

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report Nos. 50-454/94007(DRP); 50-455/94007(DRP)

Docket Nos. 50-454; 50-455

License Nos. 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: March 1, 1994 through April 7, 1994

Inspectors: H. Peterson
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Approved By:

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Reactor Projects Section 1A

4/29/94
Date

Inspection Summary

Inspection from March 1, 1994 through April 7, 1994

(Report Nos. 50-454/94007(DRP); 50-455/94007(DRP))

Areas Inspected: Routine, unannounced safety inspection by the resident inspectors of previous inspection findings, plant operations, plant support (housekeeping and plant cleanliness, radiological controls, security, and emergency preparedness), regional request, safety assessment/quality verification, maintenance and surveillance activities, engineering and technical support, and reports review.

Results: One non-cited violation and one unresolved item were identified. The non-cited violation pertained to a missed technical specification surveillance (paragraph 6). The unresolved item pertained to a design basis concern compared to station practices associated with the auxiliary feedwater tunnel flood seal openings (paragraph 8.b). A summary of licensee performance during this inspection period is provided in paragraph 1 of the following Details.

DETAILS

1. Management Interview (30702, 30703)

The inspectors met with the licensee representatives denoted in paragraph 12 during the inspection period and at the conclusion of the inspection on April 7, 1994. The inspectors summarized the scope and results of the inspection and discussed the likely content of the report as described in these Details. The licensee acknowledged the information and did not indicate that any of the information disclosed during the inspection could be considered proprietary in nature.

Plant Operations

Overall, the licensee's performance in this area continued to be very good. During this inspection period, the licensee's operations department and the engineering organization demonstrated excellent communications and coordination, in respect to several operational concerns and engineering challenges.

These issues included the operational concerns associated with auxiliary feedwater (AFW) tunnel flood seal openings, cold overpressure protection setpoint changes, main steam safety valve (Trevitest) errors, and re-evaluation of reduced high flux trip setpoints affected by inoperable main steam safety valves. Detailed discussions are found in paragraph 8. The issue of the AFW tunnel flood seal openings was identified to be an unresolved item pending further NRC review.

Plant Support

This is a new area designation to encompass the evaluation areas for the revised program for the Systematic Appraisal of Licensee Performance (SALP). It includes Emergency Preparedness, Fire Protection, Security, Radiological Controls, Chemistry, and Housekeeping and Cleanliness. During this inspection period, performance associated with plant support was very good. On April 6 the inspector observed an emergency preparedness exercise. Overall, the performance was very good. Two enhancement items were relayed to the licensee (paragraph 4). No major concerns were noted.

Maintenance and Surveillance

Performance in these areas was considered satisfactory, but mixed. During this inspection period, it was concluded that errors are still apparent associated with missed surveillances, as indicated in the Licensee Event Report (LER) review (paragraph 6) resulting in a non-cited violation. Also, work control errors were found associated with work request review. An unqualified non-safety related oil pressure switch was erroneously installed in the 2B charging pump (paragraph 7). The maintenance person fortunately discovered the error during post maintenance record review, and the correct part was installed prior to

the charging pump being declared operable and exiting the limiting condition for operation action requirement (LCOAR). Continued attention in this area is warranted.

Safety Assessment/Quality Verification

Safety Assessment/Quality Verification is considered a vital part in all plant activities, but does not have a separate and specific SALP functional area. However, it will be evaluated routinely in these inspection reports.

During this inspection period, the licensee's performance in this area was not specifically assessed due to the limited activities reviewed by the inspector. The one LER reviewed, associated with a missed surveillance (paragraph 6), was considered to have adequate corrective action identified to preclude a similar event in the future. This item was determined to meet the requirements for a non-cited violation. But, the inspector noted that several unrelated causes towards missed surveillances warrants added attention.

Engineering and Technical Support

The licensee's performance in this area was considered to be very good. The licensee faced numerous engineering challenges, including operability issues, associated with the auxiliary feedwater tunnel flood seal openings, cold overpressure protection setpoint changes, main steam safety valve (Trevitest) errors, and re-evaluation of reduced high flux trip setpoints affected by inoperable main steam safety valves (paragraph 8). Overall, the licensee's responses to these issues were good.

In addition, the inspector reviewed the system engineering department's new program to promote a more enriching career path for system engineers. This program was called the Senior System Engineer Career Program.

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

(Closed) Open Item 454/92003-01(DRS): Overpressurization of the regenerative waste drain tank (RWDT). This item was originally opened in inspection report 91029, and was subsequently closed. During inspection report 92003, the regional inspector reviewed the associated event and noted that it had no radioactive release nor other radiological consequences. The calibration of a level instrument was of interest, but it was corrected. Specifically, no inspection follow up item was established for this report. In conclusion, this item was mistakenly inserted as an inspection follow up item; therefore, this item is considered closed.

No violations or deviations were identified.

3. Plant Operations

Both Units operated at power levels up to 100 percent in the load following mode throughout the report period.

Operational Safety Verification (71707, 93702)

The inspectors verified that the facility was being operated adequately in conformance with applicable licenses and regulatory requirements. Additionally, the licensee's management control system continued to effectively carry out its responsibilities for safe operation.

On a sampling basis, the inspectors verified proper control room staffing and coordination of plant activities; verified operator adherence with procedures and technical specifications; monitored control room indications for abnormalities; verified that electrical power was available; and observed the frequency of plant and control room visits by station management.

Shift briefings continued to be thorough with discussions of activities planned for the shift, including those activities which required special preparation, precaution, or control.

Overall, the licensee's awareness of plant safety continued to be very good. During this inspection period several items relating to operational events and issues were evaluated. These items required considerable coordination between operations and engineering staff, with respect to plant operability status. These items included problems associated with auxiliary feedwater tunnel flood seal openings, cold overpressure protection setpoint changes, main steam safety valve testing errors, and re-evaluation of reduced high flux trip setpoints affected by inoperable main steam safety valves. Detailed discussions are found in paragraph 8.

The inspector observed a fire drill associated with a simulated fire in the turbine building on March 23, 1994. This was a complete activation of fire brigade personnel and equipment. The fire brigade response was rapid. All personnel donned fire fighting gear and participated in actual staging of fire hoses. The drill utilized two smoke generators, which made the fire simulation very realistic. The drill was an excellent training aid and overall performance was good.

Emergency Medical Response Team (EMT)

During this inspection period, the licensee implemented a new program associated with medical emergency assistance. It was designated as the Emergency Medical Response Team Program. Within the station organization, five operators were selected and trained to the necessary requirements to meet an emergency medical situation.

Process Computer

During this inspection period, one failure of the plant computer occurred requiring NRC ENS notification. These periodic failures of the process and prime computers are an undesirable disruption to shift personnel. The computer failure itself does not pose a major safety concern; however, it is an annoyance to deal with the repeated computer failures and the required NRC notifications. Until the computer replacement projects have been completed, the licensee will continue to experience computer problems. The inspectors will continue to monitor the associated computer problems and the progress of the system replacement.

No violations or deviations were identified.

4. Plant Support

a. Emergency Preparedness

On April 6, 1994, the inspector performed a limited observation of the licensee's performance in its annual Generating Station Emergency Preparedness (GSEP) Exercise. The inspector reviewed the exercise scenario and observed the Technical Support Center (TSC). The exercise scenario was challenging, and it involved both reactors. It included numerous component failures and system challenges. Major portions of the exercise included a security threat, terrorist attack, multiple explosions, loss of both condensate storage tanks, rad waste resin spill with contaminated personnel, trip of both units, loss of both Unit 1 diesel generators, loss of all AC power, loss of ESF buses, and challenge to core cooling. For the loss of AC, the licensee physically opened the breaker supplying AC power to the TSC. This was an excellent simulation and an opportunity to observe real TSC response to a loss of AC power.

The inspector identified to the licensee two items that could use some enhancement. First, the TSC performance in assuming command and control appeared to be slow, notwithstanding the loss of power and lighting in the TSC. The TSC took command and control at 11:20 a.m., approximately three hours into the exercise. Secondly, the casualty affected both units; however, the TSC system/equipment status boards were only designed for a single unit casualty.

Overall, the exercise was conducted professionally, and the licensee satisfactorily demonstrated their GSEP responsibilities.

b. Housekeeping and Plant Cleanliness

The inspectors monitored the status of housekeeping and plant cleanliness for fire protection and protection of safety-related equipment from intrusion of foreign matter. The licensee

continued its clean up and painting program throughout the plant. Housekeeping and plant cleanliness continued to improve.

c. Radiological Controls

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.

d. Security

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.

No violations or deviations were identified.

5. Regional Request (90700): NRC Information Notice 89-77, Supplement 1, "Debris in Containment Emergency Sumps and Incorrect Screen Configurations"

On December 3, 1993, the NRC issued a supplement to Information Notice (IN) 89-77. This supplement identified a potential problem associated with post-accident debris blocking emergency core cooling systems (ECCS), which may have not been previously considered. It alerted licensees of potential flow paths that may bypass the sump screens, for example; breaches (holes) and other defects in the sump screen, and designed penetrations bypassing the screens. The supplement further indicated that failure to ensure the physical condition and as-built configuration of the screening material, including other penetrations going into the sump, could result in bypassing the filtering function and lead to the loss of ECCS function.

The inspector discussed and reviewed the licensee's actions associated with IN 89-77, its supplement, and numerous other NRC IN and bulletins concerning debris in ECCS sumps. The inspector found that the licensee, back in January 1990, experienced a situation where debris was found within the Unit 1 ECCS recirculation sump. The cause of the event appeared to be inadequate post maintenance clean up. Corrective actions were satisfactorily performed to preclude this event from recurring. These included the enhancement of several procedures associated with containment inspections and work practices.

The inspector concluded that the licensee took appropriate actions in respect to the original IN 89-77 in March of 1990. The licensee verified that the construction of the triple screen ECCS sump configuration was consistent with the description and accident analysis

in the UFSAR. For the recent IN supplement, the licensee did perform a review for applicability. It was determined that previous actions associated with NRC IN 89-77, IN 93-34, and Bulletin 93-02 adequately considered the concerns associated with IN 89-77, Supplement 1. The periodic surveillances associated with cleanliness in the primary containment, including visual inspections of the containment recirculation sumps and containment loose debris inspections, are designed to verify cleanliness and configuration of the ECCS suction strainers. Overall, the licensee's past actions associated with this ECCS sump concern were satisfactory; however, the inspectors will continue to specifically monitor sump screen configuration during unit refuel outages.

No violations or deviations were identified.

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

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) LER 455/94-126 (LER No. 94-001): Room Temperature Reading Taken at Wrong Location Causing a Missed Technical Specification Surveillance due to Personnel Error

On January 30, 1994, while performing routine rounds, the Equipment Attendant (EA) tapped on the Division 22 Cable Spreading Room temperature gauge and its indicating pointer broke. He informed the Unit 2 Shift Supervisor (SS), noting that it is a technical specification (TS) required reading, per TS 3/4.7.12, "Area Temperature Monitoring." With the temperature gauge inoperable, the SS directed the EA to locally take the Division 22 Cable Tunnel temperature utilizing a Doric hand held calibrated temperature probe. The SS assumed that the air flow in the tunnel was from the Division 22 Cable Spreading Room.

On February 19, 1994, a different Unit 2 SS, accompanied the EA to check out the status of the temperature gauge. When the SS asked how the room temperature was being monitored, the SS realized that this was not technically the correct location. Immediate corrective action was taken to properly identify the correct location to take the room temperature. It was determined that approximately 21 days had passed between correct temperature readings in the Division 22 Cable Spreading Room. This event was identified by the licensee as exceeding the TS surveillance requiring the monitoring of room temperatures every 12 hours.

This issue of missed TS surveillance was not an isolated case, there have been other occurrences. Additional information was required to

determine if a cited violation and/or evaluation of a potential negative trend was warranted. The inspectors waited for the licensee's event report (LER) to ascertain the root cause and corrective actions. The LER was issued on March 16, 1994.

It was determined that, although the room temperature was not taken technically in the correct location, it was reasonably represented by the Division 22 Cable Tunnel. The TS temperature limit for the room was 108 degrees F. Other indications were available and monitored to offset the lack of temperature indication. The Unit 2 Lower Cable Spreading Room temperature did not exceed 77 degrees F, and the Division 22 Cable Spreading Room was under a hourly fire watch. These sources supported a conclusion that no temperature abnormalities existed. The inspectors concluded that the corrective actions on two previous missed surveillances would not have prevented this event. This event was a personal error by the SS not properly determining the correct location to manually take the temperature readings, and his confusion on the physical layout of the cable tunnel. Furthermore, the error had minimal safety significance. It was determined that this event meets the criteria outlined in 10 CFR Part 2, Appendix C, Section VII.B, and therefore was considered a non-cited violation. This LER is considered closed.

One non-cited violation was identified.

7. Maintenance/Surveillance (62703 & 61726)

a. Maintenance Activities (62703)

Routinely, station maintenance activities were observed and/or reviewed to ascertain that they were conducted in accordance with approved procedures, regulatory guides and industry codes or standards, and in conformance with technical specifications.

The following items were also considered during this review: approvals were obtained prior to initiating the work; functional testing and/or calibrations were performed prior to returning components or systems to service; quality control records were maintained; and activities were accomplished by qualified personnel.

Portions of the following maintenance activities were observed and reviewed:

- Oil Pressure Switch Replacement for 2B Charging Pump
- Unit 1 Containment Spray Valve CS00iA and Associated MOV Testing
- Cable Staging and Replacement for Units 1 and 2 Containment Spray Valve CS007B

During the performance of the 2B charging pump oil pressure switch replacement, on March 15, 1994, the licensee identified a work control problem. A safety related charging pump system was repaired with an unqualified non-safety related oil pressure switch. Following the switch replacement, the licensee's maintenance person noticed the inconsistency during the document review prior to returning the system to operable status or exiting the LCOAR. The licensee took immediate corrective action to re-install a qualified part before returning the pump to service. It was found that the work request for the charging pump designated it as a non-safety related system. The alertness of the maintenance person was very good; however, the different levels of review and authorizations originally required for a work request approval should have caught the discrepancy. The licensee was highly concerned and initiated satisfactory corrective actions. The inspector understands that the Electronic Work Control System (EWCS) will preclude such mistakes in the future. The EWCS is anticipated to be activated on April 18, 1994.

b. Surveillance Activities (61726)

During the inspection period, the inspectors observed technical specification required surveillance testing and verified that testing was performed in accordance with adequate procedures, that test instrumentation was calibrated, that results conformed with technical specifications and procedure requirements and were reviewed, and that any deficiencies identified during the testing were properly resolved.

The inspectors also witnessed portions of the following surveillances:

- Liquid Radwaste Release Form
- Radioactive Liquid Effluents - Shift Engineer Request Prior to each Liquid Release
- Unit 2 Fire Hazards Panel Test Monthly
- Essential Service Water OA SX Makeup Pump Monthly
- Records Review of Equipment Attendant Logs Associated with AFW Tunnel Flood Seal Openings Check
- Records Review of Hourly Fire/Flood Seals Impairment Watch

No violations or deviations were identified.

8. Engineering & Technical Support (37700)

The inspectors evaluated the extent to which engineering principles and evaluations were integrated into daily plant activities. This was

accomplished by assessing the technical staff involvement in non-routine events, and assigned technical specification surveillances. Further evaluation was conducted, as necessary, by observing technical staff involvement associated with on-going maintenance work and troubleshooting, and reviewing non-conformance investigations and root cause analyses. The engineering organization continued to demonstrate good engineering awareness and initiatives.

One of these initiatives was associated with the continuing efforts to keep and entice highly qualified and experienced personnel to the system engineering department (SED). The licensee's SED initiated a new program to promote a more enriching career path. This program was called the Senior System Engineer Career Program. It appears to be an affirmative approach to further the career path within the SED to appropriately acknowledge senior experienced system engineers.

The following items were considered significant activities that challenged the licensee's engineering organization.

a. Auxiliary Feedwater Temporary Alteration Upgrade

During December of 1993, the licensee, along with the Braidwood station, experienced an operability problem associated with the motor driven Auxiliary Feedwater (AFW) Pumps (DRP Report 93017). Both stations satisfactorily made temporary alterations to meet the operability requirements. The licensee satisfactorily performed an onsite review of all the corrective actions on December 11, and declared the system operable.

This temporary alteration/modification was timely installed; however, a complication was identified by the licensee associated with the motor driven AFW pump handswitch position. It was determined that depending on the position of the pump handswitch "After Close," after an automatic start or on a manual start of the motor driven AFW pump, the automatic essential service water (SX) switch over would be bypassed. This was due to the way the pump control switch contacts were arranged. It would then be necessary to manually align the SX valves. To compensate for the handswitch positioning, the licensee conducted additional training to inform the operators of the configuration problem, and placed an operator aid on the AFW pump control switch.

During the week of March 14, 1994, the licensee additionally installed temporary alterations on both motor driven AFW pump control circuits. This temporary alteration compensated for the handswitch contact arrangement to allow for normal control of the handswitch. With the new alterations, the auto switch over to the SX was no longer disabled with the control switch in "After Close." It removed the requirements listed on the control room operator aid, allowing for better and normal controls for the operators.

b. Auxiliary Feedwater Tunnel Flood Seals

On March 14, 1994, a problem identification form (PIF) identified a potential problem associated with the Auxiliary Feedwater (AFW) tunnel flood seal opening (FSO). The AFW tunnel runs underneath the Main Steam (MS) tunnel. These FSOs are located within the MS tunnel, and isolate the two tunnels. The PIF noted that these FSOs are routinely opened for maintenance and surveillance. Consequently, this raised concerns about the adequacy of allowing the FSOs to be opened, based on plant design basis.

The PIF stated that the Updated Final Safety Analysis Report (UFSAR) notes the maximum temperature limit for the MS Tunnel as 419 degrees F, but it does not list a maximum temperature for the AFW tunnel. Also, the MS tunnel pressurization report, UFSAR section C3.6, does not list the AFW tunnel as a flowpath. It appears that the design basis relies on the isolation between the AFW and MS tunnels. The PIF questioned whether removal of the AFW tunnel FSOs may constitute operation outside the design basis, by exposing the non-environmentally qualified AF013 valves (AFW header to steam generator isolation valve) to the effects of a main steam or feed line break.

On March 15, 1994, the PIF was brought to the attention of the licensee's PIF screening group. This PIF was classified as a level 4 PIF and dismissed the concern about a steam tunnel accident affecting the AFW valves. The screening meeting notes stated that the motor operated valves (AF013) in the AFW tunnel are not required to perform a safety function during a steam tunnel accident; therefore, the FSO status was not an environmental qualification (EQ) concern. The screening group failed to acknowledge the UFSAR and design concerns associated with flooding (i.e., flood seals), as noted in the PIF. It appeared that only the EQ question towards the AF013 valve was the area of concentration. Although the initial screening appeared inadequate, the PIF was assigned for further investigation to the Regulatory Assurance group.

Subsequently, two weeks later on March 29, 1994, the licensee determined that the removal of the AFW tunnel FSOs constituted a reportable event. This was based on the condition being one that could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident, per 10 CFR 50.72(b)(2)(iii)(D). It was concluded that the FSOs are relied upon to separate the equipment in the AFW tunnel from the environment created in the event of a MS line failure in the MS tunnel, and to ensure a water tight environment in the AFW tunnel in the event of turbine building flooding.

The 50.72 notification to the NRC operations center was also the first time the resident inspectors were notified of this issue. The original PIF review dealing with design basis concern was not

brought to the attention of the inspectors because level 4 PIFs are no longer routinely relayed to the resident office. This matter associated with PIFs and PIF review is an ongoing inspector concern, as noted in previous inspection report 94004 (DRP), as an inspector follow up item.

The present item concerning the FSOs appears to be a design basis issue. It was identified that these seals are routinely opened and left open for a considerable duration. As was stated in the PIF, both unit's AFW tunnel FSOs were opened from December 1993 to mid February 1994. The inspectors conducted an initial investigation by reviewing plant procedures which control the AFW tunnel FSOs. It was found that an administrative procedure BAP 1100-3, "Fire Protection Systems, Fire Rated Assemblies, Radiation, Ventilation, and Flood Seal Impairments," allows FSOs to be removed (impaired), and ensures compensatory measures are being taken during the impairment. The compensatory measures include shiftly check by the Equipment Attendant and an hourly fire/flood watch. The inspectors reviewed these documents and found that the licensee adequately performed the compensatory measures; however, the procedure appears inadequate. The procedure is open ended and does not set a finite time period that the FSOs can be left impaired. This appears to contradict the UFSAR and the Safety Evaluation Report design basis for which the plant was licensed. Further investigations are being conducted by the licensee's engineering department. This issue will be tracked as an Unresolved Item pending further review by the inspectors of design basis requirements and the licensee's corrective actions, (454/455-94007-01(DRP)).

c. Auxiliary Feedwater Piping Hanger Adjustment

On March 16, 1994, during a walkdown inspection of the Unit 2 AFW tunnel, the licensee identified some pipe hangers to be loose. The hangers in question were the ones adjacent to the flow limiting orifice on the AFW line. Additional inspection was conducted in the Unit 1 AFW tunnel and a similar condition was found. The licensee conservatively entered a limiting condition for operation action requirement (LCOAR) associated with structural integrity of ASME code class 1 components. This LCOAR was associated with TS 3/4.4.10, "Reactor Coolant System Structural Integrity." The pipe hangers were not damaged or impaired, but the piping were found slightly out of contact with the hangers. The licensee took appropriate actions to make the necessary adjustments.

d. Pressurizer Power Operated Relief Valve (PORV) Cold Overpressure Protection

On February 23, 1994, the licensee informed the NRC of the results of the technical evaluation, WCAP 13880, "Analysis of Capsule X from the Byron Unit 1 Reactor Vessel Radiation Surveillance

Program," pursuant to 10 CFR 50, Appendix H, "Reactor Vessel Material Surveillance Program Requirements." Within this report, the licensee stated that an evaluation of the Unit 1 Low Temperature Overpressure Protection System setpoints was currently being performed by Westinghouse, and that the results were expected to be completed by March 1, 1994.

On March 1, 1994, the licensee received the results of the Westinghouse evaluation associated with the cold overpressure PORV lift setpoints. It was determined that the current Unit 1 TS PORV setpoints are non-conservative under certain reactor coolant pump/residual heat removal pump alignment and temperature ranges. The licensee further determined that only Unit 1 was affected. In late 1988, the PORV setpoints for Unit 1 were assumed to be conservative based on the calculated data associated with the pressure/temperature curves and were not adjusted pursuant to Regulatory Guide 1.99, rev 2, "Radiation Embrittlement of Reactor Vessel Materials." Unit 2 appears not to be affected, for the setpoints were developed in accordance with the Regulatory Guide 1.99, rev 2.

To determine if past operation on Unit 1 posed any potential violation of the cold overpressure limitation, the licensee reviewed LCOAR entries for the affected TS, 3.4.9.3, "Reactor Coolant System Overpressure Protection System," from 1989 to the present. The licensee determined that either the lower set PORV (1RY455A) and the residual heat removal (RHR) suction relief valve (1RH8708 A/B) were available for cold overpressure protection in modes 4, 5, and 6. Since the setpoints for these valves are lower than the maximum revised setpoints identified by Westinghouse, the 10 CFR Part 50, Appendix G, "Fracture Toughness Requirements," limits for the Unit 1 vessel were determined to have not been violated during past operation. The licensee's on-site review concluded that based on the above information, the Unit 1 reactor vessel was operable.

The inspectors reviewed the licensee's actions, including the operability determination on Unit 1 PORV setpoint non-conservatism and the effect on reactor vessel overpressurization. The licensee's determination of the lower set PORV and the RHR relief valve as being available to provide cold overpressure protection appears appropriate. The higher set PORV (1RY456) was determined to be inoperable until the revised setpoints can be implemented. Having one PORV inoperable required contingency actions to address the condition whenever Unit 1 would have to enter mode 4. Appropriate actions were delineated to the operators via daily orders to ensure compliance with TS 3.4.9.3 action requirement C when entering mode 4. Although the licensee has not violated this TS, the inspector discussed the appropriateness of the licensee documenting this concern in some type of an informational reporting mechanism to the NRC. The inspectors will continue to monitor the licensee's progress associated with its tracking

items, including the determination of root cause, and updating the TS with new PORV setpoints.

e. Main Steam Safety Valve Trip Setpoint Adjustment

On March 2, 1994, the inspectors received a fax from NRC headquarters associated with the a generic issue concerning the potential operation with inadequate secondary relief capacity. This was based on the September 1992 event at the Seabrook Unit 1 nuclear power station. The condition describes the potential overpressurization of the Main Steam (MS) system due to insufficient relief capacity with one to three Main Steam Safety Valves (MSSV) out of service. To compensate for inoperable MSSVs, Westinghouse design incorporated TS requirements to reduce the high flux trip setpoint commensurate with the number of inoperable MSSVs. But a deficiency in the basis and calculation by Westinghouse meant that the original TS trip reduction setpoints were not conservative. Subsequently, an overpressurization could cause the MS system pressure to increase beyond 110 percent, thereby exceeding the acceptance criteria for a design basis accident.

The inspectors reviewed the licensee's actions associated with this issue and found that on January 20, 1994, Westinghouse issued a Nuclear Safety Advisory Letter (NSAL) 94-01, "Operation at Reduced Power Levels with Inoperable MSSVs." This letter informed the affected plants that plant operation at power levels reduced in accordance with the requirements of TS table 3.7-1 may not be conservative. The licensee's corporate organization, Nuclear Fuel Services (NFS), responded to the NSAL 94-01 and issued a letter dated February 24, 1994, to Byron. The letter stated the results of a NFS calculation used to determine the Power Range Neutron Flux High Trip setpoints which ensured that overpressurization of the MS system would not occur during a Loss of Load/Turbine Trip transient when operating with inoperable MSSVs.

On receiving the NFS calculations, the licensee's engineering and operations organization initiated interim compensatory actions and an on-site engineering review. On March 3, 1994, a daily order was initiated in the control room to put in place the more restrictive trip reduction setpoints associated with inoperable MSSVs. The on-site review was completed on March 18, and actions were taken to update Byron operating procedures to reflect the new power range trip setpoints. Subsequent actions required to fully complete and close out this issue are the revisions to the TS and the UFSAR. The inspectors reviewed all of the licensee's actions and they were determined to be appropriate.

f. Main Steam Safety Valve Trevitest Error

On March 10, 1994, the licensee received a letter from the Furmanite Company addressing a problem associated with Furmanite's

Trevitest method of MSSV relief setpoints. Furmanite indicated that comparative testing of its Trevitest method versus steam overpressure was conducted at the Palo Verde nuclear power station during August of 1993 to January of 1994. The testing determined that a generic problem/error was found with the Trevitest procedure. Specifically, Furmanite was utilizing incorrect mean seat area in its calculations, resulting in an offset in the relief setpoint. This offset could potentially place the MSSVs outside the required TS setpoint tolerances, per TS 3.7.1.1, "Safety Valves."

The licensee immediately initiated corrective actions. The engineering group reviewed the Trevitest results and performed recalculation of the MSSV lift setpoints for both units. It was found that Unit 1 had 16 of 20 and Unit 2 had 19 of 20 MSSVs outside the TS ± 1 percent setpoint tolerance. Although the licensee had previously performed an analysis verifying that the plant would still be bounded for the pertinent accidents with the lift setpoints on the MSSVs at ± 3 percent, the licensee declared the affected MSSVs inoperable and entered the appropriate LCOAR. The licensee was required by TS to restore the valves to operable status within four hours or be in at least Hot Standby within the next six hours. Due to the circumstances and the number of inoperable MSSVs, affecting both Byron units and one Braidwood unit, it posed a significant operational and logistics problem. The other Braidwood unit was already shutdown for an outage. The licensee submitted a request to the NRC for an issuance of a Notice of Enforcement Discretion (NOED) from TS 3.7.1.1 for both Byron units and Braidwood Unit 2.

NRC headquarters reviewed the licensee's request and justification for the NOED. It was concluded that the licensee's course of action was satisfactory, and that this exercise of enforcement discretion involved minimal or no safety impact. On March 15, 1994, the NRC issued the NOED; however, it stipulated that by March 21 the licensee must submit for approval an emergency TS amendment that will request a one-time exemption from the TS 3.7.1.1 until the MSSVs can be reset. The licensee satisfactorily submitted the required request, including a schedule for resetting the MSSVs. The affected Byron MSSVs are scheduled for testing and resetting during the week of April 18, 1994. The inspectors reviewed the licensee's course of action, including the on-site review and submittal of the NOED request. The licensee's actions were determined to be timely and appropriate. The inspectors will monitor the licensee's testing and resetting of the MSSVs.

During this inspection period, the licensee's engineering organization faced many challenges and managed them well. The challenges described earlier in this section were issues that affected significant plant operability concerns. However, there were other engineering issues with little or no significant impact on plant operations. These items included a vendor-submitted Part 21 report with information on potential

software problems in the RM-80 microprocessor for the Wide Range Gas Monitor, and the adequacy of welded caps on concrete vent pipes in the Emergency Personnel Hatch "Barrel," as identified by Braidwood station. Both of these issues were effectively investigated and found to be of no problem at the Byron station.

In conclusion, the licensee responded appropriately to all issues. All required actions were taken adequately in a timely manner; however, the significance of the AFW tunnel flood seals issue was not promptly recognized. Overall, the cooperation and efforts made by the licensee's engineering and operations personnel, in dealing with these issues, were very good, and continued to show progress towards plant design ownership.

One Unresolved item was identified.

9. Report Review

During the inspection period, the inspector reviewed the licensee's Monthly Performance Report for February 1994. The inspector confirmed that the information provided met the requirements of Technical Specification 6.9.1.8 and Regulatory Guide 1.16.

The inspector also reviewed the licensee's Monthly Plant Status Report for February 1994.

No violations or deviations were identified.

10. Definitions

Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations, or deviations. An unresolved item disclosed during the inspection is discussed in paragraph 8.b.

11. Meetings and Other Activities

a. Safety Review Board (30702)

On March 3 and 4, 1994, the Byron station underwent its first interview and evaluation by the newly established Safety Review Board (SRB). The SRB was created to provide a comprehensive and independent overview of the nuclear stations. It is comprised of approximately eight senior managers and two external members. Its overall purpose is to be a self assessment tool to assure that the challenges to the nuclear stations and Nuclear Operations Division are determined, properly evaluated, and effectively depositions. On March 3, 1994, the Senior Resident Inspector had the opportunity to discuss and share perspectives of Byron station performance with the SRB.

b. INPO Site Evaluation Inspection (30702)

On March 14, 1994, an INPO inspection team arrived at the Byron station. The INPO team was scheduled for a two week inspection ending on March 25, 1994. The official exit meeting was scheduled for April 15, 1994. The resident inspectors were informed that there were no major safety significant concerns. However, the inspectors will review the INPO inspection report, per the NRC/INPO memorandum of understanding, once it is issued to the licensee.

c. Management Reassignments

During this inspection period, the inspectors were informed of the following personnel changes:

- Effective March 14, 1994, Mr. Paul Donavin reassigned from Design Supervisor, Corporate, to Modification Design Supervisor, Site Engineering and Construction.
- Effective March 28, 1994, Mr. William Grundmann reassigned from Onsite Quality Verification Superintendent, Byron, to Auxiliary Systems Group Leader, Systems Engineering Department.
- Effective April 11, 1994, Mr. Paul O'Neil, Senior Engineer, Byron Maintenance Staff, to Onsite Quality Verification Superintendent, Byron.
- Effective March 16, 1994, Mr. Scott Campbell, Site Financial Director, transferred from Byron to Quad Cities station.

12. Persons Contacted

Commonwealth Edison Company (CECo)

- K. Graesser, Site Vice President
- *K. Schwartz, Station Manager
- T. Tulon, Operations Manager
- D. St. Clair, Site Engineering Construction Manager
- P. Johnson, Technical Service Superintendent
- *E. Campbell, Support Services Director
- *M. Snow, Work Control Superintendent
- *D. Brindle, Regulatory Assurance Supervisor
- *T. Gierich, Maintenance Superintendent
- A. Javorik, Technical Staff Supervisor
- E. Zittle, Security Administrator
- R. Wegner, Shift Operations Supervisor
- P. Donavin, Site Engineering Mod Design Supervisor
- *M. Rasmussen, Operations Engineer Unit 2
- T. Schuster, Site Quality Verification Director
- *C. Bontjes, Acting SQV Supervisor

*K. Passmore, Station Support Engineering Supervisor
*P. Enge, NRC Coordinator

*Denotes those attending the exit interview conducted on April 7, 1994.

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.