June 12, 2001

Mr. Oliver D. Kingsley, President
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: BYRON STATION, UNITS 1 AND 2
NRC INSPECTION REPORT 50-454/01-08(DRP); 50-455/01-08(DRP)

Dear Mr. Kingsley:

On May 14, 2001, the NRC completed an inspection at the Byron Station, Units 1 and 2. The enclosed report documents the inspection findings which were discussed on May 10, 2001, 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.

Based on the results of this inspection, no findings of significance were identified.

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).

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 50-454/01-08(DRP);
50-455/01-08(DRP)

See Attached Distribution

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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:	50-454/01-08(DRP); 50-455/01-08(DRP)
Licensee:	Exelon Generation Company, LLC
Facility:	Byron Station, Units 1 and 2
Location:	4450 N. German Church Road Byron, IL 61010
Dates:	April 1 through May 14, 2001
Inspectors:	E. Cobey, Senior Resident Inspector B. Kemker, Resident Inspector C. Phillips, Braidwood Senior Resident Inspector T. Tongue, Project Engineer W. Slawinski, Senior Radiation Specialist 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 05000454-01-08(DRP), IR 05000455-01-08(DRP), on 04/01-05/14/2001; Exelon Generation Company, LLC; Byron Generating Station; Units 1 & 2. Resident Inspector Report, Radiation Specialist Report.

The baseline inspections were conducted by resident inspectors, radiation specialists, and a regional project engineer. No findings of significance were identified. 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 web site 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

No findings of significance were identified in any of the cornerstones.

B. Licensee Identified Violations

Violations of very low significance which were identified by the licensee have been reviewed by the inspector. Corrective actions taken or planned by the licensee appear reasonable. These violations are listed in Section 4OA7 of this report.

Report Details

Summary of Plant Status

The licensee operated Unit 1 at or near full power until April 24, 2001, when the licensee reduced power to approximately 30 percent of rated thermal power to perform an emergent repair to a steam generator main feedwater system isolation valve. Following repair to the valve, the licensee returned Unit 1 to full power on April 25, 2001. The unit was operated at or near full power for the remainder of the inspection period.

Unit 2 was operated at or near full power until April 7, 2001, when the licensee conducted a reactor shutdown for refueling outage B2R09. Following completion of the refueling outage, the unit was synchronized to the grid on April 22, 2001. The unit was operated at or near full power for the remainder 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:

- 2A Diesel Generator (DG)
- Unit 2 System Auxiliary Transformer (SAT) 242-2, and
- 2A Auxiliary Feedwater (AF) System Train.

The systems were selected because they were identified as risk significant in the licensee's risk analysis. The inspectors performed walkdowns of the accessible portions of the systems and verified the system lineup and each of the system operating parameters (i.e., temperature, pressure, flow). During the Unit 2 SAT outage that removed SAT 242-1 from service for maintenance, the inspectors verified the alignment of the 2A AF system train because the loss of this equipment would result in a significant increase to the unit's on-line risk status. During the 2A DG alignment activity and Unit 2 SAT outage, the inspectors also verified the alignment of the normal and reserve offsite power sources.

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 Containment Building
- 2A DG Room (Zone 9.2-2)
- 2A DG Day Tank Room (Zone 9.3-2)
- 2B DG Room (Zone 9.1-2)
- 2B DG Day Tank Room (Zone 9.4-2)

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.

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 fire protection issues documented in selected condition reports.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07)

a. Inspection Scope

The inspectors observed the licensee perform inspections of the following heat exchangers on the diesel driven 2A AF pump:

- 2AF01AB 2B AF Pump Lube Oil Cooler
- 2AF02A 2B AF Pump Gearbox Oil Cooler
- 2SX01K 2B AF Pump Engine Closed Cycle Heat Exchanger
- 2SX02K 2B AF Pump Right Angle Gear Oil Cooler

The inspectors selected these heat exchangers to inspect because the AF system was identified as risk significant in the licensee's risk assessment and the heat exchangers were required to support operability of the pump. During this inspection, the inspectors observed the as-found condition of the coolers and verified that no deficiencies existed that would mask degraded performance. In addition, the inspectors observed that no conditions were present that would indicate a potential for common cause problems. The inspectors discussed the as-found condition as well as the historical performance of

these coolers with engineering department personnel and reviewed applicable documents and procedures.

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 heat sink performance issues documented in selected condition reports.

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:

- Reactor Containment Fan Coolers.

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 the equipment failures were appropriately evaluated in accordance with the maintenance rule. 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 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 planned maintenance activities on the following equipment:

- 0A Essential Service Water (SX) System Makeup Pump,
- 2SX 194 (Auxiliary Feedwater to SX System Recirculation Check Valve), and
- Unit 2 System Auxiliary Transformer 242-1.

The inspectors selected these maintenance activities because they involved systems which were risk significant in the licensee's risk analysis. 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 also interviewed operations, engineering and work control department personnel.

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 risk related issues documented in selected condition reports.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-routine Plant Evolutions (71111.14)

.1 Unit 2 Shutdown for Refueling Outage B2R09

a. Inspection Scope

The inspectors observed the heightened level of awareness briefing for the Unit 2 reactor shutdown for refueling outage B2R09, interviewed operations and engineering department personnel, and observed selected portions of the shutdown evolution. This non-routine plant evolution was selected for observation to evaluate the performance of operators and qualified nuclear engineers.

b. Findings

No findings of significance were identified.

.2 Unit 2 Startup Following Refueling Outage B2R09

a. Inspection Scope

On April 22, 2001, the inspectors observed the startup of Unit 2 following refueling outage B2R09. This non-routine plant evolution was selected for observation to evaluate the performance of operators and qualified nuclear engineers. The inspectors interviewed operations and engineering department personnel, attended the pre-startup briefing, and reviewed plant startup procedures.

b. Findings

No findings of significance were identified.

.3 Problem Identification and Resolution of Selected Human Performance Issues

a. Inspection Scope

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 human performance issues documented in selected condition reports.

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:

- 0A SX System Makeup Pump,
- 2B SX System Pump, and
- 1FW009D ("D" Steam Generator Main Feedwater System Isolation Valve).

The inspectors selected these post maintenance activities because they involved systems which were 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 tests were performed in accordance with approved procedures, that the procedures clearly stated acceptance criteria, and that the acceptance criteria were met. During these inspection activities, the inspectors interviewed operations, maintenance, and engineering department personnel and reviewed the completed post maintenance testing documentation.

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities (71111.20)

a. Inspection Scope

The inspectors evaluated the licensee's conduct of B2R09 refueling outage activities to assess the licensee's control of plant configuration and management of shutdown risk. The inspectors reviewed configuration management to verify that the licensee maintained defense-in-depth commensurate with the shutdown risk plan; reviewed major outage work activities to ensure that correct system lineups were maintained for key mitigating systems; and observed refueling activities to verify that fuel handling operations were performed in accordance with the Technical Specifications (TS) and approved procedures. Other major outage activities evaluated included:

- the licensee's control of containment penetrations in accordance with the TS;
- the licensee's control of systems, structures, and components (SSCs) which could cause unexpected reactivity changes;
- the licensee's control of flow paths, configurations, and alternate means for reactor coolant system (RCS) inventory addition and control of SSCs which could cause a loss of inventory;
- the licensee's control of RCS pressure, level, and temperature instrumentation;
- the licensee's control of spent fuel pool cooling during and after core offload;
- the licensee's control of switchyard activities and the configuration of electrical power systems in accordance with the TS and shutdown risk plan; and
- the licensee's control of 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 evaluated portions of the restart activities to verify that requirements of the TS and administrative procedure requirements were met prior to changing operational modes or plant configurations. Major restart inspection activities performed included:

- verification that RCS boundary leakage requirements were met prior to entry into mode 4 (cold shutdown) and subsequent operational mode changes;
- verification that containment integrity was established prior to entry into mode 4;
- inspection of the containment building to assess material condition and search for loose debris, which if present could be transported to the containment recirculation sumps and cause restriction of flow to the emergency core cooling system (ECCS) pump suctions during loss-of-coolant accident conditions;
- verification that the material condition of the containment building ECCS recirculation sumps met the requirements of the TS and was consistent with the design basis; and
- observation and review of reactor physics testing to verify that core operating limit parameters were consistent with the core design so that the fuel cladding barrier would not be challenged.

The inspectors interviewed operations, engineering, work control, radiological protection, and maintenance department personnel and reviewed selected procedures and documents.

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 refueling outage issues documented in selected condition reports.

b. Findings

No findings of significance were identified.

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:

- Local Leakage Rate Testing of Safety Injection System Piping Penetration P-55,
- 2A Diesel Generator 18 Month Surveillance Testing, and
- Simultaneous Start of Both Auxiliary Feedwater Pumps with Flow to the Steam Generators.

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.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed the temporary modification listed below to verify that the installation was consistent with design modification documents and that the modification did not adversely impact system operability or availability:

• Design Change Procedure (DCP) 9901021	Remove Cable From Pre-amplifier Circuit for 2NR13EB (Post Accident Neutron Monitoring System) Due to Potential Moisture Build-up Within Cable.

The temporary modification removed one of the two detector inputs from the instrument's wide range amplifier circuit because moisture build-up in a cable created noise in the circuit. The inspectors verified that configuration control of the modification was correct by reviewing design modification documents and confirmed that appropriate post-installation testing was accomplished. The inspectors reviewed the design modification documents and the 10 CFR 50.59 evaluation against the applicable portions of the Updated Final Safety Analysis Report.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01)

.1 Plant Walkdowns, Radiological Boundary Verification, and Radiation Work Permit (RWP) Reviews

a. Inspection Scope

The inspectors reviewed the station's implementation of physical and administrative controls over access to radiologically controlled areas (RCAs), including worker adherence to these controls, by reviewing station procedures, RWPs, and walking down radiologically significant areas (high radiation areas (HRAs), radiation areas, and airborne radioactivity areas) of the station. Specifically, areas in Unit 2 containment, the Unit 2 Reactor Cavity In-Core area, the Unit 2 Containment Access Facility, the Auxiliary Building, and the Radwaste facility were observed and some confirmatory radiation measurements were performed by the inspectors to verify that these areas were posted and controlled in accordance with 10 CFR Part 20, licensee procedures, and Technical Specifications.

b. Findings

No findings of significance were identified.

.2 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed self-assessments, Nuclear Oversight audits and field observations, and licensee condition reports completed in recent months which focused on access control to radiologically significant areas. The inspectors reviewed these documents to assess the licensee's ability to identify repetitive problems, contributing causes, the extent of conditions, and implement corrective actions to achieve lasting results.

b. Findings

No findings of significance were identified.

2OS2 As-Low-As-Is-Reasonably-Achievable (ALARA) Planning and Controls (71121.02)

.1 Radiological Work/ALARA Planning

a. Inspection Scope

The inspectors reviewed the station's procedures for radiological work/ALARA planning and scheduling, and evaluated the dose projection methodologies and practices implemented for the B2R09 Refueling Outage, to verify that sound technical bases for outage dose estimates existed. Specifically, the inspectors reviewed ten radiologically significant RWP/ALARA planning packages to verify that adequate man-hour estimates, job history files, lessons learned, and industry experiences were utilized in the ALARA planning process. The RWP/ALARA planning packages and the Outage Control Center scheduling system were also reviewed to assess the integration of ALARA principles into work procedures and scheduling of radiologically significant evolutions. In addition, via discussions with the Radiation Protection (RP) staff, the inspectors assessed the licensee's coordination with on-site subject matter experts (from the maintenance departments, engineering, chemistry, and operations) and the Station ALARA Committee in refining the ALARA plans.

b. Findings

No findings of significance were identified.

.2 Job Site Inspections and ALARA Controls

a. Inspection Scope

The inspectors observed work activities in the RCA that were performed in radiation areas or HRAs to evaluate the use of ALARA controls. Specifically, the inspectors reviewed radiological surveys, attended pre-job radiological briefings, and assessed job site ALARA controls, in part, for the following work activities:

- Replacement of the N44 power range detector in the reactor cavity in-core area;
- Reactor cavity decontamination activities;
- Scaffolding staging, building, and removal;
- Reactor coolant pump inspection, maintenance, and repair; and
- Reactor head reassembly.

Worker instruction requirements including protective clothing, engineering controls to minimize contamination, the use of predetermined low dose waiting areas, as well as the on-the-job supervision by the work crew leaders and RP technicians were observed to determine if the licensee had maintained the radiological exposure for these jobs ALARA. Additionally, the inspectors reviewed RP technician and staff evaluations for three personnel contamination events that occurred during B2R09, to verify technical adequacy and compliance with licensee procedures.

b. Findings

No findings of significance were identified.

.3 Radiation Worker Performance

a. Inspection Scope

The inspectors observed radiation workers performing the activities described in Section 2OS2.2 and evaluated their awareness of radiological conditions, personal electronic dosimetry alarm set points, and their implementation of applicable radiological controls.

b. Findings

No findings of significance were identified.

.4 Source Term Reduction and Control

a. Inspection Scope

The inspectors reviewed the status of the station's source term reduction program focusing on those initiatives with the potential to impact outage dose exposures (hot spot tracking, hydrolasing and flushing, temporary and permanent shielding, and on-line and shutdown chemistry controls). The inspectors also assessed the general trend of

the station's total source term to evaluate the effectiveness of the station's source term reduction plan.

b. Findings

No findings of significance were identified.

.5 Verification of Exposure Estimates, Dose Trending, and Exposure Tracking Systems

a. Inspection Scope

The inspectors reviewed the licensee's total outage dose goals, selected individual job dose goals, and the related dose trending for the B2R09 refueling outage. The licensee established an estimate of 74.81 person-rem for the Unit 2 outage. As of April 18, 2001, (day 12 of an approximately 16 day outage), the licensee had recorded an outage exposure of 44.98 person-rem compared to the total estimate of 69.38 person-rem. Selected Work-in-Progress reviews were examined to evaluate the licensee's ability to assess the effectiveness of the ALARA plans in a timely manner and institute changes in the plan or its execution, if warranted. The licensee's exposure tracking system was also reviewed to determine if the level of exposure tracking detail, exposure report timeliness, and report distribution were sufficient to support the control of collective exposure. Additionally, the inspectors reviewed dose tracking records for all workers on selected RWPs to assess the licensee's exposure tracking system and the effectiveness of licensee controls for maintaining individual exposures ALARA and relatively uniform across the workgroup.

b. Findings

No findings of significance were identified.

.6 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed Nuclear Oversight audits and field observations and licensee condition reports completed in recent months which focused on ALARA planning and controls. The inspectors reviewed these documents to assess the licensee's ability to identify repetitive problems, contributing causes, the extent of conditions, and develop corrective actions which will achieve lasting results.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES (OA)

4OA3 Event Follow-up (71153)

(Closed) Licensee Event Report (LER) 50-454-00-003-01: "Unintentional Violation of Low Temperature Over Pressure Protection System Technical Specification Due to Operator Error," Supplement 1. The inspectors reviewed the original LER and issued Non-Cited Violation 50-454-00-19-01 for the licensee's failure to maintain a low temperature over pressure protection system operable as required by Technical Specification 3.4.12. The licensee submitted Supplement 1 to LER 50-454-00-003 to revise the root cause investigation and risk assessment for the event. The inspectors determined that the information provided in Supplement 1 to LER 50-454-003 did not raise any new issues or change the conclusions of the initial review, which were documented in NRC Inspection Report 50-454/455-00-19(DRP). This LER is closed.

4OA6 Meetings

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 May 10, 2001. The licensee acknowledged the findings presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. Proprietary information was reviewed during this inspection; however, the material is not discussed in this report.

The results of the Occupational Radiation Safety inspection were presented to Mr. R. Lopriore and other members of licensee management at the conclusion of the inspection on April 20, 2001. 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.

4OA7 Licensee Identified Violations. The following finding of very low safety significance was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as a Non-Cited Violation (NCV).

If the licensee contests the NCV, the licensee should provide a response within 30 days of the date of this inspection report, with the basis for the denial, to the U.S. Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, D.C. 20555-0001, with copies to the Regional Administrator, Region III; Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the Byron Generating Station.

NCV Tracking Number	Requirement Licensee Failed to Meet
NCV 50-455-01-08-01	10 CFR 50, Appendix B, Criteria V, “Instructions, Procedures, and Drawings,” requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. On April 16, 2001, a crew of three contract workers disassembled a feedwater system tempering line check valve from the wrong train, contrary to the work instructions. The licensee entered this occurrence into its corrective action program as CR B2001-01745.

KEY POINTS OF CONTACT

Licensee

B. Adams, Systems Engineering Manager
B. Altman, Maintenance Manager
R. Blaine, Radiation Protection Manager
D. Drawbaugh, Regulatory Assurance
S. Gackstetter, Shift Operations Superintendent
N. Gordon, Unit 2 Chemist
D. Hoots, Operations Manager
J. Kramer, Work Control Manager
J. Kuczynski, Radiation Protection Technical Support Superintendent
S. Kuczynski, Station Manager
R. Lopriore, Site Vice President
R. Munson, ALARA Analyst
P. Reister, Regulatory Assurance Manager
R. Roton, Regulatory Assurance
J. Sambito, Radiation Protection Field Supervisor
T. Schuster, Chemistry Manager
D. Wozniak, Engineering Manager

Contractor (Numanco)

C. Fuller, ALARA Analyst

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

50-454-00-003-01	LER	Unintentional violation of low temperature over pressure protection system Technical Specification due to operator error

Discussed

50-454-00-19-01	NCV	Failure to maintain low temperature over pressure protection system Technical Specification due to human performance errors

LIST OF ACRONYMS USED

AC	Alternating Current
ADRC	Advanced Digital Reactivity Computer
AF	Auxiliary Feedwater
ALARA	As-Low-As-Is-Reasonably-Achievable
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
BAP	Byron Administrative Procedure
BGP	Byron General Operating Procedure
BOP	Byron Operating Procedure
BOSR	Byron Operating Surveillance Requirement Procedure
BVSR	Byron Technical Surveillance Requirement Procedure
CFR	Code of Federal Regulations
CR	Condition Report
DCP	Design Change Procedure
DG	Diesel Generator
DRP	Division of Reactor Projects
ECCS	Emergency Core Cooling System
GL	Generic Letter
HRA	High Radiation Area
LCOAR	Limiting Condition for Operation Action Requirement
LER	Licensee Event Report
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
NSP	Nuclear Station Procedure
OOS	Out-of-Service
PANM	Post Accident Neutron Monitor
PARS	Publically Available Records
RCA	Radiologically Controlled Area
RCFC	Reactor Containment Fan Cooler
RCS	Reactor Coolant System
RH	Residual Heat Removal
RP	Radiation Protection
RWP	Radiation Work Permit
SAT	System Auxiliary Transformer
SDP	Significance Determination Process
SFP	Spent Fuel Pool
SHIP	System Health Indicator Program
SPP	Special Process Procedure
SSC	Systems, Structures, and Components
SX	Essential Service Water
TLCO	Technical Requirements Manual Limiting Condition for Operation
TMOD	Temporary Modification
TS	Technical Specification
WIP	Work-in-Progress Reviews
WR	Work Request

LIST OF DOCUMENTS REVIEWED

1R04 Equipment Alignment

	Byron Station Technical Specifications	
	Byron/Braidwood Stations Updated Final Safety Analysis Report	
Byron Administrative Procedure (BAP) 340-2	Initiation and Use of System Lineups (Mechanical and Electrical),	Revision 11
Byron Operating Procedure (BOP) AF-E2	Unit 2 Auxiliary Feedwater System Electrical Lineup	Revision 4
BOP AF-E2A,	Unit 2 Auxiliary Feedwater System Train 'A' Electrical Lineup	Revision 1
BOP AF-M2	Unit 2 Auxiliary Feedwater System Valve Lineup	Revision 8
BOP AF-M2A	Unit 2 Auxiliary Feedwater System Train 'A' Valve Lineup	Revision 8
BOP AF-M2C	Unit 2 Auxiliary Feedwater System Train 'C' Valve Lineup	Revision 1
BOP AP-86	Isolating SAT 242-2 at Power	Revision 5
BOP DG-1	Diesel Generator Alignment to Standby Condition,	Revision 8
BOP DG-E2A	Train 'A' Diesel Generator System Electrical Lineup	Revision 2
BOP DG-M2A	Train 'A' Diesel Generator System Valve Lineup	Revision 6
Unit 1 Byron Operating Surveillance Requirement Procedure (BOSR) 8.1.1-1	Normal and Reserve Offsite AC [Alternating Current] Power Availability Weekly Surveillance	Revision 3
2BOSR 8.1.1-1	Normal and Reserve Offsite AC Power Availability Weekly Surveillance	Revision 3

Condition Reports Written for Inspector Identified Issues

B2001-02198	Valve Lineup Discrepancy	

1R05 Fire Protection

	Byron/Braidwood Stations Fire Protection Report	
	Byron Administrative Procedure 1100-16, Administrative Controls for Required Fire/Flood Watch Inspections	Revision 6
Condition Report (CR) B2001-01875	Hourly Fire Watch Not Properly Documented and Plant Barrier Impairment Not Closed in Prompt Fashion	April 21, 2001
CR# B2001-01965	No Hourly Fire Watch in Place as Required by LCOAR [Limiting Condition for Operation Action Requirement] for Detection Zone	April 27, 2001

Condition Reports Written for Inspector Identified Issues

CR# B2001-02160	Oil and Oil Absorbent Under Unit 2 Diesel Generators	May 10, 2001

1R07 Heat Sink Performance

Byron Technical Procedure 800-30	Service Water System Fouling Monitoring Program	Revision 4
Work Request (WR) 990157857-01	2SX02K - Heat Exchanger Inspection Per GL [Generic Letter] 89-13, 2B AF Pump Right Angle Gear Oil Cooler	Revision 0
WR 990157858-01	2SX01K - Heat Exchanger Inspection Per GL 89-13, 2B AF Pump Engine Closed Cycle Heat Exchanger	Revision 0
WR 990217899-01	2AF02A - Heat Exchanger Inspection Per GL 89-13, 2B AF Pump Gearbox Oil Cooler	Revision 0
WR 990217900-01	2AF01AB - Heat Exchanger Inspection Per GL 89-13, 2B AF Pump Lube Oil Cooler	Revision 0
CR# B2000-02836	Essential Service Water Pipe and 1B Auxiliary Feedwater Cubicle Cooler Flange Connections Are Corroded	September 30, 2000
CR# B2001-00487	Generic Letter 89-17 Trending Database Not Current	February 1, 2001

Condition Reports Written for Inspector Identified Issues

CR# B2001-02149	Discrepancies in GL 89-13 Reports From B2R08	May 9, 2001

1R12 Maintenance Rule Implementation

Nuclear Station Procedure ER-3010	Maintenance Rule	Revision 0
	Maintenance Rule Performance Monitoring Data for Criteria VP-2, Containment Air Recirculation and Cooling	March 1, 1999 through April 2, 2001
CR# B1999-00992	1D RCFC [Reactor Containment Fan Cooler] Low Speed Breaker Cell Switch Failure	March 22, 1999
CR# B1999-01021	1D RCFC Heat Exchanger Effectiveness Surveillance Failure	March 23, 1999
CR# B1999-01217	21A Drain Cooler Tube Leak	April 3, 1999
CR# B1999-02144	Failure of 1C RCFC to Start in Low Speed	June 3, 1999
CR# B1999-02567	21B Drain Cooler Tube Leak	July 15, 1999
CR# B2000-01781	Maintenance Rule Monitoring Concerns With Ventilation Supply to Motor Driven Auxiliary Feedwater Pumps	June 23, 2000
CR# B2000-01866	11A Drain Cooler Tube Leak	July 4, 2000
CR# B2000-02094	Apparent Trend in the Number of Unplanned Limiting Condition for Operation Action Requirement Entries Due to Equipment Related Problems	July 26, 2000
CR# B2000-03435	Primary Containment System Degrades to Red System SHIP [System Health Indicator Program] Status	November 13, 2000
CR# B2000-03832	2B Containment Chiller Tripped Inadvertently Due to Low Essential Service Water Temperature	December 17, 2000
CR# B2000-03870	Failure of 1B RCFC to Start in High Speed	December 19, 2000

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) OU-AA-103	Shutdown Safety Management Program	Revision 1
NSP OU-AP-104	Shutdown Safety Management Program Byron/Braidwood Annex	Revision 2
NSP WC-AA-103	On-Line Maintenance	Revision 3
CR# B2000-02721	Missed Protected Equipment Signs Associated With the 1B Charging Pump	September 26, 2000
CR# B2000-03735	Loss of Spent Fuel Pool Cooling Concerns	December 8, 2000

1R14 Personnel Performance During Non-routine Plant Evolutions

Unit 2 Byron General Operating Procedure (BGP) 100-2,	Plant Startup	Revision 20
2BGP 100-2A1	Reactor Startup	Revision 14
2BGP 100-2T1	Plant Startup Flowchart	Revision 9
2BGP 100-2T3	Reactor Startup Flowchart	Revision 2
2BGP 100-3	Power Ascension	Revision 28
2BGP 100-3T1	Power Ascension Flowchart	Revision 12
2BGP 100-4,	Power Descension	Revision 14
2BGP 100-4T1	Power Descension Flowchart	Revision 8
2BGP 100-5	Plant Shutdown and Cooldown	Revision 26
2BGP 100-5	Plant Shutdown and Cooldown Flowchart	Revision 13
CR# B2000-02710	BOP RH-6 Procedural Enhancement Identified	September 26, 2000
CR# B2000-02838	Unit 1 Excess Letdown Heat Exchanger Out-of-service (OOS) Error	October 1, 2000
CR# B2000-02915	Failure to Follow Procedures When Transferring Spent Fuel Pool Water	October 3, 2000

CR# B2000-03028	Precursor Events in Implementation of the OOS Process	October 8, 2000
CR# B2000-03447	1CV8392B Not Returned to As-found Position Following Maintenance	November 14, 2000

Condition Reports Written for Inspector Identified Issues

CR# B2001-02105	Insufficient Apparent Cause Evaluation	May 7, 2001
CR# B2001-02106	Failure to Document Deviations/Exceptions From BGP Flowchart	May 7, 2001

1R19 Post Maintenance Testing

Unit 1 Byron Technical Surveillance Requirement Procedure (BVSR) 6.3.5-1	Unit 1 Main Feedwater System Containment Isolation Valves Full Stroke Test	Revision 2
1BVSR 6.3.5-2	Unit 1 Main Feedwater System Containment Isolation Valves Partial Stroke Test	Revision 2
WR 990118093-01	2B SX Pump Overhaul	Revision 0
WR 990118093-04	2B SX Pump - Pump Casing Weld Repairs as Needed	Revision 0
WR 990228995-01	0A SX Makeup Pump - Install Fuel Oil System Check Valve Per Design Change Procedure 9900875	Revision 1
WR 990264689-01,	2B SX Pump ASME [American Society of Mechanical Engineers] and Miscellaneous Check Valve Surveillance	Revision 0
WR 99020728973-01	1FW009D - Hydraulic Pump of Valve Is Cycling Excessively	Revision 0
WR 99020728973-04	Calibrate Pressure Switch 1PS-FW177	Revision 0
WR 99020728973-07	1FW009D - Determinate/Reterminate Feedwater Isolation Valve Motor	Revision 0

1R20 Refueling and Outage Activities

BAP 370-3,	Administrative Control During Refueling	Revision 29
2BGP 100-1,	Plant Heatup	Revision 25
2BGP 100-1T1	Plant Heatup Flowchart	Revision 14
2BGP 100-1T2	Mode 5 to 4 Checklist	Revision 10

2BGP 100-1T3	Mode 4 to 3 Checklist	Revision 12
2BGP 100-1T5	Containment Integrity Checklist	Revision 7
2BGP 100-2	Plant Startup	Revision 20
2BGP 100-2A1	Reactor Startup	Revision 14
2BGP 100-2T1	Plant Startup Flowchart	Revision 9
2BGP 100-2T2,	Mode 3 to 2 Checklist	Revision 8
2BGP 100-2T3	Reactor Startup Flowchart	Revision 2
2BGP 100-3	Power Ascension	Revision 28
2BGP 100-3T1	Power Ascension Flowchart	Revision 12
2BGP 100-3T2	Mode 2 to 1 Checklist	Revision 7
2BGP 100-4	Power Descension	Revision 14
2BGP 100-4T1	Power Descension Flowchart	Revision 8
2BGP 100-5,	Plant Shutdown and Cooldown	Revision 26
2BGP 100-5	Plant Shutdown and Cooldown Flowchart	Revision 13
2BGP 100-6	Refueling Outage	Revision 28
2BGP 100-6T2	Mode 6 to 5 Checklist	Revision 9
2BGP 100-6T4,	Core Alteration/Fuel Movement Checklist	Revision 9
BOP CV-14	Degassing the Reactor Coolant System and Pressurizer	Revision 20
BOP RH-6	Placing the RH [Residual Heat Removal] System in Shutdown Cooling	Revision 20
2BOSR 4.3.1-1	Unit Two Reactor Coolant System Pressure/Temperature Limit Surveillance	Revision 4
2BOSR 4.c.1-1	Unit Two Pressurizer Temperature Limit Surveillance	Revision 2
2BOSR Z.5.b.1-1	Unit Two Containment Loose Debris Inspection	Revision 2
2BOSR 6.3.3-1	Primary Containment Integrity Verification of Containment Isolation Devices	Revision 7
2BVSR 5.2.8-1	Unit 2 Visual Inspection of the ECCS Recirculation Sumps	Revision 2

2BVSR XPT-23	Unit 2 Low Power Physics Test Program With the Westinghouse ADRC [Advanced Digital Reactivity Computer]	Revision 4
NSP OU-AA-103	Shutdown Safety Management Program	Revision 1
NSP OU-AP-104	Shutdown Safety Management Program Byron/Braidwood Annex	Revision 2
	Byron Station Unit 2 Cycle 10 Core Loading Plan	
	Byron Station Unit 2 Pressure and Temperature Limits Report	June 28, 1999
	Byron Station Unit 2 Cycle 10 Core Operating Limits Report	Revision 0
	Nuclear Component Transfer List for Byron Unit 2 Cycle 9 Core Offload	
	Nuclear Component Transfer List for Byron Unit 2 Cycle 10 Core Reload	
	Byron/Braidwood Stations Updated Final Safety Analysis Report	
	Byron Station Technical Specifications	
CR# B2000-02914	Lack of Controls for SFP [Spent Fuel Pool] Temporary Pumps	October 3, 2000
CR# B2000-03051	NRC Unit 1 Containment Walkdown Concerns	October 9, 2000
CR# B2000-03063	Reactor Coolant Pump Started by Control Room While Work Activities Were Still In Progress	October 9, 2000
CR# B2000-03072	1D Reactor Coolant Pump Startup	October 10, 2000
CR# B2000-03452	Action Tracking Items Closed Without Final Action Being Performed	November 14, 2000
CR# B2000-03935	Common Cause Analysis Identifies Inadequate Contractor Supervisor Oversight	December 22, 2000
CR# B2001-00145	SFP Foreign Material Concern	January 11, 2001

Condition Reports Written for Inspector Identified Issues

CR# B2001-01619	Revision to TLCO [Technical Requirements Manual Limiting Condition for Operation] 3.9.c Issued With Flaw in the Action Condition	April 12, 2001
CR# B2001-01822	B2R09 Unit 2 Emergency Core Cooling System Recirculation Sump Inspection Discrepancies	April 19, 2001
CR# B2001-01870	Containment Recirculation Pump Cover Fastener Discrepancy	April 21, 2001
CR# B2001-02143	Containment Loose Debris Inspection Surveillance Concern	May 9, 2001
CR# B2001-02197	Discrepancies Found in Cooldown Surveillances	May 11, 2001

1R22 Surveillance Testing

	American Society of Mechanical Engineers / American National Standards Institute (ASME/ANSI) OMa-1988 Addenda to ASME/ANSI OM-1987, Operation of Maintenance of Nuclear Power Plants, Part 10, Inservice Testing of Valves in Light-Water Reactor Power Plants	
Byron Special Process Procedure (SPP) 00-026	Diesel Generator Governor Upgrade Setup and Construction Test	Revision 0
2BOSR 6.1.1-22	Unit 2 Primary Containment Type C Local Leakage Rate Test of Safety Injection System	Revision 1
2BOSR 8.1.9-1	Unit Two 2A Diesel Generator Safe Shutdown Sequencer and Single Load Rejection Test - 18 Month	Revision 0
2BOSR 8.1.10-1	Unit Two 2A Diesel Generator Load Rejection and Overspeed Trip Surveillance 18 Month	Revision 0
2BOSR 8.1.11-1	Unit Two 2A Diesel Generator Sequencer Test - 18 Month	Revision 0
Byron Technical Procedure 800-39	Byron Containment Leakage Rate Testing Program	Revision 4

2BVSR AF-3	Unit 2 Simultaneous Start of Both AF Pumps with Flow to the Steam Generators	Revision 6
	Byron/Braidwood Stations Updated Final Safety Analysis Report	
	Byron Station Technical Specifications	

1R23 Temporary Plant Modifications

Nuclear Station Procedure CC-AA-112	Temporary Modifications	Revision 2
DCP 9901021	Remove Cable From Pre-amplifier Circuit for 2NR13EB (Post Accident Neutron Monitoring System) Due to Potential Moisture Build-up Within Cable	Revision 0
10 CFR 50.59 Safety Evaluation BRW-SE-1997-1570	Temporary Alteration 97-2-013, Remove One Detector From Service on Unit 2 PANM [Post Accident Neutron Monitor] Channel B	Revision 0
10 CFR 50.59 Validation 6H-01-0047	TMOD [Temporary Modification] DCP 9901021	Revision 0
Work Request 990275350-01	Install TMOD 9901021	Revision 0

2OS1 Access Control to Radiologically Significant Areas

	Focus Area Self-Assessment Report, Radiation Protection - High Radiation Area Controls/Postings for Byron	February 6-8, 2001
CR# B2001-00180	Inconsistent Posting	January 12, 2001
CR# B2001-01563	Lack of Adequate Radiological Controls Identified During a Plant Walkdown (RP)	April 10, 2001
BAP 1450-3	Access to Reactor Cavity Incore Area	Revision 7
RP-AA-460	Controls for High and Very High Radiation Areas	Revision 1

2OS2 As-Low-As-Is-Reasonably-Achievable (ALARA) Planning and Controls

	B2R09 ALARA Index	April 19, 2001
	Byron Radiological Action Plan	April 18, 2001
	Byron Station Exposure Reduction Plan	1996 - 2000
	RP/ALARA Daily PODs	April 16-19, 2001
CR# B2001-00523	Failure to Follow RWP Requirements/Unclear Standards	February 2, 2001
CR# B2001-00902	2CV06MA Work for B2R09; Lacking Detail	March 1, 2001
CR# B2001-00921	ALARA Outage Readiness Assessment	March 1, 2001
CR# B2001-01387	Radioisotopes Detected in SJAE Samples	April 3, 2001
CR# B2001-01463	Radiological Work Mock-up Standard Not Clearly Communicated	April 7, 2001
CR# B2001-01771	Reactor Vessel Bottom Incore Entry for Inspection by Engineering	April 17, 2001
RP-AA-400	ALARA Program	Revision 1
RP-AA-401	Operational ALARA Planning and Controls	Revision 1
RP-AA-441	Evaluation and Selection Process for Respirator Use	Revision 1
RWP #012527	S/G Eddy Current Testing, Tube Repairs & Inspections	Revision 0
RWP #012528	Remove/Install Secondary Side Covers & Sludge Covers. Perform Sludge Lance Activities & Inspection(s)	Revision 0
RWP #012567	Miscellaneous Valve Work: (CV Letdown Area on 412 OMB Only)	Revision 0
RWP #012571	Rx Head Disassembly and Reassembly Including Lift Prep, Cleaning Rx Head Studs, Conoseal & RVLS Removal & Installation	Revision 0
RWP #012580	Reactor Coolant Pumps: Inspection, Maintenance, and Repair (All loops)	Revision 0
RWP #012707	Replacement of N41/N42/N43/N44 Power Range Detectors	Revision 0

RWP #012748	ISI Activities (IMB and OMB), Including Scaffolding, Insulation Removal/Restoration, Decon, Weld Prep & Examinations	Revision 0
RWP #012751	Snubbers: Remove, Inspect, Test and Reinstall (OMB/IMB), Including Scaffold, Insulation and Decon Support	Revision 0
RWP #012795	Rx Cavity Decon: Equipment Staging and Set Up, Removal and Associated Activities	Revision 1
RWP #012822	Scaffold: Staging, Building and Removal (OMB/IMB)	Revision 0