March 28, 2000

Mr. Oliver D. Kingsley
President, Nuclear Generation Group
Commonwealth Edison Company
ATTN: Regulatory Services
Executive Towers West III
1400 Opus Place, Suite 500
Downers Grove, IL 60515

SUBJECT: NRC INSPECTION REPORT 50-454/2000003(DRS); 50-455/2000003(DRS)

Dear Mr. Kingsley:

On February 2, 2000, the NRC completed an inspection of your Byron Nuclear Generating Station. The on-site inspection was conducted from January 10 through February 2, 2000. At the conclusion of the inspection on February 2, 2000, the inspection results were discussed with members of your staff. Subsequent to the formal exit, additional corrective action concerns were raised and NRC in-office reviews and discussions addressed those concerns. The concerns and the evaluation of the concerns were discussed between NRC personnel and your staff by telephone on February 15 and 22, 2000. The enclosed report presents the results of the on-site inspection and the results of the in-office review of the additional concerns.

Areas examined during the inspection are identified in the report. The objectives of the inspection were to determine whether activities authorized by the license were conducted safely and in accordance with NRC requirements. The inspection included an assessment and evaluation of engineering support, design change and modification activities, 10 CFR 50.59 screenings and evaluations, as well as corrective action and internal assessment activities. Within these areas, we selectively observed activities in progress, reviewed procedures and representative records, observed plant conditions, and discussed activities and concerns with members of your staff.

Overall, our inspection results indicated that engineering, corrective action, and 10 CFR 50.59 screening and evaluation activities at the Byron plant were effective. Licensee personnel were qualified for their positions, and demonstrated good knowledge of their responsibilities. The Nuclear Oversight assessments of the program were also good. One example was noted where a plant modification was not correctly translated into procedures and equipment added by the modification was not added to the surveillance program. In addition, we are concerned with the lack of timely action to correct previously identified repetitive breaker problems.

Based on the results of this inspection, the NRC has determined that a violation of NRC requirements occurred. This violation is being treated as a Non-Cited Violation (NCV), consistent with Section VII.B.1.a of the Enforcement Policy. The violation is described in the attached inspection report. If you contest the violation or severity level of this NCV, you should provide a response within thirty days of the date of this inspection report, with the basis for the denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, if you choose to provide one, will be placed in the NRC Public Document Room.

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

Sincerely,

/RA/

Ronald N. Gardner, Chief
Electrical Engineering Branch
Division of Reactor Safety

Docket Nos. 50-454; 50-455
License Nos. NPF-37; NPF-66

Enclosure: Inspection Report 50-454/2000003(DRS);
50-455/2000003(DRS)

cc w/encl: D. Helwig, Senior Vice President, Nuclear Services
C. Crane, Senior Vice President, Nuclear Operations
H. Stanley, Vice President, Nuclear Operations
R. Krich, Vice President, Regulatory Services
DCD - Licensing
W. Levis, Site Vice President
R. Lopriore, Station Manager
K. Moser, Acting Regulatory Assurance Manager
M. Aguilar, Assistant Attorney General
State Liaison Officer
State Liaison Officer, State of Wisconsin
Chairman, Illinois Commerce Commission

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos:	50-454; 50-455
License Nos:	NPF-37; NPF-66
Report No:	50-454/2000003(DRS); 50-455/2000003(DRS)
Licensee:	Commonwealth Edison Company (ComEd)
Facility:	Byron Generating Station, Units 1 & 2
Location:	4450 North German Church Road Byron, IL 61010
Dates:	January 10 - February 22, 2000
Inspectors:	H. Walker, Team Leader R. Bathia, Inspector R. Langstaff, Inspector G. O'Dwyer, Inspector W. Scott, Inspector Trainee T. Tella, Inspector R. Winter, Inspector
Approved by:	Ronald N. Gardner, Chief Electrical Engineering Branch Division of Reactor Safety

EXECUTIVE SUMMARY

Byron Generating Station, Units 1 & 2
NRC Inspection Report 50-454/2000003(DRS); 50-455/2000003(DRS)

Plant Status: During this inspection period Unit 1 was at or near full power. Unit 2 was at or near full power, except for approximately three days, when the unit tripped due to a breaker fault in the switch-yard.

During this routine announced team inspection of approximately three weeks duration, the inspection team reviewed engineering and technical support, corrective action and 10 CFR 50.59 activities including implementation. The inspection also included a review of selected NRC items identified during previous NRC inspections.

The following statements summarize the inspection results in each area:

- The methods used to control design changes and modifications at the Byron plant were effective. Modification packages were complete, well prepared, and of good technical quality. Plant changes were adequately designed and installed. Post modification testing was specified, properly performed, and was adequate to verify that the modified equipment would perform the design function. With one exception, changes to procedures, required by the design changes, were properly completed. Design configuration and configuration controls were maintained throughout the process (Section E1.1).

- The 10 CFR 50.59 evaluation and screening program was effective and the 10 CFR 50.59 screenings and safety evaluations were good. Screenings were performed for each change and full evaluations were performed when necessary. The evaluations were thorough with 10 CFR 50.59 questions appropriately answered. The evaluations provided sufficient detail to support the conclusions that no unreviewed safety questions existed (Section E1.2).

- The control of temporary modifications was very good. Temporary modifications were effectively controlled and were tracked by use of a control room log. The number of installed temporary modifications was maintained at a very low level (Section E1.3).

- Calculations reviewed were adequately controlled and supported the associated design changes. The purposes of the calculations, the assumptions made, and the inputs were adequately described. Calculations were adequately reviewed and approved and in most cases, the results of the calculations were properly translated into design documents. Problems with non-conservative errors in breaker control voltage calculations had been identified in a previous NRC inspection; however, corrective actions completed and proposed in this area were adequate to address the issue (Section E1.4).

- The corrective action program was effective and well implemented. Problem identification forms were normally initiated for problems that occurred onsite and the initiation threshold was quite low. There was a widespread acceptance of the problem

identification form system by plant organizations to identify problems. The closing of problem identification forms, prior to completion of required actions, appeared to be a significant weakness in the program. In almost all cases, corrective actions were adequate and timely, and root cause investigation and actions to prevent recurrence were performed when necessary. Actions to correct known repetitive problems with electrical breakers, however, had been slow (Section E2.1).

- System engineers trended equipment performance and component failures for selected plant equipment. Problem identification forms were issued when adverse trends were identified; however, adequate actions were not always taken to eliminate or reduce adverse trends (Section E2.2).

- Engineering support for Technical Specification surveillances was good and the overall program was effective. Surveillance requirements were properly identified in the procedures and were effectively implemented. Even though some minor concerns were noted, the overall surveillance results were acceptable and were within the required acceptance criteria (Section E2.3).

- Over-all engineering support for maintenance was good. Good support was provided in problem investigation and resolution and in the development and implementation of predictive maintenance such as oil analysis, vibration analysis, and thermography. Weaknesses were noted in preventive maintenance as was illustrated by repetitive breaker problems and the failure to include the switchyard air circuit breaker 10-11 load rejection contacts in the preventive maintenance program (Section E2.4).

- The Operating Experience Program was acceptable and adequately responded to identified issues. The information received was reviewed and evaluated and appropriate actions were scheduled and completed when considered necessary (Section E2.5).

- Nuclear over sight assessments and field observations were performed by well-qualified auditors and were of good quality. Reviews were in-depth and findings were written when appropriate. Auditor follow-up was provided to verify completion of required actions on items considered to be significant conditions affecting quality (Section E7.1).

- Self-assessments were properly performed and were effective. The assessments were preformed by well-trained and experienced engineers and were of good quality. Reviews were in depth and problem identification forms were written when deficiencies were identified. Actions taken to address identified issues were adequate and timely and follow-up was provided as needed (Section E7.2).

- The two plant review committees, Plant Operations Review Committee and Nuclear Safety Review Board, performed well and were effective in completing assigned reviews, investigations, and evaluations. Support and assistance to plant management by these organizations in the resolution of problems was very good. Members of the groups were experienced and were aggressive in pursuing plant problems and issues (Section E7.3).

Report Details

III. Engineering

The review of engineering included both design and support engineering activities. The design review included design changes, temporary modifications and 10 CFR 50.59 evaluations and screenings. Engineering support included systems engineering, problem resolution and corrective action activities as well as normal engineering involvement with operations, maintenance and other plant organizations.

E1 Conduct of Engineering

E1.1 Design Changes and Modifications

a. Inspection Scope (37550, 37700)

The methods used to control design changes and modifications were reviewed to verify adequacy, control, and compliance with regulatory requirements. The review included the basic design change procedures and 20 selected design change packages (DCPs). The DCPs were reviewed in detail, discussed with cognizant system and design engineers, and the field installations of selected portions of some accessible modification installations were reviewed. The package review included 10 CFR 50.59 screenings and evaluations, design calculations, post modification test procedures and results, and selected applicable updated design and affected documents.

b. Observations and Findings

The DCPs reviewed were complete, of good quality, and were adequate to accomplish the design changes. The packages included a description of the change, interdepartmental reviews, required approvals, and the appropriate 10 CFR 50.59 screenings or evaluations. The packages included requirements for post modification testing and acceptance criteria for these tests. Some calculations, performed to support design changes, were selected and reviewed. Affected drawings were revised or red-lined as appropriate and, with one exception, procedures were revised as necessary. The overall material condition of the plant, observed during walkdowns, was good.

The inspectors observed that the closeout documentation for Exempt Changes 9303479 and 9303480 did not list the identifying numbers for some items required to be changed. Licensee personnel stated that the corrective actions generated by problem identification form (PIF) B2000-00139 would correct the modification close-out tracking problems even though the PIF was originated to address a tracking inadequacy for another modification.

DCP 9600186: This DCP required that time delay relays be installed for the residual heat removal (RHR) system mini-flow valves to prevent spurious closure upon pump start. This Unit 2 modification was completed in March of 1999. The inspectors reviewed postmodification testing documentation for the modification and verified that the testing was acceptable. In addition, the inspectors verified that a procedure change had been made to delete the procedural operator work around which the modification

was intended to eliminate. However, the inspector noted that licensee personnel failed to add the relays, installed per the modification, to the surveillance program to provide for periodic testing and calibration of the relays.

10 CFR 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures be established to assure that designs be correctly translated into specifications, drawings, procedures, and instructions. Contrary to the above, the design changes of DCP 9600186 were not correctly translated into procedures and instructions in that the time delay relays added by the DCP were not added to surveillance program. Licensee personnel initiated PIF B2000-00139 to provide for corrective actions in response to this violation. This Severity Level IV violation is being treated as a Non-Cited Violation (NCV) in accordance with Section VII.B.1.a of the NRC Enforcement Policy. (50-454/2000003-01(DRS); 50-455/2000003-01(DRS))

c. Conclusions

Based on the inspection results, the inspectors concluded that the methods used to control design changes and modifications at the Byron plant were effective. DCP packages were complete, well prepared, and of good technical quality. Plant changes were adequately designed and installed. Post modification testing was specified, properly performed, and was effective to verify that the modified equipment would perform its design function. With one exception, changes to procedures required by the DCP were completed. Design configuration and configuration controls were maintained throughout the process.

E1.2 10 CFR 50.59 Evaluations and Screenings

a. Inspection Scope (37001)

The methods and procedures used to control 10 CFR 50.59 screenings and evaluations were reviewed to verify adequacy, control, and compliance with regulatory requirements. Emphasis in this review was on design changes and modifications. 10 CFR 50.59 screenings and evaluations were discussed with cognizant licensee personnel and selected evaluations were reviewed in detail to verify acceptable implementation and compliance with 10 CFR 50.59.

b. Observations and Findings

The 10 CFR 50.59 screenings and evaluations were appropriately prepared, of good quality, and were consistent with licensee procedures and regulatory requirements. Implementing procedures appropriately described effective methods for controlling and performing 10 CFR 50.59 screenings and evaluations. Licensee personnel reviewed appropriate documents during the screenings and evaluations. The list of the reviewed documents, the description of the changes, and the responses to the 10 CFR 50.59 questions were found to be detailed, complete, and consistent with the associated design change packages, licensing change requests, and design calculations. The evaluations adequately addressed the effects of the proposed changes on plant operations, interactions with other systems and components, any new failure modes, the

effects on accidents and transients, and whether an unreviewed safety question existed. The conclusions that these design changes did not result in unreviewed safety questions were appropriate.

a. Conclusions

Based on the inspection results, the inspectors concluded that the 10 CFR 50.59 screenings and safety evaluations were good. Screenings were performed for each item and full evaluations were performed when necessary. The evaluations were generally thorough with 10 CFR 50.59 questions appropriately answered. The evaluations provided sufficient detail to support the conclusions that no unreviewed safety questions existed.

E1.3 Temporary Modifications

a. Inspection Scope (37550, 37700)

The methods used to control temporary modifications were reviewed to verify adequacy, control, and compliance with regulatory requirements. The review included the controlling procedure and selected open temporary modification packages, which also included the appropriate 10 CFR 50.59 screenings or evaluations. Temporary modifications were discussed with cognizant licensee personnel and, in some cases, the inspectors walked down accessible portions of installed temporary modifications.

b. Observations and Findings

The control room temporary modification logs listed only nine installed temporary modifications. Plant operators were aware of the control room temporary modification logs and the nine existing installed temporary modifications. The inspectors reviewed two selected temporary modification packages and discussed the modifications with control room personnel. This review included the associated 10 CFR 50.59 screenings. No 10 CFR 50.59 evaluations were necessary for the selected packages. The operators were aware of the temporary modifications and the effects on the respective systems. During the review of the temporary modification process and the selected packages, no problems or concerns were identified with the temporary modification process.

c. Conclusions

Based on the inspection results, the inspectors concluded that the control of temporary modifications was very good. Temporary modifications were effectively controlled and were tracked by use of a control room log. The number of installed temporary modifications was maintained at a very low level.

E1.4 Calculations

a. Inspection Scope (37550, 37700)

Selected design calculations were reviewed to verify adequacy, control, and compliance with regulatory requirements. Five selected voltage drop calculations were reviewed to verify that a previously identified type of voltage drop error did not exist and that accuracy, appropriate inputs, acceptable assumptions, and calculation methods were acceptable. The calculations were discussed with cognizant licensee personnel.

b. Observations and Findings

The review of electrical voltage drop calculations was initiated to address a common concern in this area, which was identified as an inspection follow-up item (IFI) in NRC Inspection Report No. 50-454/99001; 50-455/99001. This item is also briefly discussed in Section E8.8 of this report.

In the previous inspection, the inspectors identified that Revision 2 of calculation 19-AQ-43 did not include the voltage drop of a length of control cable used in the breaker control circuit. This resulted in a non-conservative determination of the voltage available at the closing coil of the emergency diesel generator 2A breaker. During this inspection, the inspectors selected and reviewed additional breaker voltage drop calculations.

Revision 2 of calculation 19-AQ-43 stated that a parallel cable had been added to the control circuit for the RHR 2B breaker for voltage improvement. During verification of the as-built condition, licensee personnel discovered that the cable was not connected at one end, thereby, making the calculation results non-conservative. Without the added cable, the inspectors concluded that the revised voltage at the breaker close coil was more than 90 vdc and was acceptable. Licensee personnel also noted that there were some non-conservative errors in the voltage calculations for the RHR pump 2A breaker, even though the final voltage levels at the breaker coils were acceptable. PIF No. B2000-00138 was issued on January 12, 2000, to address the calculation issue. Licensee personnel also stated that a re-review of the affected calculations would be completed by October 6, 2000.

c. Conclusions

Based on the inspection results, the inspectors concluded that the calculations reviewed were adequately controlled and supported the design changes. The purposes of the calculations, the assumptions made, and the inputs were adequately described. The calculations were adequately reviewed and approved and in most cases, the results of the calculations were properly translated into design documents. Problems with non-conservative errors in breaker control voltage calculations had been identified in a previous NRC inspection; however, corrective actions completed and proposed in this area were adequate to address the issue.

E2 Engineering Support of Facilities and Equipment

The inspectors reviewed the effectiveness of engineering support to plant organizations, which included plant management, operations and maintenance. Much of the engineering support involved assistance in the documentation, evaluation, and resolution of problems.

E2.1 Corrective Action Program

a. Inspection Scope (40500)

The methods used to control the corrective action process were reviewed to verify adequacy and effectiveness in identifying and correcting problems. This review included controlling procedures, records, and reports including selected PIFs. Timeliness and priority of actions completed or scheduled were considered as well as tracking of actions to correct or minimize problems. The inspection included reviews of selected and associated effectiveness reviews as well as discussions of corrective action issues with cognizant licensee personnel. The PIFs and other documents reviewed are listed in the section entitled, "List of Licensee Documents Reviewed During the Inspection," which is located near the end of this report.

b. Observations and Findings

The inspectors determined that PIFs were normally initiated for problems that occurred onsite. The threshold for initiation of PIFs was low and resulted in some minor problems being documented on PIFs. An initial screening of PIFs by the Events Screening Committee (ESC) screened out the minor problems. The remaining items were sent to the Corrective Action Review Board (CARB) where the PIFs were assigned a priority and actions necessary to correct the problems were specified and assigned to various departments for completion. Action Requests (ARs) or other documents were initiated and entered into the action tracking system. The PIFs were then closed even though, in most cases, actions to correct the problems and causes had not been completed. Although closing of the PIF was not considered a good practice, the inspectors did not identify instances where specified actions were inappropriately closed.

During discussions with licensee personnel, the inspectors noted that both management and non-management personnel agreed that one of the first actions, when a problem was found, would be to write a PIF. The PIF system was perceived as a way to get problems fixed and licensee personnel indicated a willingness to write PIFs.

During the review of problems with completed actions, the inspectors noted that, in almost all cases, the actions taken appeared to be adequate and timely with the exception of electrical breaker problems. Licensee personnel had identified repetitive problems with station breakers and corrective actions had been slow. After reviewing several breaker-related PIFs, the inspectors noted several types of degraded component problems in different types of station breakers. This was evidenced by PIFs written during the past two years. Specific breaker problems were being identified

during routine surveillances and preventive maintenance (PM) activities. This item is discussed in more detail in Section E2.4 of this report.

c. Conclusions

Based on the inspection results, the inspectors concluded that the corrective action program was effective and well implemented. PIFs were normally initiated for problems that occurred onsite and the initiation threshold was quite low. There was a widespread acceptance of the PIF system to identify problems by plant organizations. The closing of PIFs, prior to completion of required actions, appeared to be a significant weakness in the program. In almost all cases, corrective actions were adequate and timely and cause investigation and actions to prevent recurrence were performed when considered necessary. Actions to correct known repetitive problems with electrical breakers had been slow.

E2.2 Trending

a. Inspection Scope (40500)

The methods used to determine repetitive failures and detect negative quality trends were reviewed to verify adequacy, control, and compliance with regulatory requirements. The review included the controlling procedures, records, trend reports, and actions taken when negative trends were noted. Selected PIFs were reviewed to determine if repetitive failures were documented and trended. The trending program and activities were discussed with cognizant licensee personnel.

b. Observations and Findings

The inspectors noted that system engineers trended equipment and component failures for selected plant equipment. The basic document used to identify problems and for the trending was the PIF. The inspectors reviewed the trending of electrical equipment performance by the system engineers. The equipments trended included Large Electrical Transformers and dc Batteries. Various parameters of these equipments such as transformer oil quality, battery voltages, and specific gravities were trended and action was taken to correct the problems when adverse trends were noted.

During the review of PIFs at Byron, the inspectors noted that, during the last two years, licensee personnel had written 64 PIFs, which were related to electrical breaker problems. The inspectors were concerned that adequate action was not taken to decrease or stop the continuing trend of safety-related breaker problems at Byron. Previous NRC Inspection Report 50-454/99001; 50-455/99001 identified the problem and stated, “The lack of adequate maintenance history, both at the plant and from the vendor refurbishment reports, makes breaker performance and failure trending difficult.” The inspectors were concerned that, in spite of recent PIFs generated on breaker problems, timely action was not taken to refurbish electrical breakers, especially in the safety-related area. This issue is discussed in more detail in Section E2.4 of this report.

c. Conclusions

Based on the inspection results, the inspectors concluded that system engineers trended equipment performance and component failures for selected plant equipment. PIFs were issued when adverse trends were noted; however, adequate actions were not always taken to eliminate or reduce adverse trends.

E2.3 Engineering Support to Surveillance Testing

a. Inspection Scope (37550)

Selected completed electrical and mechanical surveillance test procedures and records were reviewed for adequacy of content, proper implementation, and to verify that the applicable technical specification (TS) surveillance requirements were met. The selected records were discussed with cognizant licensee personnel and, in some cases, the inspectors walked down portions of the respective equipment.

b. Observations and Findings

The inspectors reviewed surveillance procedure 2BVSR AF-3, "Simultaneous Start of Both AF Pumps With Flow to the Steam Generators," and determined that the procedure adequately verified that pump performance was within analyzed limits. However, the inspectors also identified a weakness with respect to one of the surveillance procedure prerequisites. Specifically, prerequisite C.3 required that operators verify that condensate storage tank (CST) level was $\geq$ 60 percent before conducting that test which would draw down CST level. However, the TS requirement was also for the level of the CST to be $\geq$ 60 percent. The inspectors were concerned that if the test were started with CST level at or close to 60 percent, CST level could be drawn down to below the 60 percent level required by technical specifications. The licensee agreed to review the procedure in response to the inspectors comments.

c. Conclusions

Based on the inspection results, the inspectors concluded that engineering support for TS surveillances was good and the overall program was effective. Surveillance requirements were properly identified in the procedures and were effectively implemented. Even though some minor concerns were noted, the overall surveillance results were acceptable and were within the required acceptance criteria.

E2.4 Engineering Support to Maintenance

a. Inspection Scope (37550)

The methods used by engineering to provide support to maintenance were reviewed to verify adequacy and control. Emphasis in this review was on the involvement of engineering in the development and implementation of predictive and preventive maintenance (PM). The review included relevant procedures and records as well as discussions of the issues with cognizant licensee personnel. In addition, the inspectors

reviewed the actions taken by engineering and maintenance in investigating and correcting problems which resulted in a Unit 2 reactor trip on January 13, 2000.

b. Observations and Findings

Engineering personnel were actively involved in prioritizing and assisting in appropriate maintenance activities. System engineers were knowledgeable of significant maintenance work on the assigned systems, directly interfaced with maintenance personnel, and witnessed selected maintenance work. Procedures adequately described the duties and responsibilities of engineers in supporting maintenance and other organizations. System engineers were qualified and experienced in their respective systems and were directly involved in problem investigation and resolution pertaining to the assigned systems. Maintenance personnel stated that engineering provided good support to maintenance especially when a rapid response was needed.

Engineering personnel were also involved in predictive and PM activities; programs were in place for oil analysis, vibration analysis and thermography. Licensee personnel mentioned several areas in which equipment failures had been prevented by use of predictive maintenance techniques.

Electrical Breaker Refurbishment Program: A significant number of PIFs had been documented in the recent past on problems with electrical circuit breakers. The inspectors were concerned that refurbishment of breakers did not appear to be timely; most of the safety-related 4.1kV breakers and many of the safety-related 480V breakers at Byron had not been refurbished after 20 years even though vendors had recommended refurbishment after 10 to 12 years. Although this problem was identified by the NRC in early 1999, adequate attention had not been given to breaker maintenance during the past year. The inspectors noted that 64 breaker-related PIFs were issued at Byron during the last two years. These PIFs documented 11 functional failures of breakers. Because adequate history of previous maintenance was not documented, the current condition of plant breakers was difficult to assess. The inspectors were concerned that there was a potential for common mode failure of these breakers until adequate PM had been performed. The inspectors were concerned that, in spite of several PIFs generated on recent breaker problems, timely refurbishment was not provided for the safety-related electrical breakers and there was a potential for a common mode failure of the un-refurbished breakers. This was discussed with licensee management and was considered a programmatic weakness.

Unit 2 Switch-Yard Breaker Failure: On January 13, 2000, following a fault on 345KV grid line 0622, Unit 2 tripped from full power due to the functional failure of auxiliary contacts on non-safety-related 345 KV switchyard breaker air circuit breaker (ACB) 10-11. The load rejection contacts were determined to be in the “closed” position, when they should have been “open.” This resulted in a trip of the Unit 2 main generator and a subsequent reactor trip.

An investigation, performed by licensee personnel at the time of the event, concluded that a defective ACB 10-11 auxiliary contact switch (load rejection contacts) was the cause of the on-site failure. Subsequent testing of this ACB 10-11 contact switch, by the Commonwealth Edison Test Laboratory, determined that the switch was not

defective. An opportunity to determine the actual root cause of the failure was missed when a thorough cause determination process was not used prior to removal of the auxiliary contacts. Investigation into records of the breaker by licensee personnel determined that auxiliary contacts on the breaker, other than the load reject contacts, were tested periodically to ensure proper operation. Possible cause of the failure was attributed to the lack of periodic testing of these load rejection contacts. At the conclusion of the inspection, licensee personnel had not determined the root cause for this event. Additional testing to determine the root cause(s) was planned.

The switchyard (SY) system, including the ACB 10-11 breaker, was included in the Byron Maintenance Rule Program and classified as an (a)(2) item. On January 26, 2000, the Byron maintenance rule (MR) expert panel met to determine if changes in the SY system scoping, risk significance, or performance criteria were necessary to meet the MR program. The panel re-evaluated the MR classification and agreed that the SY system should be re-classified from (a)(2) to (a)(1). The panel's decision was based on the following:

- The failure of the ACB 10-11, phase A, load reject contacts resulted in a significant plant level event (reactor trip).
- PM had not been performed on the load reject contacts prior to this event.
- There was no established PM program to test or maintain the ability of these contacts to function properly.
- The functional failure of the ACB 10-11, phase A, load reject contacts was attributed to the lack of an effective PM program for these contacts.
- This contact type had a history of failures in ComEd's electrical systems.

During discussions on this issue, the inspectors were told that the failure to include the ACB 10-11 load rejection auxiliary contacts within the scope of the breaker PM was an oversight. The change of the SY system MR classification would require that complete and thorough PM be performed on breaker ACB 10-11. Based on the review of switchyard performance, the Expert Panel unanimously determined that there were no programmatic changes such as scoping, risk significance, or performance criteria required. In addition, PIF B2000-00146 was written to enter the problem and required actions into the corrective action program.

c. Conclusions

Based on the inspection results, the inspectors concluded that over-all engineering support for maintenance was good. Good support was provided in problem investigation and resolution and in the development and implementation of predictive maintenance such as oil analysis, vibration analysis, and thermography. Weaknesses were noted in PM as illustrated by repetitive breaker problems and the failure to include the switchyard ACB 10-11 load rejection contacts in the PM program.

E2.5 Operating Experience Program

a. Inspection Scope (37550, 40500)

The Operating Experience (OPEX) Program was reviewed and discussed with cognizant licensee personnel. The methods used to process and evaluate outside or industry generic problem notifications such as generic letters, information notices, Institute of Nuclear Power Operations (INPO) notifications, service information letters, etc., were reviewed to verify adequate review, applicability determination, and determine and schedule actions if considered necessary to correct the problems at Byron. The review included the controlling procedure and the actions taken on selected notification documents.

b. Observations and Findings

The inspectors noted that the controlling procedures adequately defined the operating experience program responsibilities including the receipt, dissemination, screening, investigation, evaluation, appropriate disposition, scope, and documentation of incoming industry information. The procedures also provided instructions for sending information on Byron events to other plants. The program was used to assess problem information coming from outside the licensee's site organization. The inspectors noted that the licensee had adequately evaluated and had taken appropriate corrective actions to address selected industry information.

Licensee personnel thoroughly disseminated OPEX information to plant personnel including discussions at the plan-of-the-day meetings, shift turnovers, job briefings, and written OPEX newsletters. The inspectors only found minor deficiencies and did not identify any risk significant issues.

The inspectors reviewed PIFs that licensee personnel had initiated as a result of OPEX evaluations and determined that the actions taken to correct the identified deficiencies had been appropriate.

c. Conclusions

Based on the inspection results, the inspectors concluded that the Operating Experience Program was acceptable and adequately responded to identified issues. The information received was reviewed and evaluated and appropriate actions were scheduled and completed when considered necessary.

E7 Quality Assurance in Engineering Activities

Quality assurance of engineering activities was provided by the Nuclear Oversight (NO) organization, who performed assessments, field observations of plant activities, and required audits of plant activities. Some self-assessments of engineering were conducted by the engineering departments. In addition, two independent committees provided independent reviews of selected documents, problems, and issues. These

activities provided substantial support for corrective action and problem avoidance type activities.

E7.1 Assessments and Field Observations

a. Inspection Scope (40500)

The methods used to perform and control Nuclear Oversight Assessments (NOAs) and Field Observations (FOs) were reviewed to verify adequacy, control, and compliance with regulatory requirements. The review included the controlling procedures, selected 1999 assessment, and FO reports as well as discussions of the program and issues with cognizant licensee personnel.

b. Observations and Findings

The NOAs were routinely planned and scheduled in accordance with procedures. The assessments were usually broad in scope and covered a selected area or function. The inspectors reviewed six NOAs and several FO Reports. FOs were usually less formal, narrow in scope, more specific and of a much shorter duration. FOs normally required limited planning and could be dependent on the plant work in progress. Licensee personnel performing the NOAs and FOs appeared to be well qualified and experienced in the areas assessed or observed.

NOA auditors generated PIFs for the findings identified during the NO activities. The findings were not always followed-up to verify completion of adequate corrective actions. Most of the PIFs, identified in this area, were categorized by the PIF screening committee as Significant Conditions Adverse to Quality (SQAC) or Condition Adverse to Quality (CAQ). The auditors usually verified corrective actions for SQACs and, in some cases, selected CAQs. The inspectors did not identify problems with the follow-up of identified issues by the auditors.

c. Conclusions

The inspectors concluded that NO assessments and FOs were performed by well-qualified auditors and were of good quality. Reviews were in-depth and findings were written when appropriate. Auditor follow-up to verify adequate actions was provided for SQACs.

E7.2 Self-Assessments

b. Inspection Scope (40500)

The inspectors reviewed the licensee's self assessment program to verify adequacy and implementation. The controlling procedure and selected records of activities were reviewed to evaluate the effectiveness of the program. The activities and findings of the assessments were discussed with cognizant licensee personnel.

b. Observations and Findings

The corporate self-assessment procedure, applicable to all the ComEd plants, required quarterly assessments, and a "Self-Assessment Process Map" as well as implementation details. The self-assessments program was initiated in 1999. Self-assessment reports were considered good, and documented strengths, deficiencies, and recommendations. When deficiencies were identified, PIFs were generated, and were evaluated for prioritization and corrective action through the normal PIF system.

c. Conclusions

Based on inspection results, the inspectors concluded that self-assessments were properly performed and were effective. The assessments were preformed by well-trained and experienced engineers and were of good quality. Reviews were in-depth and PIFs were written when deficiencies were identified. Actions taken to address identified issues were adequate and timely and follow-up was provided as needed.

E7.3 Review Committee Activities

a. Inspection Scope (40500)

The inspectors reviewed the methods used by the two separate and independent review groups at Byron, the Plant Operations Review Committee (PORC) and the Nuclear Safety Review Board (NSRB), to verify adequacy, control, and compliance with regulatory requirements. The review included the controlling procedures and selected records of activities. The functions, findings, and activities of the groups were discussed with cognizant licensee personnel. The inspectors attended one PORC meeting.

b. Observations and Findings

The functions of the two groups, PORC and NSRB, were to provide technical expertise for continuing assessment of plant documents and activities, which were independent of plant management. The functions included: examination of significant plant problems; operating characteristics; NRC issues; industry advisories; and other sources of plant design and operating experience that might indicate areas for improving plant safety. Independent reviews and assessments of selected plant activities included maintenance, modifications, operational problems and analysis, and aids in the establishment of programmatic requirements for plant activities.

Membership of these committees included representatives from various departments with varying knowledge and expertise. The diverse membership provided a knowledgeable and balanced group review. Regularly scheduled meetings were normally held and special meetings were held as needed to discuss specific issues. An inspector attended PORC Meeting No. 00-07, held on January 27, 2000, and noted that the meeting was conducted in accordance with procedural requirements and in a professional manner. PORC members raised safety questions and there was a good discussion of issues.

The inspectors reviewed selected samples of review committee meeting minutes. These records indicated that committee actions were appropriately documented, a broad variety of issues were discussed and reviewed and the described committee functions and quorum requirements were properly implemented.

c. Conclusions

Based on the inspection results, the inspectors concluded that the two plant review committees, PORC and NSRB, performed well and were effective in completing assigned reviews, investigations and evaluations. Support and assistance to plant management by these organizations in the resolution of problems was very good. Members of the groups were experienced and were aggressive in pursuing plant problems and issues.

E8 Miscellaneous Engineering Issues

This section describes the review, action and status of selected items which had been identified in previous NRC inspections.

E8.1 (Closed) Unresolved Item 50-454/98004-01; 50-455/98004-01: Breaker interlock contacts, used in Units 1 and 2 safety-related logic circuits, had not been tested promptly in response to NRC Generic Letter 96-01.

This unresolved item was opened to track the completion of safety-related logic circuit testing as required by Generic Letter (GL) 96-01, "Testing of Safety-Related Logic Circuits," issued January 10, 1996. The inspectors reviewed the response letter from ComEd to the NRC dated January 13, 1999, which stated that NRC Generic Letter 96-01 actions had been completed. The inspectors interviewed licensee and NRC personnel and reviewed related PIFs and LERs. The actions verified that since the letter, neither the licensee nor the NRC has identified and GL 96-01 associated components that were missed by the review. This item is closed.

E8.2 (Closed) Violation 50-454/98004-02; 50-455/98004-02: Field chance request (FCR) 960062, completed on June 7, 1995, was not subjected to design control measures commensurate with those applied to the original design. In addition, as-built drawings and seismic calculations did not match the plant design because a battery rack was not modified as required by DCP 9600148. By a letter dated April 27, 1998, licensee management documented disagreement that FCR 960062 was not subjected to appropriate design control measures. The licensee stated that Calculation 7.16.10.2-BYR96-074, Revision 1, provided appropriate design control measures for FCR 960062. The inspectors reviewed the calculation and concluded that the calculation was acceptable. With regards to DCP 9600148, the licensee updated drawing 6E-0-3391H to reflect that the modification was optional and not required. Consequently, the revised drawing allowed for only one of the battery racks to be modified. The inspectors performed a walkdown of the affected battery racks and determined that the drawing revision was appropriate. In addition, the inspectors reviewed 10 CFR 50.59 evaluation 6G-98-0068 performed to support the drawing revision and the inspectors concurred with the determination that no unreviewed safety question existed. This item is closed.

E8.3 (Closed) Violation 50-454/98004-03(a); 50-455/98004-03(a): Corrective actions to correct a degraded condition of the bolts and anchors for the auxiliary feedwater battery rack were not timely. DCP 9600148, which was issued to correct the problem, had not been completed even though the DCP had been issued since May 1996. The inspectors reviewed the violation and the response to the violation, documented in ComEd's response letter dated May 27, 1998.

The inspectors determined that the degraded condition had been adequately corrected by replacement of one battery rack. As discussed in Section E8.2 above, the drawing for the modification was revised to specify that modification necessary for replacement was optional. The inspectors performed a walkdown of the auxiliary feedwater battery racks and did not identify any corrosion or other degraded conditions. Actions taken by licensee personnel were adequate to resolve the issue. This item is closed.

E8.4 (Closed) Violation 50-454/98004-03(c); 50-455/98004-03(c): Failure to take adequate corrective action to ensure that field-installed modification DCP 8500999 had been properly evaluated, tested, and signed off as completed before placing the modification in service. The inspectors reviewed the violation and the response to the violation, documented in ComEd's response letter dated May 27, 1998. The inspectors concluded that adequate action was taken by licensee personnel to resolve the issue. This item is closed.

E8.5 (Closed) Violation 50-454/98004-04; 50-455/98004-04: Failure to establish an effective process for independent inspection and verification of quality-related modification activities. The inspector reviewed the violation and the response to the violation, documented in ComEd's response letter dated May 27, 1998.

The inspectors verified that the requirement to have independent verification of safety-related work was incorporated into procedures BAP 300-1, "OP-AA-101-101, Conduct of Operations Manual, Byron Addendum," and BAP 1099-3, "QC Field Inspections." In addition, the inspectors verified that independent verifications had been performed for work requests (WR) 970116466, 970117049, 970109215, and 970109216. The inspectors determined that the actions taken by licensee personnel were adequate. This item is closed.

E8.6 (Closed) Unresolved Item 50-454/98004-05; 50-455/98004-05: This item was unresolved pending completion of the plan to access the impact of cable impedance changes on marginally acceptable circuits. The inspectors reviewed action taken by licensee personnel on this item and considered the action appropriate. This item is closed.

E8.7 (Closed) Unresolved Item 50-454/98004-06; 50-455/98004-06: There were no studies or evaluations to address appropriate methods for pressure control during shutdown and cooldown of the reactors without the pressurizer heaters. This item was written pending completion of licensee commitments to find or develop appropriate technical evaluations and revision of operating and emergency procedures, if needed, for the controlled safe shutdown and cooldown of the reactor with the loss of the pressurizer heaters. Licensee personnel considered the existing operations shutdown procedures to be adequate to safely shutdown the reactor and control cooldown without the pressurizer

heaters. After review and discussions on this issue, and the existing shutdown procedures, the inspectors concurred and have no further concerns in this area. This item is closed.

E8.8 (Closed) Inspection Follow-up Item 50-454/1999001-01; 50-455/1999001-01: A non-conservative error was found in voltage calculations for safety-related breaker coils. Due to this error, there was a need to re-review the minimum voltage calculations for other critical breakers. This inspection follow-up item was written to review the actions of licensee personnel on the review of additional voltage calculations. During a review of calculations, described in Section E1.4 of this report, the inspectors considered this item to be adequately addressed and have no further concerns in this area. This item is closed.

II. Management Meetings

V1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management in an exit meeting on February 2, 2000. The inspectors noted that one document, provided during the inspection, was identified as proprietary. The licensee acknowledged the information discussed during the exit and agreed that no additional proprietary information was discussed or provided to the inspectors. The inspection results were discussed with plant management and staff during this exit meeting. Subsequent to the formal exit, on February 15 and 22, 2000, telephone discussions were held to discuss further corrective action concerns. On February 22, 2000, the results of the review of these additional corrective action concerns to members of your staff.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

W. Levis, Site Vice President
B. Adams, Regulatory Assurance Manager
R. Colglazier, NRC Coordinator
J. Feimster, Rapid Response Team Supervisor Site Engineering
S. Kuczynski, Nuclear Oversight Manager
R. Lopriore, Station Manager
K. Moser, Acting Regulatory Assurance Manger
K. Passmore, Assistant Systems Engineering Manager
T. Roberts, Design Engineering Manager Site Engineering
D. Wozniak, Site Engineering Manager

NRC

E. Cobey, Senior Resident Inspector
R. Gardner, Chief, Electrical Engineering Branch, DRS
B. Kemker, Resident Inspector

INSPECTION PROCEDURES USED

IP 37001:	10 CFR 50.59 Safety Evaluation Program
IP 37550:	Engineering
IP 37700:	Design Changes and Modifications
IP 40500:	Effectiveness of Licensee Controls in Identifying, Resolving and Preventing Problems
IP 92903:	Followup - Engineering

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-341/99002-01	VIO	Errors were made in three design calculations
50-341/99002-01	URI	Possible failure of emergency lights to meet appendix R requirements

Closed

50-341/95009-02	IFI	Questionable Emergency Equipment Cooling Water (EECW) Heat Exchanger Rating
50-341/97005-01	VIO	Failure to Maintain the Diesel Fire Pump Engine Speed Within Acceptable Limits
50-341/97005-03	URI	Licensee Review of Lubricating Levels for Rotating Equipment
50-341/95005-04	VIO	Inadequate Engineering Evaluation of Nonsafety-Related Parts
50-341/97011-02	VIO	The Condensate Storage Tank Volume Was Inaccurate in the Updated Final Safety Analysis Report and the Technical Specifications
50-341/98005-01	EEI	Failure to Demonstrate Reactor Protection System Trip Units Within Response Time Limit
50-341/98005-02	EEI	Failure to Demonstrate Isolation Trip Within Response Time Limit
50-341/98005-03	EEI	Failure to Demonstrate ECCS Trip Function Within Response Time Limit
50-341/98005-04	EEI	Prior NRC Approval Was Not Sought or Obtained for Changing Technical Specification Requirements

Discussed

None

LIST OF LICENSEE DOCUMENTS REVIEWED

The following is a list of licensee documents reviewed during the inspection, including documents prepared by others for the licensee. Inclusion on this list does not imply that NRC inspectors reviewed the documents in their entirety, but, rather that selected sections or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document in this list does not imply NRC acceptance of the document, unless specifically stated in the body of the inspection report.

Procedures

AD-AA-103	NGG Self-Assessment Procedure, Revision 1
BAP 300-1	OP-AA-101-101, Conduct of Operations Manual, Byron Addendum, Revision 17
BAP 1099-3	QC Field Inspections, Revision 5
BAR 1-3-D7	AF Flow Cont Vlv Setting Low, Revision 51
1BEP ES-1.3	Transfer to Cold Leg Recirculation, Unit 1, Revision 1
2BEP-0	Reactor Trip or Safety Injection, Unit 2, Revision 1
2BEP-1	Loss of Reactor or Secondary Coolant, Unit 2, Revision 1
2BEP ES-1.4	Transfer to Hot Leg Recirculation, Unit 2
2BEP-3	Steam Generator Tube Rupture, Unit 2
1 BOSR 8.4-1	125 Vdc Bus 111 Loadshed when Crosstied to D.C. Bus 211, Revision 2
2 BOSR 8.4-2	125 Vdc Bus 212 Load Shed When Cross-Tied to D.C. Bus 112, Revision 2
BOP DC-7	125 Vdc ESF Bus Crosstie/Restoration, Revision 7
CC-AA-112	Temporary Modifications, Revision 0
CAP-1	Problem Identification Form Threshold Information Handbook (Revision 3 issued October 1, 1999)
CAP-2	Significant Apparent Cause Evaluation Handbook Revision 1
CAP-3	Root Cause Investigation and Report Handbook Revision 1 issued April 29, 1999
CAP-4	Trend Investigation and Report Handbook Revision 0, issued April 29, 1999
CAP-5	Effectiveness Review Handbook Revision 0, issued April 29, 1999
CAP-6	Coding and Trending Handbook Revision 0, issued April 30, 1994/30/99
CAP-8	Apparent Cause Evaluation (ACE) Handbook Revision 0, issued September 20, 1999
CWPI-NSP-AP-1-17	Corrective Action Program Process Manual of Common Work Practice Instructions Revision 0, issued May 18, 1998
CWPI-NSP-AP-1-1	Corrective Action Program Process Manual of Common Work Practice Instructions Revision 0
CC-AA-204	Control of Vendor Equipment Manuals, Revision 1
CWPI-NSP-AP-1-10	Operating Experience (OPEX), Revision 0
NEP-04-00	Roadmap To Configuration Changes, Revision 4
NEP-04-01	Plant Modifications, Revision 6

NEP-10-02	10 CFR Part 21Evaluations and Technical Issue Reviews, Revision 1
NEP-09-03	Performance Centered Maintenance (PCM) Methodology, Revision 0
NES-G-08	Performance Centered Maintenance (PCM) Templates, Revision 4
NO-AA-11	Nuclear Oversight Continuous Assessment Process, Revision 0.
NSP-RA-3001	Conduct of the Nuclear Safety Review Board, Revision 1
NSP-AP-1002	Plant Operation Review Committee , Revision 4
NSP-AP-1004	Corrective Action Program Process Revision 3, issued April 6, 1999
NSP-AP-2004	Corrective Action Program Process Roles and Responsibilities Revision 3, issued April 6, 1999
NSP-AP-3004	Corrective Action Program Handbook Revision 4, issued June 17, 1999
NSP-AP-4004	Corrective Action Program Procedure Revision 4, issued June 8, 1999
SPP 98-091	Auxiliary Feedwater Flow Verification, Revision 0
RS-AA-109	Licensee Event Report (LER) Security Event Report (SER), Revision 0
RS-AA-115	Operating Experience (OPEX), Revision 0
RS-AA-120	10 CFR Part 21 Implementation, Revision 0
RS-AA-120	10 CFR Part 21 Implementation, Revision 1

Company Instruction 9-0	10 CFR 21 Reporting Requirements, September 22, 19933
Company Instruction 9-1	10 CFR 21 Reporting Requirements, October 1, 1997
Company Instruction 12-0	Expanded Review of Significant Construction and Operating Defects at Nuclear Stations, September 21, 1993
Company Instruction 12-1	Expanded Review of Significant Construction and Operating Defects at Nuclear Stations, October 1, 1997

Surveillances

2BVS 5.2.f.3-1	Unit 2, ASME Surveillance Requirements for Residual Heat Removal Pump 2RH01PA, Revision 18
2BVS 5.2.4-4	Unit 2, ASME Surveillance Requirements for Residual Heat Removal Pump 2RH01PB, Revision 1
2BVSR AF-3	Unit 2, Simultaneous Start of Both AF Pumps With Flow to the Steam Generators, Revision 2

Modification Packages

DCP 9600184	Modified the Feeder Water Pump Motor Heater Interlock Wiring to Assure Heater Motor Winding Is Energized When Pump Is Not Running
DCP 9600186	Time Delay Relay for RH Valves 610 and 611

DCP 9600194	Unit 1 ESF Battery Replacement. (Modification)
DCP 9600195	Replacement of 125 VDC ESF Batteries (2DC001E and 2E) of Unit 2
DCP 9600265	Change Control Circuit of Non-IE Pump 2TO-06P (Exempt Change)
DCP 9600416	Incorporate Time Delay for Closure of 1/2CC685
DCP 9700389	Revise Control Circuits of Valve 2CV8152 and 2CV8160 to Test Slave Contact of ESF Logic in “NO-GO” Configuration and Interlock of 2CV8149 A and C
DCP 9700425	Well Water Pump Control Circuit Wiring to Eliminate Ground on Both DC Safety Buses
DCP 9700474	Cut a Four Inche Hole in Doors 341 and 346 Transoms of the Auxiliary Building for Routing Robotic Cable for Outage Support
DCP-9700527	Replace 4.16 Kv ESF Bus Degraded Voltage Time Delay Relay
DCP 9700559	Auxiliary Feedwater Control Valve (2AF005A-H) Modification
DCP-9800094	Increase Time Delay for the EDG 1A for the Under Frequency Relay (Exempt Change)
DCP 9800238	Moved Feed for OFP03JB Circuit 4 to Circuit 20 at MCC 133U1
DCP-9800265	Splice Flexible Cable To Existing CRDM Cables and Upgrade Connectors (Exempt Change)
DCP 9800498	Installed Larger SX MU Pump Impeller
DCP 9900066	Provide Cable Jacket and Shield Repair for (Radiation Monitors) Cable to 1RE-AR023A and D
EC 9303479 (M06-1-93-890)	Installed Larger Operator on Valves 1SX143A and B
EC 9303480 (M06-2-93-890)	Installed Larger Operator on Valves 2SX143A and B

Temporary Modifications

99-2-018	Connect Interlock Circuitry from Non-Functioning 2SX173 Valve to 2SX178 Valve
99-1-041	Defeat Containment Equipment Drain Leak Detector Input to Main Control Room Alarm

Problem Identification Forms (PIFs)

B1998-00079	UFSAR Table 6.2-58 Discrepancies
B1998-00103	NFS AF Pump Curve Restrictions, dated January 8, 1998
B1998-00308	MUD Day Tank Cleaning Delayed
B1998-00350	Loss of Configuration Control
B1998-00359	Design Drawing Not Revised for Design Change
B1998-00525	Lack of Testing of SAR "A" Relay When Cross-Tied to Bus 241, February 2, 1998
B1998-00952	Auxiliary Feed-Water Battery Rack
B1998-01021	UFSAR 6.5.1.6 Discrepancy
B1998-01127	Failed PMT on Emergency Safety Shower at U1 CWPH
B1998-01327	Essential Service Water Underground Pipe Wall Defects, dated March 19, 1998
B1998-02611	2A SI Pump Discharge Relief Lifting Early, dated March 16, 1998

B1998-03036	Train B Post H2 Analyzer Instruments OOS but Corrected
B1998-03197	Unplanned LCOAR Entry Due to Failed AF Flow Indicators, July 16, 1998
B1998-03246	Configuration Control
B1998-03247	2B DG Air Dryer Refrigerant Compressor Switch Out of Position
B1998-03306	Functional Test of 4kV Breakers Challenging Systems and LOCAR Time
B1998-03350	Bus 7 Voltmeter Found OOT
B1998-03382	Damaged Components on 4kV Breaker
B1998-03387	Specific Gravity Readings Found Outside Acceptance Criteria
B1998-03412	SX Makeup Pump Line Shaft Bearing, July 25, 1998
B1998-03425	OOS Error on PS OOS 980007792
B1998-03426	New Motor From Stores Making Strange Noises When Running
B1998-03428	Configuration Control Problem
B1998-03438	SX Booster Pump, July 28, 1998
B1998-03467	Breaker Completely Removed from Cubicle and Return to Service Cleared
B1998-03470	Request for Evaluation of SX Lineup to AF, July 31, 1998
B1998-03487	Elevated Ground on DC Bus 212
B1998-03511	Rx Trip Bypass Breaker B Problem
B1998-03547	Wiring in CP Room Not Per Print, August 16, 1998
B1998-03717	Low AC Volts on Instrument Bus 114
B1998-03725	Containment Spray Isolation
B1998-03767	Electrical Maintenance Worker Received Electrical Shock
B1998-03769	Cathodic Protection Units Bad, August 26, 1998
B1998-03786	2A Bus Duct Cooling Fan Tripped and 2B Fan Auto Started as Designed August 28, 1998
B1998-03796	DC 112 Ground
B1998-03937	Electrical Maintenance Storage Cage Chemical Control
B1998-03995	SX and AF Diesel Engine Jacket Water Heater Bypass Not Shown on Vendor Drawing, September 15, 1999
B1998-04087	Breakers for SAT 142-1 Cooling Fans Found Open after SAT was Energized
B1998-04108	TSC Inverter Concern, September 21, 1998
B1998-04126	1A DG Trip During Startup Results in LER
B1998-04400	Battery Pilot Cell Voltage Found Out of Admin Tolerance for TSC/Security Battery
B1998-04452	Violation of CWPI-NSP-AP-1-10 Due to Untimely Corporate Action, October 16, 1998
B1998-04531	Valve Body Erosion on the 2SX150A, dated October 21, 1998
B1998-04649	1A FW Pump Breaker
B1998-04813	New PM WR Affects Work Schedule Scope Stability
B1998-04910	Unit 1 RWST Level Loop Schematic Diagram Errors, November 17, 1998
B1998-04950	P-12 Circuit Inadequately Tested During Past Refueling Outages November 19, 1998
B1998-04956	Spurious Alarms on MS Pressure Low
B1998-05029	Pump Breaker Thermals Tripped and Will Not Reset
B1998-05202	Over Current Relay for Unit 0 CC Pump Found out of Tolerance

B1999-00014	CW Flow UFSAR Discrepancy
B1999-00017	Bus 144 Feed to XFMR 034RA & 034PA Breaker
B1999-00090	480 Volt Breaker Spring Release Device Coil Failed Voltage Test
B1999-00125	N.O. Identified Deficiencies in Maintenance Apparent Cause Evaluations
B1999-00134	480 Volt Breaker Motor Cutoff Switch Found Bad
B1999-00149	480 Volt Breaker Operating Mechanism Found Gummed Up on 034R Feed From 244
B1999-00153	Bus 034R Feed to MCC 034R3 Breaker
B1999-00196	Breaker From Stores S.I #767C16 to Replace B Reactor Bypass Breaker
B1999-00211	Cable Length Not Considered in Calculation 19-AQ-43 (Revision 2)
B1999-00224	Trip Latch and Trip Cam Failed to Reset on 4kV Breaker (ACB 1441)
B1999-00308	Non-adherence to Effectiveness Review Procedure
B1999-00335	Potential Trend for the Auxiliary Power System
B1999-00373	N.O. Identified Ineffective Corrective Action in Response to a CAR
B1999-00388	480 BRKR, 2A ISOL Phase Bus Duct Cooling
B1999-00497	N.O. Identified Deficiency for Engineering ACE Quality
B1999-00498	N.O. Identified Deficiency for ACE Corrective Action Completion Time
B1999-00575	Auto Closure of 1RH611 During Performance of Mod Test
B1999-00599	ACB 10-11 345kv Breaker Pole Disagreement
B1999-00631	2B Diesel Driven Auxiliary Feed Pump 2A/2B Battery Charger Tripped During Return to Service
B1999-00857	Wrong Fuse Installed in 1MS01JG (1UU-EH020)
B1999-00957	1B CW PP Breaker
B1999-00959	ASCO Notification of a Hydromotor Problem, March 19, 1999
B1999-01985	N.O. Identified Maintenance ACE Corrective Action Deficiencies
B1999-02305	Incomplete Modification Testing Performed on 1SI8811A/B
B1999-02303	Failure to Have Part 21 Committee Meetings Violates NEP-10-02, March 23, 1999
B1999-02307	Battery 212 Cell #46 Voltage Too Low
B1999-02568	Subject Relay Not Retained For Pt 21 Review, July 15, 1999
B1999-03291	Potential Bypass of Part 21 Process, July 2, 1999
B1999-03820	Station Drawings Did Not Match Actual Field Conditions
B1999-03972	No Corrective Actions for Manufacturing Defect, October 27, 1999
B1999-04175	2SI05TB Inner Screen Discrepancy
B1999-04187	Lack of Proper Engineering Analysis, November 10, 1999
B1999-04188	UFSAR Figure 6.3-8 Does Not Match S-1070
B1999-04587	Voltage Drop Common CC Pump Switchgear Breaker Closing Coils Not Evaluated
B1999-04676	Unplanned LCOAR Entry on 2B AF Pp, dated December 22, 1999
B2000-00124	Inadvertent Entry Made to Temp Mod Control Room Log, dated January 11, 2000
B2000-00138	Voltage Drop for 2A and 2B RH Pump Switchgear Breaker Closing Coils.

B2000-00139	Mod Closeout Activities Not Adequately Tracked, dated January 12, 2000
B2000-00304	Incorrect Labels on Doors 0DSD225 & 0DSD226, January 28, 2000

10 CFR 50.59 Safety Evaluations

DCP 9600184	Modified the Feeder Water Pump Motor Heater Interlock Circuit
DCP 9600195	Replaced the Existing Safety-Related Gould 125 VDC Batteries with Safety-Related C&D Batteries in Unit 2
DCP 9700389	Revised Control Circuits of Valve 2CV8152 and 2CV8160 to Test Slave Contact of ESF Logic in “NO-GO” Configuration and Interlock of 2CV8149 A and C
DCP 9700474	Added Close Able Penetrations to Doors 341 and 346 Transoms to Route a Fibre Optics Cable into Containment During Outage Support from Valve to Motor Breaker
DCP 9800238	Resolved Drawing Discrepancy Between 6E-0-4030FP02 and 6E-1-4008CY and 6E-1-4814D
DCP 9800498	Installed Larger SX Makeup Pump Impellers.
DCP 9900066	Provided Cable Jacket and Shield Repair for (Radiation Monitors) Cable to 1RE-AR023A and D
EC 9303479	Installed Larger Capacity Actuators on Valves 1SX143A and B
EC 9303480	Installed Larger Capacity Actuators for Valves 2SX143A and B.
6G-97-0075	Unit 1 ESF Battery Replacement, May 19, 1997
6G-98-0068	Auxiliary Feedwater Battery Racks, Revision 0
6G-00-0023	2SX178 Valve Logic Change, Revision 0
6G-97-0212	Flow switches for Component Cooling Water Isolation from RCP Thermal Barrier, Revision 1
6E-99-0323	Disable Main Control Room Alarm, Revision 0
6G-98-0174	Residual Heat Removal System Miniflow Recirculation Valve Time Delays, Revision 1
6G-98-0263	Auxiliary Feedwater Flow Control Valves, Revision 0

Work Requests

970116466	Install Time Delay in Valve 2RH610
970117049	Install Time Delay in Valve 2RH611
970109215	Replace Instrument With Model 289A Per DCP 9600416
970109216	Replace Instrument With Model 289A Per DCP 9600416
990067703-01	Replace Cell #46 on Unit 2, 125 Vdc Battery 212
990011465-01	Replace Cells 51-58 on Unit 2, Battery 212

Drawings

6E-0-3391H	Electrical Installation Electrical Equipment Mounting Details, Revision AH
6E-2-4030RH03	Schematic Diagram, Residual Heat Removal Pumps 2A & 2B Miniflow Valves 2RH610 & 2RH611, Revision J

ND-48858-11	36 inch W/S Valve 150# ANSI Flangeless with Manual Actuator, Revision D
ND-48858-14	Jamesbury Drawing, 8" Fig. 8126-E Mod. “B” Wafer Sphere Valve w/Limitorque Electric Actuator, dated November 29, 1976
M-129	Diagram of Containment Spray, Revision AH
M-139	Diagram of Component Cooling, Revision AM

Nuclear Oversight Assessments

NOA-06-98-043	Engineering Request Program
NOA-06-99-001	Maintenance Corrective Actions
NOA-06-99-005	Operations Corrective Actions
NOA-01-99-SA01	Continuous Assessment Process Self-Assessment
NOA-06-99-031	Second Quarter Plant Support Corrective Actions
NOA-06-99-029	Organization and Administrative Corrective Actions
NOA-06-99-028	Maintenance Corrective Actions
NOA-06-99-010	Plant Support Corrective Actions
NOAS-06-99-002	Engineering Corrective Actions
NO-99-003	Assessment of Corrective Action Program Implementation
NOA-06-99-032	Engineering Self-Assessment And OPEX
NOA-06-99-033	Design Control
NOA-06-99-ES01	Corrective Actions- Engineering Instructions, Procedures, and Drawings
NOA-06-99-ES02	Reactor Engineering and Nuclear Fuel
NOA-06-99-ES03	Plant Engineering
NOA-06-99-ES04	Organization, Procurement Document Control, and Corrective Actions

Nuclear Oversight Field Monitoring Reports

06-99-01	Daily Engineering Review of Out of Tolerance PIFs
06-99-02	Operability Assessment 99-004
06-99-01A	Follow up on Unit 1 Reactor Trip Breaker AT Mod

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97-0110	Evaluation and Corrective Action Program

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IN 99028, “Recall of Star Brand Fire Protection Sprinkler Heads”
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IN 99030, "Failure of Double Contingency Based on Administrative Controls Involving Laboratory Sampling and Spectroscopic Analysis of Wet Uranium Waste,” November 8, 1999

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BYR 97-225	Circuit Breaker Trip Settings-125 Vdc and 250 Vdc Distribution Centers, Revision 1
BYR 97-226	125 Vdc System Short Circuit Calculation, Revision 2
NED-H-MSD-17	Verification of Byron 125 Vdc Battery Room Ventilation Requirements, Revision 2
19-AQ-43	D.C. Control Circuit Voltage Drop, Revision 2
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SITH-1	Refueling Water Storage Tank (RWST) Level Setpoints, Revision 6
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97-0244	Evaluation of CARD Tag Removal Practices for Compliance With MWC02

Nuclear Design Information Transmittals (NDITs)

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BYR98-023	ASME Surveillance Instrumentation Measurement Uncertainties

Correspondence

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Byron Nuclear Safety Review Board Meetings (October 5-6, 1999) Minutes, dated October 18, 1999
Byron and Braidwood Nuclear Safety Review Boards Meeting December 22, 1999, Technical Specification Review, dated January 12, 2000
Braidwood and Byron Nuclear Safety Review Board Meeting January 17, 2000, Technical Specification Review, dated January 18, 2000

LIST OF ACRONYMS USED

ACB	Air Circuit Breaker
AFW	Auxiliary Feed-Water
AR	Action Request
CAQ	Condition Adverse to Quality
CARB	Corrective Action Review Board
CFR	Code of Federal Regulations
ComEd	Commonwealth Edison Company
CST	Condensate Storage Tank
dc	Direct Current
DRS	Division of Reactor Safety
DCP	Design Change Package
ESC	Events Screening Committee
FCR	Field Change Request
FO	Field Observations
GL	Generic Letter
IFI	Inspection Followup Item
INPO	Institute of Nuclear Power Operations
kV	Kilo Volt
LER	Licensee Event Report
MR	Maintenance Rule
NCV	Non-cited Violation
NO	Nuclear Oversight
NOA	Nuclear Oversight Assessment
NRC	Nuclear Regulatory Commission
NSRB	Nuclear Safety Review Board
OPEX	Operating Experience
OSRO	On-Site Review Organization
PORC	Plant Operations Review Committee
PIF	Problem Identification Form
PM	Preventive Maintenance
RHR	Residual Heat Removal
SQAC	Significant Condition Adverse to Quality
SY	Switch Yard
TS	Technical Specifications
URI	Unresolved Item
VIO	Violation
WR	Work Request