December 9, 2005

Mr. Christopher M. Crane
President and Chief Nuclear Officer
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: BRAIDWOOD STATION, UNITS 1 AND 2
NRC PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION
REPORT 05000456/2005012(DRP); 05000457/2005012(DRP)

Dear Mr. Crane:

On October 28, 2005, the U.S. Nuclear Regulatory Commission (NRC) completed a team inspection at the Braidwood Station, Units 1 and 2. The enclosed report documents the inspection findings which were discussed on October 28, 2005, with Mr. K. Polson and other members of your staff.

This inspection was an examination of activities conducted under your license as they relate to identification and resolution of problems, and compliance with the Commission's rules and regulations and with the conditions of your operating license. Within these areas, the inspection involved selected examination of procedures and representative records, observations of activities, and interviews with personnel.

On the basis of the samples selected for review, there were no findings of significance identified during this inspection. The team concluded that problems were properly identified, evaluated and resolved within the problem identification and resolution (PI&R) programs. However, the team identified a few examples where the implementation of the corrective action program lacked the rigor needed to ensure the effectiveness of the program. Specifically, the team identified instances where extent of conditions evaluations of identified problems were narrowly focused and a circumstance where technical rigor for a potentially safety significant issue was not up to the station management expectations. The team also identified an example where your staff's response to previous NRC non-cited violation may have not been thorough or complete.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure and your response to this letter 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 Public Electronic Reading Room).

Sincerely,

/RA/

Richard A. Skokowski, Chief
Branch 3
Division of Reactor Projects

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

Enclosure: Inspection Report 05000456/2005012(DRP); 05000457/2005012(DRP)
w/Attachment: Supplemental Information

cc w/encl: Site Vice President - Braidwood Station
Plant Manager - Braidwood Station
Regulatory Assurance Manager - Braidwood Station
Chief Operating Officer
Senior Vice President - Nuclear Services
Vice President - Operations Support
Vice President - Licensing and Regulatory Affairs
Director Licensing
Manager Licensing - Braidwood and Byron
Senior Counsel, Nuclear, Mid-West Regional
Operating Group
Document Control Desk - Licensing
Assistant Attorney General
Illinois Emergency Management Agency
State Liaison Officer
Chairman, Illinois Commerce Commission

DOCUMENT NAME: E:\Filenet\ML053430126.wpd
To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	RIII						
NAME	RSkokowski:dtp						
DATE	12/09/05						

OFFICIAL RECORD COPY

ADAMS Distribution:
GYS
JBH1
RidsNrrDirsIrib
GEG
KGO
NXS
CAA1
C. Pederson, DRS (hard copy - IR's only)
DRPIII
DRSIII
PLB1
JRK1
ROPreports@nrc.gov (inspection reports, final SDP letters, any letter with an IR number)

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos:	50-456; 50-457
License Nos:	NPF-72; NPF-77
Report Nos:	05000456/2005012(DRP); 05000457/2005012(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:	October 11 through October 28, 2005
Inspectors:	B. Dickson, Senior Resident Inspector, Clinton G. Roach, Resident Inspector A. Klett, Reactor Inspector, RIII
Approved by:	R. Skokowski, Chief Branch 3 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000456/2005012(DRP), 05000457/2005012(DRP); 10/11/2005 - 10/24/2005; Braidwood Station, Units 1 and 2. Identification and Resolution of Problems.

The inspection was conducted by a senior resident inspector, a resident inspector, and a Region III reactor inspector. There were no findings identified during this inspection. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

Identification and Resolution of Problems

Overall, the team concluded that problems were being adequately identified, evaluated, and corrected. Issues captured in the corrective action program were appropriately screened and evaluated for root or apparent causes and workers generally expressed positive views about the program. However, the team identified a few examples where the implementation of the corrective action program lacked the rigor needed to ensure the effectiveness of the program. Specifically, during the review of some root cause reports the team identified that the scopes for extent of condition were narrowly focused. The team also identified a circumstance where the technical rigor related to a technical-specification required evaluation did not meet the station management expectations. The Nuclear Oversight organization was considered thorough and challenged corrective action program performance based on the numerous examples of assessment findings reviewed during the inspection. The team also observed that in most cases, the station had reasonably addressed previously identified NRC issues.

REPORT DETAILS

OTHER ACTIVITIES (OA)

4OA2 Problem Identification and Resolution (71152)

This inspection counts as one inspection sample.

.1 Effectiveness of Problem Identification

a. Inspection Scope

The team assessed the licensee's processes for identifying and correcting problems. The team reviewed selected plant procedures and program description manuals, interviewed plant and contractor personnel, and attended various station meetings to understand the station's processes for initiating the corrective action program (CAP) and related activities.

The team reviewed previous NRC-identified issues, operating experience reports, Nuclear Oversight (NOS) reports and trend assessments to determine if problems were being identified at the appropriate threshold and entered into the CAP. The team also reviewed issue reports to determine if the significance levels of the issues were appropriately assigned. The team reviewed selected operator logs generated since January 2005 for both Braidwood Units 1 and 2 to determine whether identified issues were being captured in the CAP.

Although the review covered the last 5 years, the team focused on items generated since the 2003 NRC Problem Identification and Resolution Inspection (PI&R) (Inspection Report 05000456/2003009(DRP); 05000457/2003009(DRP)) for a more in-depth review.

The team performed an in-depth review of the emergency diesel generators (EDGs), instrument air systems and auxiliary feedwater systems to evaluate the licensee's processes for equipment monitoring, maintenance rule implementation, and to identify if issues were being appropriately addressed. These systems were considered of high risk significance. The team interviewed system managers, reviewed cause and operability evaluations, system health reports and system monitoring program results, and performed partial system walkdowns. In particular, the team searched for material condition items or issues, component reliability and longstanding design issues which looked like potential trends and assessed whether the licensee had appropriately identified and captured these trends within the CAP. In addition to the three systems described above, the team also reviewed issue reports generated since January 1, 2004, for the boric acid corrosion/leakage control program for potential trends.

The team reviewed selected audits and self-assessments of the corrective actions, operations, maintenance, engineering and plant support (radiation protection, chemistry, and emergency preparedness) programs. The team evaluated whether these audits were being effectively managed, adequately covered the subject areas and whether

identified issues were properly captured in the CAP. In addition to the document review, the team also interviewed licensee staff regarding the implementation of the audit and self-assessment programs.

The specific documents reviewed are listed in the Attachment to this report.

b. Observations and Findings

The licensee operated a broad, low-threshold CAP governed by corporate-level policies and procedures. A shared computerized database was used for creating individual reports and for subsequent management of the processes of issue evaluation and response. This included determining the issue's significance, addressing such matters as regulatory compliance and reporting, and assigning any actions deemed necessary or appropriate. Through interviews, the team determined that individuals were encouraged to initiate an issue report for any item they personally felt needed attention or action. Very large numbers of issues were entered into the computer database for the CAP since the last problem identification and resolution inspection. The team noted that the majority of these issue reports were of very low individual significance.

Although the team concluded that problems were being adequately identified, there were some vulnerabilities noted involving the following: 1) level of participation in the program by specific working groups and 2) the level of feedback availability following closeout/resolution of an identified issue. These matters are discussed in greater detail below.

b.1 Observations on Thresholds for Entering Known Problems into the Corrective Action Program

In general, station personnel effectively identified issues at a low threshold and entered problems as issue reports into the corrective action program. As noted, all individuals were encouraged to initiate an issue report for any issue they felt needed attention. The licensee also encouraged the staff to use issue reports to report suggested enhancements to station activities or equipment. The general nature of the CAP administrative procedures necessarily left some room for interpretation regarding the threshold for documenting an issue; however, most individuals stated that there was generally no issue too insignificant to put into the CAP. Upon entry into the CAP, each issue report received a significance level classification (Level 1 through 5).

Still, the team observed a considerable variation in the level of direct participation in the program. For example, in the mechanical maintenance department, working-level individuals relied on their supervisors for entering issues into the CAP. Several individuals in that department stated they did not know how to use or did not feel comfortable using the shared computerized database to generate issue reports.

b.2 Observations on Availability of Feedback Following Issue Closeout or Resolution

Several individuals interviewed by the team stated no direct feedback was given to the individuals if they indicated via the shared computerized database that they disagreed with the disposition/resolution of an issue report. Additionally, some employees that

originated issue reports expressed frustration with being assigned to resolve the issues when additional assistance was desired. The team however, noted that this frustration did not appear to affect the effectiveness of the resolution for the issues identified.

b.3 General Corrective Action Program Implementation Observations

The licensee's program had integral processes for identifying or recognizing conditions adverse to quality. As noted, the program authorized and encouraged all staff to initiate issue reports as appropriate. Once initiated, issue reports were first reviewed by the Department Corrective Action Program Coordinators for completeness and for assignment of the applicable trend coding. The issue reports were then reviewed by the Station Ownership Committee to assign priority and actions. The licensee informed the team that the Corrective Action Program Coordinators' responsibilities included prompt routing of issues that had potential bearing on plant equipment operating conditions or otherwise had the potential to affect plant operations to the operating shift for review by the Shift Manager.

The team noted that newly generated issue reports were reviewed on a daily basis by the Station Ownership Committee in accordance with LS-AA-120 "Issue Identification and Screening Process." However, during the review of LS-AA-120 the team noted that there was no guidance regarding the minimal qualifications (knowledge and experience) required for a Station Ownership Committee member. The team questioned the licensee regarding whether there had been minimal qualifications established by the licensee's program for the Station Ownership Committee members. The licensee referred the inspectors to Step 2.16 "Screening Committee Knowledge Based" of procedure WC-AA-106 "Work Screening and Processing."

Following the review of the WC-AA-106, the team questioned whether the licensee was fully meeting the intent of Step 2.16. For example, the team noted that a Station Ownership Committee member representing radiation protection department was a recent college graduate had approximately 6 months of plant experience according to the licensee. However, Step 2.16, specifies that the radiation protection representative must be knowledgeable of radiation control classification, engineering controls, and/or special instructions that will impact radiation workers. The team was concerned with whether an individual of this experience level would possess these core competencies to be an effective screening team member. Based on this concern, the team attended several Station Ownership Committee and Management Review Committee meetings and observed that issues were indeed being appropriately challenged.

During the team's review of operating logs they noted that issues identified in the operator logs were appropriately documented in issue reports, and potential operability concerns were generally routed to operation's shift management for review. The team also reviewed several issue reports that were assigned a significance level of 4 (minor) to determine if they were appropriately classified as such. No issues were identified

The team reviewed Operating Experience (OPEX) information and reports and discussed OPEX program activities with the OPEX coordinator. The team observed that industry experience was appropriately captured in the corrective action program. The team reviewed issue reports containing industry operating experience to determine if

applicability to Braidwood was reviewed by licensee personnel. The team also determined that licensee personnel were reviewing Part 21 reports that were applicable to Braidwood and appropriately addressing the issues contained in those reports.

b.4 Selected System and Program Reviews

The team performed partial walkdowns of the 1A and 1B emergency diesels generator, the instrument air system, and Units 1 and 2 motor-driven and diesel-driven auxiliary feedwater system. In general, the team noted that equipment and program deficiencies had been entered into the corrective action program and selected operating experience reports were properly evaluated and dispositioned by the system engineer/ program manager. However, the team observed that there were relatively long standing issue reports and equipment status tags for oil leaks on both the emergency diesel generators and auxiliary feedwater systems. These issues were being tracked by the licensee individually, and none of them presented an operability concern. Based on the sample of issue reports reviewed, the team also concluded that issues affecting equipment availability were appropriately evaluated for maintenance rule applicability.

Issues associated with the radiation protection, emergency preparedness, and fire protection programs at Braidwood were reviewed for successful problem identification and resolution. The inspectors reviewed issue reports; routine audits; site and corporate procedures; and apparent, root and common cause evaluations. In general, issues were identified, dispositioned, and corrected in a timely and effective manner. The team identified one area in the fire protection program where corrective actions have not been effective to prevent recurrence. Specifically, multiple issue reports had been written during the inspection period (00273639 and 00312986) regarding smoking in unauthorized areas of the plant, including the area around the hydrogen tank farm. The inspectors performed a walk down of the hydrogen tank farm and noted evidence of unauthorized smoking which resulted in the generation of Issue Report 00391078. The licensee noted additional areas of unauthorized smoking on power block building roof tops as a part of its extent of condition plant walk down. Although the inspectors considered the licensee's corrective actions to be ineffective to prevent recurrence, this issue was not considered a significance condition adverse to quality and therefore it was not a violation of NRC requirements.

b.5 Nuclear Oversight

Overall, NOS conducted well-planned, thorough audits. They identified numerous findings and observations across the spectrum of performance, including issues of both proper and improper corrective action program implementation. In general, the NOS assessments were thorough and appropriately critical of the areas being evaluated. In particular, the team noted that the April 18, 2005, NOS assessment of the corrective action program was broader in scope and more critical than the licensee's subsequent, April 25, 2005, corrective action program self-assessment.

NOS worked primarily under well-defined and focused audit and surveillance procedures, which produced structured reports of results in the defined areas examined. However, these reports contained relatively few examples of NOS making broader judgements about the meaning of the issues they identified, or of their potential generic

implications, their common causes, or their assessment of broad organizational weaknesses. Instead, activities and reports reflected a focus on process details. In this regard, several of the licensee personnel interviewed by the team characterized the NOS approach as too detail oriented. The team viewed this as a potential missed opportunity for the NOS group to contribute expertise to the broadest and most in-depth understanding of the issues and discussed this concern with NOS staff.

.2 Review and Evaluation of Issues

a. Inspection Scope

The team reviewed selected root cause evaluations and common cause analyses (CCAs). Attributes reviewed included the adequacy of the extent of condition reviews, including evaluations of potential common cause or generic concerns and, as applicable, the adequacy of associated operability and reportability determinations. The team reviewed the various controlling procedures and selected records of activities, visually inspected the selected systems, interviewed cognizant station personnel and observed various licensee meetings. The specific documents reviewed are listed in the Attachment to this report.

b. Observations and Findings

b.1 Evaluations

The team reviewed several CCAs that were performed in response to trends identified within the CAP. For the most part the team concluded that the CCAs appeared to have been completed in accordance with the licensee's trending and coding manual. The team also reviewed root cause evaluations. In general, the licensee's evaluations were found to be broadly-based, technically sound, and focused on safety. However, the team identified a few shortcomings with the extent of condition reviews associated with root cause evaluations and the technical rigor associated with a technical specification required common mode failure evaluation. Specific examples are provided below. No violations of NRC requirements were identified.

Root Cause Report Regarding the Precipitation of Calcium Carbonate at Braidwood Ultimate Heat Sink

The team reviewed the root cause evaluation that was performed for Issue Report 00199206, "Lake Chemistry Trend - Calcium Carbonate Issue." In February 2004, calcium carbonate precipitated out of the lake that served as a source of water for the Circulating Water (CW), Essential Service Water (SX), Non-Essential Service Water (WS) and the Fire Protection (FP) systems. The Calcium Carbonate ($CaCO_3$), affected several components within the above systems, such as valve seating surfaces on several CW components, cubicle and pump gear oil coolers, piping, strainers, and the jockey fire pump. Several components were disassembled and cleaned as corrective actions. The team reviewed the licensee's extent of condition review section of the root cause evaluation and noted the following shortcomings with the extent of review. Specifically the licensee did not address the possibility for the $CaCO_3$ to have affected other portions of the fire protection system, in particular the

piping and sprinklers downstream of the jockey pump. The team was concerned that if the sprinklers opened, $CaCO_3$ could break loose in the piping and plug some of the sprinklers or form obstructions at the fittings. In addition, the team noted that the extent of condition report did not address all of the valves located in the SX system, and they were concerned that $CaCO_3$ buildup could adversely affect the ability of the valves to function when required.

The inspectors noted that several issue reports that were written after the precipitation event that documenting problems with SX valves (i.e., valves were difficult to operate, corrosion was found in the valve seating area, valve stems were bent or twisted, valves did not stroke smoothly during calibration, and valves were failing to fully open and close). The inspectors also noted several condition reports were written after the precipitation event that documented problems with FP sprinklers (i.e., sprinkler heads were blocked, corroded, covered with mineral deposits, leaking, and flow switches were fouled with sediment). The inspectors raised concerns regarding the root cause evaluation not addressing the possibility that $CaCO_3$ was contributing to these issues.

In response to the team's concerns, the licensee provided a May 2005 Action Request, (AR) 00336783, "NOS ID'd Lake Precip Eval Enhancement for Vlvs/Instr Tubing," that documented NOS's concerns about the effects of $CaCO_3$ deposits in valves and small bore (instrument) tubing. The AR stated that the corrective actions from the lake precipitation event root cause evaluation and related focused area self assessment did not document the issue of $CaCO_3$ deposits on valves and instrument tubing as being properly addressed. The extent of condition for this AR stated that the $CaCO_3$ issue also applied to the CW/WS/FP systems and recommended that the CS/WS/FP system managers review this AR for applicability and initiate additional actions or new issue reports if any deficient conditions were identified. Responses to this AR from SX and FP personnel stated that, subsequent to the precipitation event, preventive maintenance and surveillance tests performed on these systems showed no $CaCO_3$ build-up.

Although the team considered the licensee's final corrective actions for the $CaCO_3$ issue to be acceptable, and no violations of NRC requirements were identified, the team noted shortcomings in the original root cause evaluation extent of condition review. Specifically, the root cause evaluation did not thoroughly address the possible effects of $CaCO_3$ build-up in the internal FP piping and downstream sprinklers and fittings. In response to the team's observations, the licensee initiated Issue Report 00390590, "EOC Review Weak For Calcium Carbonate in FP System," to perform a thorough extent of condition review for the effects of $CaCO_3$ in the FP system and to update the root cause evaluation to reflect the revised EOC and any actions that need to be taken.

Common Mode Failure Evaluation for Emergency Diesel Generator

On October 12, 2005, while the team was onsite, the 2A Emergency Diesel Generator failed a surveillance test. Specifically, the 2A EDG failed to reach rated frequency and voltage within 10 seconds of starting (Issue Report 385062) as required by the licensee's Technical Specifications. As a result of this failure, the technical specification required that the licensee to test the other division EDG or perform a common mode failure analysis to ensure that the other division EDG would not experience the same problem.

In response to the failure the licensee completed the common mode failure analysis in leu of testing the other division EDG. The team reviewed the common mode failure analysis and concluded that it lacked the technical rigor to justify not testing the other division EDG. Specifically, the common mode failure analysis document, which was accepted by the Shift Manager as demonstrating operability of the 2B EDG, did not identify a specific failed component in the 2A EDG and licensee justified 2B EDG operability based on the fact that all of its components were within their normal maintenance periodicity and that the diesel had passed all previous surveillance tests. The team noted that these were the conditions that existed on the 2A EDG just prior to its failed surveillance run. The team along with the NRC resident office addressed these issues with licensee management. Subsequently the licensee tested the 2B EDG and proved that a common failure condition did not exist. Since all actions were completed within the Technical Specification-required times, no violations of NRC requirements occurred.

b.2 Trending

The licensee regularly performed analyses of issue reports for adverse trends. The inspection team reviewed a number of issue reports generated by the licensee relating to potential or actual adverse trends. The team did not identify any trends that were not already identified by the licensee. The team noted that when actual declining trends were identified, the licensee performed Common Cause Analysis to understand the adverse trend and to determine appropriate corrective actions. During the last Problem Identification and Resolution Inspection, the NRC identified that, between February and November 2002, six failures and one out-of-tolerance for the same model pressure switch used on the diesel generators occurred. As each switch failed, it was replaced with a switch of a new model because the old one was obsolete. At that time the team did not have an operability concern because trips initiated by the pressure switches were automatically overridden during an emergency start. However, the team noted that the licensee had not identified the multiple failures of the same model switch as an adverse trend. The team also noted that the corporate procedure ER-AA-520, “Instrument Performance Trending,” Revision 3, required that instruments found out-of-tolerance be trended, but did not require failed instruments to be trended.

During this inspection, the team confirmed that since the last inspection the licensee had identified multiple failures on the same/similar components and generated a number of engineering evaluations to determine the cause of the failures. The team also concluded that the licensee had since then generated issue reports documenting these repetitive failures in accordance with ER-AA-520. The team was concern however, that these issue reports were not readily retrievable by the licensee corrective action program staff, due to inconsistent use of trending codes during the initial issue review.

b.3 Focused Area Self-Assessments

The team reviewed selected FASA reports and concluded the process was being effectively implemented and that the results were valuable in directing corrective action resources efficiently and effectively.

.3 Effectiveness of Corrective Action

a. Inspection Scope

The team reviewed selected condition reports and associated corrective actions to evaluate the effectiveness of corrective actions and to determine whether corrective actions were being identified and implemented in a timely manner, commensurate with the safety significance of the issues. The team also assessed licensee corrective actions stemming from previous Non-Cited Violations. A listing of the specific documents reviewed is in the Attachment to this report.

b. Observations and Findings

The team concluded that, in general, corrective actions were adequately implemented and tracked to completion, corrective actions appeared effective in addressing the parent issue, and corrective action timeliness appeared to be commensurate with the safety significance of the issues. During the team's reviewed of the licensee's corrective actions associated with a previous non-cited violation the following unresolved item was identified:

Introduction: The inspectors identified an Unresolved Item (URI) associated with the corrective actions taken in response to a Non-Cited Violation (NCV 50-456/457/03-05-02) from the 2003 Triennial Fire Protection Baseline Inspection performed at Braidwood.

Description: NRC Inspection Report 2000-06 documents a Non-Cited Violation (NCV 50-456/00-06-06(DRS); 50-457/00-06-06(DRS)) from a Triennial Fire Protection Baseline Inspection performed at Braidwood in 2000. The NCV was issued for the licensee's failure to provide objective evidence that the molded case circuit breakers at the 120Vac and 125Vdc voltage levels had been periodically manually exercised, inspected, and tested as required by the Braidwood Station's Fire Protection Report, Chapter 2.4, "Safe Shutdown Analysis." The licensee's corrective action for this NCV was the establishment of a program to test and manually exercise molded case circuit breakers (MCCB).

The licensee's MCCB testing program was established in 2002. The program specified testing safety-related MCCBs over a 6-year period and non-safety related MCCBs over a 12-year period. During the licensee's testing, numerous Westinghouse HFB magnetic-only MCCBs were tripping out of tolerance (OOT) high. On average the breakers were tripping approximately 20 percent OOT high on all three phases. Condition Report 00105657 was initiated to document, evaluate, and address the adverse trend and a potential common mode failure associated with the instantaneous trip settings on these breakers. In response to these failures, the licensee would replace any originally installed breakers with breakers from another manufacturer. In addition, the licensee evaluated each OOT condition to verify that the breaker would have interrupted the minimum fault current and that coordination requirements were met.

In the 2002 time-frame, the licensee sent some of the breakers that failed OOT high to Exelon Power Labs. The lab concluded that the breakers were OOT high due to

distortion or twisting of the breaker trip bars, which caused the trip setpoints to drift (Reports BRW-06222 and BRW-21082). The licensee contacted the breaker manufacturer, Westinghouse, to investigate further. Westinghouse concluded that the breakers were tripping high due to hardening of the internal lubrication of the breaker and they recommended cycling/testing the breakers on a yearly basis. Nonetheless, the licensee did not increase the testing frequency of these breakers as recommended by the vendor.

NRC Inspection Report 50-456/45703-05 documented a Non-Cited Violation (NCV 50-456/457/03-05-02) from the following Triennial Fire Protection Baseline Inspection. The NCV of 10 CFR 50, Appendix B, Criterion XVI was issued for the licensee's failure to establish a program and to manually cycle/exercise MCCBs at the 120Vac, 125Vdc, and 480Vac voltage levels on a preestablished periodic basis to ensure proper breaker operation as recommended by the breaker vendor, by the NEMA AB-4 standard, and as required by Braidwood's Safe Shutdown Analysis.

During this PI&R inspection, the inspectors chose to review the 2003 NCV to determine if the licensee's corrective actions in response to the NCV were adequate and timely. The licensee informed the inspectors that in 2004 a sample of nine breakers that tested OOT high was sent to an independent laboratory, Wyle Laboratories, to investigate the cause of the OOTs. Wyle Report No. 10514R04, "Failure Analysis of Westinghouse HFB Breakers From Exelon's Braidwood Station," concluded that while the data was not completely consistent, it appeared that the cause of the failures was something other than lubrication. The Wyle tests indicated that the problem may have been caused by the magnetic properties of the trip flaps and that the MCCBs may have been tripping high since the initial manufacture of the breakers. The licensee took no additional corrective actions as a result of this information.

Westinghouse issued a technical bulletin, TB-04-13, "Replacement Solutions for Obsolete Classic Molded Case Circuit Breakers, UL Testing Issues, Breaker Design Life and Trip Band Adjustment," dated June 28, 2004. TB-04-13 recommended that breakers be cycled each year (or at least each refueling outage) for 6 to 12 times at no load conditions, to keep lubrication well distributed on moving parts. A periodic functional test to NEMA AB4 guidelines, on a representative sample, was also recommended. In addition, Westinghouse defined the design life of these breakers to be 20 years. No additional corrective actions were taken as a result of this information.

Based on the causes described in the Power Labs and Wyle Laboratories reports, the team questioned the licensee regarding potential generic manufacturing implications associated with these failures. In response to the team's questions, the licensee provided Assignment 6 from AR 00105657 dated November 1, 2002. This assignment was to determine if the breaker issue required a response pertaining to 10 CFR Part 21, "Reporting of Defects and Noncompliance." The assignment was deferred to June 2003 pending results of an analysis from Westinghouse. Upon receipt of the Westinghouse analysis the assignment was closed with no further actions required. The licensee did not issue a Part 21 report nor provide a documented justification for why a report was not warranted. Therefore, as a result of the team's question, the licensee initiated Issue Report 00396317 on November 8, 2005 to document the inadequate closure of assignment.

Based on the relatively large rate (~ 20 percent) of high OOT results during breaker testing coupled with a large population of the applicable MCCBs that have not been tested since the plant's construction, the team considered the adequacy of the licensee's corrective actions to address this concern to be unresolved. Specifically, the team needed additional information to determine:

- the potential OOT high conditions would not adversely impact the worst-case coordination studies;
- the acceptability of not increasing the cycling and testing of these breakers as recommended by the vendor; and
- the generic manufacturing implications of the failure mechanism.

This issue is considered an unresolved item (URI) (URI 05000456/2005012-01; 05000457/2005012-01).

.4 Assessment of Safety-Conscious Work Environment

a. Inspection Scope

The team interviewed approximately 25 members of the plant staff, across all major work groups and all levels of responsibility. The purpose of the interviews was to assess whether a safety-conscious work environment existed at the station. The interviews were conducted using the guidance provided in Appendix 1 of NRC Inspection Procedure 71152, "Suggested Questions for Use in Discussions with Licensee Individuals Concerning Problem Identification and Resolution Issues."

In addition to the interviews, the team looked for evidence that plant employees might be reluctant to raise safety concerns during document reviews and observations of activities. The team also reviewed the station procedures related to the Employee Concerns Program (ECP), and discussed the implementation of this program with the station's program coordinator.

b. Observations

The team did not identify any significant findings. Workers generally expressed no concerns about identifying issues, and felt comfortable discussing them with supervision without fear of reprisal. The team observed that all personnel interviewed were aware of the different options through which they could express concerns including the corrective action program, informing their supervisor or plant managers, or coming to the NRC; however, many workers said they preferred reporting issues directly to their immediate supervisor.

With regards to contacting the licensee's Employee Concern Program (ECP) a number of individuals interviewed by the team did not readily recognize the ECP as an avenue to raise safety concerns. A number of interviewees told the team that they thought the ECP was an avenue to address personal problems. None of the individuals interviewed had contacted ECP to raise concern or knew of anyone who had raised concerns through the ECP. The interviewed individuals expressed no concerns with utilizing it, if

needed. The team noted that the number of issues being addressed in 2005 at Braidwood through the ECP was very low.

During the course of safety conscious work environment interviews with plant employees, the management decision process regarding analysis and response to observed boric acid leakage from Unit 2 D loop pressurizer spray valve 2RY455B was raised to the inspectors. As a result, the team assessed the licensee's performance associated with this issue.

On December 22, 2004, following a reactor trip of Unit 2 subsequent to a failed circuit card in the Steam Generator Water Level Control circuitry a Mode 3 walk down of containment was being performed. Using procedure ER-AA-335-015 (Rev 3), *VT-2 Visual Examination,* and the ER-AP-331 Boric Acid Control Program series the licensee identified boric acid leakage in the vicinity of 2RY455B (IR 285241). At the time of discovery, based on As-Low-As-Reasonably-Achievable concerns and plant piping temperature concerns the licensee's visual examiner recommended to management not to remove the mirror insulation on the valve and adjacent piping to confirm the exact source of the leak. The source of the leak, which was later confirmed during the subsequent Unit 2 refueling outage, was analyzed to be from the body to bonnet joint of 2RY455B based on maintenance performed on this joint during the previous refueling outage, as well as the pattern of boric acid formation on the insulation and adjacent piping and structure. Licensee procedures governing visual inspection in existence at the time of discovery, allowed for an engineering analysis to be performed in place of the required removal of insulation to verify that through-wall leakage did not exist in pressure boundary piping, and therefore no violation of NRC requirements occurred. The team reviewed the licensee's current procedures governing the Boric Acid Control Program and interviewed the engineer responsible for boric acid control, and noted that subsequent to this event, the licensee procedures have been changed to require the removal of insulation when the source of a leak involving boric acid cannot be visually verified.

4OA6 Meetings

Exit Meeting

The team presented the inspection results to Mr. K. Polson and other members of licensee management on October 28, 2005. The team confirmed with the licensee that proprietary information reviewed during this inspection would not be included in the inspection report.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

K. Polson, Site Vice President
G. Boerschig Plant Manager
S. Butler, Licensing Engineer
M. Smith, Engineering Director
S. Butler, Acting Regulatory Assurance Manager, NRC Coordinator
J. Feeney, NOS Assessment Manager
F. Lentine, Design Engineering Manager
J. Moser, Radiation Protection Manager
G. Golwitzer, Site Corrective Action Program Manager
D. Riedinger, Braidwood Design Engineer
E. Johnston, Braidwood, Maintenance
M. Morrs, Chemistry CAPCO
T. Odette, Work Control, CAPCO

Nuclear Regulatory Commission

N. Shah, Braidwood Acting Senior Resident Inspector
Serita Sanders, NRR/DIPM
Meghan Thorpe-Kavanaugh, NRC

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

URI 05000456/2005012-01; 05000457/2005012-01; Molded Case Circuit Breaker Testing Results

Closed

None

Discussed

NCV50-456/457/00-06-06(DRS)); Triennial Fire Protection Baseline Inspection, failure to provide any objective evidence that the molded case circuit breakers at the 120Vac and 125Vdc voltage levels had been periodically manually exercised, inspected, and tested as required by the Braidwood Station's Fire Protection Report, Chapter 2.4, "Safe Shutdown Analysis."

NCV 50-456/457/03-05-02; Triennial Fire Protection Baseline Inspection Molded Case Circuit Breaker Testing failure to follow vendor and industry guideline regarding manually exercising breakers.

LIST OF DOCUMENTS REVIEWED

Issue Reports Generated

00390590; EOC Review Weak for Calcium Carbonate in FP System; dated October 26, 2005

Issue Reports Reviewed (AR #'s)

00105657; Potential Common Mode Failure with Westinghouse HFB Breakers; dated April 27, 2002
00166532; Discrepancies Between Vendor Recommendations and PCM (NCV); dated July 7, 2003
00180076; Suspicious Substance (May Be Boric Acid) in RCFC Outlet Fins; dated October 9, 2003
00212605; CO2 Tank Level Decreasing 15 to 20 percent Per Month; dated April 2, 2004
00218864; 1SX2077A Valve Hard to Operate Causing Wear in Valve Handle; dated May 5, 2004
00232406; Increasing Trend - Procedures Followed Incorrectly (MAINT); dated June 29, 2004
00237440; Potential Adverse Trend in Assigning Wrong RWP #'s to WO's; dated July 20, 2004
00247342; Potential Trend - RWPs Not Being Correctly Assigned to WOs; dated August 25, 2004
00269120; NOS ID'd Declining Trend For Maintenance 3Q04 Performance; dated November 1, 2004
00313569; Potential Trend in Work Order & Task Status Issues; dated March 16, 2005
00328183; Revise MCC Troubleshooter Based on OE13351; dated April 24, 2005
00332691; CC Pump Discharge Check Valve Disc and Hanger Problem; dated May 6, 2005
00339770; Need WR to Clean/Replace Refrig Injection Nozzles & Valves; dated May 31, 2005
00343587; NRC Event 41761; SCI Power Supply 10CFR21 Notification; dated June 13, 2005
00352725; Need WR For Retrofit of 7300 Cards for C105; dated July 13, 2005
00365465; Shaft Guard For Iso-Phase Bus Duct Fan (2MP02C); dated August 22, 2005
00366610; Engineer Found to Not Have Troubleshooting Cert; dated August 25, 2005
00372596; Deficiencies/Recommendations From OPEX Check-In Assessment; dated September 12, 2005
00373517; Lesson Learned From Byron Slave Relay Testing IR 371420; dated September 14, 2005

Apparent Cause Evaluations

LS-AA-125-1001; Root Cause Analysis Manual; Revision 4
LS-AA-125-1003; Apparent Cause Evaluation Manual; Revision 5
IR 184746-11; 2MS001A failed to close using control board close switch; dated February 27, 2004
IR 234222-02; Emergency Preparedness (EP) liquid release in progress determination (drill); dated August 23, 2004
IR 301264-02; Concerns identified with outbuildings & fire hazards ; dated April 4, 2005
IR 327867-02; Instrument Air lines near 2IA948 damaged and leaking; dated May 18, 2005

IR 338480-05; Failure to perform complete inspection of the pressure boundary piping associated with the Units 1 and 2 post accident hydrogen monitors as required by American Society of Mechanical Engineers (ASME) Section XI code; dated July 27, 2005
IR 343977-08; Main Steam Isolation Valve (MSIV) room ventilation repetitive Maintenance Rule Functional Failure; dated September 8, 2005

Common Cause Analyses

222876; Potential Adverse Trend in Engineering Document Quality; dated June 28, 2004
232406-05; Adverse Trend Identified (Procedures Followed Incorrectly) in the Maintenance Area; dated September 13, 2004
283310; Potential Trend in 2004 Engineering Human Performance Events; dated March 24, 2005
309542-02; Failure to Properly Enforce the Use of Work Standards and the Use of Written Work Instructions; dated May 12, 2005
333162-03; Potential Safety Issues with Clearance Orders Within Maintenance; dated July 13, 2005
222876; Potential Adverse Trend in Engineering Document Quality; dated June 28, 2004
232406-05; Adverse Trend Identified (Procedures Followed Incorrectly) in the Maintenance Area; dated September 13, 2004
283310; Potential Trend in 2004 Engineering Human Performance Events; dated March 24, 2005
309542-02; Failure to Properly Enforce the Use of Work Standards and the Use of Written Work Instructions; dated May 12, 2005
333162-03; Potential Safety Issues with Clearance Orders Within Maintenance; dated July 13, 2005
IR 271620-04; Security department human performance (HU) related events; dated December 16, 2005
IR 352503; Trend identified issues in radiation protection from NOS audit; dated August 31, 2005

Root Cause Report

00199206; Lake Chemistry Trend - Calcium Carbonate Issue; dated February 3, 2004
00256955; Unit 2 PZR Backup Heater Groups A & D Inoperable
00252888; 2B CC Pump Declared Inoperable During Operability Evaluation
00363693; Engineers Performed Activities Without Proper Certification
Issue Report (IR) 166634-02; Elevated reactor coolant system radioactivity levels due to fuel rod defect due to undetermined reasons at this time; dated August 15, 2003
IR 233731; 0A Hydrogen recombiner was not identified by operations as being inoperable due to a lack of technical evaluation resulting in a 60 day LER; dated July 30, 2004
IR 243310-14; Procedural deficiencies and workarounds lead to a locked high radiation door being left administratively uncontrolled; dated September 7, 2004
IR 256955; Unit 2 pressurizer back-up heater groups A & D inoperable; dated November 5, 2004
MA-BR-723-601; Maintenance of Westinghouse type GPD contactors; Revision 0
IR 318027; Braidwood Unit 2 reactor trip due to ‘C’ phase bushing failure due to overheating; dated May 10, 2005

IR 333300-02; Elevated reactor coolant system radioactivity levels due to fuel rod defect(s) due to undetermined reasons at this time; dated June 28, 2005
00199206; Lake Chemistry Trend - Calcium Carbonate Issue; dated February 3, 2004

Operability Evaluation

IR 00150984; 1FW009B Oil Sample Color Not as Expected; March 27, 2003
IR 00214396; Unplanned Limiting Condition for Operations Action Requirement for 1RY8033 Failure During SST Surveillance; April 11, 2004
IR 00310993; 2B DG [Diesel Generator] Service Air Check Valve Not Isolating (2SA191D); March 10, 2005
IR 00318009; FP Header in Area 5 Appears to Have a Through Wall Leak; March 28, 2005
IR 00334573; Oil Leak on 1B CV Pump; May 12, 2005
IR 00337617; Pressurizer Safety Valve Exceeded Its' As-Found Acceptance Criteria; May 28, 2005

Drawings

—58 Sheet 1; Diagram of CO_2 and H_2 System; Revision AV
—58 Sheet 2; Diagram of CO_2 and H_2 System; Revision AB
—58 Sheet 1; Diagram of CO_2 and H_2 System; Revision AV
—58 Sheet 2; Diagram of CO_2 and H_2 System; Revision AB

Procedures

LS-AA-120; Issue Identification and Screening Process; Revision 3
LS-AA-125; Corrective Action Program (CAP) Procedure; Revision 8
LS-AA-125-1001; Root Cause Analysis Manual; Revision 4
LS-AA-125-1002; Common Cause Analysis Manual; Revision 3
LS-AA-120; Issue Identification and Screening Process; Revision 3
LS-AA-125; Corrective Action Program (CAP) Procedure; Revision 8
LS-AA-125-1001; Root Cause Analysis Manual; Revision 4
LS-AA-125-1002; Common Cause Analysis Manual; Revision 3
ER-AA-335-015; VT-2 Visual Examination; Revisions 3 & 4
ER-AP-331-1002; Boric Acid Corrosion Control Program Identification, Screening, and Evaluation; Revision 2
LS-AA-125-1001; Root Cause Analysis Manual; Revision 4
LS-AA-125-1103; Apparent Cause Evaluation Manual; Revision 6
LS-AA-126-1001; Focused Area Self-Assessments; Revision 3

Miscellaneous

10514R04; Wyle Laboratories Failure Analysis of Westinghouse HFB Breakers From Exelon's Braidwood Station; dated May 3, 2004
Correspondence between Rich Agnich/Peter Graffy and Ken Vancina; Failure Analysis on 8 Westinghouse Breakers; dated April 26, 2002
Correspondence between Peter Graffy and Doug Overbeck; Failure Analysis (10) Westinghouse Breakers; dated December 18, 2002

Correspondence between Westinghouse and Mr. Wayne Vargas; Westinghouse Recommendations Concerning the Functionality of HFB Magnetic Only Breakers Supplied to Exelon Byron / Braidwood; dated May 22, 2003
ATI No. 233999-02; Perform the OPEX SME Review of Westinghouse Technical Bulletin TB-04-13; dated July 2004
10514R04; Wyle Laboratories Failure Analysis of Westinghouse HFB Breakers From Exelon's Braidwood Station; dated May 3, 2004
Correspondence between Rich Agnich/Peter Graffy and Ken Vancina; Failure Analysis on 8 Westinghouse Breakers; dated April 26, 2002
Correspondence between Peter Graffy and Doug Overbeck; Failure Analysis (10) Westinghouse Breakers; dated December 18, 2002
Correspondence between Westinghouse and Mr. Wayne Vargas; Westinghouse Recommendations Concerning the Functionality of HFB Magnetic Only Breakers Supplied to Exelon Byron / Braidwood; dated May 22, 2003
ATI No. 233999-02; Perform the OPEX SME Review of Westinghouse Technical Bulletin TB-04-13; dated July 2004
NOSA-BRW-04-07 AR; NOS Audit on SURV/TESTING/ISI/IST
AR 287771; Maintenance Rule/EPIX
AR 266820; MOVs FASA
AR 209360; FASA (Maintenance): INPO AFIs related to Work Practices
AR 265890; OPEX use at the department level
AR 265881; Problem Identification & Resolution FASA
AR 203736; FASA Work Control Process
AR 194719; Operability Determinations
IR 285241; 2RY455B active body to bonnet leak (20 DPM); dated December 22, 2004
IR 344977; Radwaste crane workaround and problems; dated June 17, 2005
IR 348256; Inconsistent labeling for Feedwater (FW) chemicals; dated June 28, 2005
IR 348642; Insulation is damaged on bottom / repair; dated June 29, 2005
IR 349853; One half of valve handle broken off; dated July 3, 2005
IR 350119; 2SX169A is leaking by (duplicate IR 281716/ WO 765205), dated July 5, 2005
IR 353185; 2RY455B previous leakage evaluation issues; dated July 14, 2005
IR 391078; NRC ID: cigarette butts in H_2 farm. Repeat issue; dated October 27, 2005

Trending

00288815; Operations ID Reactivity Management Indicator Adverse Trend
00335903; Negative Trend Identified in O.2 Reactivity Management PI
00352503; Trend Identified Issues in RP - From NOS Audit
00356435; Potential Adverse Trend for SG Blowdown Rad Monitors
00328064; NOS ID'd an Adverse Trend in Operations Standards
00243234; Potential Adverse Trend in Operating Procedure Quality
00250014; NOS ID'd Operations Inadequate Response to 2B RCP Temp Trend
00263330; NOS ID: Events Associated with Protected Equipment
00297198; Potential Adverse trend in Equipment Readiness and Reliability
00216355; NO assessment deficiencies indicate declining trend - Eng
00222876; Potential Adverse Trend In Engineering Document Quality
00283310; Potential Adverse Trend Involving Engineering Human Performance
00272628; NOS ID: Review of Torquing Issues - Trend

00291509; Adverse Trend on Westinghouse DHP Breaker Deficiencies
00325164; Adverse Trend in Issues Associated with Pumps and Motors
00264058; Potential Trend - NSR Parts Used/Reserved For SR Components
00243987; Potential Trend - Boric Acid Leakage
00307755; Potential Trend RC System Boric Acid Leakage
00217361; NOS ID'd (Maintenance) Declining Trend for 1st quarter 2004
00269120; NOS ID'd Declining Trend for Maintenance 3Q04 Performance
00287535; NOS ID'd Potential Adverse Trend in Maintenance CAP Products
00319004; CCA For Job Delay Trend Rejected by MRC as Poor (Maint Prog)
00232406; Increasing Trend - Procedures Followed Incorrectly (MAINT)
00308542; Station Trend Failure to Enforce Procedure Use/WRK Standards
00289977; Review of BRW MAINT OpEx Reports Show Declining HU Trend
00264684; Potential Trend - Work Packages Not Taken to Correct Status
00285966; NOS ID'd Clearance and Tagging Program Potential Trend
00333162; Potential Trend - Clearance Order Problems in Maintenance
00313569; Potential Trend in Work Order & Task Status Issues
00237440; Potential Adverse Trend in Assigning Wrong RWP #'s to WO's
00247342; Potential Trend - RWPs Not Being Correctly Assigned to Wos
00288815; Operations ID Reactivity Management Indicator Adverse Trend
00335903; Negative Trend Identified in O.2 Reactivity Management PI
00352503; Trend Identified Issues in RP - From NOS Audit
00356435; Potential Adverse Trend for SG Blowdown Rad Monitors
00328064; NOS ID'd an Adverse Trend in Operations Standards
00243234; Potential Adverse Trend in Operating Procedure Quality
00250014; NOS ID'd Operations Inadequate Response to 2B RCP Temp Trend
00263330; NOS ID: Events Associated with Protected Equipment
00297198; Potential Adverse trend in Equipment Readiness and Reliability
00216355; NO assessment deficiencies indicate declining trend - Eng
00222876; Potential Adverse Trend in Engineering Document Quality
00283310; Potential Adverse Trend Involving Engineering Human Performance
00272628; NOS ID: Review of Torquing Issues - Trend
00291509; Adverse Trend on Westinghouse DHP Breaker Deficiencies
00325164; Adverse Trend in Issues Associated with Pumps and Motors
00264058; Potential Trend - NSR Parts Used/Reserved For SR Components
00243987; Potential Trend - Boric Acid Leakage
00307755; Potential Trend RC System Boric Acid Leakage
00217361; NOS id'd (Maintenance) Declining Trend for 1st quarter 2004
00269120; NOS ID'D Declining Trend for Maintenance 3Q04 Performance
00287535; NOS ID'd Potential Adverse Trend in Maintenance CAP Products
00319004; CCA For Job Delay Trend Rejected by MRC as Poor (Maint Prog)
00232406; Increasing Trend - Procedures Followed Incorrectly (MAINT)
00308542; Station Trend Failure to Enforce Procedure Use/WRK Standards
00289977; Review of BRW MAINT OpEx Reports Show Declining HU Trend
00264684; Potential Trend - Work Packages Not Taken to Correct Status
00285966; NOS ID'd Clearance and Tagging Program Potential Trend
00333162; Potential Trend - Clearance Order Problems in Maintenance
00313569; Potential Trend in Work Order & Task Status Issues
00237440; Potential Adverse Trend in Assigning Wrong RWP #'s to WO's
00247342; Potential Trend - RWPs Not Being Correctly Assigned to WO's

Other Condition Reports

00105657; Potential Common Mode Failure with Westinghouse HFB Breakers; dated April 27, 2002
00166532; Discrepancies Between Vendor Recommendations and PCM (NCV); dated July 7, 2003
00180076; Suspicious Substance (May Be Boric Acid) in RCFC Outlet Fins; dated October 9, 2003
00212605; CO2 Tank Level Decreasing 15 to 20 percent Per Month; dated April 2, 2004
00218864; 1SX2077A Valve Hard to Operate Causing Wear in Valve Handle; dated May 5, 2004
00232406; Increasing Trend - Procedures Followed Incorrectly (MAINT); dated June 29, 2004
00237440; Potential Adverse Trend in Assigning Wrong RWP #'s to WO's; dated July 20, 2004
00247342; Potential Trend - RWPs Not Being Correctly Assigned to WOs; dated August 25, 2004
00269120; NOS ID'd Declining Trend For Maintenance 3Q04 Performance; dated November 1, 2004
00313569; Potential Trend in Work Order & Task Status Issues; dated March 16, 2005
00328183; Revise MCC Troubleshooter Based on OE13351; dated April 24, 2005
00332691; CC Pump Discharge Check Valve Disc and Hanger Problem; dated May 6, 2005
00339770; Need WR to Clean/Replace Refrig Injection Nozzles & Valves; dated May 31, 2005
00343587; NRC Event 41761; SCI Power Supply 10CFR21 Notification; dated June 13, 2005
00352725; Need WR For Retrofit of 7300 Cards for C105; dated July 13, 2005
00365465; Shaft Guard For Iso-Phase Bus Duct Fan (2MP02C); dated August 22, 2005
00366610; Engineer Found to Not Have Troubleshooting Cert; dated August 25, 2005
00372596; Deficiencies/Recommendations From OPEX Check-In Assessment; dated September 12, 2005
00373517; Lesson Learned From Byron Slave Relay Testing IR 371420; dated September 14, 2005
00336783; NOS ID'd Lake Precip Eval Enhancement for Vlvs/Instr. Tubing; dated May 19, 2005
00281329; Failed Sprinkler Air Flow Test; dated December 10, 2004
00222984; U-2 TB 426 Zone 2S-20 Sprinkler Head Corrosion; dated May 22, 2004
00231971; Sprinkler Head Covered in Mineral Deposits - Replace; dated June 28, 2004
00233211; Sprinkler Heads Have Indication of Significant Leakage; dated July 1, 2004
00236747; Sprinkler System Flow Switches Fouled with Sediment/Gunk; dated July 16, 2004
00281519; FP– Sprinkler Head Leaking; dated December 11, 2004
00286088; Fire Protection Sprinkler Head Failure - Unit 1 Turbine Building; dated December 28, 2004
00218864; 1SX2077A Valve Hard to Operate Causing Wear in Valve Handle; dated May 5, 2004
00388027; 1SX2165A & 1SX2184A Valves Will Not Isolate; dated October 20, 2005
00343938; 1SX052B Would Not Isolate, Delaying JW Work for 1B EDG LCOAR; dated June 14, 2005
00343097; 2SX2164A Valve Stem is Twisted; dated June 11, 2005
00341037; 1SX150A Actuator is Not Coupled to Valve; dated June 4, 2005
00337288; 2SX2158B Will Not Operate; dated May 20, 2005
00333055; 1SX147A Did Not Stroke Smoothly During Calibration; dated May 9, 2005

00218866; 1SX2080A Valve Hard to Operate Causing Wear in Valve Handle; dated May 5, 2004
00359633; 2SX001A Failed to Fully Reopen After Closure; dated August 3, 2005
00225875; Repair/Replace 1SX021C; dated June 4, 2004
00226067; Check Vlv Internal Leak By; dated June 4, 2004
00361147; 1SX217A Plugged Results in Water on 1A DG Room Floor; dated August 9, 2005
00362540; 2SX169A Leaks By 225-250 GPM; dated August 12, 2005
00233585; 2SX025D Would Not Throttle Flow Properly; dated July 2, 2004
00239230; 1SX2088B Can Not Be Fully Closed; dated July 27, 2004
00364998; 1SX178 Stroked Several Times to Achieve Sat Stroke Time; dated August 19, 2005
00281716; 2SX169a Leakby; dated December 12, 2004
00339068; Valve 2SX147A Has Packing Leak; dated May 27, 2005
00203078; 1SX016A Closed Stroke Resulted in Dual Light Indication; dated February 20, 2004
00114149; Split Pin Failure Causing loose parts at Wolf Creek
00115034; 2A DG, Cylinder 5L Piston Skirt tin coating was missing
00134227; PWST Dissolved Oxygen Content Exceeds Westinghouse Spec
00142968; Ht. Exchanger 2RH02AB Potential of Boron Corrosion (Bolting)
00147166; No Engineering Evaluation Done for Deleting Smoke Detectors
00150479; Byron CV pump failure root causes should be reviewed by BWD
00154763; CV Maximum Injection Line Flow Imbalance on 'B' train
00154839; Test instruments post calibrations found OOT
00174301; Multiple industry motor failures noted during OPEX review
00175848; NOS ID'd Safety Program Effectiveness Potential Trend
00175939; Missed Work Week Milestone (E-3 work on hold)
00180076; Suspicious Substance (may be boric acid) in RCFC Outlet Fins
00193270; Secondary Transient on Unit 2 (reasons unknown)
00193708; ER-MRM ID'd CHIP issues related to Fan vibration problems
00209162; Potential adverse trend involving seismic housekeeping
00209466; Breaker Maintenance Program Deficiencies
00210294; Trend associated with Work Planning Department Crew Clock Resets
00212605; CO2 Tank level decreasing 15 to 20 percent per month
00214248; 1B Rx Containment Chiller Oil Pump Did Not Run
00217704; Boric Acid Leakage Repair Deferred to A1R12 (1RH8724A)
00214552; 0A VC Chiller pressure control valve failed open
00218864 & 66; 1SX2077A [80A] valve hard to Operate Causing Wear in Valve Handle
00220093; Field Labeling of Fuses in 231X Does not match EWCS
00220331; Replace Body to Bonnet Gasket on Valve 1CS002B
00220540; Need to Install Barrier Fencing as Requested by Security
00221784; Inspection of Cylinder #8L Liner and Piston Skirt
00222612; Replacement JW HX Reversing Head Dimensional Incompatibility

Self-Assessment Reports

0028771; Maintenance Rule Implementation; dated June 10, 2005
209360-05; Maintenance Work Practices; dated February 4, 2005
265890; Operating Experience Usage at the Work Execution Level; dated August 24, 2005
LS-AA-120; Issue Identification and Screening Process; Revision 3
LS-AA-125; Corrective Action Program Procedure; Revision 8

LS-AA-125-1002; Management Observation of Activities; Revision 1
LS-AA-126; Self-Assessment Program; Revision 4
LS-AA-126-1001; Focused Area Self-Assessments; Revision 3
LS-AA-126-1005; Check-In Self-Assessments; Revision 2
IR 205576-02; Criticalness of department CAPCO closeout reviews; dated June 7, 2004
IR 208964; Audit # NOSA-BRW-04-03, Emergency Preparedness Audit Report; dated May 10, 2004
IR 213666; Audit # NOS-BRW-04-04, Chemistry, Radwaste, and Process Control Program; dated May 12, 2004
IR 244996; Audit # NOSA-BRW-04-08, Procedures, Document Control and Quality Assurance Records; dated September 29, 2004
IR 265881; Focus area self assessment (FASA), Problem Identification and Resolution; dated September 6, 2005
IR 287273; BWD EP Pre-NRC Insp Assess CHECK-IN Report; dated July 13, 2005
IR 287711; Audit # NOSA-BRW-05-01, Corrective Action Program Audit Report, dated April 6, 2005
IR 287714; Audit # NOSA-BRW-05-04 Emergency Preparedness Audit Report; dated April 19, 2005
IR 287716; Audit # NOSA-BRW-05-06, Health Physics/ Radiation Protection Audit, dated July 17, 2005

Significance Level and 1 and 2 Issue Reports (SCAQ)

PIF # A1998-03530; Potential trend - out of tolerance pressure switches in the EH (Turbine Electro-Hydraulic Control) system **;** dated October 1, 1998
IR 102884; Pressurizer safety valves set test out of tolerance; dated April 8, 2002
IR 263845; Unit 1 Reactor (RX) fuel assembly contacted another assembly during move, dated October 15, 2004
IR 274721; HI-2 isolation of 15-17 heaters causing Over Power Differential Temperature (OPDT) Runback; dated November 18, 2005
IR 285216; Unit 2 Reactor trip on LO-2 Steam Generator level, dated December 22, 2004

Significance Level 3 Issue Reports (CAQ)

IR 096695; 1AF01PB failed to start during 1BwOSR 3.7.5.3-2; dated February 25, 2002
IR 137826; REWORK - Newly replaced valve (0PW056) had yoke nut back out, dated January 1, 2003
IR 191087; Auxiliary Power (AP) system experiences repetitive MRFFs; MR (a)(1) evaluation; dated December 16, 2003
IR 209323; Unexpected Corrective Maintenance (CM) & Foreign Material Exclusion (FME) issue - 2B Containment Spray (CS) pump breaker did not fully close; dated March 18, 2004
IR 252888; 2B Component Cooling (CC) pump declared inoperable during operability evaluation; dated September 14, 2005
IR 261937; Increased radioiodine level in waste gas decay tank releases; dated October 9, 2004
IR 264177; Dropped steel rod in Spent Fuel Pool (SFP) during reconstitution (FME event); dated October 15, 2004
IR 323559; Maintenance rule plant level criteria exceeded; dated April 1, 2005

IR 328116; Foreign objects found in 2B Steam Generator secondary side; dated April 24, 2005
IR 329076; Foreign objects found in 2A/2D Steam Generators - A2R11; dated April 26, 2005
IR 338480; ASME pressure test frequency not met (Ref TSR 3.0.C); dated May 25, 2005
IR 360998; Rag discovered in 1A diesel generator oil sump; dated August 8, 2005
IR 366352; Safety System Design Performance Capability (SSDPC) inspection pressure test Essential Service Water (SX) pipe follow-up to IR 364793; dated August 24, 2005
IR 367805; NRC SSDPC - NCV identified with procedures for condensate (CD) system; dated August 29, 2005

Employee Concerns Program (ECP)

EI-AA-1; Employee Issues; Revision 1; dated June 25, 2001
EI-AA-101; Employee Concerns Program; Revision 4
EI-AA-101-1001; Employee Concerns Program Process; Revision 2
EI-AA-101-1002; Employee Concerns Program Trending Tool; Revision 1
IR 311246; Employee concern with Fundamentals Management System (FMS) file entry; dated March 11, 2005

Radiation Protection (RP) Program Review

IR 200616; Radioactive contamination found in Maintenance and Test Equipment (M&TE) shop; dated February 9, 2004
IR 202248; Hot particle found on individual's pants from Eckert dome; dated February 17, 2004
IR 208459; RP instrument CHECK-IN deficiencies; dated March 15, 2004
IR 212583; Failed source checks on radiation protection instrumentation; dated April 2, 2004
IR 225028; Daily source check not performed on Radioactive Waste (RW) IPM-8 and Small Article Monitor (SAM); dated June 1, 2004
IR 234206; Spread of contamination to clean area of Rad Waste RCA; dated July 7, 2004
IR 248040; Inadequate corrective action closure (RAD Protection); dated August 27, 2004
IR 265437; A1R11 LL Nuclear Oversight (NOS) ID'D questions w/ U1 containment Locked High Radiation Area (LHRA) controls; dated October 20, 2004
IR 288705; Oil sample improperly removed from auxiliary building RCA; dated January 7, 2005
IR 301329; Level 1 Personnel Contamination Event (PCE) from clean area of U-2 401 auxiliary building; dated February 14, 2005
IR 339085; Unit 2 Residual Heat (RH) system needs flushed for source term reduction; dated May 27, 2005
IR 362111; Aux. 383' demin. blowdown valve aisle (very poor matl. cond.); dated August 11, 2005
IR 366162; 2PR27J steam jet air ejector radiation monitor spiking con; dated August 24, 2005
IR 367807; 6 spent incore detectors not in the expected SFP cell; dated August 29, 2005
IR 367816; Fuel cask needs decon requiring impact limiter removal; dated August 29, 2005
IR 367842; Question on operators performing rounds in LHRA; dated August 29, 2005
IR 368300; Rad shipment not sealed prior to going to Byron; dated August 30, 2005

Emergency Preparedness (EP) Program Review

IR 216333; NOS id outdated procedures found in Technical Support Center (TSC) & Main Control Room (MCR); dated April 22, 2004

IR 234222; EP potential department performance indicator failures; dated July 7, 2004
IR 241558; Reportable event - Loss of off-site siren capability; dated August 4, 2004
IR 244051; NRC Regulatory Information Summary (RIS) 2004-13, Sheltering as a utility Protective Action Recommendation (PAR); dated August 12, 2004
IR 286398; Chemistry department mask fit qualification below 50 percent reqrmt; dated December 29, 2004
IR 324543; NOS id'd Emergency Response Organization (ERO) quals not consistently entered in PQD; dated April 14, 2005
IR 348143; Instrument Maintenance Division (IMD) maskfits below the required 50 percent; dated June 28, 2005
IR 358914; EP augmentation drill issue; dated August 2, 2005
IR 360367; Storm caused loss of emergency sirens (DUP IR 355199); dated August 5, 2005
IR 365379; No cohesive tornado emergency plan exists; dated August 22, 2005
Third Quarter Mini-drill findings and Observations Report; dated September 1, 2005

Fire Protection Program Review

IR 193571; Plugged instrument lines found during Fire Protection PM; dated January 6, 2004
IR 197244; Degraded SCBA equipment identified during fire drill; dated January 23, 2004
IR 197304; 2FP351A tamper switch found out of adjustments - B4 trend code; dated January 23, 2004
IR 204400; Calcium carbonate excursion affects 0A FP jockey pump; dated February 26, 2004
IR 214887; NOS Id'd: Fire seal programmatic deficiencies; dated April 14, 2004
IR 222981; Excessive fire protection pipe corrosion; dated May 22, 2004
IR 222984; U-2 Turbine Building (TB) zone 2S-20 sprinkler head corrosion; dated May 22, 2004
IR 223054; Multiple problems associated with System Auxiliary Transformer (SAT) 142-1 deluge valves; dated May 23, 2004
IR 223082; Fire protection piping to 2PI-FP8007B clogged; dated May 23, 2004
IR 225751; 2 Fire hoses found with past due hydro dates; dated June 3, 2004
IR 227780; NOS Id'd: Fire seal 2AB-5822 not per design; dated June 11, 2004
IR 231971; Sprinkler head covered in mineral deposits - replace; dated June 28, 2004
IR 236747; Sprinkler system flow switches fouled with sediment/gunk; dated July 16, 2004
IR 243174; DOST room 1A/1C foam deluge system piping plugged; dated August 10, 2004
IR 253415; Hourly fire watch stopped without permission from operating; dated September 16, 2004
IR 260530; Missed GOCAR required firewatch in 2A EDG room, zone 2D-72; dated October 5, 2004
IR 273639; Evidence of cigarette smoking on various roof areas; dated November 15, 2004
IR 279129; 0A jockey fire pump cycling; dated December 4, 2004
IR 286088; Fire protection sprinkler head failure - Unit 1 turbine building; dated December 28, 2004
IR 300928; Performance deficiency identified during 1st qtr fire drill; dated February 13, 2005
IR 303531; 0FP03PB appears to have broken right angle gear drive; dated February 20, 2005
IR 311315; Dimeric sealant never applied to block wall penetrating item; dated March 11, 2005
IR 311821; Scaffolding improperly installed & stored in 1A/1C DOST room; dated March 12, 2005
IR 312986; Evidence of continued smoking in unauthorized areas; dated March 15, 2005
IR 345535; Issues identified during crew 6 fire drill; dated June 20, 2005

IR 364016; Potential repeat/chronic failures of CO_2 compressor - review; dated August 17, 2005
IR 366708; Wood is not fire resistant on battery racks; dated August 25, 2005

Focus Area Self Assessment Reports

0028771; Maintenance Rule Implementation; dated June 10, 2005
209360-05; Maintenance Work Practices; dated February 4, 2005
265890; Operating Experience Usage at the Work Execution Level; dated August 24, 2005

LIST OF ACRONYMS AND INITIALISMS USED

ADAMS	Agency Wide Documents Access and Management System
AR	Action Request
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CCA	Common Cause Evaluation
CFR	Code of Federal Regulations
DRP	Division of Reactor Projects
ECP	Employee Concerns Program
EDG	Emergency Diesel Generator
FP	Fire Protection
INPO	Institute of Nuclear Power Operations
IR	Issue Report
MCCB	Molded-Case Circuit Breaker
NOS	Nuclear Oversight
NRC	Nuclear Regulatory Commission
OA	Other Activities
OOT	Out-of-Tolerance
PARS	Publicly Available Records System
PI&R	Problem Identification and Resolution
SX	Essential Service Water
RCS	Reactor Coolant System
WO	Work Order
WS	Service Water