

November 2, 2005

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 05000454/2005009;  
05000455/2005009

Dear Mr. Crane:

On September 30, 2005, 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 October 3, 2005, with Mr. S. Kuczynski and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and 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-revealed findings of very low safety significance (Green) are documented in this report. Both findings were determined to involve violations of NRC requirements. However, because these violations were of very low safety 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, D.C. 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, D.C. 20555-0001; and the Resident Inspector office at the Byron facility.

C. Crane

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Sincerely,

**/RA/**

Richard A. Skokowski, Chief  
Branch 3  
Division of Reactor Projects

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

Enclosure: Inspection Report 05000454/2005009; 05000455/2005009  
w/Attachment: Supplemental Information

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Plant Manager - Byron Station  
Regulatory Assurance Manager - Byron Station  
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U. S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report Nos: 05000454/2005009; 05000455/2005009

Licensee: Exelon Generation Company, LLC

Facility: Byron Station, Units 1 and 2

Location: 4450 N. German Church Road  
Byron, IL 61010

Dates: July 01, 2005, through September 30, 2005

Inspectors: D. Schroeder, Acting Senior Resident Inspector  
R. Ng, Resident Inspector  
T. Tongue, Project Engineer, Region III  
M. Wilk, Reactor Engineer, Region III  
C. Thompson, Resident Inspector, Illinois Emergency  
Management Agency

Approved by: R. Skokowski, Chief  
Branch 3  
Division of Reactor Projects

## SUMMARY OF FINDINGS

IR 05000454/2005009; 05000455/2005009; on 07/01/2005-09/30/2005; Byron Station, Units 1 and 2; Maintenance Effectiveness, Refueling & Outage Activities.

This report covers a three month period of baseline resident inspection. The inspections were conducted by Region III inspectors, and the resident inspectors. Two Green findings, both of which were 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 Non-Cited Violation (NCV) of Technical Specification (TS) 5.4.1a, having very low safety significance was self-revealed. Specifically, the procedure for cleaning the Essential Service Water (SX) make-up pump diesel fuel oil storage tanks was inadequate and resulted in each of the SX make-up pumps being inoperable for a period of approximately 60 days due water and sediment contamination of the fuel following tank cleaning. As corrective actions the tanks were drained of contaminated fuel, flushed, and verified to contain acceptable fuel. A primary cause to the inadequate SX fuel tank cleaning was related to the Human Performance cross-cutting area because the procedures for diesel fuel oil tank cleaning and post maintenance testing lacked technical details to ensure that the SX makeup pumps were restored to an operable condition.

Byron's inadequate SX fuel tank cleaning procedure was a performance deficiency that was greater than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone to ensure the availability, reliability, and capability of systems to respond to an initiating event to prevent undesirable consequences. The risk significance of the finding was determined to be of very low safety significance because the deep well make-up pumps were available during the period of time that the diesel driven SX make-up pumps were inoperable. The issue was a NCV of TS 5.4.1a which required that procedures be established, implemented, and maintained for maintenance activities that can affect the performance of safety-related equipment. (Section 1R12)

#### **Cornerstone: Barrier Integrity**

- Green. A NCV of TS 5.4.1a, having very low safety significance was self-revealed. Specifically, a fuel handler moving new fuel in the spent fuel pool failed to unlatch the fuel assembly after being lowered into the designated storage position, then the bridge crane was trolleyed with the fuel assembly partially inserted in its storage location. This event resulted in lateral stresses being placed upon the fuel assembly and potentially

damaged the fuel assembly. Afterwards, the crane was then centered over the storage location, and the fuel bundle was lowered into position. The licensee plans to remove this assembly from the spent fuel pool, decontaminate it, and inspect it for damage. A primary cause to the fuel handling procedure violation was related to the Human Performance cross-cutting area because the operators failed to follow the procedure steps specified in OU-BY-204, "Fuel Handling Procedures in the Spent Fuel Pool for Byron," Revision 2.

The issue was more than minor because it was related to the human performance attribute of the barrier integrity cornerstone to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The issue was of very low safety significance (green) because the fuel cladding boundary was not breached. The issue was a NCV of TS 5.4.1a which required the implementation of fuel handling procedures. (Section 1R20)

**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 corrective action tracking numbers 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 with the following exception:

- On September 18, 2005, power was reduced to 88 percent for a turbine throttle valve and governor valve surveillance test.

Unit 2 operated at or near full power throughout the inspection period with the following exception:

- On September 25, 2005, Unit 2 was shut down for a refueling outage. The outage continued through the end of the reporting period, September 30, 2005.

### **1. REACTOR SAFETY**

#### **Cornerstone: Initiating Events, Mitigating Systems, and Barrier Integrity**

##### **1R04 Equipment Alignment (71111.04)**

##### **.1 Partial Walkdowns**

##### **a. Inspection Scope**

The inspectors performed three partial walkdown samples 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 determine 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 determine that there were no obvious deficiencies. The inspectors used the information in the appropriate sections of the Updated Final Safety Analysis Report (UFSAR) and Technical Specification (TS) to determine the functional requirements of the systems.

The inspectors verified the alignment of the following:

- Unit 1 Train A Containment Spray Pump during Unit 1 Train B Containment Spray Pump work window;
- Unit 2 Train A Safety Injection Pump; and
- Unit 2 Train B Auxiliary Feed Pump.

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

b. Findings

No findings of significance were identified.

.2 Complete Walkdown

a. Inspection Scope

During the inspection, the inspectors completed one complete system alignment inspection of the accessible portions of the Unit 2 Train A Emergency Diesel Generator. This system was selected because it was considered both safety related, and risk significant in the licensee's probabilistic risk assessment. The inspection consisted of the following activities:

- a review of plant procedures, drawings, and the USFAR to identify proper system alignment;
- a review of outstanding work requests on the system;
- a review of outstanding temporary modifications on the system;
- a review of system health information; and
- a walkdown of the system to determine proper alignment, component accessibility, availability, and current condition.

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

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Walkdowns

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:

- OP-AA-201-006; Control of Temporary Heat Sources, Revision 0;
- OP-AA-201-009; Control of Transient Combustible Material, Revision 4; and
- OP-MW-201-007; Fire Protection System Impairment Control, Revision 3.

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

- Laundry Room (Zone 11.6C-0);
- Auxiliary Building General Area 346' (Zone 11.2-0);
- Unit 1 Division 12 Engineered Safety Feature Switchgear Room (Zone 5.1-1);
- Unit 1 Train B Auxiliary Feedwater Pump Room (Zone 11.4A-1);
- Unit 2 Division 11 Miscellaneous Electrical Equipment Room (Zone 5.6.2); and
- Unit 2 Non-segregated Bus Duct Area (Zone 3.2A-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 action program. The documents reviewed during this inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

.2 Drill Observation

a. Inspection Scope

The inspectors assessed the fire brigade performance and the drill evaluator's critique during two fire brigade drills conducted on July 27, 2005, and August 11, 2005. These were counted as one annual inspection sample. The first drill simulated an oil fire in the security diesel generator fuel oil tank room and the second drill simulated an oil fire at the Unit 1 turbine oil purifier. The inspectors focused on command control of the fire brigade activities; fire fighting and communication practices; material condition and use of fire fighting equipment; and implementation of pre-fire plan strategies. The inspectors evaluated the fire brigade performance using the licensee's established fire drill performance procedure criteria. The inspectors also reviewed the qualification of fire brigade personnel. The documents listed at the end of this report were also used by the inspectors to evaluate this area.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11)

.1 Resident Inspector Quarterly Review

a. Inspection Scope

The inspectors completed one inspection sample by observing and evaluating an operating crew during a steam generator tube leak and tube rupture on the simulator using Scenario "05-5-5," 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 1;
- OP-AA-103-102, Watchstanding Practices, Revision 3;
- OP-AA-103-103, Operation of Plant Equipment, Revision 0; and
- OP-AA-104-101, Communications, Revision 1.

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 determine whether they also noted the issues and discussed them in the critique at the end of the session.

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

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors completed three inspection samples 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 structures, systems, and/or components:

- Unit 0 Instrument Air System;
- Unit 0 Train A and Train B Essential Services Water Makeup Pumps; and
- Unit 2 Division 12 Battery Charger.

During this inspection, the inspectors evaluated the licensee's monitoring and trending of performance data for the past two 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 systems reviewed, the inspectors also evaluated selected work orders, condition reports and other documents to determine that failures were properly identified, classified, and corrected, and that unavailable time had been properly calculated.

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

Introduction: A self-revealing Green Non-Cited Violation (NCV) of TS 5.4, "Procedures," was identified for Byron's inadequate cleaning procedure for the Essential Service Water (SX) make-up pump diesel fuel oil storage tanks. This resulted in each of the SX make-up pumps being inoperable for a period of approximately 60 days.

Description: On August 16, 2005, following a scheduled TS required oil sample of the 0A SX diesel driven make-up pump fuel oil storage tank, the 0A SX make-up pump was declared inoperable due to visual indication of water and sediment in the oil. This sample was the first fuel oil sample drawn since the tank was cleaned and refilled on June 21, 2005. An extent of condition search showed that the 0B SX diesel fuel oil storage tank was cleaned and refilled on June 1, 2005. The 0B SX diesel fuel oil storage tank sample showed similar indication of water and sediment. The 0B SX makeup pump was also declared inoperable on August 16, 2005. With both SX makeup pumps inoperable, TS 3.7.9 was entered, which required that alternate sources of make up water from the deep well pumps be verified operable, and that the SX make-up pumps be restored to operable within seven days.

Investigation into the cause of the fuel contamination revealed that the vendor was not given adequate instructions to perform the tank cleaning, the tank inspection did not specify an acceptance criteria, and the post maintenance test did not require a fuel sample from the tank. Although the suction pipe for the storage tanks was located two inches above the bottom of these tanks, the sediment and water could have been stirred up in the tank during the addition of fuel oil to the tanks. This was the basis for the licensee to conclude that the SX makeup pumps were inoperable from the time that the tanks were cleaned until the time that the tanks were drained of contaminated fuel, flushed, and verified to contain acceptable fuel. The 0A make-up pump was returned to operable on August 17, and the 0B SX make-up pump was returned to operable on August 18.

Analysis: Byron's inadequate SX fuel tank cleaning procedure was identified as a performance deficiency that was greater than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone to ensure the availability, reliability, and capability of systems to respond to an initiating event to prevent undesirable consequences. The finding was evaluated using Inspection Manual Chapter (IMC) 0609. Phase 2 significance determination process (SDP) analysis was required because the finding represented an actual loss of safety function of a single train for greater than its TS allowed outage time. Phase 2 analysis determined the risk significance of the finding was determined to be of very low safety significance (green) because the deep well make-up pumps were available during the period of time that the diesel driven make-up pumps were inoperable.

A primary cause to the inadequate SX fuel tank cleaning was related to the Human Performance (organization) cross-cutting area. Procedures for diesel fuel oil tank cleaning and post maintenance testing lacked technical details to ensure that the SX makeup pumps were restored to an operable condition.

Enforcement: Technical Specification 5.4.1.a required that written procedures be established, implemented, and maintained for the activities in Regulatory Guide 1.33, Revision 2, Appendix A. Item 9.a of Regulatory Guide 1.33, Appendix A specifies that maintenance that can affect the performance of safety-related equipment should be properly pre-planned and performed in accordance with written procedures appropriate to the circumstances. Contrary to the above, procedures to clean the SX diesel fuel oil storage tanks were inadequate, because the maintenance procedures did not ensure tank cleanliness including sediment and water removal. Because this violation was of very low safety significance and because it was entered into the licensee's corrective action program (Issue Report 363560) this violation is being treated as a non-cited violation, consistent with Section VI.A.1 of the NRC enforcement policy: NCV 05000454/455/2005009-01, Inadequate Cleaning of SX Diesel Fuel Oil Storage Tanks.

#### 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 other related documents to determine 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 documents:

- ER-AA-600, Risk Management, Revision 4;
- ER-AA-310, Implementation of the Maintenance Rule, Revision 4;
- OU-AA-103, Shutdown Safety Management Program, Revision 4;
- OU-AP-104, Shutdown Safety Management Program, Revision 8;
- WC-AA-101, On-Line Work Control Process, Revision 11;
- Byron Operating Department Policy 400-47, June 23, 2004, Revision 7; and
- Byron Nuclear Power Station Probabilistic Risk Assessment, Revision 5B.

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

- Concurrent inoperability of Unit 0 Train A and Train B SX Makeup Pumps due to fuel oil contamination;
- Emergent work for both Unit 0 Train A and Train B Auxiliary Building Ventilation Chillers during hot weather condition;
- Unit 2 Division 12 Battery Charger Limiting Condition of Operation extension and emergency work on Backup Charging Pump Cooling via Fire Protection header;
- Unit 2 Train B Residual Heat Removal System out of service during Quick Stem Sensor installation on the Suction from Hot Leg Downstream Isolation Valve; and
- Bus Tie Breaker 12-13 Open for maintenance.

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.

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

a. Inspection Scope

The inspectors completed one inspection sample by observing and evaluating control room and equipment operators during the following non-routine evolution:

- Unit 2 shutdown for the outage.

The inspectors evaluated crew performance in the areas of:

- 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;
- OP-AA-103-102, Watchstanding Practices;
- OP AA-103-103, Operation of Plant Equipment; and
- OP-AA-104-101, Communications.

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 eight inspection samples by reviewing the following evaluations and issues:

- Unit 0 Train A Essential Service Water Makeup Pump;
- Unit 0 Train B Essential Service Water Makeup Pump;
- Unit 0 Train G Essential Service Water Cooling Tower Fan;
- Unit 1 Train B Auxiliary Feedwater Pump;
- Unit 2 Division 12 Battery Charger;
- Unit 2 Reactor Coolant pump Seal Injection Flow;
- Unit 2 Train B Residual Heat Removal Pump; and
- SX Piping Nondestructive Examination (NDE) Minimum Wall Thickness.

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 determine 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 1. 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; and
- NRC Generic Letter No 91-18: Information to Licensees Regarding NRC

Inspection Manual Section on Resolution of Degraded and Nonconforming Conditions, Revision 1.

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

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds (71111.16)

a. Inspection Scope

The inspectors completed two operator workaround samples. The first sample evaluated the impact of an existing operator challenge and corrective actions taken or proposed to correct the problem:

- Unit 1 Nuclear Steam Supply System Water Standpipe High Level Annunciator.

The second sample was a semi-annual sample of the licensee's aggregate review of operator workarounds. The inspectors assessed the cumulative effects of operator workarounds and operator challenges to determine that they did not adversely affect 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.

During these reviews, the inspectors interviewed operating and engineering department personnel and reviewed applicable documents.

The inspectors also reviewed selected issues documented in CR's, 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.

#### 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 determine 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, and other related documents to evaluate this area. The inspectors verified that the licensee controlled post maintenance testing in accordance with the following:

- BAP 1600-11, Work Request Post Maintenance Testing Guidance, Revision 12; and
- MA-AA-716-012, Post Maintenance Testing, Revision 5.

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

- Unit 0 Train A Essential Service Water Makeup Pump;
- Unit 0 Train B Essential Service Water Makeup Pump;
- Unit 0 Train B Main Control Room Chiller;
- Unit 2 Division 12 Battery Charger;
- Unit 2 Train B Residual Heat Removal Pump; and
- Unit 2 Main Steam Safety Valves Trevi Testing.

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

##### b. Findings

No findings of significance were identified.

#### 1R20 Refueling and Outage Activities (71111.20)

##### a. Inspection Scope

The inspectors observed the licensee's performance during Refueling Outage B2R12 beginning September 25, 2005 through the end of the inspection period on September 30, 2005. This inspection sample was ongoing and will be completed during the next 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

activities to ensure that correct system lineups were maintained for key mitigating systems; and observed refueling activities to ensure that fuel handling operations were performed in accordance with 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 Reasonably Achievable] briefings. Other major outage activities evaluated include the licensee's control of:

- containment penetrations in accordance with the TS;
- structures, systems for 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;
- reactor coolant system 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 the 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 B2R12 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:

- ER-AP-331-1002; Boric Acid Corrosion Program Identification, Assessment, and Evaluation
- HU-AA-104-101; Procedure Use and Adherence
- OP-MW-109-101; Clearance and Tagging
- OU-AA-103; Shutdown Safety Management Program
- OU-BY-204; Fuel Handling Activities in the Spent Fuel Pool for Byron and Braidwood
- OU-BY-205; Fuel Handling Activities in Containment During Refuel Outages for Byron and Braidwood.

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

b. Findings

Introduction: A NCV of TS 5.4.1.a, having very low safety significance (Green) was self-revealed. Specifically, a fuel handler moving new fuel in the spent fuel pool failed to

unlatch the fuel assembly after being lowered into the designated storage position, potentially damaging the fuel assembly as the bridge crane was trolleyed with the fuel assembly partially removed from its storage location.

Description: On August 24, 2005, the reactor services crew was performing fuel moves from the new fuel vault to the spent fuel pool during preparations for the refueling outage. After lowering a fuel assembly into the spent fuel pool storage location, the fuel handler failed to unlatch the grapple correctly and the fuel assembly remained attached to the tool. After raising the hoist to the proper height for transferring the tool without a fuel assembly attached, the spent fuel pool bridge crane was trolleyed with the fuel assembly still attached to the hoist and partially protruding from the spent fuel pool cell. This event resulted in lateral stresses being placed upon the fuel assembly and potentially damaged the fuel assembly. The crane was then centered over the storage location, and the fuel bundle was lowered into position. This assembly will be removed from the spent fuel pool, decontaminated, and shipped back to Westinghouse for inspection.

Several factors contributed to the error made by the fuel handler. The procedure to transfer new fuel to the spent fuel pool was not reviewed at the daily pre-job brief. The fuel handling supervisor and another fuel handler were on the spent fuel pool bridge crane to verify that the fuel assembly storage location was correct, but left prior to the new fuel assembly being fully lowered and the fuel handling tool being unlatched from the fuel assembly. They went to prepare the next new fuel assembly for transfer into the spent fuel pool. The fuel handler removed the locking pin to unlatch the fuel bundle, but did not raise the handle prior to reinserting the locking pin. The procedure did not require the fuel handler to check the load indicator to verify that the fuel assembly was unlatched. The fuel handler did not perform a self check after noticing an unexpected condition. After raising the hoist approximately three feet, the fuel handler started and stopped the trolley as he recognized that the trolley was moving only in slow speed, which was another indication that the fuel assembly was still attached. Instead of stopping and investigating, the fuel handler trolleyed the crane again, and was told to stop movement by another fuel handler that observed that the fuel assembly was attached.

Analysis: The inspectors determined that the failure to detach the fuel assembly from the fuel handling tool prior to raising the assembly approximately three feet and moving the spent fuel pool bridge crane hoist trolley was a performance deficiency. This performance deficiency warranted a significance evaluation in accordance with Inspection Manual Chapter (IMC) 0612 "Power Reactor Inspection Reports," Appendix B, "Issue Disposition Screening." The inspectors determined that the finding was more than minor because it was related to the human performance attribute of the barrier integrity cornerstone to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. A Phase 1 screening was performed in accordance with IMC 0609 using the SDP worksheet and determined the risk significance of the finding to be of very low safety significance (green) because the fuel cladding boundary was not breached.

A primary cause to the fuel handling procedure violation was related to the Human Performance (personnel) cross-cutting area. The operators failed to follow the

procedure steps specified in OU-BY-204, Fuel Handling Procedures in the Spent Fuel Pool for Byron,” Revision 2.

Enforcement: Technical Specification 5.4.1 stated that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A. This includes fuel handling procedures. Contrary to the above, on August 24, 2005, operators failed to follow procedure steps specified in OU-BY-204 and detach the fuel assembly from the fuel handling tool prior to raising the tool (and fuel assembly) approximately three feet height and moving the spent fuel pool bridge crane hoist trolley. Because this violation was of very low safety significance and was entered into Byron’s corrective action program (Issue Report 366335), it was treated as an NCV, consistent with Section VI.A of the NRC enforcement policy. (NCV 05000454/2005009-02; 05000455/2005009-02)

## 1R22 Surveillance Testing (71111.22)

### a. Inspection Scope

The inspectors witnessed selected surveillance testings and/or reviewed test data to determine that the equipment tested using the surveillance procedures met the TS, the TRM, the UFSAR and licensee procedural requirements. The inspectors also reviewed applicable design documents including plant drawings, to verify 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 ensuring mitigating systems capability and barrier integrity.

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

- Unit 1 Train A Charging Pump Mini-flow Recirculation Valve Stroke Time Test;
- Unit 1 Moveable Control Assemblies quarterly surveillance;
- Unit 2 Train B Safety Injection Pump ASME surveillance; and
- Unit 2 Train B Diesel Driven Auxiliary Feedwater Pump monthly surveillance.

Additionally the inspectors used the documents listed in the Attachment to this report to determine 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. The inspectors verified that the individuals performing the tests were qualified to perform the test in accordance with the licensee’s requirements, and that the test equipment used during the test were calibrated within the specified periodicity. In addition, the inspectors interviewed operations, maintenance and engineering department personnel regarding the tests and test results.

### b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors completed two inspection samples by evaluating the following temporary plant modifications on risk-significant equipment:

- Engineering Change 354350, Valve Block to Support CW220 Actuator PM; and
- Engineering Change 356377, Proceduralized Temporary Configuration Change to Provide Supplemental Cooling to Main Steam Isolation Valve Room.

The inspectors reviewed these temporary plant modifications to determine that the instructions were consistent with applicable design modification documents and that the modifications did not adversely impact system operability or availability. The inspectors verified that the licensee controlled temporary modifications in accordance with Nuclear Station Procedure NSP CC-AA-112, "Temporary Configuration Changes," Revision 9.

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

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

On August 10, 2005, the inspectors completed one inspection sample by observing an Emergency Preparedness drill. The inspectors assessed the licensee's exercise performance and looked for weaknesses in the risk significance areas of emergency classification, notification and protective action development. The inspectors observed the licensee's performance from the simulator control room and from the technical support center. The inspectors compared issues noted during their observations to those identified during the licensee's critique as contained in the licensee's exercise findings and observation report. Additionally, the inspectors verified that items identified during the licensee's critique were appropriately entered into their corrective action program. The drill scenario observed was:

- spurious carbon dioxide actuation and security event.

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

##### **Cornerstones: Mitigating Systems, Barrier Integrity, Public Radiation Safety**

#### 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 determine 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

No findings of significance were identified.

##### .2 Annual Sample - 1A Auxiliary Feedwater SX101 Valve Issue - Root Cause and Extent of Condition Review

Introduction: On June 28, 2004, during the Unit 1 Train A Auxiliary Feedwater pump ASME surveillance test, solenoid operated valve 1SX101A failed to open, causing lube oil temperatures to exceed 130°F. Subsequently, the licensee declared the Unit 1 Train A Auxiliary Feedwater pump inoperable. This was also determined to be a maintenance rule functional failure. This test failure was documented under the licensee's corrective action program as CR 232158. The licensee's root cause evaluation determined that the existing design of the 1SX101A valve was not appropriate for use in a raw water system. It was a pilot operated globe valve with tight tolerances between the body and disc that were susceptible to fouling. It also used a small diameter sensing line to equalize pressure across the valve disc when opening. Any debris, such as silt, may plug this line and prevent opening. The regulatory aspects of 1SX101A failing to open were addressed in NRC Inspection Reports 05000454/2004007 & 2005003.

###### a. Prioritization and Evaluation of Issues

###### (1) Inspection Scope

The inspectors reviewed the root cause evaluation associated with CR 232158, compared the root cause method used to the guidance in the licensee's procedures, and discussed the technical aspects of the issues with members of the licensee's engineering staff.

(2) Issues

Based on the licensee's review, they determined that the Unit 1 and Unit 2 SX101A valves should be removed from the system. These valves open to allow flow through the oil cooler when the pump was running, and stop flow of water through the lube oil cooler when the pump was secured. The inspectors' review of the root cause evaluation found it to be of appropriate scope and depth for the situation. Also, the inspectors considered the associated extent of condition review to be extensive and appropriate.

b. Effectiveness of Corrective Actions

(1) Inspection Scope

The inspectors assessed the licensee's immediate and long term corrective actions associated with the missed surveillance tests to determine if the corrective actions were appropriately focused to address the problems identified.

(2) Issues

The inspectors reviewed the licensee's root cause evaluation and determined that the corrective actions addressed the causes identified. The inspectors determined that the immediate corrective actions, which included temporary modifications to fail open the Unit 1 and Unit 2 SX101A valves until they could be removed from the system, were appropriate. The inspectors reviewed the long term corrective actions, which included a modification to remove the SX101A valves from the auxiliary feed pump oil cooling system. The system engineer was interviewed concerning the long term effects of removing the valves from the system, and the actions put in place were considered to be appropriate.

4OA3 Event Follow-Up

.1 (Closed) Licensee Event Report (LER) 05000454-2005-004-00: "Technical Specification Required Action Not Satisfied Due to Ambiguous Implementing Procedure."

On May 23, 2005, the Unit 1 Control Room Supervisor entered action condition "A" of TS 3.8.4, DC Sources - Operating due to planned work on Division 11 Battery Charger. One of the required TS actions was to verify battery float current to be within limits once every 12 hours. This was accomplished incorrectly as the wrong procedure was used to verify the battery float current. When the error was discovered, the shift manager concluded that the TS required action was not correctly satisfied within the required completion time and consequently was a violation of TS. The inspectors reviewed the LER and determined that it met the requirements of 10 CFR 50.73. The event was reviewed and the enforcement aspects of this issue were discussed by the NRC in Inspection Report 050000454/2005004. This LER is closed.

#### 4OA4 Cross-Cutting Aspects of Findings

- .1 A finding described in Section 1R12 of this report had as a primary cause a human performance deficiency (organization). Specifically, procedures for diesel fuel oil tank cleaning and post maintenance testing lacked technical details to ensure that the SX makeup pumps were restored to an operable condition.
- .2 A finding described in Section 1R20 of this report had as a primary cause a human performance deficiency (personnel). The operators failed to follow the procedure steps specified in OU-BY-204, Fuel Handling Procedures in the Spent Fuel Pool for Byron, Revision 2.

#### 4OA6 Meetings

The inspectors presented the inspection results to Mr. S. Kuczynski and other members of licensee management on October 3, 2005. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

#### 4OA7 Licensee Identified Violations

The following violation of very low significance (Green) was identified by the licensee and is a violation of NRC requirements which met the criteria of Section VI of the NRC Enforcement Policy for being dispositioned as an NCV.

##### **Cornerstone: Mitigating Systems**

10 CFR Part 50.55a(g)4 required in part that throughout the service life of a boiling or pressurized water reactor facility, components classified as ASME Code Class 1, 2, and 3 must meet requirements of Section XI. Section XI, Table IWD-2500-1, Item D.1.10 (Pressure Retaining Components) required a System Inservice Test (IWD-5221) be performed each Code inspection period. Section XI, IWD-5210 (a)(1) required a System Inservice Test in accordance with IWA-5211(c). Section XI, IWA-5211(c) required a visual examination VT-2 while the system is in service under operating pressure. Section XI, IWA-5244 "Buried Components" required that "(a) In nonredundant systems where the buried components are isolable by means of valves, the visual examination VT-2 shall consist of a leakage test that determines the rate of pressure loss. Alternatively, the test may determine the change in flow between the ends of the buried components." Contrary to these requirements, as of August 19, 2005, the licensee failed to perform the pressure drop or change in flow rate testing of the isolable buried portions of the 36 and 48 inch diameter SX system (Code Class 3 system) intake headers (lines 2SX01BB, 1SX01BB, 1SX01AA, 2SX01BA, 1SX01BA) which were bounded by SX isolation valves. This issue was entered into the licensee's corrective action program as Condition Report 364859.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee

S. Kuczynski, Site Vice President  
D. Hoots, Plant Manager  
B. Adams, Engineering Director  
D. Drawbaugh, Emergency Preparedness Manager  
S. Gackstetter, Operations Training Manager  
W. Grundmann, Regulatory Assurance Manager  
S. Kerr, Chemistry Manager  
W. Kouba, Nuclear Oversight Manager  
M. Marchionda, Shift Operations Supervisor  
D. Palmer, Radiation Protection Manager  
M. Prospero, Operations Manager  
M. Snow, Work Management Director  
B. Youman, Maintenance Manager

#### Nuclear Regulatory Commission

J. Hopkins, Project Manager, NRR

### **LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED**

#### Opened and Closed

05000454/2005009-01		Inadequate Cleaning of SX Diesel Fuel
05000455/2005009-01	NCV	Oil Storage Tanks. (Section 1R12)
05000454/2005009-02		Fuel Handling Error Potentially Damages
05000455/2005009-02		Fuel Assembly. (Section 1R20)

#### Opened

None

#### Closed

LER

05000454/2005004-00		Technical Specification Required Action
		Not Satisfied Due to Ambiguous
		Implementing Procedure

#### Discussed

None

NCV

## 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 or 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

BOP CS-E1A; Containment Spray System Train A Electrical Lineup, Revision 1  
BOP CS-M1C; Containment Spray System Train C Valve Lineup, Revision 2  
BOP CS-M1A; Containment Spray System Train A Valve Lineup, Revision 1  
BOP DG-11; Diesel Generator (DG) Startup, Revision 18  
BOP DG-E2A; DG Train A Electrical Lineup, Revision 2  
BOP DG-M2; DG System Valve Lineup, Revision 14  
BOP DG-M2A; Train A DG System Valve Lineup, Revision 6  
CR 201387; 1PS-DG11B Out of Tolerance, Expanded Tolerance Exceeded, February 12, 2004  
CR 204100; Continuing Deterioration of 1B DG Pre-lube Pump Motor, February 25, 2004  
CR 200639; 1B DG MVAR Swings, February 09, 2004  
CR 2008117; MMD Not Prepared to Perform Scheduled 1B DG Prelube Pump, March 12, 2004  
CR 208961; 1B DG Secondary Pot Fuse Holder Has High Resistance, March 17, 2004  
CR 209718; 1B DG Overspeed Governor Oil Level Below Line, March 20, 2004  
CR 213373; 2B Diesel Generator LO Temperature is Abnormal During Testing, April 06, 2004  
CR 214994; 2B DG Engine Lube Oil Temperature Off-Normal Alarm, April 14, 2004  
CR 223361; 2A Diesel Oil Storage Tank Oil Sample, May 25, 2004  
CR 227272; 2B EDG Exhibited Wide Variable Swings During Monthly Surveillance, June 09, 2004  
CR 229861; 1B DG Jacket Water (JW) Standpipe Level Low and No Auto Makeup, June 19, 2004  
CR 232114; 1B DG JW Standpipe Level Trend, June 28, 2004  
CR 236258; Unplanned LCOAR Entry Due to 1B EDG, July 15, 2004  
CR 238709; OLR Potentially Impacted During 2A DG Testing, July 23, 2004  
CR 243654; 2B DG Abnormal Start Indications, August 11, 2004  
Survey Map #014; AB-364 U-1 Penetration Area, Revision 2  
Survey Map #128; AB-343 1A Residual Heat Removal (RHR) Pump Room, Revision 1  
Survey Map #129; AB-343 1A Containment Spray (CS) Pump Room, Revision 2

### 1R05 Fire Protection

Auxiliary Building 346'-0" Zone 11.2-0 South, Pre-Fire Plan, October 14, 1999  
Auxiliary Building 346'-0" Zone 11.2-0 North, Pre-Fire Plan, October 14, 1999  
Auxiliary Building 346'-0" Zone 11.2-0 Northwest, Pre-Fire Plan, October 13, 1999  
Auxiliary Building Zone 3.2A-2 Pre-Fire Plan, November 15, 1999

Auxiliary Building 346'-0" Zone 11.2-0 Southwest, Pre-Fire Plan, July 5, 2000  
 Auxiliary Building 426'-0" Zone 5.1-1, Pre-Fire Plan, July 06, 2000  
 Auxiliary Building 451'-0" Zone 5.6-2, Pre-Fire Plan, July 27, 2000  
 Auxiliary Building 383'-0" Zone 11.4-0 North, Pre-Fire Plan, January 24, 2003  
 Auxiliary Building 346'-0" Zone 11.2-0 West, Pre-Fire Plan, January 24, 2003  
 Auxiliary Building 426'-0" Zone 11.6C-0, Pre-Fire Plan, Revision 1  
 OP-AA-201-003; Fire Drill Scenario No. 28; Oil Leak at Turbine Oil Purifier,  
 November 03, 2005  
 Turbine Building 401'-0" Zone 8.3-1 Northeast, Pre-Fire Plan, August 10, 1999  
 Turbine Building 401'-0" Zone 8.7-0 Pre-Fire Plan, August 10, 1999  
 Byron Station Operating Emergency Report Sheet, August 11, 2005  
 Byron Site Policy Memo 200.12; Fire Brigade Qualification, August 6, 2003  
 OP-AA-201-003; Fire Drill Scenario No. 11, Fire in Security Diesel Area, June 30, 2005  
 OP-AA-201-003; Fire Drill Record, Revision 6  
 OP-AA-201-005; Fire Brigade Qualification, Revision 3  
 RP-BY-825-1000; Attachment A Self-Contained Breathing Apparatus Inspection,  
 August 01, 2005  
 RP-BY-825-1000; Maintenance Care and Inspection of the Inservice Inspection (ISI)  
 Viking Self-Contained Breathing Apparatus (SCBA), Revision 2  
 RP-BY-300-1000; Attachment 2 Monthly Respiratory Checklist, Revision 5  
 PosiCheck3 Test Results, December 1, 2004  
 BAP 1100-10; Response Procedure for Fire, Revision 4

#### 1R11 Licensed Operator Requalification Program (Quarterly)

Simulator Scenario Guide; 1CV121 Controller Failure, Steam Pressure Channel Failure,  
 SG Tube Leak, Steam Generator Tube Rupture (SGTR), Revision 0  
 Simulator Scenario Guide; Mode 4 Residual Heat Removal (RH) Operations,  
 Condensate Cooling (CC) Operations, Chemical & Volume Control System (CV)  
 Operations, 3.0.3 Entry, BOA PRI-10 Entry, Revision 0

#### 1R12 Maintenance Effectiveness

Laboratory Report, Diesel Fuel; EPN 0DO08TB, May 16, 2005  
 Laboratory Report, Diesel Fuel; EPN 0DO08TA, August 17, 2005  
 0BOSR 7.9.9-1; Quarterly Sampling Diesel Oil System for Essential Service Water  
 Diesel Driven Make-up Pumps, Revision 5  
 BAP 370-2; Lubricant Sampling Administrative Guideline, Revision 14  
 BOP DO-300-7; Sampling A/B SX Diesel Fuel Oil Tank (0DO08TA.B), Revision 3  
 MA-AA-716-230-1004; Lubricant Sampling Guideline, Revision 0  
 Assignment Report 265906; Higher Amount of Moisture in the Service Air (SA) and  
 Instrument Air Supply (IA) Headers, December 13, 2004  
 CR 233349; Water in IA Lines, July 02, 2004  
 CR 244427; River Screen House (RSH) 1A Dryer Failure, August 14, 2004  
 CR 249246; RSH Instrument Air Dryer Not Working as Expected, September 01, 2004  
 CR 265906; SA & IA Excessive Water, October 21, 2004

CR 302701; 1H Main Steam (MS) Dump Has an IA Leak, Failed Surveillance,

February 17, 2005

CR 363560; Unplanned LCOAR 0BOL 7.9 0A SX Pump (Pp) Fuel Oil is Unsatisfactory, August 16, 2005

CR 366868; Replace 1IA066 Air Regulator During B1R14, August 25, 2005

CR 366870; Replace the Air Regulator on 21A065 During B2R12, August 25, 2005

CR 374036; Opex not Utilized for SX Diesel Oil Tank Cleaning WO Preparation, September 15, 2005

#### 1R13 Maintenance Risk Assessments and Emergent Work Control

BAP 330-9TI; Byron 345KV Switchyard (Switching Order Worksheet), Revision 6

SPOG: 1.3-F; System Planning Operating Guide, Revision 3

0BOSR NLO-TRM; Non-Licensed Operator TRM and NPDES Daily Logs, Revision 2

#### 1R15 Operability Evaluations

WO 833909; 125V DC Engineered Safety Feature (ESF) Battery Bank and Charger 212 Operability, August 05, 2005

WO 835697; DC 212 ; Troubleshoot Battery Charger 756561, August 06, 2005

WO 836078; 125V DC ESF Battery Bank and Charger 212 Operability, August 10, 2005

CR 247715; Voltage Above Administrative Limit for 212 DC Charger, August 26, 2005

CR 275601; Fluctuating Charger AMPS on 211 and 212, November 22, 2004

CR 286758; BUS 212 Voltage Appears to be Degrading, December 31, 2004

CR 344398; Battery Charger 223 AC Input Breaker Tripped Open, June 15, 2005

CR 351732; Unexpected Annunciator 223 Charger Trouble, July 11, 2005

CR 359168; Battery Charger 212 Voltage Fluctuations, August 02, 2005

CR 359353; Charger Malfunction During PED Surveillance, August 03, 2005

CR 360501; Oil Slick in Essential Service Water (SX) Tower Basin, August 05, 2005

CR 362174; 2DC212 Work Window Critique Successes/LL's, August 02, 2005

CR 371433; Pre-Freeze NDE Reveals Minimum Wall Issues on 2SXB7A-8

CR 371857; Pre-Freeze NDE Reveals Minimum Wall Issues on 2SXA9A-6,

September 09, 2005

CR 335845; Degraded AF Capabilities, May 17, 2005

BYR-04-029; Safety Analysis AF System Mission Time and AF Pump Flow Profile, Revision 2

BAR 1-3-D6; AF Pump DO Day Tank Level Low, Revision 4

NES-MS-03.1; Piping Minimum Wall Thickness Calculation, Revision 3

#### 1R16 Operator Workarounds

Operator Workarounds, August 31, 2005

OP-AA-102-103; Operator Workaround Program, Revision 1

CR 227890; Inconsistency in Setpoint For Non-essential Service Water (WS)

Temperature Control Valves (TCV) (1/2WS215, 1/2WS219, June 11, 2004

CR 267684; Adequate Soil Cover for Protection of Buried SX Piping, October 26, 2004

CR 316948; Primary Water (PW) Standpipe Hi-Level Annunciator Main Control Room

(MCR) Distraction Unresolved, March 24, 2005  
Byron Archival Operations Narrative Logs, 8/01 - 9/01/2005

1R19 Post Maintenance Testing

BOP VC-10; Startup of the Control Room Chilled Water System, Revision 13  
BOP VC-17; Swapping Control Room Chiller and Heating, Ventilation, and Air Conditioning (HVAC) Trains, Revision 6  
CR 193689; Oil Sample for 2RH01PB Indicates High Wear Metal Concentration, November 14, 2003  
CR 204728; 2B RH Motor Oil Sample Indicates High Particulate Level, February 27, 2004  
CR 368885; 2B RH Schedule Change for ASME/Oil Change, August 31, 2005  
CR 369397; Summary of 2RH01PB Oil Condition to Date, September 01, 2005  
Work Order 00800144-01; SX Makeup Pump 0B Monthly Operability, May 03, 2005  
Work Order 00803341-01; 0A SX makeup Pump Monthly Operability Surveillance, May 18, 2005  
Work Order 00839371; Draining and Inspecting the Train 0A SX Makeup Pump Diesel, August 16, 2005

1R20 Refueling and Outage Activities

OU-AP-205; Fuel Handling Activities in Containment During Refuel Outages for Byron and Braidwood, Revision 2  
OP-AA-106-101-1001; Event Response Guidelines, Revision 7  
LS-AA-125-1003; Apparent Cause Evaluation Manual, Revision 5  
LS-AA-125; Corrective Action Program Procedure, Revision 8  
LS-AA-125-1001; Root Cause Analysis Manual, Revision 4  
CR 366335; Spent Fuel Pool Bridge Crane Trolley with New Fuel Assembly Attached  
OU-AP-204; Fuel Handling Activities in the Spent Fuel Pool for Byron and Braidwood, Revision 2  
OU-AP-200; Administrative Controls during Fuel Handling Activities for Byron and Braidwood; Revision 2

1R22 Surveillance Testing

IST-BYR-BDOC-V-03; Byron Inservice Testing Bases Document, February 21, 2000  
1BOSR 1.4.2-1; Moveable Control Assemblies Quarterly Surveillance, Revision 12  
2BOSR 7.5.4-2; Diesel Driven Auxiliary Feedwater Pump Monthly Surveillance, Revision 9  
2BVSR 5.2.4-2; ASME Surveillance Requirements for Safety Injection Pump 2SI01PB, Revision 10  
1BVSR 5.2.4-6; ASME Surveillance Requirements for 1B Centrifugal Charging Pump and Check Valve 1CV8480B Stroke Test, Revision 8

1R23 Temporary Modification

CR 353933; Hydraulic Pump on 2FW009A is Cycling Abnormally; July 17, 2005  
CR 362183; Temporary Ventilation Not Installed per Procedure, August 11, 2005  
EC 354350; Require Valve Block to Support 0CW220 Actuator PM, April 11, 2005  
EC 356553; U2 A/D Main Steam Isolation Valve (MSIV) Room Door Open to Support 2FW009A; Rev. 0  
EC 356377; Engineering Change 356377, Engineering Evaluation of Proceduralized TCC for Installation of Air Movers to Provide Supplement Cooling to MSIV room BOP VV  
LS-AA-104-1001; 50.59 Review Coversheet Form, Revision 2  
LS-AA-104-1003; 50.59 Screening Form, Revision 1  
50.59 Screening 6D-05-0127; Main Steam Pipe Tunnel and Safety Valve Enclosure Ventilation System Operation; Rev. 0  
BOP VV-1; Main steam Pipe Tunnel and Valve Enclosure Ventilation System Operation; Rev. 7.  
Adverse Condition Monitoring and Contingency Plan; 2FW009A Hydraulic Pressure Monitoring ; Rev. 1  
BMP 3112-1; Feedwater Isolation Valve Hydraulic Actuator Maintenance, Revision 18  
MA-BY-716-026-1001; Seismic Housekeeping; Revision 0  
Work Request # B84733; Rebuild Actuator

#### 1EP6 EP Drill Evaluation

Third Quarter Simulator/Technical Support Center (TSC) Drill Findings and Observation Report  
EP-AA-125-1002; Drill Reporting Elements, Revision 3  
EP-MW-114-100-F-01; Nuclear Accident Reporting system (NARS) Form, August 10, 2005  
SIM/TSC/OSC PI Drill Timeline, August 03, 10, 17, and 31/2005

## LIST OF ACRONYMS USED

ACE	Apparent Cause Evaluation
ADAMS	Agency wide Documents Access and Management System
CFR	Code of Federal Regulations
CR	Condition Report
DRP	Division of Reactor Projects; Region RIII
EH	Turbo Electro-Hydraulic Control
ESF	Engineered Safety Feature
IMC	Inspection Manual Chapter
IR	Inspection Report
ISI	Inservice Inspection
LCOAR	Limiting Condition for Operation Action Requirement
LER	Licensee Event Report
NCV	Non-Cited Violation
NDE	Nondestructive Examination
NPP	Nuclear Power Plants
NRC	United States Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
OSP	Offsite Power
PARS	Public Availability Records
RCS	Reactor Coolant System
RP	Radiation Protection
RWST	Refueling Water Storage Tank
SBO	Station Blackout
SDP	Significance Determination Process
SSC	Structures, Systems for Components
SSPS	Solid State Protection System
SX	Essential Service Water
TI	Temporary Inspection
TRM	Technical Requirements Manual
TS	Technical Specification
TSO	Transmission System Operator
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
VCT	Volume Control Tank
WO	Work Order
WS	Non-Essential Service Water