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Docket Number 50-346
License Number NPF-3
Serial Number 1-1478

November 16, 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 the 2006 Engineering Programs Effectiveness Independent Assessment Report for the Davis-Besse Nuclear Power Station

Dear Mr. Caldwell:

The purpose of this letter is to submit the assessment report for the 2006 Engineering Programs Effectiveness Independent Assessment 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," which requires submittal of the assessment results within forty-five (45) days of the completion of the assessment.

The on-site activities of the Engineering Programs Effectiveness Independent Assessment were conducted from September 11 to September 22, 2006, in accordance with the Assessment Plan submitted via letter Serial Number 1-1466, dated June 12, 2006. The final debrief of results was presented to the DBNPS management on October 6, 2006, marking the end of the assessment. The enclosed report contains the results of the Independent Assessment. No issues rising to the level of an Area for Improvement were identified in the Independent Assessment; therefore, no action plans are included to address areas for improvement.

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

Sincerely yours,

LJS

Attachment 1 - Commitment List

Enclosure 1 - 2006 Independent Assessment, Engineering Programs Effectiveness, Davis-Besse Nuclear Power Station

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

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 notify the Manager - Regulatory Compliance at (419) 321-8585 at the DBNPS with any questions regarding this document or associated regulatory commitments.

COMMITMENTS	DUE DATE
None	N/A

Docket Number 50-346
License Number NPF-3
Serial Number 1-1478
Enclosure 1

2006 INDEPENDENT ASSESSMENT OF THE ENGINEERING PROGRAMS EFFECTIVENESS AT THE DAVIS-BESSE NUCLEAR POWER STATION

(76 pages follow)

Independent Assessment
Engineering Programs Effectiveness
Davis-Besse Nuclear Power Station

COIA-ENG-2006
September 11 – September 22, 2006

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Submitted by:

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Reviewed and Accepted by:

DBNPS Vice President - Nuclear

Jannie M. Rinckel 11/13/06

FENOC Vice President - Oversight

Section 1

1.1 Executive Summary

The Engineering Programs Independent Assessment Team found the engineering programs at Davis-Besse to be effective overall, and found performance in each of the six areas designated for assessment to be effective.

The team reviewed engineering work products in a number of areas in depth, and did not find any discrepancies that were considered to be either significant in terms of the validity of the work product, or indicative of a systematic deficiency in engineering work performance or quality management.

Findings were categorized into three types, defined as an Area of Strength (AS), an Area for Improvement (AFI), or an Area in Need of Attention (ANA):

An Area of Strength is an identified performance, program, or process element within an area of assessment that is significant in obtaining desired results.

An Area for Improvement is an identified performance, program, or process element within an assessed area that requires improvement to obtain the desired results with consistency and effectiveness. All Areas for Improvement identified in the Assessment Report will be addressed by the Action Plan(s) submitted to the NRC.

An Area in Need of Attention is an identified performance, program, or process element within an area of assessment that, although sufficient to meet its basic intent, management attention is required to achieve full effectiveness and consistency. Areas in Need of Attention are not addressed by Action Plan(s) submitted to the NRC, but are considered for entry into the Corrective Action Program.

The Team's findings in 2006 consisted of:

2 Areas of Strength (AS)
0 Areas For Improvement (AFI)
7 Areas in Need of Attention (ANA)

The 2006 Findings are designated as:

Areas of Strength:

1 AS	DIE process
2 AS	Margin management

Areas In Need of Attention

1 ANA	Inattention to detail in calculations
2 ANA	Implementation of requirements from calculations
3 ANA	Equipment Reliability Program
4 ANA	Red plant health systems
5 ANA	ECP Revision Reviews
6 ANA	Follow-ups to assessments and last year's COIA-ENG-2005
7 ANA	Management of engineering workload

These findings are described in more detail in section 1.5.4 of this report.

By comparison, the team's findings in 2005 consisted of:

1	Area of Strength (AS)
0	Areas for Improvement (AFIs)
6	Areas In Need Of Attention (ANAs)
2	Comments

The Independent Assessment Team made several overall conclusions:

- The technical quality of Engineering work products and support is generally good to excellent with a continuing trend to improvement
- Engineering's focus has been (properly) on quality/effectiveness, backlog reduction, post-restart work execution, and process standardization/refinement. Now seeing more focus on outage preparation and execution.
- The team notes ongoing transition from post-recovery/restart to more normal tasks and workloads.

Two CRs were written during the assessment:

CR 06-6388 Inconsistent practice in reviews and design verification for ECP revisions. No immediate actions were required. (Discussed in section 1.5.2.1)

CR 06-6652 CST vortex calculation for AFW Pump suction. No immediate actions were required. (Discussed in section 1.5.2.2)

1.2 Introduction

The Confirmatory Order Modifying License dated March 8, 2004, required FENOC to conduct independent assessments of the effectiveness of the engineering program annually for a period of five years. The assessment conducted by the Independent Assessment Team and reported in this document is the third annual independent assessment of the engineering program.

The plan for this Independent Assessment was formulated in accordance with the guidance of FENOC's procedure DBBP-VP-0009 Management Plan for Confirmatory Order Assessments Rev 3, and also with benefit of the guidance of FENOC's procedure NOBP-LP-2001 FENOC Self Assessment/Benchmarking Rev 8. The Assessment Plan was submitted to the USNRC via serial letter 1-1446 dated June 12, 2006 (see Appendix 1)

The members of the Independent Assessment Team were drawn from the nuclear power industry. There were three team members from operating US nuclear plants and three from the Marathon Consulting Group. The resumes of the team members are included in the Assessment Plan and also presented in Section 1.7 Resumes of this report. The Team members were:

John Garrity	The Marathon Consulting Group, Team Leader
Harold Baumberger	The Marathon Consulting Group
Charles Bergeron	The Marathon Consulting Group
Bruce Beuchel	Seabrook Station, FPL Energy
Mark Flaherty	Calvert Cliffs Station, Constellation Nuclear
John Meyer	Comanche Peak Station, TXU

The Independent Assessment Team commenced work on the Davis-Besse (DB) independent assessment during the week of June 12, 2006, with information gathering activities and discussions with FENOC management. The team gathered information from FENOC relevant to the DB assessment and posted this information to an Internet FTP site established for this purpose over a period of several weeks. The weeks of August 14 and August 28 were devoted to intensive review of FENOC documents and formulation of interview strategies, questions, and interview lists. The Team spent the weeks of September 11 and September 18 at the Davis-Besse site conducting initial and follow-up interviews and reviewing additional FENOC supplied material.

1.3 Scope of Assessment

The scope of the Engineering program assessment included primarily activities and performance since the 2005 Independent Assessment

Assessment information was drawn from a variety of sources, including:

- Documents supplied by FENOC, including procedures, performance data and reports, program descriptions, engineering work products such as modification packages, calculations, etc., Corrective Action Program (CAP) work items and records, and assessments (partial list of documents provided in Appendix 3)
- Assessments performed by others such as NRC, INPO, and independent assessors and reviewers
- FENOC task, project, program, and business plans and status reports
- Interviews with FENOC personnel (interview list provided in section 1.6.1)

The assessment concentrated on engineering performance in six areas of interest:

1. Modifications
2. Calculations
3. System Engineering
4. Implementation of the Corrective Action Program by Engineering
5. Effectiveness of Assessment Activities
6. Corrective Acton Taken in Response to Findings identified in the 2005 Independent Assessment

Within each of these areas, sub-areas were identified for review. These sub-areas are shown below:

1. Plant Modification Process

The team will perform a review of activities to assess the effectiveness of the plant modification process:

a. Selection and prioritization of potential modifications, including assessment of delayed modifications on plant and operating personnel
b. Owner acceptance sub-process (review of contracted work)
c. Quality of modification packages since 2005 assessment (Permanent and Temporary Modifications)
d. Closeout of modification packages and supporting document updates
e. Effectiveness of modifications
f. Interaction and support from parallel processes
g. Workload management

2. Calculation Process

The team will assess the following attributes of the plant calculation process.

a. Workload management, including appropriateness of work priorities
b. Acceptance criteria and owner acceptance sub-process (review of contracted work)
c. Margin management and allocation
d. Linkages and consistency with other calculations
e. Preservation of design bases
f. Documentation/traceability/attribution
g. Calculation health and improvement program
h. Interaction and support from parallel processes
i. Systems descriptions design information
j. Engineering rigor and attention to detail

3. System Engineering Programs and Practices

The team will investigate the following items:

a. System Engineering alignment and plant support
b. System Health evaluation and reporting
c. Process for prioritizing, communicating, and resolving health deficiencies and program deficiencies
d. Equipment Reliability Improvement Program as reflected in FENOC Excellence Plans
e. Maintenance Rule system monitoring and trending
f. Experience and expertise, including use of operating experience
g. Margin awareness and margin allocation
h. Interaction and support from parallel processes
i. Access to knowledge of Engineering information in calculations
j. Workload management

4. Implementation of the Corrective Action Process by Engineering

The Assessment Team will assess the following:

a. Promptness in initiating condition reports for identified conditions adverse to quality
b. Condition Report ownership and appropriate initiator involvement
c. Quality of root and apparent causes produced by Engineering and associated management behavior and guidance
d. Prompt acceptance of corrective actions
e. Corrective action quality and implementation timeliness
f. Effectiveness of corrective actions to prevent recurrence
g. Support of corrective actions assigned to others
h. Workload management and backlog management

5. Effectiveness of Davis-Besse Assessment Activities

The Assessment Team will evaluate the effectiveness of the Davis-Besse Nuclear Power Station's assessment activities associated with the implementation of Engineering programs as follows:

a. Planning of assessments over the short and long term for ongoing assessment of Engineering performance
b. Review the results of the Davis-Besse Quarterly Quality Assessments that evaluated Engineering; Determine if the assessments were comprehensive and if effective actions were taken to correct problems or weaknesses identified.
c. Evaluate the effectiveness of self-assessment capability by reviewing corrective actions associated with self-assessment reports, audits (including audits of the offsite safety committee activities), and evaluations conducted of Engineering program implementation.
d. Determine if the Engineering staff is aggressive in correcting self-assessment and assessment findings, and determine whether the corrective actions are adequate, timely, properly prioritized, and that effectiveness reviews are ensuring the desired results.
e. Determine the receptivity and responsiveness of management and staff to issues raised in self-assessments and assessments.

6. Corrective actions taken in response to the Areas in Need of Attention (ANAs) identified during the 2005 Independent Assessment of the Davis-Besse Engineering Program Effectiveness

The Assessment Team will evaluate the responses to the six (6) Areas in Need of Attention (ANAs) identified during the 2005 Independent Assessment:

- 1 ANA Containment Copper Oxide
- 2 ANA Additional Corrective Actions to Address Vendor Product Quality Concerns
- 3 ANA Transmittal of Engineering Requirements for Operation and Maintenance
- 4 ANA Program Status – PRA and Equipment Reliability
- 5 ANA System Engineering Attention to Detail
- 6 ANA Design Engineering Backlog Reduction

1.4 Methodology

The assessment was performed in accordance with the sequence of steps, summarized below.

1. Develop the assessment scope, including areas to be assessed and assessment topics under each area. This step included consideration of FENOC management's views, FENOC's procedural and business planning guidance for assessments in general, and the need to meet the particular assessment requirements for Davis-Besse.

2. Develop the assessment plan, including the overall objectives and approach, the framework for conducting the assessment, and including review and comments by FENOC engineering and corporate management and staff.

3. Determine the team size and composition requirements

4. Recruit the team, including industry peers.

5. Develop a document library and means to provide access to team members. This included collecting documents from FENOC's corporate offices and the Davis-Besse site such as procedures, performance reports, engineering work products, and organizing them for access by team members through a website established for this purpose.

6. Develop a list of plant personnel to be interviewed and typical interview questions or areas of inquiry. A list of plant personnel to be interviewed was developed by defining the organizational positions to be interviewed for each assessment area and topic, and selecting one or more team members to represent that interview area of interest.

7. Develop the detailed interview schedule. Plant administrative support personnel scheduled interviews and published schedules notifying interviewees and team members of the time, date, location, subject, and participants of each interview. Typically an interview was scheduled for an hour, and interviewees were scheduled to meet with from one or two Team members. Follow-up interviews were scheduled during the assessment as needed. Approximately sixty-five formal interviews were conducted, with approximately sixty different individuals interviewed, and additional follow-up discussions were held as necessary. The first week on site was dedicated to interviews and assessment of the areas of modifications, calculations, and system engineering, while the second week focused on the areas of implementation of the corrective action program by engineering, effectiveness of assessment activities, and corrective action taken in response to ANAs identified in the 2005 independent assessment.

8. Assemble the team and provide orientation. The team assembled for an orientation session the Sunday evening before the assessment. The interview schedules were briefed, any new documents received were noted, and the overall assessment schedule was discussed. The assessment plan and scope, the background for and development of the assessment scope, and the guidance provided for focused self-assessments by the FENOC fleet procedure, were discussed.

9. Obtain badges for unescorted access to the plant (all Independent Assessment Team members were granted unescorted access)

10. Conduct interviews and document reviews. During the assessment period, results of interviews and document reviews were summarized on daily records of facts and observations. Items of interest were those thought to require further follow-up or having the potential for becoming findings. The daily records were collected, consolidated, and distributed to team members on a daily basis.

11. Organize items of interest. Toward the end of each of the assessment weeks, items of interest from daily records were binned to identify evolving issues in the form of potential Strengths, Areas For Improvement, and Areas in Need of Attention in each of the assessment areas. Potential findings were documented on a summary form developed for this purpose.

12. Provide regular counterpart briefings. The Team briefed site counterparts on a regular basis to keep the site staff informed of items of interest and potential findings, and also to support generation of Condition Reports when appropriate (two were generated during the assessment)

13. Consolidate items of interest into Areas of Strength, Areas for Improvement (AFIs), and Areas in Need of Attention (ANAs). Near the end of each assessment week, issue summary forms were developed to reflect available information and to support generation of management briefing and exit talking points.

14. Brief plant engineering management at exit. Site management was briefed at a formal exit on Friday of the second week of the assessment. FENOC key corporate executives and engineering managers were included in this briefing. The briefings were conversational in style, with a team member for each assessment area discussing the significant findings in his area. For each potential finding, the issue and appropriate examples or other supporting information was presented and questions were answered. The daily counterpart briefings and management pre-exit briefings assured that the site personnel being briefed already knew of all findings and that appropriate CRs had been generated.

15. Provide assessment preliminary findings. Site management briefing summaries and talking point outlines were provided to the sites in electronic file form after the assessment was complete. (At this stage, the findings were still considered draft, but useful information for the sites).

16. Provide report for Davis-Besse. This report is the report for information and action by Davis-Besse and FENOC.

1.5 Conclusions

The Assessment team's conclusions are summarized in this section. These findings are based on extensive working field notes and Team discussions conducted each day during the assessment period and after.

1.5.1 Overall Rating of Engineering Programs Effectiveness

The Independent Assessment Team rates the effectiveness of Engineering Programs as **Effective**, with no identified Areas for Improvement and several Areas in Need of Attention

- The technical quality of Engineering work products and support is generally good to excellent with a continuing trend to improvement
- Engineering's focus has been (properly) on quality/effectiveness, backlog reduction, post-restart work execution, and process standardization/refinement. Now seeing more focus on outage preparation and execution.
- The team notes ongoing transition from post-recovery/restart to more normal tasks and workloads.

Specific findings in the 2006 independent assessment included

2 Areas of Strength (AS)
0 Areas For Improvement (AFI)
7 Area in Need of Attention (ANA)

1.5.2 Assessment Ratings by Assessment Areas

Section 1.5.2 presents the Independent Assessment Team's conclusions about the effectiveness of Engineering performance in each of the six assessment areas.

There were one Strength and three (3) Findings uniquely associated with only one assessment area. The remaining Strength and four (4) Findings are "cross-cutting findings" applicable to two or more areas. All the Strengths and Findings are described in section 1.5.4, and those descriptions are referenced under the headings "Findings for This Area" and "Cross Cutting Findings Applicable to This Area" in the discussion of each of the six assessment areas.

The distribution of Findings between unique and cross-cutting has changed since last year when only one Finding was unique and five were cross-cutting. This indicates that the assessment Findings are becoming less systemic within the Engineering department. This supports the team's assessment that the Engineering department continues to improve and issues are becoming more isolated.

1.5.2.1 Modifications

Area Effectiveness Rating

Overall, the team rated the modification process **Effective**. This is based on the quality of ECPs, interviews with engineers and managers, EAB performance indicator trends, and the emphasis on work quality voiced by all engineers interviewed.

There are no AFI Findings associated with this area. There is one ANA Finding dealing with a process issue which has not been found to adversely impact quality to date and one Specific Issue dealing with administrative matters. There were no Findings uniquely associated with the Modifications assessment from the 2005 COIA. The Finding from the 2004 COIA, Modification Tracking and Closeout, continues to be addressed and further improvement in the reduction of the backlog of open modifications was noted. The number of open modifications has been reduced and the status is being tracked. There are fewer partially implemented modifications and these are being tracked in the SAP work management system. The negative noteworthy item from the 2004 COIA, Selection and Prioritization Of Modifications, continues to be addressed. The Engineering department continues to produce quality modifications.

Source Information

The Independent Assessment Team conducted interviews of selected Engineering and Site personnel and reviewed selected documents from the reference library (See Sections 1.6.1 & 1.6.2).

The team reviewed selected Engineering Change Packages (ECPs), interviewed design and system engineers and managers, fleet oversight staff, Engineering Assessment Board members, DB Project Managers, as well as operations and maintenance managers.

Documents Reviewed

ECR 02-0737-11	EDG Excitation System Replacement
ECP 05-0095-00	EDG Loading Improvements
ECP 06-0084-00	Replacement Motor for MP79-1
ECR 06-0065-00	Use as is 18"-HBD-5
ECR 05-0086-01	Cont Air Cooler SW Mods
ECP 05-0142-01	Small Bore Piping Supports

ECP 05-0304-00	Main Fuel Handling Bridge
TM 06-0025	Reheat Drain Piping Repair
Engineering Assessment Board Report for January 1 through March 31, 2006	

Observations

The assessment team reviewed the FENOC fleet procedures for Engineering Changes and found them to be generally concise and providing for the basic requirements but not containing administrative format details. This is apparently due to the use of the procedures at three distinct sites. This lack of specific information and administrative detail does not appear to impact the final product quality. Also, the procedures are written for a process that relies on handing off responsibility for modifications as they progress from engineering to work planning for execution. This provides for a more efficient organizational approach with limited engineering resources, but does place more dependence on proper work task transmittals. The DIE Process is seen as critical to this type of fractionated process and appears to be functioning well. There is only one concern that arose which resulted in the ANA dealing with package revision reviews which is addressed below. The assessment team believes this is an issue that may be addressed by either Procedure, Training, or Skill centered actions, or a combination of these.

The assessment team reviewed several recent ECPs and a number of ECPs that had revisions during 14RFO. A recent Temporary Modification (TM) was reviewed and the EAB report was specifically reviewed for other recent TMs. The ECPs were reviewed for general attributes in the descriptions, 10CFR50.59 screens, regulatory applicability determinations, and various design interface documents. The assessment team concluded the technical content of ECPs and associated documents was of acceptable quality. The TM was found to be quite general in it's description but consistent with a process that puts a great emphasis on the Work Planners knowledge and responsibility for taking responsibility for developing the work steps and oversight of maintenance / construction tasks up to and including the modification closeout process.

The EAB Quarterly Report for the period January 1 through March 31, 2006 was also reviewed. The observations were then discussed with the responsible Engineering managers. EAB review scope includes all ECPs and associated calculations, selected 50.59 evaluations and selected Operability Evaluations. The EAB evaluated 103 products during this period, and have documented an improved trend in FENOC design engineering product quality.

The EAB grades are significantly below the station stretch goals (Lower grades are good!). The EAB procedure is being changed to incorporate Fleet wide criteria for EAB ranking scores. According to the DB EAB member, this should make receiving grades of 0 or 1 more difficult and thus will impact the future ability to exceed the station goal levels.

Discussions with several design engineers indicate that the real-time feedback (from EAB) on calculation and ECP quality serves to reinforce the *FENOC Engineering Principles and Expectations (NOPL-CC-0001).* In particular, the EAB product grading has been shared with the specific product vendors as a result of the corrective actions that resulted from the snapshot assessment for 14RFO Design Modifications.

The engineering change process backlog reduction efforts for 2006 were almost static for the period up to the end of the 14RFO. In May a new work off curve was established and since that time the department has been meeting or exceeding it's goal and expects to end the year in the Green PI.

Specific Issues for This Area

The finding 7ANA Management of Engineering Workload is a crosscutting issue for this area and is of particular relevance because of the need to coordinate and communicate between parallel supporting departments during the engineering change process for plant modifications. This was recognized by the author of CR 06-02483 that was written to address the Noteworthy Items from the Snapshot assessment of 14RFO Mods. Recommendation 1 was "A workable, realistic, integrated schedule needs to be developed that reflects Design Engineering's workload."

Workload management is still in a transition from the Engineering Work Management System (EWMS) to SAP. Currently, engineers are entering new work in the SAP system for tracking only and managing the workload by focusing on a small number of approved modifications and conservative milestones for 15RFO.

The assessment team believes that managing work from multiple tracking systems (outage lists/milestones, SAP, CREST, and others) does not provide for effective coordination and communication of priorities, constraints, interactions, workloads, or resource availabilities

The assessment team believes that an Integrated Schedule will help communicate the Engineering departments expectations for support from and to other Departments. This will improve the Engineering Department's ability to meet its commitments to its customers.

The assessment team has been informed that the station is pursuing a long term solution to this issue by utilizing the work tracking features of SAP and the station scheduling software.

Findings for This Area

There was one Finding uniquely associated with the Modification assessment area:

- 5 ANA Engineering Change Package Revision Reviews

The assessment team review of a number of ECPs with revisions found an inconsistent practice in reviews and design verification as noted on the ECP Revision Form. When this was initially discussed with engineering management they initiated **CR 06-6388,** Inconsistent practice in reviews and design verification for ECP revisions, to capture this concern. No immediate actions were required.

This Area in Need of Attention and CR are discussed in more detail in Section 1.5.4

Cross Cutting Findings Applicable to This Area

The team made several Findings that relate to or are applicable to more than one Assessment Area. The Findings are documented in Section 1.5.4. Cross-cutting findings which are applicable to the area of Modifications are:

- 1 AS DIE Process
- 7 ANA Management of Engineering Workload

1.5.2.2 Calculations

Area Effectiveness Rating

Overall the team rated the calculation area as **Effective** based on the quality of work performed and the progress made. More work remains to clear the backlog of calculations. Work to address overall calculation health is noteworthy.

Source Information

The Independent Assessment Team conducted interviews of selected Engineering and Site personnel and reviewed selected documents from the reference library (See Sections 1.6.1 and 1.6.2).

In particular, the team reviewed the plant Design Basis Assessment Reports (DBAR), with emphasis on the Calculation Health and Calculation Quality sections, Condition Reports related to calculations, and new and revised staff and vendor calculations issued since the last assessment.

Interviews were conducted with engineers concerning work products reviewed.

Finally, the team independently reviewed thirteen calculations performed since last year for conformance to standards and expectations with respect to technical rigor.

Calculations reviewed included:

Calc 33B-GCB-10-H38, Rev 0, A01	Low Pressure Injection [Pipe Stress Problem 80A, DP 933]
C-EE-002.01-010, Rev 29, A04 CC-EE-002.01-010, Rev 29, A05 C-EE-002.01-010, Rev 30 C-EE-002.01-010, Rev 30 A01	DC Calc – Battery and Charger Sizing, Short Circuit, and Voltage Drop
C-ICE-037.01-001, Rev 00	Condensate Storage Tank Level Instrument Uncertainty
C-ME-013.01-028, Rev 1	Diesel Fire Pump Cooling with Increased Forebay Temperature
C-NSA-052.01-003, Rev 8, A05	HPI Pump Acceptance Criteria
015.044, Rev 01	Diesel Fire Pump Day Tank (T-47) Fuel Oil Capacity Requirements
C-ME-037.01-003, Rev 01	Tank Level Curve Calculation – CST 1 & 2
C-ME-045.02-005, Rev 1	MDFP Surveillance Test
C-NSA-011.01-016, Rev 00	Service Water System Design Basis Flowrate Analysis and Testing Requirements
C-NSA-049.02-033, Rev 1, A01	LPI Flow Evaluation Based on Test Data from DB-SP-04455

Specific Condition Reports reviewed included:

06-00219	05-05695	05-05658	06-06427	04-06372
06-02320	06-06509	06-01281	06-01753	06-00207
06-00026	06-00327	06-02441	06-00019	06-00212
06-00243	06-00328	06-00373	06-00372	06-00474

06-00556	06-00596	06-00585	06-01149	06-01353
06-01352	06-01369	06-02521	06-02166	06-02265
06-01739	06-01757	06-01676	06-01805	06-02555
06-02659				

Observations

The quality of the calculations fully met the station's high standards and expectations for technical rigor. This was affirmed by the team's independent review of thirteen calculations issued since the 2005 COIA Engineering Assessment. The team did note instances of inattention to detail in the preparation and initial review of calculations related to administrative requirements. Specific details and examples are provided in Finding 1 ANA in Section 1.5.4. These errors were judged not to have an impact on the technical rigor of the calculation, but did suggest improvements needed in self-checking.

Condition Reports related to calculations and issued during the assessment period were reviewed for significance. Two were noted, one with a computational error and one with an assumed configuration that did not match as-built conditions. These two errors noted appear to be isolated performance errors and did not appear to represent an adverse trend in calculation quality and rigor.

The quality of calculations is also monitored by using Engineering Assessment Board (EAB) scores presented in the DBAR Calculation Quality Section. Current EAB scores show an improving trend since last assessment with scores consistently achieving the goal of less than or equal to 0.5 and averaging approximately 0.2 for Davis-Besse prepared calculations and 0.4 for vendor prepared calculations.

A declining trend in the quality of vendor-prepared calculations was identified by the Davis Besse EAB during the previous assessment period. The issue was related to a significant difference in the level of quality (as measured by the EAB scores) noted between those prepared by the Davis-Besse staff and those prepared by vendors. During the last assessment the issue was documented on a Condition Report. Follow up during this assessment indicates that the gap in vendor performance, as measured by EAB scores, has narrowed considerably and vendor products are achieving a satisfactory level of quality. Reviews of vendor products by the team found them to be satisfactory with no significant differences noted in quality.

The Calculation Improvement Plan was essentially complete at the time of the last assessment and has been closed. The purpose of the plan was to improve the rigor of calculations.

Calculation Health, as defined in the DBAR, is a combination of the age and margin available in plant calculations. This indicator has improved to "WHITE" based on the reduction in the number of Tier-1 calculations with low margin.

Improvements have been achieved through improved computational techniques and physical plant modifications to recover margin. Many of these efforts were completed in the recent refueling outage (14RFO). The company's commitment to margin improvement is noteworthy.

Propagation of Engineering requirements to Operations and Maintenance is accomplished by the Design Interface Evaluation (DIE process). This process is used effectively to identify necessary design inputs to calculations. This process is considered a strength and is identified as Strength 1AS. See discussion under Modifications. This process is also generally effective in identifying impacts on operation and maintenance. These requirements are identified in the conclusions section of the calculations and documents impacted by the change are listed on completed DIE forms. The team identified a weakness in communication of these requirements at the time of calculation approval that sometimes results in lack of timeliness in the implementation of the new requirements. See Finding 2 ANA for more details.

Overall, it is concluded that the calculation area has made continued progress since the last assessment. The technical rigor of calculations has remained excellent. Margin management efforts have reduced the number of Tier-1 calculations with low margin and improved. Findings noted represent opportunities to improve and are not considered significant weakness or shortcomings.

Specific Issues for This Area

The following observations are provided for consideration. None of these rose to the level of a finding:

- Some Tier-1 calculations with low margin are for calculations where no further action is considered needed. An example is calculation C-NSA-060.05-010, Containment Vessel Analysis (see DBAR excerpt below) that is currently counted as a "low margin" calculation. In the cases where a management decision has been made that the calculation is acceptable and no further action is to be taken, the criteria should be revised to allow the calculation to be reclassified as "satisfactory margin".

  > *C-NSA-060.05-010, Containment Vessel Analysis – This calculation has a low peak pressure margin during the design basis accident. Based on a review documented in CR 04-07604-01, a risk informed revision to 10 CFR 50.46 is expected. Implementation of the revised licensing requirements with respect to margin improvements should be considered once the regulation is finalized. As discussed in CR 04-07604-01, there is no increase in risk associated with operating the plant with a low peak pressure margin.*

- The margin management program is currently limited to Tier-1 calculations for the ten most risk significant systems. The number of these calculations with low margin has been significantly reduced. As the number of remaining Tier-1 calculations with low margin approaches zero, consideration should be given to expanding the program to include other systems.

- Calculation procedure NOP-CC-3002 requires the incorporation of all active Addenda when performing a revision. Instances exist where pending Addenda remain open, e.g. for modifications not yet incorporated in the plant. The procedure does not address the possible need to perform a new "collective impact review" for the pending Addenda. For example, if Addendum 05 to Rev 29 is not incorporated in Revision 30, and Revision 30 contains new impacts not included in the collective impact review in Rev 29 A05, then a new collective impact should be performed. The new collective impact can be either included in Rev 30 or issued as Addendum A01 to Rev 30. (Note a new collective impact may not be required if Rev 30 only incorporates A01 through A04 that had already been included in the A05 collective impact and does not add any new impacts not already considered.) A revision to NOP-CC-3002 is suggested to address this. A note before the step to incorporate outstanding Addenda in the Revision could be added to perform a new collective impact if pending Addenda remain and the collective impact in the most recent Addenda does not already incorporate all impacts from the new revision.

- NOBP-CC-3002 R3 (Processing Calculations) only mentions the Calculation Utility under the BV section (4.1) and not the DB section (4.2). Consideration should be given to addressing the Calculation Utility in section 4.2.

Findings for This Area

There were one Strength and one Finding uniquely associated with the Calculation assessment area

- 2 AS Margin management
- 1 ANA Inattention to detail in calculations

Cross Cutting Findings Applicable to This Area

The team made several Findings that relate to or are applicable to more than one Assessment Area. The Findings are documented in Section 1.5.4. Cross-cutting findings which are applicable to the area of Calculations are:

- 1 AS DIE process
- 2 ANA Implementation of requirements from calculations

1.5.2.3 System Engineering

Area Effectiveness Rating

The Independent Assessment Team rates the System Engineering area as **Effective.**

Source Information

The Independent Assessment Team conducted interviews of selected Engineering and Site personnel and reviewed selected documents from the list of documents provided in advance by FENOC (See Sections 1.6.1 and 1.6.2).

The team reviewed recent and past Plant Health Reports, and interviewed system engineers responsible for the following plant systems:

Med Voltage AC
Boric Acid Addition
Doors and Hatches
480 V AC
Freeze Protection/Heat Trace
Plant Computer
ICS NNI
Radiation Monitoring, Process and Area
Component Cooling Water
Feedwater
HPSI

In addition, the team selected engineering programs from the Engineering Programs Quarterly Health Report and interviewed the site program owners for Equipment Reliability, Maintenance Rule and FAC Programs.

Plant Engineering supervisors and the Plant Engineering manager were interviewed, as were selected management personnel from the Plant organizations responsible for operations and maintenance.

Observations

System Engineering was generally praised as effective and responsive to problems and support assistance needs of Operations and Maintenance.

System engineers interviewed regarding the status and health of their systems were knowledgeable and engaged in system health monitoring and reporting.

Maintenance rule systems overall health was found to be White for the current quarter (2Q 2006), the same as at the time of the 2005 assessment. Since the time of the 2005 assessment, overall system health had improved to green (4Q 2005) then reverted to white.

The following systems, which were in red system health condition, were selected for closer review and interviews with the system owners.

System	Red status in quarterly System Health Reports				
	Q2 2006	Q1 2006	Q4 2005	Q3 2005	Q2 2005
Med Voltage AC	x				
Boric Acid Addition	x				
Doors and Hatches	x	x			
480 V AC	x	x	x	x	x
Freeze Protection/Heat Trace	x	x	x	x	x
Plant Computer	x	x	x	x	x
ICS NNI	x	x	x	x	x
Rad Monitoring, Process and Area	x	x	x	x	x

System health recovery plans for the red systems were reviewed and discussed with the responsible system engineers. The health recovery plans were generally found to be suitable vehicles for identifying and guiding the work necessary to improve system performance from red to at least yellow.

Completion of work identified in system health recovery plans since the last assessment was markedly greater than in the period prior to the 2005 assessment.

The Plant Engineering Manager in place during the last assessment has been assigned as Director, Maintenance. His replacement was drawn from within the System Engineering organization.

Problems with the generation of the Plant Health Report observed during the last assessment appear to have been resolved, and Plant Health Reports are being generated reasonably promptly and accurately.

Specific Issues for This Area

- The system walkdown reports and the walkdown process were found to be essentially unchanged from those observed last year. The system walkdown process benchmarking to be undertaken pursuant to a corrective action specified in CR 06-02311 was in progress but not complete. The team questioned why this initiative was not being conducted in accordance with the FENOC procedure for benchmarking (NOBP-LP-2001 FENOC Self-Assessment/Benchmarking Rev 8). Engineering management directed that the benchmarking be performed in accordance with FENOC's procedure.

- System health recovery plans for systems in red health status generally did not include contingency plans and preparedness measures to address the potential need to departure from the plan if future activities do not yield the anticipated results.

Findings for This Area

The following findings are applicable only to this one assessment area:

- 3 ANA Equipment Reliability Program
- 4 ANA Red plant health systems

Cross Cutting Findings Applicable to This Area

The team made several Findings that relate to or are applicable to more than one Assessment Area. The Findings are documented in Section 1.5.4. Cross-cutting findings which are applicable to the area of System Engineering are:

- 1AS DIE Process
- 7ANA Management of engineering workload

1.5.2.4 Use of the Corrective Action Program (CAP) by Engineering

Area Effectiveness Rating

The Independent Assessment Team's overall rating for the Corrective Action area is **Effective**. Progress is continuing to be made on corrective action backlogs. Engineering's implementation of the CAP is very good to excellent.

Source Information

The Independent Assessment Team members reviewed a number of applicable Condition Reports in their assessment of the areas of Modifications, Calculations, and System Engineering. In addition to the insights provided with respect to the areas under review, this also provided insight into Engineering's use of the Corrective Action Program. . Additionally, all Engineering root cause analyses, all effectiveness reviews, a sample of limited and apparent cause analyses, and a sample of closed "CF" and "CC" Condition Reports since the last assessment were reviewed.

The team also reviewed the DBAR section related to Design Engineering Condition Report (CR) Backlog Reduction to determine progress being made with respect to Backlog Reduction of investigations and corrective actions completion/resolution. Similar statistics were obtained for Plant Engineering from the available management reports

The engineering assessment avoided duplication of the work performed under the independent assessment of the Corrective Action Program that was completed just before the engineering assessment took place. The engineering assessment focused on CAP implementation and did not assess the CAP processes that are common to all station organizations that had previously been assessed.

Observations for This Area

The team reviewed the results of this earlier Confirmatory Order Independent Assessment of the Corrective Action Program performed in August 2005.

Considerable progress has been made at reducing Corrective Action backlogs in Engineering. Plant Engineering has remained below the "work down" curve. Design Engineering's progress was impacted by 14RFO preparations and support. Although, this was a setback to Design Engineering backlog reduction efforts, the change in priorities to outage-related work was necessary to complete a number of commitments due the first refueling after restart. The Design Engineering work down curve has been rebaselined to the end of the first quarter 2006 value, and progress has resumed on backlog reduction. The team considers these actions appropriate.

The team found that Engineering was promptly initiating Condition Reports when appropriate.

Condition reports appeared to be appropriately classified as SCAQ or CAQ. The NCAQ classification has been discontinued. New Items that are not considered Conditions Adverse to Quality are documented and tracked through SAP notifications. Existing NCAQs continue to be tracked in the CR system, but must be closed or converted to SAP notifications on their current due date. The type of actions included requiring root cause evaluations ("SR" or "CR"), apparent cause evaluations (CA, limited or full), fix (CF, no causal evaluation required), or closed to trending (CC, corrective action, if any, already complete). The items chosen for root cause, full apparent cause and limited apparent cause appeared appropriate. The two root cause evaluations reviewed were well done. Several apparent cause evaluations (both limited and full) were reviewed and were also considered well done. Some problems with the quality of the new limited apparent cause evaluations were noted in the July 2006 Monthly Performance Report (3 rejects) and attributed to a lack of familiarity with the new process. These problems were not evident in the engineering limited apparent cause evaluations reviewed.

The corrective actions for "FIX" items appeared appropriate for hardware or technical issues documented in Condition Reports assigned to Engineering. However, the team questioned the appropriateness of the use of "FIX" for some process or management issues (such as those CRs documenting INPO AFIs or issues raised during COIA-ENG-2005 assessment). Some opportunities to address more generic issues may have been missed. This did not rise to the level of a finding. See "specific issues for this area" below.

Corrective actions formerly in CAP considered "enhancements" have been converted to SAP Tracking Items and closed in the corrective action system. This appears to be satisfactory as long as items are truly "enhancements". The team did not identify any instances where SAP items should have been more appropriately tracked as CR Corrective Actions.

Specific Issues for This Area

The team assessment was structured to avoid duplication with the recently completed Corrective Action COIA. The team focused on implementation of the program by Engineering. Process issues found in the Corrective Action COIA should be considered as equally applicable to Engineering.

The team noted that a relatively small number of CRs for process or programmatic issues were handled as "CF" with no causal evaluation performed. These items included an INPO AFI and the CRs written for COIA-ENG-2005 ANAs. (It is noted that the COIA procedure does not require CRs for the ANAs, only that CRs should be considered.) The team feels that CRs related to the completeness and effectiveness of processes and programs issues should generally have some form of a causal evaluation performed to identify opportunities to improve the overall process or program, and not just deal with the specific deficiency noted. This issue is not considered to rise to the level of a finding since relatively few CRs of this type were found and the CR evaluations (not a casual evaluations, per se) did attempt to address some possible causes. Cases where opportunities were missed to address some process and programmatic issues are discussed in Section 1.5.2.6, "Follow up to ANAs from 2005" and Section 1.5.4, Finding 6 ANA..

Findings for This Area

There were no Findings uniquely associated with the Use of the CAP by Engineering assessment area.

Cross Cutting Findings Applicable to This Area

The team made several Findings that relate to or are applicable to more than one Assessment Area. The Findings are documented in Section 1.5.4. Cross-cutting findings which are applicable to the area of Use of the Corrective Action Program are:

- 6 ANA Follow-ups to assessments and last year's COIA-ENG-2005

1.5.2.5 Effectiveness of Assessment Process

Area Effectiveness Rating

Overall, the team rated the self-assessment process as **Effective**. This is based on the quality of self-assessments, interviews with engineers and managers, and the receptivity and responsiveness management exhibits toward the self-assessment process.

Source Information

The Independent Assessment Team conducted interviews of selected Engineering and Site personnel and reviewed selected documents from the reference library (See Sections 1.6.1 & 1.6.2).

The team reviewed the following self-assessments:

Number	Title
DB-SS-06-10	14RFO Design Modifications
DB-SS-06-25	Master Trip Solenoid Valve
DB-SS-05-23	System Performance Books and Walk downs
DB-SS-05-25	System Experts Qualifications
TSS-06-00065	Cycle 14 PMEAR
NPE 05-00054	PE&TS IPA 5/05 – 10/05
TSS 06-00050	PE&TS IPA 11/05 – 4/06 Rev. 01
DBE 05-00182	DE IPA 5/05 – 10/05
DBE 06-0099	DE IPA 11/05 – 4/06 Rev. 01
DB-C-05-04	DB Fleet Oversight Quarterly Report
DB-C-06-01	DB Fleet Oversight Quarterly Report
DB-C-06-02	DB Fleet Oversight Quarterly Report
DB-C-06-03	DB Fleet Oversight Quarterly Report

Observations

In 2006, 30 snapshot self-assessments were scheduled and approximately fourteen (14) reports were available at the time of the 2006 COIA. There were eight (8) snapshot assessments for engineering subjects, most of which are scheduled for late in the year and are for Technical Services. There were two (2) 2006 snapshot assessments of engineering or engineering subjects available for review. There were two (2) 2005 snapshot assessments that were completed after the 2005 COIA was performed which were also reviewed during this assessment. These four (4) snapshot assessments were reviewed and are listed above.

In 2006, there were 7 focused self-assessments scheduled, none of which are directly related to engineering. In 2005, there were five (5) focused self-assessments scheduled that applied to engineering. All five were reviewed by the 2005 COIA.

The last four (4) Integrated Performance Assessments for engineering were reviewed and are listed above.

A spot check of 9 snapshot assessments, 2 IPAs (one each for Design and Plant Engineering), and 4 fleet Oversight assessments performed since middle of last year related to engineering revealed the following:

- Assessments appeared to be critical and resulted in identification of areas to improve. Basis – 43 items were generated in response to these assessments (14 CRs and 29 Notifications).

- There is a potential vulnerability to lose enhancements identified within self assessments. Basis – of the 43 items resulting from the above assessments, 18 are closed and 25 remain open. Of the 25 open items, 9 have no end date in SAP and 10 are overdue (76% of open items). Also, Notification 600269668 was entered and closed within SAP on the same date. One action in the Notification was completed but all the actions were closed leaving three items with no response. The responsible engineer was not aware that the actions had been closed and SAP would no longer alert him to respond to these activities. For more details, see Finding 6 ANA, Follow-ups to assessments and last year's COIA-ENG-2005, in Section 1.5.4.

- Limited opportunity exists for outside perspective of Engineering effectiveness from assessments performed over last year. Basis - self assessments evaluate both compliance and best practices. Five self assessments related to Engineering were performed last year, none are scheduled for this year. Snapshots are primarily focused on industry and fleet best practices (versus compliance and program effectiveness). Only the IPAs, CAP related snapshots, and Oversight reports provide insights with respect to compliance and program effectiveness.

- Opportunities were lost to identify and improve the Problem Solving/Decision Making "process". Basis - Snapshot assessment DB-SS-06-025, Master Trip Solenoid Valve "B" Did Not Trip When Pushbutton Pushed – Evaluation of Problem Solving Plan, identified a weakness in the draft plan (level of documentation), and "numerous improvement opportunities" (details associated with prior failures). However, no CR or Notification was generated to determine if there was an opportunity for process improvements (e.g., training).

- The Nuclear Oversight report for 4th quarter 2005 (DB-C-06-01) identified several issues associated with the Boric Acid Corrosion Control Program. In follow-up discussions with the program owner, these were primarily administrative, attention-to-detail issues. The issues were also covered in detail during the latest CNRB meeting. No concerns were identified with the program.

- The Maintenance Rule Program, including the latest (a)(3) assessment report covering Cycle 14, appears to be in a strong condition. Basis – Cycle 14 Periodic Maintenance Effectiveness Assessment Report and interviews with program owner.

The last four (4) DB Fleet Oversight Quarterly Reports were reviewed for engineering issues and are listed above. These were Quarterly Quality Assessment reports for Q4-2005, Q1-2006, Q2-2006, and Q3-2006. The assessments covered the following engineering areas: Performance Indicators (PI), Boric Acid Corrosion Control (BACC), In-service Inspection (ISI), and some ASME attributes. Condition reports were generated as necessary.

The receptivity, responsiveness, and aggressiveness of management and staff to resolving issues raised in self-assessments were evaluated by conducting interviews of many engineers, oversight personnel, and managers. Overall, the results of the interviews indicated management was aggressively addressing the condition reports generated by the self-assessment and assessment issues. The treatment of corrective actions and SAP notifications for enhancement issues were responsive but generally characterized as "broke – fix" type responses.

During the interview with Fleet Oversight management they discussed the recent revision to the Oversight Program to make more of a distinction between the Compliance functions and the Performance Improvement functions. This change is discussed in the Executive Summary of the 3rd quarter DB Fleet Oversight Assessment Report DB-C-06-03. The assessment team believes this will be beneficial to the Engineering Department, which is seen as improved, performing quality work and now being able to benefit from continuous improvement focused assistance.

Engineering program self-assessments were found to be consistently executed, intrusive, adding value, and of high quality.

Specific Issues for This Area

The assessment team was not able to determine the stations strategy for selecting assessment areas. The Fleet and station develop schedules for focused and snapshot self-assessments but there is no strategy guidance that we have found after inquiring for the past two COIA assessments. It was noted that in 2005 several focused self-assessments were related to engineering subjects, but in 2006 there are none scheduled. The review of the 2006 Oversight Quarterly reports indicate that the only primary element reviewed for engineering to this date was the area of Reactor Engineering and Fuels.

The assessment team believes that the engineering department has shown improvement and performs snapshot and IPAs that point to a continuing improvement trend. The COIA appears to be the only focused assessment scheduled for engineering in 2006.

Findings for This Area

There were no Findings uniquely associated with the Effectiveness of Assessment Process assessment area

Cross Cutting Findings for This Area

The team made several Findings that relate to or are applicable to more than one Assessment Area. The Findings are documented in Section 1.5.4. There was one cross-cutting finding which is applicable to the area of Assessment Effectiveness:

- 6 ANA Follow-ups to assessments and last year's COIA-ENG-2005

1.5.2.6 Follow-up to ANAs from 2005

Area Effectiveness Rating

The Independent Assessment Team rates DB Engineering Performance in this area as **Effective.** Opportunities for improvement were noted

Source Information

The team reviewed the actions taken on last assessment's Areas in Need of Attention (ANAs) including those documented on Condition Reports initiated following the last assessment.

There were no Areas For Improvement (AFIs) from the 2005 COIA-ENG assessment, therefore no Condition Reports or Action Plans were required.

However, FENOC's DB CNRB recommended during the February 2006 meeting that DB use CRs to track action on the findings of the 2005 assessment.

Six CRs were initiated to track response to the 2005 findings. These CRs covered five of the ANAs from the 2005 assessment. One ANA was not tracked using a CR.

The team reviewed these six CRs as well as additional related documents provided by FENOC for the assessment library (see section 1.6.2). The team also interviewed individuals responsible for the Investigation Summary and for authorizing closure of the CR corrective actions for the Condition Reports issued to resolve the 2005 Findings.

Source Information

The following six CRs were initiated to address findings from the 2005 assessment:

- CR 05-05828 COIA-ENG-2005 Vendor Product Quality
- CR 06-02441 COIA-ENG-2005 Transmittal of Engineering Requirements for Operation and Maintenance - DE
- CR 06-02312 COIA-ENG-2005 Transmittal of Engineering Requirements for Operation and Maintenance - PE
- CR 06-02443 COIA-ENG-2005 Program Status – PRA Program Improvements
- CR 06-02311 COIA-ENG-2005 ANA for System Engineering Attention to Detail
- CR 06-02442 COIA-ENG-2005 ANA for Design Engineering Backlog

The following CRs were related to issues raised in the 2005 assessment

- CR 06-02422 Technical Services IPA Identifies Need to Update CTMT Copper Oxide Issue
- CR 05-00293 COIA-ENG 2005 Green Dust on 565 During Initial CTMT BLD Radiological Surveys

Numerous additional documents were reviewed during the assessment of this area. Many are mentioned in the following discussion, and all are listed in the document library list in section 1.6.2

Observations

Follow-up of findings from COIA-ENG-2005

This section discussed in detail the observations made concerning how the findings from last year's assessment were tracked and the results achieved.

There were 6 ANAs (no AFIs) identified in last year's assessment.

ANAs do not *require* Condition Reports or Action Plans, but rather are to be "considered for entry into the Corrective Action Program..." (definition 3.3, DBBP-VP-0009 Management Plan for Confirmatory Order Independent Assessments Rev 3). During the February 2006 CNRB meeting, the CNRB recommended that CRs be generated to take action on the ANAs. Consequently six CRs were initiated covering five of the six ANAs.

The coverage of the 2005 ANA findings by the CRs generated was not complete:

- 1ANA Containment Copper Oxide, containing four issues regarding Copper Oxide response planning and longer term actions, was not addressed by a CR. The shortcomings identified in the ANA appear not to have been acted upon.

- The part of 4 ANA Program Status – PRA and Equipment Reliability, regarding the Equipment Reliability Program was not addressed by a CR. The shortcomings identified in the ANA have been addressed by the Equipment Reliability Excellence Plan, but implementation of the plan has left the ER Program about in the same state as was found last year.

A summary of the CR / CA response to the COIA-ENG-2005 assessment is:

Finding	Short Name	CR Number	CAs generated
1ANA	Containment Copper Oxide	No CR generated	0
2ANA	Additional Corrective Actions to Address Vendor Product Quality Concerns	05-05828	3
3ANA	Transmittal of Engineering Requirements for Operation and Maintenance	06-02441 (Design Engineering Department)	1
3ANA	Transmittal of Engineering Requirements for Operation and Maintenance	06-02312 (Plant Engineering Department)	0
4ANA	Program Status – PRA and Equipment Reliability	06-02443 (addressed PRA program only)	1
5ANA	System Engineering Attention to Detail	06-02311	1

6ANA	Design Engineering Backlog Reduction	06-02442	0

Six CA's were initiated from the six CR's. One was considered to be strongly responsive to the finding (CA 1, CR 06-02443 re 4 ANA0, three were considered to be reasonably responsive CAs 1,2, and 3, CR 05-05828 re 2 ANA) and two were considered to be only partially responsive (Ca 1, CR 06-02441 re 3 ANA and CA 1, CR 06-02311 re 5 ANA).

The CAs are discussed in relation to each of the respective Findings.

Review of response to 1ANA Containment Copper Oxide.

It does not appear that this finding was addressed, and appropriate action was not taken.

The 1 ANA Containment Copper Oxide finding was a problem management issue, but it was not addressed as such. The CR treated it as a documentation issue.

The 1ANA-2005 finding was intended to stimulate improvement in the plan for addressing the containment copper oxide issue. It mentioned four specific shortcomings observed in the copper oxide plan:

Shortcomings identified included:

- *The currently intended ultimate closure state of this issue has not been defined.*
- *A decision tree, or similar tool, displaying potential contingencies, action levels, and response concepts has not been prepared to guide the ongoing effort.*
- *Readiness assessments to indicate what, if any, preparations for dealing with contingencies should be undertaken have not been performed.*
- *Reinspection of the containment to confirm the rates and locations of copper dust accumulations had not been included on the unscheduled outage work list.*

The assessment team continues to believe that the first and fourth items continue to have relevance to the copper oxide issue, and could constitute lessons learned in problem solving:

1. The ultimate closure state of the copper oxide issue has not been determined or targeted
2. Defining an ultimate closure state in a resolution plan for a complex problem is a good practice worth adopting in general
3. Use of decision trees or similar tools to display contingencies, action levels, and response concepts is a good practice worth adopting in general
4. Readiness assessment to indicate what, if any, preparations for dealing with contingencies should be undertaken is a good practice worth adopting in general

CR 05-02422 was issued 5/31/2006 titled "Technical Services IPA Identifies Need to Update CTMT Copper Oxide Issue" and discusses the ANA identified in COIA-ENG-2005 regarding Containment Copper Dust. However, this CR does not address or even mention the shortcomings listed in the finding.

Regarding the fourth shortcoming, a continuing concern remains:.

The response to CR 05-02422 states "This Condition Report does not identify any new deficiencies and is used to capture the AREVA as well as the 14RFO results..."

Interviews with the individuals involved in preparing the response to CR 05-02422 indicated that they had not seen the full finding as written in the COIA-ENG-2005 report including the four shortcomings. As a result, the individuals addressed only the copper oxide issue and not the shortcomings in the action plan. The CR was consider a "CF" and documented only those actions actually taken in response to the AREVA letter and during the RFO.

Discussions with the Containment Air Cooler System Engineer indicated that more copper oxide deposits had been found during the Master Trip Solenoid forced outage. The copper oxide deposits were deemed to be consistent with what had been previously found. A CR had been generated related to the newest copper oxide deposit find.

There is a recommendation in the AREVA letter to repeat the 14RFO chemistry check for copper in the reactor coolant system during subsequent outages whenever copper oxide deposits are found. However, there was no action taken to capture this recommended action either as a corrective action to the latest CR or in an action plan. (After discussion with the system engineer, he indicated that it would be captured as a corrective action for the new CR. This however, only addresses 15RFO and does not address or establish an action for all outages subsequent to 14RFO when copper oxide deposits are found.)

An overall plan to deal with copper oxide deposits, including ongoing actions beyond 14RFO and those actions to take if levels of copper oxide deposits or reactor chemistry Cu analyses indicate a departure from anticipated levels, has not yet developed.

The team believes that a comprehensive action plan for copper oxide is still needed for the following reasons:

1. To identify all ongoing actions from the AREVA letter, including responsibilities for determining whether they are appropriate for any given outage.
2. To establish parameter values and required actions should the deposits and/or reactor coolant chemistry depart from levels consistent with the AREVA conclusion that there are "no active source of copper oxide"

Review of response to 2ANA Additional Corrective Actions to Address Vendor Product Quality Concerns

This ANA appears to have been addressed and resolved responsively and satisfactorily.

This finding was addressed by 05-05828, which generated three Corrective Actions, all of which have been closed as complete.

The CAs (paraphrased) are:

1. Share info from CR and Letter dated Jan 20 with the DE staff
   - Enforce increased schedule adherence to provide adequate time to complete owner's acceptance and supervisory reviews prior to EAB review.
   - Require advance preparation and review of one engineering product as a lead example when many similar products are required.
   - Familiarize the Davis-Besse design engineering staff with a summary of EAB findings to ensure they know of and look out for past deficiencies in future reviews.
2. Receive and evaluate vendor responses to 1/20/06 letter and attach to CR
3. EAB will document success of vendor plans

Review of response to 3ANA Transmittal of Engineering Requirements for Operation and Maintenance

This finding was not addressed in a fully responsive manner, and a related finding has been generated in the 2006 assessment report.

Two CRs were generated to address this finding: CR 06-02312 for Plant Engineering and CR 06-02441 for Design Engineering.

The Plant Engineering CR resulted in the conclusion "Process should remain as is and no action is required" and no corrective actions.

The Design Engineering CR resulted in one Corrective Action, to perform a training gap analysis. This action was completed and resulted in no training issues being identified and no other specific actions required for CR closure.

This response is weak in that it does not address how deficient translation of design requirements into protocols for operating and maintaining the plant, similar to the two examples cited in the finding, will be avoided in the future.

During the conduct of the 2006 Engineering Programs Effectiveness assessment, one of the examples, the one related to exclusion of flammables from the dry fuel storage cask pad in accordance with the engineering requirements flowing from assumptions in the fire hazard analysis performed to support licensing, evolved into a non-cited violation because flammable liquids were in fact found to be stored in Sealands located on the storage pad.

The response to the DE CR cites the DIE process and the use of CRs as preferred means to transmit design information to the plant for implementation.

The Assessment Team feels that CRs would only be appropriate for this purpose when prompt actions are required, and the requirements they transmit should soon be transcribed into a more enduring form of basis. (CRs are not reviewed maintained up to date under configuration management protocols and might be soon rendered obsolete and unsuitable for use). Further, CRs would not be suitable for transmittal of engineering design requirements for future adoption.

The team also believes that since DIEs are a one-time review and not kept up to date, their suitability as a reference beyond their initial use in connection with a change is somewhat limited.

Interestingly, the Investigation Summary for CR 06-02441 contains the following, on page 2 of 5:

> *The effectiveness of the DIE process is limited by the presentation of the engineering requirements and the expertise of the evaluators. Using calculation 034.009 as an example substantiates this limitation. Calculation 034.009 consists of 65 pages of computation with the limitations that directly affect organizations identified by the DIRC on a total of 3 pages in the design inputs/assumptions section of the calculation. The design inputs/assumptions are not highlighted to capture the attention of the evaluator and the design inputs/assumptions are not restated in the results/conclusions of the calculation. Calculation 034.009 is a hydraulic analysis of a piping system completed by hand computation. Complete comprehension of the computation would require a fundamental comprehension of fluid dynamics and comprehension of the Boric Acid Addition System and the reactor coolant makeup system. Evaluators of the calculation without the knowledge of the aforementioned subjects could fail to comprehend the engineering requirements established in the calculation.*
>
> *To increase the effectiveness of the DIE review in this example the specific engineering requirements (design inputs/assumptions) under the control of operations or other organizations should be flagged in the body of the engineering document, restated in the results/conclusions of the document and discussed on the DIE cover page. Additionally, the notifications or condition reports generated to track procedure changes as a result of the DIE review should be reviewed and/or augmented by engineering to provide assurance that the applicable engineering requirements are propagated effectively.*

The Assessment Team agrees. We find the first paragraph of the excerpt to be a succinct statement of the problems we seek to help Engineering avoid. And we find the second paragraph to describe an approach that would not only enhance the effectiveness of the DIE process to translate engineering requirements for operation and maintenance when the engineering document is issued for review, but it would also provide the very desirable additional benefit of permitting future readers of the engineering document to become aware of the engineering requirements created within even though they might not have access to the DIE.

Review of response to 4ANA Program Status – PRA and Equipment Reliability

Last year's finding addressed two programs – PRA and Equipment Reliability.

Part of this ANA was responded to in an exemplary manner (PRA program). However, there was no response to the ER program part of the finding, and the ER program remains troubled. A related finding has been developed in the COIA-ENG-2006 assessment (3 ANA Equipment reliability program).

CR 06-02443 was generated to address the PRA finding.

One Corrective Action was generated to address the PRA program related portion of this finding. The CA calls for Update and completion of Action Plan DBEA-001 and specifically calls for inclusion of four items responsive to three of the four shortcomings identified by the finding.

This CA is considered highly responsive to the finding in that it addresses the issues fully (except for the item dealing with corporate PRA infrastructure, which is being addressed independently at the corporate level). Further, good progress in implementing the plan has been shown and DB is on track to complete the level 1 PRA upgrade by the end of CY 2006 as planned.

There was no CR addressing the Equipment Reliability Program part of this finding. However, an Excellence Plan has been formulated and is being implemented.

The status of some elements of the ER program is little changed from what the team found in 2005 (component criticality categorization is still being validated, and PM templates are still being generated at the corporate level for implementation at the plant).

On the positive side, PM feedback review and implementation backlogs have been significantly reduced.

Review of response to 5ANA System Engineering Attention to Detail

The response to this finding was not aggressive.

CR 06-02311 was generated in response to this finding. The CR addressed four of the five items identified in the finding. One Corrective Action addressing one of the five items was generated.

One item, update of system description SD-037A Chemical Addition System, was completed as a work item without CAP tracking (Document Change Notice SD-037A-03-002, SAP Notification 600272845 prepared in April 2006).

The CA addressed the system engineer walkdown item by commissioning a benchmarking of five other plants' walkdown processes to align the Davis-Besse process more closely with other plants. (The CR indicates benchmarking and alignment with other FENOC plants, but the benchmarked plants included several non-FENOC plants as well.) The benchmarking process was underway via telephone surveys during the assessment, but results were not available. The CA completion due date is 9/28/06.

Two other items, dispersed management expectations for system engineers and reports on system engineer training were acknowledged to be true but deemed to not require any action.

It was observed that the Plant Engineering Manager still has to go to great lengths to determine for himself that the qualifications of department personnel are current. The expectation is that individuals will monitor and maintain their own training and qualification status, and put themselves on report if their qualifications lapse. Management oversight as a check would be cumbersome to accomplish.

It was reported that some system engineers still find it challenging to maintain an awareness of all the expectations and duties associated with the SE position. A search of the procedures potentially defining responsibilities and accountabilities for system engineers could readily be conducted with the results organized and provided the SE's in the form of a table indicating the duties and the procedures (or other documents) which assign them. Procedures wouldn't need to be changed to create this reference.

The final item concerning a system engineer whose system was in persistent red health status but who had not met with the Plant Health Committee was overtaken by events in that he is now meeting monthly with the Plant Health Committee and is receiving support for his system health improvement plan.

Review of response to 6ANA Design Engineering Backlog Reduction

The response to this finding addresses the issues, and the actions taken are effective.

CR 06-02442 was generated to address this finding. No Corrective Actions were generated within this CR.

The finding indicated four areas where management attention was needed:

- Develop a "Recovery Plan" to either establish a new work down curve or get back on the original curve
- Assess the impact of the transfer of work items to SAP with respect to the backlog and its positive impact to backlog reduction
- Analyze the impact of possible competing priorities in the next operating cycle and incorporate into the work down curve.

- Analyze the backlog to determine if there is low value work that should be either cancelled or moved to SAP. (Currently this determination is not being made until the item comes due).

The CR addressed these items in the Investigation Summary section under a topic titled "analysis".

The recovery plan item is addressed under Specific Issues for This Area below.

The second and third items were items addressed as described by a paragraph each, and seem reasonable.

The fourth item, analysis of backlog and cancellation of low value work or transfer of tracking to SAP has been satisfactorily addressed. The transfer of enhancement items from CREST to SAP has been completed. The elimination of low value ECRs/ECPs is ongoing and making good progress.

Specific Issues for This Area

For the recovery plan item, DE indicated the steady state of 610 open documents has been retargeted for the end of 2006. The team pointed out that the new workoff curve for DE Open Documents did not account for the significant variance from the previously projected workdown path, so achieving 610 open documents would either require a much faster workoff rate for the remainder of the year or deferral of the achievement of the target until mid-2007 if the recent work off rate were to be maintained.

Findings for This Area

There were no Findings uniquely associated with this assessment area

Cross Cutting Findings Applicable to This Area

- 2 ANA — Implementation of requirements from calculations
- 6 ANA — Follow-ups to assessments and last year's COIA-ENG-2005

1.5.3 CR summary

This section summarizes CRs written during the assessment related to assessment reviews, discussions, and findings

Two CRs were written during the Independent Assessment, by the Design Engineering Department.

CR 06-6388 Inconsistent practice in reviews and design verification for ECP revisions.

CR 06-6652 CST vortex calculation for AFW Pump suction

1.5.4 Findings

This section presents the Findings of the Independent Assessment Team and shows the relationship between findings and the six assessment areas.

The table below shows a list of the 2006 findings and relates them to the assessment areas.

Findings		Areas of assessment					
		Modifications	Calculations	System Engineering	Use of CAP	Self Assessment Effectiveness	2005 Findings
1 AS	DIE process	X	X	X			
2 AS	Margin management		X				
1 ANA	Inattention to detail in calculations		X				
2 ANA	Implementation of requirements from calculations		X				X
3 ANA	Equipment reliability program			X			
4 ANA	Red plant health systems			X			
5 ANA	Engineering change package revision reviews	X					
6 ANA	Follow-ups to assessments and last year's COIA-ENG-2005				X	X	X
7 ANA	Management of engineering workload	X	X	X			

Discussion of findings

Three of the seven ANAs were applicable to more than one assessment area. Four of the seven ANAs were applicable to only one area. By comparison, of the six ANA findings in the 2005 assessment, five were applicable to more than one assessment area. Thus the 2006 findings were somewhat narrower in applicability.

Two of the 2006 findings are related to findings of the 2005 COIA-ENG assessment.

The 2006 finding "2 ANA Implementation of requirements from calculations" is related to the 2005 finding "3ANA Transmittal of Engineering requirements for operation and maintenance". There have been no process changes to address the examples noted last year, additional examples were noted in 2006, and one example noted in the 2004 and 2005 assessment reports (the engineering requirement to control flammable material on the spent fuel storage pad) recently evolved into an NRC non-cited violation of 10 CFR 72.212. Future additional instances are thus not reliably precluded.

The 2006 findings "3 ANA Equipment reliability program" is related to the 2005 finding "4 ANA Program status – PRA and Equipment reliability". At the time of the 2005 assessment, the team found component criticality categorization validation due to be completed by the end of the year and found the same this year. The team found PM templates being developed with 25 to be available by the end of the year 2005 and found essentially the same template availability target for the end of 2006. This indicates little progress has been made in establishing and implementing the PM basis.

Findings statements

The following section contains the findings statements and their bases.

1 AS DIE Process

The Design Interface Reviews and Evaluations (DIE) Process is an excellent tool for identifying the impacts of modifications and calculations on plant procedures and practices.

- The DIE Process was previously identified as a positive noteworthy item in The 2004 COIA (Report Number 2004-0102) because it has been beneficial in identifying additional inputs, requirements and impacts for calculations. The DIE Process remains strong in the calculation area and has been successfully incorporated into the Engineering Change Process.

- The DIE Process is flexible as a common process for use with modifications, calculations and other engineering products. It has potential for use wherever critical communications and design information needs to be passed between departments and organizations.

- The assessment team's review of Engineering Change Packages (ECPs) and Calculations found that the DIE process results in a thorough and well documented exchange of engineering information across section and departmental boundaries.

- The assessment team's evaluation of the DIE Process viewed it as a good communication tool. It initiates exchange of information that sparks both formal and informal exchange of ideas related to the referenced subject and results in a better end product.

- During the review of calculations and ECPs, two Utility Peer members of the assessment team identified the DIE Process as a method worthy of consideration for use in their Fleet Procedures.

2 AS Margin Management

The margin management program is well-implemented and is achieving excellent results

- Margin improvement efforts have resulted in a significant reduction in the number of Tier 1 calculations with low margin.
- The program focuses on ten highest risk systems
- Improved calculation techniques and/or physical plant changes are considered to address low margin calculations
- Davis-Besse management has a demonstrated commitment to achieving improved design margins.

1 ANA Inattention to detail in calculations

Several instances of inattention-to-detail with respect to administrative requirements were found in calculations reviewed. Examples include wrong values used (not affecting calculation results), wrong DIN numbers used, blocks not checked on cover sheets/design reviews/verifications when required, and sections copied from similar calculations or previous versions that are no longer applicable. These problems indicate the need for better self checking.

From a sample of thirteen calculations reviewed plus the calculation prepared to support the temporary modification related to MSR elbow temporary repair, the following was identified.

- Wrong dimension used for stanchion size in pipe hanger stress calculation This error was apparently caused by copying this section from a similar calculation with the larger stanchion size. The stanchion size error was not caught during the design review, vendor approval, and owner acceptance. It was caught during the EAB review.
- Blocks not checked on calculation cover sheet, review checklist or design verification record (one instance caught by EAB, two not caught)
- Wrong addendum number assigned. Number assigned had already been used. (caught by Nuclear Oversight after approval. CR issued)
- Some explanations contained inconsistent or confusing statements or information.
    - "Usable volume" (of a tank) was defined differently in adjacent paragraphs. Apparently caused by copying the previous calculation revision where usable volume was defined as the volume above the bottom on the outlet. This revision's first paragraph defined usable volume as the volume above the level that vortexing might occur.

- Same variable used for represent two different parameters (Q used as both volumetric flow rate and as "partial" volume.)
- Unclear use of the word "conservative". Parameters were sometimes described as "conservative" without an adequate explanation, e.g. a "maximum flow rate" for a heat exchanger described as "conservative" when compared to a minimum design value. The maximum flow rate would have been better described as the flow rate with the control valve full open.

These administrative and clerical errors did not impact the overall calculation conclusions and outputs, but detracted from an otherwise excellent engineering work product. However, these shortcomings do indicate the need for more self-checking and critical initial review to prevent potentially more serious errors from occurring.

2 ANA Implementation of requirements from calculations

Some requirements from calculations and analyses have not been adequately communicated to ensure effective and timely implementation by operations and maintenance. Examples include requirements related to storage of combustibles on the Dry Fuel Storage Pad, changes to required minimum fuel oil level in the Diesel Fire Pump Day Tank to meet design requirements and required minimum water level in the Condensate Storage Tanks to prevent vortexing.

Failure to effectively implement the Dry Fuel Storage Pad requirements resulted in a Non-Cited Violation.

Supporting details include:

- The 2004 COIA-ENG assessment team questioned the storage of combustible materials on the Dry Fuel Storage Pad that resulted in CR 04-06372 being initiated by Engineering. Corrective action was to define the requirements, revise the applicable procedure, and verify the pad was in compliance. Corrective was completed in March 2006. In April 2006, this problem recurred and the station received a potential Non-Cited Violation (NCV) for storage of combustible material on the Dry Fuel Storage Pad that did not meet the requirements. Primary resolution of this item was assigned to Reactor Operations (owner of the Dry Fuel Storage Facility design basis), Fire Protection (owner of the combustible control procedure) and Radiation Protection (user of the "Sealand" trailers on the pad). However, this information was apparently not adequately communicated to others who might store items on the Dry Fuel Storage Pad, such as DB Projects.
- Operations identified procedures affected by a calculation reducing the minimum level of fuel oil in Diesel Fire Pump Day Tank Level in February 2006 in a DIE for review of the draft calculation. A SAP notification was initiated for these changes to be implemented once the calculation was

issued and a FHAR UCN approved. The UCN was approved in March 2006. As of September 2006, this change had not yet been implemented in the operating procedures. The SAP item had been assigned a 2020 due date. It is noted that the previous day tank level requirement resulted in an Operations Work-Around that will no longer be required once the new relaxed requirements are implemented. Although the new requirements were less stringent than the previous ones and, as such, reduced the urgency to implement the revised requirements, an operator work-around that was no longer necessary could have been eliminated six months ago.

- A CST Tank Level calculation was performed to determine the CST Volumes needed to meet the tank volume Technical Specification requirement. As part of this calculation, it was determined that 3.44 feet represented the minimum tank height to prevent possible air entrainment due to vortexing. The results of the calculation were used to establish new higher total CST volumes to meet the TS. However, the new minimum level to prevent vortexing was not communicated to Operations. By procedure (DB-OP-06233), AFP manual switch over from the CST's to Service Water is required at 3 ft indicated level. Since vortexing is not desirable, operations should consider raising the level to higher than the vortexing point (including instrument error). The Design Interface Summary in the calculation exempted reviews by OP, MA & PE based on the statement that impacted procedure(s) already identified in the CRs that were the initiating documents for the calculation revision process. However, the new minimum tank level to prevent vortexing was never communicated to Operations. CR 06-6652 was initiated during the assessment to evaluate this concern.

Although the DIE process does an excellent job of identifying potential impacts of new requirements resulting from revisions to calculations, it leaves the actual implementation to the impacted station group. Further communication with or involvement by the design bases owner is encouraged when it is felt appropriate, but is not required. Additionally, station groups are sometimes not aware that a calculation or analysis has been approved and ready for implementation, since it is only in draft form when it is reviewed. A more formal, rigorous process (perhaps as an enhancement of the DIE process) appears needed to ensure the final requirements are communicated and implemented in a timely manner. It is noted that plant modifications inherently have such a process, the Operations Acceptance process, but that is not the case for calculations.

3 ANA Equipment Reliability Program

The Equipment Reliability Program has taken too long to be implemented and is therefore not providing the benefits needed in protecting against equipment performance degradation and equipment failures.

Failures of equipment attributable to PM scope omissions or excessive intervals have been previously identified by other assessments (INPO, DB-SS-06-26 Common Cause Review AFI #2)

The Maintenance Rule program generates adjustments to the PM program for actual failures. This program is strong.

The ER program covers potential failures that have not yet occurred. This program is not strong (not having the desired effect at present)

The implementation of the ER program is planned and scheduled via an Excellence Plan, but has a way to go before it delivers its promised benefits.

Component classification, development and application of PM templates, task comparison and PMCR generation, implementation through revised PMWO's, and field execution are the steps necessary to achieve benefit to the equipment.

DB is at the component classification stage (with some later stage work running in parallel). Most other plants are beyond this.

Work in the excellence plan is primarily assigned to station personnel.

Execution of the Excellence Plan will be challenging.

4 ANA Red plant health systems

Several plant systems have been in health status RED for some time, and require additional work to exit to higher levels of system health.

Significant deferrals of required performance improvement actions or other causes of sustained unacceptable system health had been noted in past assessments.

At the beginning of the 2006 assessment, the following systems were in RED system health status.

System	Red status in quarterly System Health Reports				
	Q2 2006	Q1 2006	Q4 2005	Q3 2005	Q2 2005
Med Voltage AC	x				
Boric Acid Addition	x				
Doors and Hatches	x	x			
480 V AC	x	x	x	x	x
Freeze Protection/Heat Trace	x	x	x	x	x
Plant Computer	x	x	x	x	x
ICS NNI	x	x	x	x	x
Rad Monitoring, Process and Area	x	x	x	x	x

Two systems have recently exited the red status (Doors and Hatches, Plant Computer). The exit from red status was supported by a combination of successful completion of planned recovery work and revised criteria for designating system health for plants in the a(1) monitoring status.

An example of management oversight and emphasis is the Freeze Protection/Heat Trace system. The system engineer for this system meets with and reports progress in implementing his system health recovery plan to the Plant Health Committee on a monthly basis. The Plant Health Committee has influenced completion of preparatory work for recovery activities with the result that since the 2005 COIA-ENG assessment, considerable progress has been made in producing and implementing modifications required to restore system health.

However a recent modification for heat tracing on the BWST was pushed from its original schedule this Fall to a Spring schedule because engineering could not support a necessary calculation that had to be done. The need for the calculation was not initially recognized, and when it was, it could not be accommodated in the engineer's workload. This instance is an example of a failure of engineering's work management process to keep important work on track to support larger plant initiatives.

The need for PHC involvement indicates that the work management system sometimes does not accomplish the work called for without supplemental oversight.

A change to system health rating was recently implemented with adoption of Revision 1 of NOBP-ER-3009 FENOC Plant Health Report Program. Where previously a system remained in red health status after required health restoration activities had been completed for some period of time to permit monitoring, with the revision, a system can be deemed to have exited the red status upon entry into the monitoring period. This is a desirable change in that it focuses attention on the systems remaining in red status and on the activities necessary for them to achieve improved health.

However, some systems persist in their red status. Management oversight and work completion emphasis would benefit the health of these systems.

Improvement plans for some systems contain tasks whose outcomes may be uncertain due to future required authorizations, need for spare parts, etc. Contingency measures were found to be incorporated into some system health recovery plans but not all.

One improvement plan was found to not include all the steps necessary to achieve the intended goal of exiting from the red condition (the plan for ICS/NNI).

Anticipatory factors such as spare parts unavailability, age related degradation, impact of movement of PM from outage to on-line, etc. are not considered in assessing system health, as system health is indicated by current condition and performance.

5 ANA Engineering change package revisions

Engineers have not consistently interpreted and performed the ECP revision process requirements for a) independent design verification and b) review.

The Design Change Process controlled by Procedure NOP-CC-2003 requires a Change Notice Form to revise an ECP. The ECP Change Notice (Form NOP-CC-2003-16) provides for documenting the description of the changes to the ECP and other administrative information. It also provides for documentation of the need to perform an Independent Design Verification and the signatures of the preparer, reviewer (if necessary), and the supervisor.

- The assessment team review of a number of ECPs with revisions found an inconsistent practice in reviews and design verification as noted on the ECP Revision Form.
- CR 06-6388 (CF) was written by Davis Besse Engineering to review this matter.
- The inconsistencies dealt with the Reviewer's Signature block and questions on the ECP Change Notice. (Form NOP-CC-2003-16). Not on the individual Design Documents such as Calcs or the Independent Design Verification forms per the IDV Procedure (NOP-CC-2001).
- The assessment team did not find any technical or quality issues with the ECPs reviewed and no specific instances of missed reviews per the requirements of ANSI 45.2.11 were noted.
- The assessment team interviewed various levels of personnel in the design engineering organization, and determined that the requirements for review signatures and design verification was not well understood for ECP Revisions.
- The Engineering Supervisor has the responsibility for determining if a Reviewer is required and may perform the review him / herself. This has resulted in a number on Reviewer's signature blocks being NA'd.

The assessment team felt that a more consistent approach and guidance should be considered to remove any doubts for reviews and audits of Safety Related ECPs.

6 ANA Follow-ups to assessments and last year's COIA-ENG-2005

Some findings or some elements of findings are not being captured and/or acted on, resulting in forgone opportunities for performance improvement. Numerous

findings from FENOC assessments were captured in SAP but are overdue for action, have no required completion dates, or have been closed without any action or explanation. Several findings or elements of findings from the 2005 COIA-ENG assessment were not captured or acted upon, or the actions taken did not fully address the intent of the findings.

Details supporting this finding are presented in sections 1.5.2.5 and 1.5.2.6.

7 ANA Management of engineering workload

An effective tool is not in place in the Davis-Besse engineering organization for use by a) the individual engineer to anticipate and manage his work and workload, and b) supervisors and managers to anticipate and manage the work and work loads of their subordinates. Individual engineers currently have to obtain and integrate information from multiple sources to identify and manage their work assignments. Supervisors and managers have to further aggregate and integrate this information to anticipate and manage work requirements for their units.

The transition from the EWMS to SAP systems to control engineering work tasks has left the Engineering Department without a viable means for scheduling workloads for its staff. The recent fluid situation with some Engineering sections has resulted in a lack of qualified personnel which exacerbates the above and raises a concern for the future quality of engineering products.

- Condition Report CR 06-02483 was written to address the Noteworthy Items from the Snap Shot Self Assessment of 14RFO Design Modifications. Recommendation 1 was "A workable, realistic, integrated schedule needs to be developed that reflects Design Engineering's workload."
- A number of major engineering tasks are competing for Engineering resources in the near future. The following are examples of potentially increasing workloads for Engineering; 15RFO Outage, Main Generator Rewind, Equipment Reliability work loads and supporting upcoming NRC Inspections.
- The assessment team found that some Engineering area staffs are challenged because of short staffing and lack of experience or qualifications.

The station has instituted several measures to try to prevent a recurrence of the problems with 14RFO such as strict scope controls and limiting the outage modification workload for Engineering by approving a limited number of modifications.

The assessment team is aware that the station is pursuing a long term solution to this issue through the capabilities of the SAP computerized work control system The assessment team members believe that an Integrated Schedule will help communicate the Engineering departments expectations for support from and to other Departments. This will improve the Engineering Department's ability to meet it's commitments to its customers.

1.6 References

1.6.1 List of persons interviewed

First	Last Name	Position
Barry	Allen	Director, Site Operations
Richard	Anderson	VP, FENOC Operations
E. Dave	Baker	Senior Consultant
Mark	Bezilla	Site Vice President, DB Nuclear
Dennis	Blakely	Staff Nuclear Engineer
Clair	Bleau	Supervisor, Electrical/I&C Engineering
Jim	Bodine	Fleet Program Owner, BACC
Brian	Boles	Director, Maintenance
Kevin	Browning	Senior Nuclear Specialist~~, CAP~~
Ken	Byrd	Manager, Design Engineering
Edward	Chimahusky	Staff Nuclear Specialist
George	Chung	Staff Nuclear Engineer
Mark	Clark	Senior Nuclear Engineer
Bill	DeJong	Staff Nuclear Engineer
John	Dominy	Superintendent, Work Planning
Karen	Dunn	Supervisor, Nuclear Document Control
Dale	Duquette	Senior Nuclear Engineer
John	Grabnar	Director, Site Engineering
Tom	Gulvas	Staff Nuclear Engineer
Dan	Haley	Staff Nuclear Engineer
John	Hartigan	Senior Consultant
Mark	Haskins	Staff Nuclear Specialist
Charles	Hawley	Manager, Site Projects
Craig	Hengge	Staff Nuclear Engineer
Jon	Hook	Supervisor, Structural Mechanical Engineering
Robert	Hovland	Manager, Technical Services
Raymond	Hruby	Manager, Fleet Oversight
Dave	Isherwood	Staff Nuclear Specialist
Eric	Johnson	Staff Nuclear Engineer
Vito	Kaminskas	Director, Fleet Operations and Support
Jessica	Kemp	Senior Nuclear Engineer, Eng Analysis
Joe	Kendall	Senior Nuclear Engineer
Bill	Kline	Fleet Engineering Programs Manager
Gregg	Laird	Supervisor, Nuclear Rapid Response Engineering
Guy	LeBlanc	Supervisor, Electrical/I&C Engineering (Former)
Steven	Loehlein	Director, Fleet CAP and Assessment
Jane	Mallernee	Advanced Nuclear Specialist
Jim	Marley	Staff Nuclear Engineer
Alan	McAllister	Supervisor, Nuclear Engineering Programs
Gary	Melssen	Staff Nuclear Engineer

First	Last Name	Position
Greg	Michael	Senior Nuclear Engineer
Andy	Migas	EAB Chairman
Andy	Miller	Nuclear Engineer
Connie	Moore	Supervisor, Nuclear Configuration Control
Bill	Mugge	Manager, Site Work Management
Matt	Murtha	Staff Nuclear Engineer
Robert	Najuch	Supervisor, Nuclear Project Engineering
Dirul	Nasser	Senior Nuclear Engineer
Mike	Nelson	Staff Nuclear Engineer
Jonathan	Otermat	Senior Nuclear Engineer
Jim	Pierson	Senior Nuclear Specialist
Scott	Plymale	Manager, Plant Engineering
Bob	Schrauder	Director, Performance Improvement
Dennis	Schreiner	Fleet Program Owner, Equipment Reliability
Steve	Slosnerick	Staff Nuclear Engineer
Tim	Thompson	Staff Nuclear Engineer
Brian	Young	Senior Nuclear Engineer
Kevin	Zellers	Supervisor, Nuclear Engineering Analysis

1.6.2 Reference Documents

The information listed below was provided in advance by FENOC for the use of the Independent Assessment Team Additional information was provided by FENOC while the Team was on site at Davis Besse. Additional documents that the Team found significant are listed in the report sections for the relevant assessment areas.

Some document titles were changed to support organization of the documents within the ftp site library, or to make the titles more indicative of the contents.

A number of INPO documents were reviewed at the site. These documents remained in the control of FENOC personnel and were obtained under non-disclosure agreements. These documents are not individually listed.

Library #	Document name
10 FENOC engineering assessment planning information	
10.001	Final Assessment Plan COIA-ENG-2006 060706.doc
10.002	Project contacts 060608.xls
10.003	Station Key Activities and Events Rev2 060612.vsd
10.004	Inputs from Industry Peers 060905.doc
10.005	Grabner et al Presentation to COIA-ENG team 060911.ppt
10.006	HEB Notes on COIA-CAP Debrief 060911.doc
11 INPO reference material	
11.001	SOER02-4.doc
12 assessment plans, reports	
12.001	14RFO MOD Presentation.ppt

Library #	Document name
12.002	Deleted
12.003	Self-Assmt Focused DB-SA-05-07 Alloy 600.pdf
12.004	Self-Assmt Focused DB-SA-05-08 EQ Prog.pdf
12.005	Self-Assmt Snapshot DB-SS-05-15 IST.pdf
12.006	Self-Assmt Snapshot DB-SS-05-16 Alloy 600_690.pdf
12.007	Self-Assmt Snapshot DB-SS-05-17 BACC.pdf
12.008	Self-Assmt Snapshot DB-SS-05-23 Sys Perf Books & Walkdowns.pdf
12.009	Self-Assmt Snapshot DB-SS-06-10 14RFO Design Mods.pdf
12.010	Self-Assmt Snapshot DB-SS-06-25 Master Trip Solenoid Vlv.pdf
12.011	Self-Assmt Snapshot Sys Eng Quals DB-SS-05-25.pdf
12.012	2006 Site Focused Self-Assessment Log.doc
12.013	2005 Site Focused Self-Assessment Log.doc
12.014	2005 Snap-Shot Self-Assessments.xls
12.015	2006 Snap-Shot Self-Assessments.xls
12.016	Deleted
12.017	DBPE and DBTS IPA Nov2005-Apr2006 Rev 1.pdf
12.018	Design Eng IPA Nov 05 to Apr 06.pdf
12.019	Design Eng May 05 to Nov 2005 ipa-.pdf
12.020	Plant Eng & Tech Services IPA May 05-Oct 05 NPE-05-00054.PDF
12.021	Self-Assmt Focused DB-SA-05-06 Flow Acc Corr.pdf
12.022	Self-Assmt Focused DB-SA-05-04 Sys Trending & Monitoring.pdf
12.023	Self-Assmt Focused DB-SA-05-05 Fuse Control.pdf
12.024	DB-SS -05-04 SnapShot Assessment Vendor Manual Ctrl.pdf
12.025	DB-SS-05-12 SnapShot Assessment Allowable Transient Op Cycles.pdf
12.026	DB-SS-05-20 CAP Implementation Q4 2005.pdf
12.027	DB-SS-06-02 CAP Implementation Q1 2006.pdf
12.028	DB-SS-06-04 CAP Implementation Q2 2006.pdf
12.029	DB-SS-06-05 Work Management Q4 2005.pdf
12.030	DB-SS-06-11 RFO 14 CR Trend Summary.pdf
12.031	DB-SS-06-13 Human Performance Crosscutting.pdf
12.032	DB-SS-06-16 Tech Skills Training Tracking CREST to SAP.pdf
12.033	DB-SS-06-26 Common Cause Review.pdf
12.034	DB-SS-06-28 Cross Cutting NRC Findings 050701 to 060630.pdf
12.035	FP PROGRAM ASSESSMENT 2005.xls
12.036	DRAFT Self-Assmt Snapshot Thermal Performance DRAFT report.doc
12.037	14RFO_Outage_Execution_Assessment.pdf
12.038	Fleet Oversight Assessment Report DB-C-05-04.pdf
12.039	Fleet Oversight Assessment Report DB-C-06-01 Report.pdf
12.040	Fleet Oversight Assessment Report DB-C-06-02 Report.pdf
12.041	Fleet Oversight Assessment Report DB-C-06-03 Report.pdf
12.042	DB Oversight QualityTrendSummary-Outage.2-2006.pdf
12.043	CYCLE 14 Periodic Maint Effectiveness Assessment Rpt Final.doc
12.043_1	Cycle 14 Periodic Maint Effectiveness Assessment Rpt Final.pdf
13 INPO reports on FENOC	not listed
14 engineering procedures	
14.001	DBBP-VP-0009-R3 R3 Management Plan for Confirmatory Order Independent Assessments.pdf
14.002	NOP-LP-2001 rev13 Corrective Action Program.pdf
14.002_1	NOP-LP-2001 rev14 Corrective Action Program.pdf

Library #	Document name
14.004	NOBP-SS-4001-R2 Change Management Guide.pdf
14.005	DBBP-NED-0002-R2 Eng Assessment Board.pdf
14.006	NOBP-CC-2003A-R1 Prelim Cost Est.PDF
14.007	NOBP-CC-2003B-R1 Conceptual design Package.PDF
14.008	NOBP-CC-2003C-R1 Project Team.PDF
14.009	NOBP-CC-2003D-R1 Walkdowns.PDF
14.010	NOBP-CC-2003-R2 Config Mgt Database Control.PDF
14.011	NOBP-CC-3002-R3 Processing Calcs.PDF
14.012	NOBP-CC-7001-R9 Procurement Packages.PDF
14.013	NOBP-CC-7002-R3 Enhanced Procurement.PDF
14.014	NOBP-ER-1002-R4 Proj Apprvl and Resource Allocation.PDF
14.015	NOBP-ER-1004-R2 Fleet Value Rating Methodology.PDF
14.015_1	Form NOBP-ER-1004-01-R0 FVR Wksht.doc
14.015_2	Deleted
14.016	NOBP-ER-3002-R3 Plant Health Committee.pdf
14.017	NOBP-LP-2001-R8 Self-Assessment-Benchmarking.PDF
14.018	NOBP-LP-2007-R3 CR Process Effectiveness Review.PDF
14.019	NOBP-LP-2008-R5 CARB.PDF
14.020	NOBP-LP-2010-R2 CREST Trendng Codes.PDF
14.021	NOBP-LP-2011-R5 Cause Analysis.PDF
14.022	NOBP-LP-4003A-R2 50.59 User Guidelines.PDF
14.023	NOBP-LP-4003B-R1 50.59 Mentoring Review Committee.PDF
14.024	NOBP-SS-2101-R1 Peer Groups.PDF
14.025	NOBP-SS-3401-R6 Document Hierarchy.PDF
14.026	NOP-WM-2001-R4 Work Management Scheduling Process.pdf
14.027	NOP-CC-2001-R4 Design Verification.pdf
14.028	NOP-CC-2002-R2 Design Input.pdf
14.029	NOP-CC-2003-R9 Engineering changes.pdf
14.029_1	NOP-CC-2003 Design Report forms 02-21.zip
14.030	NOP-CC-2004-R5 Design Interface Reviews and Evaluations.pdf
14.031	NOP-CC-3002-R3 Calculations.pdf
14.032	NOP-CC-7002-R6 Procurement Engineering.pdf
14.033	NOP-ER-1001-R0 Cont Equip Perf Improvement.pdf
14.034	NOP-ER-3001-R2 Problem Solving and Decision Making.pdf
14.035	Deleted
14.036	NOP-LP-2006-R0 CNRB.pdf
14.037	NOP-LP-4003-R3 Eval of Changes, Tests, Experiments.pdf
14.038	NOPL-SS-3201-R1 Document Hierarchy.pdf
14.039	NOPL-CC-0001-R1 Eng Principles and Expectations.pdf
14.040	NOPL-ER-0001-R0 Equipment Reliability Policy Statement.pdf
14.041	NOPL-LP-2003-R2 SCWE Policy.pdf
14.042	NOBP-CC-2004-R0 Engineering Change Risk Analysis.pdf
14.043	Cancelled NOPL-CC-0002R1 Policy for Eng Roles and Responsibilities.pdf
14.044	ESI-001-R2 SystemEngineerQualCard.pdf
14.045	NOBP-TR-1111-01-R0 Eng suppt personnel training sylabus Rev02.doc
14.045_1	NOBP-TR-1111-R1 FENOC Training Program Descriptions.pdf
14.046	NOBP-CC-1004-R0 Calc Utility.PDF
14.047	EN-DP--0150 System Description Procedure-R3.PDF

Library #	Document name
14.048	NOP-CC-2004-05-R05 Design Interface Summary.doc
14.049	NOP-CC-2004-07-R03 Design Interface Evaluation.doc
14.050	NOP-CC-2004-02-R04 Design Interface Review Checklist.doc
14.051	NOBP-CC-2005 R0 Fleet EAB procedure.pdf
14.052	DB-DP-00023 R6 Labels & Signs.pdf
14.053	DB-DP-00307 R3 Ctrl of Positionable Comp.pdf
14.054	EN-DP-01072 R6 Mod Test Rqmts.pdf
14.055	NG-EN-00307 R9 Configuration Mgmt.pdf
14.056	NG-EN-00309 R1 Plant Modification.pdf
14.057	NOBP-LP-2018 R1 Intregrated Perf Assmt_Trending.pdf
14.058	NOBP-CC-1003_R0 Design Basis Info for Atlas.pdf
14.059	NOBP-CC-1005_R0 FENOC Latent Issues Review.pdf
14.060	NOBP-SS-3201_R1 Document Hierarchy.pdf
14.061	NOP-SS-8001 Rev1 FENOC Activity Tracking.pdf
14.062	NORM-CC-2001 Engineering Change Process Flowcharts.pdf
14.063	DBBP-DCU-0010 EC Closeout Processing.pdf
14.064	NOBP-LP-2001 FENOC SA_Benchmark.pdf
14.065	NOP-WM-4300 Order Execute Process.pdf
14.066	NOP-WM-4305 Order Closure Process.pdf
14.067	NOP-OP-1010NOP-OP-1010 R0 Operational Decision Making.pdf
14.068	NOP-WM-1001 Order Planning Process.pdf
14.069	NOBP-ER-3009-R1 FENOC Plant Health Report Program.pdf
14.070	PEG-10 system walkdowns R12.doc
15 engineering program documents	
15.001	System Descrip DH_LPI.pdf
15.002	System Descrip HPI.pdf
15.003	ModsReport EPE 11-01-05.pdf
15.004	ModsReport EPE 11-01-05.xls
15.005	P8 ecp open by age as of 082506.xls
15.006	P8 ecp open by design type as of 082506.xls
15.007	EER list sort
15.008	ECP list
15.009	Temp Mods as of 2nd qtr rpt.doc
15.010	Mods Assigned to Maintenance as of 07-10-06.xls
16 engineering work products	
16.001	Calc 33B-GCB-010-H38.pdf
16.002	Calc 33B-GCB-010-H38_A01.pdf
16.003	Calc C-EE-002.01-010 Rev29 Post It Note 1.pdf
16.004	Calc C-EE-002.01-010 Rev29 Post It Note 2.pdf
16.005	Calc C-EE-002.01-010_R29_A04.pdf
16.006	Calc C-ICE-037.01-001.pdf
16.007	Calc C-ME-013.01-028_R1.pdf
16.008	Calc C-ME-037.01-003_R1 Post It Note.pdf
16.009	Calc C-NSA-052.01-003_R8_A05_Post It Note 1.pdf
16.010	Calc C-NSA-052.01-003_R8_A05_Post It Note 2.pdf
16.011	Calc C-NSA-052.01-003_R8_A05_Post It Note 3.pdf
16.012	Calc 015.044_R01.pdf
16.013	Calc C-ME-037.01-003_R1.pdf
16.014	Calc C-ME-045.02-005_R1.pdf

Library #	Document name
16.015	Calc C-NSA-011.01-016.pdf
16.016	Calc C-NSA-011.01-016_A01.pdf
16.017	Calc C-NSA-049.02-033_R1_A01.pdf
16.018	Calc C-NSA-052.01-003_R8.pdf
16.019	Calc C-NSA-052.01-003_R8_A05.pdf
16.020	OE-Japanese Pipe Failure IN 2006-08.pdf
16.021	SAP Notif 600267095 for A600 strategic plan development.pdf
16.022	ECR 05-0134-00 Thermal Perf Program.pdf
16.023	OE NRC RIS 2005-03 Post-Fire Circuit.pdf
16.024	ECP06-0013-00 DCM - postulated piping failures.pdf
16.025	ECP06-0065-00 Use-as-is pipe wall thinning.pdf
16.026	ECP06-0084-00 Replacement Motor for MP79-01.pdf
16.027	MOD03-0619-00 Redundant Freeze Protection Circuits.pdf
16.028	MOD04-0072-00 DRU for EDG K5-2 speed control.pdf
16.029	MOD05-0086-00 Cont air cooler SW mods.pdf
16.030	ECR 05-0086-1 Cont air cooler SW mods.pdf
16.031	MOD05-0086-01 Cont air cooler SW mods.pdf
16.032	MOD05-0086-02 Cont air cooler SW mods.pdf
16.033	MOD05-0089-00 Cycle 15 RCS P-T setpoint changes.pdf
16.034	MOD05-0095-00 EDG Loading Improvements.pdf
16.035	MOD05-0097-00 Update ECP-05-0097-00 re calc C-CSS-004.01-16.pdf
16.036	ECP 06-0021-00 Replace Power Supply PS2 in DB-NY5874B abd NY-5875B.pdf
16.037	ECP 2006-0022-00 Relocation of pipe couplings in SWS supporting CREVS cond S33-2.pdf
16.038	ECP 06-0059-00 Replace A Bus totalizer JXT-6024.pdf
16.039	Example ECPs Open against engineering.zip
16.040	Examples of ECPs Scheduled to implement.zip
16.041	ECR 02-0737-00EDG Excitation System Rplcmt.pdf
16.042	PORV Leakage ODMI Recommendation Summary Sheet Rev 01 - Sept 2006.doc
17 NRC reports	
17.001	NRC Restart Confirmatory Order
17.002	davi_2005q2 NRC perf rev and insp plan.pdf
17.003	davi_2005q3 NRC perf rev and insp plan.pdf
17.004	davi_2005q4 NRC annual assessment letter.pdf
17.005	davi_2005009 NRC INSP REPORT.pdf
17.006	DB q-2006 NRC website inspection summary.doc
18 Root cause analyses and CR information	
18.001	CR 06-02483 14RFO Design Mods Snapshot Assessment AFI .pdf
18.002	CR 06-00219 Non-Conservative acceptance criteria used for pump testing.pdf
18.003	CR06-02506 late material requests for 14RFO mods and ECRs (closed to CR 06-02483) .pdf
18.004	Open CAs DBDE Grabnar.pdf
18.005	Open CAs DBDM Hook.pdf
18.006	Open CAs DBPE Plymale.pdf
18.007	Open CAs DBTS Hovland.pdf
18.008	Open CRs DBDE Grabnar.pdf

Library #	Document name
18.009	Open CRs DBDM Hook.pdf
18.010	Open CRs DBPE Plymale.pdf
18.011	Open CRs DBTS Hovland.pdf
18.012	CR05-05393 AFI CM 3.1 unevaluated design changes.pdf
18.013	CR06-02311 Attention to Detail in SE.pdf
18.014	CR06-02312 ERFOM DBPE.pdf
18.015	CR06-02422 Copper Oxide in Containment.pdf
18.016	CR06-02441 ERFOM DBDM .pdf
18.017	CR06-02442 DE Backlogs.pdf
18.018	CR06-02443 PRA updates and use.pdf
18.019	CR 05-05828 2005 COIA Vendor Quality.pdf
19 General procedures	
19.001	Post Maintenance Test Manual Rev 27
20 Organzational Charts and contact lists	
20.001	Draft Org Chart 07_06.ppt
20.002	Manager announcement.pdf
20.003	Rx Eng Org Change.pdf
21 Performance Indicators	
21.000	DBAR 2ndQ 2005.pdf
21.001	2005 Q3 DBAR.zip
21.001_1	DBAR 3rdQ 2005.pdf
21.002	2005 Q4 DBAR.zip
21.003	2006 Q1 DBAR.zip
21.004	2006 Q2 DBAR
21.004_1	Deleted (**See file 21.070**)
21.005	2005 Q4 Program Health Reports.zip
21.006	2006 Q1 Program Health Reports.zip
21.007	2006 Q2 Program Health Reports.zip
21.007_1	2005 Q3 Plant Health report Excerpts.zip
21.008	2005 Q4 Plant Health Report.pdf
21.009	2006 Q1 Plant Health Report.pdf
21.010	2006 Q2 Plant Health Report ER-702.pdf
21.011	PHC Mtg Minutes,2005-09-14.pdf
21.012	PHC Mtg Minutes,2005-09-28.pdf
21.013	PHC Mtg Minutes,2005-10-12.pdf
21.014	PHC Mtg Minutes,2005-10-26.pdf
21.015	PHC Mtg Minutes,2005-11-23.pdf
21.016	PHC MtgMinutes,2005-12-02.pdf
21.017	PHC Mtg Minutes,2005-12-14.pdf
21.018	PHC Mtg Minutes,2005-12-28.pdf
21.019	PHC Mtg Minutes,2006-01-17.pdf
21.020	PHC Mtg Minutes,2006-01-31.pdf
21.021	PHC Mtg Minutes,2006-05-10.pdf
21.022	PHC Mtg Minutes,2006-05-26.pdf
21.030	MPR July 2006.pdf
21.031	MPR June 06.pdf
21.032	MPR May 06.pdf
21.033	MPR August 2006.pdf
21.044	CNRB Nov 2005.zip

Library #	Document name
21.045	CNRB Feb 2006.pdf
21.046	CNRB July 2006.pdf
21.060	15RFO Milestone Schedule UPDATED.xls
21.061	Completion of 15RFO Milestone 9 Milestone%2091.pdf
21.062	Outage management Team roster OMT%20Members1.pdf
21.070	Working Copy of EAB DOC LOG 2nd quarter 2006 list.xls
21.071	EAB Review of Cause Analyses - 1st Qtr 2006.xls
21.072	EAB first quarter 2006 report - final draft 4-10-06.doc
21.073	EAB 2nd Quarter 2006 Results.doc
22 Business and performance improvement/action plans	
22.001	FENOC Business Plan.pdf
22.002	PGER Excellence Plan.xls
22.003	PGTS Excellence Plan.xls
22.004	PGDE Excellence Plan.xls
22.005	Turbine Bypass Valve Performance Action Plan Rev02.doc
22.006	A600-690 Strategic Plan SAP 600267095.xls
22.007	Completed Operational Improvement Plan Initiative Reports.zip
23 General information	
23.001	INRC article on draft GL hot shorts re FP.pdf
23.002	Reg Issue Summary 200607 safety system unavailability performance indicators.pdf
23.003	ACRS letter 060410 on containment sump generic issue.pdf
23.004	Reg Issue Summary 2005-30 Post Fire SS Requirements.pdf
23.005	Engineering Confirmatory Order Independent Assessment Sept 2006 (Grabnar presentation 9/11/06)

1.7 Team Members' Biographies

The following biographies are included

John Garrity	The Marathon Consulting Group, Team Leader
Harold Baumberger	The Marathon Consulting Group
Charles Bergeron	The Marathon Consulting Group
Bruce Beuchel	Seabrook Station, FPL Energy Seabrook, LLC
Mark Flaherty	Calvert Cliffs Nuclear Power Plant, Constellation Energy
John Meyer	Comanche Peak, TXU Power

John H. Garrity
President and Chief Executive Officer (CEO)
Marathon Consulting Group

- 1994-present: *Marathon Consulting Group*; President and CEO - Responsible for Marathon client service operations, and selected personal consulting engagements. Engaged in expert consulting in the area of process performance monitoring and improvement, management mentoring, process centered team formation and compensation, configuration management, business plan and corporate strategy development, process improvement training, and project management training. Also conducted root cause and collective significance analyses of client situations, and participated or lead high impact teams to resolve problems.
- 1993-1994: *New York Power Authority*; Resident Manager - Placed in charge after unit was shut down under NRC confirmatory action letter and on problem plant list. Responsible for developing and executing plan to resolve problems in context of intense political pressure and company senior management turnover. Numerous escalated enforcement actions from actions of earlier periods mitigated by effective, aggressive management investigations and corrective actions.
- 1992: *TVA Bellefonte*; Site Vice President - Responsible for all ongoing activities necessary to reactivate the project from deferred status.
- 1990-1992: *TVA, Watts Bar*; Site Vice President - Responsible for all activities necessary to progress completion of the Watt's Bar units, including engineering, construction, startup, operational readiness, and commissioning. Formulated management objectives for restart of construction following stand down and significant regulatory involvement. Reengineering of design engineering and construction processes, restart of construction, outsourcing construction labor, engineering, and management. Instituted management performance accountability through site wide self-monitoring program, based on principles of TQM. Significant improvement of site nuclear performance, left site positioned for successful completion. Credibility with NRC restored. Significant process performance improvement results in engineering design, engineering analysis, construction engineering, construction, and corrective action.
- 1990: *Maine Yankee Atomic Power Co*; Assistant to President - Special projects assignment, including work on low level waste disposal options available to company and state.
- 1989-1990: *Maine Yankee Atomic Power Co*; Vice President Engineering and Licensing - Responsible for nuclear engineering, plant engineering, licensing, and operations support.
- 1988-1989: *Maine Yankee Atomic Power Co*; Assistant Vice President Engineering and Quality Programs - Responsible for quality assurance, nuclear engineering, licensing and plant engineering.
- 1984-1988: *Maine Yankee Atomic Power Co*; Plant Manager/Senior Site Manager - Responsible for site operations.

John H. Garrity (continued)

- 1984: *Maine Yankee Atomic Power Co*; Assistant Refueling Manager - Special assignment, monitored several dozen engineering projects and coordinated activity with overall refueling effort.
- 1980-1984: *Maine Yankee Atomic Power Co;* Director, Nuclear Engineering and Licensing - Responsible for overall coordination of reload design, plant safety analysis and nuclear engineering analysis of plant systems, emergency planning, and radiological monitoring.
- 1975-1980: *Central Maine Power Co.;* Principal Nuclear Engineer for Central Maine Power Co. (1976 –1980), project engineer for two new reactor sites (1975)
- 1970-1974: *Maine Yankee Atomic Power Co.*; performed primary/reactor and secondary plant systems performance monitoring (1973-1974), Reactor Engineer & Startup Test Supervisor for commissioning of the Maine Yankee reactor (1970-1972)

Charles Bergeron
Senior Consultant
Marathon Consulting Group

- 1995 – present: *Marathon Consulting Group*; Senior Consultant
  - Nine Mile Point - provided consulting for Electrical Switchyard upgrades and support to the power systems assessment and single point vulnerability assessment tasks associated with the Equipment Reliability Improvement Program.
  - Florida Power and Light - prepared specifications for the procurement of replacement Control Rod Drive Motors (CRDM) associated with the reactor vessel head replacement project at Turkey Point and St. Lucie.
  - Nine Mile Point - provided industry expertise and acted as a "White Team" member and critical reviewer for regulatory actions required by NRC IMC 0305 for White Performance Indicators at Units 1 & 2. Assisted in the successful preparations for the NRC Inspection Procedure 95001 Inspections at both Units.
  - Performed a Digital Control Complex Upgrade Survey/Study performed for a Japanese Utility and consulted on their plans for a plant control room upgrade.
  - D. C. Cook Nuclear Plant - provided design review, licensing support, and construction coordination of Control Room HVAC Systems improvements to conform to new Lake Temperature requirements.
  - Wolf Creek Nuclear Station - provided computer systems consulting for the Y2K issue and assisted the Project Manager in meeting project goals by expediting problem areas.
  - Clinton Nuclear Power Station - Detailed Design Review Team member for an Engineering Quality Assessment performed to support the Restart Program.
  - Central Maine Power (CMP) - reviewed Business Plan development activities to assess the overall company position to address stockholders concerns and prepare for deregulation.
  - Cooper Station / Nebraska Public Power District - participated in the Configuration Management Assessment Project.
  - South Texas Project - developed a re-engineered approach to QA Procedures and participated in a training assignment for the Training Department in Project Management.
  - Maine Yankee - participated on corporate engineering Independent Safety Assessment Response Team. Conducted a review of a Maine Yankee's FSAR to current design basis, identifying and resolving apparent discrepancies. Prepared FSAR changes, Design Basis Summary Document updates, plant modification packages, and other engineering information as needed to completely resolve issues found during reviews.

  1988 – 1995: *Grove Engineering, Inc.* - Vice President and Director - founded and managed the Boston Office, which specialized in Power

Charles Bergeron (continued)

- Plant Life Extension, Severe Accident Analysis, Information Management Systems, and innovative solutions to industry problems. Acted as Project Manager at Maine Yankee as for major outage modifications, including main electric generator replacement, containment penetration replacement, and radiation monitoring system upgrades.
- 1987: *FIW Corp*; COO, Vice President and Director - responsible for overall management of administrative, retail, contracts, and finance, with specific responsibility for the profitability of the company and acquisition strategy.
- 1984 – 1987: *Stone & Webster Engineering Corp.*; Consultant - performed numerous studies for plant life and license extension efforts. Managed special Task Force for Nuclear Safety Studies and was Special Projects Manager for Maine Yankee Atomic Power Station.
- 1979-1983: *Stone & Webster Engineering Corp.*; Supervisor - responsible for the Nuclear Safety Group, Nuclear Safety Task Force, Engineered Safety Systems and Analysis (Thermal-Hydraulic) Group, and the Emergency Planning Group.
- 1978-1979: *Stone & Webster Engineering Corp.*; Senior Engineer - responsible for management systems development, corporate I&C standards, problem reporting system, and other Design Review Board functions.
- 1974-1978: *Stone & Webster Engineering Corp.;* Control Engineer - Lead Engineer for Control Systems on fossil and nuclear powered electric plants.
- 1972-1973: *Stone & Webster Engineering Corp.;* Engineer - responsible for I&C section of engineering and design of a dual unit nuclear power station.
- 1970-1971: *Stone & Webster Engineering Corp.;* Field Engineer - responsible for construction and testing of I&C systems for a natural gas fired power plant.
- 1967 – 1970: *Bettis Atomic Power Laboratory;* Joint Test Group member / Bettis Technical Advisor - responsible for on-site direction of testing of nuclear power plants for naval vessels and directed decontamination of two nuclear reactors with personal onsite control of the evolution, including emergency response management.

Harold E. "Rusty" Baumberger
Vice President and Director, Performance Assessment
Marathon Consulting Group

- 1996-present: *Marathon Consulting Group*; Responsibilities include the following:

- Vice President and Director, Performance Assessment - Responsible for business areas of independent assessment, INPO evaluation and NRC inspection support, Design Basis assessments, and Maintenance Rule implementation. Also serve as Marathon's Quality Assurance Manager.

- Team Member - Davis-Besse Independent Assessment of the Engineering Program Effectiveness in 2004 and 2005.

- Project Lead of the Master Equipment List (MEL) Update Project at Millstone - Managed the validation and update of the MEL database.

- Executive Lead, Transition for the Vermont Yankee Nuclear Power Corporation - Managed the implementation of the sale agreement and transition of the Vermont Yankee station to new ownership. Reported directly to the President & CEO.

- Quality Assurance Manager - Developed and implemented Quality Assurance Program, obtained NUPIC certification, trained and certified lead auditors. Provided interface with client QA Managers.

- Configuration Management Supervisor at Cooper Nuclear Station - Worked in environment of high regulatory scrutiny to improve Engineering performance and develop recovery strategies. Responsible for maintaining Design Basis and resolving Design Basis and Configuration Control issues. Managed Modification Process, Design Criteria Program, Equipment Classification Program, Equipment Data File, and Drawing Control Program.

- Served as a Safety System Functional Evaluation team member in the area of Operations at Beaver Valley - Reviewed the 4kV Electrical Distribution and Emergency Diesel Generator systems for Unit 2.

- Provided expert consulting related to INPO-related issues at River Bend - Participated in major assessment covering the new INPO Performance Objectives, existing INPO findings, and items from the Long Term Performance Improvement Program.

- Participated in a component-level design basis review of non safety-related systems and outage work at Dresden - Documented review of over 7000 components against Design Basis, FSAR requirements, original system and component specifications, and vendor-supplied data.

- Performed assessment of Design Basis programs at Vermont Yankee including Design Basis document program development.

- Participated on corporate Engineering Independent Safety Assessment Response Team at Maine Yankee.

Harold E. "Rusty" Baumberger (continued)

- 1990-1996: Independent Consultant; Provided services to nuclear utilities and Department of Energy (DOE) contractors in management, safety review, quality assurance and performance areas. Performed audits and independent assessments of overall performance, outage management, maintenance, and configuration management programs.
- 1988-1990: Liberty Consulting Group; Senior Consultant - Led evaluations of management capability at nuclear power plants in all areas of facility operation. Conducted assessment of plant performance against INPO standards.
- 1980-1988: Institute of Nuclear Power Operations (INPO); Evaluator/Senior Evaluator - Performed evaluations of more than 50 commercial nuclear power stations in areas of maintenance, Engineering Support, and Organization and Administration. Participated in accreditation reviews of utility training programs.
- 1977-1980: Nuclear Power Consultants; Consultant – Provided services to nuclear utilities and government agencies conducting reviews and audits in areas of operations, maintenance, engineering, quality assurance, nuclear fuel fabrication and procurement, and licensing. Project manager for the update of Fort St. Vrain Final Safety Analysis Report. Participated in the review of Ontario Hydro's heavy water production costs and uranium fuel requirements for the Providence of Ontario.
- 1967-1977: U. S. Naval Submarine Service; Naval Nuclear Propulsion Officer – Responsible for supervision, operation and maintenance of nuclear propulsion plant and ship's auxiliary systems. Certified Navy Nuclear Propulsion Engineer Officer. Participated in refueling, pre-operational testing, and startup of two reactors following extended outages, including one after a change of NSSS.

Mark D. Flaherty
Manager, Engineering Services
Calvert Cliffs Nuclear Power Plant, Constellation Energy

- April 2006 – present: *Calvert Cliffs Nuclear Power Plant, Constellation Energy;* Manager, Engineering Services - Responsible for providing engineering services to site including system, design, program, and equipment reliability functions. Manage a staff of over 100 engineers, technicians, and supervisors
- February 2006 - April 2006: *Constellation Energy;* Vice President, Technical Services (Acting) - Responsible for providing oversight for corporate technical functions including Fuels, Corporate Engineering, Probabilistic Risk Assessment, and Licensing. Supervised managers of identified corporate functions; participated in senior leadership meetings and councils
- June 2004 - Feb 2006: *Constellation Energy;* Manager, Fleet Licensing - Responsible for: interfacing with Nuclear Regulatory Commission (NRC) management; creating and implementing standard Licensing processes and procedures; providing interface to INPO and NEI; serving on site Nuclear Safety Review Boards. Supervised three site Licensing Directors and staff, including two corporate personnel. Managed oversight of successful recovery of Nine Mile Point License Renewal Project - $3M effort. No NRC violations at any site greater than green during this time period, closed two existing white findings.
- July 2001 - June 2004: *R.E. Ginna Nuclear Power Plant,* Rochester Gas and Electric Corporation (RG&E); Manager, Nuclear Safety and Licensing - Responsible for interfacing with NRC personnel including preparing License Amendment Requests (LARs) and responding to correspondence (e.g., Orders, Bulletins, etc.). Supervised staff of eight personnel (imaging, licensing, risk, and software engineers). Managed conversion of configuration management computer system from mainframe to local server based - $0.5M project.
- October 1998 - December 2001: *R.E. Ginna Nuclear Power Plant, RG&E;* Manager, Configuration Support Engineering - Implemented Design Basis Document (DBD) Program which provided electronic copies of design related information on employee computers - $3.5M project. Supervised staff of eight personnel (imaging, design, risk, and software engineers). Implemented new 10CFR50.59 and 10CFR50.65(a)(4) Programs. Shift Technical Advisor (STA), 2000. INPO Plant Evaluation Team Member for Point Beach, 2000. Participated as an International Atomic Energy Agency (IAEA) PRA expert to Krsko (Croatia) and Dukovany (Czech Republic) in 1991 and 1992, respectively.
- February 1997 - October 1998: *R.E. Ginna Nuclear Power Plant, RG&E;* Senior Licensing Engineer - Senior Reactor Operator (SRO) Certification. Developed and implemented risk models for Ginna Station using Equipment Out Of Service (EOOS) software.

Mark D. Flaherty (continued)

- February 1989 - February 1997: *R.E. Ginna Nuclear Power Plant, RG&E;* Licensing Engineer - Developed and managed Improved Technical Specifications (ITS) Program - (Ginna Station was first and oldest Westinghouse plant to convert) and received Senior Nuclear Executive Award - $1.5M project. Developed probabilistic risk assessment (PRA) models and programs; managed program beginning 1995; $3M project. Responsible for multiple licensing tasks (research licensing basis, LARs)
- September 1986 - February 1989: *Davis-Besse Nuclear Power Station, Toledo Edison Company;* Probabilistic Risk Analysis Engineer

John W. Meyer
Technical Support Manager
TXU Power – Comanche Peak

- 2004-present: *Comanche Peak Steam Electric Station (CPSES)*; Technical Support Manager - Responsible manager for department consisting of five units: 1) Engineering Programs is responsible for establishing and implementing such programs as Fire Protection Engineering, In-service Testing, In-service Inspection, ASME Repair and Replacement, welding processes and qualification, flow accelerated corrosion, RCS materials management, the electrical cable and raceway database, and Environmental Qualification of plant equipment. 2) Design Engineering Analysis has responsibilities delineated below. 3) The Joint Engineering Team serves as the Engineering rapid response team, addressing emergent issues and processing design changes to address documentation issues and minor modifications. 4) Procurement Engineering provides engineering support for procurement activities including development of technical and QA requirements, replacement item evaluations, spare parts management support, and management of TXU interests in the Pooled Inventory Management System. 5) The Computer Aided Design group provides drafting and designer support for the station.
- 2003-2004: *CPSES*; Design Engineering Analysis Manager - Responsibilities included maintenance of the CPSES design and licensing basis, design reviews, adverse condition report engineering resolution, industry operating event research and resolution, emergent operational problem resolution, consultation, engineering human performance, and the CPSES design control program. Provided analytical support for CPSES in such areas as radiation analysis, control room habitability, systems interaction, environmental barriers, thermal/hydraulic analysis, loss of ventilation analysis, tornado venting, electrical calculations, and civil/structural analysis.
- 1998-2003: *CPSES;* Engineering Analysis Manager - Responsible for analytical support of CPSES in such areas as radiation analysis, control room habitability, systems interaction, environmental barriers, thermal/hydraulic analysis, containment analysis, loss of ventilation analysis, and tornado venting. In addition, managed the efforts of the Risk and Reliability Supervisor, responsible for plant PRA and risk assessment activities.
- 1996-1998: *CPSES*; Design Basis Engineering Supervisor - Responsible for maintenance of the CPSES design and licensing basis, Master Equipment List maintenance, design reviews, adverse condition report engineering resolution, industry operating event research and resolution, emergent operational problem resolution, and implementation of reengineered electronic processes for design control and corrective action programs.

  1992-1996: *CPSES*; NSSS and HVAC Systems Supervisor - Responsible for design engineering support on CPSES NSSS, HVAC, and Fire

John W. Meyer (continued)

- Protection Systems including design modification engineering, temporary modification engineering review, adverse condition report engineering resolution, industry operating event research and resolution, and emergent operational problem resolution.
- 1987-1992: *CPSES*; Principal Engineer - Staff Assistant to the Manager, Plant Engineering at CPSES. Founding member of Operations Support Engineering, formed to provide immediate design engineering support to CPSES Operations during transition from construction to Unit 1 operation. Prior to that an NSSS expert assigned to the Primary Plant Systems group of the on-site CPSES corporate engineering department.
- 1974-1987: *Westinghouse Electric Corp.*; As a Senior Project Engineer, served as Nuclear Systems Engineer in the CPSES site office. As a Senior Field Service Engineer, performed field services at operating and construction PWR projects. As an Engineer/Senior Engineer B, responsible for schedule control of a major subcontractor on the Clinch River Breeder Reactor Plant.
- 1969-1973: *U. S. Navy*; Completed Naval officer nuclear power training qualifying for supervision, operation, and maintenance of Naval Pressurized Water Reactors. Assigned to a Sturgeon Class Nuclear Attack Submarine.

Bruce E. Beuchel
Project Engineer
FPL Energy Seabrook, LLC

- Aug 2005 - Present: *Seabrook Station Nuclear Power Plant*; Project Engineer – Responsible for engineering activities on major projects. Ongoing and recently completed projects include, Thermal Camera Modification for Security System, Steam Generator Narrow Range Level Tap Relocation, Digital Turbine Controls, Pressurizer Weld Overlay, Reactor Vessel Head Inspection, Split Pin Replacement, and Generator Protective Relaying. Preparing procedure infrastructure for new Capital Projects Engineering Group.
- Jul 1998 - Aug 2005: *Seabrook Station Nuclear Power Plant*; Project Manager - Responsible for the completion of major projects ranging in value from $0.1M to $17.1M. Projects have included the installation of several camera systems, two large building air conditioning systems, and the addition of a partial flow Condensate Polisher System. For several years during this period also responsible for the performance controls group (cost reporting and estimating) and other project managers.
- Aug 1996 - Jul 1998: *Seabrook Station Nuclear Power Plant*; Engineering Performance Manager - Responsible for Reliability and Safety Engineering Group, including Plant Safety Assessment (PRA); Program Support Group (ASME code testing requirements and Predictive Maintenance programs); and Configuration Management Group (responsible for drawing maintenance, and records retention of original engineering documents).
- Jan 1996 – Aug 1996: *Millstone Point Unit 1*; Temporary assignment as the Design Engineering Manager - Part of the initial recovery team to restore Millstone Unit I to operation. Reorganized the design engineering department and identified the scope of the work necessary for restart. The effort included both design basis reconstitution, and identification and preparation of modifications. Initiated changes in the design engineering organization in the area of work planning and time reporting, increased the technical standards, and worked on resolution of infrastructure deficiencies, such as equipment data bases.
- Oct 1994 - Jan 1996: *Seabrook Station Nuclear Power Plant*; Engineering Performance Manager - The responsibilities were essentially the same as indicated for the period of Aug. 1996 to July 1998 and also included the Engineering Services Group which was responsible for engineering assurance and provided the administrative support to the entire engineering department.
- Jan 1994 - Oct 1994: *Seabrook Station Nuclear Power Plant*; Temporary assignment as the Mechanical Design Engineering Manager - Responsible for Mechanical Engineering Group (civil/structural engineering, pipe stress analysis, support design and stress analysis, seismic analysis, etc.); NSSS System Engineering Group (system design, pumps, valves, system interactions, etc. for the piping systems supplied by the NSSS vendor); and

Bruce E. Beuchel (continued)

Balance of Plant System Engineering Group (similar responsibilities to the NSSS group, but on systems supplied by the architect engineers). These groups prepared design modifications for the station and responded to day to day questions with regard to the design bases of mechanical systems for the station.

- Dec 1988 - Jan 1994: *Seabrook Station Nuclear Power Plant*; I&C Engineering Supervisor - Responsible for the supervision and technical direction of I&C engineering, responsible for preparing all I&C design change packages. Recipient of the utility's "Values for Excellence" Award in 1990.
- Mar 1985 - Dec 1988: Assigned to the -Seabrook Project in Framingham/Bolton office for Yankee Atomic Electric Co. - Member of group responsible for oversight of architect engineering I&C work for the completion of construction of Seabrook Station. Performed initial verification of technical values in Seabrook Technical Specifications. Following construction, responsible for preparation of I&C design changes.
- Aug 1984 - Mar 1985: *General Electric Company*; Engineer in Startup, Test and Operations Group - Completed SRO Certification on Black Fox BWR-6 simulator. Assigned as a test engineer at Shoreham for three months.
- Nov 1980 - Aug 1984: *Seabrook Station Nuclear Power Plant*; Senior I&C Engineer
- Jun 1975 - Oct 1980: U S Navy; Division Officer on board the USS Tecumseh (SSBN 628) - Qualified to stand watch as Engineering Officer of the Watch (EOOW) responsible for the operation of the nuclear power plant and as Officer of the Deck (OOD) responsible for the operation of the entire ship. Passed Engineer's Exam for Navy Nuclear program.

Section 2 Assessment of Internal Self-Assessment Performance

This topic is an explicit assessment area in the 2006 Independent Assessment plan, and is addressed in section 1.5.2.5

Appendix 1 Action Plans

DBBP-VP-0009 Rev 3 "Management Plan for Confirmatory Order Independent Assessments" requires Action Plans to be developed to address the Independent Assessment Report's Areas for Improvement (AFIs). No AFIs were identified in the 2006 Independent Assessment of Engineering Programs, therefore no action plans are required.

Appendix 2 Independent Assessment Plan submittal

NUMBER:
COIA-ENG-2006

ASSESSMENT AREAS:

Engineering program effectiveness of modifications, calculations, system engineering, and corrective action program utilization.

PURPOSE:

The purpose is to provide an independent and comprehensive assessment of the Engineering program effectiveness at the Davis-Besse Nuclear Power Station. The assessment will be performed in accordance with the requirements of the March 8, 2004, Confirmatory Order Modifying License No. NPF-3, and Davis-Besse Business Practice DBBP-VP-0009, Management Plan for Confirmatory Order Independent Assessments. The assessment will be used to identify areas for improvement, requiring corrective actions with action plans. The assessment will also be used to assess the rigor, criticality, and overall quality of available Davis-Besse internal self-assessment activities in the Engineering program areas listed above. The final assessment report will provide an overall concluding statement on the Engineering program effectiveness as rated utilizing the assessment categories of DBBP-VP-0009.

SCOPE:

The Independent Assessment Team will assess the following Engineering program areas:

1. Plant Modification process
2. Calculation process
3. System Engineering Programs and Practices
4. Implementation of the Corrective Action Program (CAP) by Engineering
5. Effectiveness of self-assessments
6. Corrective actions taken in response to the Areas in Need of Attention (ANAs) identified during the 2005 Independent Assessment of the Davis-Besse Engineering Program Effectiveness

The Assessment Team will assess conduct of the following activities:

1. Plant Modification Process

The team will perform a review of activities to assess the effectiveness of the plant modification process:

h. Selection and prioritization of potential modifications, including assessment of delayed modifications on plant and operating personnel
i. Owner acceptance sub-process (review of contracted work)

j. Quality of modification packages since 2005 assessment (Permanent and Temporary Modifications)
k. Closeout of modification packages and supporting document updates
l. Effectiveness of modifications
m. Interaction and support from parallel processes
n. Workload management

2. Calculation Process

The team will assess the following attributes of the plant calculation process.

k. Workload management, including appropriateness of work priorities
l. Acceptance criteria and owner acceptance sub-process (review of contracted work)
m. Margin management and allocation
n. Linkages and consistency with other calculations
o. Preservation of design bases
p. Documentation/traceability/attribution
q. Calculation health and improvement program
r. Interaction and support from parallel processes
s. Systems descriptions design information
t. Engineering rigor and attention to detail

3. System Engineering Programs and Practices

The team will investigate the following items:

k. System Engineering alignment and plant support
l. System Health evaluation and reporting
m. Process for prioritizing, communicating, and resolving health deficiencies and program deficiencies
n. Equipment Reliability Improvement Program as reflected in FENOC Excellence Plans
o. Maintenance Rule system monitoring and trending
p. Experience and expertise, including use of operating experience
q. Margin awareness and margin allocation
r. Interaction and support from parallel processes
s. Access to knowledge of Engineering information in calculations
t. Workload management

4. Implementation of the Corrective Action Process by Engineering

The Assessment Team will assess the following:

i. Promptness in initiating condition reports for identified conditions adverse to quality
j. Condition Report ownership and appropriate initiator involvement
k. Quality of root and apparent causes produced by Engineering and associated management behavior and guidance
l. Prompt acceptance of corrective actions

m. Corrective action quality and implementation timeliness
n. Effectiveness of corrective actions to prevent recurrence
o. Support of corrective actions assigned to others
p. Workload management and backlog management

5. Effectiveness of Davis-Besse Assessment Activities

The Assessment Team will evaluate the effectiveness of the Davis-Besse Nuclear Power Station's assessment activities associated with the implementation of Engineering programs as follows:

f. Planning of assessments over the short and long term for ongoing assessment of Engineering performance

g. Review the results of the Davis-Besse Quarterly Quality Assessments that evaluated Engineering; Determine if the assessments were comprehensive and if effective actions were taken to correct problems or weaknesses identified.

h. Evaluate the effectiveness of self-assessment capability by reviewing corrective actions associated with self-assessment reports, audits (including audits of the offsite safety committee activities), and evaluations conducted of Engineering program implementation.
i. Determine if the Engineering staff is aggressive in correcting self-assessment and assessment findings, and determine whether the corrective actions are adequate, timely, properly prioritized, and that effectiveness reviews are ensuring the desired results.
j. Determine the receptivity and responsiveness of management and staff to issues raised in self-assessments and assessments.

6. Corrective actions taken in response to the Areas in Need of Attention (ANAs) identified during the 2005 Independent Assessment of the Davis-Besse Engineering Program Effectiveness

The Assessment Team will evaluate the responses to the six (6) Areas in Need of Attention (ANAs) identified during the 2005 Independent Assessment:

- 1 ANA Containment Copper Oxide
- 2 ANA Additional Corrective Actions to Address Vendor Product Quality Concerns
- 3 ANA Transmittal of Engineering Requirements for Operation and Maintenance
- 4 ANA Program Status – PRA and Equipment Reliability
- 5 ANA System Engineering Attention to Detail
- 6 ANA Design Engineering Backlog Reduction

INDEPENDENT ASSESSMENT TEAM:

John Garrity, Marathon Consulting Group, Team Leader
Charles Bergeron, Marathon Consulting group
Harold Baumberger, Marathon Consulting Group
John Meyer, Technical Support Manager, Comanche Peak, TXU Energy
Bruce Beuchel, Project Engineer, Seabrook Station, FPL Energy Seabrook, LLC
Mark Flaherty, Manager, Engineering Services, Calvert Cliffs Nuclear Power Plant, Constellation Energy

Biographies attached.

SCHEDULE:

- August 11, 2006: Send selected documentation to team members to begin off-site preparations.
- August 14, 2006 to September 8, 2006: Offsite (in office) review in preparation for onsite assessment.
- September 10, 2006: Assessment team will assemble at the plant for final assessment preparations.
- September 11, 2006 to September 22, 2006: Conduct onsite assessment and provide Davis-Besse with preliminary results prior to leaving site.
- October 6, 2006: Draft team assessment report and final debrief (marks the completion of the assessment) will be provided to Davis-Besse.
- October 13, 2006: Final team assessment report provided to Davis-Besse.
- November 20, 2006: Final Davis-Besse assessment report and action plans (if required by findings) will be submitted to the NRC within 45 days of the completion of the on-site assessment.

ASSESSMENT METHODS:

The Independent Assessment Team will use DBBP-VP-0009 "Management Plan for Confirmatory Order Independent Assessments"

The assessment methodology may include, but is not limited to, any combination of the following:

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

The following general standards will apply to the assessment of Davis-Besse Engineering program implementation:

- Modification and Calculations reflect in-depth reviews of problems and resolutions that support a high level of nuclear safety.

- Engineers demonstrate knowledge and understanding of the design basis, including maintenance of design basis documentation.
- System engineers demonstrate intolerance for failures of critical equipment.
- Engineers maintain clear ownership of corrective actions from initiation through resolution.
- A rigorous approach to problem solving and application of engineering procedures and methods is used.

The Assessment Team will review the referenced procedure/documents during the preparation period prior to site arrival.

The Assessment Team will identify in its final report, as applicable, areas of strength, areas in need of attention, and areas for improvement as defined in Davis Besse Business Practice DBBP-VP-0009. The Team will provide an overall concluding statement on the Engineering program effectiveness as rated utilizing the assessment categories of DBBP-VP-0009.

REFERENCES:

- Confirmatory Order dated March 8, 2004
- DBBP-VP-0009 "Management Plan for Confirmatory Order Independent Assessments"
- NOP-CC-2003, Engineering Changes
- NOP-CC-3002, Calculations
- NOP-LP-2001, Condition Report Program
- Action items from NRC inspection reports issued since December 9, 2005, that are applicable to the areas assessed (i.e., condition reports, corrective actions, responses to findings and non-cited violations)
- Applicable self-assessments performed since December 9, 2005
- QA Quarterly Assessments/Reports for past three quarters
- CNRB meeting minutes from last three CNRB intervals.
- Applicable Section or area Performance Indicators

ASSESSMENT PLAN APPROVALS:

Prepared by: John H Garrity Date: 6/7/06
John H. Garrity, Assessment Team Lead

Approved by: Lori Strauss Date: 6/8/06
Lori J. Strauss, Project Manager

Approved by: Jeannie M Rinckel Date: 6/8/06
Jeannie M. Rinckel, Executive Sponsor