January 30, 2002

EA-02-016

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 50-454/01-16(DRP); 50-455/01-16(DRP)

Dear Mr. Kingsley:

On December 31, 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 January 7, 2002, with Mr. R. Lopriore and other members of your staff. A followup discussion was held with Mr. S. Kuczynski on January 29, 2002.

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 inspectors identified a Severity Level IV violation of NRC requirements. Specifically, in July 1998, your staff implemented a change to the diesel generator (DG) ventilation system that involved an unreviewed safety question and failed to obtain prior NRC approval in accordance with the 10 CFR 50.59 requirements in effect at the time. The change involved defeating the automatic start function of a diesel generator room ventilation fan and covering the outside air damper with a prefabricated cover. The change also substituted operator manual actions in place of automatic system actuation described in the Updated Final Safety Analysis Report (UFSAR). We also evaluated this issue against the current and revised 10 CFR 50.59 requirements. We determined that this issue would have been a violation of the revised 10 CFR 50.59 rule because the change would represent more than a minimal increase in the likelihood of occurrence of a malfunction of a system previously evaluated in the UFSAR. However, because the violation was non-willful and non-repetitive and because it has been entered into your corrective action program, the NRC is treating this issue as a Non-Cited Violation in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny this Non-Cited Violation, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region III; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington DC 20555-0001; and the NRC Resident Inspector at the Byron facility. The current Enforcement Policy is included on the NRC's website at www.nrc.gov/OE.

In addition, immediately following the terrorist attacks on the World Trade Center and the Pentagon, the NRC issued an advisory recommending that nuclear power plant licensees go to the highest level of security, and all promptly did so. With continued uncertainty about the possibility of additional terrorist activities, the Nation's nuclear power plants remain at the highest level of security and the NRC continues to monitor the situation. This advisory was followed by additional advisories and although the specific actions are not releasable to the public, they generally include increased patrols, augmented security forces and capabilities, additional security posts, heightened coordination with law enforcement and military authorities, and more limited access of personnel and vehicles to the sites. The NRC has conducted various audits of your response to these advisories and your ability to respond to terrorist attacks with the capabilities of the current design basis threat. From these audits, the NRC has concluded that your security program is adequate at this time.

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/reading-rm/ADAMS.html (the current link to 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

Enclosures: Inspection Report 50-454/01-16(DRP);
50-455/01-16(DRP)

See Attached Distribution

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REGION III

Docket Nos:	50-454; 50-455
License Nos:	NPF-37; NPF-66
Report No:	50-454/01-16(DRP); 50-455/01-16(DRP)
Licensee:	Exelon Generation Company, LLC
Facility:	Byron Station, Units 1 and 2
Location:	4450 N. German Church Road Byron, IL 61010
Dates:	November 13 through December 31, 2001
Inspectors:	R. Skokowski, Senior Resident Inspector B. Kemker, Resident Inspector P. Snyder, Resident Inspector H. Peterson, Senior Operations Engineer C. Thompson, Illinois Department of Nuclear Safety
Approved by:	Ann Marie Stone, Chief Branch 3 Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000454-01-16(DRP), IR 05000455-01-16(DRP), on 11/13-12/31/2001; Exelon Generation Company, LLC; Byron Station, Units 1 & 2. Other Activities.

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

A. Inspector Identified Findings

Cornerstone: Mitigating Systems

The inspectors identified a Severity Level IV Non-Cited Violation. In July 1998, the licensee implemented a change to the diesel generator (DG) ventilation system that involved an unreviewed safety question and failed to obtain prior NRC approval in accordance with the 10 CFR 50.59 requirements in effect at the time. Specifically, the licensee failed to adequately evaluate the defeating of the automatic actuation of the DG ventilation system and replacing it with operator manual actions to recover the system's function. This change increased the probability of occurrence of a malfunction of equipment important to safety previously evaluated in the safety analysis report.

Because the SDP was not designed to assess the significance of violations that potentially impact or impede the regulatory process, this issue is being dispositioned using the traditional enforcement process in accordance with Section IV of the NRC Enforcement Policy. The result of this violation (when a DG was inoperable due to the implementation of the procedure) was assessed significance through the SDP and the severity level of the violation was based on the significance determination. This issue was considered to have more than minor significance, in that, it had a credible impact on safety by affecting the operability, availability, reliability, or function of the DGs. Because the licensee caused one DG to be inoperable for about 21 days which was longer than the outage time allowed by Technical Specification, the inspectors performed a bounding Phase II SDP analysis. The inspectors evaluated the loss of offsite power and a loss of offsite power coincident with a loss of one division of AC power accident sequences using the following assumptions: (1) minimal credit for operator recovery actions, (2) the DG was inoperable at the start of the event; and (3) the exposure time for this type of failure occurred for an entire year instead of just during the winters months. The result of these analyses determined that this issue was of very low safety significance (i.e., Green).

The regional senior reactor analyst also performed a qualitative Phase III SDP analysis and determined that external conditions would not be sufficient to increase the safety significance of the issue. Therefore, the issue was classified as a Severity Level IV violation of 10 CFR 50.59. However, because this issue is of very low safety significance and it was captured in the licensee's corrective action program, this issue is being treated as a Non-Cited Violation, consistent with Section VI.A.1 of the NRC Enforcement Policy. (Section 4OA5).

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

1R05 Fire Protection (71111.05)

a. Inspection Scope

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

- Unit 1 Turbine Building General Area (Zone 8.5-1), and
- Unit 2 Turbine Building General Area (Zone 8.5-2).

These areas were selected for inspection because systems, structures, and components that could potentially cause plant transients 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. During this inspection, the inspectors also interviewed the station's fire marshal. The documents listed at the end of this report were also used by the inspectors to evaluate this area.

In addition, the inspectors assessed fire brigade performance and the drill evaluators' critique during a fire brigade drill conducted in the 2A diesel generator (DG) room on December 15, 2001. The drill simulated a lube oil fire associated with a lube oil leak on the 2A DG. The inspectors focused on command and control of fire brigade activities, fire fighting and communication practices, material condition and use of fire fighting equipment, and implementation of pre-fire plan strategies. The inspectors also reviewed the shift manager's emergency classification of the simulated event.

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 November 19, 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:

- Miscellaneous Electric Equipment Rooms and Engineered Safety Features Battery Rooms Ventilation

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

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

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

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

- 2A DG, and
- 2B Containment Spray System Train.

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 2A DG was considered emergent work to repair a damaged voltage regulator. During this inspection, the inspectors assessed the operability of redundant train equipment and verified that the licensee's planning of the maintenance activities minimized the length of time that the plant was subject to increased risk. The inspectors interviewed operations, engineering, maintenance, and work control department personnel. The documents listed at the end of this report were also used by the inspectors to evaluate this area.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

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

- Operability Evaluation 01-017, "Potential Distortion of Stuffing Box Extension Wear Ring During Thermal Transients on the Residual Heat Removal Pumps," Revision 0.

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

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17)

a. Inspection Scope

The inspectors reviewed the permanent plant modifications associated with the Design Change Packages (DCPs) listed below to verify that the modification did not adversely affect the availability, reliability, and functional capability of the systems:

- DCP 9900292 Provide a 3/16 Inch Diameter Venting Hole in the Upstream (RH Pump) Side of the Valve Disc for Valve 2CV8804A; and

- DCP 9900387 Revise Trip Logic for Digital Electro-Hydraulic Controller for a Loss of Direct Current Power.

The first modification was installed to address possible thermally and pressure induced pressure locking of the power-operated gate valve 2CV8804A. The second modification rewired the turbine trip logic so that a single card failure would not initiate a turbine trip.

During this inspection, the inspectors evaluated the implementation of these designs to verify that:

- the compatibility, functional properties, environmental qualifications, seismic qualification, and classification of materials and replacement components were acceptable;
- the affected operating procedures and training have been identified and necessary changes were complete;
- the pressure boundary integrity was not compromised;
- the implementation of the modifications did not impair key safety functions;
- no unintended system interactions occurred;
- the system performance characteristics affected by the modification continued to met the design basis; and
- the modification design assumptions were appropriate.

The documents listed at the end of this report were also used by the inspectors to evaluate this area.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope

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

- 2A DG

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

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

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

- Unit Two - 2B DG Operability Surveillance.

The inspectors selected this surveillance test activity because the DGs were identified as risk significant in the licensee's risk assessment and the engines were credited as operable in the licensee's safety analysis to mitigate the consequences of a potential accident. The inspectors interviewed operations and engineering department personnel, reviewed the completed test documentation, and observed the performance of all or portions of the surveillance testing activity. The documents listed at the end of this report were also used by the inspectors to evaluate this area.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES (OA)

4OA1 Performance Indicator Verification (71151)

a. Inspection Scope

The inspectors verified the following performance indicators:

- Safety System Unavailability - Auxiliary Feedwater, and
- Safety System Unavailability - Emergency Alternating Current (AC) Power.

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

b. Findings

No findings of significance were identified. See Section 4OA5.2 for the resolution of a previous performance indicator reporting unresolved item (URI) involving the emergency AC power system.

4OA3 Event Follow-up (71153)

.1 (Closed) Licensee Event Report (LER) 50-454/2001-002-00: "Main Steam Isolation Valves (MSIVs) Surveillance Not Performed in Mode 3 as Required by TS Bases Due to Improper Procedure Revision." On September 26, 2001, the licensee identified that both units' MSIVs had not been tested in Mode 3 as required by the TS. Subsequently, the licensee requested a Notice of Enforcement Discretion (NOED) to allow both units to continue operating without the immediate completion of this surveillance test requirement. The NRC approved this NOED on September 27, 2001. The inspectors reviewed the LER and concluded that it accurately described the event and that the root cause determination and corrective actions appeared to be adequate. Therefore the LER is closed. However, the regulatory aspects and risk significance of the issue (Unresolved Item (URI) 50-454/455-01-10-02) remains open pending actual testing in Mode 3 and additional NRC review.

4OA5 Other

.1 (Closed) URI 50-454/455-01-06-01(DRP): Review of the Licensee's Change to the DG Ventilation System. The inspectors initiated a Task Interface Agreement which requested additional assistance from the Office of Nuclear Reactor Regulation (NRR).

The inspectors identified a Severity Level IV Non-Cited Violation. The licensee failed to obtain prior NRC approval for a change to the DG ventilation system which required a license amendment in accordance with 10 CFR 50.59.

In December 2000, the inspectors identified a URI associated with the 10 CFR 50.59 evaluation for a change the licensee made to the DG ventilation system. Specifically, the change involved defeating the automatic start function of a diesel generator room ventilation fan and covering the outside air damper with a prefabricated cover. The licensee also substituted operator manual actions to recover the ventilation system in place of automatic system actuation described in the UFSAR. The inspectors noted that the licensee had used this modification for several years during the winter months because the air dampers did not seal tightly and allowed excessive leakage of cold air from outside into the DG rooms. The cold air affected DG operability due to minimum temperature requirements for safety related components, lube oil system, and jacket water system. The inspectors reviewed the station operating history and noted that the licensee disabled the DG ventilation system for one DG room at a time with the longest duration of 21 days. The inspectors also noted that while the DG room ventilation system was disabled, the opposite train DG was available as well as the capability to cross-tie emergency power from the other operating unit.

In March 2001, the 10 CFR 50.59 requirements were revised. Because the licensee made this change in July 1998, the NRR staff reviewed the issue against the previous 10 CFR 50.59 requirements. The NRR staff concluded that the licensee's substitution of operator manual actions in place of automatic system actuation as described in the UFSAR resulted in an unreviewed safety question and required prior NRC review and approval before implementation. Specifically, the staff determined that the change required prior NRC approval because: (1) the plant subsequently relied on operator intervention for the effective performance of systems that are important to safety and

(2) this reliance on human intervention potentially introduced unanalyzed failure modes caused by operator errors of omission or commission. In accordance with NRC Enforcement Manual Section 8.13, the NRC staff also reviewed the issue against the current 10 CFR 50.59 requirements and determined that the change resulted in more than a minimal increase in the likelihood of a malfunction of equipment that is important to safety. The NRR staff noted that the licensee did not conduct a comprehensive 10 CFR 50.59 evaluation to support the change, failed to perform either a task analysis or walk-through, and did not consider the possibility of operator errors or the likelihood of recovering from such errors. The NRR staff also concluded that the licensee did not provide adequate evidence to support its contention that 2 hours was sufficient operator response time to: (1) ensure accurate diagnosis of a transient that requires a DG to start, (2) perform the required manual actions on up to four separate DGs, and (3) recover from potential operator errors.

Because violations of 10 CFR 50.59 are considered to be violations that potentially impede or impact the regulatory process, they are dispositioned using the traditional enforcement process instead of the Significance Determination Process (SDP). Although the SDP is not designed to assess the significance of violations that potentially impact or impede the regulatory process, the result of a 10 CFR 50.59 violation is assessed significance through the SDP and the severity level of the violation is based on the significance determination. In this case, the licensee modified the 1B DG ventilation in 1999 for a 21 day period. Therefore, the inspectors assessed the significance of having the DG inoperable for 21 days using the SDP.

The inspectors concluded that this issue had a credible impact on safety because the change to the DG ventilation system resulted in an increased likelihood of a malfunction and could have affected the operability, availability, reliability, or function of the DGs. Because this issue only affected the mitigating systems cornerstone, the inspectors performed a Phase I analysis using the SDP. The inspectors answered “yes” to Question 3, specifically, that a single DG train was unavailable for greater than the 14-day outage time allowed by TS 3.8.1. The inspectors and regional senior reactor analyst performed a bounding Phase II analysis for the loss of offsite power and the loss of offsite power coincident with a loss of one division of AC power accident sequences using the following assumptions: (1) minimal credit for operator recovery actions, (2) the DG was inoperable at the start of the event; and (3) the exposure time for this type of failure occurred for an entire year instead of just during the winters months. The result of these analyses determined that this issue was of very low safety significance (i.e., Green). The regional senior reactor analyst also performed a qualitative Phase III SDP analysis and determined that external conditions would not be sufficient to increase the safety significance of the issue.

Because this issue was identified prior to March 2001, the issue was evaluated against the previous 10 CFR 50.59 requirements. Specifically, 10 CFR 50.59(a)(1) stated, in part, that the holder of a license authorizing operation of a utilization facility may make changes in the facility as described in the safety analysis report without prior Commission approval, unless the proposed change involved an unreviewed safety question. 10 CFR 50.59(a)(2) stated, in part, that a proposed change shall be deemed to involve an unreviewed safety question if the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously

evaluated in the safety analysis report may be increased. 10 CFR 50.59(b)(1) required, in part, that the licensee shall maintain records of changes in the facility to the extent that these changes constitute changes in the facility as described in the safety analysis report. These records must include a written safety evaluation which provides the bases for the determination that the change does not involve an unreviewed safety question. The Byron/Braidwood Stations UFSAR, Section 9.4.5.2, "Diesel Generator Facilities Ventilation System," states, in part, that each diesel generator room ventilation system is interlocked to start when its associated diesel generator starts.

Contrary to the above, on July 8, 1998, the licensee failed to perform an adequate written safety evaluation which provided the bases that a change in the facility did not involve an unreviewed safety question. Specifically, the written safety evaluation for Byron Operating Procedure VD-5, "Diesel Generator Room Ventilation System Operation," Revision 4, failed to adequately evaluate the licensee's defeating of the automatic actuation of the diesel generator ventilation system and replacing with operator manual actions to recover the system's function. This change in the facility increased the probability of occurrence of a malfunction of equipment important to safety previously evaluated in the safety analysis report. Consequently, the change involved an unreviewed safety question and was made without prior NRC approval. The result of the violation was determined to be of very low safety significance; therefore, this violation of 10 CFR 50.59 was classified as a Severity Level IV violation. However, because this non-willful violation was non-repetitive, and was captured in the licensee's corrective action program (CR 00084634), it is considered a Non-Cited Violation (NCV 50-454/455-01-16-01(DRP)) consistent with Section VI.A.1 of the NRC Enforcement Policy. This URI is closed.

.2 (Closed) URI 50-454/455-00-14-01(DRP): Review of the Licensee's Reporting of Unavailability Time for the Emergency AC Power System.

In September 2000, the inspectors identified three discrepancies with respect to the performance indicator for the emergency AC power unavailability time. The inspectors noted that the licensee did not consider the affected DG inoperable when the DG room ventilation system was not capable of performing its safety function. Therefore, the licensee did not include these occurrences against the unavailability time for the emergency AC power system. The licensee submitted a "Frequently Asked Question" form to the NRC, requesting clarification of this performance indicator. The NRC staff reviewed each of the reporting discrepancies and concluded that the licensee should have accounted for unavailability time for each case. The inspectors determined that if the licensee included unavailability time for these occasions, the performance indicator would not have changed color. Therefore, these reporting discrepancies are considered minor. The licensee entered this issue into its corrective action program as CR B2000-03275, CR 00084936, and CR 00087455. This URI is closed.

.3 (Closed) URI 50-454/455-00-301-01(DRS): This unresolved item involved a potential emergency procedure deficiency.

Procedure 1BEP-0, "Reactor Trip or Safety Injection," required operators to assess reactor coolant system (RCS) pressure and if RCS pressure was decreasing with abnormal auxiliary building radiation levels, to eventually transition to BCA-1.2, "LOCA

Outside Containment." An operator licensing examination scenario was written expecting that the applicants would perform BCA-1.2 and isolate the inter-system loss of coolant accident (LOCA). However, due to multiple, independent, and unrelated malfunctions, the plant conditions were such that reactor pressure was increasing, and therefore, the applicants were not directed by the emergency procedure to address the leak outside containment when such a condition existed. Following the review of the facility's condition report B2000-01829 and action item 00031721, the inspectors determined that the current procedure was in compliance with Emergency Response Guidelines developed by Westinghouse and the Westinghouse Owner's Group guidance; and the facility's probabilistic risk analysis results did not meet the threshold to require a revision to the emergency procedure.

The inspectors determined that the scenario with multiple, independent, and unrelated malfunctions occurring in a short time frame placed the operators outside the procedure. This practice was not uncommon during training and examination scenarios when multiple events are occurring. In addition, procedures are not, and can not be written to cover every conceivable scenario situation. During the scenario the operators correctly followed procedures and addressed the plant conditions that would have steered them to the inter-system LOCA procedure. However, the plant conditions did not warrant a transition out of the existing emergency procedure being implemented at that time. In general, the inspectors concluded that the operators adequately followed the emergency procedures. Although the transition into the inter-system LOCA procedure did not occur as expected, the operators appropriately followed procedures and satisfactorily addressed the LOCA condition and placed the plant in a safe condition. The inspectors concluded that the emergency procedure, based on multiple scenario conditions, was adequate. The licensee's actions were considered reasonable, and no findings of significance were identified. This URI is closed.

4OA6 Meetings

Resident Inspector Exit Meeting

The inspectors presented the inspection results to Mr. R. Lopriore and other members of licensee management at the conclusion of the inspection on January 7, 2002. 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 examined during this inspection but is not specifically discussed in this report.

On January 29, 2002, Mrs. A. M. Stone contacted Mr. S. Kuczynski and discussed the changes in the characterization of the findings as originally presented during the January 7 exit meeting.

KEY POINTS OF CONTACT

Licensee

R. Lopriore, Site Vice President
B. Altman, Maintenance Manager
R. Blaine, Radiation Protection Director
D. Combs, Site Security Manager
D. Drawbaugh, Regulatory Assurance
B. Grundmann, Regulatory Assurance Manager
K. Hansing, Site Nuclear Oversight Manager
J. Heaton, Lead License Requalification Specialist
M. Heinzer, Nuclear Oversight Assessment Manager
D. Hoots, Operations Manager
W. Kolo, Work Management Director
S. Kuczynski, Station Manager
T. Roberts, Engineering Director
T. Schuster, Executive Assistant
D. Spoerry, Training Manager
S. Stimac, Shift Operations Superintendent

Nuclear Regulatory Commission

A. Stone, Chief, Branch 3, Division of Reactor Projects
S. Burgess, Senior Reactor Analyst, Division of Reactor Safety

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-454/455-01-16-01	NCV	Failure to obtain prior NRC approval for a change to the diesel generator ventilation system that resulted in an unreviewed safety question

Closed

50-454/2001-002-00	LER	Main Steam Isolation Valves Surveillance not Performed in Mode 3 as Required by Technical Specification Bases Due to Improper Procedure Revision
50-454/455-00-14-01	URI	Review of the licensee's reporting of unavailability time for the emergency ac power system
50-454/455-00-301-01	URI	Potential emergency procedure deficiency.
50-454/455-01-06-01	URI	Review of the licensee's change to the diesel generator ventilation system
50-454/455-01-16-01	NCV	Failure to obtain prior NRC approval for a change to the diesel generator ventilation system that resulted in an unreviewed safety question

Discussed

None

LIST OF ACRONYMS USED

AC	Alternating Current
BAP	Byron Administrative Procedure
BOP	Byron Operating Procedure
BOSR	Byron Operating Surveillance Requirement Procedure
CFR	Code of Federal Regulations
CR	Condition Report
DCP	Design Change Package
DG	Diesel Generator
DP	Differential Pressure
DRP	Division of Reactor Projects
ESF	Engineered Safety Features
FW	Feedwater
LCOAR	Limiting Condition for Operation Action Requirement
LER	Licensee Event Report
LOCA	Loss of Coolant Accident
MSIV	Main Steam Isolation Valve
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NOED	Notice of Enforcement Discretion
NRC	Nuclear Regulatory Commission
NSP	Nuclear Station Procedure
OOS	Out-of-Service
RCS	Reactor Coolant System
RH	Residual Heat Removal
SDP	Significance Determination Process
SER	Safety Evaluation Report
SPP	Special Plant Procedure
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
WR	Work Request

LIST OF DOCUMENTS REVIEWED

1R05 Fire Protection

	Byron/Braidwood Stations Fire Protection Report	Revision 19
	Byron Station Pre-Fire Plans and Drawings	
Byron Administrative Procedure (BAP) 1100-17T1	Byron Station Pre-Fire Plan	Revision 0
BAP 1100-7	Fire Prevention for Transient Combustibles	Revision 10
BAP 1100-7A1	Minor Transient Combustibles	Revision 1
Nuclear Station Procedure (NSP) OP-AA-201-003	Fire Drill Performance	Revision 3
NSP OP-AA-201-003 Attachment 1	Fire Drill Record	December 15, 2001
NSP OP-AA-201-003 Attachment 3	Fire Drill Scenario	October 12, 2001
Condition Report (CR) 00087056 [1]	Plant Page Near 401' Fire Brigade Cage Inaudible	December 17, 2001

1R11 Licensed Operator Requalification Program

	Licensed Operator Simulator Training Scenario for Scenario completed November 19, 2001	

1R12 Maintenance Rule Implementation

NSP ER-3010	Maintenance Rule	Revision 0
NUMARC 93-01	Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants	Revision 2

	Maintenance Rule Performance Monitoring Data for Criteria VE-1, Provide Ventilation for the Miscellaneous Electric Equipment Rooms and Engineered Safety Features (ESF) Battery Rooms	October 1, 1999 through October 19, 2001
CR B2000-00100	2TS-VE003 Out of Tolerance, Expanded Tolerance Exceeded	January 11, 2000
CR B2000-00324	Out-of-Service (OOS) Card Appears to Be Left on Equipment When OOS Was Reset to “Approved” Status	January 30, 2000
CR B2000-00429	Unplanned Limiting Condition for Operation Action Requirement (LCOAR) Entry for Battery Room 111 Exhaust Fan Trip	February 8, 2000
CR B2000-01448	Unplanned LCOAR Entry for ESF Battery 111 Room Ventilation	May 19, 2000
CR B2000-01694	Instrument Out of Tolerance, Expanded Tolerance Exceeded	June 14, 2000
CR B2000-03692	Unplanned LCOAR Entry 1BOL [Unit 1 Byron Operating Limits Procedure] VE1 Due to 111 Battery Room Fan Tripping	December 5, 2000
CR B2000-03989	Nuisance Alarm on 2VE05C High Differential Pressure (DP) Trip Alarm	December 29, 2000
CR B2001-00251	Trend on Diesel Fuel Oil Pump Relief Valve Replacement	January 18, 2001
CR B2001-00252	Inappropriate Corrective Action to Prevent Recurrence for Trend 97-014	January 18, 2001
CR B2001-00300	Results from Common Cause Analysis on the Process Radiation Monitoring System	January 22, 2001
CR B2001-00374	Maintenance Rule Peer Group Containment Closure Industry Event Review	January 26, 2001
CR B2001-00600	Housekeeping / Foreign Materials Exclusion Concern	February 8, 2001
CR B2001-00646	Unplanned Reduction in Circulating Water Blowdown Flow Due to River Screen House Traveling Screen Plugging	February 11, 2001

CR B2001-00750	Unit 1 Division 12 Miscellaneous Electrical Equipment Room Temperature Cold	February 17, 2001
CR B2001-00831	Failure of Unit 2 Turbine Vibration Supervisory Module	February 23, 2001
CR B2001-00875	0B Primary Water Makeup Pump Excessive Amperes/Trip	February 27, 2001
CR B2001-01446	Unplanned Administrative LCOAR Entry 2BOL VE1 Due to Fan 2VE02C Tripped on High DP	April 6, 2001
CR B2001-02206	Unplanned Administrative LCOAR Due to Fan Trip (1VE02C)	May 12, 2001
CR B2001-02622	Unplanned Technical Requirements Manual LCOAR Entry - 112 Battery Room Exhaust Fan 1VE02C Tripped	June 8, 2001
CR B2001-02577	Unplanned LCOAR Entry (1BOL VE1) Due to ESF Battery Room Exhaust Fan Trip	June 5, 2001
CR B2001-02833	Unplanned Administrative LCOAR Entry (1BOL VE1) - Trip of ESF Battery Room 112 Exhaust Fan	June 23, 2001
CR B2001-03438	Battery 112 Room Ventilation Fan Tripped	August 8, 2001
CR 00074710	112 Battery Room Ventilation Fan 1VE02C Trip - Unplanned LCOAR 1BOL VE1	September 9, 2001
CR 00077989	Battery Room Fan Division 11 Tripped	October 6, 2001
CR 00078056	Battery Room 111 Exhaust Fan Trip on High DP	October 7, 2001
CR 00078092	Unplanned LCOAR Entry on 1VE03C, Division 11 Battery Ventilation Fan Trip	October 8, 2001
CR 00078498	Battery Room 111 Exhaust Fan Trip	October 11, 2001
CR 00080602	Unplanned Administrative LCOAR Entry, 111 Battery Room Ventilation Fan Trips	October 27, 2001
CR 00080833	Unplanned LCOAR for 111 Battery Room Exhaust Fan (1VE03C)	October 29, 2001
CR 00076596	2A Main Steam Power Operated Relief Valve Will Not Stroke With Manual Pump	September 26, 2001

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

	Byron Station Technical Specifications (TS)	
	Byron/Braidwood Stations Updated Final Safety Analysis Report (UFSAR)	
Byron Operating Department Policy No. 400-47	On-Line Risk/Protected Equipment	Revision 2
NSP WC-AA-103	On-Line Maintenance	Revision 4
NSP WC-AA-104	Review and Screening for Production Risk	Revision 4
CR 00087525 [1]	Failure to comply with Operations Department Policy No. 400-47	December 19, 2001

1R15 Operability Evaluations

	Byron Station TS	
	Byron/Braidwood Stations UFSAR	
NSP CC-3001	Operability Determination Process	Revision 0
NSP LS-AA-105-1000	Operability Determination Guidance Manual	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
Operability Evaluation 01-017	Potential Distortion of Stuffing Box Extension Wear Ring During Thermal Transients on the Residual Heat Removal (RH) Pumps	Revision 0
Byron Operating Procedure (BOP) RH-6	Placing the RH System in Shutdown Cooling	Revision 21
50.59 Screening 6D-01-0336	Revision 21 to BOP RH-6, “Placing the RH System in Shutdown Cooling”	Revision 0

F-95N3D-136186-000	Finite Element Analysis of Casing Cover Deformation Due to Thermal Transients, Pump Model 8X20WDF Ingersoll-Dresser Pump Company, Prepared for Watts Bar Nuclear Power Plant	September 18, 1995
Westinghouse Technical Bulletin ESBU-TB-96-03	RH Pump Operating Recommendations	Revision 0
Watts Bar Incident Investigation Event Report II-W-94-014	RH Pump 1B-B Failures (With Pump 1A-A Supplemental Results)	Revision 2
	"RH in Service at Temperature < 350 Degrees Fahrenheit," email Annie Wong to John Panici, et al	November 19, 2001
CR 00082603	Byron Review of Braidwood 2B RH Pump Failure	November 12, 2001
CR 00087847 [1]	BOP RH-6 Revision 21 50.59 Screening Needs Improvement	December 21, 2001

1R17 Permanent Plant Modifications

	Byron/Braidwood Stations UFSAR	
	Byron Station TS	
Design Change Package (DCP) 9900292	Provide a 3/16 Inch Diameter Venting Hole in the Upstream (RH Pump) Side of the Valve Disc for Valve 2CV8804A	January 26, 2000
DCP 9900387	Revise Trip Logic for Digital Electro-Hydraulic Controller for a Loss of Direct Current Power	December 29, 1999
Drawing M-62	Diagram of Residual Heat Removal	Revision AY
Drawing M-64 Sheet 4B	Diagram of Chemical and Volume Control and Boron Thermal Regeneration	Revision H
NRC Generic Letter 95-07	Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves	August 17, 1995

1R19 Post Maintenance Testing

	Byron/Braidwood Stations UFSAR	
Work Request (WR) 00347069-00	Contingency Package Troubleshooting on 2A Diesel Generator (DG)	August 6, 2001
WR 00347069-01	Electrical Maintenance Troubleshooting on 2A DG	November 19, 2001
WR 00347069-02	Operations Post Maintenance Test	November 19, 2001
Special Plant Procedure (SPP) 01-026	2A DG Voltage Regulator Special Procedure	Revision 1
Byron Plant Review Report 01-062	Post Maintenance Test Plan for 2A DG Voltage Regulator	November 19, 2001
Byron Plant Operating Review Committee Minutes 01-090	SPP 01-026, 2A DG Voltage Regulator and Plant Review Report 01-062, 2A DG Post Maintenance Test	November 19, 2001
2BOL 8.1	LCOAR AC [Alternating Current] Sources - Operating	Revision 5
CR 00082913	Unplanned LCOAR Entry - 2A DG Failed to Reach Rated Voltage	November 15, 2001
CR 00082931	Chart Recorder Jumper Lead Caused Short on 2A DG Circuit	November 15, 2001
CR 00083302	Isolation Transformer Installed on 2A DG on Hold	November 17, 2001
CR 00083474	2A DG SPP 01-026 Procedure and Performance Problems	November 20, 2001

1R22 Surveillance Testing

	Byron Station TS	
	Byron/Braidwood Stations UFSAR	
Unit 2 Byron Operating Surveillance Requirements Procedure (BOSR) 8.1.2-2	Unit Two - 2B Diesel Generator Operability Surveillance	Revision 8

4OA1 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 (High Pressure Safety Injection/High Pressure Core Injection, Residual Heat Removal, Reactor Core Isolation Cooling/Auxiliary Feedwater, Emergency Diesel Generator)	Revisions 2 and 3
NSP LS-AA-2040	Monthly Performance Indicator Data Elements for Safety System Unavailability - Emergency AC Power	Revision 06/25/2001
NSP LS-AA-2060	Monthly Performance Indicator Data Elements for Safety System Unavailability - Reactor Core Isolation Cooling (BWRs) or Auxiliary Feedwater (PWRs) Systems	Revision 06/25/2001
	Byron Shift Manager's Logs	October 1, 2000 through September 30, 2001
CR B2000-03275 [1]	Carbon Dioxide Puff Test Impact on NRC Indicator on DG Safety System Unavailability	October 30, 2000
CR B2000-03441	Additional Unavailability for 1A DG	November 14, 2000
CR B2000-03632	NRC Information Notice Implementation Warrants Review	November 30, 2000
CR B2000-03952 [1]	1A DG Lube Oil Temperature Affected By Cold Outside Air Temperatures	December 26, 2000
CR B2001-00296	1B DG Jacket Water Pump Seal Repair Impact on Performance Indicators	January 22, 2001
CR B2001-01802	NEI Performance Indicator Database Problem	April 18, 2001
CR B2001-02748	Work Process Improvement	June 18, 2001
CR 00084936 [1]	DG Unavailability Due to Ventilation Damper Covers	December 4, 2001
CR 00087455 [1]	Unfavorable Response to Frequently Asked Question on Safety System Unavailability	December 19, 2001

OA3 Event Follow-up

Licensee Event Report 50-454/2001-002-00	Main Steam Isolation Valves Surveillance not Performed in Mode 3 as Required by Technical Specification Bases Due to Improper Procedure Revision	November 26, 2001

4OA5 Other

	Byron/Braidwood Stations Updated Final Safety Analysis Report (UFSAR), Section 9.4.5.2, “Diesel Generator Facilities Ventilation System”	
NUREG-0876	Safety Evaluation Report (SER) Related to the Operation of Byron Station, Units 1 and 2, Section 9.4.5, “Engineered Safety Features Ventilation and Cooling Systems”	
NRC Generic Letter 91-18	Guidance on Resolution of Degraded and Nonconforming Conditions and on Operability	November 7, 1991
NRC Information Notice 97-78	Crediting of Operator Action in Place of Automatic Actions and Modifications of Operator Action, Including Response Times	October 23, 1997
BOP VD-5	DG Room Ventilation System Operation	Revision 4
Onsite Review 97-003	DG Ventilation System Impact on Diesel Generator Operability	January 23, 1997
Safety Evaluation TI-97-0008	Safety Evaluation Supporting the Findings and Recommendations Made in Onsite Review 97-003	January 24, 1997
Memorandum from Ledyard B. Marsh to Geoffrey E. Grant	Task Interface Agreement - TIA 2001-008, “Evaluation of a Change to the Byron Station DG Ventilation System Per 10 CFR 50.59"	November 19, 2001
NEI 99-02	Regulatory Assessment Performance Indicator Guideline	Revision 1
CR B2000-01829	Condition Report: Potential Emergency Procedure Problem Identified During ILT NRC Exam Administration	June 21, 2000

AR 00031721	Action Request: Action Item to Evaluate Revision of Emergency Procedures and Search WOG as Needed	December 20, 2000
BOP VD-5	DG Room Ventilation System Operation	Revision 4
CR B2000-03275 [1]	Carbon Dioxide Puff Test Impact on NRC Indicator on DG Safety System Unavailability	October 30, 2000
CR B2000-03952 [1]	1A DG Lube Oil Temperature Affected By Cold Outside Air Temperatures	December 26, 2000
CR 00084936 [1]	DG Unavailability Due to Ventilation Damper Covers	December 4, 2001
CR 00087455 [1]	Unfavorable Response to Frequently Asked Question on Safety System Unavailability	December 19, 2001

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