April 29, 2004

Mr. Christopher M. Crane
President and Chief Nuclear Officer
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: BYRON STATION, UNITS 1 AND 2
NRC INTEGRATED INSPECTION REPORT 05000454/2004002;
05000455/2004002

Dear Mr. Crane:

On March 31, 2004, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Byron Station, Units 1 and 2. The enclosed report documents the inspection findings which were discussed on April 13, 2004, with Mr. S. Kuczynski and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and to compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, two self-revealing findings of very low safety significance (Green) are identified in the report. These findings were determined to involve violations of NRC requirements. However, because these violations were of very low significance and because the issues were entered into your corrective action program, the NRC is treating these findings as Non-Cited Violations in accordance with Section VI.A.1 of the NRC's Enforcement Policy. Additionally one licensee identified violation is listed in Section 4OA7 of this report.

If you contest the subject or severity of a Non-Cited Violation, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, U. S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U. S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector office at the Byron facility.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Ann Marie Stone, Chief
Branch 3
Division of Reactor Projects

Docket Nos. 50-454; 50-455
License Nos. NPF-37; NPF-66

Enclosure: Inspection Report 05000454/2004002; 05000455/2004002
w/Attachment: Supplemental Information

cc w/encl: Site Vice President - Byron Station
Plant Manager - Byron Station
Regulatory Assurance Manager - Byron Station
Chief Operating Officer
Senior Vice President - Nuclear Services
Vice President - Mid-West Operations Support
Vice President - Licensing and Regulatory Affairs
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REGION III

Docket Nos:	50-454; 50-455
License Nos:	NPF-37; NPF-66
Report Nos:	05000454/2004002; 05000455/2004002
Licensee:	Exelon Generation Company, LLC
Facility:	Byron Station, Units 1 and 2
Location:	4450 N. German Church Road Byron, IL 61010
Dates:	January 1, 2004, through March 31, 2004
Inspectors:	R. Skokowski, Senior Resident Inspector P. Snyder, Resident Inspector D. Tharp, Reactor Engineer C. Phillips, Senior Operator Licensing Examiner T. Tongue, Project Engineer R. Winter, Reactor Engineer C. Thompson, Illinois Emergency Management Agency
Observers:	T. Bilik, Reactor Engineer L. Haeg, Reactor Engineer
Approved by:	Ann Marie Stone, Chief Branch 3 Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000454/2004002; 05000455/2004002; on 01/01/2004-03/31/2004; Byron Station; Units 1 & 2; Equipment Alignment, Maintenance Effectiveness

This report covers a 3-month period of baseline resident inspection. The inspection was conducted by Region III inspectors, and the resident inspectors. Two Green findings which were both violations of NRC requirements, were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be "Green" or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. Inspector-Identified and Self-Revealed Findings

Cornerstone: Mitigating Systems

- Green. A finding of very low safety significance and an associated Non-Cited Violation (NCV) was self-revealed when the licensee failed to promptly identify and correct a condition adverse to quality. Specifically, the licensee failed to identify the cause and take prompt corrective actions to correct a malfunction in the Unit 2 Train B auxiliary feedwater pump bearing oil system that caused bearing oil leakage in December 2003. On January 14, 2004, the pump bearing oil system again malfunctioned and leaked oil in a similar manner. This resulted in the licensee taking additional unavailability time in January to identify the cause and repair the oil system to prevent future leakage. This deficiency affected the cross-cutting areas of Human Performance and Problem Identification and Resolution. Human Performance was affected because a non-licensed operator did not adequately verify oil in the site glass when the pump was returned to standby condition on January 14, 2004. Problem Identification and Resolution was affected because, although the licensee had an opportunity to identify and correct the cause for this condition in December 2003, the cause was not correctly identified at that time. The licensee has since repaired the pump and successfully performed six reliability runs with no subsequent leakage, and plans to complete similar repairs to the other three auxiliary feedwater pumps.

  The issue was more than minor because it affected the equipment performance attribute of the mitigating systems cornerstone objective to ensure the reliability and availability of systems that respond to initiating events to prevent undesired consequences. The finding was of very low safety significance because there was no design deficiency, no actual loss of safety function, no single train loss of safety function for greater than the technical specification allowed outage time and no risk due to external events. The failure to correct the malfunction in December 2003 was considered a violation of 10 CFR 50, Appendix B, Criterion XVI. (Section 1R12)

Cornerstone: Barrier Integrity

- Green. A finding of very low safety significance and an associated NCV was self-revealed when a non-licensed operator (NLO) failed to follow written procedures during the restoration of control room ventilation after securing the 2B auxiliary feedwater pump. Specifically, the NLO started the control room office ventilation system prior to securing the control ventilation system from the make-up mode. This resulted in the inoperability of the control room ventilation filtration actuation system. Upon identification that control room office ventilation system was started prematurely, it was secured. The primary cause of this violation was related to the cross-cutting area of Human Performance because the NLO failed to follow procedure.

  The issue was more than minor because the failure to follow written procedures resulted in the inoperability of the control room ventilation filtration actuation system was similar to the greater than minor examples of Section 2 of Inspection Manual Chapter 0612. The finding was of very low safety significance because it only represented a degradation of the radiological function provided for the control room. The failure to follow procedures was a non-cited violation of Technical Specification 5.4.1(a) (Section 1R04)

B. Licensee Identified Violations

A violation of very low safety significance which was identified by the licensee has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation and the licensee's associated corrective action tracking number are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1 operated at or near full power throughout the inspection period except on January 11, 2004 when power was reduced to about 20 percent for replacement of a feedwater regulating valve positioner.

Unit 2 operated at or near full power for the quarter except for two short reductions in power prior to shutting down the unit for a refueling outage on March 22, 2004. Power was reduced to about 80 percent both on January 4, 2004, for turbine throttle valve and governor valve testing and again on February 4, 2004 at the request of electric operations for repairs on a 345 kilovolt transmission line. After March 22, 2004, the unit remained shutdown for the remainder of the quarter.

1. REACTOR SAFETY

Cornerstone: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

a. Inspection Scope

The inspectors completed one inspection sample with their review of the licensee's response to sustained high winds on March 5, 2004. The inspectors evaluated licensee performance by comparing actual performance to the licensee management expectations and guidelines as presented in Byron Abnormal Operating Procedures:

- 0BOA ENV-1, Adverse Weather Conditions, Revision 101;
- 1BOA ENV-1, Adverse Weather Conditions, Revision 3; and
- 2BOA ENV-1, Adverse Weather Conditions, Revision 3.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

.1 Partial Walkdowns

a. Inspection Scope

The inspectors performed four partial walkdowns of accessible portions of trains of risk-significant mitigating systems equipment during times when the trains were of increased importance due to the redundant trains or other related equipment being unavailable. The inspectors utilized the valve and electric breaker lineups and applicable system drawings to verify that the components were properly positioned and that support

systems were lined up as needed. The inspectors also examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors used the information in the appropriate sections of the Updated Final Safety Analysis Report (UFSAR) to determine the functional requirements of the systems.

The inspectors verified the alignment of the following trains:

- Unit 2 Train A auxiliary feedwater while Train B was out of service due to emergent oil leak on January 15, 2004,
- Unit 2 direct current battery and distribution system Train A while Train B was cross tied to Unit 1 for battery charger work on February 02, 2004,
- Unit 1 Train A auxiliary feedwater while Train B was out of service on February 11, 2004, and
- Unit 1 Train B essential service water while Train A was out of service on February 24, 2004.

The inspectors utilized the following references during the completion of their review:

- BOP AF-M2A; Auxiliary Feedwater System, Train "A" Valve Lineup, Revision 3,
- BOP AF-E2A; Unit 2 Auxiliary Feedwater Train "A" Electrical Lineup, Revision 1,
- BOP AF-M1A; Unit 1 Auxiliary Feedwater Train "A" Valve Lineup, Revision 3,
- BOP AF-E1A; Unit 1 Auxiliary Feedwater Train "A" Electrical Lineup, Revision 1,
- BOP SX-M1B; Unit 1 Train "B" Essential Service Water System Valve Lineup, Revision 6,
- BOP SX E1B; Unit 1 Train "B" Essential Service Water Electrical Lineup, Revision 2, and
- BOP DC-E2A; Unit 2 DC Battery and Distribution System Train "A" Electrical Lineup, Revision 2.

The inspectors also reviewed selected issues documented in Condition Reports (CRs), to determine if they had been properly addressed in the licensee's corrective actions program. The documents reviewed during this inspection were listed in the Attachment to this report.

b. Findings

No findings of significance were identified as a result of the equipment alignment samples performed this quarter. However, during the review of Condition Report 198864, "Unplanned Limited Condition For Operation Requirement (LCOAR) Entry for Planned Work," February 02, 2004, an equipment alignment-related finding was identified.

Introduction: A Non-Cited Violation (NCV) of Technical Specification (TS) 5.4.1a having very low safety significance (Green) was self-revealed when a non-licensed operator (NLO) failed to follow procedures. Specifically, the NLO failed to follow the procedures while restoring control ventilation to the normal alignment, causing the control room ventilation filtration actuation system to be inoperable.

Description: On March 1, 2004, the licensee conducted a test start of the 2B auxiliary feedwater (AFW) pump. In preparation for the pump start, operators realigned the control room ventilation to the make-up mode. This was performed to prevent the control ventilation system process radiation monitor filters from becoming clogged due to the exhaust of the 2B AFW pump diesel engine. Prior to placing the control room ventilation system in the make-up mode, the control room office ventilation system was procedurally required to be secured, and marked with equipment status tags indicating the need to contact the control room prior to operating.

Following the completion of the 2B AFW pump test start, the operators were directed to secure the pump in accordance with Byron Operating Procedure AF-8. Step F.9 of this procedure required that the control ventilation system be placed in the mode specified by the Shift Manager or Unit Supervisor. However, the NLO assigned the task did not request this information and proceeded to restart the control room office ventilation fans. The NLO also failed to contact the control room prior to operating the control room office ventilation system as specified by the equipment status tags, nor did the NLO abide by the precaution provided in the Byron Operating Procedure (VV-3) for the startup and shutdown of the control room office heating, ventilation and air-conditioning system to verify that the control room ventilation, including the radiation monitors were operable. As a result of these actions, the control room ventilation filtration actuation system was inoperable.

After starting the control room office ventilation system, the NLO returned to the control room to deliver the equipment status tags. Upon reporting the control ventilation system status to the unit supervisor, it was noted that control room ventilation was still running in the make-up mode and the NLO was directed to re-secure the control room office ventilation system. Subsequently Condition Report 205280 was written to address the concern.

Analysis: The inspectors determined that the failure to follow procedure on March 1, 2004, that resulted in the inoperability of the control room ventilation filtration actuation system was a performance deficiency warranting a significance evaluation. This determination was made in accordance with Inspection Manual Chapter (IMC) 0612, “Power Reactor Inspection Reports,” Appendix B, “Issue Disposition Screening,” issued on June 20, 2003. The inspectors determined that the finding was more than minor because it was similar to the more than minor examples of Section 2 of Appendix E of IMC 0612. The inspectors determined that this deficiency affected the cross-cutting area of Human Performance because the NLO failed to follow written procedures.

The inspectors determined that the finding could be evaluated using the Significance Determination Process (SDP) in accordance with IMC 0609, “Significance Determination Process,” because the finding was associated with the integrity of the control room envelope. For the Phase 1 screening, the inspectors concluded that the finding was of very low safety significance (Green) because the finding only represented a degradation of the radiological barrier function of the control room.

Enforcement: Technical Specification 5.4.1a required, in part, that written procedures shall be established, implemented and maintained covering AFW system operations and control room ventilation. Byron Operating Procedure AF-8, ”Diesel Driven Auxiliary

Feedwater Pump B Shutdown," Revision 17, Step F.9, required that the main control room ventilation system be placed in the mode specified by the Shift Manager or the Unit Supervisor. Contrary to the above, on March 1, 2004, following the shutdown of the 2B AFW pump, an NLO failed to contact the shift manager of the unit supervisor and inappropriately started the control room office ventilation system while the control ventilation system was in the make-up mode, which caused the control room ventilation filtration actuation system to be inoperable. This condition lasted approximately 5 minutes before the error was recognized and the control room office ventilation was secured. The issue was entered into the licensee corrective action program as CR 20580, "Control room office Ventilation fans restarted prior to 0A Control Ventilation System Make-up Train Secured," dated March 1, 2004. Because of the very low safety significance, this violation was treated as a Non-Cited Violation consistent with Section VI.A of NRC Enforcement Policy (NCV 05000455/2004002-01).

1R05 Fire Protection (71111.05)

a. Inspection Scope

The inspectors conducted fire protection walkdowns that were focused on availability, accessibility, and the condition of fire fighting equipment; the control of transient combustibles and ignition sources; and on the condition and operating status of installed fire barriers. The inspectors reviewed applicable portions of the Byron Station Fire Protection Report and selected fire areas for inspection based on their overall contribution to internal fire risk, as documented in the Individual Plant Examination of External Events Report. In addition, during these inspections, the inspectors used the following reference documents:

- Fire Test TR-207; Fire and Hose Stream Test of an Empty Embedded Steel Sleeve and Plugs (each end) and an Embedded Steel Conduit Filled with 5.0' (max.) #TCO-010 Ceramic Blanket and Steel Plugs at Each End, May 1, 1985, and
- Fire Test TR-110; Transco Test Report TR-110 Fire and Hose Stream Test of TCO-003 High Density Silicone Elastomer, April 22, 1983.

The inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and that fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The Byron Station Pre-Fire Plans applicable for each area inspected were used by the inspectors to determine approximate locations of firefighting equipment. The documents listed in the Attachment at the end of this report were also used by the inspectors to evaluate this inspection area.

The inspectors completed eight inspection samples by examining the plant areas listed below to observe conditions related to fire protection:

- Division 12, 4 kilovolt switchgear room on January 22, 2004,
- Unit 1 diesel driven auxiliary feedwater pump room on January 27, 2004,
- Unit 2 turbine building Elevation 426 on February 5, 2004,

- Auxiliary building Elevation 401 general area on February 6, 2004,
- Unit 2 upper cable spreading room on March 16, 2004,
- Unit 1 Train A emergency diesel generator room on March 17, 2004,
- Division 21, 4 kilovolt switchgear room on March 19, 2004, and
- Auxiliary building Elevation 383 general area on March 23, 2004.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11)

a. Inspection Scope

On February 3, 2004, the inspectors completed one inspection sample by observing and evaluating an operating crew during an "out-of-the-box" requalification examination on the simulator using Scenario "Number 04-01-OOB," Revision 0. The inspectors evaluated crew performance in the areas of:

- clarity and formality of communications;
- ability to take timely actions;
- prioritization, interpretation and verification of alarms;
- procedure use;
- control board manipulations;
- supervisor's command and control;
- management oversight; and
- group dynamics.

Crew performance in these areas was compared to licensee management expectations and guidelines as presented in the following documents:

- OP-AA-101-111, Roles and Responsibilities of On-Shift Personnel, Revision 0,
- OP-AA-103-102, Watchstanding Practices, Revision 2,
- OP-AA-103-103, Operation of Plant Equipment, Revision 0,
- OP-AA-103-104, Reactivity Management Controls, Revision 2,
- OP-AA-104-101, Communications, Revision 1, and
- TQ-AA-106-0113; Simulator Demonstration Examination Individual Competency Evaluation Form, Revision 0.

The inspectors verified that the crew completed the critical tasks listed in the above simulator guide. The inspectors also compared simulator configurations with actual control board configurations. For any weaknesses identified, the inspectors observed the licensee evaluators to verify that they also noted the issues and discussed them in the critique at the end of the session.

In addition, the inspectors utilized the following references during the completion of their review:

- Unit 1 Abnormal Operating Procedure PRI-1, Excessive Primary Plant Leakage, Revision 102,
- Unit 1 Abnormal Operating Procedure SEC-8, Steam Generator Tube Leak, Revision 102,
- Unit 1 Emergency Operating Procedure 1BEP-0, Reactor Trip or Safety Injection, Revision 106, and
- Unit 1 Emergency Operating Procedure 1BEP-3, Steam Generator Tube Rupture, Revision 102.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors completed one inspection sample by evaluating the licensee's implementation of the maintenance rule, 10 CFR 50.65, as it pertained to identified performance problems associated with the following systems:

- turbine electro-hydraulic control system.

During this inspection, the inspectors evaluated the licensee's monitoring and trending of performance data for the past 2 years, verified that performance criteria were established commensurate with safety, and verified that equipment failures were appropriately evaluated in accordance with the maintenance rule. These aspects were evaluated using the maintenance rule scoping and report documents. The inspectors also verified the basis for classification as (a) 1 or (a) 2 and the criteria for change of classification. For the system reviewed, the inspectors also reviewed the significant work orders and condition reports listed in the Attachment at the end of this report to verify that failures were properly identified, classified, and corrected, and that unavailable time had been properly calculated.

In addition, the inspectors utilized the following references during the completion of their review:

- Regulatory Guide 1.160, Monitoring the Effectiveness of Maintenance at Nuclear Power Plants, Revision 2,
- NUMARC 93-01, Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants, Revision 2, and
- ER-AA-310; Implementation of the Maintenance Rule, Revision 2.

The inspectors also reviewed selected issues documented in CRs, to determine if they had been properly addressed in the licensee's corrective actions program. The CRs and related documents reviewed during this inspection were listed in the Attachment to this report.

b. Findings

No findings of significance were identified as a result of the inspections in this area performed this quarter. However, during the performance of an operability determination inspection associated with the Unit 2 Train B auxiliary feedwater pump CR 195433 in January 2004 (Section 1R15), one maintenance effectiveness-related finding was identified.

Introduction: An NCV of Criterion XVI of 10 CFR 50 Appendix B having very low safety significance (Green) was self-revealed when the licensee failed to promptly identify and correct a condition adverse to quality. Specifically, the licensee failed to identify the cause and take prompt corrective actions to correct a malfunction in the Unit 2 Train B auxiliary feedwater (AFW) pump bearing lubricating oil system that caused bearing oil leakage in December 2003.

Description: On December 1, 2003, during a required surveillance test on the 2B AFW pump, the pump developed an oil leak at the outboard bearing housing labyrinth seal. This leak necessitated that the pump be shut down and the test aborted. The licensee later took the 2B AFW pump out of service to repair the leak. However, the licensee was unable to identify any physical cause for the leak. The only discrepancy found was that the pump oil pressure was slightly higher than the value specified by the vendor. As a result the licensee adjusted the lube oil pressure to the specified value. The pump was returned to service, and the licensee initiated biweekly confidence runs of the pump to ensure the leak was repaired.

On January 14, 2004, the licensee performed a confidence run of the 2B AFW pump, and afterward an NLO restored the pump to the standby condition. The following day, during routine rounds, another NLO discovered oil in the pump bed plate and no oil in the lubricating oil site glass. Since there were no signs of an active lube oil leak, the licensee concluded that the pump must have leaked during the confidence run the previous night. In addition, the licensee concluded that on January 14, when the pump was restored to the standby condition, the NLO did not identify that there was no oil in the site glass.

During the subsequent troubleshooting, the licensee determined that the oil leak had occurred at the same location as the leak discovered in December 2003. Furthermore, the licensee was able to reproduce the leak by raising oil pressure to an abnormally high setting.

The licensee determined that the leak caused by the configuration of the outboard bearing housing oil return pipe to the oil sump. Specifically, the return line entered the sump at an elevation low on the oil sump at a point below the level that the sump was normally filled. At this location oil in the oil return line had to overcome the pressure in the return line cause by the volume of oil standing above the entry point of the line into the oil sump. This situation led to a condition where oil backed-up in the return line until the oil reached the level of the bottom of the shaft in the outboard bearing housing where oil could then migrate directly into the labyrinth seal area and out of the housing along the pump shaft.

The oil return line was modified so that the entry point of the line into the sump was above the standing oil level in the sump thereby eliminating the back-up of oil in the return line during pump operation. Following the modification of the oil return line, the licensee ran the pump for testing and was unable to reproduce leakage via raising system oil pressure as before. Subsequently, for added assurance, the licensee performed six more confidence runs of the pump with no detected leakage. Furthermore, the licensee plans to complete similar repairs to the other three auxiliary feedwater pumps.

Analysis The inspectors determined that the failure to promptly identify and correct the malfunction in the bearing oil system that caused bearing oil leakage from the 2B AFW pump bearing lubricating oil system in December 2003 was a performance deficiency warranting a significance evaluation. This determination was made in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Disposition Screening," issued on June 20, 2003. The inspectors determined that the finding was more than minor since it involved the equipment reliability and availability attribute that affected the Mitigating System cornerstone objective. Although the licensee later determined that the oil leak did not render the pump inoperable, the failure to correct the oil leak in December 2003 resulted in additional unavailability of the pump in January 2004.

The inspectors determined that this deficiency affected the cross-cutting areas of Human Performance and Problem Identification and Resolution. Human Performance was affected because the non-licensed operator did not adequately verify oil in the site glass when the pump was returned to standby condition on January 14, 2004. Problem Identification and Resolution was affected because, although the licensee had an opportunity to identify and correct the cause for this condition in December 2003 the cause was not correctly identified at that time.

The inspectors determined that the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," because the finding was associated with the operability, availability and reliability of a train of a mitigating system. For the Phase 1 screening, the inspectors answered "no" to the questions in the Mitigating System column, because there was no design deficiency, no actual loss of safety function, no single train loss of safety function for greater than the TS allowed outage time, and no risk due to external events. Therefore, the finding was of very low safety significance (Green).

Enforcement: Criterion XVI of 10 CFR Part 50 Appendix B states, in part, that measures shall be established to assure that conditions adverse to quality such as malfunctions are promptly identified and corrected. Contrary to the above, in December 2003, the licensee failed to identify and correct the malfunction that caused the 2B AFW pump bearing oil leakage. Subsequently, the licensee repaired the pump by modifying the routing of the oil return line. Because of the very low safety significance, this violation was treated as a Non-Cited Violation consistent with Section VI.A of NRC Enforcement Policy (NCV 05000455/2004002-02). The licensee entered the problem into its corrective action system as Condition Report 195433, "2B Auxiliary Feedwater Pump Outboard Bearing Oil Leak, Resulting in Inoperability of the Pump," dated January 15, 2004.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

a. Inspection Scope

The inspectors reviewed the licensee's management of plant risk during emergent maintenance activities or during activities where more than one significant system or train was unavailable. The inspectors chose activities based on their potential to increase the probability of an initiating event or impact the operation of safety-significant equipment. The inspectors verified that the evaluation, planning, control, and performance of the work were done in a manner to reduce the risk and the work duration was minimized where practical. The inspectors also verified that contingency plans were in place where appropriate.

The inspectors reviewed configuration risk assessment records, UFSAR, TS, and Individual Plant Examination. The inspectors also observed operator turnovers, observed plan-of-the-day meetings, and reviewed the documents listed in the Attachment at the end of this report to verify that the equipment configurations had been properly listed, that protected equipment had been identified and was being controlled where appropriate, and that significant aspects of plant risk were being communicated to the necessary personnel. The inspectors verified that the licensee controlled work activities in accordance with the following:

- Nuclear Station Procedure (NSP) WC-AA-101, On-Line Work Control Process, Revision 7,
- NSP ER-AA-600, Risk Management, Revision 3,
- NSP ER-AA-310, Implementation of the Maintenance Rule, Revision 2, and
- Byron Operating Department Policy 400-47, August 15, 2003, Revision 3.

The inspectors completed eight inspection samples by reviewing the following activities:

- emergent inoperability of Unit 2 diesel driven auxiliary feedwater pump on January 15, 2004,
- Unit 2 bus 212 direct current bus battery charger out of service coincident with auxiliary building ventilation supply fan C on February 2, 2004,
- emergent line instability in switchyard line 621 concurrent with Unit 2 diesel driven auxiliary feedwater pump maintenance on February 4, 2004,
- Unit 1 Train B auxiliary feedwater concurrent with auxiliary building ventilation supply fan on February 11, 2004,
- both units Train B essential service water out of service concurrently on February 12, 2004,
- Unit 2 Bus 211 direct current bus battery charger out of service coincident with the Unit 1 Train A essential service water pump on February 24, 2004,
- emergent inoperability of Unit 2 Train B auxiliary feedwater pump on February 25, 2004, and
- shutdown risk during fuel moves and with the following equipment unavailable; 2B emergency diesel generator, 2B residual heat removal pump, 4160kV Bus 242, and the Unit 1 and Unit 2 SX Train B on March 27, 2004.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance Related to Non-routine Plant Evolutions and Events (71111.14)

a. Inspection Scope

The inspectors completed four inspection samples by observing and evaluating control room operators during the following non-routine evolutions:

- Unit 2 downpower for moisture separator reheater valve controller card replacement on January 23, 2004,
- Unit 1 uppower from 20 percent power for feedwater flow regulating valve (1FW540) positioner repair on January 10 and 11, 2004, and
- Unit 2 secondary heater drain tank level transient on March 3, 2004, and
- Shutdown for Byron Station Unit 2 Refueling Outage Eleven (B2R11) on March 22, 2004.

The inspectors evaluated crew performance in the areas of:

- clarity and formality of communications,
- prioritization, interpretation and verification of alarms,
- procedure use,
- control board manipulations,
- supervisor's command and control,
- management oversight, and
- group dynamics.

Crew performance in these areas was compared to licensee management expectations and guidelines as presented in the following documents:

- OP-AA-101-111, Roles and Responsibilities of On-Shift Personnel, Revision 0,
- OP-AA-103-102, Watchstanding Practices, Revision 2,
- OP-AA-103-103, Operation of Plant Equipment, Revision 0,
- OP-AA-103-104, Reactivity Management Controls, Revision 2, and
- OP-AA-104-101, Communications, Revision 1.

In addition, the inspectors utilized the following references during the completion of their review:

- 2BGP 100-5, Plant Shutdown and Cooldown, Revision 39,
- 2BOSR 4.3.1-1, Reactor Coolant System Pressure/Temperature Limit Surveillance, Revision 5,
- 2BOSR 0.1-4, Mode 4 Shiftly and Daily Operating Surveillance, Revision 9,
- 2BGP 100-5TI, Plant Shutdown and Cooldown Flowchart, Revision 21,
- 2BGP 100-4, Power Decension, Revision 23, and
- 2BGP 100-4TI, Power Decension Flow Chart, Revision 14.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors evaluated plant conditions, selected condition reports, engineering evaluations and operability determinations for risk-significant components and systems in which operability issues were questioned. These conditions were evaluated to determine whether the operability of components was justified.

The inspectors completed seven inspection samples by reviewing the following evaluations and issues:

- Engineering Change 347317 Revision 0, evaluation of component cooling flow to residual heat removal heat exchanger during surveillance 2BVSR 5.2.4-4,
- CR 198864, Unplanned LCOAR of Unit 1 direct current bus 112 battery charger,
- CR 195433, Unit 2 Train B auxiliary feedwater pump oil leak,
- CR 208497, Unit 2 solid state protection system relay K602 and associated failure of the 0VA03CA fan to start as expected,
- CR 204052, Unit 2 Train B auxiliary feedwater pump water in lube oil,
- root cause analysis: 2B auxiliary feedwater pump outboard oil leak resulting in inoperability of the pump, potential common mode failure of auxiliary feedwater pumps due to location of the oil return line, and
- Operability Determination 04-002, 1A diesel generator inlet manifold air leak.

The inspectors compared the operability and design criteria in the appropriate section of the TS including the TS Basis, the technical requirements manual (TRM) and UFSAR to the licensee's evaluations to verify that the components or systems were operable. The inspectors determined whether compensatory measures, if needed, were taken, and determined whether the evaluations were consistent with the requirements of licensee's Procedure LS-AA-105, "Operability Determination Process," Revision 0. The inspectors also discussed the details of the evaluations with the shift managers and appropriate members of the licensee's engineering staff.

The inspectors utilized the following references during the completion of their review:

- NRC Inspection Manual Part 9900: Technical Guidance; Operable/Operability: Ensuring the Functional Capability of a System or Component,
- NRC Inspection Manual Part 9900: Technical Guidance; Resolution of Degraded and Nonconforming Conditions; October 8, 1997,
- NRC Generic Letter No 91-18: Information to Licensees Regarding NRC Inspection Manual Section on Resolution of Degraded and Nonconforming Conditions, Revision 1,
- Byron's Operations Narrative Logs, February 10 - 11, 2004, and
- UFSAR Section 9.2.2; Component Cooling System.

The inspectors also reviewed selected issues documented in CRs, to determine if they had been properly addressed in the licensee's corrective actions program. The documents reviewed during this inspection were listed in the Attachment to this report.

b. Findings

No findings of significance were identified associated with the operability evaluations reviewed. However, during the review of the operability determination associated with the 2B AFW pump and associated oil leak (CR 195433), a finding associated with maintenance effectiveness was identified. This finding was described in Section 1R12 of this report.

1R16 Operator Workarounds (71111.16)

a. Inspection Scope

The inspectors performed one semi-annual review sample of the licensee's operator workarounds to verify that the cumulative effects of operator workarounds and operator challenges did not adversely impact the ability to operate the plant. In particular, the inspectors focused on the following attributes:

- the cumulative effects of operator workarounds and challenges on the reliability, availability and potential for missed operation of a system,
- the cumulative effects of operator workarounds and challenges that could affect multiple mitigating systems,
- the cumulative effects of operator workarounds and challenges on the ability of operators to respond in a correct and timely manner to plant transients and accidents, and
- assessed the classification of existing operator workarounds and challenges.

The documents reviewed during this inspection were listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (Annual) (71111.17)

a. Inspection Scope

The inspector performed one sample with the review of the following special test:

- SPP 04-001, "Determine an accurate flow measurement of feedwater to support Advanced Measurements and Analysis Group (AMAG) system commissioning."

The inspectors reviewed the impact of this special test on safety-related plant system and equipment. Additionally, the inspectors considered the radiological impact of the test. As part of the evaluation the inspectors reviewed the test procedure, associated

10 CFR 50.59 paperwork and the applicable sections of the UFSAR. Since the test results associated with a feedwater flow tracer test were to be used to determine the adequacy of the common header installation of the AMAG Crossflow instrumentation, the inspectors reviewed the test results as part of a continuing review of Unresolved Item 50-454/03-02-03.

The inspectors referenced the following documents for the review:

- American Society of Mechanical Engineers (ASME) Technical Paper 87-JPGC-Pwr-45, Investigation of Power Plant Components by Means of an Advanced Tracer Technique, Dated October 1987;
- ABB Turbo Systems Ltd. Letter, Byron Generating Station Results of Feedwater Flow Calibration Test with Tracer, February 16, 2004.

b. Findings

No findings of significance were identified as a result of this review of the tracer test procedure on the common feedwater header. However, the tracer test results will be considered in the continuing review of Unresolved Item 50-454/03-02-03. Unresolved Item 50-454/03-02-03 remains open.

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed the post maintenance testing activities associated with maintenance or modification of mitigating, barrier integrity, and support systems that were identified as risk significant in the licensee's risk analysis. The inspectors reviewed these activities to verify that the post maintenance testing was performed adequately, demonstrated that the maintenance was successful, and that operability was restored. During this inspection activity, the inspectors interviewed maintenance and engineering department personnel and reviewed the completed post maintenance testing documentation. The inspectors used the appropriate sections of the TS, TRM, and UFSAR, as well as the documents listed in the Attachment at the end of this report, to evaluate this area. The inspectors verified that the licensee controlled post maintenance testing in accordance with the following:

- Byron Administrative Procedure (BAP) 1600-11; Work Request Post Maintenance Testing Guidance; Revision 12, and
- NSP MA-AA-716-012; Post Maintenance Testing, Revision 0.

The inspectors completed six inspection samples by observing and evaluating the post maintenance testing subsequent to the following activities:

- Unit 2 diesel driven auxiliary feedwater pump following emergent work on January 17, 2004,
- Unit 1 diesel driven auxiliary feedwater pump planned work on February 12, 2004,

- Unit 1 Train A essential service water pump following planned work on February 24, 2004,
- Unit 2 bus 211 battery charger following a planned outage on February 24, 2004,
- Unit 2 Train B essential service water pump following planned work on March 3, 2004, and
- Unit 1 steam generator power operated relief valve D following rebuild work on March 3, 2004.

b. Findings

No findings of significance were identified.

1R20 Refueling & Outage Activities (71111.20)

a. Inspection Scope

The inspectors observed the licensee's performance during Refueling Outage B2R11 beginning March 22, 2004, and continuing through the end of the quarter. Since the outage was ongoing at the end of the quarter, these inspection activities represent only a partial completion of one inspection sample. The inspection sample will be completed in the next quarterly inspection period.

The inspectors evaluated the licensee's conduct of refueling outage activities to assess the licensee's control of plant configuration and management of shutdown risk. The inspectors reviewed configuration management to verify that the licensee maintained defense-in-depth commensurate with the shutdown risk plan; reviewed major outage work activities to ensure that correct system lineups were maintained for key mitigating systems; and observed refueling activities to verify that fuel handling operations were performed in accordance with the TS, TRM, UFSAR and approved procedures. The inspectors interviewed operations, engineering, work control, radiological protection, and maintenance department personnel during their inspection activities. The inspectors also attended outage-related status and pre-job briefings as well as Radiation Protection ALARA [As Low As Reasonable Achievable] briefings. Other major outage activities evaluated included the licensee's control of:

- containment penetrations in accordance with the TS,
- structures, systems or components (SSCs) which could cause unexpected reactivity changes,
- flow paths, configurations, and alternate means for reactor coolant system inventory addition,
- SSCs which could cause a loss of inventory,
- RCS pressure, level, and temperature instrumentation,
- spent fuel pool cooling during and after core offload,
- switchyard activities and the configuration of electrical power systems in accordance with the TS and shutdown risk plan, and
- SSCs required for decay heat removal.

The inspectors observed portions of the plant cooldown, including the transition to shutdown cooling, to verify that the licensee controlled the plant cooldown in accordance

with the TS. In addition, the inspectors completed numerous visual inspections inside the Unit 2 containment. This included a tour of the Unit 2 containment at Mode 3 during the cooldown at the beginning of B2R11 so that the inspectors could assess the initial material condition of equipment inside containment immediately following the operating cycle. During the visual inspections, the inspectors focused on the material condition of the equipment and particularly on any indication of boric acid.

The inspectors utilized the following references during the completion of their review:

- BFP FH-4, Fuel Movement in Spent Fuel Pool, Revision 15,
- BFP FH-5, Fuel Movement in Containment, Revision 14,
- BFP FH-14, Operation of Refueling Machine, Revision 16,
- BFP FH-14, Operation of Refueling Machine, Revision 17,
- CC-AA-201, Plant Barrier Control Program, Revision 4,
- ER-AP-331-1002, Boric Acid Corrosion Program Identification, Assessment, and Evaluation, Revision 0,
- HU-AA-104-101, Procedure Use and Adherence, Revision 0,
- OP-MW-201-007, Fire Protection System Impairment Control, Revision 0
- OU-AA-103, Shutdown Safety Management Program, Revision 2,
- SA-AA-129-2118, Management and Control of Temporary Power, Revision 1, and
- Byron Station Foreign Material Exclusion (FME) Plan, B2R11 Refueling Outage, Revision 3.

The inspectors also reviewed selected issues documented in CRs, to determine if they had been properly addressed in the licensee's corrective action program. The documents reviewed during this inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors witnessed selected surveillance testing and/or reviewed test data to verify that the equipment tested using the surveillance procedures met the TS, the TRM, the UFSAR, and licensee procedural requirements. The inspectors also verified that the surveillance tests demonstrated that the equipment was capable of performing its intended safety functions. The activities were selected based on their importance in verifying mitigating systems capability and barrier integrity. The inspectors used the documents listed in the Attachment at the end of this report to verify that the testing met the frequency requirements; that the tests were conducted in accordance with the procedures including establishing the proper plant conditions and prerequisites; that the test acceptance criteria were met; and that the results of the tests were properly reviewed and recorded. In addition, the inspectors interviewed operations, maintenance and engineering department personnel regarding the tests and test results.

The inspectors completed seven inspection samples by observing and evaluating the following surveillance tests:

- Unit 2 125 volt direct current bus 212 battery charger operability surveillance test,
- Unit 2 Train B residual heat removal pump ASME surveillance test,
- Unit 2 Train B AFW pump ASME surveillance test,
- Unit 2 Train B safety injection pump ASME surveillance test,
- Unit 2 main steam safety valve lift point verification surveillance test,
- Unit 2 simultaneous start of both AFW pumps with flow to steam generators surveillance test, and
- Unit local leak rate test of CS-007B and CS-008B (Penetration 16) surveillance test.

During the review of the Unit 2 simultaneous start of both AFW pumps with flow to steam generators, the inspectors utilized the following documents as references:

- Calculation PSA-B-97-18, Byron/Braidwood AFW Flow for AF005A-H Modification, Revision 5, and
- Analysis BYR03-088, Instrument Uncertainties Associated with Performance of Auxiliary Feedwater Pump Surveillance Procedure (2) 1BVSR-AF-3, Revision 0.

The inspectors also reviewed selected issued documented in CRs, to determine if they had been properly addressed in the licensee's corrective actions program. The CRs and related documents reviewed during this inspection were listed in the Attachment to this report.

b. Findings

A Licensee Identified Violation was noted during the review of the Unit 2 main steam safety valve lift point testing. This violation is described in Section 4OA7 of this report. No other findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors completed one inspection sample by observing activities associated with the simulator training completed on February 3, 2004. Specifically, the inspectors verified that the emergency classification and simulated notifications were properly completed, and that the licensee adequately critiqued the training. The inspectors also determined that the results were properly counted in the Performance Indicators for emergency preparedness.

In addition, the inspectors utilized the following references during completion of their review:

- EP-AA-125-1002, Revision 2, ERO Performance - Performance Indicators Guidance, and
- EP-AA-114-100, Revision 3, Midwest Region Offsite Notifications.

The documents listed in the Attachment at the end of the report were used in the assessment of this area.

b. Findings

No findings of significance were identified

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

As discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's corrective action system at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Minor issues entered into the licensee's corrective action system as a result of inspectors' observations are generally denoted in the list of documents reviewed at the back of the report.

b. Findings

A finding of very low safety significance identified during review of the licensee's corrective action program was discussed in Section 1R04

4OA4 Cross-Cutting Aspects of Findings

.1 A finding described in Section 1R04 of this report had, as its primary cause, a human performance deficiency, in that an NLO failed to follow written procedures during the restoration of the control room ventilation system, resulting in the inoperability of the control room ventilation filtration actuation system.

.2 A finding identified in Section 1R12 of this report affected the cross cutting areas of human performance and problem identification and resolution. Human performance was affected because the non-licensed operator did not adequately verify proper oil level in the sight glass when the 2B AFW pump was returned to standby condition on January 14, 2004. Problem identification and resolution was affected because, the licensee failed to identify and correct the cause of the malfunction of the 2B AFW pump bearing oil system that led to a bearing oil leak in December 2003, as evidenced by the leak recurred in January 2004.

4OA5 Other Activities

.1 Review of Institute of Nuclear Power Operations Report

The inspectors completed a review of the final report for the Institute of Nuclear Power Operations June 2003 Evaluation, dated February 25, 2004.

.2 Spent Fuel Material Control and Accounting At Nuclear Power Plants (Temporary Instruction (TI) 2515/154)

a. Inspection Scope

The inspectors interviewed the station and Exelon corporate special nuclear material custodians. The inspectors reviewed licensee procedures regarding the movement and accountability of special nuclear material. The inspectors also reviewed a sample of recent inventories of nuclear fuel and special nuclear material. Documents reviewed as part of this TI were listed in the Attachment. This TI was not a part of the baseline inspection program and was therefore not considered a sample. The TI is considered complete.

b. Findings

No findings of significance were identified.

.3 (Updated) Unresolved Item (URI) 50-454/03-02-03:

Evaluation for Unit 1 Potentially Exceeding Licensed Thermal Power Limits. This issue was discussed in Section 1R17 of this report but remains unresolved pending the completion of the NRC ongoing review.

4OA6 Meetings

Exit Meeting

The inspectors presented the inspection results to Mr. S. Kuczynski and other members of licensee management at the conclusion of the inspection on April 13, 2004. The inspectors did review and dispose of two proprietary documents. The inspectors asked the licensee whether any other materials examined during the inspection should be considered proprietary. No other proprietary information was identified.

4OA7 Licensee-Identified Violations

The following violation of very low significance was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Manual NUREG-1600, for being dispositioned as NCVs.

Cornerstone: Mitigating Systems

Technical Specification 3.7.1 required that Main Steam Safety Valves be operable as specified in TS Table 3.7.1-2 or within 4 hours reduce power to less than or equal to that specified in TS Table 3.7.1-1. Furthermore, if this action was not completed in the specified time, the plant was required to be in Mode 3 in 6 hours. Contrary to this, as described in CR 209381, on March 18, 2004, the lift settings for Main Steam Safety Valve 2MS017A was found below the 3 percent limit allowed in TS Table 3.7.1-2. Based on engineering judgement, it is likely that the valves were outside the TS value in excess of the time allowed by the TS limiting condition for operation. This violation is of very low safety significance because the condition was bounded by the safety analysis report. The licensee entered this event into its action tracking system as CR 209381.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

S. Kuczynski, Site Vice President
D. Hoots, Plant Manager
B. Adams, Engineering Director
D. Combs, Site Security Manager
D. Goldsmith, Radiation Protection Director
W. Grundmann, Regulatory Assurance Manager
K. Hansing, Nuclear Oversight
B. Youman, Maintenance Manager
S. Kerr, Chemistry Manager
R. Kolo, Training Manager
M. Snow, Work Management Director
S. Stimac, Operations Manager

Nuclear Regulatory Commission

A. Stone, Chief, Projects Branch 3, Division of Reactor Projects

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000455/2004002-01	NCV	Failure to Follow Results in Inoperable Control Room Ventilation Filtration Actuation System (Section 1R04)
05000455/2004002-02	NCV	Failure to Promptly Identify and Correct Lube Oil on the 2B Auxiliary Feedwater Pump (Section 1R12)

Closed

None

Discussed

50-454/03-02-03	URI	Evaluation for Unit 1 Potentially Exceeding Licensed Thermal Power Limits (Sections 1R17 and 4OA5.3)

LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety but rather that selected sections of portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

1R04 Equipment Alignment

CR 00198864; Unplanned Limited Condition For Operation Requirement (LCOAR) Entry for Planned Work, February 02, 2004;
Prompt Investigation for Unplanned Limited Condition For Operation Requirement (LCOAR) Entry for Planned Work, February 02, 2004;
BOP AF-8; Diesel Driven Auxiliary Feedwater Pump Startup on Recirc., Revision 24;
BOP AF-8; Diesel Driven Auxiliary Feedwater Pump Shutdown, Revision 17;
BOP VC-1; Startup of Control Room HVAC System, Revision 5;
BOP VC-5,; Placing the Control Room HVAC System Makeup Filter Train Recirculation Charcoal Absorbers in Operations, Revision 7;
BOP VV-3; Control Room Office HVAC System Start-Up and Shutdown, Revision 2;
BOP VV-3; Control Room Office HVAC System Start-Up and Shutdown, Revision 3.

1R05 Fire Protection

CR 198501; Missing Studs on Hatch 1DSH120, January 27, 2004 - (NRC Identified);
CR 209183; Flammable Smoke Detector Test Gas Found in Upper Cable Spreading Room, March 18, 2004 (NRC Identified);
BAP 1100-3A3; Enter OBOL 10.g Logbook LCOAR Entry is Acceptable for Work of Less than 1 Hour in Duration, Revision 12;
Drawing Number A-252; Byron Station Unit 1 Auxiliary Building Mezzanine Floor Plan.

1R12 Maintenance Effectiveness

Oil Sample Data for the Electro-Hydraulic Control System From Analysts, Inc., January 28, 2004;
BOP AF-2; Securing the Auxiliary Feedwater System After Initiation, Revision 12;
BOP AF-1; Diesel Driven Auxiliary Feedwater Pump Alignment to Standby Condition; Revision 20;
BOP AF-8; Diesel Driven Auxiliary Feedwater Pump - B Shutdown, Revision 17;
Project # BYR-95687; Failure Evaluation of a Fulflo Relief Valve, Cat ID 43022;
AR 188595; Evaluate Mod. Installation on 3 AFW Pumps Evaluate the Installation of the Outboard Bearing Drain Line Mod. That Was Installed on the 2B AFW Pump to the Other 3 AFW PUMPS, February 20, 2004;
CR 195433; Prompt Investigation Report - Unit 2 NLO Performing Auxiliary Building Rounds Reported No Visible Oil Level for 2AF01PB Pump Oil Sight Glass, January 15, 2004;
CR 195433; Complex Troubleshooting Data Sheet;
Component ID 2AF01PB, Ref AR 195433, Byron Unit 2, February 25, 2004;

2BVSR 5.5.8.AF.1-2; ASME Surveillance Requirements for the Diesel Driven Auxiliary Feedwater Pump;
WO 656483; Oil Leak on 2B AFW PUMP Outboard Pump Bearing, January 17, 2004.

1R13 Maintenance Risk Assessments And Emergent Work Control

CR 199623; Unit 2 Ramp Down Due to Emergent Line Work, February 04, 2004;
CR 198864; Unplanned LCOAR Entry for Planned Work, February 2, 2004;
CR 197932; Parts Issues for 212 Work Window and Upper Cable Spreading Room Puff Test 1S-35,
January 28, 2004.

1R14 Personnel Performance Related to Non-Routine Plant Evolutions and Events

CR 210637; Accelerograph Acceleration High Alarm Received, March 24, 2004, (NRC Identified);
BAR 0-38-E5; Accelerograph Acceleration High, Revision 7;
OBOA ENV-4; Earthquake Unit 0, Revision 100.

1R15 Operability Evaluations

EC 347317; Evaluation of Component Flow to Residual Heat Removal Heat Exchanger During Surveillance 2BVSR 5.2.4-4, Revision 0;
BOP AF-7; Diesel Driven Auxiliary Feedwater Pump 2B Startup on Recirc, Revision 22;
CR 189314; NRC Concerns with Operability Determinations (P&IR), December 5, 2003;
CR 195433; Declared 2B AFW PUMP Inoperable Due to No Oil In Pump, January 15, 2004;
CR 200886; Anomalous Component Cooling System Flows During RH Test,
February 10, 2004;
CR 208086; Air Manifold Leakage from Cylinders 4L & 4R for 1A Diesel Generator,
March 12, 2004;
CR 208497; 0VA03CA Failed to Start as Required, March 15, 2004;
CR 208635; Poor Communication in Outage Control Center Leads to Inaccurate LCOAR Status,
March 15, 2004;
WO 587038; RCP 2C Thermal Barrier Flow Indicator Switch, February 13, 2004;
WR 131525; 2C Thermal Barrier Low flow Alarm In and Will Not Clear,
February 11, 2004;
Modification No. M6-1-91-018; Permanent Installation of Supplemental Cooling in the Miscellaneous Electrical Equipment Rooms, September 29, 1992;
WR 121206; Motor “Humming” Fan Not Turning, November 19, 2003, fixed
March 08, 2004;
WR 120091; Appears to Have High Vibes. Fan Blade(s) May Be Making,
November 12, 2004;
Schematic Diagram 6E-2-4030EF11; Reactor Protection System Output Relays Development Train “A”;
Byron Units 1 & 2 Schematic Diagram 6E-0-4030VA13; Auxiliary Building Charcoal Booster Fan 0A 0VA03CA;

WO 00656483; Complex Troubleshooting - Auxiliary Feedwater;
Root Cause Analysis; 2B Auxiliary Feedwater Pump Outboard Bearing Oil Leak Resulting in Inoperability of the Pump, March 20, 2004;
Prompt Investigation Report; 2AF01PB Outboard Bearing Oil Sample, February 25, 2004;
AR 188595- Prompt Investigation Report; 2B Auxiliary Feedwater Pump Outboard Bearing Oil Leak.

1R16 Operator Workarounds

OP-AA-102-103; operator work-around program, Revision 0;
Byron Nuclear Generation Station -Plan of the Day - operator challenges, March 1, 2004;
annual aggregrate review of plant operations, January 15, 2004;
CR 200975; 2CC9507B position/TS issues and unapproved operator aids, February 10, 2004;
CR 202480; identification and coding of Main Control Room corrective work orders, February 20, 2004;
AR 00161417; PORC aggregate review of unit operations, January 15, 2004;
AR 00205840; preconditioning 1MS018D, March 3, 2004;
AR 00205800; NOS ID: wrong weld procedure specified on ASME weld record, March 2, 2004;
AR 00205655; activities scheduled on protected equipment during 2B SX win, March 2, 2004.

1R17 Permanent Plant Modifications

CR 200745; Feedwater Flow Tracer Test Preliminary Results, February 9, 2004;
CR 202040; Feedwater Flow Tracer Test Preliminary Results, February 16, 2004;
Actions from Initial Byron Tracer Test Results, February 17, 2004;
Synopsis of PORC Review of Feedwater Tracer Test Results, February 26, 2004.

1R19 Post Maintenance Testing

WO 628201 02; Check The Oil Filters for External Leakage, February 12, 2004;
WO 609286 03; Operations Post Maintenance Test (PMT) Task Verify New Sample Valve Works Properly, February 12, 2004;
WO 579999 02; Check the Hose Connections on the JW Surge Tank. Verify Level Switch Tubing is not Leaking, February 12, 2004;
WO 583917 02; Verify Engine Block Heaters are Warm, February 12, 2004;
WO 579998 02; Verify Normal Level is Maintained in the Jacket Water Surge Tank and that Solenoid Isolates Flow When Level Increases, February 12, 2004;
WO 639361 01; SEB 1B AFW ASME Surveillance (Quarterly), February 12, 2004;
WO 609286 04; SEB - PMT for New Jacket Water Sample Valve, February 12, 2004;
WO 490145 01; 211 “A” Train 125V Battery Charger Operability Test, February 04, 2004;
WO 488429 04; Replace Current Limit Board See Post Maintenance Test, February 23, 2004;
WO 00627472; Small Oil Leak On Flange Of Main Oil Pump, February 16, 2004;
WO 00627472 02; OPS PMT No Leakage From Repaired Areas, February 23, 2004;

WO 00640149; Oil Leak Appears To Be Coming From Inboard BRG, February 16, 2004;
WO 00640149 02; OPS PMT No Leakage From Inboard Bearing Oil Drain Piping, February 23, 2004;
WO 00519848; Replace Seal Cooling Water Supply Piping, January 23, 2004;
WO 00519848 02; No Leakage From Seal Injection Piping With Pump Operating, February 23, 2004;
WO 00601774; Essential Service Water Lube Oil Cooler, January 12, 2004;
WO 00601774 02; No Leaks With Cooler Valved In, February 23, 2004;
WO 00624836; Perform VT-2 at Normal Operating Pressure of Drain Line and Pipe to Reducer Weld, February 23, 2004;
WO 597452; OPS Post Maintenance Test - No Leaks, March 3, 2004;
WO 99279919; OP Post Maintenance Test - Verify Full Stroke Time/PIT For 1D MS PORV, March 3, 2004;
1BOSR 0.5-2.MS.3; Unit 1 Main Steam System Valve Indication Test, Revision 1;
1BOSR MS-R1; Unit 1 Manual Stroke of the SG PORVs 18 Month Surveillance, Revision 3;
BOP DC-7; 125V DC ESF BUS Crosstie/Restoration, Revision 11;
2BVSR 8.4.2-1; Unit 2 BUS 211 125V Battery Charger Operability, Revision 1;
CR 198176; Copying Error on Wiring Drawings for 125VDC Battery Chargers, January 15, 2004;
CR 200955; Pipe Plug Was Broken While Trying to Remove It, February 12, 2002.

1R20 Refueling and Outage Activities

B2R11 SSRB Meeting, March 9, 2004;
B2R11 Shutdown Safety Profile as of March 15, 2004;
PORC 04-010; B2R11 Shutdown Risk Plan, March 18, 2004;
BOP RC-11; Removing/RVLIS/HJTC/CETC From Service, Revision 2;
Tag 2RC01R-A; Unit 2 Reactor Vessel Int. HD Term Package - Electrical, March 24, 2004;
2BVSR 5.5.8.SI.2-1; Unit 2 Safety Injection Check Valve Stroke Test, Revision 7;
CR 210054; Debris and Duct Tape Identified During the Mode 3 Walkdown, March 22, 2004;
CR 210055; Loose Item found IMB B2R11 Mode 3 S/D Walkdown, March 22, 2004;
CR 210417; 2D CRDM Ductwork Disch Ductwork Has Debris in Grating, March 24, 2004;
CR 210565; Potential Foreign Material in CRDM Booster Fan Screens, March 24, 2004;
CR 211239; NRC Containment Walkdown Issues, March 27, 2004 (NRC Identified);
CR 211325; BACC Review of NRC Walkdown Results, March 27, 2004 (NRC Identified);
CR 211387; NRC Concerns on Unit 1, March 28, 2004 (NRC Identified);
CR 211409; Lessons Learned - Refueling Cavity FME 1 Zone, March 28, 2004;
CR 211433; Unlogged Duct Tape in an FME 1 Zone, March 29, 2004 (NRC Identified);
CR 211768; NRC Unit 2 Containment Tour Comments from March 29, 2004 (NRC Identified);
CR 211851; Post Review of Core Plate Inspection Video Revealed Debris, March 30, 2004;
ER-AP-335-1012; Visual Examination of PWR Reactor Vessel Head Penetrations, Revision 0.

1R22 Surveillance Testing

CR 153963; AFW SSDI FASA Pump Curves in 1BVSR AF-3 Don't Match Calculation Curves, April 15, 2003;
CR 196989; M&TE Program Enhancement, January 21, 2004 (NRC Identified);
CR 199268; Unexpected Rise in 2B SI Pp Discharge Indication During ASME, February 03, 2004;
CR 201169; 2B-AFW Confidence Run, February 11, 2004;
CR 209378; Delays in Completing Downpower to Support Trevistest, March 18, 2004;
CR 209381; 2MS017A as Found Test Failure, March 18, 2004;
CR 209398; Unplanned LCOAR Entry 2BOL-7.1 for 2MS017A, March 18, 2004;
CR 209635; Flood Seal Gaskets, March 19, 2004 (NRC Identified);
CR 209643; 2B AFW PUMP Exceeded Maximum Head Limit per 2BVSR AF-3, March 19, 2004;
WR 130393; 2B SI PP Pressure Read High (1800 PSIG) During Pump Run, February 03, 2004;
WO 487403-01; Simultaneous Start Both AFW Pumps with flow to the Steam Generator, March 19, 2004;
WO 487403-02; Simultaneous Start Both AFW Pumps with Flow to the Steam Generator, March 19, 2004;
WO 637293; ASME Surveillance Requirements for Safety Injection PU, February 03, 2004;
WO 646379; 2AF01PB 2B AFW PP ASME Surveillance, March 02, 2004;
WO 492202; 212 "B" Train 125V Battery Charger Operability Test, January 16, 2004;
WO 512326; Main Steam Safety Valves Operability test (<94 percent RX PWR), February 25, 2004;
WO 527516; 2MS017A IST Trevitest, January 16, 2004;
WO 640351; ASME Surveillance Required for Residual Heat Removal Pump 2RH01PB; February 15, 2004;
WO 658303; OP Run AFW PP Auxiliary Oil PP for 15 Minutes to Maintain Oil Film, February 17, 2004;
2BVSR 5.2.4-4; Unit 2 ASME Surveillance Requirements For Residual Heat Removal Pump 2RH01PB, Revision 11;
2BVSR 5.5.8.AF.1-2; Unit 2 ASME Surveillance Requirements for the Diesel Driven Auxiliary Feedwater Pump, Revision 11;
2BVSR 8.4.2-2; Unit 2 BUS 212 125V Battery Charger Operability, Revision 1;
2BVSR AF-3; Unit 2 Simultaneous Start of Both AFW PUMPS with Flow to the Steam Generators, Revision 13;
2BVSR 7.1.1-1; Unit 2 Main Steam Safety Valves Operability Test, Revision 5;
Daily Orders 2BVSR AF-3; Simultaneous Starts of the Auxiliary Feedwater Pumps, March 17, 2004;
BMP 3114-15; Main Steam Safety Valve Verification of Lift Point Using Furmanite's Trevitest Equipment, Revision 17;
BOP DC-1; 125V DC ESF Battery Chargers Startup, Revision 10;
BOP LLRT-1; Local Leak Rate Test Device Operation, Revision 5;
EC 333008; Evaluate (Informational) DC Bus Crosstie Voltage Drop Concerns;

2BOSR 6.1.1-14; Unit 2 Primary Containment Type C Local Leakage Rate Test and ISI Tests of the Containment Spray System;
2BOSR 6.1.1-14; LLRT-2PC-16 Drawing;.

1EP6 Drill Evaluation

EP-AA-125-1002; Attachment 1 R.EP.01 and EPPI.01a-c PI Summary, Revision 2;
EP-MW-114-100; Attachment 1 Nuclear Accident Reporting System (NARS), Revision 3.

4OA5 Other

Exelon Memo: Byron PWR Station SNM Yearly Inventory, July 24, 2003;
Inventory Sheet: Fuel Rod Storage Rack #1 After Operation, March 18, 2004;
Inventory Sheet: Fuel Rod Storage Rack #2 After 2003 LTA 24 Low-Enriched Road RECON Operation, March 18, 2004;
NF-AA-300; Special Nuclear Material Control, Revision 4;
NF-AA-300-1000; Special Nuclear Material Control and Periodic Reporting, Revision 2;
NF-AP-311-3.7.16; Special Nuclear Material Movement Requirements For Byron and Braidwood, Revision 1;
NF-AA-330; Special Nuclear Material Physical Inventories, Revision 1;
NF-AA-310; Special Nuclear Material and Core Component Movement, Revision 6;
NF-AA-30; Special Nuclear Material Control Process Description, Revision 0;
NF-AP-330-5201; Special Nuclear Material Inventory Requirements for Byron and Braidwood, Revision 0;
NF-AA-600; Integrated Spent Fuel Management, Revision 0;
NF-AA-610; On-Site Wet Storage of Spent Nuclear Fuel, Revision 3.

4OA7 Licensee-Identified Violations

CR 209381; Unit 2 Main Steam Safety 017A as Found Test Failure, March 18, 2004;
LER 454-2003-004-00; Two Main Steam Safety Valves Lift Setpoints Found Out of Tolerance During Testing Due to Unknown Causes.

LIST OF ACRONYMS USED

ADAMS	Agency wide Documents Access and Management System
AFW	Auxiliary Feedwater
ALARA	As Low As Reasonable Achievable
AMAG	Advanced Measurements and Analysis Group
ASME	American Society of Mechanical Engineers
BAP	Byron Administrative Procedure
B2R11	Byron Station Unit 2 Refueling Outage Eleven
CFR	Code of Federal Regulations
CR	Condition Report
DRP	Division of Reactor Projects; Region RIII
FME	Foreign Material Exclusion
IMC	Inspection Manual Chapter

IR	Inspection Report
LCOAR	Limited Condition For Operation Requirement
NCV	Non-Cited Violation
NLO	Non-Licensed Operator
NRC	United States Nuclear Regulatory Commission
NSP	Nuclear Station Procedure
PARS	Publicly Available Records
PMT	Post Maintenance Test
SDP	Significance Determination Process
SSC	System, Structure, and Component
TRM	Technical Requirements Manual
TI	Temporary Instruction
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item