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Docket Number 50-346
License Number NPF-3
Serial Number 1-1474

October 23, 2006

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

Subject: Submittal of Independent Assessment Report of Corrective Action Program
Implementation and Action Plan for the Davis-Besse Nuclear Power
Station, Year 2006

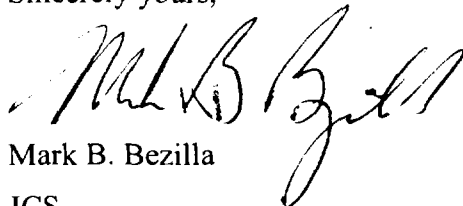
Dear Mr. Caldwell:

The purpose of this letter is to submit the 2006 Corrective Action Program (CAP) Implementation Independent Assessment Report and action plan for the Davis-Besse Nuclear Power Station (DBNPS). This submittal is in accordance with 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."

The Assessment was conducted from August 14, 2006 to August 25, 2006, in accordance with the CAP Implementation Assessment Plan submitted via DBNPS letter Serial Number 1-1462, dated May 15, 2006. The final debrief marking the end of the assessment was conducted on September 11, 2006. This submittal contains the results of the Independent Assessment and the action plan to address the Area For Improvement identified by the Assessment.

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

Sincerely yours,



Mark B. Bezilla
JCS

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Docket Number 50-346
License Number NPF-3
Serial Number 1-1474
Page 2 of 2

Enclosures:

- 1) Commitment List
- 2) Independent Assessment of the Corrective Action Program Implementation at Davis-Besse Nuclear Power Station
- 3) Action Plan to Address Area For Improvement from the 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) Assign appropriate maintenance strategy template numbers to the population of functional locations (FLOC) currently covered by Preventive Maintenance (PM) tasks.	February 28, 2007
2) Implement Business Practice NOBP-ER-3916, "Component Health and Trending Reports." This business practice will prescribe: <ul style="list-style-type: none">a) The use of the Component Health and Trending (CHT) Module 16 of the Equipment Reliability (ER) Workbench for the quarterly equipment trending Component Health and Trend (CHT) process; andb) Outline the process requirement to perform a review to identify changes to the component template if a negative trend is identified in the quarterly CHT.	February 28, 2007

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Enclosure 2

INDEPENDENT ASSESSMENT
OF THE
CORRECTIVE ACTION PROGRAM IMPLEMENTATION AT
DAVIS-BESSE NUCLEAR POWER STATION

(72 pages to follow)

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

COIA-CAP-2006

August 14 to August 25, 2006

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September 15, 2006

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TABLE OF CONTENTS

ACRONYMS	iii
EXECUTIVE SUMMARY	v
1.0 INTRODUCTION	1
2.0 SCOPE OF ASSESSMENT	1
2.1 Status of Corrective Actions from the 2005 and 2004 Independent Assessments of the Davis-Besse Corrective Action Program	1
2.1.1 Condition Reports from 2005 Independent Assessment	1
2.1.2 Observations on Condition Reports from the 2004 Independent Assessment	6
2.1.3 Summary	7
2.2 Identification, Classification, and Categorization of Conditions Adverse to Quality	8
2.2.1 Evaluation of Identification, Classification, and Categorization of Condition Reports Categorized as Conditions Adverse to Quality	8
2.2.2 Interviews with Selected Davis-Besse Personnel	14
2.2.3 Evaluation of Operational Experience Feedback	14
2.2.4 Evaluation of Implementation Problems and Program Deficiencies	15
2.2.5 Summary	15
2.3 Evaluation and Resolution of Problems	16
2.3.1 Root Cause Evaluations	16
2.3.2 Apparent Cause Evaluations	20
2.3.3 Review for Proper Identification	24
2.3.4 Summary	24
2.4 Corrective Action Implementation & Effectiveness	25
2.4.1 Timeliness of Corrective Actions	25
2.4.2 Review of Repeat Condition Reports	28
2.4.3 Review of the activities of the Corrective Action Review Board (CARB)	30
2.4.4 Summary	32
2.5 Effectiveness of Program Trending	33
2.5.1 Deficiencies Tracked in the Corrective Action Program (CAP)	33
2.5.2 Effectiveness of Corrective Action Trending Program	34
2.5.3 Summary	37
2.6 Effect of Program Backlogs	38
2.6.1 Program Backlog and Backlog Trend	38
2.6.2 Evaluation of the Impact of the Backlog and Backlog Trend	42
2.6.3 Summary	42

2.7	Effectiveness of Internal Assessment Activities.....	43
2.7.1	Evaluation of Davis-Besse Oversight/Audit of the CAP	43
2.7.2	Evaluation of the Davis-Besse Self-Assessment of the CAP	44
2.7.3	Review of Safety Review Committee Activities.....	46
2.7.4	Summary	49
2.8	Evaluation of Open Actions Taken in Response to NRC Special Team Inspection – Corrective Action Program Implementation – Report 05000346/2003010	50
2.8.1	Background	50
2.8.2	Open Items	50
2.8.3	Summary	52
3.0	METHODOLOGY.....	54
3.1	Assessment Methodology.....	54
3.2	Assessment Categories	55
4.0	REFERENCES.....	56
4.1	Persons Interviewed during this Assessment.....	56
4.2	Condition Reports.....	58
4.3	Procedures	62
4.4	Assessments.....	62

ACRONYMS

ACE	Apparent Cause Evaluation
AFI	Area for Improvement
AFW	Auxiliary Feed Water
ANA	Area in Need of Attention
BACC	Boric acid corrosion control
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
CNRB	Company Nuclear Review Board
COIA	Confirmatory Order Independent Assessment
CR	Condition Report
CREST	Condition Report Evaluation and Status Tracking
DBBP	Davis-Besse Business Procedure
DH	Decay Heat
ECR	Engineering Change Request
EDG	Emergency Diesel Generator
EOC	Extent of condition/cause
EPRI	Electric Power Research Institute
EPZ	Emergency Preparedness Zone
ER	Effectiveness Review
FENOC	First Energy Nuclear Operating Company
HRA	High-radiation area
IN	Information Notice
INPO	Institute for Nuclear Power Operations
IP	Inspection Procedure (NRC)
IPA	Integrated Performance Assessment
LACE	Limited Apparent Cause Evaluation
LCO	Limiting Condition for Operation
MAOM	Management Alignment and Ownership Meeting
MRFF	Maintenance Rule Functional Failure
MSSV	Main Steam Safety Valve
M&TE	Maintenance and Test Equipment

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 Operations Business Practice
NOP	Nuclear Operating Procedure
NRC	U.S. Nuclear Regulatory Commission
OE	Operating Experience
PCR	Procedure Change Request
PHC	Plant Health Committee
PI	Performance Indicator/Performance Improvement
PM	Preventive Maintenance
PR	Preventive Action
QA	Quality Assurance
RA	Remedial Action
RCE	Root Cause Evaluation
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
RP	Radiation Protection
RWP	Radiation Work Permit
SAP	Activity Tracking Database
SBODG	Station black-out diesel generator
SCAQ	Significant Condition Adverse to Quality
SER	Significant Event Report
SLT	Senior Leadership Team
SR	Significant Condition Adverse to Quality – Root Cause
TM	Temporary modification
TPCW	Turbine Plant Cooling Water (pump)
TR	Technical Report
TS	Technical Specification
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 assessment was conducted on-site during a two-week period in August 2006 by a team of three consultants and three peer evaluators.

Based on the definitions in Davis-Besse Business Plan procedure DBBP-VP-0009, "Management Plan for Confirmatory Order Independent Assessments," the Team assigned 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 rating of each assessment area. Additional details are found in the body of this report.

Area	Title	Team Finding
1	Review of Corrective Actions from 2004 and 2005 Independent Assessment of the Davis-Besse Corrective Action Program	Effective
2	Identification, Classification, and Categorization of Condition Adverse to Quality	Highly Effective
3	Evaluation and Resolution of Problems	Effective
4	Corrective Action Implementation and Effectiveness	Effective
5	Effectiveness of Program Trending	Effective
6	Effect of Program Backlogs	Effective
7	Effectiveness of Internal Assessment Activities	Effective
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 - Report Number 05000346/2003010	Effective

The Review of CAs From the 2004 and 2005 Assessments was rated as EFFECTIVE because the Team determined that Davis-Besse made substantial progress on closing out most of these open issues which allows the 2006 Team to close most of the concerns. Remaining areas of concern include:

- A lack of attention to the completion of the backlog of old SCAQ corrective actions (CAs),
- Implementation of a tracking and trending system for repeat events,
- Implementation of an equipment trending program, and
- CR evaluation quality and thoroughness (e.g. CR 05-00288 reactivity summary statement accuracy).

These areas of concern have been identified as **Areas in Need of Attention** in other sections of this report and remain open items in this section.

The only **Area In Need of Attention** identified for this section is the Team's determination that the evaluation for Condition Report CR 05-00288 was incomplete.

The Identification, Classification, and Categorization of Conditions Adverse To Quality Was rated as HIGHLY EFFECTIVE because the Team found a commitment by all organizations to use the condition report (CR) process and an understanding by the supervisor level and above on how to properly categorize CRs. The use of a committee of four individuals to review all separate notification system (SAP) submittals demonstrates the station's strong commitment to accuracy in categorizing CAs and SAP Notifications. The Team saw no evidence where organizations were not initiating CRs. In interviews with Davis-Besse and First Energy Nuclear Operating Company (FENOC) personnel, this was not cited as a current issue. Additionally, the Team noted a strong commitment to submitting Operating Experience (OE) items to the Institute for Nuclear Power Operations (INPO) in a timely fashion. However, the Team did identify some delays in the internal review of incoming OEs by the Davis-Besse staff as an **Area in Need of Attention**.

The Evaluation and Resolution of Problems was rated as EFFECTIVE because the Team found the Davis-Besse organization demonstrated a good understanding of the CAP and willingness to accept, investigate, and resolve CAQs. The Team identified an **Area in Need of Attention** in CR evaluation quality, thoroughness, and documentation with the following examples identified:

- The Team determined that the documentation for CR 06-00154 – Loose Parts in Diesel Generator – could be enhanced by including all of the investigation performed by the Davis-Besse staff.
- For CR 05-05559, the Team determined that the deferral of extent of condition/cause (EOC) review to a CA after Corrective Action Review Board (CARB) approval of the Root Cause Evaluation (RCE) without requiring this CA to return to CARB for closure was a missed opportunity for CARB to verify completion of the RCE of this event.
- The Team concluded that the investigation analysis for CR 06-00583 could have been enhanced. The one-time training used for the CA was classified as preventive yet there was no indication that the training would be institutionalized for the future.
- For CR 06-01503, the Team determined that the investigation analysis was weak. The investigation of an adverse trend stopped short in looking for common areas that can be improved and instead provided justification of why there is no problem.

The Corrective Action Implementation and Effectiveness was rated as EFFECTIVE because the Team determined that the Management Alignment and Ownership Meeting (MAOM), CR review meeting, and CARB meeting provided an effective review of new key issues and provided confirmation of priority and responsibility for follow-up. The Team also noted some **Areas in Need of Attention**. These areas are the following:

- The list of Significant Condition Adverse to Quality (SCAQ) items open over 135 days was an **Area in Need of Attention** in order to assure that corrective actions (especially preventive and remedial) are receiving the proper priority and attention by the plant staff and managers.
- The Team determined that the identification of repeat occurrence was dependent 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. The 2006 Team noted this is an **Area in Need of Attention**.
- Condition Report CR 06-02558 had no root cause identified, no extent of condition or extent of cause pursuit; CR 05-05559 on the Boric Acid Pumps was approved without adequate extent of condition

review. These CRs are additional examples of the **Area in Need of Attention** in CR evaluation quality, thoroughness, and documentation, including CARB review.

- The closure of CR 05-05395 with only two thirds of the required training of the designated audience was an **Area in Need of Attention**.
- The Team determined that the timeliness of completion for CR 05-00738 (reactor trip breaker fuses) did not preclude additional CRs (06-00928, and 06-01590).

The Effectiveness of Program Trending was rated as EFFECTIVE because, with the exception of equipment trending, the overall trending program has undergone significant programmatic improvements since the last evaluation. These improvements were based on industry benchmarking and a cultural shift towards line ownership of the Trending program. Many of these improvements had a short track record and as such, need time to evaluate their effectiveness. Additionally, there are further changes currently underway (e.g. converting the CAP database from Condition Report Evaluation and Status Tracking (CREST) to SAP) that may enhance these improvements, or could detract from the progress made. The much improved IPA process was considered an **Area of Strength**.

During interviews with Davis-Besse personnel the staff was unable to provide information on how the implementation of these labor-intensive trending programs had benefited the station. The Team suggests that Davis-Besse do more to demonstrate the success of the trending program. This will enhance individual commitment and line ownership of the trending programs.

Open SAP issues contain actions requiring station resources and therefore the inclusion of these items in the IPA is an **Area in Need of Attention**.

The lack of cognitive binning by many departments during the refueling outage may be indicative of a lack of focus on trending and its ability to identify long term problems. This is an **Area in Need of Attention**.

The trending of equipment problems across systems continues to be an **Area For Improvement**. This is a continuation of the same issue identified during the 2004 and 2005 Assessments. FENOC has developed a draft procedure NOBP-ER-3916 "Component Health Trending Reports" which, when implemented, may assist FENOC with the identification of common component problems for all four nuclear plants in the FENOC system. The Team determined that this proposed new trending program has the potential to be an excellent tool but this issue remains an unresolved item for this report.

The Effect of Program Backlogs was rated as EFFECTIVE because 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 was going down, the average age was increasing. Few resources were planned to be directed toward backlog reduction until all work packages for 15th refueling outage were completed. Progress in reduction of the backlog still needs aggressive attention to continue to improve, especially for calculations, procedures, and drawings. This remains an **Area in Need of Attention**.

The Effectiveness of Internal Assessment Activities was rated as EFFECTIVE because the Team determined the management support of, and involvement in, the self-assessment process was a positive reinforcement of the performance improvement culture. While some internal assessments were not considered to be self critical enough, the overall site evaluations demonstrate Davis-Besse's willingness to improve upon past performance. The Team identified additional examples of the **Areas in Need of Attention** in CR evaluation quality, thoroughness, and documentation.

1. The Radiation Protection (RP) group was not self-critical enough in response to two oversight observations of adverse trends in personnel contaminations (CR 06-01503) and incorrect HRA entry (CR 06-01697).
2. Documentation of CAP follow-up to CNRB findings regarding copper oxide in containment did not include all documentation from the multiple "Problem Solving" and "Independent Problem" teams, which would have improved the CR documentation.
3. Documentation of CAP follow-up to a clogged radiation detector (CR 05-04988) did not support an independent review reaching the conclusion that the CAP resolution of the issues was satisfactory. No discussion of extent of condition or counseling of maintenance staff in using unauthorized materials was included in the CA.

The Evaluation of Open Corrective Actions from CATI Report was rated as EFFECTIVE because the Team evaluated that Davis-Besse had taken action in response to the 2005 Area in Need of Attention. Although the licensee had indicated in 2005 that, for the most part, it was likely that no further action would be taken on many items since they were considered enhancements and not necessarily required actions, a re-review indicated that certain actions were deemed appropriate since they were associated with U.S. Nuclear Regulatory Commission (NRC) non-cited violations. Davis-Besse conducted a review of the Corrective Action Program Team Inspection (CATI)-related open corrective action items and their regulatory significance as well as to assure that resources were assigned and due dates established to be completed by the end of 2006.

The 2006 Team determined that, in some cases, it may have been more efficient to revise the procedure vs. creating all the analysis and tracking records in the SAP.

It appears that the conversion of many actions from the CREST data base into the SAP Activity tracking system is an **Area in Need of Attention**. This was not solely for CATI items but was reinforced by CATI corrective action follow-up. The Team did not conclude this due to any specific immediate safety condition but due to several factors:

- The licensee staff was already adding increased attention by providing several resources each day to reviewing the transition of actions from CREST to SAP,
- The Confirmatory Order Independent Assessment (COIA) Team had difficulty in implementing the COIA Plan when evaluating whether proper actions had been implemented and finding that the CR had been closed with no actual action other than to fill out additional documents to track the actions in another system, and
- Several licensee staff stated during interviews that the SAP system was not user friendly and that they had difficulty using the system.

OVERALL CONCLUSION

The Team assigned Davis-Besse an Overall Rating of EFFECTIVE.

1.0 INTRODUCTION

This Independent Assessment of the Davis-Besse Corrective Action Program (CAP) (COIA-CAP-2006) 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/Benchmarking;" NRC Inspection Procedure IP 71152, "Identification Resolution of Problems;" NRC IP 40500, "Effectiveness of Licensee Process to Identify, Resolve, and Prevent Problems;" Nuclear Operating Procedure NOP-LP-2001, "Corrective Action Program," and DBBP-LP-0009, "Management Plan for Confirmatory Order Independent Assessment," to evaluate the effectiveness of the implementation of the CAP.

2.0 SCOPE OF ASSESSMENT

The Team evaluated the following areas associated with the Corrective Action Program (CAP) implementation:

1. Review of Corrective Actions (CAs) from the 2004 and 2005 Independent Assessments of the Davis-Besse CAP.
2. Identification, Classification, and Categorization of Condition Adverse to Quality (CAQ).
3. Evaluation and Resolution of Problems.
4. Corrective Action Implementation and Effectiveness.
5. Effectiveness of Program Trending.
6. Effect of Program Backlogs.
7. Effectiveness of Internal Assessment Activities.
8. Evaluate 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.

2.1 Status of Corrective Actions from the 2005 and 2004 Independent Assessments of the Davis-Besse Corrective Action Program

The Team reviewed the CAs proposed and taken in response to Areas in Need of Attention (ANAs) and Areas For Improvement (AFIs) identified during either the 2004 or 2005 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 and 2005 Assessment.

2.1.1 Condition Reports from 2005 Independent Assessment

The Team evaluated the actions taken to address the observations made in the 2005 assessment. The following are the Team's comments

CR 05-03842 COIA-CAP-2005: CR 04-06498 SCAQ Preventive Action Verification

This CR was written to follow-up on a condition where a significant preventive corrective action had been completed and verified by the same individual, a condition which was prohibited by the procedure.

The Team determined that the site follow-up was appropriate, especially since this was not determined to be a frequent occurrence, (i.e., it was an isolated case).

CR 05-03845 COIA-CAP-2005: CR Determined to be a MRFF Not Upgraded to Apparent Cause

The 2005 Team identified that CR 05-00239, Corrective Action #1, requested that the event be evaluated for potential Maintenance Rule Functional Failure (MRFF) and if found to be a Functional Failure, then upgrade the CR to at least an Apparent Cause. The corrective action response identified the event as a Functional Failure but the CR was not upgraded and was evaluated as a Fix.

Davis-Besse staff reopened the CR, determined it to be a MRFF, and performed an Apparent Cause Evaluation (ACE). Additionally, an extent of condition review was performed which concluded that this was an isolated instance in the previous 2 years.

The 2006 Team found this resolution satisfactory.

CR 05-03961 COIA-CAP-2005: CR 04-06498 Root Cause Evaluation Observations

CR 04-06498 involved a boric acid heat trace Technical Specification surveillance commission. The 2005 Team identified that the evaluation for this CR had several weaknesses that were not addressed by the evaluator, the reviewer, or the Corrective Action Review Board (CARB). The Team requested that Davis-Besse re-review this event and consider appropriate lessons-learned. Davis-Besse re-evaluated the CR deficiencies, appended the original CR with their review, and provided lessons-learned training to the CR analyst, approver, and CARB. The original evaluator was no longer with the company. The 2006 Team found this disposition to be acceptable.

**CR 05-04407 COIA-CAP-2005: CR Evaluation and Corrective Action Completion Timeliness;
CR 05-04409 COIA-CAP-2005: Age of SCAQ/CAQ Preventive & Remedial Actions**

The 2005 Team assigned an AFI regarding the timeliness of root and ACEs, and the overall timeliness of completing CAs. Davis-Besse initially implemented an integrated backlog reduction plan and after reducing the backlog to some extent, the concentration has shifted to a weekly monitoring/focus at the Management Alignment and Ownership Meeting (MAOM). As of the week of 14 August 2006, the report indicated the following:

- 1 open Root Cause Evaluation - 45 days old under re-write for oversight/QA comments.
- 3 root or apparent cause evaluations being re-written to address CARB comments.
- No open ACE reports overdue.
- 21 ACEs in progress meeting expectations.
- 2 CF reviews exceeding 45 day guideline.
- 23 open Significant Condition Adverse to Quality (SCAQ) CAs.
 - 21 of which were greater than 135 day guideline (oldest was 1,315 days old).
 - 2 actions with due dates assigned that were greater than 135 days.

The station revised the CAP performance indicators by removing the aging of issues as an indicator. The station took the action to monitor and discuss the individual items not meeting expectations via an aggregate aging indicator. The peer perspective was that assessing aging performance over time (as was the past practice) can add additional performance improvement recognition (either improving or

declining). This type of trending was no longer being performed by the site. The 2006 Team recognized the significant improvement in the timeliness of CR evaluations. That aspect of this concern was closed.

The progress made in reducing the numerical backlog of CAs was noted, but as discussed in Section 2.6 of this report, the continued presence of many backlogged and aging CAs creates the appearance of ineffectiveness and may be causing inefficiencies sourced in managing and prioritizing this backlog. The Team determined that more progress in completing the backlog of old SCAQ CAs is needed to close this concern. The 2006 Team has identified this as an **Area in Need of Attention** in Section 2.6.

CR 05-04408 COIA-CAP-2005: CR Root Cause & Apparent Cause Evaluations Inadequate

The 2005 Team concluded that the site was frequently achieving the basic intent of determining the root causes of events and conditions but a significant number of condition report (CR) cause evaluations were too narrow or otherwise inadequate. In general, adequate tools were being used but the narrowness led to certain condition reports with limited CAs.

Davis-Besse initiated a team chaired by the fleet cause analysis specialist to review the 2005 COIA report as well as all the deficient root causes and apparent causes noted. Davis-Besse addressed the 2005 Team comments for each of the CRs identified and presented the result to CARB for approval.

The Davis-Besse Team also benchmarked 12 procedures from other facilities to evaluate the adequacy of their own procedures. Results of this review concluded that the Davis-Besse procedure was consistent with the industry. A FLEET self-assessment (FL-SA-05-14) was conducted to review 29 RCEs for all three First Energy Nuclear Operating Company (FENOC) sites. The evaluations were graded from 35-99 with a mean grade of 69 on a scale of 100.

As a result of these efforts, Davis-Besse determined that lessons-learned training was needed on better formation of problem statements, the use of the “why staircase,” and extent of condition/cause evaluations. Training was proposed for root cause evaluators, apparent cause evaluators, CR analysts, and CARB members. The CA for the training associated with this CR was closed in December 2005 after performing two training sessions which resulted in “approximately 67% attendance.” The implementation documentation states that an e-mail with training materials attached was sent to those staff members not in attendance.

The 2006 Team reviewed Davis-Besse’s disposition of the 2005 COIA and identified evaluation problems. Those dispositions were generally acceptable in view of the generic weaknesses and corrective actions taken by Davis-Besse in this area. During the review of follow-up actions to CR 05-00288, Decrease in T-AVG Below Technical Specification (TS) Limit, the Team noted that Davis-Besse added a “formal” statement addressing the criticality condition of the reactor on 1/17/05. It was not clear to the Team that this reactivity summary statement had correctly evaluated the core criticality conditions during the withdrawal of control rods as discussed during the 2005 COIA assessment report. It appeared that the Davis-Besse review was still focusing on the power level at which criticality was normally determined on a startup, versus whether or not the reactor was critical or subcritical (i.e., negative startup rate in the intermediate range) during the control rod withdrawals.

The Team determined that Davis Besse had adequately responded to the overall concern with the depth and uniformity of cause evaluations. The accuracy of the reactivity summary statement in CR 05-00288 should be addressed and is an additional example of the **Area in Need of Attention** in CR evaluation quality, thoroughness, and documentation described in Section 2.3 of this report..

CR 05-04411 COIA-CAP-2005: Equipment Trending Below Industry Standards

This CR was written to address the equipment trending issue identified as an AFI in Section 2.5 of the 2005 CAP Independent Assessment. The 2005 Team identified the lack of a program for trending component failures to aid in the identification of common component failures. The CR resulted in the generation of six CAs. As of August 25, 2006, only two have been closed. The CR investigation recommended that Davis-Besse perform benchmarking at other nuclear sites that have been identified as industry leaders. Information from the benchmarking could be used to revise Davis-Besse procedures and practices as appropriate.

The 2006 Team determined that equipment performance trending has made some progress since the last assessment but still lags the industry standards. FENOC is in the process of developing a computerized system to trend component health but, as the system is not yet operational, its performance cannot be evaluated as part of this Assessment.

The 2006 Team reviewed the Plant Health Reports for both the first and second quarters of 2006. The Team found that the Plant Health Report monitors CAs in each system but does not monitor or trend CRs. The CAs identify what work is required while the CRs provide the "WHY" behind the required work. Other nuclear facilities have determined that trending the CRs provides a better assessment of the plant health. While Davis-Besse continues to move toward implementing an effective equipment trending program, they have not made sufficient progress in this area for the Team to close this concern. This item remains open for this section and is considered an **Area For Improvement** in Section 2.5 of this report.

CR 05-04769 COIA-CAP-2005: CR Categorization/Evaluation Weaknesses

The 2005 Team recommended that the following CRs be reassessed for the following reasons:

- 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 04-07601 - The Team determined an Apparent Cause should have been completed.
- CR 05-00016 - The Team determined that the CR was closed before the action was completed.
- CR 05-00583 - The Team determined that the problem description was incomplete.

Davis-Besse staff reviewed the identified CRs and determined the following:

- CR 05-00239 - Davis-Besse determined that the CR was a Maintenance Rule Functional Failure and, as such, required an Apparent Cause. An Apparent Cause was completed.
- CR 05-00260 - No change necessary.
- CR 05-00288 - No change necessary.
- CR 04-07601 - No change necessary.
- CR 05-00016 - Revised CR implementation to indicate that individual was referred to management for appropriate action.
- CR 05-00583 - No change necessary.

The staff review and CR was evaluated by the CARB and accepted on November 2, 2005.

The 2006 Assessment Team considers this action closed (with the exception of CR 05-04408 and CR 05-00288 above).

CR 05-04770 COIA-CAP-2005: Repeat Event Guidance Weakness

The 2005 Team determined that the identification of repeat problems was dependent on the collective memory of individuals involved in the CAP. There was no direct method to trend repeat events in the Condition Report Evaluation and Status Tracking (CREST) database. Because of the pending transfer of CREST to the separate notification system (SAP), FENOC is not making enhancements to CREST. A SAP "notification" was issued to track the need for the new SAP-based CAP database to address this issue. This SAP item has a 2008 implementation date. The 2006 Team reviewed the repeat events since the last assessment as discussed in Section 2.4 of this report. Based on the limited site trending information and low priority of the FENOC response to this issue, the Team determined that this area should be revisited in subsequent assessments. The identification and tracking of repeat concerns is considered an **Area in Need of Attention** in Section 2.4 of this report.

CR 05-04771 COIA-CAP-2005: CR-CA Backlog Potential Effect on Effectiveness

The 2005 COIA Team concluded that the CR backlog remained at a significant level presenting a continuing challenge to site personnel. In addition, the open NRC CATI inspection items had a very low priority and had not been considered as needing corrective action by many station staff since they were considered enhancements. The 2005 Team was concerned that the open CATI items should be re-reviewed by the licensee and action taken to either schedule them for completion or provide a basis for no action.

Davis-Besse implemented a review of SCAQ and CAQ root and apparent cause CAs with the intent to disposition the proper action type and completion priority. Additionally the Design Engineering and Regulatory Compliance groups were designated to make a concerted re-review of NRC CATI items for completion.

The 2006 Team determined that Davis-Besse had conducted a re-review of the NRC report for non-cited and cited violations and provided a report with the status of each open item as of the end of 2005. The Engineering Director had reviewed this corrective action status and, in interviews, indicated the station goal remained to complete resolution by December, 2006. For the details of this 2006 Team review of the open CATI items, see report in section 2.8 of this report.

The Team noted that Davis-Besse has established two key methods to focus on backlog: (1) adding a list to the Monday Management Alignment and Ownership Meeting (MAOM) of all SCAQ items open over 135 days and a numerical listing and bar chart in the Friday meeting package of the open site backlog documents (actions requiring work). The Team attended the morning management meeting on August 21, 2006 and determined that the station review of the "Open SCAQ Corrective Actions Over 135 Days of Projected Over 135 Days" was not effective since several CAs were several years old and there was essentially no discussion of them during the meeting (see also the discussion in Section 2.4 of this report).

The Team concluded that the review and elimination of these old SCAQ action items remains an open item in this section of the report and has been identified as an **Area in Need of Attention** in Section 2.6.

CR 05-04773 COIA-CAP-2005: Lack of Smarter Corrective Action

The 2005 Team identified that the CA for implementation of the Integrated Backlog Reduction Program did not have clearly defined metrics from which to determine when this CA has been completed. Davis-Besse revised this CA to state that the item can be completed when the normalized ongoing backlog is between 4,500 and 6,500 items. This metric was achieved and the CA was closed on 3/31/06.

As discussed in Section 2.6 of this report, more stringent goals have been set and are being monitored by management. The 2006 Team found this disposition acceptable. However, the 2006 Team learned that the station has placed top priority on preparing for the 15th refueling outage and some Sections have very few to no plans for allocating resources to backlog reduction until all outage preparation activities are completed. The Team can understand the logic of Davis-Besse placing high priority on outage related preparations; however, the lack of any significant effort to reduce long-term backlog can have adverse impact on future operations.

The Team concluded that the lack of a continuous focus on the reduction of station backlog remains an open item in this section and has been identified as an **Area in Need of Attention** in Section 2.6 of this report.

CR 05-04774 COIA-CAP-2005: CR Evaluation Weaknesses

The 2005 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 appeared that continued management attention was warranted to continue improving performance. Most of the individual CR re-evaluation and programmatic aspects of this concern are discussed under CR 05-04408 above. This condition was classified as "CF" and focuses narrowly on the generic implications for apparent cause evaluators who would not receive training under CR 05-04408. The one CA associated with this CR involved lessons-learned training for apparent cause evaluators. This CA was closed on 12/12/05 after performing two training sessions which resulted in "approximately 67% attendance." The closure documentation states that an e-mail with training materials attached was sent to the individuals that did not attend. The 2006 Team found the overall response to this CR acceptable. One concern regarding the effectiveness of closure based on partial completion of training and an email of materials to the remainder is discussed in Section 2.4 of this report (CR 05-05395).

2.1.2 Observations on Condition Reports from the 2004 Independent Assessment

The 2006 Team evaluated the responses to CRs generated in response to the 2004 Independent Assessment Team that are still open or were closed after July 31, 2005. Below, are the CRs reviewed by the 2006 Team.

CR 04-05920 COIA-OPS: Cause Determination

This CR identified a deficiency in the review and cause determination for Operations 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 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 ACEs from operations for a period of one year. This CA was completed on 10/17/05.

The Team determined that the CARB has demonstrated good attention to detail during its review of the Operations ACEs.

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

This CR was initiated to resolve a 2004 Team AFI on the negative impact of large CAP backlogs. This CR was reviewed by the 2005 Team, resulting in a repeat AFI. CR's 05-04407, 04409, 04771, and 04773 above also address this issue. Davis-Besse developed an integrated backlog reduction program, set and

achieved goals for backlog reduction, and transitioned to a normal management focus for continuing the reduction effort to aggressive corporate-wide goals. This CR was closed on 4/12/06.

The 2006 Team determined that the CR closure was acceptable. The original backlog goals were achieved and continued backlog reduction has occurred despite an increase in the quantity of CAQ CRs initiated in 2006 as compared to 2005. This demonstrates a station commitment to backlog reduction. Team concern over the closure of the oldest open CAs is tracked by CR 05-04771. This item is closed.

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 had three CAs associated with it, and all three have been closed. This CR was closed 1/31/05.

The 2006 Assessment Team noted that the site continues to have challenges in tracking and trending equipment problems via the CAP, however, the Integrated Performance Assessments (IPAs) prepared by each section, and rolled up to site and fleet reviews has matured. The IPAs appear to be a valuable tool for monitoring section overall performance. The reports identify section issues and CRs are initiated to resolve the issues. The CRs then contain evaluations for the adverse issues and the actions to address same are tracked via the condition reporting process. The IPAs also discuss the results of actions performed in the previous IPA. Though this process is relatively new (only three semi-annual IPA reports to date), each sequential assessment has, for most departments, been a step improvement in value added. The Team is tracking equipment trending issues under CR 05-04411 and considers this item closed.

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

This CR was generated after the 2004 Team found that the definition of "Repeat Events" used in Davis-Besse's CAP Performance Indicators (PIs) is too limited. Both the 2004 and 2005 Teams proposed the development of performance indicators to trend a broader definition of repeat events.

Although this CR was closed October 12, 2005 (based on new metrics created in August 2005), interviews with Davis-Besse staff indicated that the site has decided that "repeat" occurrences would not be trended as a primary indicator. Instead, a roll-up of the cognitive binning performed as part of the IPAs would provide analysis of common causes.

The 2006 Team reviewed a draft of a recent common cause roll-up report for root cause. The draft was dated July 2006 but has not yet been issued for in-house review. Davis-Besse intends to generate multiple CRs for new issues identified in this common cause review report. The Team observed that the value of trending can be diminished when the response actions are delayed.

The 2006 Team concluded that trending repeat events (particularly those that exceed the frequency of IPA binning cycles) is an industry standard indicator of CAP effectiveness that deserves consideration by Davis-Besse. Follow-up of repeat events during this assessment period is discussed in Section 2.5 below. The Team is tracking trending of repeat issues under CR 05-04770 and considers this item closed.

2.1.3 Summary

The Assessment Team reviewed the CAs proposed and taken in response to the ANAs and AFIs identified during both the 2004 and 2005 Independent Assessments of the Davis-Besse CAP. Davis-Besse made substantial progress on these open issues allowing the Team to close most of the concerns. Remaining areas of concern include:

- A lack of attention to the completion of the backlog of old SCAQ CAs,
- Implementation of a tracking and trending system for repeat events, and

- Implementation of an equipment trending program, and
- CR evaluation quality, and thoroughness (CR 05-00288 for example).

These areas of concern have been identified as ANAs in other sections of this report and remain open items in this section.

Areas of Strength

None.

Areas in Need of Attention

Records of reactivity conditions during the January 2005 plant shutdown event addressed in CR 05-00288 continue to appear inaccurate. CR re-evaluation did not detect and correct records of sub-critical conditions during control rod withdrawals.

Areas for Improvement

None.

Conclusion

The Team rated the status of CAs from the 2004 and 2005 Assessments as EFFECTIVE.

2.2 Identification, Classification, and Categorization of Conditions Adverse to Quality

The 2006 Assessment Team performed a review of activities to assess the effectiveness of the identification, classification, and categorization of CAQs such as:

- Evaluate the actual identification, classification, and categorization of at least 25 selected CRs categorized as CAQs.
- Through interviews with a selected sample of at least ten individuals from various parts of the Davis-Besse Nuclear Power Station's staff, ascertain the Davis-Besse Nuclear Power Station staff's and management's commitment to the CAP, the extent of their understanding of the Davis-Besse Nuclear Power Station's problem identification process, and their willingness to report problems.
- Evaluate the adequacy of the Davis-Besse Nuclear Power Station's identification, classification, and categorization of a minimum of 20 CAQs CAs for operational experience feedback.
- Evaluate the Davis-Besse Nuclear Power Station's CAP for broad implementation problems or program deficiencies if the above review indicates the potential for such problems.

2.2.1 Evaluation of Identification, Classification, and Categorization of Condition Reports Categorized as Conditions Adverse to Quality

In general, the Team found problem identification to be clear and well written and the classification and categorization appropriate. For this specific task the Team reviewed a sample of over 31 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 used the terms "classification" and "categorization" interchangeably. These CRs were chosen to cover the period since the 2005 Assessment site visit concluded in July 2005.

Each CR was reviewed against the category descriptions and the evaluation methods described in Nuclear Operating Procedure NOP-LP-2001, "Condition Report Process." The following is a discussion of the Team's review of the selected CRs:

CR 05-04220 Feed Water Heater 1-4 Normal Drain Line Pipe Hanger Spring Cam is Uncoupled

This CR documents the discovery of an uncoupled pipe hanger on the normal drain line for the 1-4 High Pressure Feed Water heater which allows the drain piping to rub against the building support structure. The CA included reattaching the pipe hanger under Order 200166646.

The Team found no discussion of any investigation or attempt to identify why the hanger was uncoupled. Other than that, the description was clear, the CAs appropriate, and the categorization correct.

CR 05-04487 Labeling Enhancement Requested for Inverters

This CR was categorized Not a Condition Adverse to Quality - Fix (NF) as it identified a human performance enhancement. The originator requested unique labels be added to all inverters to help prevent erroneous operation of the equipment. The Shift Engineer and Shift Manager reviewed the request and determined that the inverter labeling was correct but could be "enhanced." The request was converted to a SAP notification and the CR was closed.

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

CR 05-04556 Fluke Model 189 Digital Multimeter

This CR was categorized as Not a Condition Adverse to Quality (NCAQ)-FIX to document evaluation of drifted Maintenance and Test Equipment (M&TE). Usage evaluation concluded the meter had not been called upon to function in the suspect range since its last calibration. Satisfactory performance had occurred since the Fluke had been placed in stock.

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

CR 05-04777 Minor Hardware Deficiencies on EDG 1

This CR was a NCAQ-NC for two deficiencies noted related to Emergency Diesel Generator (EDG) 1: (1) the Fuel Oil Strainer DC Pump lower right mounting stud has a lock-washer that appears to have spread and (2) the drop-down personnel support gratings are missing several Cotter Pins and washers.

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

CR 05-05012 Correction to OS-48A SH1

This CR was classified NF to track the correction to a chlorination system drawing.

The Team found that the description was clear and the categorization was appropriate.

CR 05-05078 Correction to DBB-FP-04038 (10% Penetration Seal Visual Inspection)

This CR was a NCAQ-NF describing minor corrections to DB-FP-04038 - 10% Penetration Seal Visual Inspection.

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

CR 05-05316, Potential Deficiency/ Enhancement MOV PMs

This CR was a CF to track the follow-up of site Preventive Maintenance (PM) procedures in response to earlier operational experience report monitoring potential corrosion of magnesium rotors. The action was to consider enhancement of the PM to include mention of any commitments made to the NRC in response to NRC Information Notice 86-02.

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

CR 05-05524, Findings from FA-SA-05-02

This CR was a CF to initiate and track each FENOC site creating an "excellence plan." Thirty-five CAs were written with one open and due 12/2006.

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

CR 05-05622 PPF Main Fire Header Pressure Indication.

This CR was a CF to evaluate repeated failures of pressure gauges on the fire suppression system. The gauges had already been replaced when this CR was initiated. Review showed the gauges are not required. Management review led to the conclusion that this was not a CAQ and closed the CR to open notification 600263148.

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

CR 05-05822 Corrosion of Q and Seismic I Components in the Service Water Tunnel

This CR describes the discovery of localized corrosion of a duct support from ground water seepage into the service water tunnel.

The Team found that (1) the description clear, (2) the investigation adequate, (3) the immediate CA acceptable, and (4) the as-left inspection satisfactory. The addition of notification 600275179 to initiate a review and develop actions to address ground water intrusion indicated good forward-thinking by plant personnel.

CR 06-00067, Re-Evaluate the Need to Perform As-Found SW Flow Test

This CR was a CF to change the CA implemented in CR 02-06064-01 to perform as-found flow balance testing of the SW system. It was expected that improved system flow monitoring would replace the need for as-found flow balance testing, and the change would improve refueling outage efficiency.

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

CR 06-00076, Risk Profile for WW602 Omitted CR2001 Work

This CR was classified a CF to document that the planned risk profile for that section of the work week did not include one work item. This was caught before the work was actually performed and was an example of a good review and catch by the Operations night shift staff.

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

CR 06-00338, AVI Personnel Minor Injury

This CR identifies the failure of a hinge on a freezer door and subsequent minor injury to a contract worker.

The Team determined that this CR was opened on 12/08/05 and action completed 12/08/05, however the CR was not closed until 03/23/06. This type of delay can have an adverse impact on station backlog trends. Otherwise, the Team found that (1) the description was clear, (2) the categorization was appropriate, and (3) the evaluation method was appropriate.

CR 06-00550 Turbine Plant Cooling Water Pump #3

The CR identifies the discovery of low oil on the oil sight gauge for the Number 3 Turbine Plant Cooling Water (TPCW) pump. The originator identified no oil in the Number 3 TPCW site glass. Maintenance added 1.5 quarts to the 3 gallon reservoir to return the oil to its normal level.

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

CR 06-00773 BACC: Steam Generator Upper Manway

This CR identifies a small quantity of dry white residue that was found on the top of the upper steam generator 1-2 manway joint during a boric acid corrosion control (BACC) walkdown. Notification 600286245 was written to perform a VT-3 examination of the manway bolts during 14RFO. Photos of the crystal deposit were posted on the T drive for examination.

The Team found that (1) the investigation to be comprehensive, (2) the categorization was appropriate, and (3) the evaluation method was appropriate.

CR 06-00923 EPZ Siren 091 AC Power Failure

This CR identifies a battery failure of an emergency siren. The siren maintenance contractor was called and the siren was repaired within 1 week.

The Team notes that the condition was reported on 3/13/06, the siren repaired on 3/17/06 but the CR was not closed until 4/10/06. Other than the potential delay in closeout of the item, the Team found that (1) the problem description and investigation was comprehensive, (2) the categorization was appropriate, and (3) the evaluation method was adequate.

CR 06-00951, Decay Heat Auxiliary Spray Throttle

This CR was a CAQ-CF for the discovery of boric acid residue on the gland bushing of the decay heat auxiliary spray throttle valve.

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

CR 06-01131, CRD Service Structure TC Cable Support Degradation

This CR was a Condition Adverse to Quality – Closed (CC) to address the discovery during CRD cable replacement that some cable supports were broken or degraded. Since this component was already scheduled for replacement as part of the resolution of CR 02-07964, this CR was trended and closed.

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

CR 06-01263 Condition Reports not Generated for Sipping and Spacer Grid Damage

This CR was a CA to analyze the cause and take appropriate actions following the notification by Areva that chemistry data indicated that the core had several fuel element failures and that they were most probably due to grid fretting. The report included reminders that CRs should be issued promptly upon discovery of the problem. Six additional CRs were written.

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

CR 06-01313, Two Personnel Contaminations Events Resulting in Minor Intakes

This CR was a CA for an event whose consequences fall into the "Marginal" category. The probability, based on inappropriate radiological worker practices demonstrated by experienced personnel and a similar event which occurred in the mid-cycle outage in 2005 (CR 05-01177), would fall into the "Probable" category. In accordance with the risk table in Attachment 2, this CR would then be evaluated utilizing an apparent cause.

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

CR 06-01382 BF 1260 PM Performed Past Late Date

This CR documents two issues: (1) The breaker covered by this procedure was to be replaced every 20 years. No breaker was available when PM was performed and delivery of a new breaker required 14 weeks. (2) The preventive maintenance procedure (PM 5309) was performed after its allowable late date. The PM was scheduled for every 8 years and was last performed 12/20/1995. An error in calculating its next performance called for completion of the PM by 3/27/2006 rather than the actual due date of 12/18/2003. The breaker tested satisfactory on 3/27/2006 and was re-installed while awaiting a new breaker.

The Team found (1) the problem description was clear, (2) the evaluation of the event was comprehensive, and (3) the categorization and CAs appropriate.

CR 06-01440, DH12 Testing Delayed by Clearance Issues

This CR was a CC to document, for trending, the incomplete clearance closure records that delayed valve testing while the staff resolved the clearance issues.

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

CR 06-01503, Personnel Contamination Events in Non-Posted Areas

This CR was a CA due to an adverse trend (four in less than 1 month) in personnel contamination events in non-posted areas.

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

CR 06-01661 Engine Driven Vehicle on Dry Fuel Pad without Required Fire Extinguisher

This CR describes a perceived procedure non-compliance. The original problem description stated that an engine driven fork truck was used on the dry fuel storage pad without a fire extinguisher. Later investigation revealed that the vehicle was equipped with a fire extinguisher but the originator was unaware of its location.

The Team determined that (1) the problem description was clear, (2) the categorization appropriate, and (3) the evaluation method was acceptable. The only concern the Team had was timeliness for closing the CR. The CR was opened on 4/6/2006; the investigation completed on 4/9/2006; however, the CR was not closed until 6/14/2006.

CR 06-02192 RCP 2-1 Lower Bearing Oil Level High

This CR reports the high oil level alarm for the Reactor Coolant Pump Motor lower bearing. The investigation identified that motor oil level switches were refurbished during 14RFO. Additionally, the bearing temperature has not increased.

The Team found the problem description very brief but the investigation provided excellent background and justification for continued operability of the motor.

CR 06-02441, COIA-ENG-2005 – ANA - Transmittal of Engineering Requirements

This CR was a CF to track the actions committed to address an Area Needing Attention from the 2005 independent assessment of the engineering programs. The ANA discusses weaknesses in engineering documents to convey critical parameter values to the departments that control those parameters.

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

CR 06-02481, Radiation Protection Integrated Performance Assessment

This CR was a CF analyzing four instances during 14 RFO where workers entered a HRA on an inappropriate radiation work permit, resulting in a non-cited violation of Technical Specification 6.1.12.b.

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

CR 06-02488 DH64 Boric Acid Leak

This CR identifies a small accumulation of boric acid on valve stem and packing follower of valve DH64.

The Team determined that (1) the description and investigation were clear and comprehensive, (2) the categorization was appropriate, and (3) the CAs were comprehensive.

CR 06-02542, EAB Grades TM 06-0014 as a Failed Product

This CR was a CC to track the rejection of a temporary modification (TM) package that did not meet Engineering Assessment Board quality standards. The deficiencies in the TM for installation of a temporary pressure gauge were resolved prior to approval of the TM package and the CR was written for trending purposes.

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

CR 06-02612, CW Pump 3 Auto Started When Stopped Due to Erroneous Low Flow

This CR was a CC to address a pump automatic start on a low flow signal during performance of valve testing. The issue was still awaiting completion of CA under open CR 05-05366. This CR was closed to the existing CR.

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

CR 06-02663, Coordination of VP Approval and SLT Review

This CR was a CF to track the actions performed to improve the coordination of senior management review of completed RCEs to assure timely accomplishment of these requirements.

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

2.2.2 Interviews with Selected Davis-Besse Personnel

Interviews were conducted with a cross section of the staff from Davis-Besse and FENOC. Among the topics discussed was their commitment to CAP, the extent of their understanding of the site's problem identification process, and their willingness to report problems. The Team determined that the Davis-Besse staff was knowledgeable and committed to the CAP. Individuals indicated a willingness to report problems using the condition reporting process in the CREST database and, for the most part, an awareness of problem resolutions that have occurred in response to CRs.

The Team interviewed over 35 members of the Davis-Besse staff and management organization during the course of this assessment. Section 5 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 displayed a commitment to the CAP. They had an understanding of the problem identification process, and they displayed a willingness to report problems as well as encourage others to report problems.

The Team also attended several morning MAOMs, two CARB meetings, one Senior Leadership Team (SLT) 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.

Several license staff stated during interview that the SAP system was not user friendly and that they had difficulty using the system to track items.

2.2.3 Evaluation of Operational Experience Feedback

Nuclear Operating Experience Business Practice NOBP-LP-2100, "FENOC Operating Experience Reference Guide," contains guidance on the review, evaluation, and use of Operational Experience (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. The Team determined that Davis-Besse used a very detailed approach that was worthy of a strength. The approach led to Davis-Besse sharing events with the industry that were meaningful and significant. This was verified by a cross-check of Institute for Nuclear Power Operations (INPOs) classification of the reports submitted by the utility over the past year. INPO rated 94.6% of the reports submitted by Davis-Besse as noteworthy or significant when reviewed against the defined industry standard for reporting.

The team reviewed the INPO and NRC networks to identify items that would meet the Davis-Besse procedure for evaluation of industry data. The items selected were NRC-Information Notices (INs) 2006/03, 2006/09, 2006/14, 2005/21, 2005/25, 2005/30 and from INPO Significant Event Report SER 3-

06, 1-06, 4-05; SEN 260 and TR 653. Several of the items were initially entered into the CR process and later transferred to the SAP notification process; however, most were in the SAP process. Some of the evaluation SAP items had not been completed within the Davis-Besse expectations of 60 days. Davis-Besse had self-identified the challenge to meet the 60-day expectation and had implemented a weekly discussion at the MAOM to review the status of the Industry Operating Experience reviews. Based on the Team's attendance of the 8/21/06 MAOM, it did not appear that this action was particularly effective at emphasizing the need to meet this expectation. The OE reviews completed generally addressed the issue reviewed. A sample of items reviewed is contained in Section 2.2.2 of this report. The Team's review of CRs developed in response to OE feedback is detailed in Section 2.4.1. The reviews completed generally addressed the issue reviewed.

The Team considered Davis-Besse's submittal of OEs to industry to be **An Area of Strength**. The Team determined that increased attention needs to be directed to completing reviews of incoming OEs within the 60-day time limit established by NOBP-LP-2100. The Team considered this to be an **Area in Need of Attention**.

2.2.4 Evaluation of Implementation Problems and Program Deficiencies

Part of the CRs reviewed during this assessment documented the use of the corrective action process to address broad generic problems or programmatic deficiencies. Interviews showed that site personnel are finding the cognitive binning process and the IPA process useful in identifying these higher level type issues.

In addition, the transfer of CAQ items to the new SAP process was reviewed to provide an assessment of performance expectations being met. The July 2006 new SAP items list was reviewed to determine items to be reviewed by the Team. Only those items on the list which identified a CR were sampled to be reviewed. There were 22 items and 13 were reviewed; however, one reviewed item was initially a NCAQ, therefore not included in the sample results. The Team reviewed 12 CRs which had actions "transferred" to the new SAP Notification Process in July 2006. All the process expectations for these actions (enhancement justification) were either captured in the CA, which was closed to the SAP notification or were documented as an enhancement in the original report capturing the review of the event when it occurred.

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." The team noted marked improvement in the timeliness in the completion of root and apparent causes, as well as a marked reduction in the number of open SCAQs.

2.2.5 Summary

The Team identified Davis-Besse's reporting and reviewing of operating experiences to be an **Area of Strength** 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 Team saw no evidence where organizations were not initiating CRs. In interviews with Davis-Besse and FENOC personnel, this was not cited as a current issue. Additionally, the Team noted a strong commitment to the use of the Operating Experience process and involvement with other utilities.

The use of a committee of four individuals to review all SAP submittals demonstrates the station's strong commitment to accuracy in categorizing CAs and SAP Notifications.

Areas of Strength

- Categorizing CRs and CAs was effective.
- Reporting of Operating Experience to industry was very good.

Areas in Need of Attention

The timeliness of reviewing incoming OEs frequently does not always meet the program expectations.

Areas For Improvement

None.

Conclusion

The Team rated the Identification, Classification, and Categorization of CAQ as HIGHLY EFFECTIVE.

2.3 Evaluation and Resolution of Problems

The Assessment Team performed an analysis of at least five selected issues or problems that have gone through the entire applicable CAP process, to identify strengths and weaknesses in their evaluation and resolution. The analysis included:

- An analysis of the ACE or RCE of at least five selected CRs.
- An analysis of selected issues, which should have been identified as CAQ on CA documents but were not or were only partially identified.
- An analysis of the problems selected above. An evaluation of the Davis-Besse Nuclear Power Station's effectiveness in implementing the CAP.
- An identification and discussion of any strengths and/or weaknesses or slow response identified during the detailed analysis above.

To address these issues, the Team reviewed approximately 126 CRs, including a minimum of 12 RCEs, 24 ACEs, 5 Limited Apparent Cause Evaluations (LACEs), and 44 CRs categorized as "Fix." The Team reviewed these documents 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 CRs in the following areas:

2.3.1 Root Cause Evaluations

CR 05-05349 Check Valve Found in Outlet of Moisture Trap (MT9) in C3801 for AE5027

The initial RCE associated with this SCAQ-SR Condition Report was returned with comments from the CARB. Revision 1 of the root cause report was reviewed by the Team and found to be in accordance with industry expectations. The CR was opened 10/13/05 and the last CA was closed 3/21/06. As of the date of this review, the CR is in the review status. This exceeds the industry standards for timeliness of completion.

CR 05-05559 Boric Acid Pumps Operability Standing Order 05-013

This CR was an SR addressing additional non-conservative assumptions in the calculation supporting minimum technical specification boric acid flow. CR's 05-03327 and 05-05184 had previously identified incorrect assumptions in this calculation that resulted in new guidance to operators needed to assure continued operability of the boric acid pumps. With the new errors identified in this CR, the past-operability review determined that both boric acid pumps had been inoperable under certain conditions during the past operating cycle. The RCE concluded that this was an original construction design error and that inadequate engineering department rigor in the development, review and approval of a subsequent (2005) revision to this calculation did not identify all of the calculation errors. This delayed the ultimate identification of boric acid pump inoperability without compensatory measures to avoid conditions that adversely affect boric acid flow rate. The CAs credited latent issue and engineering rigor actions taken during the 2002-3 extended outage. Retraining of engineering personnel on the lessons-learned from this event, and referral to the engineering training curriculum for inclusion in continuing training was also included as a CA. The extent of condition/cause (EOC) review focused on the latent issues portion of the event/cause, but did specify a verification of calculations for other Technical Specification required pumps. The calculations for those pumps were verified with the exception of the service water pumps, which were exempted based on calculation revisions completed in 2003.

The Team determined that the RCE was thorough and the CAs were appropriate and timely. The document for the justification for exempting service water pumps from the EOC CA did not address why the same organization that failed to exercise appropriate rigor in the 2005 boric acid pump calculation did not apply to the 2003 service water calculation. Also, the Team determined that the deferral of EOC review to a CA after CARB approval of the RCE without requiring this CA to return to CARB for closure was a missed opportunity for CARB to verify completion of the RCE of this event. The Team considers this to be an **Area in Need of Attention**.

The Team also noted that although the evaluation of this CR was CARB approved on 01/06/2006, the required Senior Leadership Team (SLT) review of this CR did not occur until 8/14/2006. The Team performed a review of other SCAQ items since the 2005 Assessment revealed that five of seven evaluations had similarly late reviews. The Team was concerned that a 7-month delay between CARB approval and SLT review could result in a decline in CARB performance. The delayed review of RCEs had been identified by Davis-Besse (CR 06-02663) and CAs for this CR were driving down the backlog. The Team observed SLT review of three old root cause packages during the assessment. The review was pertinent and probing and no significant discrepancies were noted. The senior managers interviewed could not recall an instance when additional actions were created after SLT review. The Team peer perspective was that senior management review of all RCEs is not standard in the industry. However, to achieve the highest value added for this effort, a timelier implementation is appropriate.

CR 05-05650 SW38 Found Out Of Position Closed

This CR was designated a SCAQ-SR that would require a root cause analysis for follow-up to the finding of the service water outlet valve for the standby component cooling water heat exchanger, which was found in the closed position as opposed to the required open position.

The Team determined that (1) the problem statement was clear, (2) the categorization of the event was correct, and (3) the CR evaluation was thorough. The initial safety systems affected by this condition were promptly assessed and the valve position was corrected. Appropriate consideration was given for a potential maintenance rule functional failure, potential issuance of Operating Experience information, preventative actions for reviewing procedures requiring independent valve positions, and discussions with on shift personnel.

The root causes were determined to include the original operator not properly verifying the valve position, a less than adequate pre-job briefing, and not independently verifying required system lineups. CAs, in addition to the above, included issuance of a Standing Order for independent verification of certain site procedures.

The Team determined that the identification of this deficiency was a good finding by the plant operator. The root cause analysis included a note that the original shift, on which the error had occurred, included 26 activities scheduled. Although the cause analysis did not discuss further details of the potential for this shift to have an overly excessive burden and any more detailed human factor deficiencies or fitness for duty issues, the Team determined that the cause analysis was comprehensive.

The Team observed a SLT meeting in which this RCE was reviewed. No changes to the Evaluation were made by the SLT. It was confirmed that the sites Standing Order for independent verification of safety system lineups was still in effect.

CR 06-00154 #2 EDG Broken Parts in Rocker Arm Area

The Team determined that the investigation for 06-00154 was thorough in evaluating the organizational and programmatic elements that led to the event (i.e., procedural inadequacies in not requiring concurrent verification of steps critical to the proper performance of safety related equipment). Additionally, the corrective action to shift the responsibility/accountability for documenting the completion of steps performed from the lead mechanic to the actual personnel performing the step was appropriate.

It was also noted that the investigation focused on the organizational and programmatic causes of the event and CAs were appropriately taken for the same. However, corrective actions to repair the damaged components on EDG 2 were not included in the investigation documentation. Although the investigation report states that all of the lash adjustment screw lock nuts were not torqued on EDG 2, no corrective action was included in the investigation to verify the proper torque of the remaining cylinders. Additionally, the extent of condition section of the RCE states that there are two additional diesels of the same manufacture and design at Davis-Besse and the same 6-year preventive maintenance was performed using the same process which was determined to be flawed in this investigation. No corrective action was identified to verify torque of the lash adjustment screw lock nuts on those generators. The reason for not verifying torque on the other diesel-generators was: "EDG 1 and the Station Blackout Diesel Generator have not experienced the same symptoms identified in EDG 2."

The extent of cause (associated with level of verification of torquing critical to proper performance of Tech. Spec. equipment) was well-addressed during the investigation. A sample of mechanical maintenance procedures was reviewed and found the level of verification for torquing operations was higher than within the diesel engine maintenance procedure. This was used to bound the extent of cause to the diesel maintenance procedure.

The Team concluded that the investigation analysis was particularly strong in reviewing organizational and programmatic elements associated with maintenance performance and verification of the activity. The extent of cause was also well addressed. However, the investigation did not document corrective actions taken to correct the condition, nor did it adequately document actions to address the extent of condition on the three diesel generators on which similar maintenance had been performed. The Team considers this lack of documentation to be an **Area In Need of Attention**.

CR 06-00207 Wrong Load Value Used in Calculation Addendum

The Team determined that Davis-Besse demonstrated good problem recognition in identifying and researching the problem. The expanded evaluation determined that the condition was bounded which

allowed the CR to be downgraded to CAQ. The root cause technique analysis was completed and the institutionalization of the lessons-learned in the training program was viewed as a strength. The action to review and ascertain the effectiveness of the CAs remained open.

CR 06-00583 Further Evaluation Actions Regarding EDG #2 Tapping Noise on 1/13/06

The Team determined that Davis-Besse demonstrated good recognition that the problem associated with operational decision-making in declaring the EDG 2 operable (despite an abnormal noise emanating from the engine) was a separate problem from that investigated under 06-00154, and it was a good decision to split it out in a separate investigation.

However, the Team also noted that the CR for this issue was not initiated until identified in the CARB review of 06-00154 on March 2, 2006, 41 days after the event. The CARB meeting minutes indicate that the investigation adequately addressed the problem statement but that the problem statement did not adequately address the condition. This calls into question the process by which the problem statement was initially developed and approved. It is worthy of note that previous CRs 05-4774 & 05-04408 resulted in training on, among other things, problem statement creation. This was completed in mid-December of 2005, although the training was only attended by ~2/3 of the target audience. The rest received an e-mail with the training material. A review of the attendance sheets indicates that one presentation was made on December 12, 2005. To achieve more participation, more than one presentation could have been implemented. In addition, the CARB review of CR 06-00154 investigation indicates that this training may not have been effective in that the problem statement and investigation scope was determined to not address the entire problem, and that an additional root cause investigation would be required to address the rest of the issue.

The investigation report states that implementation of the problem-solving and decision-making process (which was proceduralized in NOP-ER-3001, Rev. 1) requires both implementation of the procedure and a change in individual behaviors and in organizational culture. "It is not enough to simply invoke a procedure that describes the process. The process must become ingrained in the habits of the individuals in the organization."

Corrective Action #3 for this CR states to "Coordinate design, development, and presentation of training activities to address the root cause of this event and improve worker understanding/performance in this area." Activities should address the specifics of this event (EDG-2 Tapping noise). A case study that includes a discussion of the event and the actions taken versus the desired behavior is suggested. The training activities should address a problem-solving technique based on NOP-ER-3001. Internal and external OE examples should also be included. The recommended target audience for these training activities are engineering personnel, maintenance and operations supervisors, and above. This training should also address the missed opportunities (by the on-shift SRO and the notification screening team) to recognize that the maintenance notification should have been upgraded to CR status. Training audience, design, development, and delivery should be coordinated through the appropriate training review committees." Although this action was classified as preventive, there was no indication that this training would be institutionalized for the future.

The Team concluded that the investigation analysis could have been of greater potential value. This was due in part to the late start in investigating this aspect of the earlier event documented in CR 06-00154 and the associated loss of time-dependent evidence. This, in turn, is a result of the narrow scope and problem statement of the previous investigation. In addition, the corrective action to preclude recurrence associated with training on problem solving and decision making was not institutionalized in the training process. Therefore the stated desire to change individual behaviors and organizational culture appears to

remain a challenge. This is an example of the **Area In Need of Attention** in CR evaluation quality, thoroughness, and documentation.

CR 06-01091 Axial Indication in RCP 1-1 Drain Line

This CR was written to report a weld flaw indication found in a butt weld between dissimilar metals (alloy 600/82/182) on the Reactor Coolant Pump (RCP) cold leg drain line nozzle-to-elbow weld. The probable cause was identified as less than adequate welding during construction. A structural weld overlay was performed and an acceptable ultrasonic examination was completed. The Effectiveness Review (ER) determined that no additional action was needed because:

- Davis-Besse personnel do not perform dissimilar metal butt welds;
- The weld flaw was, most probably, a legacy issue from construction; and
- Any future dissimilar metal butt welds will be performed by outside contractors using their Quality Assurance (QA) program.

The Team determined that the corrective action investigation provided a comprehensive problem statement, event narrative, data analysis, probable cause, CAs, and commitments. The investigation appears thorough with extensive identification of similar occurrences at other nuclear facilities, an analysis of other locations within Davis-Besse that have dissimilar welds, and a comprehensive list of CAs and notifications.

2.3.2 Apparent Cause Evaluations

CR 05-05184 Boron Injection Flowrate Calc. 034.009 Non-Conservative Assumptions

The Team determined that evaluating this CR concurrent with CR 05-05559 was correct since they were both worked concurrently. The cause code of F07, "Self Checking to Ensure Correct Component," should be reconsidered. The Team determined that a cause code of F08, "Workmanship," might be more suitable.

CR 05-05278, Fuel Integrity Monitoring Did Not Identify Cycle 14 Fuel Defects

This CR was designated CA and was written following the report from Framatome that there were from one to four fuel element defects in the core. This CR required an ACE to determine the cause of the site not identifying the fuel defects through programmatic monitoring processes. The analysis included the condition that the site was not using the Xenon isotopic ratio of Xe-133 to Xe-135 as an indication of fuel defects.

The CAs included the issuance of an operating experience report, the review of practices by Perry, Beaver Valley, and the industry, and review of Electric Power Research Institute (EPRI) and INPO reference material.

The CARB rejected the cause analysis because it did not answer why the site procedure was inadequate. The cause analysis stopped short and did not go far enough. The subsequent licensee review determined that the skill level was less than expected by and the opportunity was missed when EPRI had earlier revised their guidance. CAs included the support to place a staff person on the EPRI working group to keep up-to-date on this type of issue.

CR 05-05334, WW0541 Inadvertent Risk Entry

This CR was designated CA and required an Apparent Cause analysis to follow-up a condition involving inadvertent entry in to an Orange risk work condition.

The cause analysis was accepted by CARB with comments. The cause analysis used the "why staircase" at least two times as required. The planned work was scheduled and assessed for risk acceptably, but one test continued into the next period where it had not originally been scheduled and created the unplanned Orange condition. The analyst determined that the site process was not followed, which required that if work was extended that it be treated like a change in schedule.

CR 05-05427 Adverse Trend Related to Recent Door Issues

This CR consolidated 39 earlier CRs that were evaluated and categorized as NF, CF and, in a few instances, CAs. All of the earlier CRs addressed various problems with doors throughout the station. This consolidated CR was used to elevate the level of concern and focus station management and employee attention on a potential generic problem with station doors.

Davis-Besse staff tried to downgrade the CR from a Category CA to a Category CC because the problems with doors were adequately addressed in earlier investigations and sufficient CAs. The downgrade request was denied by Davis-Besse management and an ACE was performed.

The completed Apparent Cause identified 27 equipment failures; the rest were human performance issues. Past CAs consisted of equipment repair, coaching, sign postings, and modifications to the training program. The first Corrective Action (CA-1) for this CR requires Plant Engineering to complete field observations of high-traffic areas and provide coaching and complementing to workers. These observations were done and the CA was closed on 5/9/06. The ER requested by the CARB as CA-2 has a due date of 10/15/06.

The Team determined that the evaluation was extensive and identified multiple similar problems at other nuclear sites. The CAs were appropriate to the severity of the problem.

CR 05-05689 Assessment of SAP Activity Tracking Generation Process

This CR contains the results of an audit of the Activity Tracking Screening Committee by Nuclear Oversight staff during the 4th quarter of 2005. Nuclear Oversight observed the Activity Tracking Screening Committee's review and transfer of 99 NCAQ CRs from the CREST system to the SAP Activity Tracking system.

The Nuclear Oversight group identified multiple problems with the transfer process. These problems included:

- Notifications entered into the SAP without due dates.
- Notifications entered into the SAP with due dates different from the original CA.
- Notifications referenced the wrong CA or did not identify which CA it closed.
- Notifications were written that should have been CRs.
- Notifications had typographical errors.

The 2006 Team determined that the deficiencies identified during the licensee audit occurred early in the review and transfer process. The CAs were completed and spot check follow-ups of the information being transferred from CREST to SAP have not identified new issues. The Team determined that this CR, ACE, and CAs were performed adequately.

CR 05-05990 Channel 1 Gammametrics Has Failed

This CR reports that the source range indication on Channel 1 was pegged low with Channel 2 already inoperable, while wide range indication at 0.01% power. The Team determined that the report description

was very good. The description of the system function was written to help readers who may be unfamiliar with the topic to understand the issue.

The analysis of the cause of Channel 2 being inoperable was identified as a pre-existing test circuit problem that had not been fixed at the time of Channel 1 failure. Work on the Channel 2 problem was assigned a low priority and subsequently exceeded the Technical Specification surveillance frequency, which required that the channel be declared inoperable. CAs were not assigned due to this being "previously evaluated" and the double failure attributed to "occurrence of an assumed risk." This appears to contradict a later section of the investigation report that attributes the cause of Channel 2 being inoperable to "insufficiently strict policies & controls," and the work prioritization procedure attachment being "confusing or incomplete."

The analysis of the cause of Channel 1 being inoperable identified that the power supply had failed and that the age of the power supply was 4 years beyond the vendor recommended replacement frequency with no PM in place for periodic replacement. CAs were established to change out both channel power supplies and to establish PMs to perform this periodically in the future.

The Team determined that the extent of condition appropriately bounded problems to similar power supplies.

An OE search was limited to failures of this power supply type. No OE search was performed to identify other cases where vendor recommendations for PM were not followed. This may have provided insights into a PM program weakness (extent of cause).

The CARB review concluded that a CA was needed to address the apparent cause of Channel 2 repair not being properly prioritized. The CARB directed initiation of a CR to identify the improvement needed to prioritize redundant technical specification equipment notifications/orders. CR 06-00916 was initiated on 3-15-06 and was subsequently closed as being redundant to existing CR 06-00428. CR 06-00428 determined that the prioritization process was adequate, but that it was inadequately applied in the Operations SRO and Screening Committee review. The following CA was issued:

CA #1 - Review this CR with Operations SROs and Screening Committee members and place emphasis on the operability review determining impact of the deficiency; this should also include a review of the impact on future operability (does the deficiency prevent testing?); include in this review a discussion of the Ranking Index of Orders system per CR initiator request. This action was open, and due 9/23/06.

The Team concluded that, although there were weaknesses, the investigation analysis was adequate for an apparent cause. Important omissions were identified by CARB and corrected.

CR 06-00624 Water Spray on Motor Control Centers E11B and E11C

The Team determined the evaluation was satisfactory for replacing the foreign material exclusion boundary but the cause assessment did not document the cause or source of the water and concluded that the source could not be located.

This CR was opened 03/07/06 and all actions closed as of 3/30/06; however, CR is still open in the review status. The Team believes that this type of delay in closing CRs can have an adverse impact on the perception of the Davis-Besse backlog.

CR 06-00857 Violation of NOP-LP-3005 (FENOC Confined Space Entry Program)

This CR was a CAQ-CA that resolved the March 12, 2006 entry into a condenser water box without the required safety and asbestos protection measures in place. A barrier analysis determined that the work plan documents were inadequate and the self-checking efforts by individuals were inadequate.

The Team determined that (1) the problem statement was clear, (2) the categorization of the event was correct, (3) the CR evaluation was thorough, and (4) the CAs were appropriate in scope and schedule.

CR 06-01313 Two Personnel Contaminations Events Resulting in Minor Intakes

The Team determined that the analysis of the event was well written and accurately documented the underlying organizational & programmatic elements that led to the event. The analysis also demonstrated in-depth evaluation through its recognition that a similar event in 2005 indicated the need for more robust barriers to limit the potential for future occurrences of this type.

The activity being performed was cleaning a gasket surface, presumably to minimize the potential for leaks following reassembly. The investigation and subsequent CAs were aimed at improving barriers associated with decontamination activities. It is not clear that an activity, such as was performed to clean a gasket sealing surface, would be considered a decontamination activity in the future and therefore, use improved procedural controls.

The Team determined that the investigation analysis was adequate. The work activity in question should be classified as a decontamination activity at Davis-Besse in the future to realize the benefits of the procedural improvements made in the CAs.

CR 06-01503 Personnel Contamination Events in Non-Posted Areas

The Team determined that the investigation included an analysis of five additional personnel contamination events in non-posted areas that have occurred since the initiation of the CR. However, the investigation concluded that no adverse trend existed due to: (1) the low number of occurrences and (2) all occurrences were at EPRI Level 1. Therefore, these events were not indicators of any weakness in contamination control practices. EPRI Action Level 1 (100 to 5,000 ccpm) recommendations include decontamination of the individual, logging of the occurrence, and periodic trending. Therefore, the conclusion that no trend existed due to all nine events being within the bounds of EPRI Level 1 appears to be circular logic.

The investigation focused on the validation that postings and surveys were in accordance with established procedures and processes, rather than identifying commonalities that could be used to focus corrective action to reverse the trend. Although the condition was classified as a CAQ, no CAs were taken. It was noted in this review that six of the nine events occurred in Mechanical Penetration Rooms. It would have been prudent to look at activities performed in these areas to determine the source of the contamination, and/or to perform focused decontamination activities in those areas to reduce the number of events.

The Radiation Protection (RP) Department Integrated Performance Assessment covering 11/1/05 to 4/30/06 (IPA 2006-00025) noted that 35 CRs were the result of personnel contamination on skin, clothing or shoes. The assessment states that a potential cause of the outage contamination events was that on at least two occasions there was ventilation flow from Containment to the Auxiliary Building. The assessment also states that an evaluation (600287901) has been accepted by Engineering to consider methods or processes to be used during future outages to reduce the potential for flow of air from Containment into the Auxiliary Building. This information was not included in the investigation of CR 06-01503.

The Team determined that the investigation analysis could be enhanced. The investigation of an adverse trend stopped short in looking for common areas that can be improved and instead provided justification of why there is no problem. This is an additional example of the **Area in Need of Attention** in CR evaluation quality, thoroughness, and documentation.

2.3.3 Review for Proper Identification

The 2006 Team performed an analysis of CRs and SAP notifications to determine if conditions which should have been identified as CAQ on CA documents were misidentified or only partially identified.

The transfer of CAQ items to the new SAP process was reviewed to provide an assessment of performance expectations being met. The July 2006 new SAP items list was reviewed to determine items to be reviewed by the Team. Only those items on the list which identified a CR were sampled to be reviewed. There were 22 items and 13 were reviewed which had actions "transferred" to the new SAP Notification Process in July 2006. All the process expectations for these actions (enhancement justification) were either captured in the CA which was closed to the enhancement OR were documented as an enhancement in the original report capturing the review of the event when it occurred.

The Team was unable to identify any improperly classified CRs or SAP notifications. The Team determined that the classification and categorization of issues is well-controlled at Davis-Besse.

2.3.4 Summary

The Team rated the Evaluation and Resolution of Problems as EFFECTIVE because the organization demonstrated a good understanding of the CAP and willingness to accept, investigate, and resolve CAQs.

Areas of Strength

None.

Areas in Need of Attention

The Team identified an **Area in Need of Attention** in CR evaluation quality, thoroughness, and documentation with the following examples:

- The Team determined that the documentation for CR 06-00154 – Loose Parts in Diesel Generator – could be enhanced by including all of the investigation performed by the Davis-Besse staff.
- For CR 05-05559, the Team determined that the deferral of EOC review to a CA after CARB approval of the RCE without requiring this CA to return to CARB for closure was a missed opportunity for CARB to verify completion of the RCE of this event.
- The Team concluded that the investigation analysis for CR 06-00583 could be enhanced. The one-time training CA was classified as preventive, yet there was no indication that the training would be institutionalized for the future.
- For CR 06-01503, the Team determined that the investigation analysis could be enhanced. The investigation of an adverse trend stopped short in looking for common areas that can be improved and instead provided justification of why there is no problem.

Areas for Improvement

None.

Conclusion

The Team rated the Evaluation and Resolution of Problems as *EFFECTIVE*.

2.4 Corrective Action Implementation & Effectiveness

The Team performed an analysis of CAQ CA implementation and effectiveness. The analysis consisted of:

- An evaluation of the timeliness of CAs for at least 20 CRs.
- A review of the number of repeat CRs and CAs and evaluation of the effectiveness of CAs.
- An evaluation of the adequacy of the Davis-Besse Nuclear Power Station's implementation of CAs for operational experience feedback.
- A review of the activities of the CARB and evaluation of the effectiveness of the CARB.

2.4.1 Timeliness of Corrective Actions

During the course of the Assessment, the Team reviewed several dozen CRs and their associated CAs. The Team determined that Davis-Besse is generally effective in completing the required CAs however the Team noted a delay in closing of CRs after all CAs had been completed. This delay can have an adverse impact on the station backlog. The CRs evaluated by the 2006 Team for this section of the report are discussed below.

CR 05-03779 INPO OE Report Not Fully Distributed

Oversight identified that a single INPO OE report may not have been sent to all appropriate departments for their information. Based on technical review, CR 05-04287 was initiated which became GAT 06626. No ER was required but referred to snapshot self-assessments for OEs are performed and the 2006 Team rated this as satisfactory.

CR 05-03965 OE - Beaver Valley MOV Failure Due to Damaged Gear Teeth

The Team determined that the evaluation was timely and adequately addresses the vendor recommendations.

CR 05-03974 SER 2003-05 Weakness in Operator Fundamentals

This was an NF classified report issued to track and implement an evaluation of a significant industry summary report.

The Team concluded that the evaluation was completed and that the CR had been closed in March, 2006. The CA had been "closed to a SAP notification."

CR 05-04026 Loose Trunnion Screws at North Anna 2

This CR was an NF to track the confirmatory screening of a North Anna 2 event where loose trunnion screws caused a steam-driven auxiliary feedwater pump trip/throttle valve failure. The CR evaluation found the subject component is applicable to Davis Besse, but there was no evidence of loose screws.

The Team found the review of operating experience to be timely and effective, the proposed maintenance procedure enhancement appropriate.

CR 05-04110 INPO Technical Report on Circuit Boards

INPO Technical Report on Circuit Boards originally extended evaluation in 2005. This CR was closed to SAP notification 600251710.

CR 05-04414 PY CR 2005-6616 Confirmatory Screening CR Misclassification

CR generated based on Perry misclassification of CR relating to deficiencies in effectiveness. MAOM originally classified this as NCAQ for Davis-Besse but it was upgraded to CAQ as part of the conversion of NCAQ to SAP.

The Team determined that Davis-Besse performed a satisfactory review of extent of condition with identified potential deficiencies resulting in the generation of new CRs.

CR 05-04563 OE - Beaver Valley NCV for not Placing an Inoperable OTDT Channel in the Tripped Condition Within 6 Hours as Required by TS LCO due to a Maintenance Procedure Error Which Left Switches on a Circuit Card in the "Off" Position

The Team determined that the evaluation appears to adequately address the station processes and practices that serve as barriers to this type of event.

CR 05-04672 NRC IN 2005-24: Nonconservatism in Leakage Detection Sensitivity

This was an NF to track the evaluation of NRC Information Notice 2005-24 – Nonconservatism in Leak Detection Sensitivity. Since the origination of this CR, the Operating Experience Program tracking has been shifted from CREST to the company's SAP computer tracking system. Therefore, this action was transferred to SAP notification/order 600240302/200175093. In this transfer, the evaluation due date was extended 10 months past the target 60-day evaluation expectation.

The Team determined that the OE evaluation a year after receipt was not considered timely.

CR 05-04845 IN 2005-25 Inadvertent Trip due to Tin Whisker

This was an NC classification report to document receipt of an Information Notice from the NRC regarding industry operating experience of a reactor trip caused by defective circuit cards. This CR was closed with the annotation that the IN would be evaluated by CR 05-04110 which was initiated following receipt of an associated OE from industry (INPO), Technical Report 5-47, a review of circuit board failures. This was an NF CR and was closed to a "notification."

The Team noted that the licensee performance improvement staff provided a status of "Open OE Evaluations, Confirmatory Screenings, and Follow-up Actions" in the Monday MOAM package for station management to review in addition to other priority items in the morning management meeting. Items which are overdue or coming due are included along with the original due date (if extended) and the responsible person for the action. The Team determined that this was a good practice to review these especially since the station had recently changed its practice to use a data base system called SAP as opposed to the CR system called CREST. However, based on the Team's attendance of the 8/21/06 MAOM, it did not appear that this action was particularly effective at emphasizing the need to meet this expectation.

The Team verified that the OE for review of TR 5-47, "Review of Circuit Card/Board Issues" was included in the listing reviewed in the MOAM on Monday August 14, 2006. Three separate actions were being tracked and were due (and overdue) 7/18/2006, 8/19/2006, and 9/30/2006 respectively.

The Team subsequently discussed the status of this item with the engineering staff. Due to the complexity and sensitivity of this operating experience item, the Instrument and Control (I&C) engineer indicated

that they had put together a draft plan to include training for awareness but were cautious when identifying any specific actions so as to not cause any other problems with circuit cards by inspecting or analyzing their equipment. Due to the complexity of this, the engineer had requested an extension until the end of September to complete the plan.

CR 05-04854 PCR-Tracking OPS Procedure Revision for ECR 05-0089

This CR was a NF to track the future changes needed to the control room annunciator procedure associated with a change to the Reactor Protective System variable low pressure trip scheduled for cycle 15. The CR was closed because the record was converted to the SAP database.

The Team verified that notification number 600261087 was opened to track completion this action.

CR 05-05395 CAQ-CF-2005 INPO AFI PI.2-1

CAQ-CF-2005 INPO AFI PI.2-1: Some evaluations of significant and repetitive problems for extent of condition, extent of cause, and effectiveness of previous operating experience reviews were narrow in scope and added little value. As a result, CAs have not always been comprehensive enough to reduce the occurrence of events having similar organizational causes.

The Team determined that CAs included providing a hands-on lessons-learned session on the extent of condition, extent of cause, and previous OE reviews from assessments conducted at Davis-Besse in 2005 to applicable trained or qualified individuals. However, the hands-on lessons-learned session was not attended by 45 individuals (~1/3 of the target audience), who were subsequently sent the Power Point presentation via e-mail. Missing attendees included Directors with root cause approval authority, CARB members, root cause evaluators, apparent cause evaluators, and CR Analysts. It was unclear from review of the training material what portion of the session was hands-on, but if that was the intent it would not have been performed by the 45 members of the target audience that received the material via e-mail. This is considered to be an **Area In Need of Attention**. Additionally, the presentation states under the Extent of Condition requirements that it constitutes an evaluation of the characteristics of a condition to determine if there are other identical or similar applications in which the condition or its causes could or do exist. Including "or its causes" in this description could be confusing since that was the function of the Extent of Cause review. The Team considers the CAs for CR 05-05395 to be partially completed. In a positive light, the Team identified a good presentation of the need to perform OE reviews at two times for two separate reasons (to help in identification of causes, then to help in identification of CAs).

CR 05-05396 INPO 2005 EVALUATION - AFI PI.2-2 (TIMELINESS/AGING)

The Team determined that the CR resolution was satisfactory. The Station developed an integrated indicator capturing all backlog activities and setting goals for backlog.

CR 05-05397 INPO 2005 EVALUATION - AFI PI.3-1 (USE OF OE)

INPO determined that Davis-Besse's evaluation of incoming Operating Events (OEs) for extent of condition, extent of cause, and effectiveness of previous operating experience reviews was sometimes too narrow in scope and add little value. As a result, corrective actions have not been comprehensive enough to reduce the occurrence of events having similar organizational cause.

The Team reviewed Davis-Besse's response and corrective actions which included enhanced training materials (on-the-job training, task performance, and leadership) and determined that the CA was appropriate.

CR 05-05444 Oversight Concerns Related to SAP Notifications Not Identified in CR Program

The Team's limited investigation of the SAP and CREST database systems determined that this condition has been satisfactorily resolved.

CR 05-05894 DB-SS-05-20 Corrective Actions Due Date and Action Type Assignment not per NOP

The Team determined that this condition was resolved satisfactorily. The response noted that actions were performed to address the individual performance shortfalls; the items identified as not meeting expectations were corrected; and action was assigned to revise CREST software to provide better processing of the computer system such that performance expectations would be ingrained into the system to reduce potential for non-compliance with the expectations.

CR 05-05895 DB-SS-05-20 Condition Reports Not Written for Maintenance Notifications

The Team determined this CR was resolved in a timely and satisfactory manner.

CR 06-02580 DB-SS-06-04: Individuals Performing LACE without Completing Training

This CR addresses an evaluation of a sample of 20 Limited Apparent Cause Evaluations (LACEs) showed seven instances where the individuals had not completed the required self study training and had been entered as qualified. The Team evaluated the extent of condition review and determined it was effective and comprehensive. The Team recommends the cause code be revised from I02 (no training available) to H03 (change management) since training was available on-line.

CR 06-02663 Coordination of VP Approval and ELT Review of Root Cause Evaluations

This CR was a CF to track the actions performed to improve the coordination of senior management review of completed RCEs to assure timely accomplishment of these requirements.

The team verified that the completed CAs for this CR were effectively implemented, and the backlog of incomplete reviews is declining.

2.4.2 Review of Repeat Condition Reports

The Team determined that Davis-Besse only uses the CREST tracking code for repeat occurrence for those repeat events where preventive actions have been previously taken. Because the number of these occurrences is very limited, Davis-Besse had terminated trending of this code due to its limited value. The Team peer perspective was that a broader definition of repeat events and subsequent trending of this category would provide a valuable measure of the overall effectiveness of the CAP.

Davis-Besse relies on the collective memory of their staff involved in the CAP to identify these lesser recurrent events and take additional actions when appropriate. Unless a "generic implications" review is required, the CAP does not provide specific guidance for elevated action in response to repeat events. Davis-Besse does trend CR events and causes in the Integrated Performance Assessment (IPA) Process. However, the typical focus period is limited to 6 months, thereby eliminating the identification of events with a longer repeat cycle.

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. The Team identified 11 CRs that were determined to be repeating events. Most of the repeat events were immediately closed citing coverage by the CR for the prior event. In many cases, the corrective actions to be taken for the prior event, while prioritized within the site work processes, could be viewed as untimely with respect to the reoccurrence of the event. One example of the recurrent events is discussed below.

CR 06-01590 Vendor Prints Do Not Match Field for Cabinet C4606

CR 06-00928 Configuration Control Discrepancy-Cabinet C4603 Fuse FB5

CR 05-00738 Fuse Size Discrepancy in C4603 Cabinet for Fuse Block FB5

CRs 06-01590 and 06-00928 identify discrepancies between certain plant drawings regarding the proper size for reactor trip breaker fuses. For one discrepancy, two drawings specify a 20 Amp slow blow fuse and one (the “controlling” drawing) reflects the 30 Amp fast blow field installation. These CRs were dispositioned as CC because the same discrepancy was identified in CR 05-00738 more than a year earlier. The latter CR was a CF which concluded that the proper fuses are the 20 Amp fuses as specified in the vendor design drawings, but that the 30 Amp fuse provides equivalent protection. Thus, replacing the 30 Amp fuses was not required and a CA was created to change the “controlling” drawing. The drawing change CA was subsequently closed to an SAP notification because it was considered an administrative change. To date, the drawing error had not been corrected.

Davis-Besse attempted to replace the installed fuses with 20 Amp fuses during a Spring 2006 outage preventive maintenance activity. The fact that the drawing error had not been corrected complicated the pre-job planning because the drawing discrepancy had to be resolved again. Further, there was a fuse holder compatibility issue with the 20 Amp fuses that required reinstallation of the 30 Amp fuses. Other discrepancies between field and vendor drawings were noted but not corrected.

The Team had several concerns with the implementation of these CRs.

The end state of CR 05-00738 appeared to be a use-as-is justification for an existing non-conforming condition in the field (30 Amp field installation with a 20 Amp drawing requirement). The CR hardware disposition block was not checked so the non-conforming condition could not be tracked. Typically, field discrepancies are labeled in some manner so that subsequent observers will know the condition has been identified and evaluated, thus reducing workarounds and repeat CRs. No field labeling was applied to this condition.

The drawing change for an inaccurate controlling drawing did not get high priority such that the condition still existed over a year later.

The CR 05-00738 CA closure to an SAP notification, where it is not tracked as a CAP open item, seemed inappropriate.

The immediate closure of the two repeat CRs missed the opportunity to address all of the identified discrepancies (e.g. cabinet C4606 in addition to C4603, 0.5 Amp vs 5 Amp in one application) and revisit whether the CA priority is appropriate given the amount of effort the discrepancies are continuing to cause.

The Team recommended that Davis-Besse review the processing of these CRs with regard to the conformance of the hardware disposition with the QA Program, and the timeliness of correcting plant controlling drawings. The Team determined that this was an example of how a focus on repeat events can be helpful in measuring the effectiveness of the CAP. The Team considers that the original CA (change the drawing) was not completed in a timely fashion which resulted in recurrence of the issue. This is considered to be an **Area in Need of Attention**.

2.4.3 Review of the activities of the Corrective Action Review Board (CARB)

Review of CARB Meeting Minutes for August 8, 2005

The Team reviewed the minutes of the CARB meeting on August 8, 2005. The CARB approved CR 04-07693 (Evaluation of INPO SOER 99-1 Addendum) with comments to rectify two corrective action discrepancies and create/validate an additional enhancement action. CARB did not comment on the failure to meet the 150-day INPO expectation for evaluation of this issue.

The Team determined that the CARB exercised its responsibility for technical review/oversite of CR 04-07693, but missed the opportunity to reinforce the Operating Experience Program goals.

Review of CARB Meeting Minutes from February 13, 2006

The Team reviewed the CARB Meeting Minutes from 2-13-06 (Agenda included review of six ER evaluations, five ACEs, and three other CR evaluations)

The Team determined that ERs are performed in accordance with site document NOBP-LP-2007. Section 4.1.3 states that the ER date is established by the CR owner and validated by CARB, when applicable, with the intent being to "evaluate effectiveness at the earliest expected opportunity." Contrary to this direction, the CARB minutes reflect that the ERs reviewed were scheduled late for CARB review due to an oversight, and as such, CARB members noted that they were reviewing ER evaluations for adequacy many months after the ERs were actually performed.

Additionally, the Team's review of the CARB Minutes indicated that CARB review of ACEs were critical and directed evaluation changes as appropriate.

Review of CARB Meeting Minutes from May 22, 2006

The Team reviewed the minutes of the CARB meeting on May 22, 2006. The CARB approved evaluations for CRs 06-00531, 06-00564, 06-00101, and 06-00432 with comments. CR 06-00624 was accepted as written. CR 06-00101 addressed a discrepancy in a contractor's background history not identified prior to him receiving unescorted access to the site. The CARB discussed that there had been a procedure requirement to use "Team Badging" and how to prevent a procedure requirement from being "undone" in the future as documented in this case. The CARB added a CA to add a statement to the contract purchase order to require using "Team Badging" or to notify the site if "they" change the procedural requirement. CR 06-00289 (discussed difficulty implementing changes to improve Fleet performance) was "tabled" because of no representation present.

The Team determined that the CARB exercised its responsibility for technical review/oversight of CR evaluations. CR Corrective Action item 2 was completed in May, 2006 and included the requirement for Team Badging in the contractor's own background screening procedure.

Attendance at CARB Meeting of August 14, 2006

Members of the 2006 Assessment Team attended the CARB meeting on August 14, 2006 and observed the Board's review of significant CR 06-02558 ('B' Turbine Trip Solenoid failed to indicate valve tripped during periodic test) .

The Team determined that the presentation discussion was well done. The presenter was challenged by CARB members and was able to explain why certain actions were performed. The Team noted that the investigation pursued two separate problems (only one was significant) and made it unclear which problem the CAs addressed. This confusion was demonstrated by several questions from CARB members as to which problem (failure to trip or slow to reset) the CAs addressed.

The CARB, after much discussion on whether to close the investigation when no root cause had been found, elected to declare the investigation complete. In fact, the CARB approved waiving of the ER action, since no cause had been found. There was no discussion on the acceptability of recurrence of the event, which, without corrective action to preclude recurrence, was more likely to occur. There was no discussion on the basis for classification of the CR as significant or on the option of downgrading the CR.

There was a distinct command and control flavor exhibited by the CARB Chair (Director of Site Performance and Improvement), yet there was an equally distinct willingness of other CARB members to carry on a collegial discussion and at times disagree with the comments of the Chair. There was no indication that participants were in any way unwilling to express opinions and/or concerns.

The Team concluded that the investigation analysis was weak. Although appropriate investigative techniques were used, the use of those techniques did not result in identification of a root cause. Therefore, no extent of condition or extent of cause was pursued. Based on not identifying a root cause, not providing CAs to preclude recurrence, and not pursuing extent of condition or extent of cause, the likelihood of event recurrence was high. This is an additional example of the **Area in Need of Attention** in CR evaluation quality, thoroughness, and documentation including CARB review.

Attendance at CARB Meeting of August 21, 2006

During the CARB meeting on August 21, 2006, following discussions concerning the previous outage performance (and Limited Cause evaluation 06-01179) regarding main fuel handling problems, a CARB member asked whether the fuel handling mast guide bars were going to be replaced as had been requested. The limited cause evaluation included review of CR 06-00897, Guide Bars for ERC 05-0304, had less clearance than the original bars.

In addition, during the CARB meeting, a 2-month assessment of chemistry issues was discussed. This was considered to be a useful look at emerging issues. It was noted that the “second tier” chemistry analysis (e.g. amines and sulfates) were unable to be measured due to equipment deficiencies.

The meeting also reviewed three LACEs and an ER in accordance with NOBP-LP-2008, “FENOC Corrective Action Review Board.” The following items were reviewed:

- CR 06-01183 NRC ISI: Reportability of CR 02-08782
- CR 06-01313 Two Personnel Contamination Events Resulting in Minor Intakes
- CR 06-01179 Main Fuel Handling Bridge Problems During 14RFO
- ER 04-01996-2 Effectiveness of Actions to Prevent Valve Stem Ejection

The results of recent cognitive binning efforts by the Chemistry and RP sections were also presented at this meeting. The Team found these presentations to be insightful, and CARB members probed the bases for the conclusion reached by the Sections. The Team noted that part of the Chemistry Department’s presentation included information that the “second tier” chemistry analysis (e.g. amines and sulfates) were unable to be measured due to equipment deficiencies.

The LACE presentations summarized the problem, cause analysis, and CAs recommended for each event. Board members were critical and thorough in each review, raising appropriate questions for the evaluator to address prior to closure of the CR. CARB uses a grading process to determine whether evaluations are approved, approved with comments (to address before closure), or reject a CR analysis. The Team noted that the grading sheet for LACEs has three assessment topics that are applicable to ACEs but not suitable for a LACE. The use of this grading sheet artificially inflates the CARB grade by 12 points and can mislead evaluator and condition owner as to the acceptability of the work product. During the discussion

of CR 06-01183, CARB had many comments and questions that the Team perceived would result in at best a marginally-acceptable rating. The actual grade of 96 out of 100 appeared to send the owners an incorrect assessment of the quality of the CR product as presented. During interviews with the Performance Improvement Section, the Team learned that the FLEET CAP coordinator had already accepted an action tracking item to address this issue.

Finally, the CARB was scheduled to review SCAQ Items Open more than 135 Days, but the Team noted that an earlier Condition Report, CR 02-06178, included a CA, coded "Preventive Action (PR)" to prevent a repeat condition, to replace the guide bars with ones which have gradual sweep on each end. Although it appears that the motive of this later CR was to improve the outage schedule due to unreliable refueling equipment and there were no underlying safety issues, it appears that the types of issues being raised with the refueling equipment had been raised several years ago and that the problems had not been fully resolved.

The Team also noted that, during the morning management meeting on August 21, 2006, the list of Open Significant Corrective Actions Open Over 135 days was not discussed in detail. The above CR 02- 06178 was included in this list and was not projected to be completed until mid-2008.

The Team determined that the list of significant SCAQ items open over 135 days was an **Area in Need of Attention** in order to assure that CAs (especially preventive and remedial) are receiving the proper priority and attention by the plant staff and managers.

2.4.4 Summary

The Team determined that Davis-Besse has a narrow definition of repeat events and there is no 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," requires an SCAQ categorization for multiple types of repeat events. Correct identification of repeat occurrences is presently dependent on the memory of Davis-Besse staff and management.

The MAOM, CR review meeting, and CARB meeting provided an effective review of new key issues and provided confirmation of priority and responsibility for follow-up in the continuity of corporate experience and memory.

Areas of Strength

None.

Areas in Need of Attention

- The Team determined that the list of significant SCAQ items open over 135 days was an **Area in Need of Attention** in order to assure that CAs (especially preventive and remedial) are receiving the proper priority and attention by the plant staff and managers.
- 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. The 2006 Team noted this is an **Area in Need of Attention**.
- CR 06-02558 had no root cause identified, no extent of condition or extent of cause pursuit; CR 05-05559 on the Boric Acid Pumps was approved without adequate extent of condition review. These

CRs are additional examples of the **Area in Need of Attention** in CR evaluation quality, thoroughness, and documentation, including CARB review.

- The closure of CR 05-05395 with only two-thirds of the required training of the designated audience was an **Area in Need of Attention**.
- The Team determined that CR 05-00738, corrective active implementation was untimely to prevent additional CRs (06-00928, 06-01590).

Areas for Improvement

None.

Conclusion

The Team determined that implementation and effectiveness of the CAP was EFFECTIVE at identifying and correcting problems. The problems were properly captured and characterized by the CAP. The implementation of the SAP Notification Action process has reduced the CR and CA backlog and fostered increased focus on the adverse conditions.

2.5 Effectiveness of Program Trending

The Assessment Team performed an analysis of the effectiveness of the trending of CAs. The analysis included:

- A review of the deficiencies tracked in the CAP.
- An evaluation of the effectiveness of the Corrective Action Trending Program.

2.5.1 Deficiencies Tracked in the Corrective Action Program (CAP)

This section discusses the deficiencies tracked in the CAP. The condition reporting process has been revised since the last Assessment. In September 2005, the site revised the CREST database to eliminate all work items classified as NCAQ. All open CAs were evaluated and those determined to be NCAQ issues were closed and an SAP Activity Initiation Form was generated to replace it. New CRs were generated for open CAs if it was determined that they should be converted a CAQ and remain in the CREST database. The transfer of NCAQ issues from the CREST database to the SAP database increased the visibility of the SCAQ and CAQ items remaining in the CREST system. This helped Davis-Besse Management focus on the work items with the largest probability of adversely impacting plant operation.

The purpose of the CAP was to identify and document adverse conditions, their cause, and to take actions to correct and prevent recurrence. Individuals reported SCAQ or CAQ deficiencies by completing a CR in the CREST database. Conditions considered to be NCAQ were entered into the SAP database system.

The Team reviewed multiple CRs and their associated CAs as part of the 2006 Assessment. The Team's evaluation determined that Davis-Besse does an effective job of tracking CAQ and SCAQ deficiencies in the CREST database system. The Team also performed a limited review of the enhancement actions tracked SAP database in an effort to identify CAQ or SCAQ deficiencies that may have been incorrectly categorized.

The Team determined that deficiencies tracked in the CREST database are appropriately categorized and receive management attention commensurate with their importance to the site. During its limited review of the items in the SAP database, the Team did not identify any CAQ or SCAQ deficiencies that had been entered into SAP in error.

2.5.2 Effectiveness of Corrective Action Trending Program

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

Davis-Besse has visited multiple top-tier nuclear sites to benchmark the trending methods and trending reports. This information has been used to develop trending programs for the site. These trending programs are described below:

Davis-Besse Trending Programs

The Davis-Besse Trending Program comprises five primary programs along with other programs that are unique to each Section:

1. Integrated Performance Assessment (IPA) Program
2. Cognitive Binning and Trending Program
3. Plant Health Report
4. Snapshot Self-Assessment
5. Outage Trend Summary Report

The IPA was the most comprehensive of the trending programs at Davis-Besse. It was based on procedure NOBP-LP-2018 "Integrated Performance Assessment/Trending" which was developed to standardize the CR trending requirements of procedure NOP-LP-2001, "Condition Report Process." Each section is to develop a complete IPA every 6 months (April and November) which become part of the Davis-Besse Site Summary report to FENOC.

Cognitive binning was a part of the IPA program. Each site section manager was required to review and bin all CRs assigned to their section. The CRs were binned to identify repetitive conditions and trends. Currently, the CARB required each Section to prepare and present a binning process summary report to the CARB every three months.

Plant Health Reports were prepared every quarter by the Plant Health Committee (PHC) with input from the system engineers. Procedure NOBP-ER-3002, "Plant Health Committee," identified the members of the PHC and describes the plant health review process and report format.

Snapshot self-assessments were focused assessments in accordance with NOBP-LP-2001, "FENOC Focused Self-Assessment Process," that covered a short period of time and concentrated on a single issue. They were an effective method of performing a short, high-intensity, targeted evaluation of a specific activity within a specific department. The Common Cause Analysis (CCA) was one type of snapshot self-assessment. It was done in response to NOP-LP-2001, "Corrective Action Program," and NOBP-LP-2011, "FENOC Cause Analysis." The CAP manager used common cause analysis to assist with the identification of long-term recurring failures, degraded equipment, and performance issues. The CCA process required an evaluation of multiple events to determine whether a common or underlying incident contributed to each event or failure.

The Outage Trend Summary was a review that occurred after each outage to identify problems and adverse trends and develop implementation programs to minimize the likelihood of recurrence. While the CCA looked at events during plant operation, the Outage Trend Summary Report consolidated recurrent events and performance issues specific to the outage.

Evaluation of Trending Programs

The Team reviewed trend reports completed since the completion of the 2005 Assessment. A summary of the Teams evaluation of each trending program follows.

Integrated Performance Assessment

The Team reviewed the following IPAs:

CCN No. 05-00200	Design Engineering - Integrated Performance Assessment - May 1, 2005 through October 31, 2005
CNN RAS 05-00510	Davis-Besse Regulatory Compliance - Integrated Performance Assessment - May 1, 2005 to October 31, 2005
DSM-06-00053	Davis-Besse Maintenance - Integrated Performance Assessment - May 1, 2005 to October 31, 2005
DBE-06-0099	Design Engineering - Integrated Performance Assessment - November 1, 2005 through April 30, 2006
CNN RAS 06-00212	Davis-Besse Regulatory Compliance - Integrated Performance Assessment - November 1, 2005 to April 30, 2006.
DSM-06-00053	Davis-Besse Maintenance - Integrated Performance Assessment - November 1, 2005 to April 30, 2006
RAS-06-00259	Davis-Besse Site Summary of Integrated Performance Assessments - November 1, 2005 to April 30, 2006

The Team determined that the IPA program was being effectively implemented within each department at Davis-Besse. Departmental staff was sufficiently self-critical and both positive and negative items were being identified and, when appropriate, SAP notifications or CREST CRs were prepared. The 2006 IPAs identified the lack of CR cognitive binning during the 14th refueling outage and the Station has identified this as an **Area in Need of Improvement** for future outages.

Cognitive Binning Process

Each Section used the cognitive binning process to sort CRs and identify potentially adverse trends. The binning and trending process was part of the IPA, which was summarized at the end of 6 months. This gave each Section a relatively short history for trending. The Team determined that trending would be enhanced if the binning records were compared over a longer time period.

The Team attended the August 14, 2006 CARB meeting and witnessed the presentation of the Cognitive Binning for the Plant Engineering Section. The presenter from Plant Engineering stated that they did not bin CRs during the refueling outage due to a lack of available manpower. The CARB challenged this reasoning and stressed the need to complete the process, even if it is after the outage. During its review of the presentation, CARB members found it difficult to obtain meaningful information from trend charts and requested the report be re-done and brought back to CARB at a future date. Additionally, the trend report presenter was unprepared for questions from the CARB members and frequently referred to being new to the task and only doing what his predecessor had told him to do. At one point, he appeared frustrated and informed the CARB that he “doesn’t relish doing this.” The Team determined that this indicated a lack of preparation for the meeting.

During the Team's review of the information, it was noticed that the 3rd level equipment performance binning chart broke the CRs down by types (e.g., doors, MOVs, heat exchangers, etc.). One category stood out prominently – Boric Acid Corrosion Control, yet this was explained by the presenter as consistent with what has been seen in the past. The CARB accepted this without challenge. This may indicate that the CARB was willing to accept the excuse "this is the way it has always been" for a potentially adverse trend.

The Plant Engineering Section's trend report included charts associated with operational and procedural issues as well as equipment problems. The CARB Chairman questioned whether the equipment should be trended separately. One CARB member asked if the report included all equipment related CRs. The presenter stated that the report only covered equipment assigned to his organization. The CARB directed the report be combined with trend reports from other organizations to trend all equipment related CRs.

The Team determined that the CARB was sufficiently cognizant of the purpose of binning and enforced a sufficiently focused review of trend information presented to them.

Plant Health Report

The Team reviewed the Plant Health Reports for the first and second quarters of 2006. The review noted improved documentation of system performance and analyses of problem areas and recovery plans for each system. The use of the past eight quarters for system health trending demonstrates Davis-Besse's goal for improved trend analysis.

Snapshot Self-Assessment

The Team reviewed DB-SS-06-11 – Snapshot assessment of the Davis-Besse 14th refueling outage issues compared to FENOC as a whole and to evaluate whether trends of CRs are identified for resolution of program or process weaknesses.

The fact that Davis Besse was performing a post-refueling outage self-assessment to compare performance against other FENOC plants in the area of identification of program and/or process weakness was considered useful. In the review of CR 06-01503 (Nuclear Oversight identified an adverse trend in the area of workers contaminated in non-posted areas), the Section reported that the associated cause evaluation concluded that there was no adverse trend and no corrective actions were pursued. This CR is an additional example of the **Area in Need of Attention** in CR evaluation quality, thoroughness, and documentation discussed in Section 2.3 of this report.

Although the assessment report states that a Nuclear Oversight identified weakness (CR 06-01697, written on 4/7/06) associated with workers entering HRAs under the wrong Radiation Work Permit (RWP) was evaluated as not representing an adverse trend (and therefore no associated CAs), there was a subsequent CR written by the RP organization on this same topic (CR 06-02481, written on 6-6-06) in which the trend was analyzed and corrective action assigned. It is not clear what prompted this change.

The assessment identified that CRs for four conditions discovered during BACC inspections had two-part CAs that were only partially implemented with the associated CRs ready for closure. The assessment resulted in initiation of a new CR (06-02684) to resolve the CAP issue related to inadequate corrective implementation which the Team determined to be appropriate.

The Team determined that open items from the SAP database were incorporated in only one IPA. The SAP items should be included in the IPA evaluation for each department or Section. The Team considered this to be an **Area in Need of Attention**.

The Team also reviewed DB-SS-06-26, "Condition Report Common Cause Review" (draft), and found it to be a good review; but the evaluation period ended in June 2006, the report is dated July 2006 and it is still in review. Based on interviews, the evaluators intended to initiate two CRs for common issues. The Team believed that timeliness was important for the effectiveness of resolving problems.

Outage Trend Summary Report

The Team reviewed the CR Trend Summary for Unit Outages dated February 2006.

This assessment report summarized certain trends from CRs that have occurred during outage periods at Davis Besse, Perry, or at Beaver Valley for the last several outages. The report identified global issues and site specific issues depending on the frequency and significance.

Issues identified included the following:

- Foreign material exclusion.
- Housekeeping.
- Personnel contamination.
- Dose alarms.
- Working hour guidelines exceeded.
- Industrial safety.
- Borated water leakage, fuel damage, and main steam safety valve set points.

Although the trend report was considered useful in preparation of the outage, the licensee experienced many difficulties during the outage as discussed in many post outage critiques, discussions with site personnel, and CNRB meeting minutes.

The licensee generated a CR 06-02686, Abandonment of Site Organization Cognizant Trending During Outages, in response to departments failing to perform monitoring and a low self identification rate during the refueling outage.

2.5.3 Summary

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

During interviews with Davis-Besse personnel, the staff was unable to provide information on how the implementation of these labor-intensive trending programs had benefited the station. The Team suggests that Davis-Besse do more to demonstrate the success of the trending program. This will enhance individual commitment and line ownership of the trending programs.

Areas of Strength

The IPA process was much improved.

Areas in Need of Attention

- Open SAP issues were part of the IPA and Trend Process for only one department. Since the SAP database contains action items that require station resources, it seems appropriate that these items be included in the IPA.
- The lack of cognitive binning by many departments during the refueling outage may be indicative of a lack of focus on trending and its ability to identify long term problems.

Areas For Improvement

The trending of equipment problems across systems continues to be an **Area For Improvement**. This is a continuation of the same issue identified during the 2004 and 2005 Assessments. FENOC has developed a draft procedure NOBP-ER-3916, "Component Health Trending Reports," which, when implemented, may assist FENOC with the identification of common component problems for all four nuclear plants in the FENOC system. The Team determined that this proposed new trending program has the potential to be an excellent tool but this issue remains an unresolved item for this report.

Conclusion

The Team rated the effectiveness of Program Trending as EFFECTIVE.

2.6 Effect of Program Backlogs

The Assessment Team performed an analysis of the effect of program backlogs on organizational and operational effectiveness. The Team's assessment consisted of:

- A review of program backlogs and the trend of the 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 open and unresolved work items at Davis-Besse. This was conducted through a series of interviews with plant staff and a review of the Davis-Besse databases, reports, Integrated Performance Assessments, and numeric summaries.

2.6.1 Program Backlog and Backlog Trend

Davis-Besse continued to reduce the backlog of open CRs and CAs. The implementation of the SAP database to track enhancement activities has proved "enhancement activities" are identified and transferred to the SAP database in accordance with NOBP-LP-2019, Rev. 2, "Corrective Action Program Supplemental Expectations and Guidance."

The 2006 Monthly Performance Report process has established a target for Davis-Besse's short-term CAs of 680 open CAs by December 31, 2006. The follow-on target is to reduce open short-term CAs to no more than 500 by December 31, 2007. These will probably require extensive support from staff and management to meet.

Review of Oldest Open SCAQ CRs

The August 21, 2006 MAOM was scheduled to review SCAQ Items Open more than 135 Days but the Team noted that, during the morning management meeting on August 21, 2006, the list of Open Significant Corrective Actions Open Over 135 days was not discussed in detail. One of the older items is part of CR 02-06178, which included a CA, coded PR to prevent a repeat condition, to replace the guide bars with ones which have gradual sweep on each end. The work is not projected to be completed until

mid-2008. This action appears to be aimed at improving outage schedule by correcting unreliable refueling equipment and it also appears that there were no underlying safety issues. The Team determined that the types of issues being raised with the refueling equipment had been raised several years ago and that the problems had not been fully resolved.

The Team noted that the licensee had established two key methods to focus on backlog: adding a list to the Monday MAOM of all SCAQ items open over 135 days and a numerical listing and bar chart in the Friday meeting package of the open site backlog documents (actions requiring work). The Team attended the morning management meeting on August 21, 2006 and determined that the station review of the "Open SCAQ Corrective Actions Over 135 Days of Projected Over 135 Days" was not effective since several CR CAs were several years old and there was essentially no discussion of them during the meeting.

The Team reviewed the average age of the oldest open CRs identified in the meeting minutes for the Monday MAOM. As demonstrated in the following table, the average age of the 10 oldest CRs continues to increase. As identified in Section 2.4 of this report, the Team concluded that the review of these old SACQ action items continued to be an **Area in Need of Attention**.

Age of Oldest Condition Reports

	2004 Assessment	2005 Assessment	2006 Assessment
Average Age of 10 Oldest CRs	382 days	540 days	830 days
Oldest Preventive Actions (PAs)	889 days	1,219 days (outage)	1,610 days (outage)
Oldest Remedial Actions (RAs)	691 days	862 days	1,224 days

Review of Old Condition Reports

The Team evaluated the following CRs.

CR 01-00430 RCS Boron Increase When Deborating Demin #1 Placed in Service

This CR was an SR event addressing a reactivity excursion when a deborating demineralizer was placed in service. The only action that was open in this CR was an ER with a due date of 5/31/04. The CA was extended to 5/31/06 because the plant conditions to support the ER would not exist until early 2006. In mid-2004, the CR owner decided to close the ER now based on an alternate verification method (procedure revision verification) because the required plant conditions were so far in the future. After some iterations with CARB on the documentation of the closure justification, the CA was closed on 8/24/05, CARB-approved on 10/11/05 and the CR was closed on 11/17/05.

The Team found the use of alternate closure methodology for this action to be acceptable and contributing to backlog reduction.

CR 01-01508 Equipment Lineups Affected Maintenance Risk Assessment

This CR was an SR CR written to evaluate the cause and establish CAs for an event resulting in the risk values remaining green when it should have resulted in a move to the yellow condition. The removal of a CCW heat exchanger from service was not correctly entered into the Safety Monitor risk assessment program.

Interim actions were taken when this was identified in 2001, including a Standing Order to have the Probabilistic Risk Assessment engineer validate the risk assessment prior to release of work by operations. Most CAs were completed in 2001 and 2002. The CR had been held open to conduct an ER.

This was granted an extension and the first ER was completed and accepted by CARB on 8/12/04, and the second ER was accepted by CARB on 11/21/05.

Subsequently, the station conducted a comprehensive Self-Assessment of the Risk Management process at the station during October, 2004. Several CRs were written to initiate suggestions for revising processes and procedures. The subsequent ER was completed in August, 2005 and concluded that there were no further similar issues with the risk management program or its implementation.

The Team found that although the CR was kept open until 2005, the October 2004 audit was comprehensive and effective.

CR 02-00502 Main Steam Safety Valve As-Found Test Results

This was an SR CR written due to the as-found setting found out of Technical Specification limits. The cause was attributed to bonding of the disc and seat over time due to similar materials. The corrective action was to replace the discs with pre-oxidized Inconel discs.

The Team concluded that this CR was still open because the licensee's plan to replace the discs on all twelve Safety Valves had not been completed yet. The licensee still has one more disc to replace in the next refueling outage.

CR 02-00784 Collective Review of the Nuclear Fuel Related CRs for Common Cause

The Team's review determined that Davis-Besse has completed new fuel design with an improved spacer in the latest outage. The only remaining action is an ER.

CR 02-02419 Untimely Corrective Actions to Address Corrective Action Program W LP2

The Team determined that this CR was opened June 2002. The last action was taken April 2005 but the CR was not closed until June 2006. The Team determined that this was untimely closeout.

CR 02-02494 RCP Seal Injection AOVs Are Installed Contrary to Design Assumptions Made During Startup and Pre-Operational Testing

The Team determined that the ER was completed 3/29/05, which concluded CAs were satisfactorily implemented and that they were effective in preventing recurrence.

CR 02-02575 Audit AR-02-FIRE P-01 Marginal Rating

This CR was an SR event addressing a marginal area for fire brigade training in a QA audit. The only action that was open was to resolve CARB rejection comments for the ER of CAs. There were three CARB rejections of the ER based on incomplete documentation of the ER process expectations.

The Team found the final closure acceptable and noted that CARB scrutiny was not affected by backlog reduction emphasis.

CR 02-02606 Implementation and quality of the Radiation Protection (RP) corrective action program is considered unacceptable

The ER was completed 5/27/04, which concluded CAs were satisfactorily implemented and that they were effective in preventing recurrence.

CR 02-02846 Containment Emergency Sump Issues

This CR was an SR event addressing containment sump deficiencies identified in 2002. The only CA open was the ER. The ER took credit for other ER's for CR's more focused on the root cause (lack of

managerial methods) of this CR. That root cause had already been addressed by several other similar events identified during the extended outage. The CARB approved the ER on 1/9/06.

The Team determined that ER closure was appropriate.

CR 02-02943 Containment Air Cooler Boric Acid Corrosion

This item was closed in an untimely manner. The root cause was identified and actions were assigned to address the root cause. The CR open 07/02/02, ER completed 06/22/05, last CA (#71) transferred to SAP system on 04/22/06; however, the CR was not closed until 07/13/06.

CR 02-04674 AFW Strainers

This CR identified that the Auxiliary Feed Water (AFW) strainers to protect the pump and turbine bearing coolers and the turbine governor coolers are designed to catch particles smaller (0.0470 inches) than those screened by the Service Water strainers (0.0625 inches), which introduced the potential for a common mode failure of both trains of AFW pumps and/or turbines by first clogging the strainers, then overheating the bearing coolers or governor coolers.

The Team's evaluation determined that CA-14 remains open to add AFW Pump high bearing temperature as an input to AFW Pump Trouble alarm (due 10/19/06). CA-15, to revise alarm procedures commensurate with CA-14, is open and due 6/30/08. This date does not appear timely in light of the due-date associated with CA-14.

CR 02-04914 Apparent Violation of 10 CFR 50.9, Completeness and Accuracy of Information

This CR was closed in an untimely manner. The CR was opened 08/28/02 and the last action was closed 12/20/2004; however, the CR was not closed until 07/07/2006.

CR 02-05548 Breakdown of Bechtel QA Program

This CR was an SR CR written on 9/5/02 due to an adverse trend on observations of the Bechtel 'cadweld' quality control inspections, qualifications, and supervisory oversight.

CAs included issuing a Stop Work Order pending CAs; and a back to work plan was put in place by Bechtel. The station QA organization provided follow-up and the CAs were all closed out by 2003. However, the CR was not closed until July 2006.

A related CR, 02-05591, was also closed out at the same time in July 2006 regarding an adverse trend in human performance with contractors in general.

The Team found the final closure was not completed until July 2006 and questioned why it appeared that this CR was kept open for 3 years with no apparent action.

CR 02-06019 Inspection Procedure EN-DP-01508 Findings for Inspection Area 603-4

The Team determined that the cause codes in CR did not completely match those in the root cause report and the NRC violation response.

CR 02-07409 Potential Loss of Service Water Due to Flooding

This CR was an SR event addressing service water pump room flooding issues identified in 2002. The only CA's open were the ER and implementation of an Engineering Change Request (ECR) to affect drawing changes. The ER took credit for other ER's for CR's more focused on the root cause (latent design issues) of this CR. That root cause had already been addressed by several other similar events identified during the extended outage. The CARB approved the ER on 1/9/06. The documentation for

closure of the CA that tracked issue and implementation of an ECR indicated that the CA was closed before full implementation (based on ECR "issue") of this remedial action. Subsequent follow-up determined that the ECR had been fully implemented.

The Team found the closure of this backlog CR satisfactory, noting the weakness of the ECR CA implementation as a stand alone document. The CA verifier and approver could do a better job assuring that the CREST documentation completely addresses the CARB approved action.

CR 02-07596 LIR-EDG-High Temperature Overall CR

CR, open 10/07/02, ER (last action) completed 06/29/02; however, the CR remains open pending Senior supervisory review of the report and final review of the CR pending closure.

CR 02-08530 PR/AOTC: Potential Programmatic Breakdown of the AOTC Program

This CR was held open to complete both an ER and a snap shot self-assessment. Both completed and appear satisfactory. Closed in July 2006.

CR 03-00363 CCW Pump 2 Tripped on Instantaneous Over Current and Instantaneous Ground

This CR was a carry-over from the old CR database - 1999-1648 - CCW Pump 2 tripped on instantaneous over current and instantaneous ground. Entered Tech Spec 3.8.1.1, 3.7.3.1, and 3.5.2 due to #2 EDG, #2 CCW Train, and #2 ECCS Train Components inoperable.

The Team determined that the ER was performed 1/18/06 according to revision 3 of NOBP-LP-2007, which concluded that the CAs were not effective. Condition Report CR 06-00069 was written as a result.

CR 03-04773 RCP/RTD Installation Not in Accordance With Vendor Manual

The Team determined that the last two CAs were completed in February 2005. The CR was not closed until July 2006 with no evidence of any other work on it documented. The Team believes that this demonstrates untimely closure.

2.6.2 Evaluation of the Impact of the Backlog and Backlog Trend

The numerical backlog of work items was declining and Davis-Besse had a program in place to monitor the continued reduction in backlog. While this was appropriate, the average age of the oldest open CRs continues to increase and interviews with Davis-Besse personnel identified that several Sections were dedicating their full resources to preparing for the 15th refueling outage. Few resources were planned to be directed toward backlog reduction until all work packages for 15RFO are completed. The continued progress in reducing the backlog is an **Area in Need of Attention**.

2.6.3 Summary

Several of the CR's reviewed stayed open for extended periods of time, some awaiting an action scheduled far in the future, others with no open activities. The Team noted that many of the long term CRs remained open simply because the staff did not focus on completing the items.

Areas of Strength

None.

Areas in Need of Attention

Progress in reducing the backlog still needs aggressive attention to continue to improve, especially for calculations, procedures, and drawings used for design, operations, and maintenance activities.

Areas For Improvement

None.

Conclusion

Overall, the Team rated the effectiveness of the backlog program as 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 was slowly going down, the average age was increasing.

2.7 Effectiveness of Internal Assessment Activities

The Assessment Team evaluated the effectiveness of the Davis-Besse Nuclear Power Station's internal assessment activities associated with the implementation of the CAP. This assessment included:

- A review of the results of Davis-Besse audits/reviews conducted since the 2005 Independent Assessment of the CAP that evaluated the effectiveness of the implementation of the CAP.
- Interviews with individuals involved with the oversight/audit function to determine the effectiveness of these efforts and the responsiveness of Davis-Besse management and staff to the issues raised.
- An evaluation of the effectiveness of Davis-Besse's self-assessment capability with regard to the CAP, and the aggressiveness of the Davis-Besse management and staff in responding to self-assessment findings.
- A review of other internal assessment activities that focused on CAP performance.
- An evaluation of the effectiveness of the Davis-Besse safety review committees' oversight of the implementation of the CAP.

2.7.1 Evaluation of Davis-Besse Oversight/Audit of the CAP

To evaluate the effectiveness of the Davis-Besse oversight of the CAP, the Team reviewed the results of oversight audits/reviews conducted since the 2005 Independent Assessment that evaluated the effectiveness of the implementation of the CAP. This review was completed to determine if the audits/reviews were comprehensive and whether effective actions were taken to correct problems or weaknesses identified. The Team also interviewed at least four individuals involved with the Oversight/audit function, as well as the audited organization, to gain their insight on the effectiveness of oversight efforts and the responsiveness of Davis-Besse management and staff to the issues raised.

The Team reviewed three quarterly Oversight audit reports completed since the last Independent Assessment. Focusing on the oversight of CAP implementation, the Team found that the audits covered a broad spectrum of CAP activities, and the audit process included a 2-year reconciliation to assure that all CAP performance areas were audited. These reports contained well-supported findings for individual areas audited and also provided an assessment of cross-cutting areas such as procedure adherence. The Oversight audit findings were consistent with the Team's findings in the areas that were audited and CRs are tracking Davis-Besse response to the findings, most notably, the need for more progress in the trending program (see Section 2.5 of this report).

The Team also interviewed numerous individuals involved in the audit process to ascertain their insights on the value-added by the Oversight processes and the responsiveness of Davis-Besse staff to oversight findings. These individuals covered a spectrum of line and Oversight managers, auditors, and CAP

administrators. For a list of individuals interviewed, see Section 5 of this report. In general, the staff was receptive to Oversight findings and perceived that the quality of the observations has been improved by the collation of similar findings and documentation of the importance of each finding. The Oversight staff believed the line staff was responsive to audit findings within the context of the current workload, but believe some actions could be more timely as the burden of the current backlog diminishes. Resolution of trending program deficiencies was cited as an example.

The Team validated these insights through review of Oversight generated CRs and confirmation of FENOC findings during Team assessment of CAP performance areas. Two instances were identified where the RP group's response to oversight CRs was not sufficiently self-critical. In one case (CR 06-01503), several personnel contaminations occurred in "non-posted" radiological areas. An adverse trend was rejected and no action was taken. The Team noted that focused decontamination was a typical industry response to contamination events even in non-posted areas. In the second case (CR 06-01697), RP initially rejected an adverse trend associated with workers entering HRAs under the wrong RWP. A proper response to this issue was eventually taken in response to a later CR 06-02481. The Team also noted that these deficiencies were highlighted by a Davis-Besse snapshot self-assessment (DB-SS-06-11) of the 14RFO outage issues. The CR 06-01503 analysis is an additional example of the **Area in Need of Attention** in CR evaluation quality, thoroughness, and documentation described in Section 2.3.

2.7.2 Evaluation of the Davis-Besse Self-Assessment of the CAP

To evaluate the effectiveness of the Davis-Besse self-assessment of the CAP, the Team assessed the depth and quality of self-assessments and the scope and timeliness of corrective actions taken for identified findings. The Team reviewed five self-assessment reports completed since the 2005 Independent Assessment to determine the depth of review, the level of criticality, and the significance of the findings. During this assessment, several other self-assessment evaluations applicable the CAP were identified and those findings were also evaluated by the Team.

The Team evaluated the aggressiveness of the Davis-Besse staff in correcting self-assessment findings on the implementation of the CAP. This included determining whether the CAs for the reviewed self-assessments were adequate, timely, and properly prioritized; and whether ERs were ensuring the desired results.

Davis-Besse performed planned (focused) and reactive (snapshot) self-assessments. The focused self-assessment schedule was derived annually, based on management's collective judgment of priority needs. Senior site and corporate management participation in this process reinforced management support of the self-assessment program. "Snapshots" were performed as effectiveness verifications, prior to significant outside inspections, or when a manager perceived the need for performance adjustment. While the number of focused assessments has remained about the same, the Team noted that the number of snapshots has increased in 2006. This reflected an emphasis on self-criticality and management support of, and involvement in, the self-assessment process. The Team found the currently selected self-assessment topics appropriate, but noted that there was no "master" topic list from which to judge the comprehensiveness of self-assessment coverage over the long term. In addition, an industry best practice is to perform a periodic effectiveness evaluation of the self-assessment program. The Team did not find such an ER conducted during the past 2 years.

The Team reviewed the following self-assessment reports:

DB-SS-05-07 Snapshot Self-Assessment of Regulatory Compliance Procedure Compliance

The self-assessment reviewed 255 CRs assigned to the Regulatory Compliance Section over the past 2 years. These CRs were filtered for those with procedure compliance implications and sorted by

occurrence date procedure violated. The assessment found that the errors were primarily with in-house procedures and that the number of events had declined in the last year. Actions taken previously by Regulatory Compliance Supervisors were deemed appropriate and observed to be taking effect.

The Team noted that the self-assessment was comprehensive and reinforced the remedial actions being taken by Section Supervisors.

DB-SS-05-20 Snapshot Self-Assessment of Corrective Action Program Implementation – 4th Quarter, 2005

The Self-Assessment reviewed the assignment of CA due dates, maintenance notifications requiring CR initiation, and the appropriate use of ES CAs during the 4th quarter of 2005. The assessment identified an AFI in each area reviewed; indicating that staff implementation of CAP requirements was not at the expected level. CRs 05-05299, 05894, and 05895 were generated to address the AFIs.

The Team noted that the self-assessment was a critical review of a number of plant CAP activities and focused management attention on the need for greater attention to detail in CAP implementation within Davis-Besse staff.

DB-SS-06-02 Snapshot Self-Assessment of Corrective Action Program Implementation – 1st Quarter, 2006

The Self-Assessment reviewed a sample of closed CAs, Maintenance Notifications, Operations logs, CAQ CRs categorized as CF, and the CA backlog during the 1st quarter of 2006. The assessment identified only one Area For Improvement for a CA that was not implemented as written and not approved by a Director as required by procedure. CR 06-02303 was generated to track the Area For Improvement.

The Team noted that the self-assessment completed a comprehensive review of a broad area of plant activities and only identified a single implementation error. This indicated a heightened attention to detail within Davis-Besse staff.

DB-SS-06-04 Snapshot Self-Assessment of Corrective Action Program Implementation – 2nd Quarter, 2006

The Self-Assessment reviewed a sample of closed root cause CAs, CRs categorized as closed hardware repair and use-as-is dispositions, the completion of COIA and INPO AFI CAs, and the implementation of LACE evaluations during the 2nd quarter of 2006. The assessment identified three AFIs regarding the implementation of the newly created LACE. CRs 06-02528, 02580, and 02583 were generated to address incomplete evaluator training/certification, missing extent of condition documentation and missing CR analyst reviews.

The Team noted that the self-assessment completed a comprehensive review of several CAP activities and only found problems symptomatic of a newly implemented change in the CAP process. This indicated that CAP implementation was generally good but heightened oversight of the LACE process was appropriate.

DB-SS-06-11 Snapshot Assessment of D-B 14RFO Outage Issues Compared to FENOC as a Whole and to Evaluate Whether Trends of CRs are Identified for Resolution of Program/Process Weaknesses

Davis-Besse's performed a post-refueling outage self-assessment to compare Davis-Besse performance against other FENOC plant outages to identify program and/or process weaknesses. Their review of CR 06-01503 (Nuclear Oversight identified adverse trend in area of workers contaminated in non-posted

areas) accepted that the associated cause evaluation concluded that there was no adverse trend and no CAs were pursued. Similarly, the assessment report states that a Nuclear Oversight identified weakness (CR 06-01697, written on 4-7-06) associated with workers entering high-radiation areas (HRAs) under the wrong RWP was evaluated as not representing an adverse trend (and therefore, no associated CAs). In this case, there was a subsequent CR written by the RP organization regarding HRA entries (CR 06-02481, written on 6-6-06) in which the trend was analyzed and CA assigned. It is not clear what prompted this change.

The assessment identified that CRs for four conditions discovered during BACC inspections had two-part CAs that were only partially implemented with the associated CRs ready for closure. The self-assessment resulted in initiation of a new CR (06-02684) to resolve the CAP issue related to inadequate corrective action implementation.

The Team determined that this self-assessment was a commendable effort to improve fleet-wide outage performance. The Team noted the missed opportunity to resolve why the RP Section was not more responsive to the Oversight findings on personnel contaminations and HRA entries.

DB-SS-06-13 Snapshot assessment of human performance cross-cutting issues

Davis-Besse performed a self-assessment to detect trends based on human performance cross-cutting events to assure that appropriate CAs were implemented such that additional outside focus on this area was not justified.

The assessment report provided great detail on each individual issue and what actions have been taken, and appropriately concluded the need to take specific action to target improvement in the area of "attention to detail." The report cited actions currently being taken, including creation and staffing of a new position titled Fleet Human Performance Manager, who is on loan from INPO and is tasked with developing human performance initiatives to improve overall human performance within the FENOC fleet.

The Team determined that this was a thorough and valuable self-assessment effort.

DB-SS-06-26 Davis-Besse Condition Report Common Cause Review

The self-assessment performed the first common cause roll-up for the IPA cycle ending 6/30/06. Two trends of causes were identified, but the report was still in draft form late in August.

The Team determined that the compilation of individual IPA findings was a good practice that revealed significant site-wide findings. However, the delay in publishing these findings, and therefore any remedial actions required, reduces the effectiveness of this self-assessment effort.

Overall, the Team concluded that these self-assessment reports were comprehensive, with findings well-justified. CAs for self-assessments were administered by writing CRs for the findings, thus required actions are prioritized consistent with other adverse conditions, and tracked to closure either in CREST or SAP. With the exception of the specific weaknesses detailed above, the Team found Davis-Besse's self-assessment performance to be improved.

2.7.3 Review of Safety Review Committee Activities

To evaluate the effectiveness of the safety review committees' oversight of the implementation of the CAP, the Team reviewed committee minutes, audits/reviews, or other actions initiated by the committees as they relate to risk significance or major corrective action successes or failures.

From the minutes of the last three Company Nuclear Review Board (CNRB) meetings, the Team selected issues raised by the CNRB to identify, assess, and correct areas of weakness. The Team performed an independent review of these issues to evaluate the effectiveness of the Davis-Besse response. The Team also reviewed audits/reviews of the CAP conducted within the last 12 months under the cognizance CNRB to determine if the audit/review findings were consistent with such external assessments as INPO, NRC, and consultants. The results of this review are detailed in Section 2.7.1, above. The Team reviewed the CRs and CAs for several CNRB/audit initiated findings to determine the effectiveness of the CAP in resolving these issues. These issues are discussed below.

Based on this review, the Team concluded that the CNRB was being critical and was highlighting potential safety issues for site and corporate management attention. The station staff through the CAP and other activities had effectively responded to the issues raised. The Team found that the entire record of actions taken in response to CNRB issues had not been integrated with the CAP such that an independent CR review could reach the same conclusion.

Review of CNRB Meeting Minutes for November 11, 2005

This meeting concluded that the top two issues included integration of Operations configuration and tagging controls and the preparations for the upcoming refueling outage. The CNRB noted a decrease in the backlog of site work and an increase in the quality of RCEs and ACEs.

Review of CNRB Meeting Minutes for February 10, 2006

The minutes of this meeting focused on three events or conditions that had not been pursued as thoroughly as they should have: (1) turbine building crane near miss event, (2) the root cause for SW 38 out of position not including contributing causes, and (3) CR 06-00019, over pressurization of the moisture separator demineralizer. The CNRB concluded that the management team was "not in the right place yet and was not exhibiting a self-critical behavior."

The 2006 Team reviewed a July 10, 2006, memorandum from the site VP to the CNRB chairman which described several actions the site leadership team was taking to determine gaps to excellence, assess obstacles, and clarify roles and responsibilities. Examples were given of self-critical actions including a recently completed integrated performance assessment resulting in approximately 38 CRs identifying areas for improvement and those in need of attention.

Attendance and Review of CNRB Meeting of July 14, 2005

This CNRB meeting concluded that discussion of several emergent containment issues lacked depth and perspective:

- Copper oxide inside containment.
- Containment accessibility, low oxygen levels.
- Small reactor coolant leak.

This meeting also highlighted several other issues including operations shift schedules, outage preparations, and union/management issues in the Security Section. The CNRB recommended that site management fully understand the situation and adjust actions promptly.

The Team followed up on several of these issues to verify that corrective actions were taken. Davis-Besse staff indicated that the low oxygen levels were caused by a nitrogen system valve leak and that once fixed, the atmosphere returned to normal. A routine containment entry was planned for the second week of this assessment.

The Team conducted extensive follow-up of the “Green Dust” issue inside containment because of the level of concern expressed by the CNRB. CNRB members stated that “...the plant needs to get hold of this issue... We cannot afford to let this go on like the Boric Acid issue.” The Team conducted a key word search of the CREST system to generate all CRs related to this issue. The following CRs were subsequently reviewed:

- CR 03-07160 Control of dust /dirt in Containment, (Categorized as NF)
- CR 05-00293 COIA-ENG-2005 Green Dust on 565 During Initial CTMT BLDG Initial Entry, (Categorized as CF)
- CR 05-03334 RE4597AA Flow Indicator Getting Cloudy, (Categorized as NF)
- CR 05-04988 Analysis of Material collected from RE4597AA, (Categorized as CF)
- CR 06-02422 2005 Engineering Assessment Copper Dust ANA, (Categorized as CF)

The Team concluded that the station eventually performed a thorough evaluation of the identification of the green dust (determined to be a copper salt formed from corrosion of the containment air coolers) that it did not appear to be an immediate safety issue and that monitoring was taking place to assure that it did not become a significant issue. The Team reviewed records of scanning electron microscopy and energy dispersive spectroscopy from BWXT laboratories, acceptable Reactor Coolant System (RCS) copper concentration limits from Areva, and independent review of actions taken.

The Team, however, noted several comments regarding the site’s actions:

- The CR records have conflicting statements regarding whether or not the origin of the green dust was from the corrosion of the old and new containment atmosphere coolers along with wet boric acid environment i.e. an acidic containment or the passivation of the new replacement coolers.
- The CRs frequently make reference to a Problem Solving Team which was tasked with taking actions to evaluate the causes and assign CAs. Following discussions with site engineers, the Team determined that there was more than one licensee Problem Solving Team. As a direction from site management, an additional independent review team was also created to assure adequate actions were being taken and the results were briefed to site management. In addition, it was not clear where the Problem Solving Teams reports were located or filed. When the 2006 Assessment Team requested a briefing, the site engineers produced a “Green Dust in CTMT” folder with several additional records of investigation summaries, etc. that provided additional explanation of the extent of FENOC and independent industry follow-up, as well as records of briefings to the site management team. The licensee provided the Team with an additional CR, 05-04313, Documentation of Operational Decision-Making Team Report, which provided the documentation of the Team initiated on 7-28-05. The report was dated August 5, 2005 and provided a detailed summary of five issues in containment including the green dust, RCS leakage, oxygen levels, fire detectors, and sump pump out rate. This is an additional example of the **Area in Need of Attention** in CR evaluation quality, thoroughness, and documentation described in Section 2.3.
- The 2006 Team noted that CR 05-04313 states that this was the “final report” of the Operational Decision – Making Team; however, another site team was being formed on 8-8-05 to further address the copper dust phenomenon. The 2006 Team concluded that the site should assure that all reports and other documents associated with the CAP be included with the CRs or at least referenced to where they were filed elsewhere and could be found.

- It was not clear in the CR 05-04988 record documentation whether there was an appropriate preventive action taken when the most “likely” cause of fogging of the radiation flow element RE4597 AA from a sticky silicon compound was the inappropriate use of Dow compound DC 55 grease on the sample pump skid during past maintenance. Following questions by the Team, the system engineer stated that he would add CAs to the CR data base which would document the instructions given to the three technicians who were qualified to perform maintenance on that equipment. These instructions were presumably that they should not use any materials not approved for that special equipment. This is an additional example of the **Area In Need of Attention** in CR evaluation quality, thoroughness, and documentation described in Section 2.3.
- It was not clear whether earlier follow-up to CR 03-07160, initiated by a RP technician due to an accumulation of dust and dirt in the containment, would have provided the station management with more prompt assessment of the copper corrosion issue with the containment air coolers, etc. and prevented the CNRB, as well as the COIA of Engineering Programs, from determining that additional management attention was warranted. By the time that the close-out CAs were documented, the “green dust issue” had been acted upon.

Conclusion

The Team concluded that the CNRB was being critical, was highlighting potential safety issues for site and corporate management attention, and was effectively being responded to by the station staff based on the sample of resulting actions and efforts.

Summary

The Assessment Team reviewed the effectiveness of Davis-Besse’s internal assessment of the CAP including oversight audits, self-assessments, and CNRB meetings. Davis-Besse is identifying and correcting most of its CAP weaknesses internally. Some minor discrepancies were identified.

Areas of Strength

The team considered the management support of and involvement in the self-assessment process to be a positive reinforcement of the performance improvement culture.

Areas in Need of Attention

The three ANAs below are also summarized as **Areas in Need of Attention** in Section 2.3.

- Documentation of CAP follow-up to CNRB findings regarding copper oxide in containment did not include all documentation from the multiple “Problem Solving” and “Independent Problem” teams, which would have improved the CR documentation.
- The RP group was not self-critical enough in response to two oversight observations of adverse trends in personnel contaminations and incorrect HRA entry.
- Document of CAP follow-up to a clogged radiation detector (CR 05-04988) did not support an independent review reaching the conclusion that the CAP resolution of the issue was satisfactory. No discussion of extent of condition or counseling of maintenance staff in using unauthorized materials was included in the CA.

Areas For Improvement

None.

Conclusion

The Team rated the Effectiveness of Internal Assessment Activities at Davis-Besse CAP as *EFFECTIVE*.

2.8 Evaluation of Open Actions Taken in Response to NRC Special Team Inspection – Corrective Action Program Implementation – Report 05000346/2003010

The Team reviewed the status of the open CATI CAs as of July, 2006. According to the list provided by the site in preparation for the assessment visit, there were six open CAs associated with three CRs. These were associated with the following issues: lack of vendor data for switchgear at high temperatures, calculation quality, and fuse sizing for motor operated valves. The following provides the current status of the licensee response to the 2005 Independent Assessment Report and those original NRC CATI inspection items.

2.8.1 Background

The 2005 Team had been concerned that very little action had been taken on the remaining items as of July 2005 and that CAP effectiveness would be adversely affected by continuing to utilize resources to track and report the backlog if no further actions were planned.

Response

The licensee had initiated CR 05-04771 on August 12, 2005, to document the 2005 Area in Need of Attention and to assess the remaining open items for regulatory significance, as well as for where enhanced completion priority was warranted. The affected site managers acknowledged that if they were not going to implement actions related to a non-cited violation, then they would be obligated to respond back to the NRC with the basis for the disagreement. As of December, 2005, there were eight open items tracking eight non-cited violations. The licensee had established due dates ranging from January to December 2006 to complete these actions and had verified that resources were available to accomplish them. The Engineering Director indicated that the site had plans to complete all actions regarding these items.

2.8.2 Open Items

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

This action was assigned to assure proper protection for the AFW System by initiating Engineering Change Request 03-0474 to change the power and control fuses to the proper sizes. Licensee operability evaluations indicated no operability concerns for either circuit.

Two CAs were opened: one to track initiation of the ECR and one for implementation.

As of July 2006, this ECR was open and was assigned to an engineer to work on with a due date of August 30, 2006.

(The Team noted that an associated action had been completed in July 2006 (CA02-00412) to update a calculation for voltage drops C-EE-002.01-010 rev 30. This concluded that the voltage drop was small and the action was closed.)

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

The CA was initiated to review the Davis-Besse design specification related to ambient temperatures. Consideration was also given to updating the Updated Safety Analysis Report (USAR) with design input

information wherever applicable. The licensee also planned to revise the procurement specifications as a remedial action but recognized that procurement procedures refer to the USAR, which was updated.

The Corrective Action Number 2 remains open to update the USAR with a due date of March 2007.

CR 03-06907 CATI: Calculation Quality Collective Significance Review

This CA was generated to identify what the NRC saw as a lack of stand-alone engineering calculations to support engineering products. This was considered a lack of attention and a lack of engineering rigor. The CR resulted in 16 CAs of which three remain open: (1) calculations C-EE-015.03-007, (2) C-EE-002.01-014, and (3) C-NSA-052.01-017.

The Team noted that the licensee intended to update these calculations and had scheduled them for completion between August 30, and October 30, 2006.

OPEN Non-Cited Violations (NCVs)

CATI NCV 03-010-08 Failure to Demonstrate HPI Pump Minimum Recirculation Time

A new spare pump has been approved and the licensee has scheduled this item for completion by December 2006.

CATI NCV 03-010-17 Lack of Design Basis Calculation to Support Service Water Single Failure Assumption

The set point basis for the two pressure switches has been incorporated into calculation C-NSA-011.01-016, R00.

CATI NCV 03-010-20 Borated Water Storage Tank Leakage Calculation Affects Dose Calculation

The licensee agrees that this calculation needs to be revised and has scheduled the action with a due date of December 2006.

CLOSED CRs; Actions Not Necessarily Completed

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

This action was completed. FENOC accepted an updated calculation from Framatome, incorporated the calculation into a Davis-Besse calculation, and approved it for inclusion into the USAR.

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

This CR was closed. The remedial action included a revision to the USAR as well as the Design Criteria Manual to address when it was acceptable to use 125 % of full load current. The CR was closed with the USAR updates made; however, the update to the Design Criteria Manual had not been completed and was being tracked to a "notification."

The Team determined that the action to update the Design Criteria Manual should have been completed before the CR was closed out. The process of closing out CRs for CAQs to a "notification" appears to be an **Area in Need of Attention**.

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

This CR was closed. Action 12 was to replace the overload heaters in the circuit breakers for approximately 20 Motor Control Center loads. The site re-classified this as an enhancement action since they determined that the overload heaters would not cause any failures. This corrective action was not completed but was transferred to the "Notification" tracking system.

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

This CR was closed. The described corrective action to create a station black-out diesel generator (SBODG) load calculation table was determined not to be needed; the operation is controlled manually by procedure and is limited to 2865 kW. The loads are listed in a table which is attached to an engineering calculation. The licensee determined that this original action was not needed.

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

This CR was closed. However, the CA was not completed.

Another CR was written, CR 06-00327, with CA #2 classified as a remedial action RA, because cable ampacity evaluations for higher room temperatures were not performed. The purpose of this CA is to ensure that the cables in the EDG rooms are addressed in the new calculation addressing the concern in CA 03-05739.

The Team noted that this action, CA 06-00327-02, was scheduled to be completed in November, 2006.

CR 03-06475, CATI Evaluation of Overloads on MOVs

This CR is closed. ECR 03-0472 implementation was complete in RFO 14 as of 4-16-2006. The original scope included three valves but was reduced to only one since the temperature used for two cables was not indicative of actual conditions. Implementation of ECR 03-0472 was reclassified as an enhancement vs. a remedial action and was implemented by changing the breaker to a more suitable size for protection against postulated overloads.

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

This CR is closed but the action was not completed.

This action was opened to implement the recommendations of the evaluation performed in CA 03-06497-01, namely to revise the alarm procedure for providing additional heaters for the EDG rooms. Activity tracking item 0042137 has been initiated to track completion of the procedure.

2.8.3 Summary

The Team evaluated that the licensee had taken action in response to the 2005 Area in Need of Attention. Although the licensee had indicated in 2005 that, for the most part, it was likely that no further action would be taken on many items since they were considered enhancements and not necessarily required actions, a re-review indicated that certain actions were deemed appropriate since they were associated with NRC non-cited violations. *The licensee conducted a review of the CATI-related open corrective action items and their regulatory significance as well as to assure that resources were assigned and due dates established to be completed by the end of 2006.*

The 2006 Team determined that, in some cases, it may have been more efficient to revise the procedure vs. creating all the analysis and tracking records in the SAP.

Areas of Strength

None.

Areas in Need of Attention

It appears that the conversion of many actions from the CREST data base into the SAP Activity tracking system is an **Area in Need of Attention**. This was not solely for CATI items but was reinforced by CATI

corrective action follow-up. The Team did not conclude this due to any specific immediate safety condition but due to several factors:

- The licensee staff was already adding increased attention by providing several resources each day to reviewing the transition of actions from CREST to SAP,
- The COIA Team had difficulty in implementing the COIA Plan when evaluating whether proper actions had been implemented and finding that the CR had been closed with no actual action other than to fill out additional documents to track the items in another system, and
- Several licensee staff stated during interviews that the SAP system was not user friendly and they had difficulty using the system.

Areas for Improvement

None.

Conclusion

The Team rated the Evaluation of Open Actions Taken in Response to NRC Special Team Inspection, Corrective Action Program Implementation – Report 05000346 / 2003010, as EFFECTIVE.

3.0 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 Corrective Action Program (CAP) through document reviews, observations, and interviews. The Team observed several Management Alignment and Ownership Meetings (MAOMs), two Corrective Action Review Board (CARB) meetings, and Senior Leadership Team (SLT) Meetings. The Team also observed on-going 2-day CAP training for supervisors. The Team reviewed Condition Report (CRs), Apparent Cause Evaluations (ACEs), Root Cause Analyses (RCEs), Trend Reports, Self-Assessment, and other assessment reports. The Team also interviewed CR initiators, evaluators, and management personnel. The data obtained was evaluated in order to identify Areas of Strength, Areas in Need of Attention (ANAs), and Areas for Improvement (AFIs).

The following general standards of acceptable Corrective Actions (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, ANAs, 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. ANAs are not normally identified or addressed in action plans submitted to the U.S. Nuclear Regulatory Commission (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.

3.2 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 ANAs. 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 ANAs. 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 ANAs. 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.

4.0 REFERENCES

4.1 Persons Interviewed during this Assessment

The following is the list of individuals interviewed during the 2006 Independent Assessment of the Corrective Action Plan (CAP) Implementation at Davis-Besse Nuclear Power Station between August 14 and August 25, 2006.

Name	Position
SUPERVISION, OVERSIGHT, AND TRAINING	
Regina M. Amidon	Supervisor – Nuclear Employee Concerns
Mark B. Bezilla	Vice President – Davis-Besse Nuclear Power Station
Edward Chimahusky	Supervisor – Performance Assessment
Clarence Detray	Nuclear Oversight Assessor
Raymond A. Hruby	Manager – Fleet Oversight
Rick Jarosi	Employee Concerns Program
David R. Kline	Manager – Site Protection
Steve Loehlein	FENOC Director, Corrective Action Programs & Assessments
Tom Simonetti	Training Supervisor
Paul Southerland	FENOC Preventive/Predictive Maintenance Engineer
Henry Stevens	Fleet Corrective Action Program Manager
Dave R. Wahlers	Supervisor – Compliance Audit
Dale R. Wuokko	Supervisor – Nuclear Compliance
B. Zibung	Nuclear Oversight Staff
SITE PERFORMANCE IMPROVEMENT	
Brian T. Hennessy	Supervisor – Nuclear Performance Improvement
Robert W. Schrauder	Director – Performance Improvement
Mark A. Trump	Manager – Site Training
Tom Vietch	Acting Manager – Site Regulatory Compliance
ENGINEERING	
John J. Grabnar	Director – Site Engineering
John Hook	Manager – Design Engineering (Acting)
Scott Plymale	Manager – Plant Engineering (Acting)
Jane Mallernee	Adv Nuclear Specialist, Engineering Configuration Control Group

Name	Position
Allen McAllister	Independent Team Leader
Gary Melssen	Staff Nuclear Engineer – Maintenance Rule Coordinator
Jon Otermat	System Engineer (CAC)
Dennis Schreiner	Sr. Consultant – Technical Services Engineering
MAINTENANCE	
Brian D. Boles	Director – Site Maintenance
Dave Dallas	Lead Mechanical Maintenance Planner
John C. Dominy	Supt of Planning and Support
Gary H. Kendrick	Manager – Site Maintenance
Lucas Ring	Maintenance Engineer
Henry Stevens	Manager of Corrective Actions
Doug Whalen	Supervisor, Cycle Management
OPERATIONS	
Barry S. Allen	Director – Site Operations
Nick Buchler	Non-Licensed Operator (NLO)
Bob Lakis	Senior Reactor Operator (SRO)
Pat J. McCloskey	Manager – Site Chemistry
Doug Nobel	Radiation Protection
Randy L. Patrick	Supervisor – Operations Services
Bill Rayburn	Chemistry
Dave Witt	Reactor Operator (RO)
CONTRACTORS	
Mike Wood	Contract Electrician
Keith Bogan	Contract Electrician
ROOT CAUSE EVALUATORS	
Kevin Browning	Senior Nuclear Specialist
Ken Filan	Staff Nuclear Specialist
Aaron Quadeven	Root Cause Evaluator

4.2 Condition Reports

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

CR Number	Title
01-00430	Probability Safety Assessment Improvement
01-01508	Equipment Lineups Affected Maintenance Risk Assessment
01-01687	AFW Status Changing to Category (A)(1) Per Maintenance Rule
02-00502	Main Steam Safety Valve As-Found Test Results
02-00784	Collective Review of The Nuclear Fuel Related CRs for Common Cause
02-01438	Potential Release of Hot Particles to Other Sites
02-02419	Untimely Corrective Actions to Address Corrective Action Program W LP2
02-02494	RCP Seal Injection AOVs Are Installed Contrary to Design Assumptions Made During Startup and Pre-Operational Testing
02-02575	Audit AR-02-FIRE P-01 Marginal Rating
02-02606	Implementation And Quality Of The Radiation Protection (RP) Corrective Action Program is Considered Unacceptable
02-02846	Containment Emergency Sump Issues, LER 2002-005
02-02943	Containment Air Cooler Boric Acid Corrosion
02-04674	AFW Strainers
02-04914	Apparent Violation Of 10 CFR 50.9, Completeness and Accuracy of Information
02-05548	Breakdown of Bechtel QA Program
02-06019	Inspection Procedure En-Dp-01508 Findings For Inspection Area 603-4
02-07409	LIR-SW: Potential Loss Of All Service Water Due To Flooding In The SW Pump Room
02-07596	LIR-EDG-High Temperature Overall CR
02-07808	LIR-RCS-Appendix R- RCS Makeup
02-08530	Pr/AOTC: Potential Programmatic Breakdown Of The AOTC Program
02-10141	Snubber Program Focused Self Assessment 2002-0083 Findings
03-00363	CCW Pump 2 Tripped On Instantaneous Over Current And Instantaneous Ground
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 On Bus E1 And F1
03-04773	RCP/RTD Installation Not In Accordance With Vendor Manual

CR Number	Title
03-05715	CATI: Security Building D/G Does Not Have A Load Table
03-05739	CATI: Deficiencies In Component Evaluation For Edg Room High Temperature
03-06475	CATI: Evaluation Of Overloads On Motor Operated Valves
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
03-07049	Disc Pins May Have Entered The RCS
04-05920	COIA – OPS: Cause Determination
04-06011	COIA - CAP – 2004: Corrective Action Timeliness Questioned (AFI)
04-06017	COIA – CAP - 2004: Unsatisfactory Corrective Action Program Trending
04-06023	COIA – CAP - 2004: Cap Performance Indicators Improvements
05-03779	INPO OE: Report Not Fully Distributed
05-03842	COIA – CAP – 2005 CR 04-06498 SCAQ Preventive Action Verification
05-03845	COIA – CAP – 2005: CR Determined to be a MRFF Not Upgraded to Apparent Cause
05-03961	COIA – CAP – 2005: CR 04-06498 Root Cause Evaluation Observations
05-03965	OE - Beaver Valley MOV Failure Due To Damaged Gear Teeth
05-03974	SER 2003-05 Weakness In Operator Fundamentals
05-04110	INPO Technical Report On Circuit Boards
05-04220	Feed Water Heater 1- 4 Normal Drain Line Pipe Hanger Spring Cam Is Uncoupled
05-04407	COIA – CAP – 2005: CR Evaluation And Corrective Action Completion Timeliness
05-04408	COIA – CAP – 2005: CR Root Cause & Apparent Cause Evaluations Inadequate
05-04409	COIA – CAP – 2005: CR Age Of SCAQ/CAQ Preventive & Remedial Actions
05-04411	COIA – CAP – 2005: Equipment Trending Below Industry Standards
05-04414	PY CR 2005- 6616 Confirmatory Screening CR Misclassification
05-04487	Labeling Enhancement Requested For Inverters
05-04556	Fluke Model 189 Digital Multimeter
05-04563	OE - Beaver Valley NCV For Not Placing An Inoperable OTDT Channel In The Tripped Condition Within 6 Hours Required By TS LCO Due To A Maintenance Procedure Error Which Left Switches On A Circuit Card In The "Off" Position
05-04672	NRC IN 2005-24: Nonconservatism In Leakage Detection Security
05-04769	COIA – CAP - 2005: CR Categorization/Evaluation Weaknesses
05-04770	COIA – CAP – 2005: Repeat Event Guidance Weakness
05-04771	COIA – CAP – 2005: CR-CA Backlog Potential Effect On Effectiveness

CR Number	Title
05-04773	COIA – CAP – 2005: Lack Of Smarter Corrective Actions
05-04774	COIA – CAP – 2005: CR Evaluation Weaknesses
05-04777	Minor Hardware Deficiencies On EDG 1
05-04845	In 2005-25 Inadvertent Trip Due To Tin Whisker
05-04854	PCR-Tracking Ops Procedure Revision For ECR 05-0089
05-05012	Correction To OS-481 Sh1
05-05078	Correction to DBB-FP-04038 (10% Penetration Seal Visual Inspection)
05-05184	Boron Injection Flowrate Calc. 034.009 Non-Conservative Assumptions
05-05278	Fuel Integrity Monitoring Did Not Identify Cycle 14 Fuel Defects
05-05316	Potential Deficiency/Enhancement Opportunity In Mov Pm's
05-05334	WW 0541 Inadvertent Risk Entry
05-05349	Check Valve Found In Outlet Of Moisture Trap (MT 9) In C3801 For AE 5027
05-05395	INPO 2005 Evaluation - AFI PI.2-1 (Cause Analysis)
05-05396	INPO 2005 Evaluation - AFI PI.2-2 (Timeliness/Aging)
05-05397	INPO 2005 Evaluation - AFI PI.3-1 (Use Of OE)
05-05427	Adverse Trend Related To Recent Door Issues
05-05444	Oversight Concerns Related To SAP Notifications Not Identified In CR Program
05-05524	Findings From FA-SA-05-02 Conduct Of Operations/Reactivity Management Fleet SA
05-05559	Boric Acid Pumps Operability Standing Order 05-013
05-05622	Fire Suppression System Pressure Gauges Are Regularly Out Of Tolerance
05-05650	SW 38 Found Out Of Position Closed
05-05689	Assessment Of SAP Activity Tracking Generation Process
05-05822	Corrosion Of Q And Seismic I Components In The Service Water Tunnel
05-05894	DB-SS-05-20 Corrective Actions Due Date And Action Type Assignment Not Per NOP
05-05895	DB-SS-05-20 Condition Reports Not Written For Maintenance Notifications
05-05990	Ch 1 Gammametrics Has Failed.
06-00067	Re-Evaluate The Need To Perform As-Found Service Water Flow Balance Test
06-00076	Risk Profile For Work Week 602 Omitted CV 2001 Work
06-00154	#2 EDG Broken Parts In Rocker Arm Area
06-00207	Wrong Load Valve Used In Calculation Addendum
06-00338	AVI Personnel Minor Injury

CR Number	Title
06-00550	Turbine Plant Cooling Water Pump 3
06-00583	Further Evaluation Actions Regarding EDG #2 Tapping Noise On 1/13/06
06-00624	Water Spray On Motor Control Centers E11B And E11C
06-00730	Violation Of ISDP-08512
06-00773	BACC: Steam Generator 1-2 Upper Manway
06-00857	Violation Of NOP-LP-3005 (FENOC Confined Space Entry Program)
06-00923	Emergency Preparedness Zone (EPZ) Siren 091 AC Power Failure
06-00951	14 RFO BACC Inspection Of DH 2736
06-01091	Axial Indication In RCP 1-1 Cold Leg Drain Line
06-01131	CRD Service Structure TC Cable Support Degradation
06-01263	Condition Reports Not Generated To Document Fuel Assembly Integrity Conditions
06-01313	Two Personnel Contamination Events Resulting In Minor Intakes
06-01382	BF 1260 PM Performed Past Late Date
06-01440	DH 12 Testing Delayed By Clearance Issues With 200117362.
06-01456	Corrective Action Program Timeliness Issues
06-01466	Common Cause For Overtime Deviations During 14RFO
06-01503	Personnel Contamination Events In Non-Posted Areas
06-01661	Engine Driven Vehicle On Dry Fuel Pad Without Required Fire Extinguisher
06-01697	Decline In Site Radiation Protection Performance During 14RFO
06-02108	Potential Trend Of Unqualified Outage Personnel Performing Work
06-02192	RCP 2-1 Lower Bearing Oil Level High
06-02303	DB-SS-6-02: Incorrect Approval Authority For Corrective Action 02-04764-4
06-02433	Change In Approach To Performance Of Statistical CR Trending
06-02441	COIA-ENG-2005 - ANA- Transmittal Of Engr. Requirements For Ops And Maint
06-02481	Radiation Protection Integrated Performance Assessment
06-02488	DH 64 Boric Acid Leak
06-02542	EAB Grades TM 06-0014 As A Failed Product
06-02544	Weekly ERO Pager Test Results June 12
06-02580	DB-SS-06-04: Individuals Performing LACE Without Completing Training
06-02612	CCW Pump 3 Auto Started When Stopped Due To Erroneous Low Flow
06-02663	Coordination Of VP Approval And SLT Review Of Root Cause Evaluations
06-02686	Abandonment Of Site Organization Cognizant Trending During Outages

4.3 Procedures

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

Procedure Number	Procedure Name
DBBP-VP-0009	Management Plan for Confirmatory Order Independent Assessments
NG-DB-00215	Materials Readiness and Housekeeping Inspection Program
NPBP-ER-1004	Fleet Value Rating (FVR) Methodology
NOBP-LP-2001	FENOC Focused Self Assessment Process
NOBP-LP-2007	Condition Report Process Effectiveness Preview
NOBP-LP-2008	FENOC Corrective Action Review Board, Rev. 5, 02-10-2006
NOBP-LP-2010	CREST Trending Codes, Rev. 4, 6-29-06
NOBP-LP-2011	FENOC Cause Analysis, Rev. 5, 2-10-06
NOBP-LP-2018	Integrated Performance Assessment/Trending, Rev. 1, 10-25-05
NOBP-LP-2019	Corrective Action Program Supplemental Expectations and Guidance, Rev. 2, 2/10/06
NOBP-LP-2100	FENOC Operating Experience Reference Guide
NOBP-LP-2501	DRAFT – Safety Culture Assessment – Draft #8
NOPL-LP-2007	Corrective Action Program, Rev. 0, 10/10/05
NOP-LP-2001	Condition Report Process, Rev. 13, 2-10-06
NORM-LP-2003	Analytical Methods Guidebook, Rev. 00, 9-26-05
NOP-LP-2004	Internal Assessment Process

4.4 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
N/A	Cognitive Binning Process Summary – Davis-Besse Site Chemistry, May 2006 through July 2006
N/A	Radiation Protection Cognitive Trending Jun-Jul, 2006
N/A	June 2006 – Davis-Besse Nuclear Power Station, Monthly Performance Report
N/A	July 2006 – Davis-Besse Nuclear Power Station, Monthly Performance Report.
N/A	Davis-Besse Nuclear Power Station – Condition Report Trend Summary, Unit Outages, 2/10/06
N/A	Davis-Besse Plant Health Report, 2nd Quarter 2006

Number	Audits and Self-Assessments Title
CCN No: 05-00200	Design Engineering – Integrated Performance Assessment May 1, 2005 through October 31, 2005, Rev. 1, 12-22-05
CCN RAS 05-00510	Davis-Besse Regulatory Compliance – Integrated Performance Assessment, May 1, 2005 – October 31, 2005, dated 11/8/05
CCN RAS 06-00212	Davis-Besse Regulatory Compliance – Integrated Performance Assessment (November 1, 2005 to April 30, 2006), Rev. 1, 6/16/06
DB-SS-05-01	Davis-Besse Condition Report, Common Cause Review, June 2005, 7-7-2005
DB-SS-05-20	Snapshot Self-Assessment – Corrective Action Program Implementation, 4th Quarter, 2005 (CA 05-03226-01)
DB-SS-06-02	Snapshot Self Assessment – Corrective Action Program Implementation, 1st Quarter 2006 (CA 05-03226-02)
DB-SS-06-11	Davis-Besse 14th Refueling Outage Condition Report Trend Summary, 6-29-06
DBE-06-0099	Integrated Performance Assessment – November 1, 2005 through April 30, 2006, Rev. 1, 6-9-06
DSM-05-00090	Davis Besse Maintenance – Integrated Performance Assessment, May 1 2005 – October 31, 2005, dated 12/14/05
DSM-06-0053	Davis-Besse Maintenance – Integrated Performance Assessment November 1, 2005 – April 30, 2006, Rev. 1
FL-SA-05-05	Section Level Corrective Action Program Trending, 10/24/05 to 11/14/05.
RAS-06-00259	Davis-Besse Site Summary of Integrated Performance Assessments, November 1, 2005 – April 30, 2006, dated 8/9/06

Docket Number 50-346
License Number NPF-3
Serial Number 1-1474
Enclosure 3

ACTION PLAN TO ADDRESS THE AREA FOR IMPROVEMENT
FROM THE
INDEPENDENT ASSESSMENT
OF THE
CORRECTIVE ACTION PROGRAM IMPLEMENTATION AT
DAVIS-BESSE NUCLEAR POWER STATION

(3 pages to follow)

ACTION PLAN TO ADDRESS
AREA FOR IMPROVEMENT (AFI)

FROM THE

INDEPENDENT ASSESSMENT
OF THE
CORRECTIVE ACTION PROGRAM IMPLEMENTATION AT
DAVIS-BESSE NUCLEAR POWER STATION

COIA-CAP-2006

Action Plan Reviewed and Approved by:



DBNPS Vice President - Nuclear



Date

The Area for Improvement (AFI) Action Plan contained in this enclosure was developed by the Davis-Besse Nuclear Power Station (DBNPS) in response to the AFI 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 one (1) Area for Improvement (AFI), which has been entered into the DBNPS Corrective Action Program. The AFI and the associated Action Plan are presented in this enclosure.

Davis-Besse Action Plan to address the Corrective Action Program Implementation Independent Assessment Area for Improvement:

AFI COIA-CAP-2006-01 AFI (DBNPS CR 06-6723)

- *The trending of equipment problems across systems continues to be an Area For Improvement. This is a continuation of the same issue identified during the 2004 and 2005 (CAP) Assessments. FENOC has developed a draft procedure NOBP-ER-3916, "Component Health Trending Reports" which, when implemented, may assist FENOC with the identification of common component problems.*

Action Plan for AFI COIA-CAP-2006-01

This CAP Assessment 2006-01 AFI Action Plan supersedes the CAP Assessment 2005-03 AFI Action Plan in its entirety. The CAP Assessment 2005-03 AFI Action Plan was submitted via DBNPS letter Serial Number 1-1439, dated September 19, 2005.

Business Practice NOBP-ER-3902, "Component Template Development ER Workbench Module 2," establishes a review to be conducted approximately every two years of the component maintenance strategy templates. This review analyzes Maintenance Order and Condition Report data to see if new predictive maintenance technologies may apply to improve reliability. This Business Practice requirement is designed to periodically review equipment performance or failure trends to gage the effectiveness of the prescribed maintenance strategy activities provided through the component templates. This review is led by a Fleet Component Engineer and includes a peer review team.

A computer application has been developed to provide for quarterly binning and analysis of Maintenance Orders by component type. This computer application resides in the FENOC Equipment Reliability (ER) Workbench and systematically collects appropriate Maintenance Orders of components that are assigned to the template for common failure trend identification. This binning software tool known as "Component Health and Trending" (CHT), Module 16 of the Equipment Reliability (ER) Workbench, will provide a quarterly Component Health and Trend (CHT) process to help facilitate early identification of potential or emerging adverse trends of equipment failures and/or degraded "as-found" conditions. Business Practice NOBP-ER-3916, "Component Health and Trending Reports," is currently being developed and will govern this

quarterly CHT process. Should a negative trend be identified in the quarterly CHT process, a review to identify changes to the applicable component template(s) to facilitate performance improvement will also be prescribed in NOBP-ER-3916. Development of NOBP-ER-3916 is described in item 2 below.

Actions to be completed:

1. Assign appropriate maintenance strategy template numbers to the population of functional locations (FLOC) currently covered by Preventive Maintenance (PM) tasks. Use of Maintenance Order data for trending relies on proper assignment of FLOC numbers to appropriate maintenance strategy templates. This will enable the CHT Module 16 of the ER Workbench software to more accurately perform trending. These assignments will be complete by February 28, 2007.
2. Business Practice NOBP-ER-3916, "Component Health and Trending Reports," will prescribe the use of the CHT Module 16 of the ER Workbench for the quarterly equipment trending CHT process. This business practice will also outline the process requirement to perform a review to identify changes to the component template if a negative trend is identified in the quarterly CHT. NOBP-ER-3916 will be implemented by February 28, 2007.

Mark B. Bezilla
Vice President - Nuclear

419-321-7676
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Docket Number 50-346

License Number NPF-3

Serial Number 3291

October 22, 2006

United States Nuclear Regulatory Commission
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Washington, D. C. 20555-0001

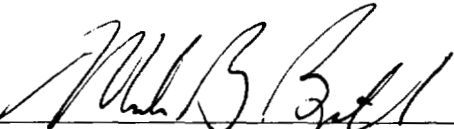
Subject: Supplemental Information Regarding the 2005 Steam Generator Tube
Inspections (TAC No. MD0528)

Ladies and Gentlemen:

By letters dated February 17, 2005 (Serial Number 3125), April 29, 2005 (Serial Number 3147), and February 16, 2006 (Serial Number 3218) the FirstEnergy Nuclear Operating Company (FENOC) reported the results of the Davis-Besse Nuclear Power Station (DBNPS) steam generator tube inspections performed during the Cycle 14 Mid-Cycle Outage (14MCO). On August 4, 2006, by facsimile the Nuclear Regulatory Commission provided FENOC with additional questions regarding the DBNPS 2005 steam generator inspections. The responses to these questions are provided in Attachment 1 to this letter. Attachment 2 identifies that there are no commitments contained in this submittal.

Should you have any questions or require additional information, please contact Mr. Gregory A. Dunn, Manager – FENOC Fleet Licensing, at (330) 315-7243.

Very truly yours,



Mark B. Bezilla, Vice President - Nuclear

TSC

Attachments

Docket Number 50-346

License Number NPF-3

Serial Number 3291

Page 2

cc: Regional Administrator, NRC Region III
NRC/NRR Project Manager
NRC Senior Resident Inspector
Utility Radiological Safety Board

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
DAVIS-BESSE NUCLEAR POWER STATION
14th CYCLE MID-CYCLE OUTAGE (14 MCO) STEAM GENERATOR INSPECTION
(TAC NO. MD0528)

Question #1:

Discuss whether any indications were identified as dents or dings. If so, identify the tube and provide the size and orientation of the flaw along with the size of the dent/ding.

DBNPS Response:

The designation for tubing deformation as a ding is not used at DBNPS; only dents are designated as tubing deformation.

Four hundred and fifty eight dented locations were inspected with the plus point and pancake eddy current examination technique (253 locations in Once Through Steam Generator 2-A and 205 locations in OTSG 1-B). This inspection scope included 434 locations of previously reported dents and new dents using a 2.5 volt bobbin threshold and 24 locations of greater than 0.5 volts between the 15S and UTS in the periphery region. No indications in dents were identified in either OTSG for this examination scope. One tube with one dent was removed from service for reasons unrelated to the dent.

Question #2:

Discuss the number and size of any flaws within the sleeved portions of tubes or within 6-inches of the bottom of the sleeves.

DBNPS Response:

During 14MCO a total of 126 sleeves were inspected with a sleeve bobbin probe (42 sleeves in OTSG 2-A and 84 sleeves in OTSG 1-B). Eighty seven sleeves (both upper and lower rolls) were inspected with the plus point eddy current examination technique (42 tubes in OTSG 2-A and 45 tubes in OTSG 1-B). The lower roll plus point eddy current examination inspected both lower rolls down to at least six inches past the sleeve. The three hundred and twenty four remaining sleeves (lower sleeve roll to six inches past the sleeve in the parent tube) were inspected with the plus point eddy current examination technique (157 tubes in OTSG 2-A and 167 tubes in OTSG 1-B). Within the scope of these examinations a 100% plus point eddy current examination was completed for the region six inches below the sleeves. No indications were reported in either OTSG for this examination scope.

Question #3:

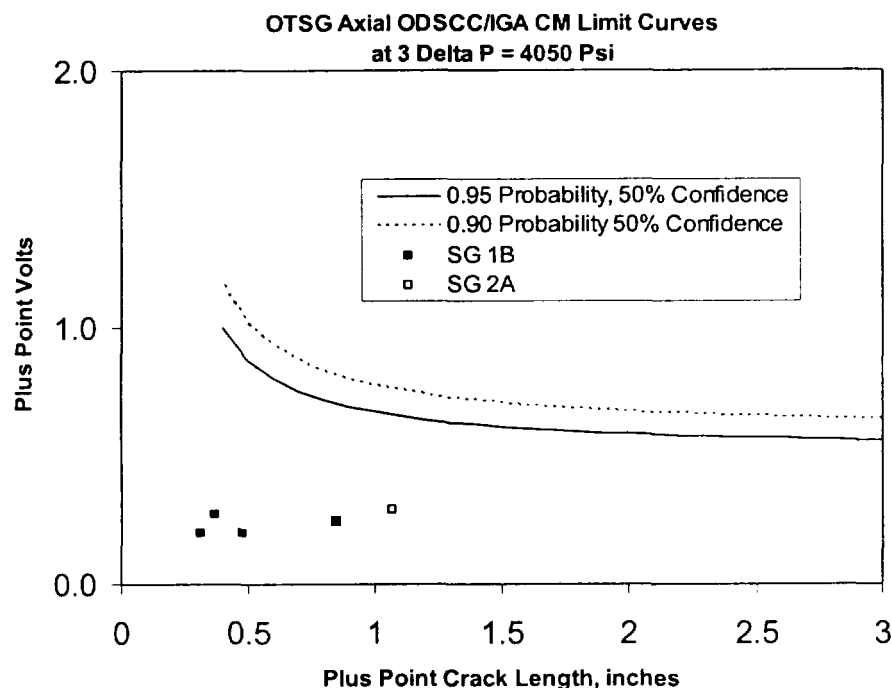
Identify any tubes in which groove intergranular attack/stress corrosion cracking was observed during your 2005 inspections. Discuss the severity of the flaws detected.

DBNPS Response:

The groove intergranular attack/stress cracking corrosion indications observed during 14MCO are listed below:

SG	Row	Tube	Ind	Volts	TSP	Inch	Probe	Depth %	Ax Len
2A	95	69	SAI	0.29	UTS	-21.63	520PP	60	1.07
1B	24	95	SAI	0.24	15S	-1.67	520PP	43	0.85
1B	25	98	SAI	0.2	15S	-2.11	520PP	40	0.31
1B	29	104	SAI	0.2	15S	-1.7	520PP	27	0.48
1B	70	60	SAI	0.27	15S	18.41	520PP	50	0.37

These indications were plotted and compared to the pre-established performance criteria for this damage mechanism which related the plus point voltage value and crack length to the structural limit of three times normal operating differential pressure. All the identified indications were below the Condition Monitoring acceptance curves. This demonstrated that the degraded tube burst pressures were above the three times normal operating differential pressure requirement of 4050 psi with a greater than 0.95 probability at 50% confidence.



Question #4:

Discuss the cause of the volumetric indications (other than wear) detected during the outage. For example, the volumetric indications identified in SG 1B in tubes 10-47, 78-67 and 81-73, and in SG 2A in tube 146-50.

DBNPS Response:

Volumetric indications other than wear observed during 14MCO are listed below:

SG	Row	Tube	Ind	Volts	TSP	Inch	Probe	Depth %	Ax Len	Circ Len	Deg. Mode
2A	146	50	SVI	0.53	15S	17.4	520PP	36	0.39	0.25	OD Wear from Internal AFW Alignment Pin
1B	10	47	SVI	0.52	UTE	-1.49	520MB	31	0.18	0.21	ID IGA in Roll Transition
1B	60	29	SVI	0.41	LTE	1.63	520PP	98	0.23	0.2	ID IGA in SRR Heel
1B	78	67	SVI	1.84	LTE	0.73	520PP	41	0.35	0.3	ID IGA in Roll Transition
1B	81	73	SVI	1.05	LTE	0.94	520PP	27	0.2	0.19	ID IGA in Roll Transition

There was one small volumetric wear indication in SG 2A tube 146-50. This was as a result of tube contact with the abandoned internal AFW header dowel pin support stay which required plugging. The eddy current inspection demonstrated that the AFW header was not moving and was greater than 0.25 inches away from all in service tubes. The OTSG eddy current inspection for movement of the internal AFW header analysis is performed on 100% of the in-service periphery tubes using a site-specific qualified bobbin coil technique.

It appears that flow conditions in SG 2A during this time period were suitable to support some tubing movement sufficient to cause contact with the support stay and initiate wear. With benefit of looking back there was some evidence of the indication in the bobbin data from 12RFO, but this was not apparent in the 13RFO data due to the bobbin coil probability of detection. The flaw in SG 2A tube 146-50 was not large enough to be a challenge to tube integrity. A 100% bobbin exam of the AFW header region was performed so no inspection escalation was necessary. There has been no other similar indication observed in the history of the Davis-Besse OTSGs.

There were also four volumetric indications located in roll transitions. This mechanism is believed to be the result of IGA that was forming in the roll transitions similar to that observed in a tube pull performed in 1996 (2A-58-119), where a small amount of grain drop out was observed to form a band of patch intergranular attack in the roll transition region of this tube. The grain drop out in these four tubes had grown to be more severe than that observed in the tube pull. These flaws were not large enough to be a challenge

to tube integrity. This region of grain drop out is believed to provide the initiation sites for the roll transition stress corrosion cracking that is beginning to be observed.

Question #5:

Discuss the nature, cause, and severity of the obstruction identified in SG 2A in tube 61-109. Discuss the largest size probe to ever pass through this tube and the probe sizes used on this tube during your 2005 inspections.

DBNPS Response:

Tube 61-109 of SG 2A was removed from service during 14MCO due to an obstruction. This tube contains a large dent that has provided a challenge to inspect over the entire history of this OTSG. Historically the maximum size 0.480 inch bobbin coil was able to pass with difficulty through this dent; therefore, this tube was plugged to prevent this tube from being a challenge in future inspections.

Question #6:

Following the identification in the shop rerolls in 2005; you indicated that you were planning to investigate construction records for other unusual design characteristics. Discuss whether you have identified any other unique conditions which could affect a tube's susceptibility to degradation. In addition, discuss any other corrective actions taken as a result of the discovery of the shop rerolls (other than the performance of the tube inspections).

DBNPS Response:

As a result of identifying double rolls in the lower tubesheet of OTSG 1-B, a review of the manufacturing records for the Davis-Besse OTSGs for the identification of any unknown design changes or construction features that could potentially impact the OTSG tubing integrity was performed. This review did not identify any remaining unknown design or fabrication features that could affect OTSG integrity, therefore no additional corrective actions were required.

Question #7:

Confirm that no cracks were observed at wear scars.

DBNPS Response:

During 14MCO all reported wear indications (wear scars) received a plus point exam and no crack like indications were observed in this inspection.

Question #8:

Confirm that no indications were identified during your rotating probe examinations in the sludge pile region that were not also identified with a bobbin probe.

DBNPS Response:

No confirmed sludge pile region indications were observed during 14MCO and the supplemental sludge pile region rotating probe exams in this region did not identify any indications.

Question #9:

You identified an indication in SG 2A which was attributed to an alignment pin (dowel pin) associated with an internal auxiliary feedwater header. You also indicated that the indication increased in size when compared to the prior outage. Discuss the dates and results of your visual inspections of the secured internal auxiliary feedwater header, header to shroud attachment welds, and the external header thermal sleeves. Discuss whether the header will remain stable during all postulated accident conditions such that tube integrity will not be affected. Discuss the eddy current criteria you use to ensure the header is not moving (or approaching the tubes) for the time period between the visual inspections of the header. Summarize the basis for this criteria.

DBNPS Response:

In 1981, a tube leak was experienced by the SG 2A at Davis-Besse Nuclear Power Station. Eddy current testing and visual examinations revealed that the internal AFW headers and the brackets that attached them to the upper steam wrapper were damaged. This degradation resulted in damage to some of the peripheral once-through steam generator (OTSG) tubes due to movement of the internal header during plant operation. The AFW internal headers were subsequently stabilized and functionally replaced by external headers. The repairs were qualified for postulated accident conditions to preserve the integrity of the OTSGs.

The internal AFW header and supporting welds are visually inspected each 10-year inservice inspection (ISI) interval per Technical Specification 4.4.5.8. Inspections in 1990 and 1998 showed no evidence of movement or degradation of the AFW header or degradation of the AFW supply nozzles and thermal sleeves, therefore these welds are still considered qualified for postulated accident conditions to preserve the integrity of the OTSGs. One AFW nozzle was found stuck in 1998 during visual inspection and the header at this nozzle location was inspected in 2000 with no evidence of movement or change in the header. The next 10-year ISI interval begins in 2012; therefore the next visual inspection is scheduled for 16RFO.

During each OTSG eddy current inspection, an AFW header analysis is performed on

Docket Number 50-346
License Number NPF-3
Serial Number 3291
Attachment 1
Page 6 of 7

100% of the in-service periphery tubes using a site-specific qualified bobbin coil technique. The analysis is performed by a specially trained analyst(s) using the bobbin probe data and a special calibration method. The data is reviewed for the presence of a header signal and the gap is estimated for each indication detected. When the gap is greater than 0.250", it is beyond the ability of the technique to accurately measure and no measurement is made. In this case, a signal may be present, but the amplitude is too small and is outside the bounds of the established calibration curve. The 14MCO AFW header analysis confirmed that no AFW header movement had occurred.

Question #10:

Summarize the number of tubes with rerolls in each SG.

DBNPS Response:

At the completion of 14MCO there were a total of 104 inservice repair rolls in OTSG 2-A and 8 inservice repair rolls in OTSG 1-B. These repair rolls were installed using the repair roll process that was tracked for leakage under FTI Topical Report No BAW2303, Revision 04, "OTSG Repair Roll Qualification Report".

Question #11:

Confirm that all tubes in which degradation was identified had adequate tube integrity at the time of the inspection.

DBNPS Response:

The observed degradation at the 14MCO outage was evaluated in a manner consistent with NEI 97-06. The observed degradation did not challenge the structural margin requirements at the 14MCO inspection or challenge required leakage integrity limits under postulated accident conditions.

Docket Number 50-346
License Number NPF-3
Serial Number 3291
Attachment 1
Page 7 of 7

The following abbreviations were used in above Attachment 1.

Ax Len	Axial Length
Circ Len	Circumferential Length
CM	Condition Monitoring
DNT	Dent
Deg. Mode	Degradation Mode
IGA	Intergranular Attack
IND	Indications
ID	Inside Diameter
LTE	Lower Tube End
LTS	Lower Tube Sheet
MCO	Mid-Cycle Outage
MVI	Multiple Volumetric Indications
OTSG	Once Through Steam Generator
OD	Outside Diameter
SAI	Single Axial Indication
SCC	Stress Corrosion Crack
SG	Steam Generator
SRR	Shop Repair Roll
SVI	Single Volumetric Indication
TSP	Tube Support Plate
UTE	Upper Tube End
UTS	Upper Tube Sheet
xxS	Support Plate Number

Docket Number 50-346
License Number NPF-3
Serial Number 3291
Attachment 2
Page 1 of 1

COMMITMENT LIST

The following list identifies those actions committed to by the 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 contact Mr. Gregory A. Dunn, Manager – FENOC Fleet Licensing, at (330) 315-7243 of any questions regarding this document or any associated regulatory commitments.

COMMITMENT

DUE DATE

None

N/A