

February 2, 2004

Mr. M. Nazar
Senior Vice President
Nuclear Generation Group
American Electric Power Company
500 Circle Drive
Buchanan, MI 49107

SUBJECT: D. C. COOK NUCLEAR POWER PLANT, UNITS 1 AND 2
NRC PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION REPORT
05000315/2003015; 05000316/2003015

Dear Mr. Nazar:

On December 19, 2003, the U.S. Nuclear Regulatory Commission (NRC) completed a team inspection at the D. C. Cook Nuclear Power Plant, Units 1 and 2. The enclosed report documents the inspection findings which were discussed on December 19, 2003, with you and members of your staff.

This inspection was an examination of activities conducted under your license as they relate to the identification and resolution of problems, 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 in general, problems were being properly identified, evaluated, and corrected. Some positive observations during this inspection may be the result of your recently developed recovery plan for the corrective action program that was still in the process of being implemented at the end of this inspection. However, during this inspection, several examples of minor problems were identified, including issues entered into the corrective action program without the proper significance categorization, a lack of rigor in operating experience reviews, and an inadequate root cause investigation. In addition, a number of significant corrective action program concerns were identified by the NRC during other inspections since the last Problem Identification and Resolution inspection, which indicated that your actions to address the previously identified corrective action program concerns have not been effective.

M. Nazar

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Sincerely,

/ RA /

Eric Duncan, Chief
Branch 6
Division of Reactor Projects

Docket Nos. 50-315; 50-316
License Nos. DPR-58; DPR-74

Enclosure: Inspection Report 05000315/2003015; 05000316/2003015
w/Attachment: Supplemental Information

cc w/encl: J. Jensen, Site Vice President
M. Finissi, Plant Manager
R. Whale, Michigan Public Service Commission
Michigan Department of Environmental Quality
Emergency Management Division
MI Department of State Police
D. Lochbaum, Union of Concerned Scientists

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U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos: 50-315; 50-316
License Nos: DPR-58; DPR-74

Report No: 05000315/2003015; 05000316/2003015

Licensee: American Electric Power Company

Facility: D. C. Cook Nuclear Power Plant, Units 1 and 2

Location: 1 Cook Place
Bridgman, MI 49106

Dates: December 8 through December 19, 2003

Inspectors: A. Dunlop, Reactor Engineer, DRS
I. Netzel, Resident Inspector, D.C. Cook
F. Ramirez, Reactor Engineer, DRP
S. Sheldon, Reactor Engineer, DRS

Approved by: Eric R. Duncan, Chief
Branch 6
Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000315/2003015; 05000316/2003015; 12/8/2003-12/19/2003; D. C. Cook Nuclear Power Plant, Units 1 and 2; Baseline Inspection of the Identification and Resolution of Problems.

The inspection was conducted by three region-based inspectors and one resident inspector. No findings of significance were identified. 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

The inspectors concluded that the licensee's corrective action program attributes enabled timely problem identification commensurate with the significance level and that the threshold for problem identification was low. Performance Assurance and self assessment reports identified issues for the plant to resolve, including issues with corrective action implementation. The significance level of identified problems was appropriately characterized in most cases.

Root cause evaluations were thorough and appropriate corrective actions for significant conditions adverse to quality were identified. However, several examples were identified by the licensee where corrective actions to prevent recurrence of significant conditions adverse to quality were not effective. An adverse performance trend in the areas of root cause identification and corrective action implementation was identified during the previous Problem Identification and Resolution (PI&R) inspection. The inspectors determined that corrective action program performance issues continued to occur in the areas.

The inspectors developed the following additional observations:

- The inspectors identified a vulnerability in the corrective action program where operating experience (OPEX) information may not receive appropriate management attention since OPEX issues were categorized, by procedure, with low significance.
- A more thorough assessment of issues associated with ineffective corrective actions was an element of the corrective action program that could be strengthened to prevent the recurrence of issues.
- The implementation of a recovery plan to improve the performance of the corrective action program has shown some positive results. However, sustained performance will be necessary for the program to be effective in adequately resolving problems.
- Through interviews and observations, the inspectors concluded that the licensee had established a safety-conscious work environment where people were not reluctant to raise issues.

REPORT DETAILS

4. OTHER ACTIVITIES (OA)

4OA2 Problem Identification and Resolution (71152)

.1 Effectiveness of Problem Identification

a. Inspection Scope

The inspectors reviewed NRC inspection report findings issued over the last 2 years, selected corrective action documents, Performance Assurance (PA) assessments, self assessments, operating experience reports, and trend assessments to determine if problems were being entered into the corrective action program (CAP) at the proper threshold. The inspectors also conducted focused plant walkdowns of reactor protection and safeguards logic and actuation cabinets to ensure that equipment problems were entered into the corrective action system.

b. Issues

In general, the plant identified issues and entered them into the corrective action program at an appropriate level. The licensee appropriately used the CAP to document instances where previous corrective actions were ineffective or inappropriate. For example, Category 1 condition report (CR) 03275041 was initiated when it was determined that the corrective actions implemented following the previous Problem Identification and Resolution (PI&R) inspection were not effective in improving CAP performance. The inspectors also noted the following items:

b.1 Identification Threshold

The licensee had defined an adequate threshold for the identification of issues to be entered into the CAP in D. C. Cook Procedure PMI-7030, "Corrective Action Program." Corrective action documents were identified as action requests (ARs) or CRs. The generation rate for ARs/CRs was 7,130 Category 1, 2, 3, and 4 condition reports in 2002 and 7,276 Category 1,2 ,3 and 4 CRs in 2003. Both the number and significance level distribution of these condition reports appeared to be appropriate for the facility.

b.2 Operating Experience

The inspectors reviewed a sample of industry operating experience (OPEX) reports and concluded that the licensee was appropriately including the issues in the CAP. The inspectors noted, however, that OPEX-related CRs had their own specific category of "OE" in the CAP system, and that the corrective actions resulting from OPEX report reviews were categorized as "X". Categories "OE" and "X" were the least significant category in the CAP system. Refer to Section 4OA2.2.b.3 for additional information on operating experience.

b.3 Performance Assurance

The inspectors reviewed a sample of PA assessment reports from the past 2 years and determined that the PA staff, in general, was effectively identifying plant performance issues including issues with implementation of the CAP. A recent PA assessment of the corrective action program concluded that CR initiation was effective with some weaknesses. However, CR evaluation and corrective actions were considered marginally effective with significant weaknesses. This assessment was consistent with NRC inspection findings since the last PI&R inspection.

.2 Prioritization and Evaluation of Issues

a. Inspection Scope

The inspectors reviewed inspection reports and corrective action documents to verify that identified issues were appropriately characterized and prioritized in the CAP.

Inspectors attended management meetings to observe the assignment of CR categories for current issues and the review of root, apparent, and common cause analyses; and corrective actions for existing CRs.

The inspectors conducted an independent assessment of the prioritization and evaluation of selected CRs. The assessment included a review of the category assigned, the operability and reportability determinations, the extent of condition evaluations, the cause investigations, and the appropriateness of assigned corrective actions. Other attributes reviewed by the inspectors included the quality of the licensee's trending of conditions and the corresponding corrective actions. The inspectors also assessed licensee corrective actions stemming from Non-Cited Violations (NCVs) and Licensee Event Reports (LERs). This review included the controlling procedures, selected records of activities, and observation of various licensee meetings. In addition, the inspectors conducted several interviews with cognizant licensee personnel.

The inspectors reviewed several generic communications regarding industry operating experience information and observed one operating experience screening meeting to verify that known industry problems that had a potential to affect D. C. Cook were being identified and appropriately evaluated.

Information reviewed by the inspectors dated back to the previous PI&R inspection conducted in April 2002 (NRC Inspection Report 05000315/2002004(DRP); 05000316/2002004(DRP)).

b. Issues

The inspectors verified that the issues reviewed were properly categorized and evaluated. Details of the inspectors's observations are described in the following subsections.

b.1 Overview of Prioritization and Evaluation Process

Within the licensee's program, a Significant Condition Adverse to Quality (SCAQ) could be assigned as a "Category 1" requiring a root cause evaluation, or as a "Category 2" requiring an apparent cause evaluation. A Condition Adverse to Quality (CAQ) could be assigned as a "Category 3" requiring further investigation to determine the proper corrective actions, or as a "Category 4" that was determined to have minimal impact not requiring further evaluation. A "Category X" classification was also available for conditions that were not adverse to quality.

The corrective action process included a daily review of new CRs by an initial screening committee comprised of plant management. This group ensured that the CR had the appropriate level of review and adjusted the categorization if necessary. They also requested further information if a trend was identified. The following day, the same CRs were reviewed by a senior management screening committee, which included the Plant Manager. This committee was recently implemented as part of the site's recovery plan interim actions to address identified concerns with the CAP process. Again, the senior management committee adjusted the categorization if necessary, requested further information regarding trends, and provided feedback to the initial screening committee. The inspectors attended some of these meetings and found that the reviews were appropriately critical and conservative. Attendees were prepared to answer questions concerning the CRs and exhibited a safety conscious attitude.

b.2 Prioritization of CRs

The inspectors identified two CRs initiated in 2002 which were improperly classified in the licensee's CAP system.

On February 21, 2002, the licensee initiated CR 02052030, "Auto Safety Injection Blocked Status Light Illuminated." The CR documented that while in Mode 4, the operators in the Unit 2 control room identified the "Train B Auto Safety Injection Blocked" status light to be lit, indicating that the Train B safety injection function was not available. At the time, the licensee classified this CR as a Action Category 3, which was a condition adverse to quality requiring further investigation to determine the proper corrective actions. The inspectors determined that this issue met the criteria for an Action Category 2, significant condition adverse to quality, because it was an equipment failure that reasonably could have had a direct adverse affect on the safe and reliable operation of the plant if different circumstances existed. The plant condition was corrected on February 21, 2002, and the CR was closed on June 13, 2002.

On February 18, 2002, the licensee initiated CR 02049054, "The CD2 Battery Charger Failed to Control Bus Voltage Resulting in Multiple Control Room Annunciators and a Large Current Loading on the Charger." At the time, the licensee classified this issue as an Action Category 3. The inspectors determined that this issue met the criteria for an Action Category 2, significant condition adverse to quality, because it was an equipment failure that reasonably could have had a direct adverse affect on the safe and reliable operation of the plant if different circumstances existed, e.g., if the plant had been operating at power.

These issues were considered minor because the licensee's prioritization of the issues as Action Category 3 rather than Action Category 2 had no actual or potential impact on safety.

b.3 Review of Operating Experience Information

The inspectors determined that the licensee's Operating Experience Group adequately identified, evaluated, and developed corrective actions for known industry problems that could potentially impact D. C. Cook. However, the inspectors identified the following minor issue.

Institute for Nuclear Plant Operations (INPO) Significant Operating Experience Report, SOER 02-4, "Reactor Pressure Vessel Head Degradation at Davis-Besse Nuclear Power Station," evaluated under CR 02323072 lacked rigor. In assessing the safety culture of the facility, a survey of questions was posed to a small group of individuals. The results of this survey did not appear to be statistically significant due to the very low number of responses. In addition, most of the corrective actions that resulted from the SOER 02-4 response were either not appropriately implemented, overdue, or closed without performing the prescribed actions.

The issue was considered to be minor because the inspectors did not identify any potential or actual adverse consequences which resulted from the issue.

b.4 Root Cause Evaluations and Apparent Cause Evaluations

The inspectors reviewed 11 root cause evaluations and 16 apparent cause evaluations. Most of these evaluations appeared thorough and reasonable with one exception. The apparent cause for CR 02049054, "The CD2 Battery Charger Failed to Control Bus Voltage Resulting in Multiple Control Room Annunciators and a Large Current Loading on the Charger," was demonstrated to be incorrect 3 days later as documented by CR 02052070, "Relay K301 Failed Causing Uncontrolled DC Voltage Output". This indicated that the root cause had not been adequately investigated before being documented.

b.5 Category X CRs

A potential vulnerability identified during the previous PI&R inspection concerned the potential for an untimely operability evaluation when a CR was inappropriately designated as Category X. This was based on the licensee working a 4-day work week, such that screening meetings were only held Tuesday through Friday. As a result, if a CR was initiated and inappropriately designated as Category X on a Friday after the daily screening meeting, the next scheduled opportunity to identify the inappropriate significance level would be the following Tuesday as Operations Department personnel did not review Category X CRs.

Subsequent to this inspection, the licensee returned to a 5-day work week such that screening meetings were held on each business day. The licensee was also tracking CRs that were upgraded from Category X. The licensee review of these upgraded CRs did not identify any operability issues. The inspectors performed an independent

review and did not identify any CRs that were inappropriately designated as Category X that resulted in an untimely operability evaluation.

.3 Effectiveness of Corrective Action

a. Inspection Scope

The inspectors reviewed past inspection results, selected CRs, root cause reports, and common cause evaluations to verify that corrective actions, commensurate with the safety significance of the issues, were specified and implemented in a timely manner. The inspectors evaluated the effectiveness of corrective actions. The inspectors also reviewed the licensee's corrective actions for NCVs documented in NRC inspection reports in the past 2 years. The inspectors conducted a walkdown of reactor protection and safeguards logic and actuation cabinets to assess the material condition of the system, and to verify that the licensee appropriately identified degraded conditions within the corrective action program.

b. Issues

In general, the licensee's corrective actions for the samples reviewed were appropriate and appeared to have been effective. The inspectors noted that the licensee generated CRs when they identified a corrective action which was either inadequate or inappropriate.

b.1 Observations on the Effectiveness of Corrective Actions

The inspectors had several observations regarding corrective actions that were not fully effective in correcting the identified issue or preventing recurrence. These observations are described below.

- The licensee initiated Category 2 CR 02139007, "Steam Generator Worker's Uptake of Radioactive Material," for inadequate radiological controls for steam generator eddy current testing. The licensee performed a root cause evaluation which identified human performance as the root cause. A number of worker training corrective actions were implemented to prevent recurrence. However, the licensee's effectiveness review for the corrective actions determined that based on additional radiological control issues during the subsequent outage, the corrective actions were inadequate, and initiated CR 03176031 to evaluate the events in the aggregate and address common causes.
- The licensee initiated Category 2 CR 02108057, "Cross-Cutting Concern Resulting From PI&R Inspection Report 2002-04," to address the cross-cutting corrective action program concern. As discussed in Section 4OA2.5 of this report, the corrective actions implemented for the previous PI&R inspection finding were not effective in improving CAP performance. This resulted in the issuance of CR 03275041, another root cause evaluation, and the subsequent CAP recovery plan that the licensee was in the process of implementing at the time of this inspection.

- As discussed in Section 4OA4 of this report, a number of issues were identified since the last PI&R inspection concerning the failure to take adequate corrective actions to prevent recurrence.

As a result of these issues, a concern exists with the implementation of corrective actions to prevent the recurrence of problems.

b.2 Practice of Closing CRs to Work Requests or Other CRs

The inspectors reviewed CRs to assess whether the original issue was appropriately addressed. Previously, an NRC inspection conducted in 2003 (NRC Inspection Report 05000315/2003004 and 05000316/2003004) in accordance with Inspection Procedure 95002, "Inspection For One Degraded Cornerstone or Any Three White Inputs In A Strategic Performance Area," noted several instances where corrective actions had been repetitively closed to other CRs, closed to a lower significance document such as a Category X CR, or re-characterized in the process of being transferred to another CR.

The inspectors verified that for category 1, 2, 3, and 4 CRs, the issues identified in the initial CR was appropriately addressed in that same CR and not closed to other follow-on documents to ensure that issues and corrective actions were appropriately tracked to completion.

.4 Assessment of Safety-Conscious Work Environment

a. Inspection Scope

The inspectors conducted interviews with plant staff to assess whether there were impediments to the establishment of a safety conscious work environment. During these interviews, the inspectors used Appendix 1 to Inspection Procedure 71152, "Suggested Questions for Use in Discussions with Licensee Individuals Concerning PI&R Issues," as a guide to gather information and develop insights. The inspectors also discussed the implementation of the Employee Concerns Program (ECP) and selected concerns with the licensee's ECP Coordinators. Additional discussions with the ECP Coordinators focused on the integration of the ECP and CAP programs.

b. Issues

Plant staff interviewed did not express any concerns regarding a safety conscious work environment. The staff was aware of and generally familiar with the corrective action program and other plant processes including the ECP through which concerns could be raised. Further, a review of the types of issues in the ECP indicated that site personnel were appropriately using the corrective action and employee concerns programs to address their concerns. Based on interviews, the ECP Coordinators were appropriately focused on ensuring all site individuals were aware of the program, reviewing individual concerns, and integrating where appropriate the ECP and CAP programs to resolve concerns.

.5 Resolution of Issues Identified During Last PI&R Inspection

a. Inspection Scope

The inspectors reviewed corrective actions that had been implemented to address the issues identified during the last PI&R inspection in April 2002 as documented in NRC Inspection Report 05000315/2002004(DRP); 05000316/2002004(DRP).

b. Issues

During the PI&R inspection in April 2002, the inspectors identified several concerns with the implementation of the corrective action program including the following:

- A recurring issue regarding the failure to implement some corrective actions as prescribed in root cause evaluations.
- The ability to consistently identify reasonable causes for conditions adverse to quality was inadequate which could adversely impact implementation of prompt and effective corrective actions to resolve the problem.
- A review of previously documented findings revealed that an adverse performance trend existed regarding the ability to promptly and effectively resolve conditions adverse to quality. This was considered a substantive cross-cutting issue.

As a result of the NRC inspection results, the licensee initiated Category 2 CR 02108057 to address the issue with the corrective action program. The resultant root cause evaluation identified the following root causes:

- The knowledge of corrective action program requirements was inconsistent due to inadequate direction.
- Condition report corrective action closure was inadequate due to a poor verification process.

These root causes resulted in a number of corrective actions to improve the corrective action process. Some of the actions taken by the licensee included:

- Establish and communicate management expectations relative to CR quality;
- Provide training on equipment causal analysis;
- Develop guidelines and performance-based qualifications for evaluators and approvers;
- Develop a prioritization process for CR evaluation and actions;
- Provide an expectation to department managers to monitor and coach on current CR action quality expectations;

- Implement an accountability process relative to CR action quality;
- Develop and provide reports and indicators to managers that identifies overdue evaluations and actions, quality aspects, etc.;
- Expand the Corrective Action Review Committee charter to include participation requirements and expand their review responsibilities; and
- Modify PMP 7030 CAP.001 to require due date extensions, changes to prescribed action, etc. associated with Category 1, 2, 3 CRs, or regulatory issues to be presented to the original evaluation review group for approval.

On October 2, 2003, the licensee initiated Category 1 CR 03275041, which stated that there were significant weaknesses in the corrective action program that need to be understood and corrected. This action was the result of both internal and external assessments of the program. It was concluded that the actions put in place for the previously identified concerns with the corrective action program were not effective in preventing the recurrence of problems. A root cause evaluation was conducted, which identified the following two root causes:

- Management strategic level corrective action program implementation focus was predominately reactive, did not guide the organization in setting and executing priorities in the presence of degrading programmatic performance and competing events, and did not demand accountability in meeting roles and responsibilities; and
- Quality and timeliness of cause evaluation completion and corrective action implementation were inconsistent due to minimal quality expectations, a lack of peer checking, and the limited scope of corrective action review boards.

Several contributing causes were also identified in the root cause evaluation. In addition, as part of establishing a successful corrective action program, the licensee identified 13 critical attributes of an excellent program. The licensee then performed a gap analysis to evaluate how the corrective action program in place compared to these attributes. This analysis determined that most of the attributes were not being met. As a result of the root cause evaluation, the critical attribute gap analysis, and the new senior management team, the licensee was in the process of implementing a corrective action program recovery plan. Interim actions to address shortcomings with the corrective action program were already in place at the time of the inspection.

Based on the actions the licensee has taken to date, the inspectors had some positive observations during this inspection. However, demonstrated sustained performance will be necessary for the program to be effective in adequately resolving problems identified at the plant.

4OA4 Cross-Cutting Issues

a. Inspection Scope

The inspectors reviewed NRC inspection reports issued since June 1, 2002, to determine if the adverse performance trend in problem identification and resolution that was identified in inspection report 05000315/2002004(DRP); 05000316/2002004(DRP) had improved.

b. Issues

The inspectors determined that corrective action program performance issues continued to occur. The following findings associated with the corrective action program were documented since June 1, 2002:

b.1 Initiating Events Cornerstone

- In December 2002, inspectors identified a Green finding and associated Non-Cited Violation for the failure to assure that prompt corrective actions were taken to address age-related failures of reactor control instrumentation power supplies to prevent repetition of power supply failures, a significant condition adverse to quality. This issue was self-revealed on May 12, 2002, when an automatic reactor trip of Unit 2 occurred due to the failure of redundant 24-volt direct current power supplies in reactor control instrumentation cabinet 2-PS-CGC-16. The failure of both power supplies caused the number 21 steam generator feedwater regulating valve to close. Unit 2 subsequently tripped on low steam generator water level coincident with low feedwater flow (Green; NCV 05000316/2002009-01).
- In December 2002, inspectors identified a Green finding and associated Non-Cited Violation for the failure to take corrective action to preclude the repetition of reactor control instrumentation 24-volt direct current power supply failures. Specifically, the licensee failed to perform weekly verification of control group power supplies to ensure that the "power available" status lights were lit. This corrective action was identified by the licensee in response to the Unit 2 reactor trip on May 12, 2002, which was caused by the failure of redundant power supplies in reactor control instrumentation cabinet 2-PS-CGC-16. The licensee subsequently performed this check on November 22, 2002, and discovered a failed 24-volt direct current power supply in Unit 1 cabinet 1-PS-CGC-16 (Green; NCV 05000316/2002009-02).
- In June 2003, inspectors identified a Green finding and associated Non-Cited Violation for failure to take effective corrective actions to address age-related failures of reactor control instrumentation power supplies and prevent an automatic Unit 2 reactor trip on February 5, 2003, due to the failure of similar power supplies (Green; NCV 05000316/2003006-03).

b.2 Mitigating Systems Cornerstone

- In December 2002, inspectors identified a Green finding and associated Non-Cited Violation for the failure to assure that corrective actions were taken to preclude repetition of emergency diesel generator (EDG) starting air system relay failures, a significant condition adverse to quality. This issue was self-revealed when the failure of a starting air system relay for the Unit 2 AB EDG occurred on October 16, 2002, causing the engine to roll without a valid start signal. The inspectors subsequently identified that appropriate corrective actions to prevent repetition had not been taken following two previous age-related EDG air start relay failures in January 1999 and September 2000 (Green; NCV 05000315/2002009-03; NCV 05000316/2002009-03).
- In March 2003, inspectors identified a Green finding and associated Non-Cited Violation for the failure to take adequate corrective action to revise Procedure 12-MHP-5021-056-007, "Turbine-driven Auxiliary Feedwater Pump Trip and Throttle Valve Linkage Adjustment," to include the manufacturer's recommendations regarding the set-up of the turbine trip throttle valve (Green; NCV 05000315/2003004-01; NCV 05000316/2003004-01).
- In March 2003, inspectors identified a Green finding and associated Non-Cited Violation for the failure to take corrective action to ensure that only turbine trip throttle valve latch hooks with the correct geometry would be installed in the turbine-driven auxiliary feedwater pumps after determining that the incorrect part had been supplied by the manufacturer (Green; NCV 05000315/2003004-02; NCV 05000316/2003004-02).
- In June 2003, inspectors identified a Green finding and associated Non-Cited Violation for the failure to take effective corrective actions to address Unit 2 CD EDG load oscillations that occurred on November 2, 2002, to prevent recurrence of these oscillations on January 26, 2003 (Green; NCV 05000316/2003006-01).
- In July 2003, inspectors identified a Green finding and associated Non-Cited Violation for the failure to resolve Technical Specification interpretation inconsistencies associated with the total required volume in the emergency diesel generator fuel oil day tanks in a timely manner. These inconsistencies were identified by the licensee in August 2000, however, as of July 11, 2003, this issue remained unresolved (Green; NCV 05000315/2003007-01; NCV 05000316/2003007-01).

b.3 Barrier Integrity Cornerstone

- In December 2002, inspectors identified a Green finding and associated Non-Cited Violation for the failure to identify and take appropriate corrective actions to preclude the failure of four Unit 1 reactor coolant system pressure boundary charging line check valves (Velan Model B10-3114B-13M), which were at risk of common cause failure due to industry identified design and manufacturing defects, a significant condition adverse to quality. This issue was self-revealed when the check valves were all found to be stuck in either the full

or partially open position during radiographic nonintrusive testing in May 2002. (Green; NCV 05000315/2002009-04).

The inspectors determined that each of these issues was due to a common causal factor associated with the failure to promptly and effectively resolve conditions adverse to quality. Although the individual findings highlighted were of very low safety significance, the findings could have had a credible impact on safety by affecting the availability, reliability, operability or functionality of mitigating equipment and by affecting public radiation safety.

4OA6 Management Meetings

.1 Exit Meeting Summary

The inspectors presented the inspection results to Mr. M. Nazar and other members of licensee management at the conclusion of the inspection on December 19, 2003. The licensee acknowledged the findings presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. The licensee indicated that no proprietary information was provided to the inspectors.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

M. Finissi, Plant Manager
M. Horvath, Manager, Employee Concerns Program
J. Jensen, Senior Vice President
J. Kobyra, Learning Organization Director
E. Larson, Work Management Director
B. Mann, Manager, Regulatory Affairs
M. Nazar, Chief Nuclear Officer
S. Simpson, Operations Director
L. Weber, Performance Assurance Director
D. Wood, Manager, Radiation Protection/Environmental
J. Zwolinski, Engineering & Regulatory Affairs Director

Nuclear Regulatory Commission

E. Duncan, Chief, Branch 6, Division of Reactor Projects
B. Kemker, Senior Resident Inspector

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

Discussed

None

LIST OF DOCUMENTS REVIEWED

The following is a list of licensee documents reviewed during the inspection. Inclusion of a document on this list does not imply that NRC inspectors reviewed the entire document, but, rather that selected sections or portions of the documents were evaluated as part of the overall inspection effort. In addition, inclusion of a document on this list does not imply NRC acceptance of the document, unless specifically stated in the body of the inspection report.

4OA2 Identification and Resolution of Problems

Condition Reports Initiated As A Result of this Inspection

CR 03343040	Ceiling Tile Missing Behind U-1 Control Panels	12/9/2003
CR 03343042	Relays 1-88x-T and 1-88x-G Found Dirty With Need of Cleaning/Burnishing	12/9/2003
CR 03345014	Inadequate Documentation for EE-2002-0602 Does Not Support the Determination that the Equivalency Evaluation was the Correct Process to use for Change Out of Battery Charger Relays	12/11/2003
CR 03345031	NRC Noted Cleanliness Issue in 1-RPS-A Logic and Output Cabinets.	12/11/2003
CR 03346064	NRC Observation Concerning CR Evaluations	12/12/2003
CR 03346069	CR 03238006 Was Closed Without Properly Addressing the Conditions Identified	12/12/2003
CR 03349037	ASCO Temperature Switch RTs (25149, 25182, 25183) Appear to be Overdue	12/15/2003
CR 03349054	Condition Report 02302032 Inappropriately Classified as a Cat X per the Rework Program	12/15/2003
CR 03350020	Shortcomings of the Station's Response to the Davis Besse Incident SOER Were Noted During PI&R Inspection Preparation.	12/16/2003
CR 03352017	Appropriate Parts or Spare Components May Not be Available to Support Critical Plant Needs	12/18/2003

Corrective Action Program Documents and Plant Procedures

01-OHP-4030-132-217A	DG1CD Load Sequencing & ESF Testing	Revision 2, Revision 4
01-OHP-4030-132-217B	DG1AB Load Sequencing & ESF Testing	Revision 3, Revision 4

02-OHP-4030-132-217A	DG2CD Load Sequencing & ESF Testing	Revision 2, Revision 5
02-OHP-4030-132-217B	DG2AB Load Sequencing & ESF Testing	Revision 3, Revision 5
12-EHP-4030-056-218	Automatic Operation of Auxiliary Feedwater Pumps	Revision 0
12-IHP-5021-IMP-004	Cleaning and Inspection of Electrical and Instrumentation & Control Equipment	Revision 2
12-EHP-5040-DES-001	Control of Design Input	Revision 3
12-EHP-5040-DES-008	Equivalency Evaluations	Revision 8
12-EHP-5040-MOD-013	Engineering Evaluations for Job Order Activities	Revision 1a
12-IHP-4030-082-004	AB, CD and N-train Battery Charger Performance/Current Limit Test	Revision 3
12-MHP-032-018	Emergency Diesel Engine Fuel Injector Maintenance	Revision 6
12-MHP-5021-001-175	Pressurizer Power Operated Relief Valve and Actuator Maintenance	Revision 4
12-MHP-5021-019-003	Essential Service Water Strainer Maintenance	Revision 7b
12-MHP-5021-056-007	Turbine Driven Auxiliary Feed Pump Trip and Throttle Valve Linkage Adjustment	Revision 3
12-MHP-5021-056-007	Turbine Driven Auxiliary Feed Pump Trip and Throttle Valve Linkage Adjustment	Revision 4
12-OHP-2110-CPS-001	Clearance Permit System	Revision 6
DTG-7030.CAP.001	Desk Top Guide for Performing Root Cause Analysis	Revision 2
OHP-4022-057-001	Screen House Forebay Degraded Conditions	Revision 1a
OHP-5030-057-001	Screen House Vulnerability Determination	Revision 4
PMI-2110	Clearance Permit System	Revision 26
PMI-2015	Policy for Maintaining a Safety Conscious Work Environment	Revision 1
PMI-7030	Corrective Action Program	Revision 30
PMP-2110-CPS-001	Clearance Permit System	Revision 7
PMP-5040-MOD-007	Engineering Modifications	Revision 0a

PMP-7030-CAP-001	Corrective Action Program Process Flow	Revision 15a
PMP-7030-OE-001	Industry Operating Experience	Revision 6
PMP-7030-OPR-001	Operability Determination	Revision 7
PMP-7030-001-002	Licensee Event Reports, Special and Routine Reporting	Revision 4

Category 1 and 2 Root Cause Evaluations

CR 02093039	Cells Number 102 and 27 Have Cracks in the Top Cover	4/3/2002
CR 02139007	Steam Generator Worker's Uptake of Radioactive Material	5/18/2002
CR 0208057	Crosscutting Concern Resulting from PI&R Report	4/18/2002
CR 02157039	PORV 1-NRV-153 Unintentionally Opened During Testing	6/5/2002
CR 02163045	1-52-I Has Had a Catastrophic Failure, Resulting in a Loss of Offsite Power Sources Supplied to Reserve Feed	6/12/2002
CR 02277047	NRC Significance Determination of a White Finding for the ESW Debris Intrusion Event Results in a Degraded Cornerstone of the RROP for Unit 2	10/4/2002
CR 03032004	Discovered Knife Switches Pulled During IMP.069 Caused CD EDG to be Inoperable	2/1/2003
CR 03036056	Unit 2 Reactor Tripped on Low Steam Generator Level Coincident with Steam Flow/Feed Flow Mismatch Due to Control Group 3, Dual Power Supply Failure in Rack 21	2/5/2003
CR 03114044	Fish Intrusion Into the Plant Circulating Water Intakes	4/24/2003
CR 03275041	Internal and External Assessment of the Corrective Action Program Has Determined There are Significant Weaknesses	10/2/2003
CR 03295045	Screenhouse Diving Accident	10/22/2003

Category 3 Apparent Cause Evaluations

CR 01163040	CR-00-11239 Maintenance Rule Evaluation Did Not Properly Evaluate the Described Condition for Possible Maintenance Preventable Functional Failure	6/12/2001
CR 01341004	1-BC-CD-2 Battery Charger Failure	12/7/2001
CR 01354016	Temperature Switch for Ventilation Fan 2-HV-SGRS-9 Sticking	12/19/2001
CR 02021004	2-CCR-440 Leaked at 44,000 SCCM During LLRT	1/21/2002

CR 02049054	The CD2 Battery Charger Failed to Control Bus Voltage Resulting in Multiple Control Room Annunciators and a Large Current Loading on the Charger	2/18/2002
CR 02052030	Auto Safety Injection Blocked Status Light Illuminated	2/21/2002
CR 02052070	Relay K301 Failed Causing Uncontrolled DC Voltage Output	2/21/2002
CR 02192015	Potential Decline in Personnel Contaminations	7/12/2002
CR 02135034	A Declining Trend with Security Officer Performance	5/15/2002
CR 02268022	Unqualified ERO Personnel Staffed OSA During 9/18/2002 Drill	9/25/2002
CR 02289033	Diesel Generator 2AB 2-OME-150-AB Starting Rolling Unexpectedly on Starting Air	10/16/2002
CR 02298007	Load Rejection Capability Is Estimated to be Significantly Less than Design Basis Due to Limitations Imposed by Steam Dump System Capacity and Reactor Protection Setpoints	10/25/2002
CR 02325047	CR 01045052 Action 2 Closed Stating Continuous Flow Through Containment Spray Heat Exchanger, But Continuous Flow Has Not Been Established	11/21/2002
CR 03057040	Roll-up CR for Maintenance Procedure Issues Identified in the 95002 Inspection	2/26/2003
CR 03059025	The Spare Trip Hooks for the TDAFP Trip & Throttle Valves Appear to Have Been Dedicated to Less-Than-Adequate Critical Characteristics	2/28/2003
CR 03079045	Potential Trend in Performance Area of Security	3/20/2003

Operating Experience and Generic Communications

OE 15979	Potential Impacts to Air Sources for Divers	3/6/2003
OE 16183	Diver Entered Circulating Water Intake Bay with Pump in Operation	5/14/2003
OE 16717	Diver Received Mild Shock While Performing Underwater Inspection of Intake Structure	8/13/2003
OE 17074	HFA Relay Coil Spool Cracking	9/16/2003
OE 17150 / OE 16227	GE HFA Relay Contacts Exhibiting High Resistance Connections	5/7/2003
OEI 14839	Periodic Testing of GE HFA Relays at Davis-Besse	8/29/2002
SEN 141	Diver Umbilical Cord Tangled in Pump Impeller	12/7/2001

Concern for Diver Safety Leads to Manual Scram	10/29/2000
Diver Injured During Circulating Pump bay Cleaning	12/8/1999
Diver Loses Finger Tip Due to Inadequate Repeat Back Practices	2/24/1999
Diver Over Pressurized Dive Suit	2/27/1999
GE HFA Relays	9/11/2002
Injury During Diving Work	10/18/2000
Traveling Screen Started with Divers in Intake Bay Due to an Inadequate Clearance	10/8/2000
Underwater Cutting Results in a Small Explosion	5/27/2003

Work Orders

03265013	Library Work Request 2-PS-CGC-16-PS1/2 Replace Power Supply	9/25/2003
R0226573 #1	Inspect and Clean Racks as Needed	5/4/2003
R0229229	Perform 1-BC-CD1 & 1-BC-CD2 549 Day (18 Mo) Surv	9/22/2003
R0230507 #13	Inspect North & CTR Intakes & Discharge Tunnel	
R0230507 #14	Inspect North & CTR Intakes & Discharge Tunnel	
R0230879 #1	Clean and Inspect Control Room Racks and Cabinets	10/23/2003
R0251790	Planned Work Request 2-PS-CGC-16-PS1/2 Replace Power Supply	9/23/2003

Clearance Permits

1032315	1-PP-2-1 Circulating Water Pump No. 11, Master Clearance for Circulating Water System
1032317	1-WMO-11 Circ Water Pump 1-PP-2-1 Discharge Valve, Master Clearance for Diver Work on All three Pump Discharge Valves

Other CRs

CR P-99-07602	SRV3 ESSR: Calculation PS-4KVD-002 Shows that the Momentary Ratings on the 4KV Circuit Breakers are Exceeded for Fault Conditions	4/5/1999
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CR P-99-09925	Apparent Error in U2 Tech Spec Table 2.2-1 Item 155 Trip Setpoint and Allowable Value Incorrectly Stated as 2905 Volts and 2870 Volts	4/29/1999
CR P-00-11239	1-BC-CD2 Failed When Energized to Perform Current Test	8/11/2000
CR 01045052	Microbiologically Induced Corrosion Control in Containment Spray Heat Exchangers Not Followed	2/14/2001
CR 01285034	Westinghouse Technical Bulletin TB-01-05 "7300 Printed Circuit Boards"	10/12/2001
CR 02009025	Condition Report to Track Maintenance Rule a(1) Action Plan Corrective Actions	1/9/2002
CR 02302032	Possible Rework on Valve 2-IMO-256	10/29/2002
CR 02037089	2-CCR-440 Failed IST Stroke Test	2/6/2002
CR 02046021	Unit 2 Aggregate Operability Review for Mode 4 Following Refueling Outage	2/5/2002
CR 02049063	Observed Electrical Flash From 2-RPST-B	2/18/2002
CR 02108010	Apparent Failure to Implement Corrective Action for a Category 1 CR	4/18/2002
CR 02123015	Unit 1 Aggregate Operability Review for Mode 4 Following Refueling Outage	12/24/2002
CR 02280037	PMP-2291 Series Procedures Do Not Address the Library Work Order Request or Job Order and How They Should be Brought into the Planning and Scheduling Process	10/7/2002
CR 02323072	Significant Operating Experience Report SOER 02-4 Reactor Pressure Vessel Head Degradation at Davis-Besse Nuclear Power Station Received at Cook	11/19/2002
CR 02323075	1-CPS-1 Fan Not Tested	11/19/2002
CR 03008032	Tracking CR for Self-Assessment SA-2003QAD-005 on SOER 0204 Action 2	1/8/2003
CR 03028010	Training Request - Evaluate the Leadership Academy Post Course Survey (dated 1/27/03) Recommendations to Determine Their Applicability to the Program	1/28/2003
CR 03028025	This AR/CR Will Track Enhancement Actions Associated with an Operating Experience Program Improvement Plan Being Developed by the Correction Action Department	1/28/2003
CR 03051126	12-MHP-5021-056-007, "TDAFP Trip and Throttle Valve Linkage Adjustment", Needs Revision	2/20/2003

CR 03065024	SEN 225 Recurring Event, Diver's Umbilical Line Entangled in Service Water Pump	3/6/2003
CR 03085024	NRC Letter Not Accepting CNP's Method of Restoring Design and Licensing Basis Requirements for the Control Rod Drive Missile Shield for the Upper Reactor Cavity Area	3/26/2003
CR 03105041	I&C Technician Required to Rebuild Circuit Cards Removed During Previous Forced Outages to Return Usable Boards to Stores as Spares	4/15/2003
CR 03107051	Wrong Batteries Ordered for 2-BATT-AB	4/17/2003
CR 03130048	Unit 2 Aggregate Operability Review for Mode 4 Following Refueling Outage	5/10/2003
CR 03171016	NRC Inspector Comments on Procedure 12-MHP-5021-032-018 During 95002 Degraded Cornerstone Inspection	6/19/2003
CR 03171019	NRC Inspector Comments on Procedure 12-MHP-5021-001-175 During Degraded Cornerstone Inspection	6/20/2003
CR 03171023	NRC Inspector Comments on Procedure 12-MHP-5021-019-003 During Degraded Cornerstone Inspection	6/19/2003
CR 03190012	Condition Report 00-11222, Related to the Contained Versus Usable Volume of the EDG Day Tanks, Does Not Clearly Document the Resolution of this Issue	7/9/2003
CR 03238006	PA Identified Inconsistencies with Two POP Cards Generated by Chemistry	8/26/2003
CR 03251010	SEN 225 Recurring Event, Diver's Umbilical Line Entangled in Service Water Pump	9/8/2003
CR 03258005	BOM for this Component has the Wrong Approved K301 Relay	9/15/2003
CR 03304026	OE17156 - SSPS Safeguard Driver Board Degradation Found During Inspections	10/31/2003
CR 03305015	Unit 1 Aggregate Operability Review for Mode 4 Following Refueling Outage	11/1/2003
CR 03305039	System Reference Wire Not Landed on 1-PS-R3L11	11/1/2003
CR 03323054	Resolution of ODEs is Not Being Done in a Timely Manner	11/19/2003
CR 03325001	During Performance of Surveillance Test 12-EHP-4030-056-218 Relay 1-33-BSVWX3-CL was Found Failed	11/21/2003

Audits

PA-02-11	Engineering	8/26/2002
PA-02-13	Chemistry	10/14/02
PA-03-09	Plant Security	5/28/2003
PA-03-10	Maintenance, Work Control and Special Processes	6/24/2003
PA-03-13	Chemistry	10/14/02
PA-03-18	Corrective Action Program	10/24/2003
PA-SR-02-0013	Vendor Performance Notification of Vendor Issues	12/27/2002
PA-SR-03-0004	Trip Hook Surveillance at Dresser - Wellsville, NY	7/25/2003
SA-2002-MNT-001	Measuring & Test Equipment	12/30/2002
SA-2002-MNT-007	Foreign Material Exclusion	2/18/2003
SA-2002-MNT-015	Maintenance Corrective Action Performance	7/28/2003
SA-2003-ENP-010	Self-Assessment for Job Order Activity Evaluations	6/4/2003
SA-2003-MNT-001	4KV & 600V Breaker Self Assessment	9/25/2003
SA-2003-QAD-001	Corrective Action Follow-up Effectiveness	5/3/2003

Drawings

OP-1-98211-25	Steam Generator F.W. Turb E Control Elementary Diagram	Revision 25
OP-1-98212-26	Steam Generator F.W. Turb W Control Elementary Diagram	Revision 25
OP-1-98214-42	Motor Driven Aux Feedwater Supply System Sheet No. 1 Elementary Diagram	Revision 42
OP-1-98215-62	Turbine Driven Aux Feedwater Supply System Sheet No. 1 Elementary Diagram	Revision 62
OP-1-98217-23	Motor Driven Aux Feedwater Supply System Sheet No. 2 Elementary Diagram	Revision 23
OP-1-98218-35	Motor Driven Aux Feedwater Supply System Sheet No. 3 Elementary Diagram	Revision 35
OP-2-98375-8	Solid State Reactor Protection & Safeguard System Demultiplexer Sheet No. 3 Elementary Diagram	Revision 8
OP-2-98387-23	Solid State Reactor Protection & Safeguard System Safeguard Actuation Signal Tr B Elementary Diagram	Revision 23

OP-2-98388-3	Solid State Reactor Protection & Safeguard System Turbine Trips Tr B Elementary Diagram	Revision 3
OP-2-98390-3	Solid State Reactor Protection & Safeguard System Tester SW's & Alarm Tr. B Elementary Diagram	Revision 3
OP-2-98391-4	Solid State & Reactor Protection Safeguard System Multiplexing Tr B Elementary Diagram	Revision 4
OP-2-98512 -21	Safeguard Actuation & Reactor Trip Signals Logic Diagram	Revision 21
OP-2-98646-10	Status Lights Grouping Elementary Diagram Sheet No. 2	Revision 10
Other Documents		
1-2-EDS-601-10	General Wiring Notes	1/18/2002
DIT-S-01165-01	Maintenance Procedure 12-MHP-5021-056-007, "TDAFP Trip and Throttle Valve Linkage Adjustment"	3/27/2003
EE-2002-0602	Relay 240VAC, 4 PDT, 3 Amp Part Number 07-740002-00	10/1/2002
INPO SOER 02-4	Reactor Pressure Vessel Head Degradation at Davis-Besse Nuclear Power Station	11/11/2002
LA-C-1001	Leadership Academy Re-Energizer	Revision 0
LA-F-0001	Plant Topics Familiarization Guide - Supervisors	Revision 2
LO0007	CAP Recovery Plan	12/1/2003
TPD-600-LA	Leadership Academy Program Description	9/19/2003
	Effectiveness Review for CR 02139007	9/26/03
	Corrective Action Closure Board Charter	Revision 2
	Corrective Action Review Board Charter	Revision 2
	Corrective Action Review Committee Charter	Revision 9
	Donald C. Cook Unit 1 Technical Specifications	Amendment 274
	Donald C. Cook Unit 2 Technical Specifications	Amendment 254
	GE HFA 100 Multicontact Auxiliary Relays Vendor Manual	
	Monthly CAP Performance Indicators	

RPS System Health Reports - 1Q2002; 2Q2002;
3Q2002; 4Q2002; 1Q2003; 2Q2003; 3Q2003

Performance Assurance Functional Area Health Report - 8/01/2003
Second Quarter 2003

Safety Evaluation by the Office of Nuclear Reactor 6/9/1999
Regulation Related to Amendment No. 126 to Facility
Operating License No. DPR-58, Indiana Michigan Power
Company, Donald C. Cook Nuclear Plant, Unit No. 1,
Docket No. 50-315

Stop Work Order on Engineering Job Order Evaluation 6/5/2003
Process

LIST OF ACRONYMS USED

ADAMS	Agency-wide Documents and Management System
AR	Action Request
CAP	Corrective Action Program
CAQ	Condition Adverse to Quality
CFR	Code of Federal Regulations
CR	Condition Report
DC	Direct Current
DRP	Division of Reactor Projects
DRS	Division of Reactor Safety
ECP	Employee Concerns Program
EDG	Emergency Diesel Generator
INPO	Institute for Nuclear Plant Operations
IR	Inspection Report
LER	Licensee Event Report
NCV	Non-Cited Violation
NRC	U. S. Nuclear Regulatory Commission
OA	Other Activities
OE	Operating Experience
OPEX	Operating Experience
PA	Performance Assurance
PARS	Publicly Available Records
PI&R	Problem Identification and Resolution
SCAQ	Significant Condition Adverse to Quality
SOER	Significant Operating Experience Report