September 10, 2001

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

SUBJECT: BYRON STATION, UNITS 1 AND 2
INSPECTION REPORT 50-454/01-10(DRP); 50-455/01-10(DRP)

Dear Mr. Kingsley:

On August 13, 2001, the NRC completed an inspection at the Byron Station, Units1 and 2. The enclosed report documents the inspection findings which were discussed on August 17, 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, the NRC identified one finding which was not quantified in terms of risk (No Color) describing a significant cross-cutting issue in the area of operator human performance. An adverse performance trend is developing in several cornerstone areas with operator errors being the common element. The finding represents multiple individual failures which were the result of incorrect knowledge-based decisions and/or the failure to correctly follow station procedures.

In addition, the NRC identified one issue of very low risk significance (Green). The issue 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 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).

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

Sincerely,
Original signed by
Ann Marie Stone

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 50-454/01-10(DRP);
50-455/01-10(DRP)

cc w/encl: J. Skolds, Chief Operating Officer
C. Crane, Senior Vice President, Midwest ROG
J. Benjamin, Vice President Licensing
H. Stanley, Vice President, Midwest ROG Operations
R. Krich, Licensing Director, Midwest ROG
R. Helfrich, Senior Counsel, Nuclear
DCD - Licensing
R. Lopriore, Site Vice President
S. Kuczynski, Station Manager
P. Reister, Regulatory Assurance Manager
M. Aguilar, Assistant Attorney General
Illinois Department of Nuclear Safety
State Liaison Officer
State Liaison Officer, State of Wisconsin
Chairman, Illinois Commerce Commission

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

Sincerely,

/s/Ann Marie Stone

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 50-454/01-10(DRP);
50-455/01-10(DRP)

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M. Aguilar, Assistant Attorney General
Illinois Department of Nuclear Safety
State Liaison Officer
State Liaison Officer, State of Wisconsin
Chairman, Illinois Commerce Commission

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REGION III

| | |
|---|---|
| Docket Nos: | 50-454; 50-455 |
| License Nos: | NPF-37; NPF-66 |
| Report No: | 50-454/01-10(DRP); 50-455/01-10(DRP) |
| Licensee: | Exelon Generation Company, LLC |
| Facility: | Byron Station, Units 1 and 2 |
| Location: | 4450 N. German Church Road<br>Byron, IL 61010 |
| Dates: | July 1 through August 13, 2001 |
| Inspectors: | R. Skokowski, Senior Resident Inspector<br>B. Kemker, Resident Inspector<br>T. Tongue, Project Engineer<br>W. Scott, Reactor Engineer<br>C. Thompson, Illinois Department of Nuclear Safety |
| Approved by: | Ann Marie Stone, Chief<br>Branch 3<br>Division of Reactor Projects |

SUMMARY OF FINDINGS

IR 05000454-01-10(DRP), IR 05000455-01-10(DRP), on 07/01-08/13/2001; Exelon Generation Company, LLC; Byron Station; Units 1 & 2. Personnel performance during nonroutine plant evolutions, cross-cutting issues.

The baseline inspection was conducted by resident inspectors, a regional reactor engineer, and a regional project engineer. The inspectors identified one Green finding and one No Color finding. 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: Barrier Integrity**

Green. The inspectors identified a Non-Cited Violation of Technical Specification (TS) 5.4.1.a for the operators' failure to follow Unit 2 Byron General Operating Procedure 100-3T5, "Load Change Instruction Sheet for Power Increases < 15 percent in 1 Hour," Revision 4. Operators incorrectly initiated a turbine generator power increase (a change directly affecting reactivity) and did not appropriately monitor Unit 2 plant parameters for the expected response during the increase in power. This resulted in Unit 2 reactor power operation in excess of its licensed thermal power limit.

This finding had a credible impact on safety because the inappropriate operator actions associated with this event could have resulted in operation outside the safety analysis if reactor power exceeded 102 percent rated thermal power. Although this finding could have affected the integrity of the fuel cladding by exceeding fuel design criteria, the inspectors determined that this finding was of very low safety significance because Unit 2 reactor power did not exceed 102 percent. Because this finding is of very low safety significance and it was captured in the licensee's corrective action program, this finding is being treated as a Non-Cited Violation consistent with Section VI.A.1 of the NRC Enforcement Policy (Section 1R14).

**Cross-cutting Issues: Human Performance**

No Color. Similar operator human performance errors were identified in the initiating events, mitigating systems, and barrier integrity cornerstones. The inspectors noted 6 operator errors associated with procedural adherence and knowledge-based decisions over the last 12 months. These operator errors resulted in the inoperability of systems designed to mitigate the consequences of accidents and/or provide barrier integrity, resulted in the violation of TS requirements, and resulted in plant transients.

While the risk significance associated with each of the individual events was very low, the number of operator human performance related incidents indicated an adverse performance trend which constitutes a significant cross-cutting issue (Section 4OA4).

B. Licensee Identified Violations

Violations of very low significance which were identified by the licensee have been reviewed by the inspectors. 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 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 Containment Spray System Train, and
- 2A Charging System Train.

In addition, the inspectors performed a complete system alignment of the Unit 1 essential service water system.

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 that the system lineup was in accordance with plant operating procedures and applicable system drawings. The inspectors also verified that selected system operating parameters (i.e., temperature, pressure, and flow) were in accordance with the station's operating procedures. In addition, the inspectors assessed the material condition of system equipment and verified that identified discrepancies were properly captured in the licensee's corrective maintenance program.

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:

- 1B Auxiliary Feedwater Pump Room (Zone 11.4A-1),
- 2B Auxiliary Feedwater Pump Room (Zone 11.4A-2),

- Unit 1 Safe Shutdown Room (Zone 11.4C-0), and
- Unit 2 Safe Shutdown Room (Zone 11.4C-0).

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.

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 July 27, 2001. 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:

- Station Air System Compressors,
- Auxiliary Building Filtered Ventilation System Equipment, and
- Component Cooling Water System Equipment.

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.

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:

- 1B Charging Pump,
- 2A Safety Injection Train, and
- Instrument Power Inverter 114.

The inspectors selected these maintenance activities because they involved systems which were risk significant in the licensee's risk analysis. The maintenance activity associated with the 114 inverter was considered emergent work to make repairs. 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, maintenance, and work control department personnel.

b. Findings

No findings of significance were identified.

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

.1 Unit 2 Exceeded Licensed Thermal Power Limit Due to Inappropriate Operator Actions

a. Inspection Scope

On April 28, 2001, while attempting to perform a 1 megawatt electrical (MWe) turbine generator power increase to maximize power production, operators inadvertently increased Unit 2 turbine generator output approximately 12 MWe. This resulted in Unit 2 reactor power operation greater than the licensed thermal power limit. This event was selected for review to determine if operator actions were appropriate and in accordance with the licensee's procedures and training. The inspectors interviewed operations and nuclear oversight department personnel, and reviewed the licensee's prompt investigation, root cause evaluation, applicable procedures, and condition reports.

b. Findings

The inspectors identified a finding of very low safety significance (Green). Operators incorrectly initiated a turbine generator power increase (a change directly affecting reactivity) and did not appropriately monitor Unit 2 plant parameters for the expected response during the increase in power. This finding was dispositioned as a Non-Cited Violation.

The Unit 2 supervisor and nuclear station operator (NSO) incorrectly entered turbine load change values into the turbine digital electro-hydraulic control (DEHC) panel equivalent to a 101 MWe turbine generator power increase instead of the desired 1 MWe turbine generator power increase. The operators then initiated the load change and left the main control board, without verifying the completion of the load change. The intended 1 MWe turbine generator power increase occurred over a 2 minute period. The unintended power increase continued unnoticed for an additional 22 minutes. At that time, the NSO noted an unexpected response in reactor coolant system temperature. At the DEHC panel, the operators confirmed that the load change had not stopped after the expected 1 MWe increase and terminated the load change. The operators subsequently reduced Unit 2 power to below 100 percent. Unit 2 thermal power was greater than the 100 percent licensed thermal power limit for a total of 41 minutes according to the 10-minute average calorimetric power calculations. The maximum power reached was 100.9 percent. The inappropriate operator actions did not result in Unit 2 exceeding the 2 percent reactor thermal power allowance contained in the safety analysis. Therefore, the assumptions contained in the safety analysis remained bounded for this event.

The inspectors concluded that this issue had a credible impact on safety because the inappropriate operator actions associated with this event could have resulted in operation outside the safety analysis if reactor power exceeded 102 percent rated reactor thermal power. The inspectors also concluded that this issue could have affected the integrity of the fuel cladding because exceeding the 2 percent reactor thermal power allowance would violate fuel design criteria, which could result in fuel damage or result in unanalyzed consequences to an initiating event. The inspectors determined that, because the inappropriate operator actions associated with this event did not actually result in Unit 2 exceeding the 2 percent reactor thermal power allowance, this issue was of very low safety significance (Green).

Technical Specification 5.4.1.a requires, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Appendix A specifies changing load and load follow (if applicable) as an example of a general plant operating procedure. The licensee established Unit 2 Byron General Operating Procedure 100-3T5, “Load Change Instruction Sheet for Power Increases < 15 percent in 1 Hour,” Revision 4, as the implementing procedure for power changes. Contrary to the above, during a Unit 2 turbine generator power increase on April 28, 2001, operators failed to appropriately monitor the plant for the expected response as required by Unit 2 Byron General Operating Procedure 100-3T5, Step 12. This resulted in Unit 2 reactor power operation in excess of its licensed thermal power limit and a violation of TS 5.4.1.a. In accordance with Section VI.A.1 of the NRC Enforcement Policy, this violation is being treated as a Non-Cited Violation (50-455-01-10-01(DRP)). The licensee entered this event into its corrective action program as Condition Report B2001-01977.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

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

- Operability Evaluation 01-009, "0B Essential Service Water Makeup Pump Jacket Water Cooler End Cover Does Not Meet American Society of Mechanical Engineers Code," Revision 0;
- Operability Evaluation 01-010, "Charcoal Filter Equipment Foundations and Portions of the Auxiliary Building Structure That Support This Equipment Have Not Been Formally Evaluated for the Additional Weight of the Charcoal Filter Cartridges," Revision 0;
- Operability Evaluation 01-011, "Boron Identified in Unit 1 Steam Generator Samples," Revision 1;
- Operability Evaluation 01-012, "Leak in the 0B Essential Service Water Cooling Tower Basin," Revision 0; and
- Condition Report B2001-03284, "Unplanned Limiting Condition for Operation Entry for the 2A Diesel Generator," July 26, 2001.

The inspectors interviewed engineering, chemistry, and operations department personnel and reviewed the applicable portions of the Updated Final Safety Analysis Report and TSs.

b. Findings

No findings of significance were identified.

1R16 Operator Work-Arounds (71111.16)

a. Inspection Scope

The inspectors evaluated the operator work-arounds (OWAs) listed below to identify any potential affect on the functionality of mitigating systems or on the operators' response to initiating events:

- OWA 226 Feedwater Heater Relief Valves Fail Open Following Plant Transients, and
- OWA 233 Unplanned Power Changes With Turbine Building Louver Adjustments.

The inspectors selected OWA 226 because operator recovery actions following a reactor trip have been complicated by feedwater heater relief valve failures and the licensee's actions to correct this problem to date have not been fully effective. The inspectors selected OWA 233 to review a problem with turbine building ambient temperature changes

causing small changes in reactor power level. The inspectors interviewed operating and engineering department personnel and reviewed applicable procedures and documents.

The inspectors also performed the semiannual review of the cumulative effects of OWAs. During this review the inspectors considered the cumulative effects of OWAs on the following:

- the reliability, availability, and potential for mis-operation of a system;
- the ability of operators to respond to plant transients or accidents in a correct and timely manner; and
- the potential to increase an initiating event frequency or affect multiple mitigating systems.

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:

- 2B Safety Injection Pump,
- 1A Diesel Generator,
- 2A Diesel Generator,
- 1D Steam Generator Power Operated Relief Valve, and
- 2B Centrifugal Charging Pump.

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.

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 0 Train B Control Room Ventilation System Train Monthly Surveillance Test,
- Unit 1 Reactor Containment Fan Cooler Monthly Surveillance Test, and
- Unit 2 Train A ASME Surveillance Requirements for Safety Injection Pump 2A.

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.

## 4. OTHER ACTIVITIES (OA)

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

The inspectors verified the following performance indicators for both units:

- Safety System Unavailability - High Pressure Safety Injection, and
- Safety System Unavailability - Residual Heat Removal.

The inspectors reviewed operating logs, maintenance history and surveillance test history for unavailability information for these systems from July 2000 to June 2001. The inspectors also verified the licensee's calculation of critical hours for both units and evaluated applicable safety system equipment unavailability against the performance indicator definition.

b. Findings

No findings of significance were identified.

4OA3 Event Follow-up (71153)

.1 (Closed) Licensee Event Report (LER) 50-454-01-01-00: "Reactor Power Limit Exceeded Due to Improperly Calculated Feedwater Mass Flowrate Utilized in Reactor Power Calorimetric." See Section 4OA7 of this report. This LER is closed.

.2 (Closed) Licensee Event Report (LER) 50-454-01-01-01: "Reactor Power Limit Exceeded Due to Improperly Calculated Feedwater Mass Flowrate Utilized in Reactor Power Calorimetric," Supplement 1. The licensee submitted Supplement 1 to LER 50-454-01-01 to provide the cause and corrective actions for the violation. The inspectors determined that the information provided in Supplement 1 to LER 50-454-01-01 did not raise any new issues or change the conclusions of the initial review which is documented in Section 4OA7 of this report. This LER is closed.

.3 (Closed) Licensee Event Report (LER) 50-455-01-01-00: "Multiple Main Steam Safety Valve Relief Tests Exceeded Required Tolerance Due to Disk to Nozzle Metallic Bonding." During surveillance testing of the Unit 2 main steam safety valves (MSSVs) on April 2 and 3, 2001, the licensee identified that 6 of 20 MSSVs failed to meet the TS acceptance criteria for the lift setpoint. As a result of each MSSV test failure, the licensee entered the appropriate TS limiting condition for operation and restored each valve to an operable condition within the TS allowed outage time. The licensee performed an evaluation of the impact of the MSSV surveillance testing results on the transient and accident analysis described in the Updated Final Safety Analysis Report (UFSAR) and concluded that the out of tolerance conditions did not invalidate the existing UFSAR analyses. The inspectors reviewed and concurred with the licensee's evaluation. The licensee entered this event into its corrective action program as Condition Report B2001-01404. This event did not constitute a violation of NRC requirements. This LER is closed.

4OA4 Cross-cutting Issues

a. Inspection Scope

The inspectors reviewed operator human performance issues documented in this inspection report and in previous inspection reports within the past 12 months to identify any performance trends or patterns of a significant cross-cutting nature.

b. Findings

An adverse performance trend is developing in several cornerstone areas with operator errors being the common element. The inspectors noted that there were six documented findings which resulted from operators failing to following station procedures and/or operators making incorrect knowledge-based decisions. The specific findings include:

- In July 2000, operators took inappropriate actions when responding to a failed feedwater regulating valve controller. This resulted in a steam

generator level transient and subsequent Unit 2 reactor trip (NRC Inspection Report 50-454/455-00-14, Section1R14).

- In October 2000, operators aligned the 1A safety injection pump such that it was capable of injecting into the reactor coolant system while Unit 1 was in Mode 5. This resulted in a plant configuration prohibited by the TS (NRC Inspection Report 50-454/455-00-19, Section 4OA7).

- In April 2001, operators failed to have the steam generator pre-heater bypass valves open during a Unit 2 reactor startup to maintain sufficient feedwater flow to the steam generators as required by procedure. This resulted in a steam generator level transient that could have caused a reactor trip (NRC Inspection Report 50-454/455-01-09, Section 4OA7).

- In June 2001, operators incorrectly evaluated the impact of a surveillance test failure of valve 1SX147B with respect to system operability. As a result, operators did not identify that the associated train of reactor containment fan cooler was rendered inoperable (NRC Inspection Report 50-454/455-01-09, Section 1R15).

- In April 2001, operators incorrectly initiated a turbine generator power increase (a change directly affecting reactivity) and did not appropriately monitor Unit 2 plant parameters for the expected response during the increase in power. This resulted in Unit 2 operation in excess of its licensed thermal power limit for about 41 minutes (NRC Inspection Report 50-454/455-01-10, Section 1R14).

- In July 2001, operators failed to ensure that the redundant train of control room ventilation was in the normal or emergency mode of operation during a maintenance activity on the 0B control room ventilation train as required by procedure. This resulted in a plant configuration prohibited by the TS (NRC Inspection Report 50-454/455-01-10, Section 4OA7).

The causal relationship of these errors was a lack of procedural compliance and/or incorrect knowledge-based decisions by operators. These individual findings each have had or could have had a direct impact on safety by increasing the frequency of initiating events or by affecting the reliability, operability and functionality of mitigating equipment or equipment associated with barrier integrity. This adverse operator human performance trend is considered a substantive cross-cutting issue not captured in individual issues and is a finding characterized as “No Color” (50-454/455-01-10-02(DRP)).

4OA5 Other

.1 (Closed) Violation 50-454/455-00-12-01(DRP): “Disposition of Unresolved Item 50-454/455-99-20-02.” The inspectors reviewed the licensee’s response to the Notice of Violation which was provided in a letter to the NRC dated August 21, 2000. The inspectors noted that the licensee’s response contained an accurate description of the root cause, corrective actions taken, and other aspects of the condition causing the violation.

The inspectors determined that the information provided in the licensee's response did not raise any new issues or change the conclusions of the initial review. The corrective actions were found to be acceptable. This violation is closed.

4OA6 Meetings

.1 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 August 17, 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.

.2 Annual Assessment Meeting

On July 10, 2001, the NRC presented the results of its annual assessment of Byron Station's performance to Mr. R. Lopriore and other members of licensee management during a public meeting held in the Byron Station Training Building. The handouts used for the presentation are attached. The results of the annual assessment were previously documented in a letter to the licensee dated May 31, 2001.

4OA7 Licensee Identified Violations. The following findings of very low safety significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as a Non-Cited Violations (NCVs).

If the licensee contests these NCVs, 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 Station.

| NCV Tracking Number | Requirement Licensee Failed to Meet |
|---|---|
| NCV 50-454/455-01-10-03 | The licensee identified two discrepancies with the feedwater flow calibration constants utilized in the calculation of feedwater mass flowrate and reactor thermal power level, which affected the accuracy of the thermal power calorimetric calculation in a non-conservative direction. Because of these discrepancies, the licensee had operated both Unit 1 and Unit 2 in excess of 100 percent power as defined in their respective Facility Operating Licenses between May 2000 and May 2001. This is a violation of the operating licenses. The licensee entered this issue into its |

corrective action program as Condition Report B2001-02275.

NCV 50-454/455-01-10-04 Technical Specification 5.4.1.a requires, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Appendix A of Regulatory Guide 1.33, Revision 2, February 1978, specifies authorities and responsibilities for safe operations and shutdown as an example of an administrative procedure. Nuclear Station Procedure OP-AA-101-102, "Roles and Responsibilities of On-Shift Personnel," Revision 3, Step 4.4.5, states that the unit supervisors are to ensure operations are conducted within the bounds of the TS in accordance with the Operations Standards and approved procedures. On July 18, 2001, during a maintenance activity that rendered the Unit 0B control room ventilation filtration actuation instrumentation inoperable, operators failed to correctly align the redundant control room ventilation filtration system train in the normal mode or emergency mode as required by Unit 0 Byron Operating Limits Procedure 3.7, "LCOAR [Limiting Condition for Operation Action Requirement], Control Room Ventilation Filtration System Actuation Instrumentation TS LCO [Limiting Condition for Operation] 3.3.7," Revision 2, Step A. The licensee entered this violation into its corrective action program as Condition Report B2001-03146.

Attachments: (1) NRC Slide Presentation, "End of Cycle Assessment Results - Byron Nuclear Power Plant," July 10, 2001
(2) Exelon Slide Presentation, "Exelon Nuclear Byron Generating Station - NRC Public Meeting," July 10, 2001

## KEY POINTS OF CONTACT

Licensee

B. Altman, Maintenance Manager
D. Drawbaugh, NRC Coordinator
S. Gackstetter, Shift Operations Superintendent
K. Hansing, Nuclear Oversight Manager
D. Hoots, Operations Manager
W. Kolo, Work Management Director
S. Kuczynski, Station Manager
R. Lopriore, Site Vice President
P. Reister, Regulatory Assurance Manager
T. Roberts, Engineering Director
D. Spoerry, Training Manager
W. Walter, Operations Support Manager

Nuclear Regulatory Commission

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

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

| | | |
|---|---|---|
| 50-455-01-10-01 | NCV | Failure to follow procedure resulted in Unit 2 reactor power operation in excess of its licensed thermal power limit |
| 50-454/455-01-10-03 | NCV | Reactor power limit exceeded due to improperly calculated feedwater mass flowrate utilized in reactor power calorimetric |
| 50-454/455-01-10-04 | NCV | Failure to follow procedure resulted in an inoperable control room ventilation filtration system |

Closed

| | | |
|---|---|---|
| 50-455-01-10-01 | NCV | Failure to follow procedure resulted in Unit 2 reactor power operation in excess of its licensed thermal power limit |
| 50-454-01-01-00 | LER | Reactor power limit exceeded due to improperly calculated feedwater mass flowrate utilized in reactor power calorimetric |
| 50-454-01-01-01 | LER | Reactor power limit exceeded due to improperly calculated feedwater mass flowrate utilized in reactor power calorimetric |

| | | |
|---|---|---|
| 50-455-01-01-00 | LER | Multiple main steam safety valve relief tests exceeded required tolerance due to disk to nozzle metallic bonding |
| 50-454/455-00-12-01 | VIO | Disposition of Unresolved Item 50-454/455-99-20-02 |
| 50-454/455-01-10-03 | NCV | Reactor power limit exceeded due to improperly calculated feedwater mass flowrate utilized in reactor power calorimetric |
| 50-454/455-01-10-04 | NCV | Failure to follow procedure resulted in an inoperable control room ventilation filtration system |

Discussed

| | | |
|---|---|---|
| 50-454/455-01-10-02 | FIN | Adverse trend in operator human performance |

LIST OF ACRONYMS USED

| | |
|---|---|
| AC | Alternating Current |
| ASME | American Society of Mechanical Engineers |
| BGP | Byron General Operating Procedure |
| BHP | Byron Electrical Maintenance Procedure |
| BHSR | Byron Electrical Maintenance Surveillance Requirement Procedure |
| BOL | Byron Operating Limit Procedure |
| BOP | Byron Operating Procedure |
| BOSR | Byron Operating Surveillance Requirement Procedure |
| BVSR | Byron Technical Surveillance Requirement Procedure |
| CC | Component Cooling Water |
| CFR | Code of Federal Regulations |
| CR | Condition Report |
| DEHC | Digital Electro-Hydraulic Control |
| DRP | Division of Reactor Projects |
| ISI | In-service Inspection |
| IST | In-service Testing |
| LCO | Limiting Condition for Operation |
| LCOAR | Limiting Condition for Operation Action Requirement |
| LER | Licensee Event Report |
| MSSV | Main Steam Safety Valves |
| MW | Megawatt |
| MWe | Megawatt Electrical |
| NCV | Non-Cited Violation |
| NEI | Nuclear Energy Institute |
| NRC | Nuclear Regulatory Commission |
| NSO | Nuclear Station Operator |
| NSP | Nuclear Station Procedure |
| OOS | Out-of-Service |
| OWA | Operator Work-Around |
| SDP | Significance Determination Process |
| SX | Essential Service Water |
| TS | Technical Specification |
| UFSAR | Updated Final Safety Analysis Report |
| VIO | Violation |
| WR | Work Request |

LIST OF DOCUMENTS REVIEWED

1R04 Equipment Alignment

| | | |
|---|---|---|
| | Byron Station TSs | |
| | Byron/Braidwood Stations Updated Final Safety Analysis Report | |
| | Byron & Braidwood Stations Individual Plant Examinations | March 1997 |
| Byron Operating Procedure (BOP) CS-E1B | Containment Spray System Train B Electrical Lineup | Revision 1 |
| BOP CS-M1B | Containment Spray System Train “B” Valve Lineup | Revision 1 |
| BOP SX-E1 | Essential Service Water Electrical Lineup | Revision 5 |
| BOP SX-M1 | Essential Service Water System Valve Lineup | Revision 27 |
| Condition Report (CR) B2001-03510 | Question from the NRC on SX [Essential Service Water] | August 15, 2001 |
| Out-of-Service (OOS) 00001278 | OOS Tagging Package for 2B Centrifugal Charging Pump Work Window | August 6, 2001 |
| OOS 00001280 | OOS Tagging Package for 2B Centrifugal Charging Pump Motor Inspection With Ground Test Device | August 7, 2001 |
| Drawing 6E-2-4030CV02 | Schematic Diagram Centrifugal Charging Pump 2B-2CVO1PB | |
| Drawing M138 | Diagram of Chemical Volume and Boron Thermal Regeneration | |
| Drawing M-42A | Composite Diagram of Essential Service Water | Revision D |
| Drawing M-42 Sheet 1A | Diagram of Essential Service Water | Revision AH |
| Drawing M-42 Sheet 1B | Diagram of Essential Service Water | Revision AG |

| | | |
|---|---|---|
| Drawing M-42 Sheet 2A | Diagram of Essential Service Water | Revision AP |
| Drawing M-42 Sheet 2B | Diagram of Essential Service Water | Revision AR |
| Drawing M-42 Sheet 3 | Diagram of Essential Service Water | Revision AV |
| Drawing M-42 Sheet 4 | Diagram of Essential Service Water | Revision AK |
| Drawing M-42 Sheet 5A | Diagram of Essential Service Water | Revision AC |
| Drawing M-42 Sheet 5B | Diagram of Essential Service Water | Revision AC |
| Drawing M-42 Sheet 6 | Diagram of Essential Service Water | Revision AP |
| Drawing M-46 Sheet 1A | Diagram of Containment Spray | Revision AN |
| Drawing M-46 Sheet 1B | Diagram of Containment Spray | Revision AR |
| Drawing M-46 Sheet 1C | Diagram of Containment Spray | Revision AK |
| System Health Overview Report | Essential Service Water | 2nd Quarter, 2001 |
| Work Request (WR) 00014031 [1] | Install Position Indication Labels on 1/2SX143A/B | August 18, 2001 |
| 1R05 Fire Protection | | |
| | Byron/Braidwood Stations Fire Protection Report | |
| | Byron Station Pre-Fire Plans and Drawings | |
| WR 980107023-01 | Unit 1 Byron Electrical Maintenance Surveillance Requirement Procedure (BHSR) 10.A-21, “Surveillance for Fire Detection Instrumentation Trip Actuating Device and Supervised Circuits Suppression Zones 1S-41 and 1S-42” | April 3, 2000 |

| | | |
|---|---|---|
| WR 980131761-01 | MA-BY-EM-1-FP003, “1(2)B Diesel Driven Aux. Feedwater Pump Room & Day Tank Room Carbon Dioxide System Actuation Surveillance” | October 18, 2000 |

1R11 Licensed Operator Requalification Program

| | | |
|---|---|---|
| | Licensed Operator Simulator Training Scenario for Scenario completed July 27, 2001 | |

1R12 Maintenance Rule Implementation

| | | |
|---|---|---|
| Nuclear Station Procedure (NSP) ER-3010 | Maintenance Rule | Revision 0 |
| | Maintenance Rule Performance Monitoring Data for Criteria SA-1, Supply Station Air to the Instrument Air System | July 1, 1999 through July 17, 2001 |
| | Maintenance Rule Performance Monitoring Data for Criteria VA-1, Non-Accessible Auxiliary Building Exhaust Filters | July 1, 1999 through July 17, 2001 |
| | Maintenance Rule Performance Monitoring Data for Criteria CC-1, Provide Cooling Water to Components | July 1, 1999 through July 17, 2001 |
| NUMARC 93-01 | Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants | Revision 2 |
| CR B1999-02761 | Unit 2 Station Air Compressor Trip | August 6, 1999 |
| CR B2000-00894 | Station Air System Pressure Transient | March 23, 2000 |
| CR B2000-01786 | Unit 2 Station Air Compressor Surge During Swap to Unit 0 Station Air Compressor | June 24, 2000 |
| CR B2000-03558 | Service Air System Spurious Depressurization, Auto Start of Standby Compressor | November 23, 2000 |
| CR B2000-03993 | Unit 0 Service Air Receiver Low Pressure and Subsequent Unit 2 Station Air Compressor Surge | December 30, 2000 |
| CR B2001-00287 | Unit 2 Station Air Unloader | January 20, 2001 |

| | | |
|---|---|---|
| CR B2001-00500 | Actuator Failure | February 2, 2001 |
| CR B2001-00858 | Unit 0 Component Cooling Water Pump Trip on Phase “A” Over-current | February 27, 2001 |
| CR B2001-01429 | 2SA032 Dual Indication | April 5, 2001 |
| CR B2001-02817 | Unit 1 Station Air Compressor Trip on High Vibration | June 21, 2001 |
| CR B2001-03059 | Unit 2 Station Air Compressor Surge - Need System Engineering to Review Condition Report | July 12, 2001 |
| CR B2001-03090 | Unit 1 Station Air Compressor Inadvertent Trip | July 14, 2001 |
| CR B2001-03099 | Unit 0 Station Air Compressor Inboard Bearing Confusion | July 16, 2001 |
| CR B2001-03134 | Unit 0 Station Air Compressor Manually Tripped Due to Oscillating Amps | July 18, 2001 |
| CR B2001-03183 | Unit 0 Station Air Compressor Trip During Startup | July 20, 2001 |
| CR B2001-03221 [1] | Maintenance Rule Program Deficiency | July 23, 2001 |
| 1R13 Maintenance Risk Assessments and Emergent Work Evaluation | | |
| Byron Operating Department Policy 400-47 | On-Line Risk/Protected Equipment | Revision 2 |
| NSP WC-AA-103 | On-Line Maintenance | Revision 3 |
| | Contingency Plan for Freeze Seal of Line 1SX58AB-2" for Installation of Design Change Procedure 9900553 | Revision 0 |
| WR 00337339-03 | Troubleshooting Plan for Inverter 114 | July 20, 2001 |
| | Byron Station Inverter 113 Critique | July 6, 2001 |
| CR B2001-03130 | Work in Progress Delays OOS, Incurs 4 Minutes of LCOAR [Limiting Condition for Operation Action Requirement] Time for 2A Safety Injection Pump | July 17, 2001 |
| CR B2001-03131 | Parts Are Not “Like for Like” | July 18, 2001 |

| | | |
|---|---|---|
| CR B2001-03132 | Lack of Self Check Leads to Problems on WR 990182247-01 | July 18, 2001 |
| CR B2001-03159 | Instrument Inverter 114 AC [Alternating Current] Input Failure | July 19, 2001 |
| CR B2001-03182 | 1A Diesel Generator Trip During Cool Down | July 20, 2001 |
| CR B2001-03273 [1] | Critique of 2A Safety Injection Pump Work Window and Delays Experienced | July 19, 2001 |

1R14 Personnel Performance During Non-routine Plant Evolutions

| | | |
|---|---|---|
| | Byron Station TSs | |
| | Byron/Braidwood Stations Updated Final Safety Analysis Report | |
| Unit 2 Byron General Operating Procedure (BGP) 100-3T5 | Load Change Instruction Sheet for Power Increases < 15% in One Hour | Revision 4 |
| Root Cause Evaluation 51245 | Personnel Error While Adjusting Reactivity Results in Reactor Overpower Incident Followed by Less Than Adequate Problem Identification by Shift Management | June 12, 2001 |
| Prompt Investigation Report 51245 | Unexpected Response to 1 MW [Megawatt] Ramp | May 11, 2001 |
| CR B2001-01977 | Unexpected Response to 1 MW Ramp | April 28, 2001 |
| CR B2001-01993 | Reclassification of CR B2001-01977 | April 30, 2001 |
| CR B2001-02006 | Non-conservative Reactivity Management | May 1, 2001 |
| CR B2001-02010 | Information for CR B2001-01977 Prompt Investigation Power Excursion | May 1, 2001 |
| CR B2001-02063 | Ineffective Communication During Return to Service of 0B Steam Generator Blowdown Demineralizer | May 3, 2001 |
| CR B2001-02896 [1] | Management Review Committee Approval of Root Cause From CR B2001-01977 | June 28, 2001 |

1R15 Operability Evaluations

| | | |
|---|---|---|
| | Byron Station TSs | |
| | Byron/Braidwood Stations Updated Final Safety Analysis Report | |

| | | |
|---|---|---|
| NSP CC-3001 | Operability Determination Process | Revision 0 |
| NRC Generic Letter 91-18 | Information to Licensees Regarding NRC Inspection Manual Section on Resolution of Degraded and Nonconforming Conditions | Revision 1 |
| NRC Inspection Manual, Part 9900 | Operable/Operability: Ensuring the Functional Capability of a System or Component | October 8, 1997 |
| Unit 2 Byron Operating Limit Procedure (BOL) 8.1 | LCOAR AC Sources - Operating | Revision 5 |
| American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section III, Appendix F | Rules for Evaluation of Service Loadings With Level D Service Limits | 1998 |
| Operability Evaluation 01-009 | 0B Essential Service Water Makeup Pump Jacket Water Cooler End Cover Does Not Meet ASME Code | Revision 0 |
| Operability Evaluation 01-010 | Charcoal Filter Equipment Foundations and Portions of the Auxiliary Building Structure That Support This Equipment Have Not Been Formally Evaluated for the Additional Weight of the Charcoal Filter Cartridges | Revision 0 |
| Operability Evaluation 01-011 | Boron Identified in Unit 1 Steam Generator Samples 2PS9352C Leaks By | Revision 1 |
| Operability Evaluation 01-012 | Leak in the 0B Essential Service Water Cooling Tower Basin | Revision 0 |
| Engineering Memo | 2A Diesel Generator Incomplete Sequence Trip (CR B2001-03284) | July 26, 2001 |
| CR B1999-03378 | Corrosion in 0B Essential Service Water Makeup Pump Jacket Water and Gear Oil Coolers | September 28, 1999 |
| CR B2001-02616 | Unit 1 Steam Generator pH Anomaly | June 7, 2001 |
| CR B2001-02628 | Incorrect Design Input Was Used for Determining Minimum Wall Thickness of Cover | June 8, 2001 |

| | | |
|---|---|---|
| CR B2001-02767 | Boron Detected in Unit 1 Steam Generator Samples | June 19, 2001 |
| CR B2001-02763 | Auxiliary Building Ventilation/Control Area Ventilation Charcoal Filter Weight Increase | June 19, 2001 |
| CR B2001-03033 | Large Amount of Water on Ground and Roadway Near Essential Service Water Tower | July 10. 2001 |
| CR B2001-03284 | Unplanned LCOAR Entry for the 2A Diesel Generator | July 26, 2001 |

1R16 Operator Workarounds

| | | |
|---|---|---|
| NSP OP-AA-101-303 | Operator Work-Around Program | Revision 0 |
| | Byron Station First Quarter 2001 Operator Workaround Aggregate Impact Assessment | April 14, 2001 |
| | Byron Station Second Quarter 2001 Operator Workaround Aggregate Impact Assessment | July 23, 2001 |
| CR B2000-00144 | Change in Unit 2 Power Level Due to Ambient Temperature Changes | January 12, 2000 |
| CR B2001-02859 | Turbine Building Cleanup After Unit 2 Reactor Trip | June 26, 2001 |
| CR B2001-03407 [1] | Inadvertent Closure of Operator Workaround 226 | August 6, 2001 |

1R19 Post Maintenance Testing

| | | |
|---|---|---|
| Byron Administrative Procedure 1600-11 | Work Request Post Maintenance Testing Guidance | Revision 11 |
| Byron Electrical Maintenance Procedure (BHP) EQ-26 | ASCO™ Solenoid Valve Replacement | Revision 8 |
| BHP XLT-2 | Limitorque Valve Operator Diagnostic Test (6.1.1) | Revision 7 |
| Unit 1/2BHSR DG-3 | Diesel Generator 18 Month Surveillance | Revision 6 |
| 1/2BHSR PM-2 | Calibration of Time Delay Relays | Revision 6 |
| BOP DG-11 | Diesel Generator Startup | Revision 15 |

| | | |
|---|---|---|
| BOP DG-12 | Diesel Generator Shutdown | Revision 15 |
| Unit 1 Byron Operating Surveillance Requirement Procedure (BOSR) 0.5-2.MS.3 | Unit 1 Main Steam System Valve Indication Test | Revision 1 |
| 1BOSR 6.3.5-19 | Unit 1 Main Steam System Containment Isolation Valve Stroke Test | Revision 2 |
| Unit 2 Byron Technical Surveillance Requirement Procedure (2BVSR) 5.2.4-6 | Unit 2, Train B ASME Surveillance Requirement for Centrifugal Charging Pump 2B and Chemical Volume Control System Valve Stroke Test | Revision 4 |
| NSP WC-AA-110 | Troubleshooting | Revision 1 |
| Engineering Memo | 1D Main Steam Power Operated Relief Valve Dual Indication (CR B2001-03304 & B2001-03309) | July 31, 2001 |
| Engineering Memo | 1MS018D Preconditioning Review | August 1, 2001 |
| | Performance Trend Data For 2CV01PB | October 1999 through May 2001 |
| NSP WC-AA-105 | Post-Maintenance Testing Program | Revision 3 |
| WR 00342179 | 1A Diesel Generator Engine Experienced Incomplete Sequence Trip on Cooldown | August 7, 2001 |
| WR 00344084 | 2A Diesel Failed to Go Into Cooldown Cycle | July 26, 2001 |
| WR 00344572 | 1D Steam Generator Power Operated Relief Valve Stroke Time Exceeded Administrative Limit | July 27, 2001 |
| WR 99182247 | High and Low Process Isolation Valves on 5-Way Manifold Leak (2FT-0918) | July 18, 2001 |
| WR 99182247-02 | Operational Functional Test (2FT-0918) | July 18, 2001 |
| WR 99182247-03 | Operational Visual (Non-ISI [In-service Inspection]) (2FT-0918) | July 18, 2001 |
| WR 99273388 | Limitorque Valve Operator Diagnostic Test | July 18, 2001 |
| WR 99273388-02 | Operational Stroke (Non ISI) - 2SI8923A | July 18, 2001 |

| | | |
|---|---|---|
| WR 99273388-03 | Operational Position Indication Test - 2SI8923A | July 18, 2001 |
| CR B2001-03273 [1] | Critique of 2A Safety Injection Pump Work Window and Delays Experienced | July 19, 2001 |
| CR B2001-03284 | Unplanned LCOAR Entry for the 2A Diesel Generator | July 26, 2001 |
| CR B2001-03326 | Failed Diesel Generator Emergency Fuel Oil Control Solenoid Valve | July 30, 2001 |

1R22 Surveillance Testing

| | | |
|---|---|---|
| | Byron Station TSs | |
| | Byron/Braidwood Stations Updated Final Safety Analysis Report | |
| ASME Code for Operation and Maintenance of Nuclear Power Plants Part 6 | Inservice Testing of Pumps in Light-Water Reactor Power Plants | 1998 |
| 0BOSR 7.10.1-2 | Control Room Ventilation System Train 0B Monthly Surveillance | Revision 2 |
| 1BOSR 6.6.2-1 | Unit One Reactor Containment Fan Cooler Monthly Surveillance | Revision 3 |
| 2BVSR 5.2.4-1 | Unit Two ASME Surveillance Requirements for Safety Injection Pump 2SI01PA | Revision 4 |
| CR B2001-03224 | Unplanned LCOAR Entry on Unit 1 Train A Reactor Containment Fan Cooler Essential Service Water Flows | July 23, 2001 |
| CR B2001-03264 | Recommended Enhancements to 1/2BOSR 6.6.2-1 | July 25, 2001 |
| IST PRV 96-006 | IST [In-service Test] Pump Reference Value/Acceptance Criteria Evaluation for 2A Safety Injection Pump | September 24, 1996 |
| IST PRV 98-003 | IST Pump Reference Value/Acceptance Criteria Evaluation for 2A Safety Injection Pump and 2B Safety Injection Pump | July 17, 1998 |
| Test Performance Curve 372.6 | 2A Safety Injection Pump Curve | October 14, 1976 |

| | | |
|---|---|---|
| WR 99281529-00 | ASME Surveillance Requirements for Surveillance Requirements for Safety Injection Pump 2SI01PA | July 19, 2001 |
| WR 99281529-01 | ASME Surveillance Requirements for Surveillance Requirements for Safety Injection Pump 2SI01PA | July 19, 2001 |

OA1 Performance Indicator Verification

| | | |
|---|---|---|
| NEI [Nuclear Energy Institute] 99-02 | Regulatory Assessment Performance Indicator Guideline | Revision 1 |
| NSP RS-AA-122-104 | Performance Indicator Safety System Unavailability | Revisions 2 and 3 |
| BOP CC-10 | Alignment of the Unit 0 CC [Component Cooling Water] Pump and Unit 0 CC Heat Exchanger to a Unit | Revision 10 |
| 1BOSR 3.2.8-603A | Unit One Engineered Safety Features Actuation System Instrumentation Slave Relay Surveillance (Train A, Automatic Safety Injection - K603) | Revision 0 |
| 1BVSR 5.2.4-6 | Unit 1 Train B ASME Surveillance Requirements for Centrifugal Charging Pump 1B and Chemical and Volume Control System Valve Stroke Test | Revision 5 |
| 1BVSR 5.5.8.CC.1-1 | Unit 1 ASME Surveillance Requirements for Component Cooling Pump 1CC01PA | Revision 5 |
| CR B2000-02151 [1] | Unavailability Event Not Captured for NEI Indicator for Residual Heat Removal for May 2000 | August 3, 2000 |
| CR B2000-03823 | NEI Indicators | December 15, 2000 |
| CR B2001-00525 | Safety System Unavailability During Surveillances | February 2, 2001 |
| CR B2001-03406 [1] | Emergency Core Cooling System Unavailability Reporting Discrepancies | August 6, 2001 |

OA3 Event Follow-up

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|---|---|---|
| | Byron Station TSs | |

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|---|---|---|
| Byron Maintenance Procedure 3114-14 | Main Steam Safety Valve Inspection and Repair | Revision 11 |
| OBOL 3.7 | LOCAR, Control Room Ventilation (VC) Filtration System Actuation Instrumentation TS LCO 3.3.7 | Revision 2 |
| 2BOL 7.1 | LCOAR Main Steam Safety Valves | Revision 3 |
| NSP OP-AA-101-102 | Roles and Responsibilities of On-Shift Personnel | Revision 3 |
| NRC Regulatory Guide 1.33 | Quality Assurance Program Requirements (Operations) | Revision 2, February 1978 |
| Licensee Event Report (LER) 50-455-99-01-00 | Six of 20 Main Steam Safety Valve Relief Tests Exceeded Required Tolerance Due to Disk to Nozzle Metallic Bonding | November 16, 1999 |
| LER 50-454-01-01-00 | Reactor Power Limit Exceeded Due to Improperly Calculated Feedwater Mass Flowrate Utilized in Reactor Power Calorimetric | June 14, 2001 |
| LER 50-454-01-01-01 | Reactor Power Limit Exceeded Due to Improperly Calculated Feedwater Mass Flowrate Utilized in Reactor Power Calorimetric | June 29, 2001 |
| LER 50-455-01-01-01 | Multiple Main Steam Safety Valve Relief Tests Exceeded Required Tolerance Due to Disk to Nozzle Metallic Bonding | June 1, 2001 |
| Prompt Investigation | Unplanned Entry into U-1/2 6-hour TS Shutdown Time Clock | July 19, 2001 |
| Engineering Evaluation NFM-MW:01-0110 | Byron Unit 2 Reload 9 Main Steam Safety Valve Trevi-test Result Evaluation | April 6, 2001 |
| CR B2001-01404 | Unit 2 Trevi Test Valves Not Meeting Criteria | April 4, 2001 |
| CR B2001-01421 | Additional Action Condition Potentially Needed for TS 3.7.1 Main Steam Safety Valves | April 4, 2001 |
| CR B2001-03146 | OBOL 3.7 One Hour Action Statement Not Met | July 18, 2001 |

OA7 Licensee Identified Violations

Byron Station TSs

| | | |
|---|---|---|
| | Byron/Braidwood Stations Updated Final Safety Analysis Report | |
| Root Cause Evaluation 52475 | Improper Feedwater Density and Thermal Expansion Coefficients Utilized to Calculate Feedwater Calibration Constants for Byron Units 1 & 2 Resulted in an Under Calculation of Reactor Power and a Dual Unit Overpower Event | June 20, 2001 |
| LER 50-454-01-01-00 | Reactor Power Limit Exceeded Due to Improperly Calculated Feedwater Mass Flowrate Utilized in Reactor Power Calorimetric | June 14, 2001 |
| LER 50-454-01-01-01 | Reactor Power Limit Exceeded Due to Improperly Calculated Feedwater Mass Flowrate Utilized in Reactor Power Calorimetric | June 29, 2001 |

[1] Condition report or work request issued as a result of the inspection.