FENOC

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Docket Number 50-346
License Number NPF-3
Serial Number 1-1394

December 6, 2004

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

Subject: Submittal of Independent Assessment Report of the Engineering Program Effectiveness at the Davis-Besse Nuclear Power Station

Dear Mr. Caldwell:

The purpose of this letter is to submit the Independent Assessment Report of the Engineering Program effectiveness at the Davis-Besse Nuclear Power Station (DBNPS). This submittal is in response to 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."

This Independent Assessment was conducted from October 11 to October 22, 2004. The Assessment was performed in accordance with the Engineering Assessment Plan submitted via letter Serial Number 1-1377 dated July 12, 2004. The enclosed report contains the results of the Independent Assessment as well as action plans to address the Areas For Improvement (AFI) identified by the assessment.

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

Sincerely yours,

AWB

DEC 07 2004

Attachment - Commitment List

Enclosure - Confirmatory Order Independent Assessment Engineering Programs Davis-Besse Nuclear Power Station

cc:

USNRC Document Control Desk
J. A. Grobe, Chairman, NRC 0350 Panel
DB-1 NRC/NRR Senior 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 (419) 321-8585 at the DBNPS with any questions regarding this document or associated regulatory commitments.

COMMITMENTS	DUE DATE
AFI DB 1.2 – Modification Tracking and Closure	
1. Classify the approximately 550 identified unclassified proposed engineering change requests by the end of Cycle 14. Progress will be monitored utilizing the status of open engineering changes monthly through the monthly Performance Report and quarterly through the Design Basis Assessment Report (DBAR).	1. End of Cycle 14
2. The long term solution to the current less than adequate tracking of engineering change status between issuance to the field and return to engineering for closure will be addressed through the inclusion of engineering changes into SAP. This will provide a common platform for managing the design as well as the implementation stages of engineering changes and provide improved monitoring of the engineering change progress.	2. December 31, 2005
3. The planning organization has placed additional focus on processing through for closure the engineering changes that are essentially field complete. The actual status of the approximately 57 identified engineering changes requiring closeout will be confirmed and dispositioned properly by the end of the second quarter 2005.	3. June 30, 2005
4. In the interim, Operations will re-review these open engineering changes to ensure no adverse impact to safe plant operations. The total number of engineering changes issued for implementation will be monitored monthly through performance indicators included in the Monthly Performance Report.	4. February 28, 2005

COMMITMENTS	DUE DATE
AFI DB 1.2 – Modification Tracking and Closure (continued)	
5. A future revision of NOP-CC-2003, Engineering Changes, will include a common engineering change close-out process. This revision is currently in progress through the fleet engineering programs manager.	5. December 31, 2005
AFI DB 2.2 – Calculation Improvement Program	
1. The Calculation Improvement Plan is updated on a quarterly basis through the Design Basis Assessment Report (DBAR). Several enhancements to the DBAR will be made, these changes include:	
a) Improve the DBAR report content to include an overall trend and summary to focus management attention to problem areas. This report content change will be made in the 1st quarter 2005 DBAR.	1.a) Upon Issuance of the 1st Quarter 2005 DBAR
b) The current status of the calculation improvement plan will be reviewed against the recent level of calculation quality. Due dates will be reconfirmed and rebaselined and adjustments will be made as necessary and the plan will be updated in the 1st quarter 2005 DBAR.	1.b) Upon Issuance of the 1st Quarter 2005 DBAR
AFI DB 6.2 – Utilization Of The Self Assessment Process	
1. FENOC Fleet ownership for Self-assessments has been established.	1. Complete
2. Engineering efforts will be focused to better utilize the Self-Assessment process in regards to planning and completion of self-assessments. The 2005 self-assessment focus areas and owners have been identified and submitted for approval. There are Fleet engineering self-assessments being scheduled for 2005. These assessments would include Davis-Besse.	2. December 31, 2005

COMMITMENTS	DUE DATE
AFI DB 6.2 – Utilization Of The Self Assessment Process (continued)	
3. During the next revision of Business Practice NOBP-LP-2001, FENOC Focused Self-Assessment Process, enhancement opportunities and integration of overall assessments will be evaluated for inclusion.	3. March 31, 2005

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Enclosure

CONFIRMATORY ORDER INDEPENDENT ASSESSMENT
ENGINEERING PROGRAMS
DAVIS-BESSE NUCLEAR POWER STATION

(56 pages follow)

Confirmatory Order Independent Assessment

Engineering Programs

Davis-Besse Nuclear Power Station

Report Number	2004-0102
Facility	Davis-Besse
Location	5501 North State Route 2 Oak Harbor, Ohio 43449-9760
Dates	October 10-22, 2004

Final Submittal
(Section I)

John N Garrity
Independent Assessment Lead   Date 12/1/04

Assessment Action Plans (Section II) Approved:

Site Vice President   Date 12/6/04

Assessment Action Plans (Section II) Reviewed:

Vice President, Oversight   Date 12/8/04

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SECTION 1

A Executive Summary

The Engineering Programs Assessment Team found the engineering program at Davis-Besse to be generally effective.

The team reviewed engineering work product 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.

The Team's findings consisted of:

3	Strengths
3	Areas For Improvement (AFIs)
3	Positive Noteworthy Items (NI+)
13	Negative Noteworthy Items (NI-)

A Strength characterizes performance that is exceptionally effective in achieving desired results.

An Area for Improvement characterizes areas where acceptance criteria including management expectations are not being met.

A Noteworthy Item characterizes areas where acceptance criteria including management expectations are being met changes could be made to enhance program or process general efficiency.

The Team also identified Positive Noteworthy Items, which address areas where performance does not rise to the level of a strength, but nevertheless merited favorable mention.

There were several strengths, and several areas where performance, while not at the level of a Strength, was nevertheless positive enough to be noteworthy. However, there were also a number of areas where Engineering performance could be improved, a couple of areas where recent performance had fallen behind plan, and three areas for improvement.

Strengths included:

- Rapid Response Team effectiveness in supporting resolution of urgent/emergent issues, especially as needed by the Plant
- Internalization of Engineering Principles and Expectations
- Engineering Assessment Board influence on quality of engineering work products

AFI's included:

- Slow closure of some modifications
- Declining focus on and rate of progress of the Calculation Improvement Program
- Slippage of the Self-Assessment schedule and mixed quality of assessment findings and corrective actions

Positive Noteworthy Items

- Implementation and use of the Calculation Utility
- Effective use of the Design Interface Evaluation (DIE) to support calculations
- System Engineering Support of the Plant

Noteworthy Items

- Selection and prioritization of modifications (alignment issue)
- Lack of confidence In System Descriptions
- Limited focus of Margin Management initiative
- System Health Rating not a leading indicator
- System Health Improvement plans elements not accomplished as planned
- Inhibited access to calculations by system engineers
- Low level of fleet counterpart interactions
- Work burden imposed in finding acceptors of corrective actions
- Expectations at interfaces with parallel processes
- Engineering management tools and techniques for planning, scheduling, assigning work
- Backlog reduction
- Human Resource development
- Engineering Rigor and Attention to Detail

The Team noted that Davis-Besse has recently restarted power operations after a lengthy shutdown and is in the transition from recovery activities to normal operation, with the transition period characterized by a work load consisting of both post-restart backlog workoff and work typical of normal operations. The team also noted that Davis-Besse is undergoing adjustment to the corporate fleet environment and the recent reorganization and redeployment of staff resources.

The Team observed that it is important for the Davis-Besse Engineering organization to adopt management techniques that will allow better prioritization of work load, better focus on priority work items, better integration of work efforts, and improvement of process efficiency.

Two condition reports were filed during the assessment:

04-06372 COIA-Eng -2004-Dry Fuel Storage Pad Transient Combustible Control.

During a review by the Independent Assessment Team review of implementation of design basis requirements within the plant, a process issue related to control of transient combustibles was identified for the Dry Fuel Storage Pad.

04-06485 COIA -Eng-2004 Accumulator Sizing Calculation for SW1424/1429/1434

This Condition Report documents concerns and responses regarding Mechanical Calculation C-ME-011.01-142 Rev 01 "Accumulator Sizing Calculation for SW1434/1429/1434" that were identified during the 2004 Engineering Order Assessment.

B 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 first 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 Mgt Plan for Conf Order Assessments Rev 1, and also with benefit of the guidance of FENOC's procedure NOBP-LP-2001 Focused Self-Assessment. The Assessment Plan was submitted via serial letter 1-1377 dated July 12,2004 (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 CV's of the team members are included in the Assessment Plan. The Team members were:

John Garrity	The Marathon Consulting Group, Team Leader
Paul Borer	The Marathon Consulting Group
Harold Baumberger	The Marathon Consulting Group
Brad Adams	Byron Station, Exelon Nuclear
John Meyer	Comanche Peak Station, TXY
Tom Vine	Duane Arnold Energy Center, NMC

(CV's are provided in Appendix 1)

The Independent Assessment Team commenced work on the Davis-Besse independent assessment in June of 2004 with information gathering and activities and discussions with FENOC management. The team gathered information from FENOC relevant to the DB assessment and posted this information to an FTP site established for this purpose over a period of several months. The two weeks of September 27 and October 4 were devoted to intensive review of FENOC documents and formulation of interview strategies, questions, and interview lists. The Team spent the weeks of October 11 and October 18 at the Davis-Besse site conducting initial and follow-up interviews and reviewing additional FENOC supplied material.

C Scope of Assessment

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

Modifications
Calculations
System Engineering
Use of the Corrective Action Program by Engineering
Management topics
Self-Assessment

Within each of these areas, sub-areas were identified for review. These sub-areas are shown in the assessment plan (Appendix 1).

The engineering assessment avoided duplication of the work performed under other independent assessments, particularly the independent assessment of the Corrective Action Program that was completed during the weeks of September 13 and September 27 before the engineering assessment took place.

The scope of the Engineering program assessment included primarily activities and performance since restart.

Within the areas assessed, 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., 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 Appendix 2)

D Methodology

The assessment was performed in according to 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. This effort was aided significantly by support initiatives to recruit 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. The team reviewed the interview list and proposed consolidation of interviews where appropriate to reduce duplication of effort by the plant staff and the team members. The assessment areas and topics were reviewed and a list of interview intentions and potential questions was prepared by the team.

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 to up to four team members. Follow-up interviews were scheduled during the assessment as needed. Approximately seventy formal interviews were conducted, with seventy-nine 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 use of the CAP by engineering, management topics, and self 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. Approximately four hundred items of interest were logged during the assessment. 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, AFIs, and Noteworthy Items 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 strengths, areas for improvement (AFIs), and noteworthy items (NIs). Near the end of each the 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. 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 finding preliminary findings. Site management briefing talking points and the issue summary forms 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.

E Results

The Assessment team's findings 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.

Recommendations are provided following some findings. The Team offers these recommendations as additional information, but expects that FENOC will formulate their own action plans which may legitimately differ from the Team's recommendations.

Area 1 Modifications Process

The team's review included the following activities:

a. Selection and prioritization of potential modifications
b. Efficiency of the modification process (graded approach, at risk changes)
c. Owner acceptance sub-process (review of contracted work)
d. Quality of modification packages
e. Closeout of modification packages and supporting document updates
f. Effectiveness of modifications in fixing known problems
g. Known process problems and progress in solving
h. Fleet interaction and progress toward consistency
i. Interaction and support from parallel processes
j. Workload management

Strength DB 1.1 Rapid Response Team

The Rapid Response Team (RRT) provides timely and efficient resolution of emergent engineering issues and reduces the unscheduled workload of design and plant engineering.

AFI DB 1.2 - Modification Tracking and Closeout

Initiation and closeout of documentation associated with plant modifications are untimely and inefficient.

There are about 550 Engineering Change Requests (ECR) that have not been dispositioned (apparent indecision about the need or type of modification to be used).

Planning and document control personnel indicate that there are about 57 modifications, some believed to be installed in the plant as early as 1998, that remain open because the exact status of the modifications in question is unknown; thus the documentation closeout has not been performed.

The closeout process is unique at each FENOC site. At Perry, closeout is performed by Document Control; at Beaver Valley, the process is handled by Engineering; at D-B, Work Planners are responsible.

Recommendation

1. Review the modification closeout processes across the fleet and adopt a common process. Consider process efficiency improvements as well as consistency improvements.

NI (-) DB 1.3 Selection And Prioritization Of Modifications

The process for selection, prioritization, and communication of station decisions for potential modifications needs improvement.

Some system engineers expressed significant frustration with recent decisions by the PHC/TOS to cancel modifications suggested by the staff. This could create an alignment gap between station management and the engineering workforce.

The team reviewed proposed modifications screened via the FVR process. Per the procedure, a modification must receive a score of $\geq$ 300 points to get funded. The following table shows the distribution among a number of improvement areas for the proposals that received FVR>300 and also for the proposals that received FVR<300.

	$\geq$ 300 points	$\leq$300 points
Nuclear Safety / Equipment Reliability	75%	83%
Radiological Safety	0%	4%
Industrial Safety	0%	4%
Production/Cost Improvement	10%	0%
EP / Security Initiatives	15%	4%
Other	0%	5%

The above data suggests that the site rightly places a high priority on Nuclear Safety and Equipment Reliability issues. However, it would also appear that Industrial and Radiological Safety are underweighted in the FVR process.

One voided modification that received significant negative comment was the proposed modification to seal-weld the access covers to the nuclear instrumentation ports in containment. These access covers have been a source of boric acid intrusion to the side of the reactor vessel in the past. The team recognizes that there may be other alternatives or options to address this issue. However, the system engineer expressed frustration with the decision that was made by TOS without his input.

System Managers were not involved upfront with the TOS modification prioritization (reduction) effort. Some expressed concern about the decisions that were made. The more aggressive system managers will likely ask for reconsideration of canceled modifications by the TOS. However, less aggressive system managers may just accept the decisions of the TOS without challenge. It is possible that a significant project or modification could get canceled inappropriately.

Recommendations

1. Reevaluate/revise the FVR procedure to include a more balanced evaluation of industrial and radiological safety items.
2. Consider application of the FVR process to a broader scope of items, including projects and other issues that are presented to the PHC. This would help improve the overall PHC prioritization process.
3. Include system managers upfront in any backlog reduction/issue prioritization efforts in the future.
4. Consider addition of a special coding in the work control system to flag backlog issues identified by the PHC needed to improve system health. Cancellation or rescheduling of these items would require PHC or Senior Management approval, thereby ensuring that the high priority backlog items needed for improved system health are completed. (Note: the "do not cancel" designation in work week schedules, and adoption of the BV RIO process, both planned for implementation in the short term at DB, will help and may suffice)
5. Develop a station wide communication strategy for the issue prioritization and backlog reduction efforts. The focus of this strategy should be to gain and maintain alignment between station management and the workforce on this issue.

Area 2 Calculations

The team's review included the following activities:

a. Acceptance criteria
b. Questioning attitude
c. Technical rigor
d. Margin management and allocation, propagation of engineering requirements for operation and maintenance
e. Linkages and consistency with other calculations
f. Preservation of design bases
g. Documentation/traceability/attribution
h. Calculation health and improvement process
i. Known process problems and progress in solving
j. Interaction and support from parallel processes
k. Workload management

Strength DB 2.1 Internalization Of Engineering Principles And Expectations (EP&E)

The internalization of the EP&E has had a positive influence in reinforcing the role of Engineering as owner of the design basis, as protector of design margin, and in promoting rigor in Engineering processes.

> Note: This strength was observed first by the assessors for the Calculation area, and was subsequently noted or confirmed by assessors in the other areas as well. Therefore this strength can be considered a cross-cutting strength.

AFI DB 2.2 Calculation Improvement Program

The Calculation Improvement Program is not receiving sufficient management focus to ensure timely completion.

> Although the Calculation Improvement Program status report in the DBAR is provided to engineering management, there is no discussion or assessment of progress provided, only item-by-item status. Low management visibility and lack of a summary level discussion could result in overlooking information showing lack of progress .
>
> Relatively few items have been addressed since restart. Most items due in the March - June 2004 time frame have been extended through the end of the year. Many of these items are reporting 0% complete.

Several due dates indicate "Under Review" or "TBD" without indication (in notes or otherwise) of the reasons for not having a required due date.

The goal established for the Calculation Quality Indicator is an average score of 1.0 or less. Actual performance has been better than this goal since February 2004. A more challenging goal has not been established.

Recommendations

1. Since implementation of this program represents a regulatory commitment, either complete scheduled actions in a timely manner or justify and request a change to the commitment.
2. Evaluate whether the remaining actions under Section 2 "Re-Affirmation and Alignment of DB DES Supervision and Staff" are warranted/add value and work with the regulators to adjust the plan, if appropriate.
3. Establish a more challenging goal for the Calculation Quality PI.
4. Consider factoring progress on Calculation Improvement Program items when assigning a Calculation Quality "window" color. (e.g. 90% or above achievement of scheduled items - Green).

Additional note: The team found information relating to the overall quality of calculations in two different sections of the DBAR: "calculations" under the Design Basis Health tab, and "calculation quality" under the Engineering Programs tab. Different individuals are named as owners. Overall calculation health might be better indicated by taking into account both the quality of current production calculations and also the condition of legacy calculations, with one owner responsible overall.

Recommendation

1. The team recommends taking a more integrated view of calculation health and reporting the result in one section of the DBAR.

NI(+) DB 2.3 Calculation Utility

The Calculation Utility has been implemented and is an excellent tool for determining design inputs and outputs for calculations.

Data has been entered and verified for all existing Davis-Besse and vendor-supplied calculations (approximately 22,000).

Training has been conducted for all DES engineers and some plant and Rapid Response Team engineers. The remaining engineers are to be trained by the end of the year.

A fleet-wide business practice for the Calculation Utility is in final review and should be issued shortly. Other engineering procedures are in the process of being updated to include reference to and use of the calculation utility.

Engineers interviewed use the calculation utility, and find it useful and accurate.

NI (+) DB 2.4 Effective Use of DIE For Calculations

The Design Interface Evaluation (DIE) is effective in the process of defining design inputs, acceptance criteria, and outputs/impacts of proposed changes. This process is also required and used for calculations that are not associated with physical changes to the plant (modifications).

Similar processes are used in the industry for modifications, expanding the use of the DIE process to calculation changes provides a mechanism to help improve the quality of calculations and communicate potential impacts of a calculation change to those impacted.

Feedback from DIE process has been beneficial in identifying additional inputs, requirements and impacts.

NI (-) DB 2.5 Lack Of Confidence In System Descriptions

There is a lack of confidence that system descriptions provide a consistently focused and reliable source of design basis information.

Some interviewees do not trust the system descriptions for design basis information, stating some design requirements cannot be traced.

Engineers interviewed noted that system descriptions tended to have many pending changes. A number of system descriptions have recently been updated, but the perception remains. Review of a recently updated service water (SW) system description indicates that changes had accumulated for almost nine years and the change incorporated almost 40 outstanding SDCNs. The recently completed SW system description (SD-018) was reviewed by the team for evidence of types of issues noted by engineers during interviews. In general, it appeared well organized and provided a good "single source roadmap" for design basis information.

Because of lack of confidence in system descriptions, engineers must search multiple data sources to get accurate design and licensing basis information. A "single source roadmap" that has the confidence of engineers is needed. (ATLAS may fulfill this function when fully implemented.)

The Team noted that the plans for updating the remainder of the system descriptions (an additional 49) and/or their potential replacement by ATLAS system representations have not been developed

Recommendations

1. Determine strategic choice for the Davis-Besse Design Basis Document format and establish a plan for implementation.
2. If System Descriptions have a role in this effort, consider ways address valid user issues to improve the usefulness of the documents and to improve the perceptions of potential users about the reliability of system descriptions. (The current effort to eliminate the backlog of SDCNs is a good start.)

Note: Additional comments developed from this item are presented in NI 5.5

NI (-) DB 2.6 FLEET COUNTERPART INTERACTIONS

While some common procedures are in place, interactions with fleet engineering counterparts are limited.

Most engineers (both design and plant) do not know who their counterparts at the sister plants are and interfaces appear to be limited. Interplant contacts are not routinely considered as a resource. Several system engineers indicated information sharing is casual and a matter of individual initiative for the most part.

Periodic cross-site visits are not required of plant or design engineers.

Note: This NI was observed first by the assessors for the Calculation area, and was subsequently noted as applicable by assessors in the System Engineering areas as well. Therefore this NI can be considered cross-cutting.

Recommendations

1. Establish points of contact with counterparts at sister plants.

2. Establish expectations for sharing information on system health issues, health management/improvement techniques, and best practices in design and system engineering.
3. Provide opportunities for peer visits and peer review of system health notebooks and system walk-downs, and peer visits in the design engineering disciplines to address commonalities such as calculation techniques, and use of the calc utility.

NI (-) DB 2.7 Margin Management

While progress is evident in identification and recovery of low margins in risk-significant systems, planning and more formal guidance for overall margin management is not provided.

There is no procedural requirement to explicitly document remaining margin in calculations. The only global guidance on margin management is found in the last bullet of Section II. of the Engineering Principles and Expectations booklet: "Recover or expand margins that are low".

There is no guidance for achieving an appropriate balance between design and operating margins, or for maintaining or improving operating margins.

There is currently no plan to go beyond identifying low margins in Tier 1 calculation for risk-significant systems. Balance of plant design and operating margins have proven to be issues at other plants.

The Team notes that common objectives for overall margin management and improvement include:

- Reduce probability and risk of events
- Reduce challenges to plant operators during normal operation (allocate margin to operating protocols and setpoints)
- Reduce challenges to organization from emergent plant conditions
- Reduce challenges to organization from equipment aging
- Support uprate

Recommendation

1. Develop additional guidance for a margin model and direction for implementing a margin management program.

Area 3 System Engineering

The team's review included the following activities:

a. System Health evaluation and reporting
b. Process for prioritizing, communicating, and resolving health deficiencies
c. Process for addressing system health deficiencies -- what corrective activities actually get done -- work week survival
d. Equipment Reliability Improvement Program
e. Maintenance Rule system monitoring and trending
f. Restart issues and lessons learned
g. Experience and expertise, including use of operating experience
h. Margin awareness and margin allocation
i. Known process problems and progress in solving
j. Interaction and support from parallel processes
k. Workload management

NI (+) DB 3.1 System Engineers are Highly Supportive of the Plant

Several managers reported exemplary service quality and responsiveness provided by system engineers. (This feedback pertained to support of problem solving and emergent equipment issues.)

> System engineers participate or lead problem solving /decision making teams in response to plant problems (There have been ~60 problem solving / decision making teams since restart). System engineering representatives participate in shift turnovers and duty team phone calls.
>
> The Plant Engineering statement of duties and responsibilities in NOPL-CC-0002 roles – responsibilities includes "Providing technical support to Operations and Maintenance, including technical reviews, assistance in problem solving, planning assistance, work prioritization" in addition to responsibilities which focus on longer term system health. System engineers have shouldered a heavy burden in this area.
>
> The organization has come to depend upon system engineers to supply information, typically troubleshooting guidance, that could be supplied by maintenance supervision or troubleshooting procedures. System engineers' attention to system health duties may be diverted by these information requests.

Recommendation

1. Check and adjust the expectations and practices of System Engineering to share the short term support work load with the RRT, Operations, and Maintenance personnel so System Engineers can provide heightened attention to system health monitoring and improvement.

   The Team noted management initiatives in this area which appear to be having the desired effect under the direction of the Duty Teams and as the redefined RRT responsibilities are implemented.

NI (-) DB 3.2 System Health Rating

The system health rating process may not provide early indication that system health is degrading.

Generally, the criteria selected to indicate system health are coincident with the consequences that are intended to be avoided. This does not provide a warning of degrading performance prior to reaching the undesirable consequence.

The system color is determined by three major criteria, maintenance rule status, material condition, and operator workarounds. The maintenance rule status is determined by a system going into a maintenance rule a(1) status in the previous monitoring period. This does not provide an early warning that system performance is degrading. More aggressive criteria could be used to indicate degraded performance prior to reaching the a(1) threshold. The three criteria utilized to determine material condition are the number of work orders, temporary modifications and derates caused by the system. The total work order indicator does not take into account the relative importance of the deficiency identified in the work order. This may or may not be accounted for by the system engineer's judgment. The derate criteria provides a lagging indication that the systems performance has already impacted production.

Operator burdens and temporary modifications seem to be appropriate leading indicators.

The system health ranking criteria for Freeze Protection/Heat Trace has recently been revised, and is now less stringent (easier to score better system health). This was accomplished by counting only maintenance rule equipment work order backlog and excluding non-maintenance rule circuits from consideration.

Recommendation

1. Reconsider the downgrading of the system health scoring for freeze protection/heat trace. The evolution of system health indicators should be in the direction of being more challenging and more anticipatory.

NI (-) DB 3.3 System Health Plan Implementation

System health plans and their implementation are not always carried out as planned and scheduled.

Several system health improvement activities for several systems were not accomplished as planned and scheduled. Numerous work order and engineering change scheduled dates slipped. Recently, a 192 hour auxiliary boiler outage left several planned health improvement activities not done.

Work planners are not regularly apprised by system engineers of the tasks which need to be given priority and retained in work week schedules to improve system health. (The Team noted that several initiatives are planned for near term implementation that will help in this area – labeling system health improvement plan related work orders as "do not reschedule" in work week schedules, and adoption of the Beaver Valley RIO process.)

System health plans for systems in a yellow or lower condition consists of lists of work orders and ECRs outstanding. The plans generally do not segregate these items into groups necessary to achieve system health progression from yellow to white, white to green, or the dates by which progress to the higher health steps will be achieved. System health plans do not contain additional actions required to effectively achieve the task dates listed, such as obsolete parts issue resolution for affected work orders, and do not illustrate linkages between related tasks to support overall coordination.

NI (-) DB 3.4 Access To Knowledge Of Engineering Information In Calculations

Calculation information that is important to engineers' knowledge of system design is not readily accessible. Awareness of the engineering requirements for operation and maintenance of systems and of available margin is inconsistent.

Calculations typically contain a significant amount of design information which is important to understanding system operating and maintenance requirements, and to understanding available margin. System engineers should be familiar with the significant calculations supporting their systems. The calculation utility has been implemented at DB but the system engineers have not been trained in its use or provided with the application for their use in identifying and reviewing calculations supporting their systems.

System Descriptions contain system design values but do not routinely identify the calculation supporting that value, relying on other (secondary) sources of that information such as drawings, specs, vendor supplied data, and operating procedures.

Recommendation

1. Consider expanding availability of the calculation utility to all groups that need access to design information, and especially to expediting access for the System Engineers.

Area 4 Use of the Corrective Action Program by Engineering

The team's review included the following activities:

a. Evaluate the impact of the backlog and backlog trend on organizational and operational effectiveness
b. Quality of evaluations/resolutions (including use of critical thinking concepts and operating experience)
c. Effectiveness of recurrence control
d. Work management and backlog management
e. Support of corrective actions assigned to others
f. Site to site and multiple plant Condition Reports
g. Root Cause Analyses techniques and management component of cause description
h. Use of Condition Report process for action items tracking
i. Known process problems and progress in solving
j. Interaction and support from parallel processes
k. Workload management

The Team was given a draft of the Independent Assessment of Davis-Besse Corrective Action Program Implementation Report (Assessment Number 2004-0100, dated October 21, 2004) for review the second week of the onsite assessment period. The Team confirmed most of the issues in that report as being applicable to the engineering program area.

The Engineering Program Team found that the Engineering personnel were generally prompt in initiating condition reports for identified conditions adverse to quality. Several root and apparent causes produced by Engineering were reviewed and found to be of good quality.

The Team found that corrective action implementation timeliness is an issue in Engineering in that that due date extensions are numerous and relatively easy to obtain. Trending of corrective action program information is generally weak. Department trending activities are primarily semi-annual Collective Significance Reviews. The Team recognized/agreed with the CAP assessment that an integrated plan is needed for the corrective action backlog as well as for other backlogs such as Engineering and corrective/elective/preventive maintenance.

Where the findings of the Engineering Program Assessment Team duplicated or significantly overlapped the CAP Assessment findings, the findings were not duplicated in this report.

The Team identified an additional Noteworthy Item discussed below (NI (-) DB 4.1).

NI (-) DB 4.1 Corrective Action Work Burden

Individuals who are required to formulate corrective actions sometimes have difficulty obtaining acceptance of the corrective actions by the prospective owner.

Assignment and acceptance of corrective actions was identified as being difficult - especially when assignments cross department boundaries. Condition report evaluators are required to gain agreement by the individuals accepting the corrective actions prior to making assignments. Reluctance to accept assignment of corrective actions may be indicative of "silos" within the organization and a lack of inter-departmental teamwork.

Although this requirement is typical in the industry, management support for this process is needed at DB to reinforce the cross-functional teamwork and collaborative behaviors necessary to achieve orderly assignment and implementation of corrective actions.

Recommendation

1. Provide management reinforcement for prompt acceptance of CAs, and an escalation path when acceptance is not readily forthcoming.

Area 5 Management Topics

The team's review included the following activities:

a. Engineering interfaces
   - Providing design and licensing basis information to others
   - Requests for assistance
   - Problem solving and troubleshooting – roles and division of responsibility
   - Engineering perspective and influence on plant operations and maintenance
   - Engineering support of other processes (work control, technical procedure development, procurement)
   - Engineering information formulation and presentation, receptivity of and interaction with operations, maintenance, and management

b. Programs effectiveness monitoring (including Training & Qualification element)

c. Change management – reorganization, new standards

NI (-) DB 5.1 Interfaces With Parallel Processes

The expectations for interfaces between Engineering and some site processes haven't been clearly defined by management and /or accepted by the engineering workforce.

Differing expectations at process interfaces are demonstrated by the following examples:

> The plant work management process owner expects engineering to be effective in meeting due dates for actions necessary to reduce engineering restraints for work items identified at work planning meetings such as T+24 and T+11. Engineering does not seem to have the same expectation and does not always manage to this expectation.
>
> The plant individual responsible for running the work management T+11 meeting expects the engineering representative attending that meeting to be fully prepared to report status and expected completion dates for all engineering restraints and inputs for all planned work orders. This expectation is essential to accomplishment of the objective of the meeting – to complete the scope selection decision making and equip all participants with the knowledge of what items are in scope by the end of the meeting. The engineering representative expects he should be prepared to discuss most items but that it is acceptable for him to take action items out of the meeting and provide the required information later.

This expectation also applies to the other work management planning meetings such as T+24, and T+8.

Maintenance planning has incorporated decision points and options into some work plan templates and expects engineering to provide the information needed to support decisions and select options. Engineering expects maintenance planners to provide the needed information based on knowledge the planners should have ready access to. If the options and decisions haven't been selected and/or taken at the time of the work week reviews, the scope and work input requirements cannot be known.

The RRT expects Procurement Engineering to perform replacement parts evaluations using the PIE procedure even when some simple document changes are required (work sharing arrangement similar to Beaver Valley). Procurement Engineering expects to perform PIEs only when no document changes are required.

Recommendations

1. Develop an interface expectations protocol for use at interfaces between engineering processes and other processes, for use in situations such as:
    - A new engineering individual is assigned to interface with another process
    - There are known issues requiring clarification at an interface
    - Previously implemented interface expectations can be revised to improve process performance.

2. Use this protocol at interfaces where differing expectations exist, for example at the interfaces with plant work week planning, and procurement engineering.

NI (-) DB 5.2 Engineering Work Management Tools And Techniques

Better engineering performance may be achieved with less effort by adopting work management technology and tools supporting the ability to plan and resource work, anticipate and accommodate challenges to work completion, and to recognize opportunities to improve expected performance.

There is no consolidated work items list and no integrated schedule for completion of engineering work. Assignment listings to the level of individual contributor do not exist for all work except as individuals create and maintain their own assignment lists from information drawn from a variety of sources. Individual engineers report they query sources such as

CREST, SAP, DBATS, EWMS, and Curator, as well as keeping notes from discussions with supervisors and meetings to assemble their own work lists. They report the resultant lists are incomplete and cannot be kept current without great difficulty.

Individual engineers work off assignments based on their own lists, but are hampered by the lack of management information such as tasks assigned, priorities, current due dates, appropriately planned task start dates, durations, and work intensity expectations, predecessor and successor logic ties, and ability to anticipate and accommodate problems in carrying out assignments

The Engineering Workload Management System (EWMS) is limited to providing a work list and is rarely used. Manloading /levelization/work linkage features are not used. Engineers report their work is reactive to many influences involving late recognition of work assignments and/or untimely communication of assignments and changed due dates. The imposed reactive posture is not conducive to orderly and efficient completion of work.

Some engineering managers relate that they are not ready to make the transition from a bulk work approach to a managed work approach (because the transition is hard to accomplish, the available tools have not been made fully useful, and because they do not see the value of adopting project and work management planning, scheduling, and monitoring tools). The point at which they believe the transition should take place is believed to be a year or so away, and only following deployment of work management tools via SAP.

Recommendations:

1. Establish a strategy for engineering work management to include performance and functional objectives, articulation of roles and responsibilities of department and project managers, supervisors, and individual contributors, and the nature and level of support to be provided by the work management system for these newly defined roles and responsibilities.

2. Select and adopt work management tools for use across engineering that support the following:

    - Readily accessible single source work lists for individuals
    - Prompt communication to individuals of new work assignments and changes to established assignments and schedules
    - Schedule dates for task starts and finishes

- o Task linkages for work by a single individual, across individuals within engineering, and for important items, with the plant work schedule.
- o Resource loading and ability to identify and mitigate overloads before they impact work execution.

NI (-) DB 5.3 Engineering Backlog Reduction

The outcome of the engineering backlog reduction project (future rate of backlog item completion, end date, resource requirements) is uncertain because the work items to be completed are not represented in work plans and schedules.

The Engineering Backlog Reduction Project is not strongly supported by some plant departments. Operations and Maintenance departments' participation in system reviews and subsequent backlog item completion is notably absent.

Criteria for maintenance work order elimination does not appear to be well defined. Engineering's support of the Maintenance backlog reduction effort is via the normal work management process, not through a distinct and coordinated set of activities.

Engineering is not using planning and scheduling tools appropriate for a project of the size, complexity, and importance of the engineering backlog reduction project. The corrective action program application (CREST) is used as the default engineering scheduling tool and due dates are not based on manpower availability, which results in numerous due date extensions.

Recommendation(s)

1. As in interim step, implement simple backlog project scheduling using Microsoft Project or an equivalent simple scheduling tool that supports task resource loading and subtask linkages. Establish milestones or ties to plant work week activities where appropriate.
2. Develop means to integrate engineering backlog reduction and plant backlog reduction.

NI (-) DB 5.4 Human Resource Development

Some aspects of human resource development need attention to increase productivity to deal with department workload and to eventually replenish an aging workforce.

The Engineering Backlog Reduction plan assumes the Engineering Department is fully staffed; but currently the design engineering organization has 8-10 open positions. Budgeted slots are not back-filled.

Bench strength in specialty areas such as stress and seismic analysis, fire protection, coatings and electric motors is weak. There may be plans to address these areas but they have not been communicated to the workforce.

There has been inadequate training on use of SAP software to fully leverage this technology. Design engineering received minimal SAP training and planners are just now discovering some of the benefits of the software in planning repetitive tasks after receiving additional training.

The recent reorganization assumed certain "enablers", one of which is transfer of certain testing and component monitoring activities from System Engineering to Maintenance. Per System Engineering personnel, these enablers have not been fully implemented and there are potentially some key testing and monitoring responsibilities that are currently in question.

Recommendation(s)

1. Consider performing a technical expertise assessment of all personnel in the Engineering organization based on critical skills and likelihood of vacancy over the next 5 years. For positions or critical skills that are at significant risk for D-B, a contingency/development plan should be developed.

2. Perform a training needs analysis in the area of SAP software utilization to identify areas where training could enhance engineering performance.

3. Identify the key enablers associated with the reorganization, specifically for the transfer of certain testing and component monitoring functions from Engineering to Maintenance. Implement actions to address any identified gaps.

Note: The following Noteworthy Item was added after the Assessment Team left the site, upon evaluation of additional information and discussions with site personnel. A supplemental briefing of DB Engineering management was conducted by phone on Thursday November 4.

NI (-) DB 5.5 Engineering Rigor and Attention to Detail

A lack of rigor and demonstration of high standards was noted in the conduct of some engineering department activities. The team's review of System Description SD-018 Service Water System (Rev. 3), and subsequent review of CR 02-05773 completed in August of 2004, gave rise to items a-e below.

a. **Calculation rigor was degraded by some work practices (see discussion in NI 2.5).**

Information developed in the discussion section of a CR was incorporated by reference into two revised calculations by listing the CR and providing a summary on the calculations' cover sheets. The cover sheet information stated that the information in the original calculation (s) is in error, but that the condition adverse to quality was acceptable with the basis for acceptability being the information presented in the CR.

The information presented in the CR does not appear to have been developed with the rigor that would have been required if the information were developed within the calculation.

Further, the Team is concerned that where the flow rates and screen velocities were previously justified by active calculations (albeit with errors), they no longer are justified by active calculations.

b. **The use of engineering judgment is casual and the bases (substantiation and conservatism) for engineering judgment are not documented**.

The CR discussion information that was adopted as a reference to the two calculations specifically included reliance on engineering judgment with no indication that engineering judgment was properly used.

c. **Some corrective actions fail to adequately address the condition adverse to quality.**

The service water system LIR team identified a statement that a condition beyond design is acceptable with no apparent justification. A CR was initiated, Corrective Actions taken, and the CR was eventually closed, with the exact same problem remaining in the system description.

The condition report written in response to this issue identified two calculations that needed revision. Design engineering accepted action to revise the calculations, and to revise affected documents (presumably including the system description) but decided in August 2004 not to correct the known errors in the calculations or to revise affected documents. Thus the condition reported was not addressed.

d. **The disposition of safety related system issues and functions is not rigorous.**

In the immediate actions taken/ supervisor comments section of the CR, it was stated that resolution of this issue was a Mode 4 restart restraint and that it involved documentation for a safety-related system. In the response section, it was stated that the function is not safety related, further stating that "the condition of the traveling screens has no impact on systems (sp) accident function." There was no mention of the Mode 4 restraint removal. The team believes that the ability of the screens to pass sufficient flow under all conditions would be necessary for the SW system to perform its safety related function.

e. **An opportunity to more clearly define and recover margin was missed when the service water calculation mentioned above was downgraded instead of revised and upgraded.**

The service water calculations for flow rate and screen flow velocity were noted to not contain acceptance criteria. The service water system is one of the systems identified as risk significant, is known to be low in margin, and designated for efforts to quantify and improve margin. Revision of the flow calculations would have provided an opportunity to calculate the correct flow rates and screen velocities and at the same time establish some form of acceptance criteria and quantify the margin to those criteria.

The Team expects that such quantification would demonstrate significant margin to flow velocity limiting values.

Area 6 Self Assessment

The team's review included the following activities:

a. Aggressiveness in developing and correcting self-assessment findings. Adequacy, timeliness, and prioritization of corrective actions.
b. Aggressiveness in developing and correcting assessment (internal oversight, Engineering Assessment Board (EAB), and Corporate Nuclear Review Board (CNRB)) findings. Adequacy, timeliness, and prioritization of corrective actions.
c. Receptivity and responsiveness of management and staff to issues raised in self-assessments and assessments

Strength DB 6.1 EAB Process

The EAB process has provided excellent reinforcement of standards and expectations for newly created/revised calculations, modifications and other Engineering products.

The EAB reviews 100% of engineering work products and grades them for content and conformance to standards and expectations. EAB grades are tied to the DBAR measurement of calculation and modification quality.

The review process has provided a level of consistency among engineering disciplines and vendors and provides positive motivation and reinforcement of high standards to those involved in preparing engineering products.

Feedback from EAB reviews is used by supervisors and provided to all members of their group (not just the preparer/reviewer) for use in improving their performance.

Recommendation

Consider whether and if so how to reduce the EAB role and have the line organizations reassume sole responsibility for product quality.

AFI DB 6.2 Utilization Of The Self Assessment Process

The Self Assessment Process is not being fully utilized to improve Engineering Performance.

To date, of the 34 engineering self assessments scheduled for 2004, seven have been completed, ten are pending completion, and 17 have been canceled.

Twelve fleet-wide focused self assessments were originally scheduled for 2004. Ten of these scheduled assessments have been canceled.

The team reviewed 16 self assessments, including focused assessments, ongoing departmental assessments, and collective significance reviews. The quality was variable. 50% (8) of the assessments were judged to be critical and had appropriate CAs to address the issues. The remaining 50% were judged average (3) or below average (5), particularly in the area of CAs.

In general, the focus of most self assessments has been backwards looking for compliance instead of forward looking toward improvements and higher standards. Therefore, there were few assessments where opportunities for process efficiencies/improvements or higher standards were identified.

The change management associated with the implementation of corporate procedures NOBP-LP-2001 and NOBP-LP- 2004 was inadequate. Currently, no owner for the self-assessment process exists onsite. Discussions with site personnel indicate that the owner is now a corporate individual. This individual was interviewed and he recognized the change management issues and indicated that he is actively working to address them in the future.

Recommendation(s)

1. Establish site and corporate ownership for the self assessment program.
2. Plan self assessments well in advance to identify which SAs will be performed, who will perform them (identify direct and support requirements), and to coordinate them.
3. Develop a strategy for SAs taking into account factors and considerations such as the following:
   - Demonstrating compliance with corporate, site, and external requirements and commitments
   - Identifying needs and opportunities for process change to improve quality and business results
   - Identifying areas where enhanced standards would benefit FENOC
   - Integration of self assessment activities

4. Consider CARB review of self assessment plans and results to provide a management perspective (as an interim measure)

SECTION 2

Action Plans for Identified Areas for Improvement

The Areas For Improvement (AFI) Action Plans contained in this section were developed by the Davis-Besse Nuclear Power Station (DBNPS) in response to the AFIs identified in Section 1 by the Independent Assessment team.

The Confirmatory Order assessment provided an independent and comprehensive review of Engineering Programs at the Davis-Besse Nuclear Power Station. The assessment team identified three "Areas for Improvement" (AFI). These AFIs have been entered in the Corrective Action Program. The AFIs and the associated Action Plans are presented in this Section. In addition to the AFIs, there were several "Noteworthy Items" documented by the assessment team. These Noteworthy Items have been captured in the Corrective Action Program.

AFI COIA-DB 1.2 – Modification Tracking and Closure

Initiation and closeout of documentation associated with plant modifications are untimely and inefficient.

Action plan:

1. Classify the approximately 550 identified unclassified proposed engineering change requests by the end of Cycle 14. Progress will be monitored utilizing the status of open engineering changes monthly through the monthly Performance Report and quarterly through the Design Basis Assessment Report (DBAR).

2. The long term solution to the current less than adequate tracking of engineering change status between issuance to the field and return to engineering for closure will be addressed through the inclusion of engineering changes into SAP. This will provide a common platform for managing the design as well as the implementation stages of engineering changes and provide improved monitoring of the engineering change progress. This change will be completed by the end of the fourth quarter 2005.

3. The planning organization has placed additional focus on processing through for closure the engineering changes that are essentially field complete. The actual status of the approximately 57 identified engineering changes requiring closeout will be confirmed and dispositioned properly by the end of the second quarter 2005. In the interim, Operations will re-review these open engineering changes to ensure no adverse impact to safe plant operations by

February 28, 2005. The total number of engineering changes issued for implementation will be monitored monthly through performance indicators included in the Monthly Performance Report.

4. A future revision of NOP-CC-2003, Engineering Changes, will include a common engineering change close-out process. This revision is currently in progress through the fleet engineering programs manager and is expected to be issued by the end of the fourth quarter 2005.

AFI COIA-DB 2.2 - Calculation Improvement Program

Calculation Improvement Program is not receiving sufficient management focus to ensure timely completion

Action Plan:

1. The Calculation Improvement Plan is updated on a quarterly basis through the Design Basis Assessment Report (DBAR). Several enhancements to the DBAR will be made, these changes include:

    a) Improve the DBAR report content to include an overall trend and summary to focus management attention to problem areas. This report content change will be made in the 1st quarter 2005 DBAR.

    b) The current status of the calculation improvement plan will be reviewed against the recent level of calculation quality. Due dates will be reconfirmed and rebaselined and adjustments will be made as necessary and the plan will be updated in the 1st quarter 2005 DBAR.

AFI COIA-DB 6.2 Utilization Of The Self Assessment Process

The Self-Assessment Process is not being fully utilized to improve Engineering Performance.

Action Plan:

1. FENOC Fleet ownership for Self-assessments has been established.

2. Engineering efforts will be focused to better utilize the Self-Assessment process in regards to planning and completion of self-assessments. The 2005 Self-assessment focus areas and owners have been identified and

submitted for approval. There are Fleet engineering self-assessments being scheduled for 2005. These assessments would include Davis-Besse.

3. During the next revision of Business Practice NOBP-LP-2001, FENOC Focused Self-Assessment Process, enhancement opportunities and integration of overall assessments will be evaluated for inclusion. This revision is expected to be completed by March 31, 2005.

Appendix 1 FENOC submittal

FENOC Davis-Besse Engineering Assessment Plan

NUMBER:
2004-0102

ASSESSMENT AREAS:

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

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.

SCOPE:

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

1. Plant Modification process
2. Calculation process
3. System Engineering
4. Corrective Action Program (CAP)
5. Additional selected areas
6. Effectiveness of self-assessments

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:

a. Selection and prioritization of potential modifications
b. Efficiency of the modification process (graded approach, at risk changes)
c. Owner acceptance sub-process (review of contracted work)
d. Quality of modification packages
e. Closeout of modification packages and supporting document updates
f. Effectiveness of modifications in fixing known problems
g. Known process problems and progress in solving
h. Interaction and support from parallel processes
i. Workload management

2. **Calculation process**

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

a. Acceptance criteria
b. Questioning attitude
c. Technical rigor
d. Margin management and allocation, propagation of engineering requirements for operation and maintenance
e. Linkages and consistency with other calculations
f. Preservation of design bases
g. Documentation/traceability/attribution
h. Calculation health and improvement process
i. Known process problems and progress in solving
j. Interaction and support from parallel processes
k. Workload management

3. **System Engineering Programs and Practices**

The team will investigate the following items:

a. System Health evaluation and reporting
b. Process for prioritizing, communicating, and resolving health deficiencies
c. Process for addressing system health deficiencies -- what corrective activities actually get done -- work week survival
d. Equipment Reliability Improvement Program
e. Maintenance Rule system monitoring and trending
f. Restart issues and lessons learned
g. Experience and expertise, including use of operating experience
h. Margin awareness and margin allocation
i. Known process problems and progress in solving
j. Interaction and support from parallel processes
k. Workload management

4. **Implementation of the Corrective Action process by Engineering**

The team will assess the following:

a. Evaluate the impact of the backlog and backlog trend on organizational and operational effectiveness
b. Quality of evaluations/resolutions (including use of critical thinking concepts and operating experience)
c. Effectiveness of recurrence control
d. Work management and backlog management
e. Support of corrective actions assigned to others
f. Site to site and multiple plant Condition Reports

g. Root Cause Analyses techniques and management component of cause description
h. Use of Condition Report process for action items tracking
i. Known process problems and progress in solving
j. Interaction and support from parallel processes
k. Workload management

5. **Other Areas**
   a. Engineering interfaces
      - Providing design and licensing basis information to others
      - Requests for assistance
      - Problem solving and troubleshooting – roles and division of responsibility
      - Engineering perspective and influence on plant operations and maintenance
      - Engineering support of other processes (work control, technical procedure development, procurement)
      - Engineering information formulation and presentation, receptivity of and interaction with operations, maintenance, and management
   b. Programs effectiveness monitoring (including Training & Qualification element)
   c. Change management – reorganization, new standards

6. **Effectiveness of Davis-Besse Assessment Activities**

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

a. Aggressiveness in developing and correcting self-assessment findings. Adequacy, timeliness, and prioritization of corrective actions.
b. Aggressiveness in developing and correcting assessment (internal oversight, Engineering Assessment Board (EAB), and Corporate Nuclear Review Board (CNRB)) findings. Adequacy, timeliness, and prioritization of corrective actions.
c. Receptivity and responsiveness of management and staff to issues raised in self-assessments and assessments

INDEPENDENT ASSESSMENT TEAM:

John Garrity, Marathon Consulting Group, Team Leader
Paul Borer, Marathon Consulting group
Harold Baumberger, Marathon Consulting Group
Bradley Adams, Site Engineering Director, Byron Nuclear Station, Exelon Nuclear
John Meyer, Design Engineering Analysis Manager, Comanche Peak, TXU Energy
Tom Vine, Manager, Engineering Programs, Duane Arnold Energy Center

Biographies attached.

FENOC Davis-Besse Engineering Assessment Plan

SCHEDULE:

- June 9 through July 7, 2004, develop, review and submit assessment plan to NRC.
- July 12, 2004, send selected documentation to team members to begin off-site preparations.
- October 10, 2004, assessment team will assemble at the plant for final assessment preparations.
- October 11- 22, 2004, conduct onsite assessment and provide Davis Besse with preliminary results prior to leaving site.
- Final team assessment report will be provided to Davis-Besse within 14 days after the completion of the on-site assessment.
- 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 Assessment" as the basis for conducting the assessment.

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.

REFERENCES:

Confirmatory Order dated March 8, 2004
DBBP-VP-0009 "Management Plan for Confirmatory Order Independent Assessment"
NOP-CC-2003, Engineering Changes
NOP-CC-3002, Calculations
NOP-LP-2001, Condition Report Process
Past NRC inspection reports (CATI, RRATI) that are applicable to the area assessed
Past applicable Self-Assessments
QA quarterly assessments 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 (signature) Date: 7/2/04
John H. Garrity, Assessment Team Lead

Approved by: Clark A. Price (signature) Date: 7/2/04
Clark A. Price, Project Manager

Approved by: Ralph Hansen (signature) Date: 7/2/04
Ralph Hansen, Executive Sponsor

Independent Engineering Assessment Plan
Assessors and Qualifications

(6 pages to follow)

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.
- 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.

Paul J. Borer
Consultant
Marathon Consulting Group

- 2002-present: *Marathon Consulting Group* - Performed Safety Culture and Engineering Effectiveness Assessments.
- 1986-2002: *Institute of Nuclear Power Operations (INPO)*-Held the following positions:
  - Senior Representative for Assistance - Management consulting role. Responsible for formulating performance improvement plans for several nuclear stations. Provided direct feedback to senior station management on performance issues. Prioritized deployment of INPO assistance resources.
  - Division Director, Plant Operations Division - a technical INPO division responsible for evaluation of Operations, Chemistry, and Radiation Protection areas. Involved in setting standards for evaluations, responsible for the evaluator training program, and assisting the industry in attaining standards of excellence.
  - Detroit Edison Vice President - Nuclear Generation (On - loan from INPO 1997-1998) Responsible for all aspects of Operation, Maintenance, and Engineering of a large scale BWR. Led a plant staff of approximately 500.
  - Vice President, Nuclear Engineering - New York Power Authority (On - loan from INPO 1993-1994). Responsible for Design Engineering at two nuclear generating stations. Developed and implemented a plan to deploy corporate design engineering resources to the stations in order to be more responsive to station needs.
  - Department Manager - Managed four INPO departments (Emergency Preparedness, Operating Experience Applications, Technical Support, and Operations) - Responsible for the evaluation of their respective areas of plant performance and various assistance programs. Also functioned as a Team Manager and lead teams of 15-20 INPO and industry professionals during performance-based nuclear plant and corporate evaluations.

  Held a Senior Reactor Operator's License - Boiling Water Reactor and Licensed Professional Engineer - Mechanical.
- 1985: *Engineering, Planning, and Management, Inc.*; Project Manager - Responsible for the overall conduct of work, sales, budget, schedule, client relationship, and quality of products for EPM clients in the Southeastern U.S.
- 1983-1984: *Smith Barney, Harris Upham, and Company*; Account Executive - Responsible for retail securities sales, client development, securities research, financial planning advice.
- 1976-1983: *Cooper Nuclear Station*; Served in various management positions, all reporting to the site manager. (Operations Manager, Engineering Manager, Chemistry and Radiation Protection Manager)
- 1970-1976: *U. S. Navy;* Completed the Naval Nuclear Power Training Program and served aboard a nuclear submarine.

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.
  - 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.
- 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.

Bradley J. Adams
Site Engineering Director
Exelon Nuclear Corporation

- 2003-present: *Exelon - Byron Nuclear Station*; Site Engineering Director - Provide overall proactive management of the site engineering function including Systems Engineering, Design Engineering, Engineering Programs, and Information Technology. Accountable for site engineering department budget, short-term and long term staffing, development, compensation, and related human resource needs for 95 assigned employees. Participate as a key station manager in the business planning and performance review process including integration with the overall Exelon business planning process. Manage the execution of contracted A/E services as they pertain to the site engineering function.
- 2002-2003: *Exelon - Byron Nuclear Station*; Superintendent of Electrical / I&C Maintenance - Direct management of the Electrical Maintenance and Instrumentation & Control Maintenance Departments at the Byron Nuclear Station. This included 22 management personnel and 73 represented personnel in the 2 departments.
- 2000-2002: *Exelon - Byron Nuclear Station*; System Engineering Manager - Responsible for direct management of the 40-person System Engineering organization. Successful in developing and implementing state of the art performance centered maintenance templates for Byron Station and the Exelon Nuclear Fleet.
- 1998-2000: *Exelon - Byron Nuclear Station*; Regulatory Assurance Manager - Managed the regulatory interface for Byron Station with the U.S. Nuclear Regulatory Commission, Illinois Department of Nuclear Safety, OSHA, Illinois and Federal EPA, and other regulatory agencies. During this period, assigned to key position with the Merger Integration Team to facilitate year-long effort to merge the former ComEd and PECo utilities into the Exelon Corporation. This effort included evaluation of assets, management of governance and oversight structure, and other key attributes of merger activities.
- 1995-1998: *Exelon - Byron Nuclear Station*; Staff Engineer - Design Engineer in the Mechanical Support Group of the Byron Site Engineering organization. In previous years was responsible for implementation of various process improvements to increase efficiency and improve quality of the engineering products delivered by the department. Involved in proactively increasing the knowledge base of personnel throughout the ComEd nuclear division by assisting the Nuclear Training Department in the development and presentation of various continuing education classes.
- 1991-1994: *ComEd Corporate Regulatory Assurance;* Licensing Engineer - Served as Generic Licensing Specialist in the Nuclear Engineering & Technology Services Department. Was responsible for helping ensure regulatory consistency between ComEd's six nuclear generating stations. Also responsible for generating major technical licensing submittals from ComEd to the USNRC.
- 1983-1991: *ComEd Corporate Nuclear Fuel Services*; Design Engineer - Qualified Nuclear Design Engineer. Promoted twice within ComEd's Nuclear Fuel Services Department to Design Group Leader with responsibility for direct supervision of eight engineers performing engineering design analyses for ComEd's entire fleet of 6 pressurized water reactors.

John W. Meyer
Design Engineering Analysis Manager
TXU Power – Comanche Peak

- 2003-present: *Comanche Peak Steam Electric Station (CPSES)*; Design Engineering Analysis Manager - Founding Manager of a unit in the Technical Support Department at Comanche Peak Steam Electric Station (CPSES). Responsible for 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. Provides 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 - Managed a multi-disciplined staff of Consulting and Senior Engineers in the Reactor Engineering Department 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. The Risk and Reliability group was responsible for maintaining the CPSES IPE and IPEEE and for all 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 Nuclear Steam Supply System, HVAC, and Fire Protection Systems. Supervised a senior staff of engineers to provide 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. NSSS expert assigned to the Primary Plant Systems group of the on-site CPSES corporate engineering department.
- 1974-1987: *Westinghouse Electric Corporation*; Senior Project Engineer - Served as Nuclear Systems Engineer in the CPSES site office. Senior Field Service Engineer - Performed field services at operating and construction PWR projects. 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.

Thomas V. Vine
Engineering Programs Manager
Nuclear Management Company

- 1991-present: *Nuclear Management Company, Duane Arnold Energy Center*; Positions held include the following:
  - Manager, Engineering Programs - Responsible for implementation of the following plant programs: Predictive Maintenance, Preventative Maintenance, ASME Code Compliance, Welding, Non Destructive Testing, In Service Inspection, In Service Testing, Motor Operated Valves, Air Operated Valves, Maintenance Rule, Thermal Performance, PRA EQ and Fire Protection. Direct reports include two Supervisors and 20 Program Engineers and Analysts. Additional responsibilities include Program Owner for the Engineering Programs, Technical Training Program.
  - Project Engineer, Spent Fuel Storage - Responsible for the design and construction of an Independent Spent Fuel Storage Installation (ISFSI) licensed under 10CFR72. Directly responsible for oversight of Architect/Engineers for ISFSI and plant security modifications as well as on-site contractors performing design, licensing and construction activities for the project. Also provided technical input into procurement and fabrication of components required for dry spent fuel storage.
  - Supervisor, Radwaste - Responsible for oversight and supervision of the Radwaste Department which is responsible for liquid processing, solids processing, wet waste disposal, cask handling, packaging and shipping of radioactive materials. Direct reports include twelve Radwaste Operators and two Health Physicists. Additional responsibilities include serving as a member of the plant Operations Committee, Program Owner of the Radwaste Training Program as well as being a member of the ASME/EPRI Radwaste Subcommittee. Significant accomplishments: Spent Fuel Shipment in support of GE Nobel Chem fuel analysis. Innovative water processing technology such as UV/Ozone organics removal system. Aggressive program to evaluate reduced resin dosage on condensate filter demineralizers. Implementation of new design pleated filters in condensate filter demineralizers to improve Feedwater iron control.
  - Principal Engineer, Systems Engineering - Responsible for oversight of the following systems: Cranes, Radwaste (processing and shipping), Structures, HVAC, Aux Boiler, Reactor Recirculation, Additional responsibilities: Heavy Loads Coordinator, Project Leader for various major maintenance activities. Significant accomplishments: Engineering support for Fuel Pool Re-rack Project. System improvements to Aux Boiler. LLRPSF HVAC modifications that solved long-standing temperature control problems. Project Leader for Recirc Pump Seal replacement to AECL CAN-2A seals.
- 1988-1991: *GPU Nuclear, Oyster Creek*; Sr. Engineer, Plant Engineering - System Engineer for Lifting & Handling, Secondary Containment, standby Gas Treatment, and Balance of Plant HVAC. Supervised project to replace 72" 16,000 LBS. butterfly valves in circulating water system utilizing innovative rigging techniques. The project involved design and fabrication of devices that allowed movement of valves over numerous obstacles. Provided engineering interface for first US installation of ABB Wet-Lift system in a BWR. Supervised major maintenance procedure upgrade project.

Appendix 2 Personnel interviewed

Allen, Barry
Andrews, Doug
Bair, Dick
Barron, Nate
Barteck, Gabe
Bennett, Eric
Blakely, Dennis
Boles, Brian
Bor, John
Browning, Kevin
Chimahusky, Ed
Dallas, Dave
Davis-Zapata, Ricardo
Dejong, Bill
DeMaison, Brad
Dominy, John
Dunn, Karen
Duquette, Dale
Dutkiewicz, Mike
Gherian, Ted
Giese, Fred
Grabnar, John
Haley, Dan
Hansen, Ralph
Harder, Lynn
Hartigan, John
Hawley, Chuck
Hengge, Craig
Hennessy, Brian
Hiss, Tom
Hook, John
Horvath, Eric
Hovland, Bob
Hruby, Ray
Jacobson, Peter
Johnson, Eric
Kendall, Joe
Koziel, Mark
Kremer, Dale
Laird, Greg
Laurer, Tim
LeBlanc, Guy
Loehlein, Steve
Marley, Jim
Matranga, Gene
McCloskey, Pat
Meckfessel, Diane
Michael, Greg
Migas, Andy
Moore, Connie
Mugge, Bill
Murtha, Matt
Nassar, Dirul
Nelson, Mike
Osting, Steve
Ostrowski, Kevin
Parker, Mike
Patrick, Randy
Pavlick, Mark
Pierson, Jim
Plymale, Scott
Reineck, Brad
Ridlon, Tim
Rinkwoski, Elaine
Rupp, Chuck
Saunders, Scott
Schrauder, Bob
St.Clair, Tracy
Stevens, Mike
Straube, Peter
Strumsky, Craig
Sturdavant, Joe
Swim, Theo
Wahlers, Dave
Whalen, Doug
Widner, Mike
Zatco, Annalisa
Zellers, Kevin
Zurvalec, Frank

Appendix 3 Documents reviewed

The following list indicates the documents collected for review by the Independent Assessment Team. 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. The sequence of documents is not continuous, because the ftp site library contained documents not applicable to the Davis-Besse independent engineering assessment. Only the Davis-Besse engineering assessment related documents are listed.

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.

Related to	Document category and name	Topic
	INPO reference material	
	Material returned under confidentiality and non-disclosure agreement	
	INPO reports on FENOC	
	Material returned under confidentiality and non-disclosure agreement	
	Assessment reports and plans	
DB	Davis-Besse Corrective Action Program (CAP) Program Review Summary Report	CA
DB	Program readiness Baseline Assessment Package for Calculation Control Program	CALC
DB	Davis-Besse Plant Modification Program Review Summary Report	MOD
DB	Corrective Action Assessment Plan 4 wrk	SA
DB	Focused Self-Assessment Report Davis Besse Engineering Organization Readiness For Restart	SA
DB	Operations Performance Assessment Plan	
DB	DB CNRB 04-15-04 Mtg Minutes	CNRB
DB	DB CNRB 11-20-03 Final	CNRB
DB	DB CNRB 07-17-03 Rev	CNRB
DB	DB QA 1st Qtr 04 Assessment	PI
DB	DB QA 3rd Qtr 03 Assessment	PI
DB	DB QA 4th Qtr 03 Assessment	PI
DB	DB Quality Trend Summary-03Q03	PI
DB	DB Quality Trend Summary-03Q04	PI
DB	DB Quality Trend Summary-04Q01	PI
DB	13.031 DB Engineering Assessment Plan	

Related to	Document category and name	Topic
DB	13.031a DB Engineering Assessment Plan (MS Word version)	
DB	13.031b DB engineering assessment plan docketed final version	
DB	13.033 Calculation Collective Significance Review	
DB	13.034 Assessment of Davis-Besse Calculation Program SL-008171	Calc
PY	13.035 PY 2nd Q 03 DES Self Evaluation 576DES2003	SA
DB	13.046 DB DBAR 1Q 04 B&W3	DBAR
DB	13.047 SA2004-0096 Reconciliation of Installed Condition for ARCs	SA
DB	13.048 SA2004-0088 Post Fire Circuit Failures	SA
DB	13.049 SA2004-0087 Technical Training Comp SA	SA
DB	13 050 SA2004-0061 ATLAS Phase 1 SA	SA
DB	13.051 SA2004-0047 Use of PEFs wrt CRs	SA
DB	13.052 SA2004-0020 AOV program	SA
DB	13.053 SA2004-0015 PM roles Resp training Benchmark	SA
DB	13.054 SA2004-0004 work week performance review	SA
DB	13.055 QA 2nd Qtr 04	
DB	13.056 CNRB 7-15-04 R0	CNRB
DB	13.059 DB 2nd quarter 2004 DBAR files	DBAR
DB	13 060 DB PHC Minutes, 2004-05-13	PHC minutes
DB	13.061 DB PHC Minutes 2004-07-08	PHC minutes
DB	13.062 DB PHC Minutes 2004-07-22	PHC minutes
DB	13.063 DB PHC Minutes 2004-08-12	PHC minutes
DB	13.064 DB PHC Minutes 2004-08-26	PHC minutes
DB	13.065 DB PHC Minutes 2004-09-09	PHC minutes
DB	13.066 DB PHC Minutes, 2004-04-08	PHC minutes
DB	13.067 DB PHC Minutes, 2004-04-22	PHC minutes
DB	13.068 DB PHC Minutes, 2004-05-27	PHC minutes
DB	13.069 DB PHC Minutes, 2004-06-24	PHC minutes
DB	13.070 DB PHC Mtg Minutes 7-15-04 R0	PHC minutes
DB	13.071 DB EAB first quarter report 2004 - Final as signed 5-11-04	EAB and EAB PI
DB	13.072 DB EAB Final second quarter report 2004 - 7-20-04	EAB and EAB PI
DB	13.073 DB Design Engineering CSSA	SA
DB	13.074 DB Plant Engineering CSSA	SA
DB	13.075 DB Procurement Engineering CSSA	SA
DB	13.076 DB Project Management Section CSSA	SA
DB	13.077 DB Quality Trend Summary-2004Q01	CAP

Related to	Document category and name	Topic
DB	13.078 DB Quality Trend Summary-2004Q2	CAP
DB	13.079 DB RCA report-collective sig - Plant Mods Program Concerns	Mods
DB	DBAR 2nd quarter 2004	DBAR
	<u>Engineering and Relevant Fleet Procedures</u>	
fleet	NOBP-LP-2001 FENOC FOCUSED SELF-ASSESSMENT	SA
fleet	14.0011 NOBP-LP-2001 Rev3	SA
DB	DBBP-NED-0002 DB Engineering Assessment Board	EAB
DB	14.0021 DBBP-NED-0002 DB Engineering Assessment Board	EAB
fleet	14.005 NOBP-LP-4003A 50.59 guide	
fleet	14.006 NOBP-LP-4003B 50.59 mentoring comm	
fleet	14.007 NOBP-LP-2002 benchmarking	
fleet	14.008 NOBP-SS-4001 Change mgt	
fleet	14.009 NOBP-LP-2006 collective significance rev	
fleet	14.010 NOBP-CC-2003B Conceptual design pkg	MOD
fleet	14.011 NOBP-CC-2003 Config mgt data control	
fleet	14.012 NOBP-LP-2008 Cor Action review brd	CA
fleet	14.013 NOBP-LP-2007 CR effectiveness review	CA
fleet	14.014 NOBP-LP-2009 CR process ref guide	CA
fleet	14.015 NOBP-LP-2010 CREST trending	CA
fleet	14.016 NOBP-SS-3401 document hierarchy	
fleet	14.017 NOBP-CC-7002 enhanced procurement	
fleet	14.018 NOBP-ER-1004 fleet value rating	FVR
fleet	14.019 NOBP-LP-2001 focused self-assmnt	SA
fleet	14.020 NOBP-SS-2101 peer groups	
fleet	14.021 NOBP-ER-3002 plant health comm	Plant Health
fleet	14.022 NOBP-CC-2003A Prelim cost est	
fleet	14.023 NOBP-CC-3002 Processing calcs	Calc
fleet	14.024 NOBP-CC-7001 Procurement pkgs	
fleet	14.025 NOBP-ER-1002 proj approval resource association	
fleet	14.026 NOBP-CC-2003C Proj team	
fleet	14.027 NOBP-LP-2011 root cause analysis guide	CA
fleet	14.028 NOBP-CC-2003D walkdowns	MOD
fleet	14.029 NOP-CC-3002 calculations	Calc
fleet	14.030 NOP-LP-2006 CNRB	CNRB
fleet	14.031 NOP-LP-2001 CR process	CR
fleet	14.031a NOP-LP-2001 Rev 7	CR
fleet	14.032 NOP-ER-3001 decision making prob solving	
fleet	14.033 NOP-CC-2002 design input	MOD
fleet	14.034 NOP-CC-2004 design reviews	MOD
fleet	14.035 NOP-CC-2001 design verif	MOD
fleet	14.036 NOP-CC-2003 Engineering Changes rev4	MOD

Related to	Document category and name	Topic
fleet	14.037 NOP-CC-2003 eng changes	MOD
fleet	14.038 NOPL-CC-0001 eng principles- expectations	
fleet	14.039 NOP-ER-1001 eq perf imprvmt	ERIP
fleet	14.040 NOPL-ER-0001 eq reliab policy statement	ERIP
fleet	14.041 NOP-LP-4003 eval of test changes experiments	
fleet	14.042 NOP-CC-7002 procure mnt eng	
fleet	14.043 NOPL-CC-0002 roles - responsibilities	R&R
fleet	14.044 NOPL-LP-2003 SCWE policy	SCWE
fleet	14.045 NOPL-LP-2005 self-assessment policy	SA
fleet	14.046 NOP-WM-2001 work mgt process	EWMS
DB	14.047 DES EAB Policy_DEP_0001	EAB
DB	14.048 Risk Desk Guide-R0 Guide	
fleet	14.049 NOP-CC-3002-02 Rev 2 Calc Addendum	Calc
fleet	14.050 NOP-CC-3002-03 Rev 0 Post It Note	Calc
fleet	14.051 Procedure Hierarchy	Proc
DB	14.052 Mgt Plan for Conf Order Assessments Rev 1 DBBP-VP-0009	SA
	Engineering program documents	
DB	Davis-Besse Nuclear Power Station Operational Improvement Plan Operating cycle 14	
DB	DB Calc Improvement Plan	
DB	Engineering Work Plan	
fleet	Design Programs Hierarchy	
DB	15.007 DB Plant Engineer responsibility list SORT BY DESCRIPTION	
DB	15.008 Eng Program List and owners	
	Engineering work products	
DB	16.016 DB modlist	mod list
DB	16.017 DB CALCs greater than 2004-01-01	calc list
	NRC reports	
DB	Approval to restart Davis-Besse, closure of CAL, confirmatory order	Restart Order
DB	Insp Rpt CATI 03-010	IR
DB	Insp Rpt RRATI 04-004	IR
DB	Insp Rpt Sys Health 02-013&02-014	IR, Sys Health
DB	Insp RptEng&Main Backlog 03-024	IR
DB	EA-03-214 Docket 50-346 Confirmatory Order	Confirmatory Order
DB	17.007 DB NRC inspection summary-1	IR summary
DB	17.008 DB NRC Routine Insp ending 040522	
DB	17.009 DB NRC Routine Insp ending 070702	
DB	17.010 DB NRC Insp RPT on Mods and 50.59	
	General Procedures	
DB	Management Plan for Confirmatory Order Assessments	

Related to	Document category and name	Topic
fleet	Focused self assessment process NOBP-LP-2001	SA
fleet	focused self assessment cbt MISC 1275	SA
	Organizational Charts and Contact Lists	
fleet	FENOC org chart	ORG
DB	Davis-Besse org chart (OOD)	ORG
fleet	20.003 FENOC Hagan org 040517	ORG
fleet	20.004 FENOC SrMgtTeam 040517	ORG
fleet	20.011 FENOC org1 Jul 04	ORG
fleet	20.012 FENOC org2 Jul 04	ORG
fleet	20.013 FENOC org3 Jul 04	ORG
fleet	20.014 peer groups	ORG
DB	20.018 DB Org Chart_10_04_Distribution	
	Performance Indicators	
DB	21.001 DB DES CR Workload	PI
DB	21.002 DB DES CA Workload	PI
DB	21.003 DB DES DC Development	PI
DB	21.004 DB DES DE Backlog Workoff	PI
DB	21.005 DB DES Qual of Eng Wrk Products	PI
DB	21.006 DB NED CR Workload	PI
DB	21.007 DB NED CA Workload	PI
DB	21.008 DB NED DC Development	PI
DB	21.009 DB NED Qual of Eng Calcs	PI
DB	21.010 DB NED Qual of Eng Wrk Products	PI
DB	21.011 DB PES CR Workload	PI
DB	21.012 DB PES CA Workload	PI
DB	21.013 DB PES Main Rule SS Rel	PI
DB	21.014 DB PES Qual of Eng Wrk Products	PI
DB	21.015 DB PRS CR Workload	PI
DB	21.016 DB PRS CA Workload	PI
DB	21.017 DB RRT CR Workload	PI
DB	21.018 DB RRT CA Workload	PI
DB	21.019 DB RRT DC Development	PI
DB	21.020 DB RRT Qual of Eng Wrk Products	PI
DB	21.027 april2004 db mpr	MPR
Fleet	21.030 february2004 fleet mpr	MPR
Fleet	21.031 january2004 fleet mpr	MPR
DB	21.033 march2004 db mpr	MPR
DB	21.043 DB june 04 draft mpr	MPR
DB	21.052 DB july2004mpr	MPR
DB	21.053 DB august2004mpr	MPR
DB	21.054 DB event history report	event history
DB	21.054a DB Events - abridged	event history
DB	21.055 DB Open Eng CRs-CAs (as of 1330 hours 10-1-04)	CAP
DB	21.056 DB Plant Health Report (2nd Quarter 2004)	Plant Health

Related to	Document category and name	Topic
	<u>Action Plans</u>	
fleet	22.001 Action Plan Heading Legend	Action Plan
fleet	22.002 FENOC Business Plan[1]	Action Plan
fleet	22.003 fleet efficiency action plans	Action Plan
fleet	22.004 material condition action plans	Action Plan
fleet	22.005 outage performance action plans	Action Plan
fleet	22 006 people develop action plans	Action Plan
fleet	22.007 safe plant ops action plans	Action Plan
DB	22.008 DB Calc Imp Plan	Action Plan