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REGION III

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Licensee: American Electric Power Company

Facility: Donald C. Cook Nuclear Generating Plant

Location: 1 Cook Place
Bridgman, MI

Dates: On-site dates: December 13 - 17, 1999
Exit date: December 28, 1999

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EXECUTIVE SUMMARY

D. C. Cook, Units 1 and 2
NRC Inspection Report 50-315/99034(DRS); 50-316/99034(DRS)

By NRC letter dated September 17, 1999, the NRC transmitted the updated Case Specific Checklist (CSC) for the Donald C. Cook Nuclear Power Plant which identified specific issues requiring resolution prior to restart of the D. C. Cook Plant. This special inspection focused on the licensee corrective actions for resolution of CSC Item No. 14B, "Contractor Control Program Ready for Restart", Item No. 14C, "Preventive Maintenance Program Ready for Restart", and Item No. 14F, "Operability Determination Program Ready for Restart". The standard applied to evaluate the acceptability for resolution of these CSC items was that described in paragraphs C.1.1 "Root Cause Determination", C.1.2 "Corrective Action Development", C.1.3 "Corrective Action Plan Implementation and Effectiveness" of Enclosure (2) of the NRC letter transmitting the CSC. **Based on this inspection, CSC Items No. 14B, No. 14C, and No. 14F are considered closed.**

Operations

- Weaknesses in the licensee's Operability Determination Program had been previously identified by the NRC, by licensee self-assessments, and through other licensee activities. The licensee identified root causes and contributing causes for those weaknesses, identified corrective actions, and at the time of this inspection had either completed or planned those corrective actions. The inspectors concluded that the licensee had identified causes which were reasonable with respect to the identified weaknesses, and had identified corrective actions which were appropriate to address the identified causes. This review closes CSC Item No. 14F (Section O3.1).
- Based on review of recent operability determinations, corrective actions implemented at the time of the inspection resulted in improvements in timeliness and consistency of operability evaluations. However, the inspectors identified two issues of concern and these were dispositioned as NCVs. In the first instance, the licensee inappropriately interpreted the Technical Specifications when addressing an operability issue involving corrosion on the 250 Vdc battery. The second NCV involved numerous LERs that were not being submitted within 30 days (Section O3.2).

Maintenance

- Based on review of the Contractor Control Program administrative procedures, the inspectors determined that the procedures still lacked guidance to assure consistent training, qualification, and licensee oversight of contractor activities. As a result of the review of various licensee assessments and recent events involving implementation of the contractor control program at the site, continued management attention is warranted. The inspectors determined that the program was better defined and was more visible and, although additional development of program procedures and adequate metrics to measure contractor performance are needed, the weaknesses were adequately captured in the licensee's corrective action program, therefore, the program

is considered adequate to support plant restart. This review closes CSC Item No. 14B (Section M3.1).

- The inspectors determined that the Performance Assurance (PA) review of the restart readiness corrective actions for the contractor control program provided effective counsel on the readiness of the program procedure (Section M7.1).
- The lack of PA related review concerning the implementation of the contractor control program revealed that the PA audits were not evaluating the effectiveness of contractor activities. This lack of assessment of the implementation of the contractor control program resulted in missed opportunities to identify deficiencies in contractor activities (Section M7.1).

Engineering

- The root cause analysis report for the Preventive Maintenance (PM) program identified a number of actions to be taken to improve the PM program. The corrective actions were expected to strengthen the program. The PM tasks were being scheduled and performed at the present time without major delays. This review closes CSC Item No. 14C (Section E2.1).
- The team concluded that poor preventive maintenance practices in the past had resulted in several components being designated as maintenance rule (a)(1) components (Section E2.1).
- Audits and assessments have identified a number of problems with the PM program dating back to 1997. Only recently has the licensee focused on addressing these problems (Section E7.1).

Report Details

I. Operations

O3 Operations Procedures and Documentation

O3.1 Operability Determination Program Review

a. Inspection Scope (40500)

The team reviewed the recent history of findings related to the Operability Determination (OD) program, to identify weaknesses that had existed in the program prior to this inspection. The inspectors reviewed the results of the licensee's investigation into the causes of those weaknesses, and the corrective actions that had been completed and were planned to address those weaknesses. The inspectors also reviewed the procedure that currently defines the program (PMP-7030.0PR-001, "Operability Determination"), interviewed personnel who administer the program, and reviewed recent condition reports (CRs) and self-assessment reports that are related to the program.

b. Observations and Findings

b.1 Previously-Identified Weaknesses in OD Program

Weaknesses in the licensee's OD program had been identified in the following documents:

- NRC Inspection Reports (IRs) 50-315; 50-316/970201, 98009, 99009, 99013, and 99024;
- Licensee CRs 99-343, 99-353, 99-1470, 99-6705, 99-9388, 99-18308, 99-21108, 99-22453, 99-22455, 99-23687, 99-26126, 99-27019, 99-27044, 99-27106, 99-27247, and 99-27499; and
- Licensee self-assessment reports "OD Program Self-Assessment Report", August 6, 1999; "OD Program Assessment Report", RST-1999-007-OPS, Revision 1, August 27, 1999; and "Collegial Assessment of Operability Evaluations", CA-1999-004-EFF, August 30, 1999.

The major weaknesses identified in these documents included the following:

- Inadequate operability "screenings" performed by Operations Department shift personnel to determine whether an operability evaluation was required;
- Inadequate operability evaluations performed by Operations Department shift personnel;

- Inadequate operability evaluations or back-up operability evaluations performed by Engineering Department personnel;
- Inadequate identification and/or assignment of corrective actions to close out operability issues;
- The OD program procedure lacked sufficiently detailed guidance to describe the requirements associated with performing and documenting operability determinations;
- OD program training that had been provided to Operations Department shift personnel was not adequate;
- Management oversight of Operations Department shift personnel who performed operability screenings was not adequate;
- The number of open operability issues was not being maintained within established goals; and
- Staffing was not adequate to properly process the workload associated with the OD program.

b.2 Identified Causes of Weaknesses

In response to CR 99-9388, the licensee conducted a root-cause investigation of the weaknesses that had been identified in NRC IR 99009. The report from that investigation (RSR 99-9388) described the scope of the investigation, summarized the investigation findings, and identified the following two root causes:

1. Omission of relevant technical guidance in procedure PMP-7030.0PR-001, "Operability Determination".
2. Incomplete training of Operations personnel who screen CRs to determine if an operability determination is required and Engineering personnel who perform operability evaluations.

The report also identified "Less than adequate quality monitoring of the OD program" as a contributing cause.

The inspectors reviewed the documents which described the identified weaknesses in the licensee's OD program. The inspectors also reviewed the report of the licensee's investigation of the issues identified in CR 99-9388, including the root causes and corrective actions described above. The inspectors considered the licensee's investigation to be thorough, and the identified causes to be reasonable.

b.3 Licensee Corrective Actions

In response to the issues identified in CR 99-6705 and 99-353, the licensee took the following corrective actions:

- PMP-7030.ODR-001, "Operability Determination" was revised and all affected personnel were trained on this revision.
- A Shift Operability Review Team (SORT) was formed to process the OD program backlog.
- An Operability Determination Evaluation Group was formed in Engineering to process the operability evaluation backlog.
- Ownership for the OD program was assigned to the Operations Department, and a Program Owner was named.
- Detailed training was provided to Engineering Department personnel who performed operability evaluations in May 1999.
- In August 1999, features were added to the site's electronic corrective action program (eCAP) computer program which enabled and facilitated OD program activities.

As a result of the Root Cause Analysis in response to CR 99-9388, (RSR 99-9388) the following corrective actions were planned:

- Revise PMP-7030.ODR-001 to include bench marking results, independent and self-assessments, and additional guidance from Plant Operating Experience.
- Revise the Operations and Engineering Operability Training Programs to include a qualification instrument, and additional information from operating experience.
- Create OD program performance indicators with quality attributes.
- Revise OHI-7013, "Operations Performance Tracking System", to include observations of OD program activities, and create scorecards for those activities to be monitored.

The inspectors reviewed the corrective actions completed and planned by the licensee. The corrective actions that have been completed or planned were appropriate to address the identified causes; the inspectors identified no causes which were not adequately addressed by the corrective actions.

b.4 The Licensee's Current Operability Determination Program

The licensee's OD program is currently defined in procedure PMP-7030.ODR-001, "Operability Determination", Revision 3. The inspectors reviewed that procedure, and found that it incorporates the major elements of and is consistent with the guidance in Generic Letter 91-18, "Information to Licensees Regarding NRC Inspection Manual Section on Resolution of Degraded And Nonconforming Conditions", Revision 1. However, the inspectors made the following observations about the program procedure:

- Section 3.2 of the procedure requires personnel to determine whether a component is operable or not, but the procedure does not acknowledge that the operability determination may be mode-specific. That is, the procedure does not provide clear guidance for dispositioning issues associated with components that satisfy Limiting Conditions for Operation that apply only in specific plant operating modes.

The inspectors found that while the unit was defueled and in a no-mode condition, personnel typically worked around this weakness by declaring an affected component to be operable (in the "current" no-mode condition) and assigning to the issue a mode constraint (because the degraded component would be required to be operable in that mode). However, the inspectors also found that the procedure does not provide clear guidance for assigning mode constraints.

- Section 3.4.5 requires the Operations Shift Superintendent/Shift Manager (or a designated Senior Reactor Operator (SRO)) to formally determine operability, but it does not require that person to actually enter that determination into the eCAP database. Consequently, the inspectors found that the documentation did not show that an SRO had approved the OD.

The inspectors reviewed the licensee's use of the eCAP computer software to enable and facilitate OD program processes. The inspectors considered use of the eCAP software to be a strength, because that use fully integrates OD program processing into the licensee's corrective action program.

c. Conclusions

Weaknesses in the licensee's Operability Determination Program had been previously identified by the NRC, by licensee self-assessments, and through other licensee activities. The licensee identified root causes and contributing causes for those weaknesses, identified corrective actions, and at the time of this inspection had either completed or planned those corrective actions. The inspectors concluded that the licensee had identified causes which were reasonable with respect to the identified weaknesses, and had identified corrective actions which were appropriate to address the identified causes. This review closes CSC Item No. 14F.

O3.2 Review of Recent Operability Issues

a. Inspection Scope (40500)

The team selected several operability issues that were recently processed through the OD program. The inspectors followed the guidance within Generic Letter 91-18. The inspectors reviewed Technical Specifications (TS) and other applicable documents and held interviews with licensee personnel.

b. Observations and Findings

The inspectors reviewed the operability determinations that were documented in CRs 99-4733, 99-6995, 99-7859, 99-8003, 99-8229, 99-8511, 99-14656, 99-16682, 99-17192, 99-17276, 99-22455, 99-27521, 99-27624, 99-27708, and 99-28015. In

general, the inspectors determined that recent issues were evaluated in a timely manner. Also, due to increased program guidance, there was better consistency in operability determinations. Specific observations are discussed below:

- CR 99-7859 described that electrical maintenance personnel identified corrosion on electrical connections for the 1 AB 250 Vdc battery on November 18, 1998. The corrosion could not be removed without taking the battery out of service and disassembling the connections. Technical Specification Surveillance Requirement 4.8.2.3.2.c.2 required verifying that cell-to-cell connections were "free of corrosion". Operations department personnel determined that the battery was operable, based on the minor amount of corrosion and their belief that the intention of TS was met. The electrical maintenance personnel challenged the initial response to CR 99-7859 and wrote a subsequent CR 99-8229. Subsequently, Performance Assurance questioned the operability call and initiated CR 99-22455, however, the operability call was not reversed or revised.

The inspectors reviewed the three CRs and determined that Operations department personnel had inappropriately interpreted the TS, rather than demonstrating literal compliance and declaring the battery inoperable until the corrosion was removed. The inspectors noted that in response to CR 99-8229, the licensee had performed additional testing, which demonstrated the functionality, but not operability, of the battery. The inspectors determined that there was minor safety significance associated with this issue. After discussion between the inspectors and licensed personnel, the licensee acknowledged that they had inappropriately interpreted TS and initiated CR 99-29292. During the investigation for CR 99-29292, the licensee identified that during the period of time that the 1 AB battery was inoperable due to the existence of corrosion, there was a period of about 2 months (March 16, 1999 - May 26, 1999) where the 1 CD battery was also inoperable due to identified corrosion. The licensee planned to report the condition to the NRC as LER 99-029, for failure to comply with TS requirements when both batteries become inoperable.

TS 3.8.2.4 requires that one 250-volt battery be operable in each Unit in MODES 5 and 6 or that the associated Action to establish containment integrity within 8 hours must be taken. TS 4.8.2.3.2.c.2 requires that the battery connections be free of corrosion. The failure to declare the 1 AB and 1 CD batteries inoperable when corrosion was first identified and comply with the TS Action statement when less than one battery in Unit 1 was operable is a violation of TS 3.8.2.4. This Severity Level IV violation is being treated as a Non-Cited Violation, consistent with Section VII.B.1 a of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as (CR 99-29292). **(NCV 50-315/99034-01(DRS))**.

- CRs 99-14987 and 99-16853 identified instances where TS surveillance requirements were not met. Specifically, the channel functional test for source range nuclear instrumentation did not properly check all alarm functions. These issues were identified in June 1999 and the CR investigations determined that the instruments were inoperable and that this condition was reportable to the NRC according to 10 CFR 50.73(a)(2)(v) and 10 CFR 50.73(a)(2)(i)(B).

The inspectors determined that the reports to NRC were not submitted within 30 days as required by 10 CFR 50.73(a)(1). Instead, the issues were "binned" for submittal as part of a supplement for an LER that had already been issued (LER 315/99-016). As of December 17, 1999, the supplement had not been issued. The inspectors informed the licensee that using a supplement was acceptable, however, the 30 day requirement still applied and was not met in these two cases.

The inspectors asked the licensee whether there were other issues that had not been reported within 30 days because of this practice of "binning". The licensee informed the inspectors on December 27, 1999, that there were a total of 15 separate items that had not been submitted within the 30 days as required. The licensee stated that each of the items was scheduled for submittal by January 17, 2000. This issue was entered into the licensee's corrective action program as CR 99-29313.

The failure to submit an LER within 30 days for events described in 10 CFR 50.73 is a violation. This Severity Level IV violation is being treated as a Non-Cited Violation, consistent with Section VII.B.1.a of the NRC Enforcement Policy. This violation is in the licensee's corrective action program as CR 99-29313. **(NCV 50-315/99034-02(DRS); 50-316/99034-02(DRS)).**

- CRs 99-04733 and 99-17276 both described cases in which check valves had not been tested in accordance with Technical Specification 4.0.5 requirements. In both of these cases, the Operations department reviewer had determined that the subject valves were operable, but the operability evaluation subsequently provided by engineering determined that the valves were in fact inoperable. The inspectors observed that although Operations had accepted the operability evaluation results, thereby acknowledging their original errors, no CR was initiated to document and address the cause or causes of those errors. After the inspectors discussed this finding with the licensee, this issue was documented in CR 99-29196.
- CR 99-14656 described concerns associated with Fuel Handling Building (FHB) dose calculations, and asked Engineering for an evaluation of the operability of the FHB exhaust system. The operability evaluation that was filed in eCAP with this CR addressed the operability of the control room ventilation system, but did not directly address the concerns raised by the CR, did not mention the FHB exhaust system, and did not develop any conclusions regarding the operability of the FHB exhaust system.

When the inspectors questioned the OD program owner about this issue, the Program Owner recalled that the FHB exhaust system issue had been addressed in CR 98-1712. The Program Owner retrieved CR 98-1712 and confirmed that the FHB issue had been addressed therein, but the Program Owner was not able to identify any reference in CR 99-14656 to CR 98-01712, or vice versa. After the inspectors discussed this finding with the licensee, the licensee documented this finding in CR 99-29196.

c. Conclusions

Based on review of recent operability determinations, corrective actions implemented at the time of the inspection resulted in improvements in timeliness and consistency of operability determinations. However, the inspectors identified two issues of concern and these were dispositioned as NCVs. In the first instance, the licensee inappropriately interpreted the Technical Specifications when addressing an operability issue involving corrosion on the 250 Vdc battery. The second NCV involved numerous LERs that were not being submitted within 30 days.

II. Maintenance

M3 Maintenance Procedures and Documentation

M3.1 Contractor Control Program Review

a. Inspection Scope (40500)

The team reviewed the recent history of findings related to the Contractor Control program, to identify weaknesses that had existed in the program prior to this inspection. The inspectors reviewed the results of the licensee's investigation into the causes of those weaknesses, and the corrective actions that had been completed and were planned to address those weaknesses. The inspectors also reviewed the procedure that currently defines the program (Plant Manager Instruction PMI-5080, "Administration of Contractors"), interviewed personnel who administer the program, and reviewed recent CRs and self-assessment reports that were related to the program.

b. Observations and Findings

b.1 Previously-Identified Weaknesses in Contractor Control Program

The licensee initiated CR 99-13984 as an "upper tier" CR to investigate the program deficiencies described in various CRs and NRC violations and to propose corrective actions for the contractor control program and associated "lower tier" CRs. The lower tier CRs provided specific examples which demonstrated contractor control program deficiencies. The inspectors reviewed the root cause analysis contained in CR 99-13984, which identified the following root causes:

- Inadequate qualification and training of contract personnel
- Inadequate supervisory oversight of certain contract personnel, and
- Inadequate communication of management expectations regarding control and oversight of contract personnel.

b.2 Corrective Actions

The licensee proposed to correct these items, in part, by the following:

- Establishment of a contractor control program owner,
- Revising the existing program procedure,
- Providing training for supervisors and others having responsibility for contractors on the program procedure, and
- Performing assessments and establishing performance indicators to monitor program implementation.

The CR remained open as many of the proposed corrective actions were not due for completion until the second quarter of 2000.

b.3 The Licensee's Current Contractor Control Program

The inspectors reviewed PMI-5080, "Administration of Contractors", Revisions 6 and 7, PMI- 2070, "Training and Qualification", Revision14, applicable Condition Reports, Maintenance Self-Assessments, Performance Assessment Audits, and the Maintenance Leadership Plan, to assure that corrective actions proposed would address deficiencies identified in the contractor control program. The inspectors had the following observations:

- The inspectors interviewed the program owner and found the owner provided a single point of accountability for the maintenance of program documents, and performance of program assessments.
- The inspectors reviewed the specific corrective actions proposed for Revision 7 to PMI- 5080. Actions 2.a.4/5 and 5.a.6 of CR 99-13984 indicated that a revision was planned to include a definition of the provisions for qualification, selection, and monitoring of workers. The inspectors noted the personnel responsible for verifying contractor qualification and training were identified, however, specific guidance on what constituted adequate qualifications and training remained vague. In addition, the inspectors found that the requirements regarding contract individuals working independently was also vague. The inspectors found that required qualification and training could vary based on the knowledge of the supervisor making the decision. The licensee indicated that PMI-2070 would be reviewed and/or revised to assure specific guidance is provided determining the qualification and selection of contract workers.
- A review of the indicators established to monitor improvement in contractor performance was performed. The inspectors found that it was difficult to establish contractor performance based on the lack of differentiation between contract and licensee performance. For example, one indicator tracked rework for the Instrumentation and Control department, but since the crews are mixed with contractors and licensee personnel, a trend in either direction could not be attributed

to contract workers. Additionally, performance tracking metrics did not appear to include contract workers in departments other than maintenance. The inspectors discussed this observation with the licensee. The licensee indicated that the performance metrics would be reviewed and revised as appropriate to better address contractor performance.

- The inspectors were concerned over a recent CR, which indicated inadequate staffing in Maintenance. The CR noted, in general, that supervisors rarely visited the job site and that staffing was inadequate. As a result of the staffing issues, certain programs did not have an assigned program manager to provide program oversight. The inspectors discussed this condition with the licensee. The licensee indicated that contractors from one company may be providing oversight of contractors from another company. The inspectors were concerned that this arrangement removed the accountability for contractor oversight for safety-related activities from the licensee to contract individuals. Several recent CRs reviewed, including a problem with underwater welders, a switch yard error on December 16, 1999, and CR 99-6964, indicated ongoing issues with the control of contractors. A review of PMI-5080, Revision 7, revealed that guidance on contractor oversight was vague. The procedure established a responsible individual to provide contractor oversight, however, expectations for the type and/or frequency of oversight was not well defined. Additionally, oversight requirements for safety-related or risk significant activities was not present. The inspectors noted that inadequate contractor oversight was identified as a contributing factor to the various deficiencies observed during the ice basket surveillance problems.

c. Conclusions

Based on review of the Contractor Control Program administrative procedures, the inspectors determined that the procedures still lacked guidance to assure consistent training, qualification, and licensee oversight of contractor activities. As a result of the review of various licensee assessments and recent events involving implementation of the contractor control program at the site, continued management attention is warranted. The inspectors determined that the program was better defined and was more visible and, although additional development of program procedures and adequate metrics to measure contractor performance are needed, the weaknesses were adequately captured in the licensee's corrective action program, therefore, the program is considered adequate to support plant restart. This review closes CSC Item No. 14B.

M7 Quality Assurance in Maintenance

M7.1 Audits of Contractor Control Activities

a. Inspection Scope (40500)

The inspectors reviewed the requirements for contractor control as provided in the Updated Quality Assurance Program Description (QAPD) for the Cook Nuclear Plant dated March 26, 1999. The inspectors also reviewed assessments of contractor control activities and held discussion with Performance Assurance personnel.

b. Observations and Findings

During review of the QAPD, the inspectors noted in Section 1.7.7.2.7 that oversight in the form of periodic audits of site contractor activities were to be conducted under the direction of Performance Assurance (PA). Plant Manager Instruction PMI-5080, "Administration of Contractors", Revision 7, delineated the requirements for the contractor control program. The inspectors noted that the procedure did not mention the QAPD audit requirement. Subsequent discussions with PA personnel revealed that annual audits were scheduled and performed in accordance with PA procedures.

The inspectors reviewed recent PA field observations regarding contractor control program issues. The field observations identified deficiencies in the completeness and accuracy of the licensee closeout of Maintenance Leadership Plan actions relating to the contractor control program. The inspectors determined that the independent review of the restart readiness corrective actions for the contractor control program provided effective counsel on the readiness of the program procedure. The inspectors requested the most recent audit covering contractor control and received PA Audit Number PA-99-03/NSDRC#263, "Personnel Selection, Indoctrination, Training and Certification & Organization (PMI-1030/2070/5080)", dated August 23, 1999. This audit was reviewed to verify that audits were properly scheduled and planned to allow a determination to be made regarding the effectiveness of the program. The inspectors noted that the audit reviewed contractor training and contractor control procedure issues, but did not cover actual implementation of the contractor control program as defined in PMI-5080. The licensee indicated that contractor control program implementation was conducted by Surveillance Reports and routine Field Observations made in accordance with PMP-7020.002, "Field Observation Process".

The inspectors reviewed field observations and Surveillance Reports (SR), for a little over a year, covering maintenance activities which had contractors performing activities. This review revealed that the auditors tended to focus on the Maintenance organization and not the control of the contractors onsite. For example, in a 1998 SR performed on the Ice Condenser Project, the plan did not call for the review of licensee oversight of contractors, nor did the auditor mention that the correct licensee oversight was verified or observed at the job site in accordance with the requirements of PMI-5080. This observation was the same throughout the various surveillance reports and field observations in both 1998 and 1999 reviewed by the inspectors.

Plant procedure PDP-7020.001, "Internal and NSDRC Audits", Revision 2, defined an audit as:

A documented activity performed in accordance with written procedures or checklists to verify, by examination and evaluation of objective evidence, that applicable elements of the Quality Assurance Program have been developed, documented, and effectively implemented in accordance with specified requirements.

The inspectors were concerned, that with the increasing number of activities performed by contractors that were safety-related or important to safety, the lack of effective PA assessment would result in additional missed opportunities to identify deficiencies in

contractor activities. Based on no PA related documentation or verification of proper implementation of the PMI-5080 in any reviewed audit plan, field observation, or surveillance report, the inspectors concluded that these observations were not adequate to determine the effectiveness of contractor activities as outlined in QAPD. The lack of assessment of the implementation of the contractor control program represented a missed opportunity to identify deficiencies in contractor activities and was identified as a weakness.

c. Conclusions

The inspectors determined that the Performance Assurance (PA) review of the restart readiness corrective actions for the contractor control program provided effective counsel on the readiness of the program procedure. However, the lack of PA related review concerning the implementation of the contractor control program revealed that the PA audits were not evaluating the effectiveness of contractor activities. This lack of assessment of the implementation of the contractor control program resulted in missed opportunities to identify deficiencies in contractor activities.

III. Engineering

E2 Engineering Support of Facilities and Equipment

E2.1 Preventive Maintenance Program Review

a. Inspection Scope (40500)

The team reviewed the recent history of findings related to the Preventive Maintenance (PM) Program, to identify weaknesses that had existed in the program prior to this inspection. The inspectors reviewed the results of the licensee's investigation into the causes of those weaknesses, and the corrective actions that had been completed and were planned to address those weaknesses. The inspectors also reviewed the procedure that currently defines the program (PMP-5030.001.003, "Preventive Maintenance"), interviewed personnel who administer the program, and reviewed recent CRs and self-assessment reports that were related to the program. The team also reviewed various preventive maintenance documents.

b. Observations and Findings

b.1 Previously-Identified Weaknesses in PM Program

The preventive maintenance program condition report (CR 99-13697) initiated May 26, 1999, noted that the PM program was ineffectively implemented and resulted in inadequate equipment maintenance, ineffective resource utilization and a large backlog of overdue PM tasks. Fifty-six specific issues and problems were described in the condition report with corresponding corrective actions. A large number of CRs had been written on the PM program and these were incorporated into CR 99-13697. The team verified that a sample of 24 CRs was captured by CR 99-13697. The sample included

CRs related to: major program issues, NRC commitments, program priority, roles and responsibilities, interfaces, PM group staffing, use of industry operating experience and vendor information, overdue PM tasks, PM task trending and PM staff training. The team found that CR 99-13697 was comprehensive and addressed the identified issues.

The team reviewed selected CRs associated with the July 1999 NCV (99013-01) for 150 missed PM tasks. Specifically, the 35 PMs on safety related equipment required in Mode 5 were reviewed. The licensee's assessment of the consequence of the missed PMs indicated that no significant safety issues were involved. The team reviewed a sample of the operability determinations made in conjunction with the CRs. No concerns were identified regarding system operability.

The team reviewed the Engineering Action Plan dated December 8, 1999 (MISC-99-144) and discussed the actions with the licensee. The plan described the status of 42 PM program problem areas. No new problems were identified by the team.

b.2 Maintenance Rule (a)(1) Systems

The team reviewed a listing of maintenance rule (a)(1) systems and noted that several of the (a)(1) systems had poor performance due in part to weak PM task implementation or required new PM tasks as part of the corrective action. These systems or components included:

- Units 1&2 containment isolation valves DCR-620 and 621
- Units 1&2 Auxiliary Building Ventilation bypass dampers
- Unit 2 PORVs
- Unit 2 Main Steam 2-MRV-232/2-X-50-232
- ABB 54K Type 4 KV Breakers

This equipment performance is an indication of poor PM practices in the past. The adequacy of the maintenance rule (a)(1) corrective actions was not assessed by the team.

b.3 The Licensee's Current Preventive Maintenance Program Procedure

The team reviewed procedure PMP 5030.001.003, "Preventive Maintenance", Revision 7, effective December 5, 1999. This procedure described the PM program and had been rewritten to address many of the program problems. In general, the procedure addressed the issues. The team identified several minor issues with the procedure and these were resolved during this review, as discussed below:

- The team noted that PMP 5030.001.003 could lead to PMs being done before surveillance tests, potentially resulting in pre-conditioning or loss of as-found data. After further review by the team and discussion with the licensee, it was determined

that the surveillance test procedures adequately addressed the pre-conditioning concern.

- The team noted that terms common to both the Work Control and PM procedures were not defined the same. This could lead to confusion. These terms included; corrective maintenance, functional equipment group cycle, action request, initiating organization, job order and job order activity. The licensee wrote CR 99-29209 to address this issue.

b.4 PM Schedule and Resources

The team verified that PM tasks were being completed. Very few PM tasks were found to be overdue without proper disposition as required by procedures. The work control and PM groups appear to be working together to schedule PM tasks. The roles and interface between work control and the PM group have been defined in a written document.

The team reviewed the PM group staffing and discussed staffing with the Supervisor of the PM group. At present the staff is mostly contractors. The licensee plans to replace the contractors with licensee personnel as soon as possible. The team determined that the current staffing level appeared to be adequate to conduct the PM program.

c. Conclusions

The root cause analysis report for the Preventive Maintenance (PM) Program identified a number of actions to be taken to improve the PM program. The corrective actions were expected to strengthen the program. The PM tasks were being scheduled and performed at the present time without major delays. This review closes CSC Item No. 14C.

The team concluded that poor preventive maintenance practices in the past had resulted in several components being designated as maintenance rule (a)(1) components.

E2.2 Observations Related to Implementation of the Corrective Action Program

a. Inspection Scope (40500)

During the review of the assigned program reviews, which was the scope of the inspection, the inspectors reviewed a number of CRs and corrective actions.

b. Observations and Findings

For one CR, the extent of condition was not properly evaluated. CR 99-12672 was initiated by the training department in May 1999 and indicated that long-term, contract Radiation Protection (RP) technicians had been conducting tasks independently without formal training and qualification in accordance with Plant Manager Instruction PMI-2070. The CR implied that this condition resulted in these potentially unqualified RP technicians performing radiation protection tasks without proper management

direction and oversight. The inspectors noted the condition evaluation was inadequate in that the extent of condition relating to the training of the RP technicians was not established nor were any necessary corrective actions initiated.

For another CR, the problem definition was not verified and the investigation was not focused on the correct problem. The inspectors reviewed CR 99-25389, which was initiated in October 1999. This CR identified a lack of qualification of the approximately 50 contract RP technicians. The inspectors noted that the evaluation of CR 99-12672 did not validate whether the reported condition was true, nor did it determine the extent of the condition. The evaluation was identified as a programmatic concern and the condition evaluation reflected that focus. Instead of dealing with the specific problem, the CR assumed that misunderstood changes to PMI-2070 and PMI-5080 was the reason for the discrepancy in qualifications. Also, no corrective actions were proposed to verify/validate the completion of RP technician qualification training. The inspectors discussed these observations with the licensee. As a result, the conditions have been reevaluated and the licensee indicated that revisions to the CRs would be performed to better capture the extent of the condition and resultant corrective actions.

The inspectors noted other deficiencies in either the description or closure of CRs. Several CRs would identify a condition, but failed to determine the extent of the condition or give support for the nonconforming condition identified. For example, CR 99-19617 stated that PMI-5080 failed to meet current procedural requirements, however, the CR never identified what requirements were not met. The inspectors also noted that some CRs which recorded self-assessment issues would simply state the issue, but failed to give the basis for the conclusion. This was seen in CR 99-12247. It was noted by the inspectors that some CRs were closed before the associated corrective actions were completed. This was often accomplished by referencing a planned corrective action for another CR. For example, CR 99-1687 was closed based on the initiation of corrective actions in CR 99-11021. The inspectors observed that the actions proposed in CR 99-11021 were in progress, but were not completed. Similar situations were identified for CRs 99-11796 and 99-19617. In other CRs, the corrective actions were not clearly cross referenced within the CR to the cause they were addressing. This was seen with CR 99-13984. This CR was written as an "upper tier" CR to address the programmatic issues in the contractor control program. Several "lower tier" CRs such as 99-22970, 99-3391, and 99-19822 refer to 99-13984 to address the conditions identified in these CRs. However, there was no clear link to cross reference the corrective action with the cause or CR it was addressing.

The corrective action program was being evaluated by another inspection team and the results will be documented in IR 99029(DRS)

E.7 Quality Assurance in Engineering Activities

E.7.1 Audits and Assessments of the PM Program

a. Inspection Scope (40500)

The team reviewed a number of audits and assessments of the PM program.

b. Observations and Findings

The team reviewed the following assessments:

- A programmatic self-assessment dated April 7, 1999, which noted the lack of management support and the degraded material condition of important plant equipment. This self assessment repeated findings made in 1997 and 1998 which were not adequately addressed.
- Field Observation, FO-99-I-306, dated November 23, 1999, which noted that the PM program started to fail in the early 1990's due to lack of management commitment to the program.
- A 3rd party assessment from July 1999 which identified the major problems again. Recent licensee corrective actions are tied to this assessment.
- An assessment of the adequacy of the PM program to support plant restart, dated November 30, 1999.
- PM program evaluations conducted March 1999.

There have been several PM program audits and assessments that identified major problems with the PM program. The team found that the corrective actions were not focused on the major problems until mid-to-late 1999. This recent focus appears to be the result of CR 99-13697 and its associated root cause evaluation, dated November 23, 1999.

c. Conclusions

Audits and assessments have identified a number of problems with the PM program dating back to 1997. Only recently has the licensee focused on addressing these problems.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors held an inspection debrief at the D. C. Cook facility on December 17, 1999. During a telephone conference on December 28, 1999, the inspectors presented the final inspection results to members of licensee management. The licensee acknowledged the inspection conclusions presented and did not identify any potential report material as proprietary.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

R. Powers, Senior Vice President
C. Bakken, Site Vice President
T. Camilleri, Engineering Manager
R. Crane, Licensing
M. Finissi, Director, Plant Engineering
C. Fritts, PM Program Supervisor
R. Gaston, Licensing Manager
R. Godley, Director, Regulatory Affairs
W. Kropp, Director, Performance Assurance
T. McCool, Operations, Unit Supervisor
T. Mountain, Licensing
J. Molden, Director, Maintenance
T. Noonan, Outage Manager
S. Partin, Assistant Operations Manager
J. Pollock, Plant Manager
M. Rencheck, Vice President of Engineering
R. Tinkle, Maintenance Performance Manager
L. Weber, Operations Manager

INSPECTION PROCEDURES USED

IP 40500: Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-315/99034-01	NCV	Battery 1AB Corrosion Not Promptly Corrected
50-315/99034-02	NCV	LERs Not Submitted Within 30 Days
50-316/99034-02	NCV	LERs Not Submitted Within 30 Days

Closed

50-315/99034-01	NCV	Battery 1AB Corrosion Not Promptly Corrected
50-315/99034-02	NCV	LERs Not Submitted Within 30 Days
50-316/99034-02	NCV	LERs Not Submitted Within 30 Days
CSC Item No. 14B		Contractor Control Program Ready for Restart
CSC Item No. 14C		Preventive Maintenance Program Ready for Restart
CSC Item No. 14F		Operability Determination Program Ready for Restart

Discussed

None

LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
CR	Condition Report
CSC	Case Specific Checklist
DDD	Drop Dead Date
DRS	Division of Reactor Safety
eCAP	electronic Corrective Action Program
FHB	Fuel Handling Building
LCO	Limiting Conditions for Operation
LER	Licensee Event Report
NCV	Non Cited Violation
NRC	Nuclear Regulatory Commission
NSDRC	Nuclear Safety Design Review Committee
OD	Operability Determination
PA	Performance Assurance
PDR	Public Document Room
PM	Preventive Maintenance
RP	Radiation Protection
QAPD	Quality Assurance Program Description
SORT	Shift Operability Review Team
SR	Surveillance Reports
SRO	Senior Reactor Operator

PARTIAL LIST OF 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 team 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 inspection report.

Procedures

1. PMP-7030.OPER-001, "Operability Determination", Revision 2
2. PMP-7030.OPER-001, "Operability Determination", Revision 3
3. PMP-7030.CAP.001, "Corrective Action Program Process Flow", Revision 3
4. PMP-2291.001.001, Revision 3a, Work Control, dated 9/13/99
5. PMI -2291, Revision 5, dated 12/6/99
6. PMP-2291.SCH.001, Revision 0, dated 12/6/99
7. PMI -5030, Preventive Maintenance, Revision 12, dated 5/29/97
8. PMP-5030.001.003, Preventive Maintenance, Revision 7, Dated 12/6/99
9. PMP-2010.PRC.002, Revision 3a, page 43 of 49, Data Sheet 4, ST Procedure Criteria #13
10. PMI -4030, Revision 22, Technical Specification ST Program, paragraph 3.8
11. PMP-4030, EXE.001, Revision 0, Conduct of Surveillance Testing, paragraph 3.2.5
12. PDP-7020.001, "Internal and NSDRC Audits", Revision 2
13. PMI-5080, "Administration of Contractors", Revisions 6 and 7
14. PMI-2070, "Training and Qualification", Revision 4

Root-Cause Reports

1. RCR 99-9388, "Root Cause Analysis for Condition Report 99-9388 Concerning Operability Determination Weaknesses Identified in Inspection Report 99009", Revision 1 (Draft), 11/18/99
2. Root Cause Investigation for CR 99-13697, Revision 0, dated 8/4/99, and a later revision with no revision number dated 11/23/99 (Preventive Maintenance)
3. Root Cause Investigation for CR 99-13984, Contractor Control

Self-Assessment Reports

1. "Operability Determination Program Self-Assessment Report", 8/6/99
2. RST-1999-007-OPS, "Operability Determination Program Assessment Report", August 27, 1999
3. CA-1999-004-EFF, "Collegial Assessment of Operability Evaluations", August 30, 1999
4. PM Program Readiness (For Restart) Baseline Assessment, dated 4/6/99 (Includes Assessment done in 1997)
5. March 1999 Assessment, 1st and 2nd week Observation
6. Contractor Control Program Assessment Report, RST-1999-009-MNT
7. Programmatic Assessment for Contractor Control - 4 small documents
8. Audit PA-99-03/NSDRC #263, "Personnel Selection, Indoctrination, Training, Certification, and Organization, August 23, 1999

Performance Assurance Field Observations

FO-99-J-212	FO-99-L-028	FO-99-L-282
FO-99-J-219	FO-99-L-039	FO-99-L-301
FO-99-K-127	FO-99-L-159	FO-99-L-326
FO-99-K-226	FO-99-L-233	FO-99-I-306

Condition Reports Related to Operability Determinations

99-00343	99-08229	99-17276	99-27019	99-27625
99-00353	99-08511	99-18308	99-27044	99-27708
99-01470	99-09388	99-21108	99-27106	99-28015
99-04733	99-14656	99-22453	99-27247	99-29196
99-06705	99-14987	99-22455	99-27499	
99-06995	99-16682	99-23687	99-27521	
99-07859	99-16853	99-26126	99-27624	
99-08008	99-17192	99-26499		

Cook Nuclear Plant Training Department Documents

1. Lesson Plan RQ-C-246F, "Operability and Beyond", Revision 0
2. Lesson Plan GP-C-9902, "Operability Evaluations Indoctrination Part 1", Revision 0
3. Lesson Plan TS-C-CS37, "Operability Determination Training Program"
4. Position Specific Guide TS-O-004, "Perform Operability Evaluation", Revision 1
5. Cook Nuclear Plant Written Evaluation and Answer Key Approval Coversheet for Course Name = "ESP 1999 Continuing Training 2nd Quarter", and Topic = "CS37 Operability"
6. Lesson Plan, titled = "Operability Determination", Program = "Engineering Support", approved on 5/21/99
7. Handouts titled, "D. C. Cook Operability Determination Training Program", prepared by L.A. Grime and Associates.

Miscellaneous Documents

1. Lists of "Open" Operability Determinations
2. Cook Nuclear Plant Restart Plan, Revision 7
3. Cook Nuclear Plant Standing Order PMSO.187, Revision 4
4. "Operability Determination Program Status Summary", obtained from T. McCool.
5. Engineering Action Plan Process Log # MISC-99-58, Revision 1
6. "OPEN NONCONFORMING ITEMS", related to CR 99-28236, obtained from T. McCool
7. "Information on Mode Constraints", obtained from T. McCool
8. Performance Assurance Inspection Affirmation, dated 12/14/99
9. Engineering Leadership Plan, Revision 3, problem statement 6, action 6I and I9I, dated 8/2/99
10. Plant Engineering Dept. Reliability Program Section, PM Program- Evaluation of Adequacy of PM Program in Support of Plant Restart, dated 11/30/99
11. List of CRs related to Contractor Control
12. Status of PM Program (not dated)
13. PM Program SRRB Presentation
14. PM/PdM Program Assessment, SA-1999-014-ENP, dated 7/28/99

15. Engineering Action Plan Process, MISC-99-144, dated 11/11/99 and newer version dated 12/8/99
16. Restart Action Plan 14C, Revision 2, PM Program, dated 12/10/99
17. SRRB Meeting 99-166, PM Comment Resolution Package, dated 11/24/99
18. Work Control-PM Interface Agreement, dated 10/12/99
19. Memo of Understanding, Reliability Programs and Surveillance Programs, dated 12/6/99
20. PM trend from June to December 1999, PMs exceeding drop dead date (DDD), dated 12/15/99
21. PM Task Schedule Success, dated 12/12/99
22. List of Maintenance Rule (a)(1) systems and components

Condition Reports Related to Contractor Control

99-01687	99-12672
99-03391	99-13984
99-06964	99-19617
99-11021	99-19822
99-11796	99-22970
99-12247	99-25389

Condition Reports Related to Preventive Maintenance

CR 99-4618, PM program ownership, dated 3/7/99
 CR 99-5110, PM on Pressure Indicator 1-IPI-321
 CR 99-5555, PM not performed with DDD of 1/28/99, dated 3/15/99
 CR 99-5651, CCW pump PM exceeded DDD, dated 3/11/99
 CR 99-5654, PM on Pump 2 -PP-46-4
 CR 98-5701, PM backlog, dated 10/12/98
 CR 99-8043, Overdue PM tasks, dated 4/9/99
 CR 99-8046, Program interfaces not well defined, dated 4/9/99
 CR 99-8047, Responses related to PM program need review, dated 4/19/99
 CR 99-8048, PM staff training, dated 4/9/99
 CR 99-8049, PM staff, dated 4/9/99
 CR 99-8050, PM tasks are not management priority, dated 4/9/99
 CR 99-8051, PM program indicators, dated 4/9/99
 CR 99-8054, PM group not integrated into design change process, dated 4/9/99
 CR 99-8057, Overdue PM tasks, dated 4/9/99
 CR 99-8059, Vendor information, dated 4/9/99
 CR 99-8060, Interface between PM and MR is inadequate, dated 4/9/99
 CR 99-11365, 50.59 Review of PMCRs, dated 5/10/99
 CR 99-13322, PM on Backup Battery
 CR 99-13340, 600 VAC PM exceeded PM DDD, dated 5/25/99
 CR 99-13342, Aux Bldg HVAC PM exceeded DDD, dated 5/25/99
 CR 99-13382, 250 VDC system PMs exceeded DDD, dated 5/25/99
 CR 99-13441, EDG PM exceeded DDD, dated 5/25/99
 CR 99-13697, PM Program, dated 5/26/99
 CR 99-14685, Five PMs on 4kv system exceeded DDD, dated 6/5/99
 CR 99-14700, Eight PMs on CCW exceeded DDD, dated 6/5/99
 CR 99-14703, Ten CRID system PMs pass DDD, dated 6/5/99

CR 99-16822, Ineffective PM program, dated 6/25/99
CR 99-19805, PM program roles and responsibilities, dated 6/25/99
CR 99-19807, PM program basis documentation, dated 7/29/99
CR 99-19958, Actions on short term PM recommendations, dated 7/30/99
CR 99-19967, Industry Experience in PM tasks, dated 7/30/99
CR 99-19969, PM and PdM NRC commitments, dated 7/30/99
CR 99-19972, Actions on long term PM recommendations-trending, 7/30/99
CR 99-19994, Actions on long term PM recommendations, dated 7/30/99
CR 99-19999, Actions on long term PM recommendations, dated 7/30/99
CR 99-28902, PM task on safety related equipment exceeded DDD, dated 12/10/99