fire and security door integrity, scaffolding, radiological controls, and any unusual conditions. Unusual conditions included but were not limited to water, oil, or other liquids on the floor or equipment; indications of leakage through ceiling, walls or floors; loose insulation; corrosion; excessive noise; unusual temperatures; and abnormal ventilation and lighting.

The material condition of Unit 1 and 2 was considered good with the material condition of Unit 0 (common) improving. Housekeeping was considered good except for Area 7 on the 346 elevation of the Auxiliary Building which was considered below average. The area was used primarily as a tool storage for the Engineering and Construction organization. The licensee initiated action to upgrade the housekeeping in this area. The number of water, oil and steam leaks was considered low in the auxiliary building.

d. Radiological Controls (71707)

The inspectors verified that personnel were following health physics procedures for dosimetry, protective clothing, frisking, posting, etc. and randomly examined radiation protection instrumentation for use, operability, and calibration.

e. Security (81064)

Each week during routine activities or tours, the inspectors monitored the licensee's security program to ensure that observed actions were being implemented according to the approved security plan. The inspectors noted that persons within the protected area displayed proper photo-identification badges and those individuals requiring escorts were properly escorted. The inspectors also verified that checked vital areas were locked and alarmed. Additionally, the inspectors also verified that observed personnel and packages entering the protected area were searched by appropriate equipment or by hand.

No violations or deviations were identified.

4. Safety Assessment/Quality Verification (40500, 90712, 92700)

a. Licensee Event Report (LER) Follow-up (90712, 92700)

Through direct observations, discussions with licensee personnel, and review of records, the following event reports were reviewed to determine that reportability requirements were fulfilled, that

immediate corrective action was accomplished, and that corrective action to prevent recurrence had been or would be accomplished in accordance with Technical Specifications (TS):

(Closed) 454/90014-LL: Reactor trip due to low-low Steam Generator level in 1D Steam Generator. The apparent cause was personnel error in the placement of a test switch. The switch was misplaced during a slave relay surveillance. As a result of the switch being placed in the wrong position, a feedwater isolation occurred. The licensee's root cause analysis and corrective action appear adequate to prevent recurrence of a similar event.

(Closed) 455/90010-LL: Steam leak in Unit 2 steam tunnel with subsequent manual reactor trip and steamline isolation. Root cause was determined to be improper installation of a sample probe during initial construction and inadequate repair to a weld during the recent Unit 2 refueling outage. The licensee inspected other steam line probes and considered the failure of the sample probe on the 2C main steam line as an isolated occurrence.

b. Evaluation of Licensee Self-Assessment Capability (40500)

The inspector evaluated the effectiveness of the licensee's self-assessment programs and determined that the programs were effectively implemented. The inspector reviewed a sample of the Onsite Review Committee meeting minutes and concluded that technical specification requirements were met with respect to the composition, duties, and responsibilities of the committee. The inspector also verified that committee members possessed the appropriate educational levels and expertise to effectively address and resolve technical issues related to specific engineering disciplines. Findings identified by the committee were given Action Item Record (AIR) numbers and entered on the licensee's nuclear tracking system (NTS) to ensure adequate tracking and prompt closure of items. The inspector also interviewed the Byron Onsite Nuclear Safety (ONS) Administrator and reviewed several ONS monthly reports to assess the effectiveness of the safety review activities of the ONS. The composition of ONS group met technical specification requirements. In addition, two of the three members of the ONS had participated in operator licensing training which enhances the ONS ability to perform independent reviews from an operational as well as safety standpoint. Activities performed by ONS included daily reviews of the shift engineer's logs, selective review of licensee's responses to Information Notices and attendance at various technical meetings, such as; Mode 4 Onsite Reviews for recent Unit 2 startup from refueling, the investigation of operational events and problems, review of licensee's evaluations for technical problems/issues, and participation on various station task forces. The activities performed by ONS were comprehensive, thorough and performance-based. ONS activities were clearly and sufficiently documented in monthly reports that were distributed to the plant manager and the Manager of Safety Assessment. Also, in an effort to raise safety significant issues to the attention of management in a timely manner, the ONS administrator would issue a letter to the plant manager when significant findings were discovered

to ensure prompt corrective action. Findings identified by ONS were categorized as management attention items in the monthly reports and were also entered on the NTS. Each finding was either assigned as a Category 1, which requires a response by the licensee, or a Category 2, which requires no response. The ONS administrator reviews the NTS every month to verify that the licensee has implemented the appropriate corrective action to facilitate timely closure of items. Even though ONS does not trend in a formal way for the identification of recurring problems, recurring findings were flagged. Proposed activities planned for the first quarter of 1991 were submitted to the Superintendent of Onsite Nuclear Safety for review and approval. Regulatory Assurance (RA) Department Trend/Concerns reports for April - November, 1990 were also reviewed. The reports were issued based on results of reviews performed of LER/DVRs and SE's logs. The reports were submitted to station management to maintain awareness of identified trends/problems. Each identified trend was assigned a number for tracking purposes. Also, trend reports identified recommendations to expedite closure and the appropriate department for followup and determination/implementation of required corrective action. A total of nine trends were written during the above time period and categorized in various functional areas. None of the trends identified were indicative of major weaknesses in any one functional area. Trends were closed out in a timely manner commensurate with the complexity of the trend.

The inspector concluded that the self-assessment organizations were effective in assuring good operating performance through the identification of substandard performance, effective implementation of corrective action, and prevention of safety significant problems.

c. Evaluation of Licensee Quality Assurance Program Implementation  
(35502)

The inspector evaluated the effectiveness of the licensee's implementation of its quality assurance program. Implementation of the licensee's QA program appeared to be effective as evident by the licensee's performance in all phases of plant operations. The inspector performed evaluations of the resident inspector's inspection reports, SALP reports, NRC open items, licensee corrective actions for NRC findings, and licensee event reports. The inspector determined that no negative trends in performance were identified in any of the functional disciplines. A review of the October Monthly Status Report indicated an increase in the number of reactor trips for the 1990 calendar year (4) as compared to 1 reactor trip for 1989. The plant has currently experienced the same number of ESF actuations (6) that occurred in 1989. The licensee has issued 20 LERs which exceeded the number of LERs issued in 1989 and exceeds the 1990 station goal of 15. The inspector did not identify any negative trends during the review of reactor trips, ESF actuation or LERs. Also, the QA department performed two station audits with only one audit deficiency identified. In addition, of the 370 Field Monitoring Reviews that were performed, 64 were found deficient. Sixty



deficiencies were immediately corrected and our required surveillances to track the corrective action. The deficiencies identified were not indicative of adverse trends.

The month of October was the first official reporting period for the Field Monitor Program (FMP) even though the program has been in effect since March. Prior to the implementation of the FMP, QA had normally performed approximately 350 surveillances a year; presently FMP activities number approximately 370 per month with a current total of 2053 activities monitored to date. The significant increase in QA activities via the FMP program ensured all functional areas were adequately monitored, assured that identified weaknesses or weak areas were promptly corrected before escalating into safety significant issues and allowed for early identification of programmatic problems. QA submitted the results of each FMP activity to the appropriate station department along with a list of the deficiencies found to inform each group of strengths and weaknesses.

After each field monitor activity was performed on a specific work group, a field monitor report form was completed and a grade was assigned to that activity by the Nuclear Quality Program (NQP) engineer/inspector performing the activity. Each activity can be monitored in five major areas, which were broken down into 30 general categories (attributes) such as; rad protection, control room (CR) operations, and security. Then each attribute consisted of specific areas (sub-attributes) such as; ALARA, CR professionalism, and Ingress control. The grade that was assigned to each activity ranges from .5 (strength) to 2.0 (marginally acceptable) if the attribute was determined to be acceptable. However, for an activity that resulted in a deficient attribute, the grade ranged from minor (2.0) to a significant deficiency (4.0). For significant deficiencies, a corrective action record was issued for followup. Grades assigned to the individual activities were used to schedule activities for the following month. Areas that were identified as having several deficiencies in the previous month were highlighted as areas requiring increased attention by QA during monitoring activities for the following month. The FMP reports were distributed to the NQP managers and the plant manager.

The licensee has been effective in implementing the QA program as demonstrated by the expanded coverage in all functional areas, prompt corrective actions for most identified deficiencies, and the identification of no major weaknesses or problems noted in any functional disciplines.

d. Audit Program (40702)

The inspector evaluated the licensee's Quality Assurance (QA) program to determine whether the program was consistent with Technical Specification (TS) and "Topical Report", CE-1-A, Revision 50, requirements. The inspector reviewed the following audits:

<u>Audit No.</u>	<u>Subject</u>	<u>Dates</u>
06-90-01	Operations	09/11/90 to 09/25/90
06-90-02	Maintenance Activities	10/09/90 to 10/23/90
06-90-03	Technical Services	07/09/90 to 07/20/90
06-90-04	Technical services No. 2	11/07/90 to 11/19/90
06-90-10	Corrective Action and Non-conformance	12/26/89 to 01/10/90
06-90-23	Control of Test and Measuring Equipment	06/25/90 (1 Day)

No problems were identified.

The inspector reviewed the licensee's QA program and determined that the program was in conformance with TS and the Topical Report requirements. The station's audit program required that a specific number of audits be performed by a qualified QA staff to meet TS requirements. Prior to performing any audits, the corporate Nuclear Quality Program (NQP) office submits the audit schedule to the station NQP superintendent. For the 1990 calendar year, the corporate audit schedule required the station to conduct 18 audits, but the station actually performed 26, which was indicative of aggressive management and a comprehensive audit program. The 1991 schedule specified the areas to be audited and the required number of audits to be performed, which totalled 15 and met TS requirements. An improvement in the QA program was that the time period in which the audits were to be performed was determined by the NQP station staff versus the corporate staff. The 1991 schedule was the first year that the schedule will be performance-based instead of compliance-based. The minimum qualifications for the NQP/QA staff were delineated in QA Memo No. 16. A review of personnel qualifications determine that all NQP/QA staff members met these requirements. In addition, the technical ability of the auditors was enhanced through annual training courses. All auditors routinely receive two to four weeks of training per year in such areas as root cause analysis, ultrasonic testing, and technical writing.

In an effort to perform the most effective audits, eight weeks prior to performing an audit, three days were scheduled and utilized by the audit team to prepare for the audit by reviewing references, preparing checklists, and ensuring TS requirements were met. The auditors determined the specific references and items to review/investigate based on previous audit deficiencies identified at Byron and other CECo facilities, QA and other departmental trends, industry issuances, and station concerns. The QA department continued to submit audit notifications to the station manager on a monthly basis to prevent conflict between corporate and station activities that could affect the station's resources. Implementation of the audit schedule appeared to be timely. The QA department was currently on the second audit of the year, "Corrective Action and Nonconformance". During the performance of all audits, checklists were utilized. An improvement in the checklist was that a method of verification was

added to ensure the requirement was met. The checklists were approved by the NQP superintendent and the Quality Program (QP) manager. Before conducting a TS audit, an auditor updates the TS changes prior to performing the TS audit. The auditor utilizes the use of (GSVR) that reflects all the recently approved TS requirements. Another enhancement to the QA program was to categorize problems or issues that were identified during audits as findings with different levels of significance (1, 2 or 3); unresolved items (UR); or strengths versus findings or observations. Any finding or UR item not corrected before the audit was completed, was entered into QASYS and on the station's Nuclear Tracking System (NTS). After the audit was completed, a report was issued to the auditee, plant manager, corresponding corporate staff group, and QP managers.

The auditee was requested to provide a written response including corrective action taken or to be taken within 30 days from the issuance of report. The items entered on the NTS were tracked by milestones that were mutually agreed upon by QA and the station. The auditee's response was submitted to QA and corporate. After the corrective actions have been implemented, the auditors perform a tri-annual followup of corrective actions to ensure deficiencies have not reoccurred.

In addition to the audits performed by QA, corporate QA/NS also will conduct two annual audits, one of station activities and the other of contractor activities. Two annual audits were routinely performed by performance assessment (PA); however, there are tentative plans to perform one PA in each functional area during the next 12 months. The PA team will consist of members from performance assessment and the offsite corporate group (OCG). Even though the PA audit will have a major manning and resource impact on the department audited, the audit will eliminate three additional audits on the stations that could have occurred if both, PA and OCG had performed the two annual audits.

The NQP superintendent prepared and submitted to the corporate office, monthly and quarterly reports of audit activities to assist the corporate staff in evaluating the station's program for effectiveness and in establishing a new audit schedule for the following year. The last quarterly report was submitted along with an annual trend report of surveillances and audit deficiencies. The station has been effective in implementing its audit program.

e. Corrective Action (92720)

The inspector assessed the licensee's corrective action (CA) program to ensure that safety related problems were promptly identified, adequately tracked, and corrected in a timely manner.

The inspector reviewed the licensee's program and verified that management controls have been established for the tracking and resolution of problems identified by operational events; quality

assurance (QA) audits; NRC inspection findings and trending efforts. The licensee maintained the appropriate administrative procedures to ensure NRC notifications were properly made for operational events and issues that met reportability requirements. The inspector reviewed BAP 1250-2, "Deviation Reporting" and BAP 1250-6, "Reportable/Potentially Significant Event Screening and Notification" to verify that events/problems were promptly identified, adequately evaluated against reportability criteria, clearly documented, and reported to the appropriate levels of plant management and the NRC when required. The station utilized BAP 1250-T4, "Event Notification Worksheet", to facilitate the transfer of information for operational events to the NRC Operations Center when reporting an event. The worksheet provides most of the information which is required and in the order requested by the NRC. For events that were determined to be significant but non-reportable, personnel were assigned to investigate the event and prepare a preliminary report Potentially Significant Event.

A review of BAP 1250-7, "Deviation Trending Procedure", BAP 1840-1, "Action Item Record Program", BAP 1800-2, "Byron Station Commitment Tracking Procedure", and BAP 1800-3, "Nuclear Tracking System", determined that the appropriate station administrative procedures were established and in place to establish actions and responsibilities to resolve identified problems and to assure prioritization for completion of corrective actions based on the safety significance of the problem by establishing the appropriate corrective action due dates. The inspector also reviewed a sampling of the licensee's handling of problems identified as a result of operational events, trend reports, QA audits, and NRC inspection findings and concluded that problems were adequately evaluated for root cause failure determination, assigned to the appropriate station departments for resolution, assigned completion dates commensurate with the safety significance of problem, and properly documented and tracked to completion via a Action Item Record (AIR) tracking number. A review of the AIR status is performed during a monthly status meeting, which is attended by the plant manager and the representatives from the appropriate departments responsible for corrective action, to ensure timely completion of corrective action and to address those corrective actions that are past due. The licensee's CA program has been effective in the identification, tracking, and closure of items.

No violations or deviations were identified.

5. Maintenance/Surveillance (62703 & 61726)

a. Maintenance Activities (62703)

Station maintenance activities that affected the safety-related and associated systems and components were observed or reviewed to ascertain compliance with approved procedures, regulatory guides and industry codes or standards, and in conformance with Technical Specifications.



The following items were considered during this review: the limiting conditions for operation were met while components or systems were removed from and restored to service; approvals were obtained prior to initiating the work; activities were accomplished using approved procedures and were inspected as applicable; functional testing and/or calibrations were performed prior to returning components or systems to service; quality control records were maintained; activities were accomplished by qualified personnel; parts and materials used were properly certified; radiological controls were implemented; and fire prevention controls were implemented. Work requests were reviewed to determine the status of outstanding jobs and to assure that priority is assigned to safety-related equipment maintenance which may affect system performance.

Portions of the following maintenance activities were observed and reviewed:

B66328 - 1A SX pump seal replacement  
B81396 - Repair of 1SX143A  
B81887 - Line upstream of valve 1SX192A

The inspectors periodically monitored the licensee's work in progress and verified performance was in accordance with proper procedures, and approved work packages, that 10 CFR 50.59 and other applicable drawing updates were made and/or planned, and that operator training was conducted in a reasonable period of time.

Two planned outages (January 9 - 11, and January 15 - 18, 1991) on Train A of Essential Service (SX) water system occurred with Unit 1 at power. In both cases, the licensee entered the appropriate Technical Specification (TS) Limiting Condition of Operation (LCO). The purpose of the outages was to install a modified mechanical seal on the 1A SX pump. The 1A SX pump was experiencing excessive seal leakage. The licensee had previously attempted to isolate the 1A SX pump and associated strainer; however, major leakage through the strainer backwash drain isolation valve, 1SX150A, prevented isolation from system pressure. The licensee installed a "Hydra-Stop" on the 1A SX strainer backwash drain line. However, isolation of the strainer and the 1A SX pump could still not be obtained due to internal leakage through the 1A SX pump discharge pump isolation valve, 1SX143A. Therefore, the licensee performed an outage of Train A of SX to repair valves 1SX150A and 1SX143A so the valves could be used as isolation points for a subsequent Train A outage to replace the mechanical seal on the 1A SX pump. To isolate valve 1SX143A, required the licensee to close the normally open SX train cross tie valves, 1SX033 and 1SX034. The closure of these valves resulted in the loss of SX cooling water to various ECCS Train A components. The licensee performed On-Site Review (OSR) 90-305 to assure that appropriate actions in accordance with TS would be taken when Train A ECCS equipment becomes inoperable. The OSR 90-305 is further discussed in paragraph 5.b of this report. The inspectors

reviewed the licensee's controls established to repair valves, 1SX143A and 1SX150A. The licensee considered the outage of Train A of SX as significant and performed the following:

- \* Thorough shift briefings to identify and discuss the plant conditions/status with SX cross tie valves 1SX033 and 1SX034 closed.
- \* Assigned the station backup Operating Engineer the responsibility of planning and coordinating the work on 1SX143A and 1SX150A.
- \* Assigned two extra Shift Foremen (SF) to monitor the maintenance activities on 12 hour shifts.
- \* Issued a schedule of work activities with specified hold points to ensure work does not progress without assurance of completion prior to the expiration of the LCO time.
- \* Briefed the resident inspector of the station's plans and management control for the work activities prior to the outage.

On January 9, 1991, at 11:39 p.m., the licensee placed the 1A SX pump out-of-service (OOS) and entered the applicable TS LCOs. The LCO required the return to service of the 1SX143A and 1SX150A valves in 72 hours. The licensee completed the necessary repairs on 1SX143A and 1SX150A and exited the LCO at 5:30 p.m. on January 11. Repairs to 1SX143A included seat replacement and adjustment to the mechanical stops in the manual actuator. With repairs to 1SX143A and 1SX150A completed, the licensee commenced the replacement of the mechanical seal on the 1A SX pump at 3:45 a.m. on January 14. Since valves 1SX143A and 1SX150A were repaired, these valves could be used for isolation points and the cross tie valves 1SX033 and 1SX034 were not closed. Therefore, Train A of ECCS was not affected by the OOS of the 1A SX pump since Train A loads were supplied by the 1B SX pump through cross-tie valves 1SX034 and 1SX033. The licensee completed the seal replacement and exited the LCO for the 1A SX pump at 1:15 a.m. on January 18. The inspector concluded that the licensee's work planning, maintenance activities, operational support and technical support during the two Train A SX outages was very good. These activities demonstrated the good teamwork between the various station's departments and the control and command by the station's management.

b. Reliability Centered Maintenance (RCM)

The licensee has completed a RCM for the Auxiliary Feedwater (AFW) system. The RCM determined appropriate preventive maintenance (PM) and failure finding tasks for both critical and non-critical components. The RCM study recommendations emphasized the use of predictive maintenance and condition directed PMs. The inspector reviewed the RCM results and concluded that the study was thorough and clearly identified that strong PM already existed. The RCM analysis

concluded that (110) PMs should be deleted due to maintenance history and failure modes and add (145) other PMs. Overall, there was a net increase of 35 PM activities. The licensee was presently reviewing and analyzing the results of the RCM for future maintenance considerations.

c. Surveillance Activities (61726)

The inspectors observed or reviewed surveillance tests required by Technical Specifications during the inspection period and verified that tests were performed in accordance with adequate procedures, test instrumentation was calibrated, limiting conditions for operation were met, removal and restoration of the affected components were accomplished, results conformed with Technical Specifications and procedure requirements and were reviewed by personnel other than the individual directing the test, and any deficiencies identified during the tests were properly reviewed and resolved by appropriate management personnel.

The inspectors also witnessed portions of the following activities:

- 1 BIS 3.3.5-203, "Calibration of Residual Heat Removal Heat Exchanger BI-Metallic Thermometers, 2TI-608 Heat Exchanger 1A."
- 2 BIS 3.1.1-027, "Functional Test for Loop 2L-0519 Steam Generator 2A Level Protection Channel II (Narrow Range)."
- 2 BIS 3.2.1-018, "Functional Test of RWST Level Loop 2L-0931."
- 2 BOS 3.2.1-802, "ESFAS Instrumentation Slave Relay Surveillance (Train A)."
- 2 BVS 0.5-2CS.1, "Containment Spray Valve Stroke Test."

No violations or deviations were identified.

6. Engineering & Technical Support (37700)

a. Installations and Testing of Modifications (37828)

The inspector witnessed the installation of modification 1-86-160 that pertained to replacement of the mechanical seal on the 1A Essential Service Water pump and reviewed the following modification packages for adequate installation and testing requirements. Also, the inspector sampled the reviewed modifications for proper training and procedure revisions required by the modifications. No problems were identified.

<u>Modification</u>	<u>Description</u>
1-88-006	Modify the auxiliary jacket water pump control circuit to shut off the pump when the DG reaches 240 RPM.
1-88-047	Provide narrow range Unit 1 containment pressure indication on Main Control Room panel 1PM06J.
1-88-052	Install a new main steam/feedwater header differential pressure indicator.
1-88-054	Rearrangement of Controls for Containment Isolation Valves.
1-88-058	Install feedwater valve monitor light matrix.
1-88-059	Install pushbutton for turbine runback.
1-89-009	Install an independent reactor coolant system (RCS) reduced inventory level indication system.
1-89-019	Automating the process computer integrated RCS leak rate program.

b. On-Site Review (OSR)

The inspector reviewed OSR 90-305 that was issued to assure appropriate actions in accordance with Technical Specifications would be accomplished when equipment becomes inoperable during maintenance activities on Essential Service (SX) valves 1SX143A and 1SX150A. The OSR addressed the closing of the SX train cross tie valves, 1SX033 and 1SX034 which would result in inoperability of Train A ECCS equipment due to the equipment not receiving SX cooling water. The OSR included a 10 CFR 50.59 safety evaluation and required a shift briefing to be conducted to advise operating personnel of plant conditions prior to closing the 1SX033 and 1SX034 valves. The inspector noted no problems with OSR 90-305.

No violations or deviations were identified.

7. Meetings and Other Activities

a. Management Meetings (30702)

On January 18, 1991, Mr. W. D. Shafer, Chief, Division of Reactor Projects, Branch 1, and Mr. B. L. Burgess, Chief, Division of Reactor Projects, Section 1A, toured the Byron plant and met with licensee management to discuss plant performance and plant material condition. Also, on January 23, 1991, Mr. A. H. Hsia, Licensing Project Manager, NRR, and Mr. F. Witt, NRR, met with licensee personnel to discuss the issue that pertained to the presence of (2-5%) lithium in motor operated valves (MOV) grease.



b. Exit Interview (30703)

The inspectors met with the licensee representatives denoted in paragraph 1 during the inspection period and at the conclusion of the inspection on February 11, 1991. The inspectors summarized the scope and results of the inspection and discussed the likely content of this inspection report. The licensee acknowledged the information and did not indicate that any of the information disclosed during the inspection could be considered proprietary in nature.