July 26, 2001

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

SUBJECT: BRAIDWOOD STATION, UNITS 1 and 2 - NRC INSPECTION REPORT 50-456/01-07(DRP); 50-457/01-07(DRP)

Dear Mr. Kingsley:

On June 30, 2001, the NRC completed an inspection at your Braidwood Station Units 1 and 2. The enclosed reports documents the inspection findings which were discussed with Mr. K. Schwartz and other members of your staff on July 3, 2001.

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. Specifically, this inspection focused on resident inspection activities.

Based on the results of this inspection, the inspectors identified two issues of very low safety significance (Green). The finding associated with the Unit 1B diesel driven auxiliary feedwater pump was considered a violation of NRC requirements. However, because of its very low safety significance 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 Braidwood facility.

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Sincerely,

/RA by Thomas Tongue Acting for/

Ann Marie Stone, Chief
Projects Branch 3
Division of Reactor Projects

Docket Nos. 50-456; 50-457
License Nos. NPF-72; NPF-77

Enclosure: Inspection Report 50-456/01-07(DRP);
50-457/01-07(DRP)

cc w/encl: J. Skolds, Chief Operating Officer
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U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos:	50-456; 50-457
License Nos:	NPF-72; NPF-77
Report Nos:	50-456/01-07(DRP); 50-457/01-07(DRP)
Licensee:	Exelon Generation Company, LLC
Facility:	Braidwood Station, Units 1 and 2
Location:	35100 S. Route 53 Suite 84 Braceville, IL 60407-9617
Dates:	May 22 through June 30, 2001
Inspectors:	C. Phillips, Senior Resident Inspector N. Shah, Resident Inspector J. Gavula, Senior Reactor Inspector J. House, Senior Radiation Specialist G. O'Dwyer, Reactor Inspector J. Roman, Illinois Department of Nuclear Safety
Approved by:	Ann Marie Stone, Chief Projects Branch 3 Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000456-01-07(DRP), 05000457-01-07(DRP); on 05/22-06/30/01, Exelon Generation Company; Braidwood Station; Units 1 & 2. Resident Operations Report.

This report covers a 6-week routine inspection, a baseline heat sink performance inspection, and a baseline radiation protection inspection. The inspection was conducted by resident and specialist inspectors. Two Green findings were identified. One of the findings involved a Non-Cited Violation. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 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 violations.

A. Inspector Identified Findings

Cornerstone: Initiating Events

Green. Operator Error Resulted in the Inadvertent Deluge of the Unit 2 East main power transformer on June 16, 2001.

This event was more than minor, because it could be reasonably viewed as a precursor to a significant event. The finding was of very low safety significance because the transformer deluge did not result in a plant transient. This was not a violation as the Unit 2 east main power transformer was non-safety-related equipment. (Section 1R04)

Cornerstone: Mitigating Systems

Green. The Unit 1B diesel driven auxiliary feedwater pump room cooler discharge isolation valve failed to open during a routine surveillance due to foreign material in the valve operator control air solenoid. The inspectors identified this as a non-cited violation owing to inadequate procedures governing the valve maintenance (Technical Specification 5.4.1).

This finding was considered more than minor, as it had a credible impact on safety that affected the availability of one train (i.e., the Unit 1B AF Pump) of a safety related, mitigating system. (Section 1R15)

B. Licensee Identified Violations

No findings of significance were identified.

Report Details

Plant Status

Both units operated at 100 percent power throughout the inspection period, with the following exceptions:

- On May 22, at 9:07 p.m., Unit 2 was restored to full power following a reactor trip occurring on May 19.

- On May 28, Unit 2 implemented a Technical Specification amendment allowing an increase in the reactor power limit to 3586 megawatts (thermal). This amendment was approved by the NRC on May 4, 2001. Specifically, the licensee raised reactor power to 3272 megawatts (thermal) or about 96.6 percent of the revised, power limit.

1. REACTOR SAFETY

Cornerstone: Initiating Events and Mitigating Systems

1R01 Adverse Weather Preparations (71111.01)

a. Inspection Scope

The inspectors reviewed the licensee's preparations for hot weather conditions. Specifically, the inspectors reviewed the Updated Final Safety Analysis Report (UFSAR), Sections 3.11 and 9.4and the Technical Requirements Manual (TRM) , Section 3.7.d, to identify those risk significant areas having specific high temperature limits. Of these areas, the inspector chose the Unit 1 engineered safety features (ESF) division 11 DC battery, the Unit 2B auxiliary feedwater (AF) pump, and the Unit 1B and 2A safety injection (SI) and charging pump rooms for further review.

For each of the above areas, the inspectors reviewed room temperature trends from July 2000 to June 2001 to determine whether the applicable temperature limits were exceeded, and performed a walkdown to observe the operation of the ventilation systems. The inspectors also reviewed selected maintenance records for the above pump room and oil coolers to determine whether they were maintained clean and supplied with essential service water.

The inspectors also observed the replacement of a differential pressure switch associated with the Unit 2 miscellaneous electrical equipment room (MEER) ventilation system. Because this work required that the ventilation system be made inoperable, the inspectors observed whether the licensee took appropriate controls to maintain room temperature below the applicable limit stated in TRM 3.7.d.

The inspectors also selected several Condition Reports (CRs) documenting problems associated with heat exchanger, room temperature or adverse weather control, to determine whether these issues were being properly addressed via the licensee's corrective action program.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

The inspectors verified the system alignment of the following systems while the alternate trains were out-of-service for planned maintenance:

- Unit 1A SI pump.

The inspectors performed a partial walkdown of the accessible portions of these systems and observed the system (electrical and mechanical) lineup and selected, system operating parameters (i.e., pump and bearing lube oil levels, room temperature, electrical breaker position, etc). The inspectors reviewed the UFSAR, Technical Specifications, system drawings, and station procedures, as applicable. The inspectors also became aware of an equipment alignment issue involving the Unit 2 east main power transformer (2E MPT) through the review of licensee CRs. The inspectors reviewed the CRs and the procedure. The inspectors also interviewed licensee operations management.

In addition, the inspectors reviewed selected 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.

b. Findings

A finding of very low safety significance (Green) was identified (self-disclosing) for an inadequate equipment alignment due to operator error that resulted in the inadvertent deluge of the 2E MPT on June 16, 2001.

The licensee determined that the unexpected deluge of the 2E MPT was caused by non-licensed operators not following procedure and not closing the transformer deluge isolation valve as required by Braidwood Flood procedure BwFP-Q1, "Unit 2 Transformer Deluge Systems Alarm Test Quarterly Surveillance," Step F.3.l, Revision 5E3, during the course of the surveillance test. This event was documented in CR A2001-01799.

This event was considered more than minor, because it could be reasonably viewed as a precursor to a significant event. Although this transformer deluge did not result in a plant transient, a review of the licensee's operating experience data base revealed

several industry occurrences in the last ten years where an unexpected fire protection deluge of a transformer resulted in a reactor trip or loss of offsite power.

This event impacted the Initiating Event Cornerstone since the 2E MPT deluge could have caused or increased the frequency of an initiating event based on the review of the licensee's operating experience data base. This event would only impact the Initiating Event Cornerstone because the loss of the 2E MPT would not result in the loss of the safety-related electrical busses; therefore, neither mitigating systems nor the containment would be impacted. The inspectors entered Phase I of the Significance Determination Process and answered "No" to all three questions regarding the Initiating Event Cornerstone resulting in a Green finding.

Based on the results of the SDP analysis, this event was a finding of Green significance. However, it was not a violation of regulatory requirements, as the 2E MPT was nonsafety-related equipment.

1R05 Fire Protection (71111.05)

a. Inspection Scope

The inspectors evaluated the licensees fire protection controls for the following areas:

- 1A Emergency Diesel Generator Room;
- 1B SI Pump Room; and
- General Area of the 364 Foot Elevation of the Auxiliary Building.

The inspectors performed a walkdown of these areas to observe conditions related to the control of transient combustibles and ignition sources; the material condition, operational lineup, and operational effectiveness of fire protection systems, equipment and features; and the material condition and operational status of fire barriers. The inspectors observed that the area (including associated fire protection and mitigation equipment) was as described in the Braidwood Fire Protection Plan, dated December 1988.

The inspectors also reviewed selected, CRs to determine whether identified problems were being entered into the corrective action program with the appropriate characterization and significance.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07)

a. Inspection Scope

Regional specialist inspectors reviewed documents associated with maintenance, inspection and thermal performance testing of the Unit 1 component cooling (CC) water heat exchanger, the Unit 2A emergency diesel generator jacket water cooler, and the

Unit 1 essential service water pump lube oiler cooler. These heat exchangers or coolers were chosen based on having high risk achievement worths in the station's probabilistic safety assessment. While on site, the inspectors reviewed completed surveillances, associated calculations, instrument calibration records, and maintenance work orders and performed independent calculations to verify that these activities adequately ensured proper heat transfer. The inspector reviewed the documentation to confirm that the test methodology was consistent with accepted industry practices, that test acceptance criteria were consistent with design basis values, and that the test results appropriately considered differences between test and design conditions. The inspectors also reviewed documentation to confirm that methods used to inspect the heat exchangers were consistent with expected degradation and that the established acceptance criteria were consistent with accepted industry standards. In addition, the inspectors reviewed CRs concerning heat exchanger or heat sink performance issues to verify that the licensee had an appropriate threshold for identifying issues and to evaluate the effectiveness of the corrective actions to the identified issues.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

a. Inspection Scope

The inspectors reviewed the implementation of the licensee's licensed operator requalification program by observing simulator training conducted on June 11, 2001. Specifically, the inspectors observed operator response to a simulated event involving a main steam line rupture outside containment, as described in licensee Scenario 0143, dated May 22, 2001, Revision 0.

The inspectors observed that the training was monitored by the licensee's staff. The inspectors also observed how operations responded to alarms, communicated plant conditions, and made emergency declarations. The inspectors also selectively compared the simulator equipment to actual control room equipment.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation (71111.12)

a. Inspection Scope

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

- Unit 2 CC;

- Units 1 and 2 SI ; and
- Units 1 and 2 Essential Service Water.

The inspectors evaluated the licensee's monitoring and trending of performance data and the appropriateness of a(1) goals and corrective actions, and determined whether performance criteria were established commensurate with safety and whether equipment problems were appropriately evaluated in accordance with the maintenance rule. The inspectors interviewed the stations maintenance rule coordinator and reviewed selective CRs to determine whether identified problems were being entered into the corrective action program with the appropriate characterization and significance.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments And Emergent Work Control (71111.13)

a. Inspection Scope

The inspectors reviewed the licensee's assessment and management of plant risk for planned maintenance and/or surveillance activities on the following systems or components:

- Capacitor Replacement in Instrument Inverter 111, on May 29, 2001;
- Unit 1B SI Pump Work Window; and
- Troubleshooting and Repair of Instrument Inverter 211 on June 23, 2001.

The inspectors attended shift briefings and daily status meetings to verify that the licensee took actions to maintain a heightened level of awareness of the plant risk status among plant personnel, and evaluated the availability of redundant train equipment. The inspectors also reviewed Nuclear Station Procedure WC-AA-103, "On-Line Maintenance," Revision 3, and evaluated licensee compliance with that procedure.

In addition the inspectors reviewed selected 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.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed and evaluated the operability evaluations in associated CRs. The inspectors also reviewed the technical adequacy of the evaluation against the Technical Specification, UFSAR, and other design information; determined whether compensatory measures, if needed, were taken; and determined whether the evaluation

was consistent with the requirements of RS-AA-105, "Operability Determination Process," Revision 0.

b. Findings

A finding of very low safety significance (Green) was identified (self-disclosing) after the Unit 1B diesel driven AF pump room cooler discharge isolation valve (1AOV-SX178) failed to open during a routine surveillance due to foreign material in the valve operator control air solenoid. The failure occurred on April 20, 2001, and rendered the AF pump room cooler, and therefore the pump, unavailable for about 12 days. This event was also discussed in Section 1R14 of Inspection Report 50-456/457-2001-06 (DRP).

The licensee was unable to specifically identify the foreign material, but determined that it was likely introduced during replacement of the control air solenoid on March 19, 2001. Additionally, the valve had successfully passed post-maintenance testing on March 20, 2001, and routine surveillance testing on March 23 and 27, 2001. This event was documented in CR A2001-1168.

This finding was considered more than minor, as it had a credible impact on safety that affected the availability of one train (i.e., the Unit 1B AF Pump) of a safety-related, mitigating system. Because this finding only affected the mitigating systems cornerstone, the inspectors performed a Phase I analysis of the event using the SDP process. The inspectors answered "No" to all five questions regarding the mitigating systems cornerstone resulting in a Green finding. Specifically, the inspectors determined that the issue was of very low safety significance in that the AF system was still capable of performing its safety function (i.e., the Unit 1A motor driven AF pump was operable) and the Unit 1B AF pump was restored to operability within its Technical Specification outage time.

The inspectors identified that the work instructions for the March 19 work on the 1AOV-SX178 valve, did not have guidance contained in the maintenance procedures for the other air-operated solenoid valves used at the station. Specifically, the March 19 work instructions did not describe the removal/installation of air line piping or require that the replacement control air solenoid be tested prior to installation. The lack of specific instruction for these activities may have contributed to the introduction of the foreign material into the valve operator of the control air solenoid.

Technical Specification 5.4.1 states, in part, that written procedures shall be established, implemented, and maintained covering the activities listed in Appendix A to Regulatory Guide 1.33, dated February 1978. Section 9.a, of Appendix A to Regulatory Guide 1.33, states, in part, that maintenance that can affect the performance of safety-related equipment should be properly performed in accordance with written procedures, documented instructions or drawings appropriate to the circumstances. Contrary to the above, the licensee's written instructions for the March 19, 2001, work on the 1AOV-SX178 valve, a safety-related component, did not describe the removal/installation of air line piping or require that the replacement control air solenoid be tested prior to installation. This is considered a Severity Level IV violation of Technical Specification 5.4.1. However, because this violation was of very low risk significance, was non-repetitive, and was captured in the licensee's corrective action program, it is

considered a Non-Cited Violation consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 50-456/457-01-07-01(DRP)).

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed the post-maintenance testing associated with the following activities:

- Capacitor replacement in instrument inverter 111, on May 29, 2001;
- Unit 1B SI pump on June 20, 2001, following routine maintenance activities; and
- Replacement of a differential pressure switch associated with the Division 22 MEER ventilation system on June 28, 2001.

For each activity, the inspectors reviewed the applicable sections of the Technical Specification and UFSAR, and observed portions of the maintenance work. The inspectors also evaluated the adequacy of work controls (including foreign material exclusion controls), reviewed post-maintenance test data, and conducted walkdowns to verify system restoration after the testing was completed.

In addition the inspectors reviewed selected 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.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the following surveillance activities:

- Routine testing of the Unit 2B CC water pump to verify operation consistent with the American Society of Mechanical Engineers (ASME) operating criteria;
- Routine testing of the Unit 2B AF pump to verify operation consistent with the ASME operating criteria; and
- Routine Inservice Inspection and Testing of the Units 1 and 2 concrete containment structures, to verify operation consistent with the ASME operating criteria.

For each activity, the inspectors witnessed portions of the testing, reviewed the test data and determined if the associated structures, systems, and components met the ASME operating criteria, Technical Specification and UFSAR technical and design requirements. For selected activities, the inspectors also reviewed past test results to

evaluate any adverse trends and to determine whether past testing was performed using

consistent protocols.

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

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control (71121.01)

Plant Walkdowns, Radiological Boundary Verifications, and Radiation Work Permit Reviews

a. Inspection Scope

The inspector conducted walkdowns of the radiologically restricted area to verify the adequacy of radiological boundaries and postings. Specifically, the inspector walked down several radiation and high radiation area boundaries in the auxiliary, radwaste, and fuel handling buildings. Confirmatory radiation measurements were taken to verify that these areas were properly posted and controlled in accordance with 10 CFR Part 20, licensee procedures and Technical Specifications. The radiation work permit for general tours was reviewed for electronic dosemeter alarm set points and protective clothing requirements.

b. Findings

No findings of significance were identified.

Cornerstone: Public Radiation Safety

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

.1 Offsite Dose Calculation Manual (ODCM)

a. Inspection Scope

The inspector reviewed the Radioactive Effluent Release Report for the year 2000, to verify that the radiological effluent program was implemented as described in the UFSAR and the Offsite Dose Calculation Manual (ODCM). The inspector reviewed changes made by the licensee to the ODCM as well as to the liquid and gaseous radioactive waste processing system design, procedures, or operation since the last inspection to verify that changes were documented in accordance with the requirements of the ODCM

and the Technical Specifications.

b. Findings

No findings of significance were identified.

.2 Gaseous and Liquid Release Systems Walkdowns

a. Inspection Scope

The inspector performed walkdowns of the major components of the gaseous and liquid release systems to verify that the current system configuration was as described in the USAR and the ODCM, and to observe ongoing activities and equipment material condition. This included radiation and flow monitors, demineralizers and filtration systems, compressors, tanks, and vessels. The inspector also discussed the waste processing system operations and components with the cognizant system engineer to assess its overall operation.

b. Findings

No findings of significance were identified.

.3 Gaseous and Liquid Releases

a. Inspection Scope

The inspector reviewed liquid and gaseous radioactive waste release records including radiochemical measurements to verify that appropriate treatment equipment was used, and that the radwaste effluents were processed and released in accordance with the ODCM. The inspector also verified that radioactive releases met the 10 CFR Part 20 requirements.

b. Findings

No findings of significance were identified.

.4 Dose Calculations

a. Inspection Scope

The inspector reviewed selected individual batch release records for the year 2001, the Annual Radiological Environmental Operating Report and the Radioactive Effluent Release Report for the year 2000, to ensure that the licensee had properly determined the offsite dose to the public from radiological effluent releases, and to determine if any annual Technical Specification or ODCM (i.e., Appendix I to 10 CFR Part 50 values) limits were exceeded.

b. Findings

No findings of significance were identified.

.5 Air Cleaning Systems

a. Inspection Scope

The inspector reviewed the most recent air cleaning system surveillance test results for the fuel handling and auxiliary buildings exhaust ventilation systems activated carbon beds to ensure that test results were within the licensee's acceptance criteria. The inspector also reviewed surveillance test results for the gaseous release systems to verify that the flow rates were consistent with UFSAR values.

b. Findings

No findings of significance were identified.

.6 Effluent Monitor Calibrations

a. Inspection Scope

The inspector reviewed calibration records of liquid and gaseous point of discharge effluent radiation monitors to verify that instrument calibrations were within the required calibration frequency. The inspector also reviewed the current effluent radiation monitor alarm setpoint values for agreement with station requirements.

b. Findings

No findings of significance were identified.

.7 Counting Room Instrument Calibrations and Quality Control

a. Inspection Scope

The inspector reviewed the quality control records for radiochemistry instrumentation used to identify and quantitate radioisotopes in effluents, in order to verify that the instrumentation was calibrated and maintained as required by station procedures. This review included calibrations of gamma spectroscopy/spectrometry systems, liquid scintillation instruments, and associated instrument control charts. The inspector also reviewed the lower limit of detection determinations to verify that the radiochemical instrumentation and analysis conditions used for effluent analysis could meet the ODCM detection requirements.

b. Findings

No findings of significance were identified.

.8 Interlaboratory Comparison Program

a. Inspection Scope

The inspector reviewed the results of the year 2000 Interlaboratory Comparison Program along with the Radiochemistry Quality Control Program (Section .7) in order to evaluate the licensee's capability to perform radiochemical measurements, and to assess the quality of radioactive effluent sample analyses performed by the licensee. The inspector reviewed the licensee's quality assurance evaluation of the Interlaboratory Comparison Program and associated corrective actions for any deficiencies identified.

b. Findings

No findings of significance were identified.

.9 Identification and Resolution of Problems

a. Inspection Scope

The inspector reviewed audits, self-assessments, and condition reports generated in 2000 and 2001 to evaluate the effectiveness of the licensee's self-assessment process in the identification, characterization, and prioritization of problems, and to verify that previous radiological instrumentation and effluent related issues were adequately addressed. Condition reports that addressed radioactive treatment and monitoring program deficiencies were also reviewed to verify that the licensee had effectively implemented the corrective action program.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

40A1 Performance Indicator Verification (71151)

a. Inspection Scope

The inspectors reviewed whether the licensee was accurately reporting data for the following performance indicators (PIs):

- Unplanned scrams per 7,000 critical hours; and
- Scrams with loss of normal heat removal.

The inspectors reviewed licensee monthly operating reports submitted to the NRC between May 1998-May 2001, to determine whether the performance indicator data was being collected and reported consistent with the guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 1.

b. Findings

No findings of significance were identified.

4OA6 Meetings

Exit Meeting

The reactor inspectors presented the biennial heat sink inspection results to Mr. K. Schwartz and other members of licensee management and staff on May 24, 2001. The radiation specialist inspector presented the results of the radiological effluents and access control inspection to Mr. K. Schwartz and other members of licensee management and staff on June 22, 2001. The resident inspectors presented the results to Mr. K. Schwartz and other members of licensee management at the conclusion of the inspection on July 3, 2001. The licensee acknowledged the findings presented. No proprietary information was identified.

KEY POINTS OF CONTACT

Licensee
J. Bailey, Regulatory Assurance - NRC Coordinator
G. Baker, Security Manager
R. Clemens, Heat Exchanger Coordinator
C. Dunn, Engineering Director
A. Ferko, Regulatory Assurance Manager
D. Goldsmith, Radiation Protection Manager
R. Graham, Work Management Director
L. Guthrie, Maintenance Director
K. Imnen, Nuclear Oversight Assessment Manager
F. Lenting, Design Engineering Manager
D. Radice, Design Engineer
K. Schwartz, Station Manager
T. Simpkin, Regulatory Assurance
B. Viehl, Design Engineer
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Nuclear Regulatory Commission
M. Chawla, Project Manager, NRR
G. Grant, Director, Division of Reactor Projects
J. Jacobson, Chief, Mechanical Engineering Branch, Division of Reactor Safety
W. Slawinski, Acting Chief, Plant Support Branch, Division of Reactor Safety
A. Stone, Chief, Projects Branch 3, Division of Reactor Projects

LIST OF ITEMS OPENED AND CLOSED

Opened

50-456/457/01-07-01	NCV	Inadequate procedure for performing maintenance on the 1AOV-SX178 Valve

Closed

50-456/457/01-07-01	NCV	Inadequate procedure for performing maintenance on the 1AOV-SX178 Valve

LIST OF ACRONYMS AND INITIALISMS USED

ADAMS	Agencywide Documents Access and Management System
AF	Auxiliary Feedwater
ASME	American Society of Mechanical Engineers
BwAP	Braidwood Administrative Procedure
BwAR	Braidwood Annunciator Response Procedure
BwEP	Braidwood Emergency Procedure
BwFP	Braidwood Flood Procedure
BwGP	Braidwood General Procedure
BwHS	Braidwood Hydrogen Surveillance Procedure
BwMP	Braidwood Maintenance Procedure
BwOA	Braidwood Abnormal Operating Procedure
BwOP	Braidwood Operating Procedure
BwOS	Braidwood Operating Surveillance Procedure
BwVP	Braidwood Engineering Procedure
BwVS	Braidwood Engineering Surveillance
CC	Component Cooling
CFR	Code of Federal Regulations
CR	Condition Report
CV	Centrifugal Charging Pump
DG	Diesel Generator
ESF	Engineered Safety Features
MEER	Miscellaneous Electrical Equipment Room
MPT	Main Power Transformer
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulations
NTS	Nuclear Tracking System
ODCM	Offsite Dose Calculation Manual
PARS	Publicly Available Records
PI	Performance Indicator
PI&R	Problem Identification & Reporting
SDP	Significant Determination Process
SI	Safety Injection
SMAD	Site Material Analysis Department
TRM	Technical Requirements Manual
UFSAR	Updated Final Safety Analysis Report
VIO	Violation
WR	Work Request
WO	Work Order

LIST OF DOCUMENTS REVIEWED

1R01 Adverse Weather Preparations

0BwOS XHT-A1	Temperature Equipment Protection Annual Surveillance	Revision 3
NTS 02025186141	Surveillance Procedure to Deenergize Various Refueling Water Storage Tank Heaters When Outside Temperature > 70 degrees F	October 14, 1986
BwVP 850-15	Essential Service Water System Performance Monitoring Program (Unit 2B AF Pump Gear Oil Cooler Test)	Revision 1E2 (test date April 29, 1999)
BwVP 850-15	Essential Service Water System Performance Monitoring Program (Unit 1B SI Pump Lube Oil Cooler Test)	Revision 3 (test date January 3, 2001)
BwVP 850-15	Essential Service Water System Performance Monitoring Program (Unit 2A CV Gear Oil Cooler Test)	Revision 1E1 (test date April 6, 1999)
	Unit 1B SI Pump Room Cooler Tube Examination Report–Eddy Current (Human Power Services, Inc)	May 1, 1991
BwVS 900-20	Heat Exchanger Test Procedure for Chemical Volume and Control Pump Room Cubicle Coolers (Unit 2A CV Pump Cubicle Cooler)	Revision 0.1 (test date September 2, 1994)
BwVP 850-15	Essential Service Water System Performance Monitoring Program (Unit 2A SI Pump Cubicle Cooler Test)	Revision 1E1 (test date March 16, 1999)
BwVP 850-15	Essential Service Water System Performance Monitoring Program (Unit 1B SI Pump Cubicle Cooler Test)	Revision 1 (test date June 24, 1998)
CR A2001-01038	Potential High Humidity Concern In the Auxiliary and Fuel Handling Buildings (PI&R)	April 6, 2001
CR A2000-00322	Division 12 MEER Temperature Not Being Maintained Properly (PI&R)	January 21, 2000
CR A2000-01757	Technical Specification Surveillance Not Performed Per Schedule (PI&R)	April 2, 2000
CR A2000-02144	Documentation per OBwOS XHT-A1 Surveillance Acceptance Criteria (PI&R)	May 7, 2000

CR A2000-03153	Loss of Ventilation to Chemistry (PI&R)	August 4, 2000
CR A2000-03989	Inability to Maintain Unit 1 Control Room Temperature (PI&R)	October 22, 2000
CR A2000-00475	Unit 2 Bus Cooling Fans, Low Flow Air Alarm (PI&R)	January 31, 2000
CR A2001-01432	Preparation for Adverse Weather–Safety Issue (PI&R)	May 14, 2001
CR A2001-01933	Potential Temperature Discrepancy Found Between TRM T3.7 and UFSAR 3.11-1 (NRC Identified)	June 28, 2001

1R04 Equipment Alignment

BwOP SI-E1	Electrical Lineup–Unit 1 (Operating)	Revision 6
BwOP SI-M1	Operating Mechanical Lineup–Unit 1	Revision 12
2BwOS FP-Q1	Unit 2 Transformer Deluge Systems Alarm Test Quarterly Surveillance	Revision 5E3
CR A2001-01799	Deluge of 2E MPT During Performance of Test	June 16, 2001
CR A2000-04707	Number of Out-of-Service Errors is Increasing (PI&R)	December 29, 2000

1R05 Fire Protection

Fire Protection Report	Section 2.3.9.1 DG Room 1B (Fire Area 9.1-1)	Amendment 13
Fire Protection Report	Section 2.4.2.21 DG Room 1B (Fire Area 9.1-1)	Amendment 13
Fire Protection Report	Section 2.3.11.25 SI Pump 1B Room (Fire Area 11.3F-1)	Amendment 13
Fire Protection Report	Section 2.3.11.12 Auxiliary Building General Area Level 364 Feet 0 Inch (Fire Area 11.3-0)	Amendment 13
CR A2001-02568	CV Pump Room Temperature Concerns (PI&R)	June 15, 2000
CR A2001-01726	UV Detector Misaligned-1B DG Room (NRC Identified)	June 8, 2001

1R07 Heat Sink Performance

	SMAD Report, Eddy Current Examination of #2A DG Jacket Water and Lube Oil Cooler Tubes	April 30, 1996
	SMAD Report, Eddy Current Examination of Unit 1 CC Heat Exchanger	January 8, 1999
*CR A2001-01551	Origin of the Data Reduction Equations in the CC HX Thermal Performance Surveillance	May 24, 2001
2-23102	Cooper Bessmer Specification Data Sheet, CKP series	August 19, 1976
AH-CC-654	CC HX Specification Sheet	December 19, 1974
BRW-00-0017-M	Byron / Braidwood Uprate Project - Post LOCA CC Water System Temperature Analysis	Revision 1
BRW-97-1072M	CC Heat Exchanger Tube Plugging Evaluation	Revision 1
BRW-99-0306	DG Jacket Water Cooler Tube Plugging Evaluation	Revision 1
BwVP 850-15	Attachment C, “Heat Exchanger As-Found Inspection Report,” 1A SX Lube Oil Cooler	October 6, 1995
BwVP 850-15	Attachment C, “Heat Exchanger As-Found Inspection Report,” 2A DG Jacket Water Cooler	April 5, 1996
BwVP 850-15	Attachment C, “Heat Exchanger As-Found Inspection Report,” 1A SX Lube Oil Cooler	February 10, 1997
BwVP 850-15	Attachment C, “Heat Exchanger As-Found Inspection Report,” SX Pump 1A Oil Cooler	August 4, 1998
BwVP 850-15	Attachment C, “Heat Exchanger As-Found Inspection Report,” Unit 1 CC Heat Exchanger	September 16, 1998
BwVP 850-15	Attachment C, “Heat Exchanger As-Found Inspection Report,” 2DG01KA-X1	October 26, 1999
BwVP 850-15	Attachment C, “Heat Exchanger As-Found Inspection Report,” 2DG01KA-X2	October 26, 1999
BwVS 900-29	Heat Transfer Test for CC Heat Exchanger 1CC01A	March 4, 1994
BwVS 900-29	Thermal Performance Test of the Unit 1 CC Heat Exchanger	October 1, 1995

DCR 99799	Pending Change Calculation for Diesel Generator Jacket Water Cooler Tube Plugging Evaluation - Calc. # BRW-99-0306-M	Revision 0
N80-40361	AMETEK Heat Exchanger Specification Sheet	February 25, 1980
PIF A1998-02641	DG JW and LO Cooler Performance Data Discrepancy	August 5, 1998
PIF A1998-02660	#1A SX Pump Lube Oil Cooler 1SX01AA Piping Does Not Match Drawings	August 6, 1998
PIF A1999-03253	Piping Corrosion Products in 2A Upper DG Jacket Water Cooler Head	October 26, 1999
PIF A1999-03391	DG 1A, Missing Bolt on Right Hand Bank JW Header Support Bracket	November 4, 1999

* Indicates CR or action request initiated as a result of NRC inspection activity.

1R11 Licensed Operator Requalification Program

1BwOA ELEC-3	Loss of 4 KV ESF Bus Unit 1	Revision 56
1BwEP-0	Reactor Trip or SI Unit 1	Revision 1A

1R12 Maintenance Rule Implementation

	Unavailability and Reliability Criteria For The CC Water, SI, and Essential Service Water Systems	June 11, 2001
	Maintenance Rule - CC Water, SI, and Essential Service Water Evaluation History	June 1999-June 2001
CR A2000-00219	Air/Gas Found While Venting Emergency Core Cooling System Piping In Unit 1 Containment	January 14, 2000
CR A2000-01002	2B Reactor Coolant Pump Thermal Barrier CC Water Flow Low Alarm	March 7, 2000
CR A2001-00494	LCOAR Entry When 2B CC Water Pump Was Removed From Pull To Lock	February 15, 2001
CR A2001-01641	Unplanned Entry Into SX LCOAR	March 30, 2000
CR A2001-00586	Local Leak Rate Test Failure of Unit 2 Valve No. 2SA033 (PI&R)	February 26, 2001
CR A2000-00272	Maintenance Rule Unavailability For CV-2 Criteria Is Approaching Limit (P&IR)	January 18, 2000

CR A2000-00219	Air/Gas Found While Venting Emergency Core Cooling System Piping In Unit 1 Containment	January 14, 2000
CR A2000-01002	2B Reactor Coolant Pump Thermal Barrier CC Water Flow Low Alarm	March 7, 2000
CR A2001-01958	Ground Water Intrusion Auxiliary Building 346' Elevation/Effect on Structure & Piping (NRC Identified)	June 30, 2001

1R13 Maintenance Risk Assessments And Emergency Work Control

OOS 00000452	Out-of-Service Tagging Checklist for the Unit 1B SI Pump	June 18, 2001
WR 99069951-01	Troubleshoot and Repair Instrument Inverter 211	June 23, 2001
2BwOSR 3.8.9.1	Unit 2 125V DC Bus Division 211/212 Operability Weekly Surveillance	Revision 0E2
CR A2001-01878	Loss of AC Input to Instrument Inverter 211	June 23, 2001
CR A2001-01897	Inadvertent Opening of AC Power Breaker CB-1 on Battery Charger 211	June 25, 2001
BwOP IP-1	Instrument Bus Inverter Startup	Revision 10
BwOP IP-2	Transferring and Instrument Bus from the Inverter to the Constant Voltage Transformer	Revision 6E2
CR A2001-01000	No Basis for Operator Response Times Used in the On-Line Risk Management Program (PI&R)	March 14, 2001

1R15 Operability Evaluations

Operability Determination 01-004	Essential Service Water System Pump Casing Weight	June 29, 2001
CR A1999-00147	Steam Generator Water Level Sensing Lines Qualification To Feedwater Line Break Loads P&IR	January 18, 1999
NES-G-18	Used Oil Data Interpretation Guidelines	Revision 2
CR A2001-00310	Essential Service Water Casing Weight	
CR A2001-00348	Unit 2B Essential Service Water Pump Oil Sample	January 29, 2001

	Analysts, Inc Oil Sample Analysis Results for Unit 2B Oil Sample 5931 and 8381.	Samples dated: January 4 and February 2, 2001
CR A2001-01168	1SX178 Valve Failed to Open On Unit 1B Diesel Driven AF Pump Start	April 20, 2001
BRW-SE-1997-990	Safety Evaluation Addressing the Impact of Failing Open The Essential Service Water Isolation Valve 1SX178	July 11, 1997
BRW-SE-1997-782	Isolation of Makeup Water to the AF Diesel's Jacket Water Expansion Tank	June 4, 1997
WR 980123935-01	Replace Solenoid 1FSV-SX178, Per Designated Requirement	March 19, 2001
BwHP 4006-030	Maintenance of Valcor Solenoid Valves	Revision 2
BwHP 4006-020	Replacement of Alco Solenoid Valves	Revision 6
BwHP 4006-034	Main Steam Isolation Valve Solenoid Maintenance	Revision 5
BwHP 4060-062	Main Steam Power Operated Relief Valve Solenoid Valve Maintenance	Revision 3E1
BwHP 4060-061	Feed Water Isolation Valve Solenoid Valve Maintenance	Revision 4E1
BwHP 4006-042	Model 79AB-010 Target Rock Solenoid Valves Maintenance	Revision 2E1

1R19 Post Maintenance Testing

WR 990282306-01	1IP05E Replace Capacitor 1C	May 29, 2001
WR 99272127-01	ASME Surveillance Requirements for the 1B SI Pump	June 20, 2001
WR 99265931-01	ASME Surveillance Requirements for the 1A SI Pump	May 30, 2001
WR 990254375-01	ASME Surveillance Requirements for the 2B SI Pump	April 25, 2001
WR 00325442-01	2PDS-VE124 MEER Exhaust Fan	June 27, 2001
BwAR 0-31-A4	MEER/Switchgear Rooms Temperature High	Revision 7
	Control Room Operating Log Entries	June 28, 2001

2BwOS VE-1a	Adverse Action Request for MEER Ventilation (for Division 22 MEER work)	Revision 0E3 (request date June 28, 2001)
Diagram 20E-2-4030VE06	Schematic Diagram MEER Exhaust Fans 2VE04C and 2VER05C	December 11, 2000

1R22 Surveillance Testing

WO 99269599	ASME Surveillance Requirements For 2B CC Water Pump	June 12, 2001
WR 990245431-01	ASME Surveillance Requirements For 2B CC Water Pump	March 20, 2001
WR 990245155-01	ASME Surveillance Requirements For 2A CC Water Pump	February 6, 2001
WO 99271508	ASME Surveillance Requirements For 2B Pump	June 14, 2001
WO 00322704	Unit Two Diesel Driven Pump Monthly Surveillance	June 14, 2001
ER-AA-330-006	Inservice Inspection and Testing of the Pre-Stressed Concrete Containment Post Tensioning Systems	Revision 0
TRM, Appendix F	Pre-Stressed Concrete Containment Tendon Surveillance Program	Revision 1
WR 990250605-01	ASME Section XI Unit 1 Containment Tendon Exam and Testing	February 12, 2001
Stevenson& Associates letter 00Q0150-LSC-002	Summary of Calculation for Minimum Tendon Force and Operability of Containment Structure When One Tendon in Each Group is De-tensioned	September 12, 2000
Stevenson& Associates letter 00Q0150-LSC-004	Summary of Calculation for Selection of Tendons and Calculation of Predicted Lift-Off Forces for 15th Year Inservice Inspection	January 12, 2000
Stevenson& Associates letter 00Q0150-LSC-005	Summary of Percent Change in Tendon Elongation for Tendons at Braidwood Nuclear Power Station	December 5, 2000
CR A2001-01858	Embedded Wood Identified in Unit 2 Containment During ASME Section XI VT3-C Exam (PI&R)	June 20, 2001

CR A2001-01832	Unit 2 Containment Dome Exterior Surface Exhibits Further Degradation (PI&R)	June 19, 2001

2PS1 Radiological Effluents

0R-PR002	Calibration of Gaseous Effluent Radiation Monitor	December 17, 1999
0R-PR010	Calibration of Liquid Effluent Radiation Monitor	December 22, 1999
1PR02J	Calibration of Liquid Effluent Radiation Monitor	December 30, 1999
1PR28J	Calibration of Gaseous Effluent Radiation Monitor	February 1, 2000
1R-PR001	Calibration of Gaseous Effluent Radiation Monitor	March 28, 2000
1R-PR003	Calibration of Liquid Effluent Radiation Monitor	February 17, 2000
2PR02J	Calibration of Liquid Effluent Radiation Monitor	August 25, 2000
2PR03J	Calibration of Liquid Effluent Radiation Monitor	August 3, 2000
2PR09J	Calibration of Liquid Effluent Radiation Monitor	August 18, 2000
2R-PR001	Calibration of Gaseous Effluent Radiation Monitor	October 25, 2000
2R-PR028	Calibration of Vent Stack Radiation Monitor	May 9, 2000
2VQ09F	I-131 Removal Efficiency Determination of Adsorbent Sample	September 28, 2000
CR A2001-00562	RWMT with Higher than Acceptable Ci Content Sent to Release Tank	February 19, 2001
CR A2001-01061	Vendor Analysis for Quarterly Samples Fail to Meet ODCM/RETS Required LLDs.	April 10, 2001
CR A2001-01122	Input Error Into the ODCM Computer Program	April 16, 2001
CR A2001-01408	Minor Discrepancies in Gas Release Packages	May 11, 2001
CR A2001-01497	Inability to Collect U-2 Vent Stack Samples	May 19, 2001
CR A2001-01498	Inability to Analyze Samples of Rad Monitor That Entered High Alarm	May 19, 2001
CR A2001-01743	Failure to Crisply Execute CW Vacuum Breaker Replacement Work Window	June 11, 2001

CR A2001-01785	Work Priority Communication	June 14, 2001
CR A2001-01786	Tritium Analysis on RCFC Samples	June 13, 2001
CR A2001-01791	Release Tank Rad Monitor Return Valve Lineup	June 15, 2001
CR A2001-01793	Loss of 6 percent during RWMT Transfer	June 16, 2001
CR A2001-01819	Magenta Rag With Hot Particle in it From Vendor	June 18, 2001
AT-38237	Root Cause Analysis: Circulating Water Blow Down Line Vacuum Breaker Failure	December 5, 2000
BwCP 210-14	High Purity Germanium Detection System Efficiencies Standardization	Revision 6
BwVSR 5.5.11.c-3	Auxiliary Building Non-Accessible System Carbon Sample Removal/Analysis	February 26, 2001
CY-AA-130-200	Quality Control	Revision 1
DET-21	Germanium Detector Calibration Verification	October 28, 2000
DET-35	Germanium Detector Calibration Verification	November 1, 2000
DET-36	Germanium Detector Calibration Verification	November 2, 2000
DET-37	Germanium Detector Calibration Verification	October 31, 2000
DET-38	Germanium Detector Calibration Verification	October 30, 2000
G-01-016	Gaseous Release Package	January 15, 2001
G-01-071	Containment Release	March 13, 2001
L-01-007	Liquid Release Package	January 29, 2001
L-01-015	Liquid Release Package	March 19, 2001
L-01-023	Liquid Release package	April 16, 2001
LSC-4000-3	Liquid Scintillation Counter Standardization	May 1, 2001
NOA-20-00-PS04	Plant Support: Process Control Program, Effluent and Environmental Monitoring	March 23, 2000
P1M01, P1M03	Material Condition and Calibration of Analytical Equipment	May 14, 2001
	LLD Determinations for Germanium Detectors	March 14, 2000
	Analytics Cross Check Program Results	Year 2000

Focus Area Self Assessment: Radwaste Treatment and Effluent and Environmental Monitoring	December 10, 1999
Regulatory Assessment Performance Indicator: RETS/ODCM Radiological Effluent Occurrences	May, 2001