

March 8, 2002

Mr. John L. Skolds, President
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: BYRON STATION, UNITS 1 AND 2
INSPECTION REPORT 50-454/02-002(DRP); 50-455/02-002(DRP)

Dear Mr. Skolds:

On February 11, 2002, the NRC completed an inspection at the Byron Station, Units 1 and 2. The enclosed report documents the inspection findings which were discussed on February 19, 2002, with Mr. R. Lopriore 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.

One issue of very low risk significance (Green) was identified by inspectors. The issue involved an inadequate post maintenance test and was determined to involve a violation of NRC requirements. However, because of its very low safety significance and because it was entered into your corrective action program, the NRC is treating the issue as a Non-Cited Violation in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you contest the 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 Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, Region III; Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Byron Station.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be 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/NRC/ADAMS/index.html> (the Public Electronic Reading Room).

J. Skolds

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We will gladly discuss any questions you have concerning this inspection.

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 50-454/02-002(DRP);
50-455/02-002(DRP)

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 50-454/02-002(DRP); 50-455/02-002(DRP)

Licensee: Exelon Generation Company, LLC

Facility: Byron Station, Units 1 and 2

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

Dates: January 1, 2002, through February 11, 2002

Inspectors: R. Skokowski, Senior Resident Inspector
J. Adams, Senior Resident Inspector
B. Kemker, Senior Resident Inspector
P. Snyder, Resident Inspector
D. Pelton, Senior Operations Inspector
T. Tongue, Project Engineer
R. Winter, Reactor Inspector
R. Alexander, Radiation Specialist
C. Thompson, Illinois Department of Nuclear Safety

Approved by: Ann Marie Stone, Chief
Branch 3
Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000454-02-002(DRP), IR 05000455-02-002(DRP), on 12/30/2001-02/11/2002; Exelon Generation Company, LLC; Byron Station, Units 1 & 2. Post-Maintenance Testing.

The baseline inspection was conducted by resident and region based inspectors. The inspectors identified one Green finding associated with a Non-Cited Violation. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter 0609, "Significance Determination Process" (SDP). The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at <http://www.nrc.gov/NRR/OVERSIGHT/index.html>. Findings for which the SDP does not apply are indicated by "No Color" or by the severity level of the applicable violation.

A. Inspector Identified Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified that following the replacement of the 1B auxiliary feedwater pump control switch, the licensee's post maintenance test failed to demonstrate that the pump auto-start feature would perform satisfactorily in service.

This finding was determined to be of very low safety significance, because the failure did not result in an actual loss of the safety function of the auxiliary feedwater system. A Non-Cited Violation of 10 CFR 50 Appendix B, Criteria XI, for the failure to perform an adequate post maintenance test was identified. (Section 1R19)

B. Licensee Identified Violations

No violations of significance were identified.

Report Details

Summary of Plant Status

The licensee operated Unit 1 and Unit 2 at or near full power for the duration of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

The inspectors verified the system alignment of the equipment listed below during maintenance activities affecting the availability of associated redundant equipment:

- 1B Residual Heat Removal (RH) System Train, and
- 1B and 2B Essential Service Water (SX) Trains.

These safety related systems were selected because they were designed to mitigate the consequences of a potential accident. The inspectors performed a walkdown of the accessible portions of the systems and verified that the system lineup was in accordance with plant operating procedures and applicable system drawings. The inspectors also assessed the material condition of system equipment and verified that identified discrepancies were properly captured in the licensee's corrective maintenance program. 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.

1R05 Fire Protection (71111.05)

a. Inspection Scope

The inspectors examined the plant areas listed below to observe conditions related to fire protection:

- Unit 2 Upper Cable Spreading Room (Zone 3.3B-2);
- Unit 1, Division 11 Engineered Safety Feature Switchgear Room (Zone 5.2-1); and
- Unit 2, Division 21 Engineered Safety Feature Switchgear Room (Zone 5.2-2).

These areas were selected for inspection because risk significant systems, structures and components were located in the areas. The inspectors reviewed applicable portions

of the Byron Station Fire Protection Report and assessed the licensee's control of transient combustibles and ignition sources, material condition, and operational status of fire barriers and fire protection equipment. The inspectors also discussed a damaged seal installed on fire door 0DSD523 with the site fire marshal. The inspectors verified that the seal did have a fire protection function and that the damage to the seal did not affect the rating of the fire door. 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)

a. Inspection Scope

The inspectors assessed licensed operator performance and the training evaluators' critique during a licensed operator training session in the Byron Station operations training simulator on January 15, 2002. The inspectors focused on alarm response, command and control of crew activities, communication practices, procedural adherence, and implementation of emergency plan requirements.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation (71111.12)

a. Inspection Scope

The inspectors evaluated the licensee's implementation of the maintenance rule, 10 CFR 50.65, as it pertained to identified performance problems with the following equipment and systems:

- 2A Emergency Diesel Generator (DG);
- 1A Emergency Diesel Generator;
- Unit 2 Condensate (CD); and
- Control Room Ventilation (VC).

During this inspection, the inspectors evaluated the licensee's monitoring and trending of performance data, verified that performance criteria were established commensurate with safety, and verified that equipment failures were appropriately evaluated in accordance with the maintenance rule. The documents listed at the end of this report were also used by the inspectors to evaluate this area. The inspectors interviewed system engineers and the station's maintenance rule coordinator.

In addition, the inspectors reviewed the issues that the licensee entered into its corrective action program to verify that identified problems were being entered into the program with the appropriate characterization and significance. The inspectors also

reviewed the licensee's corrective actions for maintenance rule related issues documented in selected condition reports.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors reviewed the licensee's evaluation of plant risk for maintenance activities on the following equipment:

- 1A Residual Heat Removal Train Work Window;
- Simultaneous Out-of-Service of One Essential Service Water Pump from Each Unit;
- 1B Auxiliary Feedwater Train Work Window;
- 2A Emergency Diesel Generator Work Window;
- Increase Trend in the Unit 2C Steam Generator Tube Leakage; and
- Unit 2 Condensate Header Leak.

The inspectors selected these maintenance activities because they involved systems that were risk significant in the licensee's risk analysis, or were considered significant as potential initiating events. During this inspection, the inspectors assessed the operability of redundant train equipment and verified that the licensee's planning of the maintenance activities minimized the length of time that the plant was subject to increased risk. The inspectors interviewed operations, engineering, maintenance, and work control department personnel. The documents listed at the end of this report were also used by the inspectors to evaluate this area.

The inspectors also reviewed two emergent plant conditions with respect to on-line risk. During the period, inspectors reviewed the circumstances associated with the Unit 2C steam generator tube leakage and the Unit 2 condensate header leak. The inspectors reviewed the licensee's development and implementation of contingency actions to address risk associated with the emergent issues. The licensee had completed a temporary repair to the condensate leak, and has planned a permanent repair. With respect to the steam generator tube leak, the licensee continues to monitor the leakage in accordance with the current industry guidance.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors evaluated the licensee's basis that the issues identified in the following operability determinations (OD) and condition reports did not render the involved equipment inoperable or result in an unrecognized increase in plant risk:

- OD 01-018, Reactor Coolant Pump Oil Viscosity;
- OD 01-020, Auxiliary Building Ventilation Damper OVA 471Y Failure to Stroke;
- OD 02-004, OA Essential Service Water Makeup Pump Seal Housing Heating;
- Condition Report (CR) 00087964, Main Control Habitability/Safety Category 1 Components Service Life Issues [due to Relative Humidity less than that Specified in the UFSAR]; and
- CR 00089364, Possible Non-conservative PR11J [Containment Atmospheric Radiation Monitor] Setpoint.

The inspectors interviewed operations, engineering, maintenance and regulatory assurance department personnel and reviewed applicable portions of the Updated Final Safety Analysis Report (UFSAR) and Technical Specification (TS). The documents listed at the end of this report were also used by the inspectors to evaluate this area.

In addition, the inspectors reviewed the issues that the licensee entered into its corrective action program to verify that identified problems were being entered into the program with the appropriate characterization and significance. The inspectors also reviewed the licensee's corrective actions for issues potentially affecting the operability of structures, systems, and components that were documented in selected condition reports.

b. Findings

In CR 00089364, the licensee documented that during a review of the setpoint for containment atmosphere radiation monitors (1/2PR11J), a non-conservative error was found. The reactor coolant system (RCS) activities used to calculate the 1 gallon per minute (gpm) leak rate were substantially more than the existing RCS activities. This error affected the monitor's ability to detect a 1 gpm leak from the RCS within 1 hour. For example, the assumed Xe-135 concentration was 1.26 curies per gram (Ci/gm) and the actual [concentration] was 1.30 E-3 Ci/gm which was roughly a factor of 1000 lower.

10 CFR Part 50, Appendix A, General Design Criterion 30 required licensees to develop means for detecting reactor coolant leakage. Regulatory Guide 1.45, "Reactor Coolant Pressure Boundary Leakage Detection Systems," described acceptable methods to ensure conformance with the General Design Criterion 30. Regulatory Guide 1.45 states that, "In analyzing the sensitivity of leak detection systems...a realistic primary coolant radioactivity concentration assumption should be used. The expected values used in the plant environmental report would be acceptable." As stated in the Updated Final Safety Analysis, Appendix A, the licensee was committed to Regulatory Guide 1.45, with the caveat that leak detector sensitivity was as low as practicable.

In addition, Technical Specification 3.4.15 required that, "The following RCS leakage detection instrumentation shall be operable: a. One containment sump monitor; and b. One containment atmosphere radioactivity monitor (gaseous or particulate). The bases for this Technical Specification states, in part, that radioactivity detection systems shall be operable to provide a high degree of confidence that extremely small leaks are detected in time to allow actions to place the unit in a safe condition, when RCS leakage indicated a possible reactor coolant pressure boundary degradation."

When the discrepancy with respect to assumed RCS activities was identified, the licensee determined that the containment radiation monitors were operable because the monitor could detect a 1gpm leakage within one hour at the reactor coolant activities specified in the plant environmental report. The licensee stated that the Technical Specification bases will be modified to reflect the actual capabilities of the monitors and will define other available means to detect leakage.

The inspectors questioned whether the 1/2PR11J containment atmosphere radiation monitors were technically operable because an informal licensee calculation showed that at current activity levels, a 1gpm RCS leakage would not be detected by the containment atmosphere radiation monitors for at least 12 days. This calculation did not take into account radioactive decay or that the containment was vented about every third day. It was unclear whether the current containment radiation monitors were sufficient to detect leakage defined in the licensee's leak-before-break analysis. In addition, the inspectors noted that the licensee's Technical Specification 3.4.15 required only two leakage detection instrumentation while Reg Guide 1.45 required three.

The operability of the containment radiation monitors is an Unresolved Item (50-454/455-02-02-02) pending resolution of questions associated with the licensing basis for the leak-before-break analysis.

1R16 Operator Work-Arounds (71111.16)

a. Inspection Scope

The inspectors evaluated event described in the CR listed below to determine if an operator work-around (OWA) existed and if there was any potential affect on the functionality of mitigating systems or on the operators' response to initiating events:

- CR 00089356, 0D Gaseous Decay Tank Inadvertent Release to Auxiliary Building Equipment Drains.

The inspectors interviewed operating and engineering department personnel and reviewed selected procedures and documents listed at the end of this report.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors evaluated the licensee's post maintenance testing activities for maintenance conducted on the following equipment:

- 1A Residual Heat Removal Train;
- 1B Auxiliary Feedwater Train; and
- 2A Emergency Diesel Generator Jacket Water Pump Seal, Heat Exchanger, and Discharge Check Valve.

The inspectors selected these post maintenance activities because the systems were identified as risk significant in the licensee's risk analysis. The inspectors reviewed the scope of the work performed and evaluated the adequacy of the specified post maintenance testing. The inspectors verified that the post maintenance testing was performed in accordance with approved procedures, the procedures stated acceptance criteria, and the acceptance criteria were met. During this inspection activity, the inspectors interviewed maintenance and engineering department personnel and reviewed the completed post maintenance testing documentation. The documents listed at the end of this report were also used by the inspectors to evaluate this area.

b. Findings

The inspectors identified a finding of very low safety significance (Green). In particular, following the replacement of the 1B AFW pump control switch, the licensee's post maintenance test failed to verify the auto start feature of the pump. The inspectors determined that this failure was a Non-Cited Violation of 10 CFR 50 Appendix B, Criteria XI, "Test Control."

On January 15, 2002, the licensee replaced the control switch for the 1B auxiliary feedwater pump. This switch was located in the main control room, and allowed the operators to manually start and stop the pump. In addition, this switch made up part of the circuitry for the auto start feature of the pump. The licensee replaced the switch in accordance with the Procedure BHP 4200-46, "Control Switch Replacement Appendix R and General Plant Non-Appendix R," Revision 5. This procedure directed the technicians to measure continuity across the various contacts within the switch. Upon completion of the work, plant operators performed a function test of the switch by using it to start and stop the pump. Subsequently, the operators declared the 1B AFW pump operable.

During the inspectors review of the post maintenance test for the control switch replacement, the inspectors focused on auto start feature of the pump to verify that this circuitry was adequately tested. Through discussions with the Electrical Maintenance Supervisory, the inspectors ascertained that the auto start function was verified through the continuity measurements made under the control switch replacement procedure. The inspectors compared these continuity checks to the schematic of the 1B AFW control circuitry. Based on this comparison, the inspectors identified that these checks failed to verify continuity through the entire portion of auto start circuitry associated with

the switch replacement. Specifically, the checks failed to verify continuity through the amphenol connector. Furthermore, this portion of the auto start feature was not verified as part of the functional test that started and stopped the pump. The licensee agreed that the post maintenance test was inadequate and on January 24, 2002, the licensee completed additional continuity measurements to verify operability of the auto-start feature.

The inspectors determined that the failure to complete an adequate post maintenance test for the 1B AFW control switch replacement had a credible impact on safety. This is because the post maintenance test is the verification that the maintenance activity did not adversely impact the operability of the system. In this case, the ability of the AFW to auto-start in response to accident or transit conditions was not adequately verified. The inspectors evaluated this issue using the Significance Determination Process (SDP) and concluded that it was of very low safety significance (Green), because it did not result in an actual loss of the safety function of the AFW system.

10 CFR Part 50, Appendix B, Criteria XI, "Test Control," requires, in part, that a test program shall be established to assure that all testing required to demonstrate structures, systems and components will perform satisfactorily in service is identified and performed. Contrary to this, following the January 15, 2002, maintenance activity that replaced the 1B AFW control switch, the licensee's post maintenance test failed to demonstrate that the auto-start feature of the pump would perform satisfactorily in service. This is a violation of 10 CFR 50 Appendix B, Criteria XI, however, because this violation was of very low risk significance, was non-repetitive, and was captured in the licensee's corrective action program (Condition Report 00091921), it is considered a Non-Cited Violation consistent with Section VI.A of the NRC Enforcement Policy (50-454-02-02-01).

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors evaluated the surveillance testing activities listed below to verify that the testing demonstrated that the equipment was capable of performing its intended function:

- Unit 2, 2A Diesel Generator Relay Operation Verification;
- Unit 2, Engineered Safety Feature Actuation System Slave Relay (K-611) Surveillance;
- Unit 2, 2A Diesel Generator Operability Surveillance; and
- Unit 1, Train A, ASME [American Society of Mechanical Engineers] Surveillance Requirements for the Centrifugal Charging Pump 1A and Chemical and Volume Control System Valve Stroke Test.

The inspectors selected these surveillance test activities because the system functions were identified as risk significant in the licensee's risk assessment and the components were credited as operable in the licensee's safety analysis to mitigate the consequences of a potential accident. The inspectors interviewed operations, maintenance, and engineering department personnel; reviewed the completed test documentation; and

observed the performance of all or portions of these surveillance testing activities. The documents listed at the end of this report were also used by the inspectors to evaluate this area.

In addition, the inspectors reviewed the issues that the licensee entered into its corrective action program to verify that identified problems were being entered into the program with the appropriate characterization and significance. The inspectors also reviewed the licensee's corrective actions for surveillance testing issues documented in selected condition reports.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Public Radiation Safety (PS)

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems (71122.01)

.1 Liquid and Gaseous Release Systems Walkdowns

a. Inspection Scope

The regional radiation protection inspector performed walkdowns of the major components of the liquid and gaseous release systems (e.g., radiation and flow monitors), and observed ongoing activities related to the systems, to verify that the current system configuration was as described in the Updated Final Safety Analysis Report and the Offsite Dose Calculation Manual (ODCM), and to observe equipment material condition. In particular, the inspector reviewed the location, material condition, and activities related to the:

- Auxiliary Building Vent Stack Gaseous Effluent Monitors (1/2RE-PR028)
- Containment Atmosphere Purge Monitors (1/2RE-PR001)
- Auxiliary Building Vent Stack Wide Range Gas Monitors (1/2RE-PR030)
- Liquid Radioactive Waste Release Tank Monitor (0RE-PR001)
- Station Liquid Blowdown Monitor (0RE-PR010)
- Condensate Polisher Conductivity Sump Monitor (0RE-PR041)
- Control Room Outside Air Intake Monitor (0RE-PR031/32)
- Control Room Turbine Building Air Intake Monitor (0RE-PR035/36)

b. Findings

No findings of significance were identified.

.2 Radioactive Effluent Release Data, Dose Calculations, and Changes to the ODCM

a. Inspection Scope

The regional radiation protection inspector reviewed the 2000 Annual Radioactive Effluent Release Report and selected radioactive effluent release data for January 2000 through January 2002, to verify that the radioactive effluent program was implemented as described in the UFSAR and ODCM and to ensure that any anomalies in the release data were adequately understood by the licensee. The inspector reviewed the licensee's offsite dose calculations and independently assessed selected calculations using the NRC PC-DOSE computer code to ensure that the licensee had properly calculated the offsite dose from radiological effluent releases and to determine if any annual Radiological Effluent Technical Specification (RETS) or ODCM limits (i.e., Appendix I to 10 CFR Part 50 values) were exceeded. In addition, the inspector reviewed Revision 3 of the ODCM and the licensee's technical justifications for changes to the document to verify that changes were made in accordance with the requirements of the RETS.

b. Findings

No findings of significance were identified.

.3 Liquid and Gaseous Effluent Releases

a. Inspection Scope

The regional radiation protection inspector reviewed the release packages for four liquid effluent batch releases completed in January 2000 through January 2002, to verify that the licensee's processing and release procedures, including dose projections to members of the public, were conducted in accordance with ODCM and RETS requirements. Additionally, the inspector selectively reviewed grab sample results and licensee calculations for three containment purge radioactive gaseous releases and one waste gas decay tank release completed in January 2000 through January 2002, including the projected doses to members of the public, to verify that appropriate treatment equipment was used and that the radioactive gaseous effluents were processed and released in accordance with ODCM and RETS requirements. For all of the release packages reviewed, the inspector also examined the monitor alarm set points used and methodology employed, to verify that changes to the set points were made in accordance with the ODCM.

b. Findings

No findings of significance were identified.

.4 Liquid and Gaseous Effluent Monitor Calibrations

a. Inspection Scope

The regional radiation protection inspector reviewed records for the two most recent instrument calibrations or maintenance completed for selected point-of-discharge effluent radiation monitors (including the associated flow rate instrumentation), to verify that these instruments had been calibrated consistent with industry standards and in accordance with station RETS and procedures. Specifically, the inspector reviewed the calibration records for:

- Auxiliary Building Vent Stack Gaseous Effluent Monitors (1/2RE-PR028)
- Containment Atmosphere Purge Monitors (1/2RE-PR001)
- Liquid Radioactive Waste Release Tank Monitor (0RE-PR001)
- Station Liquid Blowdown Monitor (0RE-PR010)
- Radwaste Area Vent Stack Effluent Radiation Monitor (0RE-PR026)

b. Findings

No findings of significance were identified.

.5 Analytical Instrumentation Quality Control

a. Inspection Scope

The regional radiation protection inspector previously reviewed the Chemistry Department's quality control data and charts for the gamma spectroscopy instrument systems used to quantify effluent release samples during the inspector's last inspection at the station (refer to Section 2PS3.4 of Inspection Report 50-454/01-14(DRP); 50-455/01-14(DRP)). The systems and methods used to quantify effluent samples are the same used in measuring samples for release from the radiologically controlled areas of the station.

The inspector also reviewed the station's quality assurance reports and reviews of the vendor laboratory that provides radiochemical analysis of effluent samples, to verify that the vendor was capable of adequately preparing and analyzing effluent samples for difficult-to-detect radionuclides (pure beta- or alpha-decay isotopes).

b. Findings

No findings of significance were identified.

.6 Identification and Resolution of Problems

a. Inspection Scope

The regional radiation protection inspector reviewed self-assessments, Nuclear Oversight field observations, and licensee condition reports (CRs) completed since January 2000, which focused on the ODCM and liquid and gaseous effluent release

programs. The inspector reviewed these documents to assess the licensee's ability to identify repetitive problems, contributing causes, the extent of conditions, and implement corrective actions intended to achieve lasting results.

b. Findings

No findings of significance were identified.

4OA6 Meetings

.1 Interim Exits

The results of the Public Radiation Safety inspection were presented to Mr. R. Lopriore and other members of licensee management at the conclusion of the inspection on January 11, 2002. The licensee acknowledged the findings presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

.2 Resident Inspector Exit Meeting

The inspectors presented the inspection results to Mr. R. Lopriore and other members of licensee management at the conclusion of the inspection on February 19, 2002. The licensee acknowledged the findings presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

KEY POINTS OF CONTACT

Licensee

R. Lopriore, Site Vice President
S. Kuczynski, Station Manager
B. Adams, Engineering
B. Altman, Maintenance Manager
D. Goldsmith, Radiation Protection Director
D. Combs, Site Security Manager
D. Drawbaugh, Byron NRC Coordinator
D. Goldsmith, Radiation Protection Manager
B. Grundmann, Regulatory Assurance Manager
K. Hansing, Site Nuclear Oversight Manager
D. Hoots, Operations Manager
S. Kerr, Chemistry Manager
W. Kolo, Work Management Director
T. Roberts, Engineering Director
B. Sambito, Byron Radiation Protection
D. Spoerry, Training Manager
S. Stimac, Shift Operations Superintendent

Nuclear Regulatory Commission

J. Adams, NRC Byron Resident
P. Snyder, NRC Byron Resident
A. Stone, Chief, Projects Branch 3, Division of Reactor Projects

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-454/455-02-02-02	URI	Non-conservative error PR11J setpoint analysis
50-454-02-02-01	NCV	Inadequate post maintenance testing following the replacement of the 1B auxiliary feedwater pump control switch

Closed

50-454-02-02-01	NCV	Inadequate post maintenance testing following the replacement of the 1B auxiliary feedwater pump control switch
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LIST OF ACRONYMS USED

AFW	Auxiliary Feedwater
ASME	American Society of Mechanical Engineers
BAP	Byron Administrative Procedure
BCP	Byron Chemistry Procedure
BIP	Byron Instrument Maintenance Procedure
BISR	Byron Instrument Maintenance Surveillance Requirement Procedure
BOA	Byron Abnormal Operating Procedure
BOL	Byron Limiting Condition for Operation Action Requirement Procedure
BOP	Byron Operating Procedure
BOSR	Byron Operating Surveillance Requirement Procedure
BVSR	Byron Technical Surveillance Requirement Procedure
CB	Condensate Booster
CC	Component Cooling
CD	Condensate
CFR	Code of Federal Regulations
CR	Condition Report
CV	Control Room Ventilation
DG	Diesel Generator
DRP	Division of Reactor Projects
ECCS	Emergency Core Cooling System
LCOAR	Limiting Condition for Operation Action Requirement
LER	Licensee Event Report
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
NSP	Nuclear Station Procedure
OD	Operability Determination
ODCM	Offsite Dose Calculation Manual
OWA	Operator Work-Around
PARS	Publically Available Records
PR	Process Radiation Monitor
Radwaste	Radioactive Waste
RCS	Reactor Coolant System
RCPB	Reactor Coolant Pressure Boundary
RETS	Radiological Effluent Technical Specifications
RH	Residual Heat Removal
RP	Release Package
SDP	Significance Determination Process
SX	Essential Service Water
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
WO	Work Order
WR	Work Request

LIST OF DOCUMENTS REVIEWED

1R04 Equipment Alignment

	Byron Station Technical Specifications (TS)	
	Byron/Braidwood Stations UFSAR	
Byron Operating Procedure (BOP) RH-E1B	Residual Heat Removal System Train "B" Electrical Lineup	Revision 2
BOP RH-M1B	Train "B" Residual Heat Removal Valve Lineup	Revision 7
Byron Administrative Procedure (BAP) 340-2	Initiation and Use of System Lineups (Mechanical and Electrical)	Revision 11
BOP SX-1	Essential Service Water Pump Startup	Revision 14
BOP SX-M1B	Unit 1, Train B, Essential Service Water Valve Lineup	Revision 6
BOP SX-M2B	Unit 2, Train B, Essential Service Water Valve Lineup	Revision 6
BOP SX E1B	Unit 1, Train B, Essential Service Water Electrical Lineup	Revision 2
BOP SX E2B	Unit 2, Train B, Essential Service Water Electrical Lineup	Revision 1

1R05 Fire Protection

	Byron/Braidwood Stations Fire Protection Report	Revision 19
	Byron Station Pre-Fire Plans and Drawings	
	Byron/Braidwood Stations Fire Hazards Analysis, Sections 2.3.3.17, 2.3.5.3 and 2.3.5.4	Amendment 18, December 1998
Work Order (WO) 00036039	Repair door gasket on door 0DSD523	February 11, 2002

1R12 Maintenance Rule Implementation

CR 00082931	Chart Recorder Jumper Lead Caused Short on 2A Diesel Generator Circuit	November 14, 2001
CR B2000-02968	1A Diesel Generator Sequence Test Failure	October 5, 2000
CR B2000-01073	2D Condensate Pump Coupling Failure	April 11, 2000
	Maintenance Rule - Performance Monitoring CD/CB, VC, DG	
	Maintenance Rule - Performance Criteria CD/CB, VC, and DG	
	Expert Panel Scoping Determination System CD/CB, VC, and DG	

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

Byron Operating Department Policy 400-47	On-Line Risk/Protected Equipment	Revision 2
Nuclear Station Procedure (NSP) WC-AA-103	On-Line Maintenance	Revision 4
CR 00091861	Problems Encountered with 1AF004B Work Window	January 23, 2002
CR 00090800	1B Auxiliary Feedwater Pump Work Window LCO Plan	January 16, 2002
CR 00090901	No Lubricant Specified for Rebuild 1AF004B Actuator	January 16, 2002
Unit 2 Byron Abnormal Operating Procedure (2BOA) SEC-8	Steam Generator Tube Leak - Unit 2	Rev. 102
2BOA SEC-8	Contingency Quick Shutdown - Unit 2	
Project Critique	1B Auxiliary Feed Pump Work Window	
NRC Inspection Manual, Part 9900: Technical Guidance	Steam Generator Tube Primary-to-Secondary Leakage	October 11, 2001
NRC Information Notice 91-43	Recent Incidents Involving Rapid Increases in Primary-to-Secondary Leak Rate	July 5, 1991

NRC Information Notice 94-43	Determination of Primary-to-Secondary Steam Generator Leak Rate	June 10, 1994
	Contingency Plan for Unit 2 Condensate Header Leakage	
	Compensatory Measures from Revised Commitment 454-251-88-93700 for the Following Maintenance/Modification Work: 0A&0B SXCT Suction Box Hatch Mod, 0SX138A&B Actuator Replacement, 0SX138A&B Internal Inspection	February 7, 2002
	HLA/IPA Briefing Worksheet 1A and 2A SX Pumps OOS to Support Maintenance/Modification Activities at SXCT 0A Basin	February 4, 2002

1R15 Operability Evaluations

	Byron Station TS	
	Byron/Braidwood Stations UFSAR	
	Byron Station Technical Requirement Manual	
CR B2001-00534	Main Control Room Ventilation Steam Generators Not Performing as Designed	February 04, 2001
CR 00087428	RCP Motor Oil Doesn't Meet Design Viscosity Requirements	December 19, 2001
CR 00087847	BOP RH-6 R/21 50.59 Screening Needs Improvement	December 21, 2001
CR 00087964	MCR Habitability/Safety Cat 1 Component Service Life Issues	December 23, 2001
CR 00088429	Failed Test of VA/AF Damper Interlock	December 29, 2001
CR 00089364	Possible Non-Conservative PR11J [Containment Atmospheric Radiation Monitor] Setpoint	January 8, 2002
CR 00091088	Deviation between Byron/Braidwood RH Procedures	January 17, 2002
CR 00091178 ¹	UFSAR and SER Don't Agree on Seismic Qualification of PR11J	January 17, 2002

OD 01-017	Potential Distortion of Stuffing Box Extension Wear Ring During Thermal Transients on the RH Pumps	Revision 0
OD 01-018	Reactor Coolant Pump Oil Viscosity	December 21, 2001
OD 01-020	Auxiliary Building Ventilation Damper OVA 471Y Failure to Stroke	December 31, 2001
50.59 Screening Form 6D-01-0336	Placing the RH System in Shutdown Cooling	Revision 00
50.59 Screening Form 6D-01-0336	Placing the RH System in Shutdown Cooling	Revision 01
LS-AA-104	Exelon 50.59 Review Process	Revision 20
LS-AA-104-1000	50.59 Resource Manual	Revision 0
Nuclear Energy Institute (NEI) 96-07	Guidelines for 10 CFR 50.59 Implementation	Revision 1
Regulatory Guide 1,45	Reactor Coolant Pressure Boundary Leakage Detection Systems	May 1973
Regulatory Guide 1.187	Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments	November 2000
NRC Information Notice 98-10	Dispositioning of Technical Specifications that are Insufficient to Assure Plant Safety	December 29, 1998
NRC Task Interface Agreement 96-019	Discrepancies of Containment Radiation Monitor Sensitivities at St. Lucie Units 1 and 2, and Turkey Point Units 3 and 4	June 24, 1998
DC-VC-01-BB	Design Criteria for Control Room HVAC System	December 28, 1979
BOP RH-6	Placing the RH System in Shutdown Cooling	Revision 21
CR 00092998	Heating Observed on 0A SX Makeup Pump	January 29, 2002
OD 02-004	0A Essential Service Water Makeup Pump Seal Housing Heating	Revision 0

1R16 Operator Work-Arounds

CR 00089356	OD GDT Inadvertent Release to WE	January 07, 2002
WO 99281382	Sight glass Very Dirty	January 08, 2002
OP-AA-101-303	Operator Work-Around Program	Revision 0

1R19 Post Maintenance Testing

	Byron/Braidwood Stations UFSAR	
	Byron Station TS	
	Byron Station Technical Requirement Manual	
WO 99245637	1A RH PP Breaker PM BUS 141 CUB 4	
WO 99037441	Rebuild Actuator, Replace Regulators, Replace Elastomers	
Unit 1 Limiting Condition for Operation Action Requirement Procedure (1BOL) 5.2	LOCAR [Limiting Condition for Operation Action Requirement] ECCS [Emergency Core Cooling System] - Operating Tech Spec LCO # 3.5.2	Revision 2
WO 99159880	Perform Inspection of Motor (1RH01PA-M)	
Unit 1 Byron Operating Surveillance Requirement Procedure (1BOSR) 0.5-2.CC.3-1	Unit 1 1CC9412A Position Indication Test	Revision 2
1BOL 7.7	LOCAR Component Cooling Water (CC) System Tech Spec LCO # 3.7.7	
Unit 2 Byron Technical Surveillance Procedure (2BVSR) 4.f.2-11	Unit 2, Nonroutine Visual Examination of ASME Class 1, 2, and 3 Components at Normal Operating Pressure of the 2A Emergency Diesel Generator Jacket Water Heat Exchangers	Revision 3
WO 990021051	Inspection of the 2A Emergency Diesel Generator Jacket Water Heat Exchanger Essential Service Water Side.	
WO 99263297-04	2A Emergency Diesel Generator Jacket Water Pump Check Valve Removal, Inspection, and Replacement Post Maintenance Test	
WO 99263297-02	2A Emergency Diesel Generator Jacket Water Pump Check Valve Removal, Inspection, and Replacement.	

WO 99263297-03	2A Emergency Diesel Generator Jacket Water Pump Seal Replacement Post Maintenance Test	
WO 99263297-01	2A Emergency Diesel Generator Jacket Water Pump Seal Replacement	
BOP DG-11T22	Diesel Generator Operating Logs from January 30, 2002	Revision 11
CR 00092600	2A DG Crankcase Breather Studs Penetrated Through Casing	January 28, 2002
CR 00092605	Corrosion/Pitting of Gasket Surface of the 2A DG Jacket Water Channel Heads	January 28, 2002
WO 99245683 03	Operations Verify Control Switch Starts-Stops Auxiliary Feedwater (AFW) Pump	January 16, 2002
WO 00334247 02	Operations PMT 1B AFW Pump Right Angle Gear Box Pressure Gage	January 16, 2002
WO 99168676 02	Operations Run Oil Pump and Check for Leaks	January 16, 2002
WO 99203178 02	Operations Functional Test	January 16, 2002
WO 99262768 02	Operations Verify Engine Starts	January 16, 2002
WO 99245683 01	Replace Main Control Board (MCB) Control Switch (C/S) for 1AF01	January 15, 2002
WO 00401516 01	Perform Continuity Check of New MCB C/S for 1AF01	January 24, 2002
Drawing 6E-1-4030AF02	Schematic Diagram Auxiliary Feedwater Pump 1B (Diesel Driven) 1AF01PB	Revision AA
CR 00091921 ¹	Deficient PMT Performed on 1B AFW Pump MCB C/S	January 23, 2002

1R22 Surveillance Testing

	Byron Station TS	
	Byron/Braidwood Stations UFSAR	
2BOSR DG-2	Unit 2, 2A Diesel Generator Relay Operation Verification	Revision 0
2BOSR 3.2.8-611A	Unit 2, Engineered Safety Feature Actuation System Slave Relay (K-611) Surveillance	Revision 1

2BOSR 8.1.2-1	Unit 2, 2A Diesel Generator Operability Surveillance	Revision 11
1BVSR 5.2.4-5	Unit 1, Train A, ASME Surveillance Requirements for the Centrifugal Charging Pump 1A and Chemical and Volume Control System Valve Stroke Test	Revision 5
CR 00093126	Wrong Procedure Revision Used to Test the 2A diesel Generator	January 30, 2002
CR 00093151	Operator Identified Procedure Problem	January 30, 2002

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems

	2000 Annual Radioactive Effluent Release Report	April 26, 2001
	Byron Offsite Dose Calculation Manual (ODCM)	Revision 3 (January 2002)
	Effluent/ODCM Calculations	February, July, 2nd Quarter, & 3rd Quarter 2001
	Focus Area Self-Assessment Report - Radiological Effluent Technical Standards and Offsite Dose Calculation Manual	December 12-13, 2001
	Nuclear Oversight Field Observations	January - June 2001
	Quality Assurance Reports - Eberline Services, Richmond, CA	September - December 2001
BAP 330-3	Locked Equipment Program, Byron Addendum	Revision 3
BAP 330-5	Lock and Key Control	Revision 15
Byron Chemistry Procedure (BCP) 400-TCNMT/ROUTINE	Gaseous Effluent Release No. 10111 (Routine Unit 2 Containment Release)	April 1, 2001
BCP 400-TCNMT/ROUTINE	Gaseous Effluent Release No. 10211 (Routine Unit 1 Containment Release)	June 15, 2001
BCP 400-TCNMT/ROUTINE	Gaseous Effluent Release No. 20012 (Routine Unit 2 Containment Release)	January 8, 2002
BCP 400-TWASTE GAS	Gaseous Effluent Release No. 10015 (Waste Gas Decay Tank 'F' Release)	January 19, 2001

BCP 400-TWX01	Liquid Radioactive Waste (Radwaste) Effluent Release No. 10123 (Release Tank 0WX01T)	April 9, 2001
BCP 400-TWX26	Liquid Radwaste Effluent Release No. 00006 (Release Tank 0WX26T)	January 6, 2000
BCP 400-TWX26	Liquid Radwaste Effluent Release No. 10235 (Release Tank 0WX26T)	July 7, 2001
BCP 400-TWX26	Liquid Radwaste Effluent Release No. 20005 (Release Tank 0WX26T)	January 5, 2002
Byron Instrument Maintenance Procedure (BIP) 2500-135	Calibration of Radwaste Area Vent Stack Effluent Radiation Monitor (PR)	Revision 4
Byron Instrument Maintenance Surveillance Requirement Procedure (BISR) 3.7.3-200	Calibration of Containment Purge Effluent Radiation Monitor (PR)	Revision 2
BISR 11.a.4-200	Calibration of Station Blowdown Radiation Monitor (PR)	Revision 3
BISR 11.a.4-200	Calibration of Liquid Radwaste Effluent Radiation Monitor (PR)	Revision 3
BISR 11.b.4-200	Calibration of Auxiliary Building Vent Stack Effluent Radiation Monitor (PR)	Revision 2
CR 00075064	Unplanned LCOAR Entry 0BOL PR1 (Admin) on 2PR08J	September 12, 2001
CR 00076945	Unplanned LCOAR Entry for 2PR0003J	September 29, 2001
CR 00076951	Unplanned LCOAR Entry for 2PR28J	September 29, 2001
CR 00078471	Unplanned LCOAR Entry - Loss of Sample Flow for 2PR08J	October 10, 2001
CR 00089001	Effluent Vendor Reports Potential False Positive Results	January 4, 2002
CR 00089356	0D GDT Inadvertent Release to WE	January 7, 2002
CR 00090062 ¹	NRC Inspection - Attention to Detail Issues	January 11, 2002
CR B2000-00064	"EPN" Out of Tolerance, Expanded Tolerance Exceeded	January 4, 2000

CR B2001-02191	Minor Transportation Error in Liquid Release Package (RP) 333	May 10, 2001
OP-AA-108-103	Locked Equipment Program	Revision 0
Work Request (WR) Task 970135222	Replace CPU Board and EPROMs (1RE-PR001)	May 11, 2001
WR Task 980072782	Calibration of a General Atomics Radiation Monitoring Skid (0RE-PR001)	January 7, 2000
WR Task 980079894	Cal of Rad Monitor 1PR28J	February 3, 2000
WR Task 980092375	Calibration of a General Atomics Radiation Monitoring Skid (0RE-PR010)	February 24, 2000
WR Task 980095947	Cal of Rad Monitor 2PR28J	March 8, 2000
WR Task 980101618	Cal of General Atomics Radiation Monitoring Skid 2PR-01J	March 21, 2000
WR Task 980125818	Radwaste Area Vent Stack Effluent Rad Monitor Loop 0PR-026	May 26, 2000
WR Task 990134439	Calibration of a General Atomics Radiation Monitoring Skid (0RE-PR001)	May 21, 2001
WR Task 990144074	Cal of Rad Monitor 1PR28J	November 21, 2001
WR Task 99150462	Calibration of a General Atomics Radiation Monitoring Skid (0RE-PR010)	August 3, 2001
WR Task 99154788	Cal of Rad Monitor 2PR28J	October 11, 2001

*1 Condition Report written as a result of the inspection.