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Docket Number 50-346
License Number NPF-3
Serial Number 1-1439

September 19, 2005

Mr. James L. Caldwell, Administrator
United States Nuclear Regulatory Commission, Region III
2443 Warrenville Road, Suite 210
Lisle, IL 60532-4352

Subject: Submittal of Corrective Action Program Implementation Independent
Assessment Report and Action Plans for the Davis-Besse Nuclear Power
Station - Year 2005

Dear Mr. Caldwell:

The purpose of this letter is to submit the assessment report and action plans for the 2005 independent external assessment of the Davis-Besse Nuclear Power Station (DBNPS) Corrective Action Program (CAP) implementation. The Nuclear Regulatory Commission (NRC) letter, dated March 8, 2004, "Approval to Restart the Davis-Besse Nuclear Power Station, Closure of Confirmatory Action Letter, and Issuance of Confirmatory Order," (DBNPS letter Log Number 1-4524) requires submittal of the assessment results and action plans necessary to address issues raised by the assessment within forty-five (45) days of completion of the assessment.

In accordance with the Confirmatory Order, the FirstEnergy Nuclear Operating Company (FENOC) is submitting the 2005 CAP Implementation Independent Assessment Report and the action plans for identified Areas For Improvement (AFI). The CAP implementation independent external assessment was conducted from July 11 to July 22, 2005, at the DBNPS in accordance with the CAP Implementation Assessment Plan submitted via letter Serial Number 1-1426, dated July 1, 2005. The final debrief marking the end of the assessment was conducted on August 8, 2005. This submittal contains the results of the Independent Assessment and action plans to address the AFIs identified by the assessment.

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If you have any questions or require further information, please contact Mr. Clark A. Price, Manager - Regulatory Compliance, at (419) 321-8585.

Sincerely yours,

Buy S. Allow for Mark B. Bezille

JCS/LJS

Attachment 1 - Commitment List

Enclosure 1 - 2005 Independent Assessment of the Corrective Action Program
Implementation at Davis-Besse Nuclear Power Station

Enclosure 2 - Action Plans to Address Areas For Improvement 2005 Independent
Assessment of the Corrective Action Program Implementation at Davis-
Besse Nuclear Power Station

cc: USNRC Document Control Desk
DB-1 NRC/NRR Project Manager
DB-1 NRC Senior Resident Inspector
Utility Radiological Safety Board

COMMITMENT LIST

The following list identifies those actions committed to by FirstEnergy Nuclear Operating Company's (FENOC) Davis-Besse Nuclear Power Station (DBNPS) in this document. Any other actions discussed in the submittal represent intended or planned actions by the DBNPS. They are described only for information and are not regulatory commitments. Please notify the Manager - Regulatory Compliance at (419) 321-8585 with any questions regarding this document or associated regulatory commitments.

<u>COMMITMENTS</u>	<u>DUE DATE</u>
1) An integrated backlog reduction project manager has been assigned to facilitate a comprehensive integrated backlog reduction effort with responsibility to ensure the backlog is eliminated and the station transitions to steady state workload work levels. Additionally, the position will maintain management level awareness and alignment on matters relating to the scope, schedule and budget for backlog reduction. This process is governed by Business Practice DBBP-DBDP-0003, "Comprehensive Integrated Backlog Reduction Plan."	Action Complete.
2) The station will establish a periodic report presentation to be discussed at the Management Alignment and Ownership Meeting (MAOM) of open Root and Apparent Cause Evaluations. This will allow for an understanding of challenges and provide support for the completion of evaluations within 30 days and 45 days, respectively. The periodic MAOM presentation will continue until the Vice President determines this is no longer necessary.	September 30, 2005
3) The FENOC fleet causal analysis program owner will review the 2005 CAP Implementation Assessment's findings and observations and perform industry benchmarking to establish an improvement plan that addresses narrow or otherwise inadequate causal evaluations. The improvement plan will be based upon assessment results identified (refer to action #4 below) to put FENOC (Davis-Besse) in alignment with industry standards.	December 31, 2005.

COMMITMENTS

DUE DATE

This improvement plan will provide for performance monitoring through performance indicators and mentoring by the program owner to the root cause evaluators and the Corrective Action Review Board (CARB) members, as appropriate.

- | | |
|--|---|
| 4) The DBNPS Performance Improvement Unit, the root cause evaluator of the specific Condition Report, a peer root cause evaluator and the fleet causal analysis program owner will assess the individual evaluations identified in the independent assessment as being narrow/inadequate; and will recommend if changes are appropriate. This team will present their results to the CARB for review. Evaluations determined by the CARB as requiring modification will be revised and returned for final CARB approval. | December 31, 2005. |
| 5) The DBNPS Performance Improvement Unit will develop and present lesson-learned results from the assessment (refer to action #4 above) to station root cause evaluators, CR analysts, site director sponsors/approval authority and CARB members. | December 31, 2005. |
| 6) The FENOC is in the process of developing and implementing approximately 50 component Preventive Maintenance (PM) templates over a three-year time frame. These PM templates will be the basis for identifying predictive and preventive maintenance activities to protect against failure causes known to each type of component and to identify trends in equipment failures. FENOC will utilize industry best practices to model the PM templates, starting with the templates developed by the Electric Power Research Institute (EPRI) and other utilities. These actions have been captured and institutionalized in FENOC's Excellent Material Condition Business Plan starting in 2004. Actions completed to date include: <ul style="list-style-type: none">• Assignment of template ownership to the Fleet FENOC Component Engineering Section in Akron• Completion of Business Practices NOBP-ER-3902, "Component Template Development, Module 2 ER | Development of the remaining PM templates will be completed by December 31, 2007. |

COMMITMENTS

DUE DATE

Workbench”, and NOBP-ER-3903, “Component Template Implementation, Module 3 ER Workbench”, effective 4/12/04, that define the template process and development of the first 17 templates.

- 7) Business Practice NOBP-ER-3902, “Component Template Development, Module 2 ER Workbench”, establishes a component template effectiveness review to be conducted every two years based on the date each template becomes effective. This Business Practice is designed to identify trends and weaknesses requiring corrective action. NOBP-ER-3902, Step 4.5.2 defines the review process lead by the template peer review team and the Fleet template owner. The PM template implementation software tools reside in the FENOC Equipment Reliability Workbench and will systematically collect all Condition Reports and Orders tied to the template for common failure trend identification. The process will utilize cause codes in the corrective action process and craft feedback on corrective maintenance Orders. The process will implement a template effectiveness review that will provide for binning of all failure causes identified through the Condition Report and Corrective Maintenance Order processes. Actions completed to date include:

- Utilizing best practices from industry utilities (Exelon) to provide for binning of failure causes identified through the Condition Report process and the Corrective Maintenance Order process to identify common failure trends and potential weaknesses in the defined template maintenance strategy.
- Development of an effectiveness review process utilizing the Exelon model and the January 2004 FENOC fleet-wide assessment.
- Development of software tools associated with this process.

This software development will be completed by September 30, 2006.

Completion of the binning software known as Module 16 of the Equipment Reliability Workbench software toolkit will fully complete the effectiveness review process.

Docket Number 50-346
License Number NPF-3
Serial Number 1-1439
Enclosure 1

2005 Independent Assessment
of the
Corrective Action Program Implementation at
Davis-Besse Nuclear Power Station

(59 pages to follow)

Independent Assessment of the Corrective Action Program Implementation at Davis-Besse Nuclear Power Station

COIA-CAP-2005
July 11 to July 22, 2005

Prepared by:



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ACRONYMS

A

ACE	Apparent Cause Evaluation
AFI	Area for Improvement
AFW	Auxiliary Feed Water

C

CA	Corrective Action
CAP	Corrective Action Program
CAQ	Condition Adverse to Quality
CARB	Corrective Action Review Board
CATI	Corrective Action Program Team Inspection
CC	Condition Adverse to Quality - Closed
CCA	Common Cause Analysis
CF	Condition Adverse to Quality - Fix
CFT	Core Flood Tank
CNRB	Company Nuclear Review Board
CR	Condition Report
CREST	Condition Report Evaluation and Status Tracking
CSSA	Collective Significance Self-Assessment

D

DBBP	Davis-Besse Business Practice
DH	Decay Heat

E

ECP	Engineering Change Package
ECR	Engineering Change Request
EDG	Emergency Diesel Generator
EPRI	Electric Power Research Institute
EPZ	Emergency Preparedness Zone

I

IN	Information Notice
INPO	Institute of Nuclear Power Operations
IPA	Integrated Performance Assessment

F

FENOC	FirstEnergy Nuclear Operations Company
FVR	Fleet Value Rating

L

LCO	Limiting Condition for Operation
LTA	Less Than Adequate

M

MAOM	Management Alignment and Ownership Meetings
MCC	Motor Control Center
MRFF	Maintenance Rule Functional Failure

MSSV Main Steam Safety Valves

N

NC Not a Condition Adverse to Quality - Closed
NCAQ Not a Condition Adverse to Quality
NF Not a Condition Adverse to Quality - Fix
NOBP Nuclear Operation Business Practice
NOP Nuclear Operating Procedure
NRC U.S. Nuclear Regulatory Commission

O

OE Operating Experience
OTSG Once Through Steam Generator
OWA Operator Work-Arounds

P

PCR Procedure Change Request
PI Performance Indicator/Performance Improvement
PM Preventive Maintenance
PR Preventive Action
PRA Probabilistic Risk Assessment
PSIRV Primary Systems Integrity Review Visit

Q

QA Quality Assurance

R

RA Remedial Action
RCS Reactor Coolant System

S

SCAQ Significant Condition Adverse to Quality
SER Significant Event Report
SMT Senior Manager Team
SO Standing Order
SR Significant Condition Adverse to Quality – Root Cause
SST Solid State Trip
SVP Senior Vice President

T

TS Technical Specification

U

UPS Uninterruptible Power Supply
USAR Updated Safety Analysis Report

EXECUTIVE SUMMARY

This is a report of the Independent Assessment of the Corrective Action Program (CAP) at the Davis-Besse Nuclear Power Station. The Independent Assessment Team (Team) evaluated the following areas:

1. Review of Corrective Actions (CAs) from 2004 Independent Assessment of the Davis-Besse CAP.
2. Identification, Classification, and Categorization of Condition Adverse to Quality (CAQ).
3. Evaluation and Resolution of Problems.
4. CA Implementation and Effectiveness.
5. Effectiveness of Program Trending.
6. Effect of Program Backlogs.
7. Effectiveness of Internal Assessment Activities.
8. Evaluate any open CAs taken in response to the U.S. Nuclear Regulatory Commission (NRC) Special Team Inspection – Corrective Action Program Implementation Team Inspection (CATI) – Report number 05000346/2003010.

The assessment was conducted during a two-week period in July 2005. A Team of three consultants and three peer evaluators conducted the assessment.

Based on the definitions in Davis-Besse Business Plan procedure DBBP-VP-0009, "Management Plan for Confirmatory Order Independent Assessment," Revision 2, dated April 26, 2005, the Team gave Davis-Besse's implementation of the CAP an overall rating of EFFECTIVE. This rating is based on interviews, document reviews, and observations.

The following summarizes the ratings of each assessment area. Additional details are found in the body of this report.

Area	Team Finding
1 Review of Corrective Actions from 2004 Assessment	Effective
2 Identification, Classification, & Categorization of Conditions Adverse to Quality	Effective
3 Evaluation and Resolution of Problems	Marginally Effective
4 Corrective Action Implementation and Effectiveness	Effective
5 Effectiveness of Program Trending	Effective
6 Effect of Program Backlogs	Marginally Effective
7 Effectiveness of Internal Assessment Activities	Effective
8 Evaluation of Open Corrective Actions from CATI Report	Marginally Effective
Overall Rating	Effective

Review of CAs from 2004 Assessment was ranked as EFFECTIVE because the Team considers the procedure for due-date extension as described in procedure NOP-LP-2001, "Condition Report Process," Rev, 10, dated April 13, 2005, to be an area of strength. Additionally, the level of detail in the extension

requests reviewed by the Team demonstrated an understanding of the risks as well as identification of interim actions when required. And finally, Davis-Besse personnel have a generally consistent understanding of when to write a Condition Report (CR).

Identification, Classification, & Categorization of Conditions Adverse to Quality was rated as EFFECTIVE because the Team found a commitment by all organizations to use the CR process and an understanding by the supervisor level and above on how to properly categorize CRs. The Area for Improvement (AFI) listed in Assessment Number 2004-0100 and captured as CR 04-06028, "COIA-CAP-2004-Condition Report Initiation Standards Not Met (AFI)," appears to be resolved. The Team saw no evidence to indicate that organizations were not initiating CRs. This was not cited as a current issue in interviews with FirstEnergy Nuclear Operating Company (FENOC) personnel.

Evaluation and Resolution of Problems was rated as marginally effective because the Team found that the organization was frequently achieving the basic intent of the CAP but was experiencing challenges to being sufficiently self-critical including deficiencies of timeliness, accuracy, and thoroughness.

Corrective Action Implementation and Effectiveness was rated as EFFECTIVE because the Team determined that the CAP was efficient at identifying problems and implementing corrective actions in an effective manner which minimizes rework. In general, problems were properly captured and characterized by the CAP and corrective actions were completed in a timely fashion. Based upon the sample reviewed, items entered into the CAP were properly classified and prioritized for resolution.

Effectiveness of Program Trending was rated as EFFECTIVE because the current trending program meets acceptable industry standards and the planned trending program demonstrates a desire for continual improvement.

Effect of Program Backlogs was rated as marginally effective because Davis-Besse has a large number of backlogged open work items and the average age of the more significant condition adverse to quality (SCAQ) corrective actions and effectiveness reviews continue to increase. The backlog is being controlled and reduced in accordance with a backlog reduction plan; additionally, a high level of management attention is concentrated on reducing the backlog, and progress has been made since the 2004 Assessment. The Team noted that the site performed a periodic system review of the backlog that incorporated the system health and potential for increase in the core damage frequency.

Effectiveness of Internal Assessment Activities was rated as EFFECTIVE because the Team determined the internal assessment activities at Davis-Besse have improved since the 2004 Assessment. The site has had one evolution of the Integrated Performance Assessment (IPA) for each group and, while effective, the IPA needs demonstrated repeatability to earn a highly effective rating. The Team also evaluated the FENOC Fleet Oversight assessment for the first quarter of 2005 and determined it to be comprehensive and generally in agreement with issues identified by the individual IPAs. The CAP 2005 Focused Self-Assessment was found to be sufficiently rigorous and self-critical to provide continued improvement of CAP implementation.

Evaluation of Open Corrective Actions from CATI Report was rated as marginally effective because the Team determined that, for the most part, no significant action has been taken on the majority of the remaining open CAs. The Design Engineering staff stated that they had not focused much effort on most of these CATI items because the issues identified were primarily enhancement oriented and not safety related, and there were higher priority items to work on such as milestones for the upcoming refueling outage.

The Team gave Davis-Besse an **Overall Rating** of EFFECTIVE because:

- The Team considers the process for extending due dates of corrective actions as described in NPO-LP-2001, “Condition Report Process” to be a major improvement over previous guidelines.
- Interviews with the Davis-Besse staff and management demonstrate a consistent understanding of when to prepare condition reports.
- Davis-Besse management demonstrates a comprehensive understanding of, and high degree of involvement in, the correct action process and a willingness to accept ownership of, and commit resources to, the resolution of identified corrective actions.
- The Management Alignment and Ownership Meetings (MAOMs) and Corrective Action Review Board (CARB) meetings are well run and demonstrate Davis-Besse’s ongoing commitment to performance review and enhancement.
- The Team determined that implementation and effectiveness of the corrective action program was effective at identifying, categorizing, and capturing problems.
- The Team determined that internal assessment activities such as the integrated performance assessments (IPAs) completed by Davis-Besse during the first quarter of 2005 demonstrate a high attention to self-evaluation and continued performance improvement on the part of Davis-Besse management and staff.

1 INTRODUCTION

This Independent Assessment of the Davis-Besse CAP (COIA-CAP-2005) was conducted at the request of the Vice President, Fleet Oversight. The Team used the general guidance of NOBP-LP-2001, "FENOC Focused Self-Assessment;" NRC IP 40500, "Effectiveness of Licensee Process to Identify, Resolve, and Prevent Problems;" and DBBP-LP-0009, "Management Plan for Confirmatory Order Independent Assessment," to evaluate the effectiveness of the implementation of the CAP.

2 SCOPE OF ASSESSMENT

The Team evaluated the following areas associated with the CAP implementation:

1. Review of CAs from 2004 Independent Assessment of the Davis-Besse CAP.
2. Identification, classification, and categorization of CAQ.
3. Evaluation and resolution of problems.
4. CA implementation and effectiveness.
5. Effectiveness of program trending.
6. Effect of program backlogs.
7. Effectiveness of internal assessment activities including self-assessments, onsite and offsite Safety Review Committee activities, and other assessments as applicable.
8. Review of open CAs taken in response to the NRC Special Team Inspection – Corrective Action Program Team Inspection (CATI) – Report 05000346/2003010.

2.1 Status of Corrective Actions from the 2004 Independent Assessment of the Davis-Besse Corrective Action Program

The Team reviewed the CAs proposed and taken in response to the Noteworthy Items and Areas for Improvement (AFIs) identified during the 2004 Independent Assessment of the Davis-Besse CAP. The Team evaluated the CAs for strengths, weaknesses, or slow responses. The following are the observations of the Team for each CR developed in response to the 2004 Assessment.

2.1.1 Observations on Condition Reports from 2004 Independent Assessment

CR 04-05920, COIA - OPS - Cause Determination

This CR was written to identify a deficiency in the review and cause determination for CR evaluations. This CR recommended that the cause determination evaluation should include the five "whys." The investigation stated that the Apparent Cause evaluators are trained in the "why staircase" and did not recommend training revisions. One CA directed the Corrective Action Review Board (CARB) to review the same Operations CRs evaluated by the 2004 Assessment Team and address unresolved comments. This CA was closed on October 29, 2004. Another CA directed the CARB to review Apparent Cause Evaluations (ACEs) from operations for a period of one year. This CA is due to be completed on October 15, 2005.

The Team determined that, while the CA only required a review of Operations evaluations, the CARB is currently reviewing all of the station evaluations. This expanded level of review demonstrates Davis-Besse's commitment to performance improvement.

CR 04-06011, COIA - CAP - 2004 - Corrective Action Timeliness Questioned (AFI)

This CR was written to address an identified problem with prioritizing, scheduling, and implementing CAs to repair long-standing issues. This CR had three CAs generated against it. The first CA incorporated another CR (04-06693, "Safety Culture Assessment") into this work scope. The second CA required development of Davis-Besse Business Practice (DBBP) DBBP-DBDP-0003, "Comprehensive Integrated Backlog Reduction Plan." The third CA required implementation of the business plan and will remain open until the business plan is "implemented."

The Team determined that the third CA has no metrics that allow it to be closed. "Implementation" of the business plan is a subjective goal because the business plan contains goals for the maximum number of open actions in the backlog tracking system. Meeting these goals may provide one method of closing this CA; however, failure to meet the goals could allow the CA to remain open indefinitely. The Team suggests that CAs contain specific measurable actions that, when completed, allow the CA to be closed.

CR 04-06013, COIA - CAP - 2004 - Increasing Trend in Corrective Actions Average Age

This CR was similar to another CR (04-06193, "Unacceptable Age of Open SCAQ PR and RA Type CAs"); therefore, the CRs were combined. CR 04-06193 provided the following data:

SCAQ average age (PR, RA)	382 days
Oldest Preventive Action (PR)	889 days
Oldest Remedial Action (RA)	691 days

The CA called for the Senior Vice President (SVP) to issue an expectations directive that interim actions need to be considered and the Condition Report (CR) was closed for Significant Condition Adverse to Quality (SCAQ) & CAQ root and apparent cause extension requests.

As of July 15, 2005, the Team determined the following:

SCAQ average age (PR, RA)	~540 days
Oldest PR	1,219 days (Outage)
Oldest RA	862 days

The Team notes that the average age of open actions is continuing to increase despite the significant attention on overall number reduction being placed on this item by management and the monthly reviews by management of the oldest non-outage CRs. Of particular concern is the average age of higher priority significance CAs and aging trend. Davis-Besse exceeds industry averages on completing SCAQ CAs. Enhanced priority should be placed on completion of SCAQ CRs as this area may represent the site's highest area of risk. The continued ease with which CR and CA due date extensions are granted also exceeds industry standards.

CR 04-06016, COIA - CAP - 2004 - Untimely Corrective Actions Results in Repeat Events

This CR was a category Condition Adverse to Quality - Fix (CF). The 2004 Assessment considered this CR an AFI. It identified the need for a review of open CAQ and SCAQ preventive and remedial actions to assure that appropriate compensatory actions were in place. The Team found that all three of the CAs are complete. A memo from the SVP was issued as an interim CA. The Team revised the Condition Report Evaluation and Status Tracking (CREST) electronic form to include additional information for extension requests. The Team also performed a review of long-standing open CAQ/SCAQ CRs. This review resulted in one

procedure being inactivated as an interim action and an additional report being requested on the status of emergency diesel generators following completion of the backlog reduction effort.

The Team evaluated the current age of CAQ/SCAQ open items and included its review in Section 2.6, "Effect of Program Backlogs" of this report. The Team also noted that current extensions include justification for the extension and a statement or evaluation of the risk of the extension. In summary, the Team determined this CR is complete and the CAs have been properly dispositioned.

CR 04-06017, COIA - CAP - 2004 - Unsatisfactory Corrective Action Program Trending

This CR was written to address the deficiencies in trending identified by the initial CAP Assessment. This CR has three CAs associated with it, and all three have been closed. The Team determined that the current trending program developed in response to this CR is adequate but slightly below industry average in the tracking and trending of equipment problems. However, the proposed new trending program to be initiated in August 2005 (using July 2005 data) appears to be above industry average if it is fully implemented. Section 2.5 of this report, "Effectiveness of Program Trending," contains additional discussion on trending.

CR 04-06018, COIA - CAP - 2004 - NOBP-LP-2006, Collective Significance Review Inconsistency

This CR was written to describe an inconsistency between two Nuclear Operation Business Practice (NOBP) procedures (CAP, and Collective Significance Reviews). The CA was initiated to cancel the procedure on Collective Significance Reviews. Additionally, Davis-Besse implemented a comprehensive business practice for performing common cause analyses. Section 2.5 of this report, "Effectiveness of Program Trending," further addresses this implementation. This CR is closed.

CR 04-06019, COIA - CAP - 2004 - Collective Significance Self-Assessment (CSSA) Reports Inconsistencies

This CR was written because the 2004 Assessment found that improvement is warranted in the documentation of organizational CSSA Reports with respect to minimal procedure guidance, expectations, documentation, documentation of CRs, and overall rating of performance. The CA consisted of revisions to NOBP-LP-2001, "FENOC Focused Self-Assessment Process," to clarify expectations relative to documentation of CSSA Reports. The Team determined that improvement has been noted, and Davis-Besse considers this issue closed.

CR 04-06021, COIA - CAP - 2004 - Self-Assessment Program Doesn't Evaluate Errors in Aggregate

This CR was written because the 2004 Assessment found that the Self-Assessment Process does not provide a mechanism for identifying and correcting programmatic concerns or trends identified during the course of the assessment. CRs are initiated for each specific issue in lieu of evaluating the errors in aggregate. The CA included revising NOBP-LP-2001, "FENOC Focused Self Assessment Process," to clearly identify the need to consider the potential aggregate impact of programmatic concerns or trends identified as an integral part of the data analysis associated with performance of individual focused self-assessments. The Team determined that improvement has been noted, and Davis-Besse considers this issue closed.

**CR 04-06022, COIA - CAP- 2004 - Self-Assessment & Nuclear Quality Assurance (NQA)
Findings Need More Timely Actions**

This CR was written because the 2004 Assessment found that additional emphasis is warranted on timely correction of items identified as a result of self-assessments and NQA findings. The 2004 Assessment found that different priorities were placed on findings from self assessments versus those from the Quality Assurance or Oversight staff. The CAs were considered appropriate and included as extensive benchmarking as well as an assessment of timeliness of response to a sampling of internally generated CRs vs. Oversight CRs. No significant deviation was identified.

CR 04-06023, COIA - CAP - 2004 - CAP Performance Indicators Improvements

This CR was generated because the 2004 Assessment found that the definition of "Repeat Events" used in Davis-Besse's CAP Performance Indicators (PIs) is too limited. Consideration should be given to developing PIs that capture repeat events at lower significance levels so as to identify adverse trends in CAP effectiveness. The CA consisted of developing and implementing a standard set of PIs based on additional benchmarking of the industry. These PIs were promulgated throughout FENOC via the revised CAP performance indicators and site-specific performance improvement indicators. The CA due date has been extended until September 2005 due to current CAP implementation issues and limited resources.

The Team determined that this is still an unresolved issue. Davis-Besse has no method for identifying repeat events on the condition report form. Additionally, the site has no clear definition of a repeat event in the existing plant procedures. The Team determined the proposed new indicators may resolve this issue.

CR 04-06024, COIA - CAP - 2004 - Deficient Evaluation & Resolution of Condition Reports

This CR was written to identify multiple deficiencies identified during the 2004 Assessment's review of CRs classified as CAQ. The 2004 Assessment recommended more in-depth analysis for CAQ CRs. This CR has three CAs associated with it. All three CAs were closed. The site determined that the current system was sufficient, and the CARB determined the root cause and apparent cause evaluations were acceptable as written. Therefore, no additional training was necessary.

The Team determined that problems still exist with the level of detail and depth of investigation in apparent and root cause evaluations. Section 2.3 of this report, "Evaluation and Resolution of Problems," discusses these specific areas of concern.

CR 04-06025, COIA - CAP - 2004 - CR Collective Significance Review not in Accordance with Requirements of NOBP-LP-2006

This CR was written because there was a concern that the cause analysis stopped short and did not include all engineering principles and expectations in the analysis. Specifically, NRC Non-cited Violation item 03-010-17 was not assessed as part of CR 03-06907. The site's investigation concluded that this was not a valid issue because the collective significance review was to identify new issues and not the causes. Additionally, Engineering Management had generated and was implementing a performance improvement program in part as a response to CR 03-06907.

The Team determined that this was a continuing concern. The Team's review of Apparent and Root Cause evaluations conducted as part of this assessment demonstrated a lack of timeliness in completing the full cause analysis and a lack of depth to many of the evaluations.

CR 04-06026 COIA - CAP - 2004 - CR Collective Significance Review Did Not Initiate CR

This CR was written to identify the plant's failure to generate a CR for a problem identified by the NRC during its CATI. Davis-Besse site investigation of the CR determined that the CAs were captured in the Calculation Improvement Plan, Safety Culture/Safety Conscious Work Environment, and the FENOC Engineering Principles and Expectations documents, and no further action was required.

The Team determined that the site review and closure of this item were acceptable.

CR 04-06027, COIA - CAP - 2004 - RCTS Item for NRC IR 03-010-011 & CR Not Linked in RCTS

This CR was written to recommend better linkage between closure packages and all actions needing to occur. This CR addressed an issue with calculation errors regarding inadequate design. This CR was closed with no action and stated that the CAs for CR 03-06907 would be applicable as it included a collective significance review of calculations and other design engineering issues.

The Team determined that the site review and closure of this item were acceptable.

CR 04-06028, COIA - CAP - 2004 - Condition Report Initiation Standards Not Met (AFI)

This CR was written to identify deficiencies in the identification and classification of CAQ CRs. The 2004 Assessment identified a variation on the threshold of when to write a CR among different departments at Davis-Besse. The Team determined that the Davis-Besse personnel have a good understanding of when to write a CR.

CR 04-06030, COIA - CAP - 2004 - NOBP-ER-1004, "Fleet Value Rating Methodology" Improvements

This CR was written because the 2004 Assessment felt that the point value listed in the NOBP-ER-1004 "Fleet Value Rating Methodology" and Fleet Value Rating Worksheet for some of the attributes do not appear to properly reflect the order of importance of the attributes. In short, a higher numerical score was given to increasing output by 1 MW than to major safety issues. This could be interpreted as FENOC placing power generation above safety. The site investigation determined that no change was necessary.

The Team found that NOBP-ER-1004, "Fleet Value Rating (FVR) Methodology" was revised. Revision 1 was approved on May 19, 2005. The revised procedure does not contain the table of numeric Fleet values. The numeric values have been relocated to an "Issue/Initiative" Worksheet. The Team reviewed the ratings in the worksheet and found the following values:

Potential Investment Activity	Points
"...eliminates the cause of a potential serious industrial accident at the site."	350
"...enable the plant to generate more revenue equivalent to 1MW."	300
"...eliminates the cause of a potentially serious industrial accident within the FENOC Fleet."	280

Potential Investment Activity	Points
"...eliminates the cause of a severe personnel injury that has occurred in the industry."	210

The Team concluded that the revision is an improvement over the earlier procedure in that it gives the highest priority to investments that eliminate the cause of a potential serious industrial accident at the site. However, the Team remains concerned that the relative rating for eliminating other potentially serious accidents could be misinterpreted.

CR 04-06031, COIA - CAP- 2004 - RFA Integrated Action Plan for CAP Implementation Improvement

Under this CR, Davis-Besse management committed to develop an Integrated Action Plan (IAP) for the improvement of the Davis-Besse CAP Implementation. The action was changed to develop and approve the Fleet CAP Continuous Integrated Improvement Plan. The Davis-Besse CAP Implementation initiative was provided to Fleet Program Manager for CAP on December 21, 2004. This item was closed to a fleet-wide CAP Integrated Continuous Improvement Plan which was approved and posted on the fleet CA web site.

2.1.2 Summary

The Team evaluated the CAs taken in response to the 2004 Assessment and identified the following areas based on the definitions contained in DBBP-VP-0009, "Management Plan for Independent Assessments," Rev. 02, dated April 26, 2005.

Areas of Strength

The Team considers the procedure for due date extension as described in Nuclear Operating Procedure (NOP) NOP-LP-2001, "Condition Report Process," Rev, 10, dated April 13, 2005, to be an area of strength. The level of detail in the extension requests reviewed by the Team demonstrated an understanding of the risks as well as identification of interim actions when required.

Davis-Besse personnel have a generally consistent understanding of when to write a CR. Davis-Besse management demonstrates a high degree of involvement and willingness to accept ownership of CRs. The industry peer on the Team identified this level of involvement as above industry average.

Areas in Need of Attention

A lack of specific activities identified in CAs that clearly identify when the activity is complete and can be closed (CR 04-06011).

Areas for Improvement

None.

Team Ranking for Review of Corrective Actions from 2004 Independent Assessment

The Team rated the status of CAs from the 2004 independent assessment of the Davis-Besse CAP as EFFECTIVE.

2.2 Review of Condition Reports for Accuracy of Identification, Classification, and Categorization

The Team performed a review of multiple activities to assess the effectiveness of the identification, classification, and categorization of CAQ items. This review included:

- An evaluation of the actual identification, classification, and categorization of at least 25 CRs categorized as CAQ.
- An evaluation of the adequacy of identification, classification, and categorization of at least 20 CAs for operational feedback.
- Interviews with at least 10 individuals to ascertain the staff's commitment to the CAP, the extent of their understanding of the problem identification process, and their willingness to report problems.
- An evaluation of the CAP for broad implementation problems or deficiencies.

2.2.1 Review of Condition Reports for Accuracy of Identification, Classification, and Categorization

The Team reviewed a sample of 25 CRs to determine whether (1) the description statement was clear, (2) the categorization/classification was appropriate, and (3) the evaluation method(s) was appropriate. The Team uses the terms "classification" and "categorization" interchangeably. These CRs were chosen to cover the period since the last 2004 Assessment site visit concluded on October 1, 2004. Section 5.2 of this report lists the CRs reviewed by the Team.

Each CR was reviewed against the category descriptions in Attachment 1 and the CR evaluation methods described in Attachment 2 of procedure NOP-LP-2001, "Condition Report Process."

The following is a discussion of the Team's review of the selected CRs:

CR 04-07277, Corrosion Found on Cell Connections for 2N Station Batteries

This CR was a Condition Adverse to Quality - Closed (CC) and written to identify corrosion on 28 battery terminals of 2N Station Battery. This CR correctly identified that previous CRs identified a similar condition and work orders existed to replace the battery during the mid-cycle outage.

The Team found that (1) the description was clear, (2) the categorization was appropriate, and (3) the evaluation method was appropriate.

CR 04-07292, RCS Hydrogen Low Out of Specification

This CR was a CF to track the actions performed to return the Reactor Coolant System (RCS) Hydrogen back to specification. Samples indicated levels had dropped below the 25-50-cc/kg expectation. Initially identified on November 16, 2004, this CR was downgraded on January 7, 2005. Five CAs were assigned for activities out of which all but one is completed. The due date for the remaining action (due to an approved extension) is September 30, 2005.

The Team found that (1) the description was clear, (2) the categorization was appropriate, and (3) the evaluation method was appropriate.

CR 04-07307, Safety Culture Assessment – Operations Commitment to Continuous Improvement.

This CR was Not a Condition Adverse to Quality - Fix (NF) and written to document and track repair of two operator work-arounds (OWA) that were in effect during the October safety culture assessment. The two OWAs (control rod transfer problem and Turbine Bypass Valves requiring manual isolation) were corrected during the recent mid-cycle outage and the CAs were closed.

The Team found that (1) the description was clear, (2) the categorization was appropriate, and (3) the evaluation method was appropriate.

CR 04-07482, Records Submittal Outside 90-Day Requirement

This CR was a CF and written to identify the failure of Quality Assurance (QA) to submit records to Nuclear Records Management within the 90 days required by NG-NA-00106.

The Team found that (1) the description was clear, (2) the categorization was appropriate, and (3) the evaluation method was appropriate.

CR 04-07601, Orders Being Voided Inappropriately

This CR was a CF documenting that work orders were inappropriately closed when the work was not performed. These work orders included at least two cases where boron deposits had been identified and not removed.

Given the sensitivity of backlog reduction, inappropriate closing orders, and boron removal issues, the Team would have expected an ACE for this CR.

The Team found that (1) the description was clear, (2) the categorization was appropriate, and (3) the evaluation method was NOT appropriate.

CR 04-07798, ABB Valve Positioners in Warehouse Potentially Defective as per OE

This CR was an NF and written to identify the potential problem with ABB type AV1 Valve Positioners. CAs were written to quarantine the suspect components, and a cost analysis was completed to determine the most cost-effective method for correcting the potential problem.

The Team found that (1) the description was clear, (2) the categorization was appropriate, and (3) the evaluation method was appropriate.

CR 05-00016, Inadequate Closure of Corrective Action CA 02-03371-1

This CR was a CF initiated to identify that a CA assigned for a 2002 CR was closed even though the action was not fully completed. Specifically, an Updated Safety Analysis Report (USAR) table was needed to address the 2002 CR. The CR Process indicates the CR should not have been closed until the USAR update was completed. Contrary to this expectation, the CR was closed when the owner approved the USAR Change Notice submittal.

The Team found that (1) the description was clear, (2) the categorization was appropriate, and (3) the evaluation method was appropriate. The response documented the USAR was verified to have been modified to reflect the change requested and concurred the CR should not have been closed. The response did not discuss the action performed to address the inappropriate closure behavior captured in the CR.

CR 05-00085, Core Flood Tank Level Technical Specification

This CR was a CF and written to identify a calculation error that could result in an incorrect reading of the level of liquid in the core flood tank (CFT). The revised calculations are more restrictive than the existing Technical Specification (TS), and the CFT volume was sufficient to meet loss of coolant accident requirements. The Team found that the CAs developed in response to this CR were performed in a timely manner without extensions, and the investigation summary was sufficiently detailed to assure the Team that the CFT volume was within TS limits.

The Team found that (1) the description was clear, (2) the categorization was appropriate, and (3) the evaluation method was appropriate.

CR 05-00185, Abnormal Decrease in Boron Concentrations

This CR was a CF documenting an unexpected change in measured concentration of boron in the borated water storage tank. This change was attributed to the recalibration of the boron autotitrator. It was determined that Technical Requirements Manual requirements were met. The evaluation determined that the change should have been anticipated based on recalibration of the autotitrator.

The Team found that (1) the description was clear, (2) the categorization was appropriate, and (3) the evaluation method was appropriate.

CR 05-00191, RE8414 Almost Missed Surveillance DB-SC-04144

This CR was classified as a CF and documents a “near miss” of a surveillance requirement. Radiation Indicating Monitor RE8414 requires a quarterly Surveillance Test. This CR captures this near miss for trending and documents the investigation of the cause of this near miss to consider ways to prevent reoccurrence.

The Team found that (1) the description was clear, (2) the categorization was appropriate, and (3) the evaluation method was appropriate.

CR 05-00219, Loss of D1 Bus During Testing

This CR documents the loss of Essential Bus D1 during testing and classified as a Significant Condition Adverse to Quality – Root Cause (SR). The CARB approved the completed Root Cause Evaluation.

The Team found that (1) the description was clear, (2) the categorization was appropriate, and (3) the evaluation method was appropriate.

CR 05-00239, MCCE21A Has Water in the MCC Causing a Smoke Smell

This CR was categorized as CF and identified smoke from a non-vital Motor Control Center (MCC) that was the result of water running through B phase. A CA was generated to perform a Maintenance Rule Functional Failure (MRFF) evaluation. This CA was closed stating that it is a MRFF but was not upgraded to a CAQ, Apparent Cause required.

Condition Reporting Procedure NOP-LP-2001 rev. 10, Attachment 2, page 2 requires “At least an apparent cause will be performed on an equipment issue determined to be a Maintenance Rule Functional Failure.”

The Team determined that this CR is not correctly evaluated. Rather than a CF, the Team determined that this CR should be categorized as a CA. The Team informed the Davis-Besse

organization (who subsequently generated a CR [05-03845] to upgrade the CR) and requested an extent of condition evaluation be performed for other MRFF CRs.

The Team found that (1) the description was clear, (2) the categorization was appropriate, and (3) the evaluation method was NOT appropriate. An ACE should have been performed.

CR 05-00260, Apparent Technical Specification Application Issues

This CR was a CF and documented that the shift exited a shutdown TS – Limiting Condition for Operation (LCO) while the inoperable condition still existed. After the loss of Bus D1 at 0849, the shift exited when the bus was restored at 1051 hours not realizing that the batteries were inoperable because they were not charged to a sufficient level. The LCO should have been exited at 1345 hours. This event should merit an ACE.

The Team found that (1) the description was clear, (2) the categorization was appropriate, and (3) the evaluation method was NOT appropriate.

CR 05-00275, Failure of Master Trip Solenoid Valve A During Performance of DB-SS-04159

This CR documents the failure of a master trip solenoid on the main turbine to extinguish the test light during the testing process. This CR was initially classified as a CF, but later upgraded to a CA. The ACE was presented to CARB and accepted. The ACE was well investigated and documented.

The Team found that (1) the description was clear, (2) the categorization was appropriate, and (3) the evaluation method was appropriate.

CR 05-00288, Decrease in T-AVE below Technical Specification Limit During Plant Shutdown

This CR was a CA and, as discussed in Section 2.3.2 of this report, the Team concluded that although a categorization of CAQ may be appropriate, the organization was not sufficiently self-critical in the assessment of this event and the many issues contributing to it. If conducted properly, the evaluation may have prevented a second reactivity event (see CR 05-01478).

The Team found that (1) the description was clear, (2) the categorization was appropriate, and (3) the evaluation method was NOT appropriate. A root cause would have been appropriate for this reactivity control event.

CR 05-00352, Inadequate Implementation of CA 04-04099-1

This CR was categorized a CF to document the inadequate implementation of CA 04-04099-1 to revise NOBP-ER-3002, "Plant Health Committee." The associated CA when completed is planned to incorporate the previously overlooked comments. The investigation summary incorrectly identified the procedure as an NOP.

The Team found that (1) the description was clear, (2) the categorization was appropriate, and (3) the evaluation method was appropriate.

CR 05-00583, Engineering Change Packages Not Closed Within 90-Day Requirement

This CR was a CF for tracking development of a plan to ensure implemented maintenance backlog Engineering Change Packages (ECPs) are being completed in a timely manner.

The use of the CF category and evaluation method was deemed appropriate provided that another CR had determined the cause for the lateness. This CR does not discuss the cause for the significant inability to complete the 44 ECPs in a timely manner.

The Team found that (1) the description was NOT clear, (2) the categorization was appropriate, and (3) the evaluation was appropriate. Additional information could have been included in the description to identify the cause of the lateness.

CR 05-00611, Lack of Operating Experience in Work Order

This CR was a CF that identified several work orders which did not have operating experience information in the packages contrary to process expectations. This may challenge the quality of the pre-job briefing as well as the human performance event free performance of the task. The review concurred with the observed issue, and two CAs were assigned to resolve the issue.

The Team found that (1) the description was clear, (2) the categorization was appropriate, and (3) the evaluation method was appropriate.

CR 05-00666, Black Deposits Identified on CRD Head Penetrations During 1M14 Inspections

This CR was a CF that identified an observed black substance in the annular region of several Control Rod Drive (CRD) penetrations. This CR also noted this issue was previously identified. The report concluded the deposit was most probably iron oxide. One CA was assigned to compare the data of the metal inspection to be performed in the 14RFO timeframe with the data from this inspection both to monitor the condition and to validate the conclusion drawn thus far.

The Team found that (1) the description was clear, (2) the categorization was appropriate, and (3) the evaluation method was appropriate.

CR 05-00715, Corrective Action Due Date Beyond Maximum with no Extension Request Form

This CR was categorized as a CF and written to point out a number of original established overdue CAs that were outside the requirements established in NOP-LP-2001. The due dates were changed to be consistent with the CR Process procedure.

The Team found that (1) the description was clear, (2) the categorization was appropriate, and (3) the evaluation method was appropriate.

CR 05-00802, Davis-Besse Process Not in Agreement with INPO Process Description

This CR was an NF and written to document a discrepancy between the site training and qualification standard and those of the Institute of Nuclear Power Operations (INPO) for concurrent verification, independent verification, and peer checking. Operators may not be familiar with the task enough to be able to prevent an error. Several CAs were issued to revise the business practice and conduct training of supervisors.

The Team found that (1) the description was clear, (2) the categorization was appropriate, and (3) the evaluation method was appropriate.

CR 05-01414, Storage Maintenance Requirement Identification and Implementation

This CR was a CF and documented two instances of preventive maintenance (PM) tasks for items stored in the warehouse. The PMs were being tracked under Storage Maintenance Requirement

number 000 which was not intended to direct actual work. The PMs were being performed as required.

The Team found that (1) the description was clear, (2) the categorization was appropriate, and (3) the evaluation method was appropriate. (The Evaluation was performed twice as it is not clear why the first evaluation was inadequate.)

CR 05-02990, INPO PSIRV Recommendation for Improvement

This CR was an NF to document the Institute of Nuclear Power Operations (INPO) Primary Systems Integrity Review Visit (PSIRV) and to evaluate the need for monitoring dry boric acid leaks for a period of time after maintenance is complete or the boric acid is cleaned from the component.

The Team found that (1) the description was clear, (2) the categorization was appropriate, and (3) the evaluation method was appropriate.

CR 05-03051, Leak Collection Device Installed Incorrectly

This CR was a CC and documented a leak from a make-up valve with an improperly installed leak-collection device. The installation was corrected and properly logged.

The Team found that (1) the description was clear, (2) the categorization was appropriate, and (3) the evaluation method was appropriate.

CR 05-03070, Annunciator 9-4-A, VAC SYS DISCH RAD HI, Alarming Spuriously

This CR was Not a Condition Adverse to Quality - Closed (NC) and written to document a spurious radiation alarm that does not provide enough time to troubleshoot the condition.

The Team found that (1) the description was clear, (2) the categorization was appropriate, and (3) the evaluation method was appropriate.

2.2.2 Evaluation of Operational Experience Condition Reports

The Team also reviewed a sample of 20 CRs to evaluate the adequacy of CAs for operational experience feedback. These were reviewed to determine whether (1) the screening, (2) the categorization, (3) the identification, and (4) the evaluation were appropriate. All the CRs reviewed contained at least one CA.

The following is a discussion of the Team's review of the selected CRs for Operational Experience (OE) Feedback:

CR 04-04417, OE 18214 – Westinghouse DHP Shutter Failure at Hatch

This CR is classified as an NF. OE 18214 was issued to document a shutter failure on a Westinghouse DHP switchgear cubicle which resulted in the alternate bus supply breaker opening and causing an Emergency Diesel Generator start. The CA associated with this CR modifies procedure DB-ME-09122, "Westinghouse DHP Switchgear Maintenance," to address this issue.

The Team found that the (1) screening, (2) categorization, (3) identification, and (4) evaluation were appropriate.

CR 04-04558, IN 2004-13 – Registration, Use & QA Requirements for NRC Cert Transport Package

This CR was an NF and documents the clarification of licensees' responsibilities regarding the packaging and transportation of licensed material as delineated in 10 CFR Part 71. Of specific note in this Information Notice (IN), the NRC dealt with the certificates of compliance requirements.

The Team found that the (1) screening, (2) categorization, (3) identification, and (4) evaluation were appropriate.

CR 04-04794, IN 2004-16 – Tube Leakage Due to a Fabrication Flaw in a Replacement Steam Generator

This CR was an NF and written to evaluate the applicability of an NRC IN regarding a new replacement steam generator with a tube defect and the importance of monitoring the fabrication and shipment of the tubes. The site conducted an evaluation of the IN and the Davis-Besse procurement documents. The evaluator also stated that the manufacturer of the Once Through Steam Generators (OTSGs) had incorporated this information into its practices.

The Team found that the (1) screening, (2) categorization, (3) identification, and (4) evaluation were appropriate.

CR 04-05398, SER 4-04 – Isophase Ground Faults

This CR was an NF and written to evaluate the conditions described in an INPO Significant Event Report (SER) identifying problems in the Isophase bus ducts at four other sites.

The Team considered the evaluation to be thorough, and it resulted in six CAs including an expanded PM to conduct a detailed inspection of the Isophase bus duct during an outage. It also included an inquiry to the site's vendor to evaluate the effect of increased airflow with the two fans running in the present configuration.

The Team found that the (1) screening, (2) categorization, (3) identification, and (4) evaluation were appropriate.

CR 04-05569, CEMAP Program Review of OE 18895, Mihama Pipe Rupture

This CR was an NF initiated to capture the review and evaluation of this industry event. The review concluded the Electric Power Research Institute (EPRI) CHECKWORKS model used at Davis-Besse coupled with the existing Flow Accelerated Corrosion inspection program, and the existing system acceptability analysis minimized the potential for a similar event. The OE review resulted in the assignment of an action to add four specific locations to the DB 14RFO CEMAP program inspection plan.

The Team found that the (1) screening, (2) categorization, (3) identification, and (4) evaluation were appropriate.

CR 04-06090, OE 19030 – Vertical Pump Problems with Design, Troubleshooting, and Maintenance

This CR was an NF initiated to capture the review and evaluation of this industry event. The review concluded that although Davis-Besse did not have pumps of this type by the manufacturer, vertical pumps by other manufacturers were present. Two actions were assigned—one to revise the alignment procedure (completed) and one to review the EPRI guidance (as recommended in

the OE item) and revise/review/implement procedure revisions as needed to ensure the EPRI guidance is captured.

The Team found that the (1) screening, (2) categorization, (3) identification, and (4) evaluation were appropriate.

CR 04-06119, OE 19130 – Seismic Monitor Taken Out of Service Without Proper Compensatory Measures

This CR is classified as an NF. OE 19130 was issued to discuss the Diablo Canyon Seismic Monitor out of service without proper compensatory measures. The associated CA has been extended due to a site reorganization causing a reduction of personnel. The Emergency Action Levels and associated instrumentation are believed to be adequately described as written and present a minimal risk as a result of the evaluation extension.

The Team found that the (1) screening, (2) categorization, (3) identification, and (4) evaluation were appropriate.

CR 04-06418, OE18410 – SCI UPS Inverter Choke Life

This CR was an NF and issued following screening of OE 18410 to evaluate the similarity of the site's Uninterruptible Power Supply (UPS) inverters to those discussed in the incoming report. The site assigned an action to initiate the appropriate PM strategy to address end-of-life degradation of the insulation in the affected inverter transformers and chokes.

The Team found that the (1) screening, (2) categorization, (3) identification, and (4) evaluation were appropriate.

CR 04-06544, Fuel Assembly Spacer Grid Failures at Crystal River 3

This CR was a CF and generated as a result of a fuel assembly grid failure in the industry. It was generated as a result of a brief conversation with a Framatome engineer.

The Team found that the (1) screening, (2) categorization, (3) identification, and (4) evaluation were appropriate.

CR 04-06625, OE 19330 – Loss of Transformer Cooling

This CR is classified as an NF. OE 19330 was issued to document the loss of all cooling on the unit main transformer at Byron. This complete loss of cooling was due to shorting of an under voltage relay. The CA associated with implementing an Engineering Change Request (ECR) to install fuses was cancelled. It was determined the condition identified in the OE was not an issue important to Davis-Besse due to transformer and annunciator design features.

The Team found that the (1) screening, (2) categorization, (3) identification, and (4) evaluation were appropriate.

CR 04-06713, Control Rod Drive Lead Screw Issue – Framatome Notification

This CR was an NF and generated as a result of an incident at Oconee 3. Framatome letters, FANP-04-3445 and 03448, were issued to describe the incident and possible implications at similar plants.

The Team found that the (1) screening, (2) categorization, (3) identification, and (4) evaluation were appropriate.

CR 04-07454, IN 2004-21 – Additional Adverse Effect of Boric Acid Leakage

This CR was classified as an NF. Given that the issue happened at Davis Besse, the F evaluation may not have been necessary. This CR should have been closed to the CR that generated the original OE.

The Team found that the (1) screening, (2) categorization, (3) identification, and (4) evaluation were appropriate.

CR 05-00440, Potential Error in Nuclear Application Software: Framatome CR 2005-9 Flow.for

This issue was classified as a CF. Framatome issued CR 2005-09 to document that Nuclear Application Software had a potential error that could cause the program to stop operation.

The Team found that the (1) screening, (2) categorization, (3) identification, and (4) evaluation were appropriate.

CR 05-00730, Confirmatory Screening OE 19872 – Improper Linkage Adjustment on Level Switches

This CR was a CF initiated to capture the review and evaluation of this industry event. The review concluded the same make and model of level switches are installed at Davis-Besse. Three CAs were assigned—one to revise the calibration procedure (completed), and two to track the completion of field calibrations to ensure the potentially affected indicators are set properly.

The Team found that the (1) screening, (2) categorization, (3) identification, and (4) evaluation were appropriate.

CR 05-00868, Confirmatory Screening OE 19895 – Lack of Lube PM of Double Shielded Bearings

This CR was an NF written to screen an OE from Braidwood. The investigation identified a similar issue at Davis-Besse and prepared a CA to replace the suspect component during the next refueling outage. Two additional CAs were generated to revise two procedures after the suspect component was replaced.

The Team found that the (1) screening, (2) categorization, (3) identification, and (4) evaluation were appropriate.

CR 05-01387, OE 18646 – Confirmatory Screening Inadequate Reliability of the Temp Air Compressors.

This OE documents various temporary air compressor performance issues at Calvert Cliffs. This issue was classified as a CF. Davis-Besse uses a temporary air compressor and appropriately assigned an action to update a requisition.

The Team found that the (1) screening, (2) categorization, (3) identification, and (4) evaluation were appropriate.

CR 05-01500, Strength Noted in Work Management/Supply During INPO Evaluation at BV

This CR is classified as an NF. It directs an evaluation be performed of the INPO Appendix of the Interim Report for Beaver Valley to determine if the cited strength in the area of Work Management is applicable to Davis-Besse.

The Team found that the (1) screening, (2) categorization, (3) identification, and (4) evaluation were appropriate.

CR 05-01657, Perry IR 2004-8 & IR 2004-11 Confirmatory Screening -

This CR was an NF and generated to identify two NRC inspection reports for the Perry Nuclear Power Plant. This CR generated four CAs to ensure that the report was included in the weekly OE summary report and added to the lesson plans and discussion documents for CARB members and root cause analysts.

The Team found that the (1) screening, (2) categorization, (3) identification, and (4) evaluation were appropriate.

CR 05-02412, INPO SER 2-05 – Gas Intrusion in Safety Systems

This CR was a NF that describes a safety system event that INPO published as significant event report (SER) 2-05. The site evaluated the procedures for Decay Heat (DH) Removal System, High Pressure Injection System, Makeup and Purification System, Boric Acid Addition System, and Containment Spray System for the adequacy of venting the piping system to eliminate trapped air after maintenance.

The Team reviewed the investigation report and found that the Davis-Besse reviewer had concluded the procedure for venting the DH Removal System (DB-OP-06012) was adequate to preclude air voids in the DH System. Additionally, CA#3 directs Plant Engineering to develop a new method/guidance to restore DH piping after maintenance.

The Team found that the (1) screening, (2) categorization, (3) identification, and (4) evaluation were appropriate.

CR 05-02702, PCR, DB-MM-09231 – Enhancement

This CR was classified as a CF for a procedure change request (PCR). OE 20151 was issued to discuss the failure of a Limitorque actuator at Hatch and the allowable methods to fix the problem. The procedure for Maintenance and Repair of Limitorque Valve Actuators Types SMB-0 through SMB-4 is scheduled for revision.

The Team found that the (1) screening, (2) categorization, (3) identification, and (4) evaluation were appropriate.

2.2.3 Interviews with Davis-Besse Staff

The Team spoke to and interviewed over 35 members of the Davis-Besse staff and management organization during the course of this assessment. Section 5.1 of this report lists the names of individuals interviewed to determine their commitment to, and involvement in, the CA process. Based on these interviews and observations of meetings, the Team concluded that the Davis-Besse staff displays a commitment to the CAP. They have an understanding of the problem identification process, and they display a willingness to report problems as well as encourage others to report problems.

The Team also attended multiple Management Alignment and Ownership Meetings (MAOMs), one CARB, one CARB member training session, one Senior Manager Team (SMT) meeting, and other CR and CA review meetings. The members at all of the meetings demonstrated an understanding of the subject under review and a questioning attitude toward problem resolution. Responsible individuals accepted ownership of items and appeared willing to cooperate in

resolving discrepancies. In general, Davis-Besse personnel demonstrated good interdepartmental cooperation and a willingness to commit resources when and where necessary. All of the meetings were well managed, the reviews of CRs and CAs were crisp, and there was good interaction between managers and CR owners. In all cases, the CR owners were prepared to discuss their packages.

2.2.4 Broad Implementation Problems in the Corrective Action Program

The Team noted no overarching or broad implementation problems in the review of the CRs or in the application of NOP-LP-2001, "Condition Report Process."

2.2.5 Summary

Areas of Strength

The MAOMs succinctly address CRs, and the line organizations take ownership of the CRs. Individuals have good understanding of the CA process and demonstrated a willingness to write and accept ownership of CRs.

Areas in Need of Attention

The Team review of over 45 CRs identified the following 6 CRs in need of attention:

- CR 05-00016 – This CR was closed before the action was completed.
- CR 05-00239 – The Team determined an Apparent Cause should have been completed.
- CR 05-00260 – The Team determined an Apparent Cause should have been completed.
- CR 05-00288 – The Team determined a Root Cause should have been completed.
- CR 05-00583 – The Team determined the problem description was incomplete.
- CR 04-07601 – The Team determined an Apparent Cause should have been completed.

Areas for Improvement

None.

Conclusion

The Team rated the Identification, Classification, and Categorization of CAQ as EFFECTIVE because the Team found a commitment by all organizations to use the CR process and an understanding by the supervisor level and above on how to properly categorize CRs. The AFI listed in Assessment Number 2004-0100 and captured as CR 04-06028, "COIA-CAP-2004-Condition Report Initiation Standards Not Met (AFI)," appears to be resolved. The Team saw no evidence where organizations were not initiating CRs. In interviews with FENOC personnel, this was not cited as a current issue.

2.3 Evaluation and Resolution of Problems

The Team was tasked to perform an analysis of selected issues that encompassed the entire applicable CAP process to identify strengths or weaknesses in the evaluation and resolution program currently in use at Davis-Besse. The evaluation was to include:

- An analysis of apparent causes and root causes of at least five CRs.
- A review of multiple CRs and CAs for correct categorization and an analysis of any CRs or CAs that, in the opinion of the Team, should have been categorized as CAQ but were not.
- A determination of the effectiveness of Davis-Besse's implementation of the CAP.

- An identification of strengths and weaknesses identified during the review.

The Team reviewed 20 CRs, including 12 Root Cause Analyses, 4 Apparent Cause Evaluations, and 4 CRs categorized as “Fix.” The purpose of the review was to determine the site’s effectiveness in correcting problems and implementing the CAP. The Team also evaluated the documents to identify any areas of strength, areas in need of attention, and areas for improvement.

The Team reviewed these issues to determine whether (1) the investigation tools used (event and causal factor flow chart, failure mode analysis, change analysis, barrier analysis, task analysis, etc.) were appropriate; (2) the stand-alone document was clear and follows the procedure; and (3) whether the depth of the investigation was appropriate.

The Team also reviewed a sample of the oldest open CAs for their safety significance. The Team reviewed the following areas:

2.3.1 Root Cause Analysis Reports

CR 03-07746, Inadvertent Opening of CF1B

This CR was written to identify the inadvertent opening of Core Flood Valve CF1B during plant heat up and pressurization. Overall, the Root Cause Analysis was well written and seemed to get to the true root cause of the event. The identified CAs have a good probability of preventing recurrence of the event. The evaluation of the training and pre-job briefing aspects was well defined and explanatory.

The Team determined that the analysis of industry events was weak. The analyst selected only two key word sequences, didn’t find any hits, and stopped the search. Because similar inadvertent valve operation events have occurred in the industry, the analyst should have located the descriptions.

The plant experience section was well written. This section identified three incidents of similar occurrences (this supports the weak industry event discussion above—three events at Davis-Besse but none in the rest of the industry). The Generic Implications section (pre extent of condition and extent of cause requirements) pointed out: “Since the 1977 event, Davis-Besse has institutionalized the performance shortcomings of this valve, as well as DH 76, by requiring operator actions to seat these valves, using mechanical agitation if necessary, during plant startup.” This indicates an organizational willingness to live with an identified problem. Additionally, this should be a flag to all that read this Root Cause Analysis—the failure of DH 77 to properly seat, thereby preventing the backflow, should have been considered for a contributing cause.

A CA requested that this issue be evaluated for possible issuance of an OE report to the nuclear industry. The evaluation determined that this event should not be issued. The Team determined that this event should be issued as an OE because of the potential generic implications of the event are applicable to more than just Babcock & Wilcox Nuclear Steam Supply systems. The failure to issue this event raises the question regarding the threshold of OE reporting.

CR 03-07862, Breaker Modification Installed Without Approved Engineering Change Documents

This CR was an SCAQ-SR which documented testing of a breaker with a Solid State Trip (SST) without ground fault protection to supply power to containment spray pump No.1. ECR 03-0513

was initiated to authorize the installation of a modified SST device into the applicable breaker; however, it had not yet been completed. This testing of the breaker was achieved by energizing the otherwise operable electrical circuit and noting the pump operation. The root cause was attributed to less than adequate (LTA) program, procedure use, team dynamics, communications, oversight, and perceived time pressure. The preventive actions involved benchmarking, training, lessons learned, white paper briefings, and re-enforcement of expectations.

The Team found (1) the problem statement was clear, (2) the categorization was appropriate, and (3) the evaluation method was appropriate.

CR 04-03213, Loss of Control of System to Activate EPZ Sirens

This CR was issued on May 7, 2004, when a monthly siren test did not activate the Emergency Preparedness Zone (EPZ) sirens. The Root Cause Report was issued on June 23, 2004, 16 days after the evaluation due date. An extension was granted to reflect this condition due to personnel availability and vendor input.

Four tools were used to evaluate the concern for the causes including Taproot, Brainstorming, Document Review, and Events and Causal Factor Charting. The Root Cause Determination identified four root causes: (1) LTA procedure content, (2) LTA written documents, (3) LTA man-machine interface, and (4) LTA self-checking.

This Root Cause Analysis Report provides a concise narrative of the events and additional sources of information on the siren system. CAs are identified and tracked with all CAs completed except the updating of the system firmware.

The Root Cause investigation was thorough and demonstrated a clear desire to minimize the probability of a recurrent event. Since the deficiency was corrected the day of the event, the extension did not increase the potential for a repeat event.

CR 04-03800, DB-SC-03001 – Missed Tech Spec Late Date

This CR describes a condition where an electrical system surveillance test required by the TSs was not completed by the date required. The actual procedure conducted was for the wrong mode of plant operation. A test was performed, but it followed the incorrect procedure and addressed verification for only one train of direct current equipment. This was classified as a significant condition (SCAQ) and required a root cause analysis. The immediate CA was to complete the test, which was successful and did not indicate any deficient equipment.

This event was straight forward, and the analysis determined that the root cause was a field supervisor who did not use appropriate self-checking tools. The supervisor needed to verify that the procedure selected was the one on the schedule and the appropriate initial conditions were met. CAs were applicable; however, they were not conducted until a second missed surveillance event regarding RCS flow instrumentation occurred.

CR 04-04087, Main Steam Safety Valve Incorrect Set Pressure

This CR describes the use of the size data for the 1,100 PSIG relief valves to check the set-point pressure for the 1,050 PSIG Main Steam Safety Valves (MSSV). The error was discovered after testing and adjustments were made to two of the four MSSVs. This use of incorrect baseline testing information caused the plant to declare both valves inoperable, which placed the unit into TS 3.7.1.1 actions (a) and (b). This TS required that one of the valves be restored to operability within 4 hours or the plant begins shutdown and is in Hot Standby within 6 hours.

The root cause was determined to be an over-dependence and over-reliance on a supporting vendor to input the correct initial data into the testing computer. The immediate CA consisted of inputting the correct data and retesting and adjusting the valves to return them to operability. Long-term CA included procedure reviews and revisions, training for personnel, and greater QA involvement with proprietary vendor information.

The Team found (1) the problem statement was clear, (2) the categorization of the event was appropriate, and (3) the evaluation method was appropriate. The Team concluded that the root cause and subsequent CAs were acceptable.

CR 04-04406, DB-OP-03006 – Missed Surveillance Requirement 4.3.1.1.1 for RCS flow Channel Check

This Root Cause Analysis was written to address 18 missed TS Surveillances (4.3.1.1.1) out of 202 required performances in the April 5, 2004, to July 14, 2004, timeframe.

An RCS Flow Indicator channel failed on April 5, 2004. While this failure should have been classified as a Control Board Deficiency, an OWA, and a 300 series work priority (21 days or less), it was instead improperly classified as a 600 series work priority (work as available, normal 12 week schedule). As a result of this failure, the operators were required to use a computer point to perform this channel check (for the purpose of the verification of the RCS flow input into Reactor Protection System).

Over the subsequent two months, two different Reactor Operators on two different crews failed to use the requisite computer point (and therefore failed to meet the surveillance requirements) on numerous occasions. Crew supervision (two different levels) failed to identify these mistakes during their review.

The Team concluded that the root cause analysis is marginal in its depth of cause analysis and, in addition, (1) the problem statement was hard to understand and lacked clarity, (2) the Root Causes did not adequately address the organizational issues that led to the multiple breakdowns of the surveillance performance and verification process, and (3) the investigation should have gone further as there were numerous individuals at numerous management levels that did not meet expectations.

CAs dealt with providing expectations reinforcements and training. An additional action (not requiring documentation in a CA) was to issue Standing Order (SO) 04-015 on October 23, 2004, to require additional peer reviews. This entailed utilizing crew management on their days off to perform an additional layer of peer reviews as a compensatory measure. This SO was eventually eliminated on February 14, 2005, after procedural enhancements were made. These actions were not included in the CR. Plant and industry operating experience was too narrowly scoped and added only marginal value. Typical expectations of these sections include (1) what should have been learned but was not, (2) what are we learning now regarding the causes, and (3) what are we learning now regarding the potential CAs. The requisite extent of cause section is not addressed.

CR 04-04927, Reactor Trip During Control Rod Drive Breaker Testing

This CR was initiated to note the plant trip during reactor trip breaker testing. The root cause was age-related latent fuse failure that materialized during the testing procedure performance. The CAs addressed revising the testing procedure, replacing the fuse and troubleshooting for the anomalies.

The Team found that (1) the problem statement was clear, (2) the categorization was appropriate, and (3) the evaluation method was appropriate. The report noted previous issues with rod control circuit fuses; however, these fuses were not included in the previous PM actions performed. The report noted this and was not captured as a cause related to the event. The report discussed potential “vibration”-induced failure of the fuse; however, it did not discuss any CAs performed to address the vibration. An extent of cause (or justification for not performing one) for other system fuses was not discussed.

CR 04-06154, Temporary Lift Issue for CCW Pump 1 Uncoupled Run

This CR describes a condition where a motor circuit breaker was racked back into the switchgear cubicle while the cubicle door had a Danger tag attached. This was classified as non-significant CAQ but did require a root cause analysis. The Team considered that the evaluation’s conclusion (i.e., the cause was ineffective tag placement) was part of the problem but certainly not the complete cause. The evaluation implied that this was due to a procedure inadequacy that allowed a choice of where to place the tag. This does not appear to be the entire cause since the station expectations and procedures require that equipment with Danger tags not be operated.

The Team considered the CA to revise the associated NOP to require verification that there are no Danger tags attached prior to racking a circuit breaker back in to be prudent. However, the Team considered the CA to “strictly enforce” a station standard for not working on plant equipment that has Danger tags attached to be very general. The CARB accepted this CR on December 1, 2004, with comments.

It appears that there were several associated issues that were not adequately addressed involving supervisory involvement, communication between operations and maintenance, and the general control of the status and conduct of maintenance as well as basic fundamentals for isolating circuit breakers. The root cause evaluation and CAs appear to be too narrow.

CR 04-06498, DB-SC-03059 – Did Not Provide Verification of Heat Trace Circuit 153 Above 105°F.

This CR described a missed surveillance test which the TSs require performing to verify that boric acid heat-tracing circuits were sufficiently heated to preclude solidification inside the piping system. The test was performed and signed off by the operator and reviewed by the shift manager. A final review by the system engineer six days later identified the deficiency that the temperature printout did not include one required circuit (#153).

The Team determined that the Root Cause analysis was extensive but still had several weaknesses.

The site root cause analysis included a Human Performance Evaluation System and Taproot evaluation and identified several causes using these methods. However, these causes were not used as the root cause. Instead, the root causes were listed as “inattention to detail and workmanship.” A contributing cause identified by the site was less than adequate (LTA) surveillance change management since the surveillance had been revised to remove steps required to document each point and verify that each point was above the acceptance criteria.

The Team indicated that the industry has stopped using behavioral statements such as “inattention to detail” as root causes. These causes do not necessarily lead to CAs to preclude repetition. The root cause would be considered inadequate as stated. Additionally, the extent of condition was not adequately scoped. The generic implications reviewed five previous performances but did not note whether they reviewed all previous performances by this individual or all performances

since the procedure change. The extent of condition also did not look for similar procedure changes that replaced specific acceptance criteria with a general one.

The Team also noted a minor deficiency (in the computer version of the records) in that the same individual signed for completion of three independent steps for CA number 4: (1) CA completion, (2) CA verification, and (3) organization approval. The governing procedure, NOP-LP-2001, prohibits the same individual from both implementing and verifying SCAQ preventive actions. The Team considered this deficiency an isolated instance and not indicative of overall performance since other preventive and remedial CAs for SCAQs were being verified by different individuals as required by the governing procedure.

CR 05-00219, Loss of D1 Bus During Testing

On January 13, 2005, during a routine monthly functional test, the bus under-voltage relay was de-energized and the emergency diesel generator (EDG) was inadvertently started without adequate cooling water. The craft individual inadvertently touched the banana plug to a protruding knife blade on the terminal and shorted out a fuse which activated the EDG. The individual was using the correct procedure and had received confirmation from the test leader that the correct test point had been selected.

The root cause was comprehensive and included use of an event and causal factor chart, a failure mode analysis, and a root cause tree analysis. It also included a very extensive use of drawings and photographs to aid the user in really understanding the situation the craft faced. The evaluation included a very good review and an analysis of previous similar events at the site including several which were almost identical events for which the CAs had been ineffective. It is not clear why action 01-1254 was not completed, but the Root Cause analysis indicated that it would have prevented this event. The pre-job check list for the monthly functional test had included statements indicating that this loss of bus power might occur with the associated EDG starting and that Operations will need to turn the EDG off in a timely manner since the service water pump will not start. Although this caution statement was considered prudent as an advance warning, it also indicated an organizational willingness to live with the problem.

The CAs for this CR included a revision to a procedure that will add specificity to recommended types of test leads to be used and a requirement to initiate a CR if the recommendation could not be met. Another preventive action was to design a panel mounted shielded connection to prevent a repeat event. The design change to prevent human error during testing (CA #8) had a due date of June 1, 2008. Since this test is conducted monthly it appeared that there was a good probability that a repeat event would take place.

The Team concluded that this condition indicated that the organization had decided to continue operating with a level of risk as opposed to assuring that the event would be precluded by the permanent modification. Although compensatory procedural measures were planned, it further indicated that the site was not assuring timely CA to preclude another similar transient.

CR 05-00939, Two Restraining Lugs Not Engaged on the Polar Crane When Parked From 13th Refueling Outage.

During a mid-cycle steam generator inspection outage, the reactor building polar crane was found with only two of four seismic restraining lugs engaged when it was parked in position at the end of the previous refueling outage for long-term operations.

The analysis concluded that the cause of the error was that the original architectural engineering firm crane specifications did not translate relevant information regarding the number and purpose

of the restraints into the crane operating procedures. The CARB rejected the root cause because it did not adequately address the human performance behavior to stop the task and collaborate with others when not familiar or when unanticipated conditions are observed. The Team considered that this rejection was warranted since the installation of the restraints was difficult and appeared to include a human performance deficiency. In addition, a CR was not originally written when the two restraining pins could not be engaged. Finally, the individual responsible for resolving the issue had wrongly determined that parking the polar crane with only two restraining lugs was acceptable without notifying the supervisor. Additionally, the individual made this decision without physically inspecting the crane.

The Team noted that the root cause evaluation identified several precursor events where restraining lugs were not engaged on certain site cranes going back to 1998. The root cause evaluation was comprehensive and included an appropriate extent of condition assessment. Similar deficiencies and associated CAs were identified for other site cranes and procedures. The evaluation also explained that the causes had not been included in system reviews prior to plant restart since they were not considered high-risk systems.

Although the individual crane operator had been “coached,” the CAs did not address more comprehensive action regarding adherence to procedures since there had already been site-wide stand-downs for failure to adhere to other procedures.

CR 05-01642, Decay Heat Train 2 Suction Piping -Refilling/Restoration Deficiency

This CR describes a condition where the DH suction piping was not completely vented following isolation and draining of the piping for maintenance. ECR 05-0159-00 was issued to install valves that will allow for proper venting of the line during future evolutions. The Root Cause was determined to be Interface Design or Equipment Condition, and Written Communication, content, technical inaccuracies. Actions taken to prevent recurrence were completed under CR 04-01481, which revised procedures to address the partial void in the line per Generic Letter 99-006.

An effectiveness review was completed in accordance with NOBP-LP-2007, “Condition Report Process Effectiveness Review.” The reviews verified that the procedure had been revised in accordance with CA #7 and no repeat CRs identifying voids in the DH suction piping had been written. The effectiveness review also determined whether either DH train had been drained and refilled since the completion of the CAs.

The Team found the (1) problem statement was clear, (2) the categorization was appropriate, and (3) the evaluation method was appropriate. The root cause discussion was well written and easy to understand. The Team concluded the CAs appear to address the extent of cause.

2.3.2 Apparent Cause Evaluations

CR 05-00288, Decrease in T-AVE below Technical Specification limit during plant shutdown.

This CR describes a transient that occurred on January 17, 2005, during a plant shutdown during an unplanned entry into TS 3.1.1.4 for operating the reactor outside the temperature limit for criticality. This CR and the associated apparent cause report indicate that the primary reactor operator was directed to maintain reactor power at 2 percent with rod control system in manual. During the shutdown sequence, soluble boron was injected into the reactor coolant system in such large amounts (according to a “water management plan”) that the operator had difficulty

maintaining control of reactivity (and therefore reactor power) and T-AVE using control rods in manual.

The net core reactivity changes being affected by the boron addition, xenon buildup, and changing steam loads were such that the reactivity being inserted via the control rod withdrawals was inadequate to maintain reactor power and, therefore, T-AVE. As a result, the operator was re-directed to insert rods to shutdown the reactor and get out of the applicable action statement for TS 3.1.1.4.

The apparent cause analysis concluded that the unplanned entry into the TS 3.1.1.4 was the failure to maintain power above 2 percent prior to putting the auxiliary boiler and motor-driven feed pump in place. This was attributed to operators not using computer information in addition to the main board indications, inadequate supervisory oversight in the control room, and a shutdown plan that added boric acid at low power levels. A contributing cause was a “design” issue that the power range nuclear instruments are inaccurate at low power levels.

The Team determined that the reactivity analysis and resulting conclusion (i.e., the reactor was never subcritical during the time that the control rods were being withdrawn) were inaccurate and needed to be re-evaluated. The apparent cause records did not include the detailed reactor parameter graphs so the Team requested those additional records. It appears from the additional data provided by the analyst that the reactor was subcritical during several rod withdrawals and that there were several additional contributing causes and issues that should have been evaluated and addressed by management as a result of that situation. For example, the CA does not address the cause of the inappropriate “water management plan” (including how it is prepared and approved) nor does it address the appropriateness of reactor engineering’s assistance in the control room during the shutdown and the control room supervisor’s oversight.

An additional CR was written, CR 05-00770, to initiate an analysis of the overall reactivity management of the plant shutdown discussed above including how reactivity was managed during low power operations. This was another missed opportunity to carefully review the details of this event including the review and approval of the water management plan and the additions of boron at these low power levels, including the design and operational aspects. No further investigation was performed for this CR.

It wasn’t until after another reactivity event a month later involving power perturbations during demineralizer operations (CR 05-01427) that the organization took more comprehensive CAs for deficiencies in understanding and control of certain reactivity conditions. CA #4 from this CR evaluated whether the organization could have precluded this event and identified that an earlier Nuclear Oversight 4th Quarter 2004 Assessment report had concluded that the site reactivity management program and procedure were “below industry standards.” Subsequent to this event, it appears that the organization took more extensive CA regarding overall site performance including operator knowledge weaknesses and operating procedures.

Another CR (CR 05-01478) was written by Operations to conduct a Common Cause Review of the above two events. The subsequent CAs included a detailed review by the site staff as well as an industry peer Operations manager. An evaluation of operator knowledge was conducted of basic reactor theory fundamentals and, following the identification of significant weaknesses, additional training was conducted during cycle 1 and 2 - 2005 of continuing training. An operating experience feedback to the industry was also completed. Additional CAs are planned to address issues raised regarding design and operating practices from 05-01427 but are not due until the end of 2005.

The Team concluded that the organization was not sufficiently self-critical in the assessment of the first event (CR 05-00288) and the many issues contributing to it. The site should have conducted a more extensive review and analysis as soon as possible after the event and, if appropriately self-critical, may have prevented the second event (CR 05-01427, CR 05-01478).

CR 05-01301, Radiation Monitor Cabinet Power Loss Needs MR Evaluation

A fuse, which was installed in March 2002, failed and de-energized six radiation monitors including maintenance rule scoped functions. The fuse was sent for lab analysis which concluded that the fuse did not have any evidence of degradation or mechanical damage and the fuse appeared to have operated due to an over-current condition, likely a current surge.

The Team determined the Apparent Cause Evaluation (ACE) was incomplete. It did not address any investigation into the over-current condition or current surge issue identified by the laboratory analysis. Instead, the ACE presumes the failure to be a “single random fuse failure” with very little investigation.

CR 05-02126, Sodium Hypochlorite Added to Intake Bay with Running Screen Wash Pump

This CR was a CAQ-CA that documented the April 7, 2005, event where an inappropriate chlorination lineup to the intake bays resulted in a direct pathway for chlorine to go directly to the screenwash pond and out through outfall 003. The report concluded the apparent causes were related to communication challenges (verbal and written), poor work practices, and procedure inadequacies. The CAs addressed the individual performance, procedure revisions, re-establishing the correct line up, and EOC for other procedures that may need revision. The EOC CR noted eight new CRs to address the procedures. These final CRs were categorized as NF, even though the original issue was classified as a CAQ-CA. The subsequent CRs for the procedure changes were completed.

The Team determined that the (1) problem statement was clear, (2) the categorization was appropriate, and (3) the evaluation method was appropriate. The Team noted the CAs assigned addressed the extent of cause for the cause identified in the report. Site and Industry OE was captured, and extent of issue was noted.

CR 05-02148, SA 2004-0071, LTA Analysis of Training Feedback

This CR describes an identified LTA analysis of the plant's training program. This CR reports that feedback from students and management observations is not consistently used to modify training to improve personnel and plant performance. As a result, opportunities to improve training materials and processes are missed.

The Team found that (1) the problem statement was clear, (2) the categorization of the event was appropriate, and (3) the evaluation method was appropriate. Opportunities to improve the report were noted. The depth of the analysis should have been enhanced. A more effective evaluation of the extent of the condition seems warranted as other training programs could be similarly affected. The ACE was completed on June 1, 2005, which is a duration of 50 days not considered timely by industry standards but not out of line based on the significance of the issue. All CAs are now complete.

2.3.3 Condition Reports Categorized as “Fix”

CR 04-07601, Orders Being Voided Inappropriately

This CR was a CF documenting that work orders were inappropriately closed when the work was not performed. These work orders included at least two cases where boron deposits had been identified and not removed.

Given the sensitivity of backlog reduction, inappropriately closing orders, and boron removal issues, the Team would have expected an ACE for this CR. It is not clear that the extent of condition in the evaluation is appropriate for the condition. The resolution of this issue appears to be something that CARB should review.

CR 05-00239, MCCE21A has Water in the MCC Causing a Smoke Smell

As discussed in this report section 2.2 above, the Team determined that this CR was not properly classified since it was a maintenance rule functional failure and as such should have had an Apparent Cause evaluation associated with it.

CR 05-00260, Apparent Technical Specification Application Issues

This CR documented that the shift exited a shutdown TS LCO while the inoperable condition still existed. After the loss of Bus D1 at 0849, the shift exited the LCO when the bus was restored at 1051 not realizing that the batteries were inoperable because they were not charged to a sufficient level. The LCO should have been exited at 1345.

This event by itself would seem to merit an ACE and subsequent CARB review.

CR 05-00770, Reactivity Management during January shutdown

This CR was written to initiate an analysis of the overall reactivity management aspects of a plant shutdown including how well reactivity was managed during low power operations. Upon completion of the investigation, it was determined that there was “no aspect of the event which had not been addressed” and, therefore, it was downgraded to an NF category. As discussed above in section 2.3.2, the Team considered this to be inappropriate.

2.3.4 Timeliness and Safety Significance

Evaluation Timeliness

Of 30 CAQ ACEs initiated in 2005, only 8 are CARB-approved as of July 15, 2005. Of the 30, the evaluation is not complete for 19 and 3 are awaiting comments from the CARB to be incorporated. The oldest CAQ ACE not approved by the CARB is approximately 120 days old. The industry standard for ACE completion is 30 days. Aging investigations represent risk for the site.

CR 05-01427 was originated on February 20, 2005. The expected evaluation completion date at the time was March, 16, 2005. The Root Cause report was dated April 19, 2005. The Manager of Operations approved the root cause on April 22, 2005. The CARB review was dated May 18, 2005. The CARB comments are not incorporated as of July 15, 2005, and are currently due July 28th. This timeline is significantly outside industry expectations. The station would report that this root cause was completed in approximately 58 days while the product is still not in a final version and is scheduled to be completed in a total of approximately 145 days.

Open SCAQ Corrective Actions

Because of the age of the oldest open items in the CAP, the Team decided to review a sample of the “oldest” items to assess the safety significance of the subject material as an additional input to the effectiveness review.

CR No.	Days Open	Topic	Scheduled	Category
02-00502	1,219	Replace MSSV Disc Material	Outage	SR
02-06178	916	Fuel/Handling Upgrades (3 of these actions)	On-Line	SR
02-04673	885	Aux Feed Water Pump Alarm Mods.	Outage/On-Line	SR
02-07808	830	Commitment Management (4 of these actions)	On-Line	SR

The Team concluded that several did not appear to be high safety significance or high-risk items.

There have been repetitive issues with MSSVs not operating properly including not lifting at the correct lift pressure. The site has evaluated the cause and has attributed it to oxide bonding of the nozzle and disc due to similar oxide structure of the materials. CAs include plans to replace the disc material over the next two refueling outages with pre-oxidized inconel. The Team questioned whether this plan would be timely and thus prevent a repeat event due to nozzle and disc bonding.

An effectiveness review for this CA has not been scheduled until the end of 2008.

Open Root Causes

There were three open Root Causes as of June 3, 2005. Two related to electrical penetrations (CR 05-01849 and CR 05-02761) and one related to a battery test in 2003 (CR 05-02415). These all were due to be completed by June 12, 2005. The issue of the electrical penetration without adequate fault protection was temporarily resolved by de-energizing the circuit, and the root cause evaluation was completed by the due date. The battery test root cause evaluation was also completed by the due date.

Based on this small sample of open SCAQ issues, the Team concluded that the safety significance was limited.

2.3.5 Summary

The Team concluded that the site was frequently achieving the basic intent of determining the root causes of events and conditions; however, since the majority of cause evaluations reviewed had deficiencies, it appears that continued management attention is warranted to continue improving performance. The Team identified the following areas:

Areas of Strength

The Team considered the level of knowledge and management attention being placed on the site's overall implementation of the CAP to be strong. This included management awareness of program backlog of outstanding cause evaluations, open high-priority CAs, and the monitoring of program performance indicators.

The event or condition description as well as the extent of cross referencing to other associated CRs was very good and provided a good record of the issue and other related issues and CAs. This can assist the efficiency and effectiveness of those managers and staff who need to review the root cause evaluations as well as the associated reports or similar events and conditions. The records also include Adobe PDF files of reports scanned into the CR system for ease of recall.

Areas in Need of Attention

The Team reviewed the Root Cause and Apparent Cause Evaluations for 20 CRs. The Team identified the following CRs in Need of Attention.

- CR 03-07746 - The analysis of industry events and the issuance of OE were weak.
- CR 04-03800 - The corrective actions were not conducted until a second event.
- CR 04-04406 - The root cause, corrective actions, and OE were weak.
- CR 04-04927 - The extent of cause was not discussed.
- CR 04-06154 - The root cause and corrective actions appear narrow.
- CR 04-06498 - The root cause and extent of condition were weak; CA not independently verified.
- CR 04-07601 - This should be an ACE and have CARB review.
- CR 05-00219 - The corrective action was not considered timely.
- CR 05-00239 - This should be an ACE and have CARB review.
- CR 05-00260 - This should be an ACE and have CARB review.
- CR 05-00288 - The cause analysis was not accurate and narrow.
- CR 05-00770 - Should have had a more thorough review.
- CR 05-00939 - Corrective actions did not address adherence to procedures.
- CR 05-01301 - The cause evaluation was too narrow.
- CR 05-01427 - This was untimely.
- CR 05-02148 - Extent of condition and timeliness were issues.

Areas for Improvement

The timeliness of conducting root and apparent cause evaluations, investigations, and overall completion of CAs was noted as a challenge in several reviews. In some cases, this was an assessment based upon a second or similar event and in others based upon a comparison to industry expectations.

A significant number of CR causal evaluations were assessed as being too narrow or otherwise inadequate. This resulted in the Team expanding the sample size. The Team determined that, in general, adequate tools and methods were available and being used by the analysts; however, some of the cause evaluations were considered too narrow. This also led to certain CRs with limited CAs.

Conclusion

The Team rated the Evaluation and Resolution of Problems as Marginally Effective because the organization was frequently achieving the basic intent of the CAP but was experiencing challenges to being sufficiently self-critical including deficiencies of timeliness, accuracy, and thoroughness.

2.4 Corrective Action Implementation and Effectiveness

The Team analyzed multiple CRs categorized as CAQ to evaluate the effectiveness and implementation of the CAs. The Team considered the timeliness of the CAs for multiple CRs. The Team's review included:

- A review of the number of repeat CRs and CAs.
- An evaluation of the adequacy of the Davis-Besse implementation of the CAs for operational experience feedback.
- A review of the activities of the CARB and an evaluation of the effectiveness of the CARB.

2.4.1 Review of Repeat CRs

The Team determined that Davis-Besse has no method in the CR process for identifying or recalling repeat occurrences. Consequently, the Team performed a word search of the CREST system for the words “repeat,” “repeatable,” and “duplicate.” The identified CRs were manually sorted for clearly identified repeat events as identified by the originator or approving supervisor. The Team identified five CRs that were determined to be repeating events by the originator or approving supervisor. The Team reviewed these CRs and determined they were previously identified by the Davis-Besse CAP Implementation Self-Assessment (DB-SA-05-02) dated June 30, 2005.

The Team also evaluated the CRs reviewed under Sections 2.1, 2.2, and 2.3 of this report for repeat or similar failures that were not identified as such by Davis-Besse. The Team identified one issue that may be considered a non-identified repeat issue. CR 05-00219, “Loss of D1 Bus During Testing,” identified the repeated accidental grounding of the under-voltage trip relay and subsequent auto-start of the emergency diesel generator. This event and its planned CAs are discussed in more detail in Section 2.3.1 of this report.

The Team determined that the CR form has no entry block or simplified search methods for repeat occurrences. Consequently, the identification of repeat problems was dependent on the memories of individuals involved in the CR process rather than being retrievable from the CREST database. In addition, the lack of a clear definition of what is a repeat issue and the reliance on staff recollection for repeat issues may place a limitation on the ability of Davis-Besse to clearly demonstrate the effectiveness of the CAP over an extended time.

2.4.2 Evaluation of the Adequacy of the Davis-Besse Implementation of the Corrective Action Program for Operational Experience Feedback

Nuclear Operating Experience Business Practice NOBP-LP-2100 “FENOC Operating Experience Reference Guided” contains guidance on the review, evaluation, and use of OE feedback. The Team reviewed CRs developed in response to OEs and spoke to Davis-Besse staff and management on their use of OE notices from FENOC and other nuclear sites. In general, the Team found that Davis-Besse reviews OE notifications when received and prepares CRs and CAs as appropriate. Section 2.2.2 of this report details the Team’s review of CRs developed in response to OE feedback.

2.4.3 Review of the Actions and Effectiveness of the Corrective Action Review Board

The Team attended a CARB meeting on July 18, 2005. The meeting was held in accordance with NOBP-LP-2008, Revision 4, “FENOC Corrective Action Review Board.”

The Team determined that the meeting was conducted with adherence to the procedure and both members and presenters were actively involved. A quorum of members was not present at the beginning of the meeting but appropriate arrangements were made to create a quorum. The CARB chairman requested that a CR be issued to address the lack of the organization’s planning

for the meeting with one presenter and a member absent without notice. The chairman kept the meeting on track and followed the agenda.

The CARB reviewed two CRs from the meeting package. Both CARB members and presenters were knowledgeable about the CRs being reviewed and the discussion remained focused on the key topics. The station staff asked probing questions of the presenters not only to clarify the incident, but also the justification for the proposed CAs and scheduled due dates. A particularly good discussion ensued regarding why it was considered acceptable to wait for the test to be conducted about ten more times before the procedure was revised for preventative CA.

The Team concluded that the CARB was effective and was conducted in accordance with station procedures.

2.4.4 Summary

The Team determined that Davis-Besse has no clear definition of repeat events, nor is there a clear method for sorting repeat events from the CREST database. The site's dependence on individual memories for identification of repeat events may limit the ability to identify similar occurrences. NOP-LP-2001, "Condition Report Process," Revision 10, dated April 14, 2005, requires an SCAQ categorization for multiple types of repeat events. Correct identification of repeat occurrences is dependent on the memory of Davis-Besse staff and management.

The MAOM, CR review meeting, and CARB meeting provides an effective review of key issues and aid in the continuity of corporate experience and memory.

Areas of Strength

The CARB meetings are well run and effective.

Areas in Need of Attention

The Team determined that the identification of repeat occurrence was dependant on the memories of individuals involved in the CR process, rather than being retrievable from the CR database. The lack of a clear definition of what was a repeat occurrence and the reliance on staff recollection for repeat issues may limit the ability to establish the effectiveness of the CAP over an extended time period.

Areas for Improvement

None.

Conclusion

The Team determined that implementation and effectiveness of the CAP was Effective at identifying problems. In general, problems were properly captured and characterized by the CAP. Based upon the sample reviewed, items entered into the CAP were properly classified and prioritized for resolution.

2.5 Effectiveness of Program Trending

This section evaluates the effectiveness of Davis-Besse's trending activities, the CAP for both organizational/programmatic issues and equipment failure issues.

The Team performed an analysis of the effectiveness of the trending of CAs. This assessment includes (1) a review of deficiencies tracked in the CAP and (2) an evaluation of the effectiveness of the CA trending program.

The assessment was conducted through document reviews and interviews.

2.5.1 Review of the Deficiencies Tracked in the Corrective Action Program

The Davis-Besse Trending Program is comprised of four different sub-programs, each with specific attributes:

- CR Organizational and Program Trending.
- CR Equipment Trending.
- Organizational Cognitive and IPA Trending.
- Common Cause Review.

CR Organizational and Program Trending

Between the second and third quarters of 2004 (2Q04 and 3Q04) trending report periods, the Performance Improvement (PI) organization benchmarked trending reports from other nuclear power plants. Using these reports as a baseline, the PI Team determined the attributes of the benchmarked trending reports that would be most beneficial to the line organizations. These “best practices” were then incorporated into the new version of the Davis-Besse trend report (beginning with the 3Q04 report). Attributes of the new report format included the use of the Nuclear Energy Institute sections (operate the plant, work management, equipment reliability, etc.) for the report and a summary section divided into New Trends, Existing Trends, and Closed Trends. The trends are derived from a statistical evaluation of the SCAQ and CAQ CRs with a subjective review by the PI section that includes review of Not a Condition Adverse to Quality (NCAQ) data.

The Team recommends that this practice be reevaluated to begin inclusion of the statistical data from the lower significant issues (NCAQs) as this inclusion would improve the analysis by providing a much larger database for predicting future more significant issues.

All identified trends are entered into the CAP database as either a new adverse trend or as an action to an existing CR. This provides a CAP based driver, with due date, to all Trending Report items. This CR, however, may be closed even though the trend is still carried as an active trend. CR 04-06991 on Training Attendance is an example of this.

This CR Trending Report executive summary uses three categories to classify Davis-Besse’s current trends; New Trends, Previously Identified Trends, and Closed Trends. In the latest report, the Previously Identified Trends section is further divided into Degraded/Recurring, Stable, and Improving. This provides a very effective executive summary for line management. The graphical trends follow the executive summary section and provide an analysis and CR reference.

The combined 4Q04/1Q05 Trending Reports are the last reports planned to be generated at the site. Current planning calls for the FENOC Corporate CAP organization to produce all future trend reports. Based on this change in responsibility, the sustainability of the previously identified improvements needs to be closely monitored for continued improvement and sustained success.

The planned corporate trend reports are scheduled to be issued semi-annually. Statistical data from the planned reports are scheduled to be evaluated against site IPAs and common cause analyses to identify differences. A CR is to be generated for identified differences. This change is considered an enhancement and could result in additional improvements.

CR Equipment Trending

Equipment trending at Davis-Besse is conducted in accordance with procedure DBBP-PES-0001 "System and Component Trending" and procedure DB-PF-00004 "Equipment Failure Trending." The site employs the industry typical System Engineering quarterly system health report and a quarterly plant health report as well as preventative maintenance. Additionally, an annual review is conducted of specific component failures (2005 was the first year this annual review was conducted). The annual review is accomplished manually by reviewing all component CRs (e.g., breakers, pumps) and evaluating the CRs to ascertain if there are any common component failures across the systems. This was accomplished in December 2004-January 2005 and was documented in a CR. The evaluation did not reveal any common component failures. Davis-Besse does not have a program that provides component trending across the site with a report done in a predictive charting methodology as is done by the CR Organization and Program Trending program. Additionally, validation of the equipment failure codes initially assigned to the CR after the Work Order is complete is not done on a routine basis.

To improve the quality of the coding, the Team recommends Davis-Besse implement the following actions:

- Institute a practice of reviewing the craft's closing remarks on the feedback form when a work order goes to complete status and update the CR equipment failure coding.
- Change ownership of the equipment coding tables to the Engineering Programs group to facilitate the continual improvement of the codes and their resultant usefulness.

To improve the overall product of Equipment Trending, Davis-Besse should evaluate industry best practices for an equipment trending report to improve the communications to management with regards to developing trends.

Organizational Cognitive/IPA Trending

Organizational trending is conducted by departmental IPAs. This is a process formally known as Collective Significance Self-Assessment. The IPAs are conducted on a biannual basis and presented to the Senior Management Team (SMT) meeting for management oversight.

The IPA is a report that correlates data from a variety of sources including CRs, Cognitive Trending, QA reports, Job Observations, NRC inspection reports, INPO issues, and performance indicators. Results of the IPA are reported in CRs to document needed improvement items. The Cognitive Trending element of the IPA is a section level ongoing process that bins the specific department's issues into common categories. Charting provided by the CAP organization to the individual sections provides the basis for this process. The IPA process provides a systematic departmental self-assessment; however, this program is in its infancy and has a minimal track record to date. The IPA process was developed from the CSSA process and was viewed by the industry peers as an improvement.

Common Cause Review

On a biannual basis, the CAP group performs a Common Cause Analysis (CCA) of the cause codes for the completed Root and Apparent Cause Analyses during that period. This is a cause

binning process that is screened to ascertain the common issues. The resultant causes of the CCA each are documented on CRs that receive an ACE, and are reviewed by the SMT. The first CCA, completed in June of this year, provides a very good review of the issues that were common to the analyzed events.

CAP Focus Self Assessment

The Team determined the “Davis-Besse Corrective Action Program Implementation Self-Assessment” (DB-SA-05-02) to be sufficiently rigorous and self critical to provide for continued improvement of the CAP implementation.

2.5.2 Evaluation of Effectiveness of the Corrective Action Trending Program

The overall trending program has undergone significant programmatic improvements since the last evaluation, with the exception of equipment trending. These improvements are based on industry benchmarking and a cultural shift towards line ownership of the Trending program. Many of these improvements have a very short track record and as such, need run time to evaluate their effectiveness. Additionally, there are further changes currently underway (e.g. CR trending being transferred to corporate and converting the CAP database from CREST to SAP) that may enhance these improvements, or could detract from the progress made.

2.5.3 Summary

Areas of Strength

The following two areas are considered areas of strength; however, both have a very short history and will require management involvement and oversight to ensure the progress made to date continues to be a priority:

- The biannual IPA process implemented at the departmental level with senior management oversight.
- The biannual Common Cause Review.

Areas in Need of Attention

None.

Areas for Improvement

Equipment Trending has made some progress since the last evaluation, but remains behind the industry in the ability to determine common equipment failure issues as well as predicting and preventing future equipment failures.

Conclusion

The Team evaluation of the overall effectiveness of program trending determined the programs to be Effective because the existing trending program meets the acceptable industry standards.

2.6 Effect of Program Backlogs

The Team evaluated the effect of program backlogs on organizational and operational effectiveness. The analysis included:

- A review of program backlogs and the trends of backlogs.

- An evaluation of the impact of the backlog and backlog trend on organizational and operational effectiveness.

The Team reviewed the status of the backlog of work items at Davis-Besse. The Team interviewed the plant staff and reviewed the Davis-Besse databases, reports, Open Site Document Reports, and numeric summaries.

2.6.1 Backlogs and Backlog Trends

Davis-Besse has a backlog of work in each Section. The highest number of non-outage open work items is in the Nuclear Engineering section, closely followed by Maintenance and Operations. The majority of the open items are Work Orders (Maintenance), CAs (Engineering), and Procedure Change Requests (all groups). Through reviews of weekly trend reports and discussions and interviews with Davis-Besse personnel, the Team determined that the backlog has undergone significant reduction since the 2004 Assessment. However, it is still higher than industry average and almost twice the Site's goal (8,000 vs. 4,500). Additionally, the Team noted that the average age of the open preventive and remedial actions was increasing. Chart 2.6.1 shows the declining trend in the number of backlogged open items and the Site's long-term goal.

The site has implemented a comprehensive backlog reduction program as described in DBBP-DBDP-003, "Comprehensive Integrated Backlog Reduction Plan," Rev.0, dated December 22, 2004. This reduction plan integrates existing maintenance, procedure change, and the engineering backlog reduction plans in order to reduce long-standing problems.

The associated project manager reports on the backlog to site managers on a monthly basis. Detailed data by section and item type is provided in both tabular and graphical forms and can give the manager good quick overview of progress being made as well as the overall amount of work to be done.

The Team questioned whether the site used the insights from the Probabilistic Risk Assessment (PRA) in the priority of addressing the backlog. The engineering backlog is coordinated through the system review teams, which have been assigned to a concentrated effort to address the backlog using a "system review waterfall schedule." This schedule is generated by considering two basic inputs: whether the system is a "core damage frequency contributor" or not, and what condition the system health is in (red, yellow, white, or green). The system health reports also prioritize those systems that are in an "a (1)" status with respect to the Maintenance Rule [10 CFR 50.65.a(1)]. The system reviews are also coordinated with the ongoing workweek maintenance planning and scheduling process.

The Team determined that, although the detailed insights from the PRA were not necessarily being used in the prioritization of the backlog reviews, a global consideration was being used. As an example, the component cooling water system, the main feed system, and the 125/250 V systems were not included in the first year review (3-04 to 3-05) although they are three of the top four systems according to risk worth in the level 1 PRA. But they also were not in an "a(1)" status or had a serious system health condition and not considered the highest priority to address. The Team determined that the process for allocating resources provides for appropriate

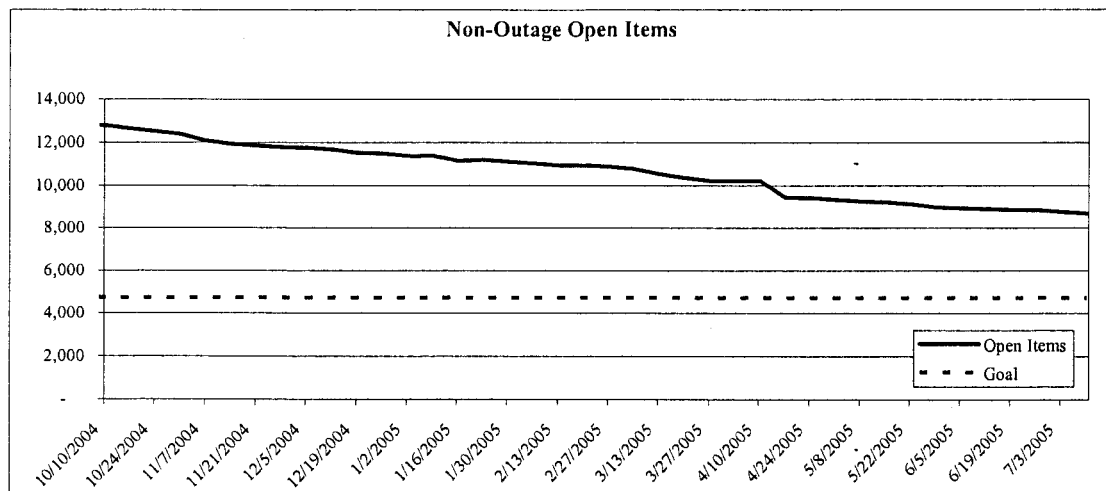


Chart 2.6.1 Trend of Non-Outage Open Items September 2004 to July 2005

consideration of safety and compliance, and appropriate consideration is given to the management of maintenance backlogs and correction of OWAs.

The Team identified that a high level of management attention was being placed on the reduction of the CA backlog. The Team also determined that the scope of the program included all safety related documents as well as non-safety related and routine actions. Examples included work requests, CRs, CAs, engineering change packages, and procedure change requests. However, the CAP priorities open issues and the average age of SCAQ open corrective actions continues to increase while overall backlog declines.

2.6.2 Evaluation of Backlog on Organizational Effectiveness

The Team reviewed the timeliness of CA investigations through June 2005 and determined that the high level of management attention being paid to the backlog reduction plan does not adversely impact the organizational effectiveness. The Team determined that Davis-Besse staff and management place the reduction of backlog behind the continued safe operation of the site. The Team further determined that the nature and extent of Davis-Besse's backlog of open work items with the potential to impact equipment of high safety significance was suitably controlled and reviewed periodically.

2.6.3 Summary

Davis-Besse has a large number of backlogged open work items that are being controlled and reduced in accordance with a backlog reduction plan. A high level of management attention is concentrated on reducing the backlog and significant progress has been made since the 2004 Assessment. The Team noted that the site performed a periodic system review of the backlog that incorporated the system health and potential for increase in the core damage frequency. The Team determined that, although the average age of the backlog is increasing, the number of backlogged items continues to decline.

Areas of Strength

The Team determined that the level of management attention currently directed toward backlog reduction is an area of strength.

Areas in Need of Attention

The backlog remains at a significant level, which presents a continuing challenge for the site personnel. The Team determined that some of the oldest open items describe enhancements or activities that the site may never complete. Some of these items date back over five years. These items should be reviewed and closed if they are no longer required. Additionally, as described in Section 2.8, the Team was concerned that the effectiveness of the CAP would be adversely impacted by continuing to use staff and management resources to track and report the backlog if no further actions are planned for the open items.

Areas for Improvement

The average age of open SCAQ and CAQ PR and RA items should be reduced.

Conclusion

Overall, the Team rated the effectiveness of the backlog program as Marginally Effective. The backlog of open items at Davis-Besse was larger than industrial norms however it received a high level of management attention and was being monitored for its impact on plant safety and operability. While the quantity of open items is going down, the average age is increasing. The Team determined that some of the oldest items are enhancement activities that may never be completed. These items should be reviewed and, if unnecessary, cancelled.

2.7 Effectiveness of Davis-Besse Internal Assessment Activities

The Team evaluated the effectiveness of the Davis-Besse Nuclear Power Station self-assessment activities associated with the implementation and performance of the CAP. This evaluation included:

- A review of the results of the Davis-Besse audits and reviews conducted since the 2004 assessment to determine if they were comprehensive and whether the CAs were effective in correcting identified deficiencies.
- An evaluation of the effectiveness of the self-assessment capabilities of the Davis-Besse staff and management by reviewing the CAs associated with at least ten self-assessment reports, audits, reviews, or evaluations associated with the CAP.
- An evaluation of self-assessment findings to determine the effectiveness of the self-assessment effort.
- A review of the aggressiveness of the Davis-Besse staff and management in correcting self-assessment findings and an evaluation of adequacy, timeliness, prioritization, and effectiveness of the results.
- Interviews with individuals involved with oversight and auditing to evaluate the effectiveness of their efforts and responsiveness of FENOC management and staff to identified issues.

The Team also evaluated the effectiveness of the onsite and offsite safety review committees and their oversight of the CAP by:

- A review of actions initiated by the safety review committees to identify, assess, and correct areas of weakness.
- An evaluation of audits and reviews of the CAP conducted under the cognizance of the offsite safety review committee to determine the consistency of such findings with external assessments by INPO, NRC, and other consultants.
- An assessment of the level of follow-up and recurrent problems for findings identified by the safety review committees.

2.7.1 Evaluation of Effectiveness of Davis-Besse Self-Assessment Activities

The Team reviewed the results of the Davis-Besse audits and reviews conducted since the 2004 Assessment that evaluated the effectiveness of the implementation of the CAP. The Team evaluated the audits and reviews to determine if they were comprehensive and whether effective actions were taken to correct identified problems or weaknesses.

The Team reviewed eight IPAs, one Focused Assessment, and the last three Oversight Quarterly Assessment reports. The Team noted the reports were comprehensive and well documented with supporting information for the conclusions captured. The IPA reports also provided the present status for previously identified issues. The stand-alone quality of the IPA reports completed in 2005 demonstrates an improvement over the previous reports.

The Team determined that the reports were comprehensive. The quality of documentation of these latest section reports reflected an improved standardization and quality over those completed in 2004. The Oversight Quarterly reports were noted (in their entirety) to be comprehensive. Even though there was improvement in the Section integrated reports, there were a few examples noted in which issues from the October assessments were still captured as unresolved in the May 2005 integrated reports. Continued management attention is recommended to drive the self-assessment improvement areas to meet Davis-Besse expectations for resolution.

2.7.2 Evaluation of Effectiveness of Self-Assessment Capabilities

The Team evaluated effectiveness of self-assessment capability by reviewing CAs associated with the following: self-assessment reports, audits and reviews (including both onsite and offsite committee activities), and evaluations conducted on the implementation of the CAP since the 2004 Independent Assessment.

Prior to the on-site activities, the Team reviewed condition reports provided by Davis-Besse identified as addressing assessment findings. The list identified approximately 250 condition reports. The Team noted that CR number 04-06011 began the post 2004 Independent Assessment report documentation via the CR process, and therefore performed reviews primarily post this CR number. During the on-site review, the Team also assessed selected recent (completed May 2005) IPAs and compared the reports to the similar reports completed in October 2004. Although both reports post dated the 2004 Assessment, the 2004 reports were primarily reviewing data also reviewed during the last independent assessment. The specific condition reports reviewed are identified in section 2.1 of this report. The Team observed that the prioritization, timeliness, and CAs were generally appropriate for the issue identified. In addition, the quality of the information documented had improved both in the responsiveness of the CR to the identified assessment for CAs, as well as the justification for not performing actions if the evaluation concluded that no action was needed.

2.7.3 Evaluation of Davis-Besse's Aggressiveness in Correcting Self-Assessment Findings

The Team evaluated the aggressiveness of Davis-Besse staff and management in correcting self-assessment findings by reviewing the adequacy, timeliness, prioritization, and effectiveness of CAs developed from the self-assessments.

The Team reviewed multiple CRs identified during assessments of the closure of previous CAs and assessment reports. These CRs documented issues with the quality of the CAP responses, clearly captured the action performed to correct the response. Although the action performed to address the lack of documentation provided in the previous response was captured, the action to address the cause for the lack of documentation was not as evident. Several CRs were categorized as CF, and the issue (missing documentation) CA was captured. The Team noted improvement of this type of issue in those responses reviewed since the 2004 Assessment. The Team determined that the 2005 IPAs were comprehensive and provided both a status of previous trend assessment issues as well as identifying new issues as appropriate.

2.7.4 Interviews with Davis-Besse Oversight Personnel

The Team interviewed selected individuals involved with the oversight function, as well as the audited organization, to gain their insight on the effectiveness of their effort and the responsiveness of FENOC management and staff to issues identified by the self-assessments.

The Team interviewed five selected individuals involved with the oversight function, specifically the Davis-Besse Fleet Oversight Manager, Supervisor and three Oversight personnel who perform audit activities. In addition, the Managers for Design Engineering, Radiation Protection, Chemistry, and the Assistance Manager for Operations (Watch) were interviewed. All personnel interviewed expressed the value added by the Oversight audit process to improve performance. Both the oversight organization and the managers interviewed provided examples of issues raised by the oversight organization and resolved by the line.

The Oversight Audit personnel expressed a concern that the assessment activity performed by the line organizations needed improvement. Specifically, the value of the IPA Trending process was noted as an area that would improve if performed more frequently. The process expectation presently is to produce a written report capturing data every six months, with a periodic presentation of the continuing trending assessment to the CARB approximately every six weeks. The CARB presentation activity noted in procedure NOBP-LP-2018 has not yet been implemented.

Both the oversight personnel and the managers interviewed noted Davis-Besse responsiveness to issues raised as well as the effectiveness of the program has improved since the 2004 Assessment; however, there was additional work activity to be performed to fully meet Davis-Besse expectations for performance. The Team concurred with the individuals interviewed in that improvement was noted since the 2004 Assessment, and that Davis-Besse was sufficiently self-critical to support continued improvement.

Managers were observed to be aware of the CAP and assessment issues both for their areas as well as the site. The newly implemented cognitive trending performed to promptly identify and bin issues by section according to the causes was observed by the Team to be an example of a forward looking performance improvement process. All managers interviewed were able to discuss both the process, and the specific issues affecting their department. The Team also spoke with select site personnel classified as "CR Analysts." The individuals interviewed did not have

the same awareness for success of the Assessment program as the Managers expressed. The Team identified the need to communicate the success of the assessment program as an area in need of attention to advance the rate of improvement.

2.7.5 Onsite and Offsite Review Committee Activities

There were no onsite or offsite safety review committee meetings during the Team's time onsite. However, the Team attended a subcommittee meeting of the Offsite Review Committee and reviewed available meeting minutes and NRC reports which concurred with plant assessments and oversight assessments of the CAP. In addition this Team was provided a copy of the recent Davis-Besse CAP self-assessment (after completion of the first week on-site). The NRC reports were noted to concur with the previously performed Independent Assessment report conclusions.

2.7.6 Other Assessments

The Team reviewed the last three Company Nuclear Review Board (CNRB) meeting minutes. Only one of these documents was subsequent to the 2004 Assessment, however all three were reviewed as a means evaluate the tracking of assigned actions. The CNRB actions are normally tracked to completion via these minutes. The Team noted the tracking and documentation of the completion of the minutes was effective. During its onsite assessment, the Team evaluated the CNRB sub-committee meeting which reviewed the oversight audit results and findings as well as the CAP program effectiveness. The Team concluded the CNRB was effective and thorough in asking probing questions of the Davis-Besse personnel presenting issues for the CNRB sub-committee review.

2.7.7 Summary

The Team determined the internal assessment activities at Davis-Besse have improved since the 2004 Assessment. The site has had only one evolution of the IPA for each group. The Team reviewed these assessments and determined them to be an effective method of self-evaluation. Additional self-assessments are planned and, if completed successfully, may demonstrate an effective performance assessment method. The Team also evaluated the FENOC Fleet Oversight assessment for the first quarter of 2005 and determined it to be comprehensive and generally in agreement with issues identified by the individual IPAs.

Areas of Strength

DB-SA-05-02 "Davis-Besse Corrective Action Program Implementation."

Areas In Need of Attention

None.

Areas In Need of Improvement

None.

Conclusion

The Team determined that the self-assessment program is Effective but requires multiple repetitions to demonstrate consistency and full effectiveness.

The IPA program needs to demonstrate consistency of implementation for all sections over several quarters.

The success of the self-assessment programs should be promulgated to the Davis-Besse staff to assure that the staff understands the importance and success of the self-assessments.

2.8 Evaluation of Open Corrective Actions Taken in Response to NRC CATI Report

The Team was requested to review the current status of, and evaluate the extent and effectiveness of the implementation of CRs and CAs resulting from Davis-Besse's response to the NRC CAP Implementation Report 05000346/2003010.

The scope of this 2005 Independent Assessment as described in the assessment plan (see letter to the NRC dated 4-12-05) is somewhat different than the 2004 follow-up.

The Team reviewed the status report of CATI Open CAs as of July 1, 2005. There were 15 open CAs primarily relating to engineering design issues including conducting analyses, updating design documentation and calculations, and implementing design changes. The following provides the current status of open CA reports:

CR 03-02651, CATI: Framatome AFW Calculation Issues with MSSV

CA #2 is open for the site to have Framatome perform a Loss of Feed Water analysis to take into account MSSV drift and accumulation to assure that the current licensing requirements were met.

Although the site engineering staff disagrees that there was a deficiency with the inclusion of uncertainties in the original analysis, Framatome has completed a new analysis, which is currently in the site process of site review prior to acceptance and incorporation into the USAR with an August 31, 2005 due date.

CR 03-02654, CATI: Cable Ampacity on Containment Spray Pump Motor

This open action was to revise the USAR and the site Design Criteria Manual to correct the description of cable ampacity ratings assumed.

The design engineering staff indicated that this is an enhancement. It has an extended due date of November 30, 2005 and that the action may be proposed for cancellation.

CR 03-02730, CATI: Lack of Vendor Data for High Voltage Switchgear at High Temperature

This open action was assigned to review the Davis-Besse design specifications related to ambient temperatures. The site also considered placing this design information in the USAR in order to have it as a design input wherever applicable.

The licensee still plans to revise the procurement specifications as a remedial action but has determined that this is not an urgent action. This was considered acceptable since the USAR has been revised for the higher temperatures and the procurement process directs the user to include the USAR criteria as an input. The engineers stated that the site will probably not meet the August 26, 2005 due date.

CR 03-03572, CATI: Lack of Coordination of Bus E1 and F1

This CR dealt with the margin to overload for tripping of a load center. The CA, #12, was open to replace (modify) several component overload heaters with shorting bars. The engineers stated that the heater (over current) function was not needed and therefore not wired in.

This action was also a site candidate for no further action.

CR 03-05715, CATI: SBODG Does not Have a Load Table

The site assigned this action, #1, to establish a table, which included the design ratings and the accumulated loading for the station blackout diesel generator. The site determined that there was no past operability concerns and considered this an enhancement.

The design-engineering group concluded that the Site Blackout Diesel Generator was manually loaded by procedure and that this action was probably not needed. They considered it as a candidate for cancellation.

CR 03-05739, Deficiencies in Component Evaluation for EDG Room High Temperature

This open action was assigned because the effect on cable ampacity from high temperatures was not available. The site planned to include this information in a calculation after ECRs were issued to cool the Emergency Diesel Generators control cabinets.

Again, this action was considered an enhancement and the design-engineering group indicated that they may or may not complete it.

CR 03-06475, CATI: Evaluation of Overload in MOVs

CA #3 was written to ensure that ECR 03-0472 was implemented to address the condition of cables which will exceed limits when the associated valve is drawing locked rotor current prior to the breaker tripping. The area of concern included conducting a test to assure that the overload current did not damage other circuits.

The site issued the ECR to decrease the size of the circuit breakers and currently plans to implement the change in a future refueling outage.

CR 03-06497, CATI: The NRC Inspector Disagrees with CR 03-03891 Resolution

This CR was to evaluate the method of providing the use of portable heaters in the EDG rooms during very cold periods in the event of a loss of the normal non-safety grade heaters. CA #1 was completed in December 2004 to evaluate various options. CA #2 is open to revise the alarm response procedure to direct the user to take the proper actions for installing 480v portable heaters.

This action has not been completed and is planned to be transferred from Engineering to Operations for completion.

CR 03-06907, CATI: Calculation Quality Collective Significance Review

This CR is categorized CA. It was generated to identify what the NRC CATI saw as a lack of stand-alone engineering calculations to support engineering products. The NRC determined that the lack of documentation was an indication of a lack of engineering rigor and attention to detail. This CR resulted in 16 CAs, of which six remain open. The open CAs have had multiple due date extensions and interviews with Davis-Besse staff and management indicated that some of the open items might never be completed.

An effectiveness review for CA 03-06907-09 demonstrates that the majority of the CAs implemented for this CR have received sufficient management attention and have been verified to be complete and in accordance with the FENOC Engineering Principles and Expectations policy.

The Team evaluation determined that the repeated extensions of due dates indicates a lack of willingness on the part of Davis-Besse to formally address long-standing, low-priority issues. If the CAs are never going to be worked, they should be cancelled and eliminated from the CA backlog.

CR 03-06944, CATI: Fuse sizing For MOV 0106 and MOV 38700

This action was assigned to assure proper protection for the Auxiliary Feed Water (AFW) system by initiating ECR 03-0474 to change the power and control fuses to the proper sizes.

The site had proposed canceling this plan based on a low "FVR" which is a tool used by management to allocate resources. The design engineering staff indicated that this may be completed as an equivalent change (vs. a new modification) with a current due date of June 2006. The investigation summary and operability evaluations indicate no operability concerns for either the power or control circuits.

The site design engineering staff indicated that this open action would also be considered for cancellation.

2.8.1 Summary

The Team evaluation of the open CAs taken in response to the NRC CATI report determined that for the most part no significant action had been taken on most of the remaining open CAs. The Design Engineering staff stated that not much effort had been placed on most of these CATI items because no safety issues had been identified, that they were primarily enhancement issues, and there were higher priority items to work on such as milestones for the upcoming refueling outage. The Team was concerned that the effectiveness of the CAP could be adversely impacted by continuing to use resources to track and report the open item backlog if no further actions are planned.

Areas of Strength

None.

Areas in Need of Attention

The open item backlog discussed in Section 2.6 includes open items from the CATI. The Team determined that many of these items have very low priority and, as such, may never be completed. The open CATI items should be reviewed and those with low or no priority should be closed.

Areas for Improvement

None.

Conclusion

The Team rated the status of the open CAs taken in response to the NRC CATI Report as Marginally Effective because the organization was challenged to continually address why these items are not important to complete and to take resources away from other higher priority activities.

3 METHODOLOGY

3.1 Assessment Methodology

The assessment methodology included the following:

- Observing activities.
- Interviewing personnel.
- Reviewing documentation.
- Evaluating trend analysis.
- Reviewing procedures, instructions, and programs.
- Comparing actual performance levels with pre-established PIs.

The Team gathered data on the implementation of the CAP through document reviews, observations, and interviews. The Team observed MAOMs, a CARB meeting, and SMT Meetings. The Team reviewed CRs, ACEs, Root Cause Analyses, Trend Reports, Self-Assessment, and other assessment reports. The Team also interviewed CR initiators, evaluators, and management personnel. The data obtained was evaluated to identify Areas of Strength, Areas in Need of Attention, and AFIs.

The following general standards of acceptable CAs were applied to the Assessment of the Davis-Besse CAP implementation:

- The problem is identified in a timely manner commensurate with its significance and ease of discovery.
- Identification of the problem is accurate and complete and includes consideration of the generic implications and possible previous occurrences.
- The problem is properly prioritized for resolution commensurate with its safety significance.
- The root causes of the problem are identified and CAs are appropriately focused to address the causes and to prevent recurrence of the problem.
- CAs are completed in a timely manner.

Areas of Strength, Areas in Need of Attention, and AFIs were based on the definitions in DBBP-VP-0009, "Management Plan for Confirmatory Order Independent Assessments," using the following terminology:

Area of Strength

This term is used to characterize demonstrated performance in a program or process element within an area being assessed that is exceptionally effective in achieving its desired results, demonstrates a high degree of attention to detail, and is significant in obtaining desired results. An Area of Strength is a program, process, or activity of such a high quality that it could serve as an example for other similar elements.

Area in Need of Attention

This term is used to identify a performance, program, or process element that is sufficient to meet its basic intent. However, management attention is required to achieve full effectiveness and consistency. Areas in Need of Attention are not normally identified or addressed in action plans

submitted to the NRC, but are brought to management attention for consideration and possible entry into the Davis-Besse CAP.

Area for Improvement

This term is used to characterize an identified performance, program, or process element that requires improvement to obtain the desired results in a consistent and effective manner. All AFIs identified in the Assessment Report will be addressed by the Action Plan submitted to the NRC.

3.1.1 Assessment Categories

Based on the Team's overall assessment, each area evaluated was given a rating of the area's overall effectiveness. The categories used to identify the overall effectiveness are defined in DBBP-VP-0009 and below:

Highly Effective

Assessment results identified no AFIs and no or few Areas in Need of Attention. Performance, programs, and processes are more than sufficient to obtain the desired results with consistency and effectiveness.

Effective

Assessment results identified one or several AFIs and no or a few Areas in Need of Attention. Performance, programs, and processes are sufficient to obtain the desired results with consistency and effectiveness.

Marginally Effective

Assessment results identified more than several AFIs and several or more Areas in Need of Attention. The basic intent of the program or process is achieved; however, the performance, program, or process is challenged to obtain the desired results with consistency and effectiveness. Prompt management action is required.

Not Effective

Assessment results identified significant shortcomings such that the basic intent of the program or process is not being achieved. AFIs identified as "Not Effective" require immediate management action.

4 REPORT CONCLUSIONS

The 2005 Independent Assessment Team rated determined the CAP is being effectively implemented at Davis-Besse Nuclear Power Station. While some deficiencies were noted, the Team has made this determination based on the definitions provided in Davis-Besse Business Plan procedure DBBP-VP-0009, "Management Plan for Confirmatory Order Independent Assessment," Revision 2, dated April 26, 2005.

The Team identified weaknesses in the following areas:

- Timeliness of completion of open work items and subsequent review by management is longer than industry average.
- Depth and completion of causal investigations for some Corrective Action, Apparent Cause, and Root Cause investigations is less than adequate.
- Trending of equipment failures for repeat and similar failures is below industry norms.
- Some CAs lack specific metrics that allow them to be closed.
- The basic intent of the CAP is frequently achieved but is not always sufficiently self-critical in the areas of timeliness, accuracy, and thoroughness.
- There is neither a clear definition of repeat events nor a clear method for sorting repeat events from the CREST database.
- Evaluation of the open CAs written in response to the NRC CATI report for the most part had no significant action taken on the majority of the remaining open CAs.

Additionally, the Team identified the following strengths in the CAP Implementation:

- The CAP is effective at identifying problems. In general, problems are properly captured and characterized by the CAP.
- The process and level of approval required to extend the due dates of corrective actions is good.
- Davis-Besse personnel take ownership of problems and appear dedicated to performance improvement.
- The level of knowledge and management attention being placed on the site's overall implementation of the CAP appears to be strong.
- The Davis-Besse staff and management demonstrated an understanding of the CAP implementation requirements and a willingness to self-identify problems.
- The event or condition description as well as the extent of cross referencing to other associated CRs was very good and provided a good record of the issue and other related issues and CAs.
- The MAOM, CR review meeting, and CARB meeting provides an effective review of key issues and aid in the continuity of corporate experience and memory.
- Both the biannual IPA and Common Cause Review demonstrate management's commitment to self-assessment and improved performance.

5 REFERENCES

5.1 Persons Interviewed During this Assessment

The following is the list of individuals interviewed during the 2005 Independent Assessment of the CAP Implementation at Davis-Besse Nuclear Power Station.

Name	Title
Charles Ackermen	Performance Improvement Staff Nuclear Specialist
Barry Allen	Director, Site Operations
Regina Amidon	Supervisor, Nuclear Employee Concerns
Richard Bair	Staff Nuclear Engineer
Gabriel Barteck	CR Analyst, Design Engineering
Mark Bezilla	Vice President, Davis-Besse Nuclear
Lawrence Bonker, Jr.	CR Analyst, Radiation Protection
John Bor	Sr. Nuclear Maintenance Technician
Edward Chimahusky	Staff Nuclear Specialist
David Dibert	Staff Nuclear Engineer
Priscilla Faris	Senior Nuclear Specialist
Richard Farrell	Director, Site Maintenance
John Grabnar	Manager, Design Engineering
Lynn Harder	Manager, Site Radiation Protection
Daniel Hartnett	Nuclear Operation Shift Supervisor
Mark Haskins	Human Performance Advocate
Brian Hennessy	Supervisor, Corrective Action Program, Performance Improvement
Raymond Hruby, Jr.	Manager, Fleet Oversight
David Imlay	Superintendent, Nuclear Operations
Gary Kendrick	Manager, Site Maintenance
David Kline	Manager, Site Protection
Timothy Kreft	Staff Nuclear Specialist
Guy LeBlanc	Senior Consultant
Steven Livingston	Supervisor, Nuclear Operations Oversight
Patrick McCloskey	Manager, Site Chemistry
Kevin Ostrowski	Manager, Site Operations
Clark Price	Manager, Site Regulatory Compliance
Jeannie Rinckel	Vice President, Fleet Oversight
Lucas Ring	CR Analyst, Maintenance
Robert Schrauder	Director, Performance Improvement
Thomas Simonetti	Supervisor, Nuclear Technical Training
Dennis Snyder	Trans-Senior Nuclear Specialist
Anthony Stallard	Operations Training Supervisor

Name	Title
Joseph Sturdavant	Senior Nuclear Engineer, Compliance, Regulatory Affairs
Theo Swim	Davis-Besse Project Engineer
James Syrowski	CR Analyst, Plant Engineering
Mark Trump	Manager, Site Training
Kevin Zellers	Supervisor, Nuclear Engineering Analysis

5.2 Condition Reports

The following is a list of the CRs reviewed during the 2005 Independent Assessment of the CAP Implementation at Davis-Besse Nuclear Power Station.

CR No.	Title
03-02651	CATI: Framatome AFW Calculation Issues with MSSV
03-02654	CATI: Cable Ampacity on Containment Spray Pump Motor
03-02730	CATI: Lack of Vendor Data for High Voltage Switchgear at High Temperature
03-03572	CATI: Lack of Coordination of Bus E1 and F1
03-05715	CATI: SBODG Does not Have a Load Table
03-05739	Deficiencies in Component Evaluation for EDG Room High Temperature
03-06475	CATI: Evaluation of Overload in MOVs
03-06497	CATI: The NRC Inspector Disagrees with CR 03-03891 Resolution
03-06907	CATI: Calculation Quality Collective Significance Review
03-06944	CATI: Fuse sizing For MOV 0106 and MOV 38700
03-07746	Inadvertent Opening of CF1B
03-07862	Breaker Modification Installed Without Approved Engineering Change Documents
04-03213	Loss of Control of System to Activate EPZ Sirens
04-03800	DB-SC-03001 Missed Tech spec Late Date
04-04087	Main Steam Safety Valve Incorrect Set Pressure
04-04406	DB-OP-03006 Missed Surveillance Requirement 4.3.1.1.1 for RCS flow Channel Check
04-04417	OE 18214 – Westinghouse DHP Shutter Failure at Hatch
04-04558	IN 2004-13 Registration, Use & QA Requirements for NRC Cert Transport Package
04-04794	IN 2004-16 Tube Leakage Due to a Fabrication Flaw In a Replacement Steam Generator.
04-04927	Reactor Trip During Control Rod Drive Breaker Testing
04-05398	SER 4-04 Isophase Ground Faults
04-05569	CEMAP Program Review of OE 18895, Mihama Pipe Rupture
04-05920	COIA - OPS - Cause Determination
04-06011	COIA - CAP - 2004 - Corrective Action Timeliness Questioned (AFI)
04-06013	COIA - CAP - 2004 - Increasing Trend in Corrective Actions Average Age
04-06016	COIA - CAP - 2004 - Untimely Corrective Actions Results in Repeat Events

CR No.	Title
04-06017	COIA - CAP - 2004 - Unsatisfactory Corrective Action Program Trending
04-06018	COIA - CAP - 2004 - NOBP-LP-2006, Collective Significance Review Inconsistency
04-06019	COIA - CAP - 2004 - Collective Significance Reports (CSSA) Inconsistencies
04-06021	COIA - CAP - 2004 - Self-Assessment Program Doesn't Evaluate Errors In Aggregate
04-06022	COIA - CAP - 2004 - Self-Assessment & NQA Findings Need More Timely Actions
04-06023	COIA - CAP - 2004 - CAP Performance Indicators Improvements
04-06024	COIA - CAP - 2004 - Deficient Evaluation & Resolution of Condition Reports
04-06025	COIA - CAP - 2004 - CR Collective Significance Review Not IAW NOBP-LP-2006
04-06026	COIA - CAP - 2004 - CR Collective Significance Review Did-Not Initiate CR
04-06027	COIA - CAP - 2004 - RCTS Item for NRC IR 03-010-011 & CR Not Linked in RCTS
04-06028	COIA - CAP - 2004 - Condition Report Initiation Standards Not Met (AFI)
04-06030	COIA - CAP - 2004 - NOBP-ER-1004, "Fleet Value Rating Methodology" Improvements
04-06031	COIA - CAP - 2004 - RFA Integrated Action Plan for CAP Implementation Improvement
04-06090	OE19030 – Vertical Pump Problems with Design, Troubleshooting, and Maintenance
04-06119	OE19130 Seismic Monitor Taken Out of Service W/O Proper Compensatory Measures
04-06154	Temporary Lift Issue for CCW Pump 1 Uncoupled Run.
04-06418	OE18410 SCI UPS Inverter Choke Life
04-06498	DB-SC-03059 - Did Not Provide Verification of Heat Trace Circuit 153 above 105°F.
04-06544	Fuel Assembly Spacer Grid Failures at Crystal River 3
04-06625	OE 19330 – Loss of Transformer Cooling
04-06713	Control Rod Drive Lead Screw Issue – Framatome Notification
04-07277	Corrosion Found on Cell Connections for 2N Station Batteries
04-07292	RCS Hydrogen Low Out of Specification
04-07307	Safety Culture Assessment –Operations Commitment to Continuous Improvement.
04-07454	IN 2004-21 – Additional Adverse Effect of Boric Acid Leakage
04-07482	Records Submittal Outside 90-Day Requirement
04-07601	Orders Being Voided Inappropriately
04-07798	ABB Valve Positioners in Warehouse Potentially Defective as per OE
05-00016	Inadequate Closure of Corrective Action CA 02-03371-1
05-00085	Core Flood Tank Level Technical Specification
05-00185	Abnormal Decrease in Boron Concentrations
05-00191	RE8414 Almost Missed Surveillance DB-SC-04144

CR No.	Title
05-00219	Loss of D1 Bus During Testing
05-00239	MCCE21A Has Water in the MCC Causing a Smoke Smell
05-00260	Apparent Technical Specification Application Issues
05-00275	Failure of Master Trip Solenoid Valve A During Performance of DB-SS-04159
05-00288	Decrease in T-AVE below Technical Specification Limit During Plant Shutdown.
05-00352	Inadequate Implementation of CA 04-04099-1
05-00440	Potential Error in Nuclear Application Software: Framatome CR 2005-9 Flow.for
05-00583	Engineering Change Packages Not Closed Within 90 day Requirement.
05-00611	Lack of Operating Experience in Work Order
05-00666	Black Deposits Identified on CRD Head Penetrations During 1M14 Inspections
05-00715	Corrective Action Due Date Beyond Maximum with No Extension Request Form
05-00730	Confirmatory Screening – OE19872 – Improper Linkage Adjustment on Level Switches
05-00770	Reactivity Management during January shutdown.
05-00802	Davis-Besse Process Not in Agreement with INPO Process Description
05-00868	Confirmatory Screening OE19895 – Lack of Lube PM of Double Shielded Bearings
05-00939	Two Restraining Lugs Not Engaged on the Polar Crane When Parked From 13 Refueling Outage.
05-01301	Radiation Monitor Cabinet Power Loss Needs MR Evaluation
05-01387	OE18646 Confirmatory Screening Inadequate Reliability of the Temp Air Compressors.
05-01414	Storage Maintenance Requirement Identification and Implementation
05-01500	Strength Noted in Work Management/Supply during INPO Evaluation at BV
05-01642	Decay Heat Train 2 Suction Piping -Refilling/Restoration Deficiency
05-01657	Perry IR 2004-8 & IR 2004-11 Confirmatory Screening
05-02126	Sodium Hypochlorite Added to Intake Bay With Running Screen Wash Pump
05-02148	SA 2004-0071, LTA Analysis of Training Feedback
05-02412	INPO SER 2-05 – Gas Intrusion in Safety Systems
05-02702	PCR, DB-MM-09231, Enhancement
05-02990	INPO PSIRV Recommendation for Improvement
05-03051	Leak Collection Device Installed Incorrectly
05-03070	Annunciator 9-4-A, VAC SYS DISCH RAD HI, Alarming Spuriously

5.3 Procedures

The following is a list of the Procedures reviewed and used during the 2005 Independent Assessment of the CAP Implementation at Davis-Besse Nuclear Power Station.

Procedure Number	Procedure Name
DBBP-DBDP-0002	Condition Report Backlog Reduction Project – Document, Rev. 1, 12-01-02004
DBBP-DBDP-0003	Comprehensive Integrated Backlog Reduction Plan, Rev. 0, 12-22-2004
DBBP-VP-0009	Management Plan for Confirmatory Order Independent Assessments, Rev. 2, 04-26-2005
NG-DB-00215	Materials Readiness and Housekeeping Inspection Program, Rev. 6, 05-19-2005
NPBP-ER-1004	Fleet Value Rating (FVR) Methodology, Rev. 01, 05-26-2005
NOBP-LP-2001	FENOC Focused Self Assessment Process, Rev. 5, 03-24-2005
NOBP-LP-2007	Condition Report Process Effectiveness Preview, Rev. 2, 05-27-2004
NOBP-LP-2008	FENOC Corrective Action Review Board, Rev. 4, 03-21-2005
NOBP-LP-2011	FENOC Root Cause Analysis Reference Guide, Rev. 1, 07-12-2004
NOBP-LP-2018	Integrated Performance Assessment/Trending, Rev. 0, 01-28-2005
NOBP-LP-2100	FENOC Operating Experience Reference Guide, Rev. 1, 04-22-2005
NOP-LP-2001	Condition Report Process, Rev. 10, 04-14-2005
NOP-LP-2004	Internal Assessment Process, Rev. 2, 05-17-2004

5.4 Assessments

The following audits, self-assessments, and reports were reviewed by the Team during the completion of this report.

Number	Audits and Self-Assessments Title
2004-0100	Independent Assessment of the Davis-Besse Corrective Action Program Implementation, October 21, 2004
BV-SA-05-76	Independent Assessment Report, Beaver Valley Power Station, Corrective Action Program, January 10 to January 28, 2005
2004-0103	Corrective Action Program Self-Assessment Report, August 9-20, 2004
DB-SA-05-02	Corrective Action Program Self Assessment, 5/23/05 to 6/3/05
DB-C-05-01	Davis-Besse Oversight Assessment Report, 01/2005 through 03/2005
N/A	Design Engineering, Collective Significance Self Assessment, 5/2004 through 10/2004, Rev. 1
DBE-05-00081	Design Engineering, Integrated Performance Assessment, 11/2004 through 4/2005
DSC-04-00095	Environmental and Chemistry, Collective Significance Self-Assessment, 5/2004 through 11/2004.

Number	Audits and Self-Assessments Title
DSC-05-00044	Environmental and Chemistry, Integrated Performance Assessment, 11/2004 through 4/2005
DSM-05-00002	Maintenance, Collective Significance Self-Assessment, 5/2004 through 10/2004, Rev. 1
DSM-05-00049	Maintenance, Integrated Performance Assessment, 11/2004 through 4/2005, Rev. 1
QAD-05-80001	Nuclear Oversight, Collective Significance Self-Assessment Report, 2nd and 3rd Quarter 2004, Rev. 1
QAD-05-80011	Nuclear Oversight, Integrated Performance Assessment Report, 4th Quarter 2004 and 1st Quarter 2005
N/A	Nuclear Training Fall 2004 Collective Significance Review, Rev. 1
TNS-05-00082	Nuclear Training, Integrated Performance Assessment, 11/2004 through 4/2005
N/A	Operations Department, Collective Significance Self-Assessment, 4/2004 through 9/2004
OPS IPA 2005-1	Operations, Integrated Performance Assessment, 11/2004 through 4/2005
N/A	Plant Engineering & Technical Services, Self Assessment for the Period of 5/2004 through 10/2004
NPE-05-00028	Plant Engineering & Technical Services, Integrated Performance Assessment for the Period of 11/2004 through 4/2005
N/A	Radiation Protection, Collective Significance Self-Assessment, 05/2004 through 10/2004
N/A	Radiation Protection, Integrated Performance Assessment, 11/2004 through 4/2005
CCN RAS 04-00693	Regulatory Compliance, Collective Significance Self-Assessment, May through October 2004, Rev. 1
CCN RAS-05-00254	Regulatory Compliance, Integrated Performance Assessment, 11/2004 through 4/2005.
DBS-04-0083	Security, Collective Significance Self Assessment, 5/2004 through 11/2004
DBS-05-00014	Site Protection, Integrated Performance Assessment, 11/2005 through 04/2005
PRS-04-00074	Site Projects Section, Collective Significance Self-Assessment, December 22, 2004
PRS-05-00029	Site Projects/Construction Services, Integrated Performance Assessment, 11/2004 through 4/2005
N/A	Supply Section, Collective Significance Self-Assessment, 5/2004 through 10/2004.
DBS-05-04060	Supply Chain, Integrated Performance Assessment, 11/2004 through 4/2005
DWM-05-00005	Work Management, Integrated Performance Assessment 11/2004 through 4/2005

Docket Number 50-346
License Number NPF-3
Serial Number 1-1439
Enclosure 2

Action Plans to Address Areas For Improvement
2005 Independent Assessment
of the
Corrective Action Program Implementation at
Davis-Besse Nuclear Power Station

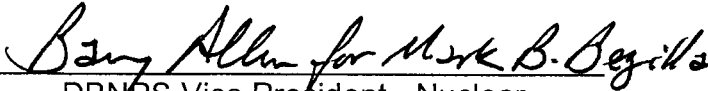
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ACTION PLANS TO ADDRESS AREAS FOR IMPROVEMENT (AFI)

2005 Independent Assessment of the
Corrective Action Program Implementation at
Davis-Besse Nuclear Power Station

COIA-CAP-2005

Action Plans Reviewed and Approved by:


DBNPS Vice President - Nuclear

The Areas for Improvement (AFI) Action Plans contained in this enclosure were developed by the Davis-Besse Nuclear Power Station (DBNPS) in response to the AFIs identified by the Independent Assessment Team.

The Confirmatory Order assessment provided an independent and comprehensive review of Corrective Action Program (CAP) Implementation at the Davis-Besse Nuclear Power Station. The assessment team identified four (4) Areas for Improvement (AFI), which have been entered into the DBNPS Corrective Action Program. The AFIs and the associated Action Plans are presented in this enclosure. In addition to the AFIs, there were several lower level Areas in Need of Attention (ANA) documented by the assessment team which have also been entered in the Corrective Action Program for disposition.

Davis-Besse Action Plans to address the Corrective Action Program Implementation Independent Assessment Areas for Improvement:

AFI COIA-CAP-01 (CR 05-04407) and AFI COIA-CAP-04 (CR 05-04409)

- *The timeliness of conducting root and apparent cause evaluations, investigations, and overall completion of CAs was noted as a challenge in several reviews. In some cases, this was an assessment based upon a second or similar event and in others based upon a comparison to industry expectations.*
- *The average age of open SCAQ and CAQ preventive corrective actions and remedial corrective action items should be reduced.*

Action Plan for AFIs 2005-01 and 2005-04

1. An integrated backlog reduction project manager has been assigned to facilitate a comprehensive integrated backlog reduction effort with responsibility to ensure the backlog is eliminated and the station transitions to steady state workload work levels. Additionally, the position will maintain management level awareness and alignment on matters relating to the scope, schedule and budget for backlog reduction. This process is governed by Business Practice DBBP-DBDP-0003, "Comprehensive Integrated Backlog Reduction Plan." Action completed.
2. The station will establish a periodic report presentation to be discussed at the Management Alignment and Ownership Meeting (MAOM) of open Root and Apparent Cause Evaluations. This will allow for an understanding of challenges and provide support for the completion of evaluations within 30 days and 45 days, respectively. This will be completed by September 30, 2005. The periodic MAOM presentation will continue until the Vice President determines this is no longer necessary.

AFI COIA-CAP-2005-02 (CR 05-04408)

- *A significant number of Condition Report causal evaluations were assessed as being too narrow or otherwise inadequate. The Team determined that, in general, adequate tools and methods were available and being used by the analysts; however, some of the cause evaluations were considered too narrow. This also led to certain Condition Reports with limited Corrective Actions.*

Action Plan for AFI 2005-02

1. The FENOC fleet causal analysis program owner (hired in August 2005) will review this assessment's findings and observations and perform industry benchmarking to establish an improvement plan that addresses narrow or otherwise inadequate causal evaluations. The improvement plan will be based upon assessment results identified (refer to action #2 below) to put FENOC (Davis-Besse) in alignment with industry standards. This will be completed December 31, 2005.

This improvement plan will provide for performance monitoring through performance indicators and mentoring by the program owner to the root cause evaluators and the Corrective Action Review Board (CARB) members, as appropriate.

2. The DBNPS Performance Improvement Unit, the root cause evaluator of the specific Condition Report, a peer root cause evaluator and the fleet causal analysis program owner will assess the individual evaluations identified in the independent assessment as being narrow/inadequate; and will recommend if changes are appropriate. This team will present their results to the CARB for review. Evaluations determined by the CARB as requiring modification will be revised and returned for final CARB approval. This will be completed by December 31, 2005.
3. The DBNPS Performance Improvement Unit will develop and present lesson-learned results from the assessment (refer to action #2 above) to station root cause evaluators, CR analysts, site director sponsors/approval authority and CARB members. This will be completed by December 31, 2005.

AFI COIA-CAP-2005-03 (CR 05-04411)

- *Equipment Trending has made some progress since the last evaluation, but remains behind the industry in the ability to determine common equipment failure issues as well as predicting and preventing future equipment failures.*

Action Plan for AFI 2005-03

1. As described in the 2005 CAP Independent Assessment, Davis-Besse currently addresses issues of component failure trending with the implementation of the Plant Health Report software and process. Each quarter, information on equipment failures from the Work Order process and the Condition Report process are collected and analyzed by System Engineers to identify and take corrective actions to mitigate any declining trends. System Engineers routinely review computer-generated performance data (PI data) for their systems. Also, Business Practice DBBP-PES-0005 "System Walkdowns," requires a quarterly extensive system walkdown to monitor system performance, identify deficiencies and potential problems as an input to the Plant Health Report. In addition, the FENOC fleet Business Plan includes action items to further improve component failure trending and analysis that have been incorporated into this Action Plan as items 2 and 3 as described below.
2. The FENOC is in the process of developing and implementing approximately 50 component Preventive Maintenance (PM) templates over a three-year time frame. These PM templates will be the basis for identifying predictive and preventive maintenance activities to protect against failure causes known to each type of component and to identify trends in equipment failures. FENOC will utilize industry best practices to model the PM templates, starting with the templates developed by the Electric Power Research Institute (EPRI) and other utilities. These actions have been captured and institutionalized in FENOC's Excellent Material Condition Business Plan starting in 2004. Actions completed to date include:
 - Assignment of template ownership to the Fleet FENOC Component Engineering Section in Akron
 - Completion of Business Practices NOBP-ER-3902, "Component Template Development, Module 2 ER Workbench", and NOBP-ER-3903, "Component Template Implementation, Module 3 ER Workbench", effective 4/12/04, that define the template process and development of the first 17 templates.

Development of the remaining PM templates will be completed by December 31, 2007.

3. Business Practice NOBP-ER-3902, "Component Template Development, Module 2 ER Workbench", establishes a component template effectiveness review to be conducted every two years based on the date each template becomes effective. This Business Practice is designed to identify trends and weaknesses requiring corrective

action. NOBP-ER-3902, Step 4.5.2 defines the review process lead by the template peer review team and the Fleet template owner. The PM template implementation software tools reside in the FENOC Equipment Reliability Workbench and will systematically collect all Condition Reports and Orders tied to the template for common failure trend identification. The process will utilize cause codes in the corrective action process and craft feedback on corrective maintenance Orders. The process will implement a template effectiveness review that will provide for binning of all failure causes identified through the Condition Report and Corrective Maintenance Order processes. Actions completed to date include:

- Utilizing best practices from industry utilities (Exelon) to provide for binning of failure causes identified through the Condition Report process and the Corrective Maintenance Order process to identify common failure trends and potential weaknesses in the defined template maintenance strategy.
- Development of an effectiveness review process utilizing the Exelon model and the January 2004 FENOC fleet-wide assessment.
- Development of software tools associated with this process.

Completion of the binning software known as Module 16 of the Equipment Reliability Workbench software toolkit will fully complete the effectiveness review process. This software development will be completed by September 30, 2006.