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July 17, 2008
L-08-219

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

Subject:
Davis-Besse Nuclear Power Station, Unit 1
Docket Number 50-346, License Number NPF-3
Submittal of the 2008 Confirmatory Order Independent Assessment Report of
Operations Performance at the Davis-Besse Nuclear Power Station

The purpose of this letter is to submit the assessment report for the 2008 Independent Assessment of Operations Performance for the Davis-Besse Nuclear Power Station (DBNPS). This submittal is in accordance with the Nuclear Regulatory Commission (NRC) letter dated March 8, 2004, "Approval to Restart the Davis-Besse Nuclear Power Station, Closure of Confirmatory Action Letter, and Issuance of Confirmatory Order," which requires submittal of the assessment results within forty-five (45) days of the completion of the assessment. This assessment fulfills the requirement of the March 2004 Confirmatory Order and is the final year this assessment is required by that Order.

The on-site activities of the Operations Performance Independent Assessment were conducted from May 12 through May 23, 2008, in accordance with the Assessment Plan, submitted via letter number L-08-040, dated February 12, 2008. The final debrief of the assessment results was presented to the DBNPS management on June 6, 2008, marking the end of the assessment. The enclosed report contains the results of the Independent Assessment. No issues rising to the level of an Area for Improvement were identified in the Independent Assessment; therefore, no action plans are included to address Areas for Improvement.

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There are no regulatory commitments included in this letter. If there are any questions or if additional information is required, please contact Mr. Dale R. Wuokko, Manager – Site Regulatory Compliance, at (419) 321-7120.

Sincerely,

A handwritten signature in black ink, appearing to read "Clark DePinto for".

Barry S. Allen

LJS

Enclosure:

- A Assessment Report - Confirmatory Order Independent Assessment, Operations Performance, Davis-Besse Nuclear Power Station

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

**Enclosure A
L-08-219**

**Confirmatory Order Independent Assessment
Operations Performance
Davis-Besse Nuclear Power Station**

Report Number COIA-OPS-2008

June 13, 2008

(41 pages follow)

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A. EXECUTIVE SUMMARY

Overall Conclusions of Operations Performance - Section I

The team concluded, based on observations of control room and simulator performance, interviews, observations of classroom training, Quality Assurance Assessments, and Condition Report evaluations, that the plant is being operated safely, both in the control room and in the plant. Personnel practice and display a questioning and safety conscious attitude. The team noted very good self and peer checking by those observed during the assessment. Operations personnel are knowledgeable of the plant and plant conditions, including workarounds, deficiency tags, etc. All control room operations observed were conducted in accordance with procedures, e.g., Conduct of Operations. Professional demeanor was displayed in every instance in which the team observed control room and simulator operations. Similarities in crew/individual performance were noted in both the simulator and the control room. In addition, based on interviews and observations, Operations personnel displayed a good attitude and high level of morale during this assessment. Work week schedule assignments were considered reasonable, with minor exceptions noted. Considerable progress has been made to address the issue of licensed and non-licensed personnel advancement and alleviating the Senior Reactor Operator (SRO) shortage. There continues to be issues with configuration control and human performance errors. Condition reports and the corrective action system appear to be effective, but level of detail and depth of review and analysis continue to be of varying quality.

The team concluded that overall *Operations performance is Effective*.

Findings are presented in three categories:

- AREA OF STRENGTH – An identified performance, program, or process element within an area of assessment that is significant in obtaining desired results.
- AREA IN NEED OF ATTENTION – An identified performance, program, or process element within an area of assessment that, although sufficient to meet its basic intent, management attention is required to achieve full effectiveness and consistency. Areas in Need of Attention are not addressed by Action Plan(s) submitted to the NRC, but are considered for entry into the Corrective Action Program.
- AREA FOR IMPROVEMENT – An identified performance, program, or process element within an assessed area that requires improvement to obtain the desired results with consistency and effectiveness. All Areas for Improvement identified in the Assessment Report will be addressed by the Action Plan(s) submitted to the NRC.

A summary of the 2008 team findings are as follows:

Area 1 – Shift and Meeting Observations

Areas of Strength: Area 1

- The Risk Matrix is a useful tool to evaluate changes in plant risk due to unplanned equipment availability.
- Operations personnel self and peer checking, both in-plant and the control room.
- Robust barriers system continues to help prevent operator errors.

Areas of Strength: Area 1 (continued)

- The Shift Managers meeting allows decisions to be made at the appropriate level within the organization.

Areas in Need of Attention: Area 1

- None observed

Areas for Improvement: Area 1

- None observed

Area 2 – Interviews

Areas of Strength: Area 2

- Training was considered effective by the majority of those interviewed.
- The facility has made considerable progress to address the unwillingness of non-licensed operators to go to licensed status and union Reactor Operators (RO) to go to non-union SRO status. Management has filled the pipe line with 10 SROs and 1 RO in the current license class with 2 more plant ROs going to join the SRO class in July.

Areas in Need of Attention: Area 2

- Maintain continued emphasis on configuration control issues (also noted in Condition Report Review).

Areas for Improvement: Area 2

- None observed

Area 3 – Condition Report Review

Areas of Strength: Area 3

- None observed

Areas in Need of Attention: Area 3

- Continuing effort to reduce the number of configuration control events.

Areas for Improvement: Area 3

- None observed

Area 4 – Licensed Operator Continuing Training

Areas of Strength: Area 4

- Just-In-Time-Training (JITT) was considered a strength based upon interviews and good crew performance during infrequent plant evolutions. JITT was in the planning stages for a scheduled June 6, 2008, down power evolution for repairs on the #1 Main Feedwater Pump. Crews involved were tentatively determined and schedules for training were discussed.
- Initiatives undertaken by the training department, in an effort to improve upon that which had been previously established, was noteworthy, e.g., WANO assist visit, Non-licensed Operator (NLO) involvement in licensed operator continuing training, Operations crew performance evaluations.

Areas of Strength: Area 4 (continued)

- Operations crew performance evaluations are an important tool that can be used effectively to improve and sustain good continued crew performance.

Areas in Need of Attention: Area 4

- None observed

Areas for Improvement: Area 4

- None observed

Other significant observations of the assessment are as follows:

The Robust Barrier program to prevent reactivity events and inappropriate manipulation of plant equipment continues to be a ***Strength***.

Expectations for procedure usage are well-known. Proficiency in this was evident during the control room, equipment operator and simulator observations.

Personnel are kept well-informed of plant status and emergent plant equipment conditions via the well-organized shift turnover and daily management meetings. Standardization of shift turnover meetings was evident for all five crews.

Management's expectations are being communicated/enforced the same across all crews. The Shift Managers (SM) readily communicate the results and decisions that are made during the SM meetings with the crews. This enhances the uniformity of crew performance across all shifts. The team noted that all levels of the on-shift personnel were aware of the need to be alert to address configuration control issues.

The threshold for problem identification continues to be low.

Shift Managers meetings resolve problems and make decisions at an appropriate level. ***This is a Strength.***

The team concluded, based on observations, that plant operations are being conducted safely and effectively.

Operations personnel understand, are on board with, and are working to implement a safety conscious work environment.

Operations personnel morale continues at a high level.

Work week planning was not considered an issue by the operators interviewed again this year.

Operator training continues to improve and is considered a ***Strength*** by a majority of operations personnel. JITT and "High Intensity Training" is well received by the operators.

Configuration Control issues continue to be a problem and ***continues to be an Area in Need of Attention.***

The facility has made considerable progress to address the unwillingness of non-licensed operators to go to licensed status and union ROs to go to non-union SRO status. Management has filled the pipe line with 10 SROs and 1 RO in the current license class with 2 more plant ROs going to join the SRO class in July. *This effort is considered a Strength.*

Actions taken to address Areas in Need of Attention identified during the 2007 Operations Assessment were *Effective*.

Maintain continued emphasis on configuration control by following clearance procedures and lineups during normal operations and refueling outages. Performance in this area continues to be a challenge to the plant. Performance in this area is *Marginally Effective*.

Overall actions to address CRs were considered *Effective*.

Similarities in crew/individual performance were noted in both the simulator and the control room.

The Training department continues to provide training that is responsive to the needs of the shift personnel.

Just-in-Time-Training (JITT) is considered by all to be an essential training tool that results in efficient and continued safe plant operations. The inclusion of the equipment operators with their respective crew's JITT for upcoming critical evolutions was an excellent initiative on the part of training and operations departments. The equipment operators were very receptive to having been included in this type of training.

Operators expressed their satisfaction with the quality of training that is provided to them on a regular basis. They do not like some of the new fundamentals that are currently being instituted, e.g., list of required memory questions, thumb rules; however, they are satisfied with the percentage of memory questions that are part of the weekly cycle exam. They also are pleased that the cycle written exam is again being administered in the simulator now that the newly licensed operator training has been completed.

Non-licensed operator training involvement with licensed operator simulator training was a noteworthy initiative on the part of the training and operations department.

Operations crew performance evaluations is an important tool that can be used effectively to improve and sustain good continued crew performance. This is an area of *Strength*.

The team considers overall training performance to be *Effective*.

Overall Conclusions of Self-Assessment Capability - Section II

The Davis-Besse Fleet Oversight Audit Reports, Quarterly Performance Reports, Company Nuclear Review Board (CNRB) minutes, and the Davis-Besse Operations department Integrated Performance Assessments (IPA) continue to be factual, in-depth, and accurate in identifying areas of weakness within the Operations department. Findings were appropriately captured within the Corrective Action Program, e.g., configuration control issues, procedure backlog, human performance issues, etc. Again, the Operations department assessments continue to maintain an emphasis on quality and depth, with an increased emphasis on areas of concern that may have an effect on continued safe operation of the plant. These assessments continue to identify problem areas and are subsequently captured in the Corrective Action Program (CAP). The Fleet trending model and NOBP-LP-2018 guidelines used to prepare the Operations IPA continue to be an important guideline for developing/conducting assessments. Each year, the Operations department has made significant improvements upon the manner in which they assess their performance. The results of these assessments continue to be in line with the assessments of outside organizations, e.g., WANO assist visit.

Operations' self-assessments, coupled with Davis-Besse Fleet Oversight and CNRB assessments, were determined by the team to be *Effective*.

Areas of Strength – Section II

- None observed

Areas In Need of Attention – Section II

- None observed

Areas For Improvement – Section II

- None observed

B. INTRODUCTION

A condition of the March 8, 2004, NRC Confirmatory Order Modifying License No. NPF-3 for restart of the Davis-Besse Nuclear Power Station following the reactor vessel head degradation event is to conduct an annual comprehensive, independent assessment of the Operations performance area. The purpose of the assessment is to identify Areas for Improvement (AFI), requiring corrective actions with action plans, and Areas in Need of Attention (ANA) for other improvement opportunities. The assessment also assesses the rigor, criticality, and overall quality of available Davis-Besse internal self-assessment activities in this performance area.

There were no AFIs identified during this (2008) assessment.

C. SCOPE OF ASSESSMENT

The scope of the Operations Assessment was defined to include an evaluation of the following Operations activities occurring during the assessment period, using current industry standards and applicable Davis-Besse procedures:

- Shift turnovers
- Control manipulations
- Communications
- Interdepartmental interfaces
- Procedural use
- Housekeeping
- Awareness of plant and equipment status and workarounds
- Pre-job/post-job activity briefings
- Non-shift Operations management interface and oversight
- Shift management command and control
- Shift management's evaluation, prioritization, and disposition of maintenance activities and emergent issues
- Operations behaviors in the areas of questioning attitude and safety
- Shift handling of off-normal operations
- Observation of operator simulator training to compare crew performance, demeanor, and communication skills with actual control room operations

The assessment team reviewed the five Condition Reports (CR) initiated by Davis-Besse to address the Areas in Need of Attention (ANA) identified during the June 2007 Operations Performance Assessment.

The assessment team also reviewed selected CRs related to Operations Department performance and independently assessed the corrective actions recommended and taken by Davis-Besse.

The assessment team reviewed many of the referenced procedures/documents listed in Appendix A during the preparation period prior to site arrival and while on-site to verify that Davis-Besse operations was in accordance with written procedures.

The assessment team also reviewed a number of the Davis-Besse Nuclear Power Station's self-assessment activities associated with Operations to evaluate:

- The results of their quarterly Oversight Assessments that evaluated Operations performance to determine if the assessments were comprehensive and if effective actions were taken, or planned to be taken, to correct problems or weaknesses identified.
- The effectiveness of self-assessment capability by reviewing corrective actions associated with self-assessment reports, audits (including audits of both on-site and off-site safety committee activities), and evaluations conducted on Operations performance.
- The aggressiveness of the Davis-Besse Operations staff in correcting self-assessment findings and to determine whether the corrective actions taken are adequate, timely, and properly prioritized.

The on-site team consisted of two independent consultants and two nuclear industry peer representatives. The industry peers participated for one week (May 12 through 16, 2008) and the two independent consultants participated for two weeks, including the weekend (May 12 through 23, 2008). Abbreviated biographies of the team members are presented in Attachment 2 of this report.

D. METHODOLOGY

The independent assessment team used the listed references (Attachment 1) as guidance to evaluate performance of the Operations Department personnel. The assessment methodology included, but was not limited to, the following:

The team observed licensed, non-licensed and Operations Management personnel in the performance of their assignments. Assessment team members overlapped shift turnovers to compare consistency of crew operations.

The team observed Control Room shift or simulator activities of all five crews and shift turnovers of all five crews. The team conducted numerous Control Room observations, including evening and weekend observations. The team observed portions of four different Non-Licensed Operator (NLO) rounds.

The team formally and informally interviewed 21 individuals, which included ten licensed (6 SRO and 4 RO), 3 management and 8 NLO individuals. The team asked questions that were directed toward previously-identified problem areas at the station. In addition, the team allowed interviewees to discuss areas they thought should receive attention.

The team reviewed selected CRs and their corrective actions to evaluate safety perspective, appropriate cause determination, and corrective action effectiveness.

The team reviewed several Operations-related CRs while on site. The team also reviewed the CRs implemented to address the Areas in Need of Attention (ANA) identified in the 2007 Operations Performance Independent Assessment. Several other CRs assigned to Operations for resolution were also reviewed during the assessment.

The team observed portions of simulator training exercises during routine and abnormal operating conditions to compare crew behaviors in the simulator to those observed in the Control

Room. The team used NUREG-1021 as guidance for evaluating simulator and Control Room observations. The team also observed classroom training, as well as additional operational and training meetings, designed to improve and maintain crew performance, thus leading to operational excellence.

E. DETAILS AND RESULTS

SECTION I

The details and results are presented for the four major areas of assessment in Section I: Shift and Meeting Observations, Interviews, Condition Reports, and Licensed Operator Continuing Training.

Area 1 - Shift and Meeting Observations

Scope - Area 1

The utility currently has five rotating shifts of Operations personnel. The shifts are twelve hours in duration. The team observed portions of day and night shift activities during the assessment period. Partial shifts (initial zone tours) of four non-licensed Equipment Operators were also observed during the assessment period. The team attended shift turnover meetings (6:30 a.m. and 6:30 p.m.) for all five shifts and also attended several 8:00 a.m. Management Alignment and Ownership Meetings (MAOM).

Observations and Findings - Area 1

Control Room Shift Observation

- General Control Room demeanor was professional during observed shifts.
- Control Room operators monitored their panels in accordance with the Conduct of Operations procedure (NOP-OP-1002), or more frequently than required.
- Several reactivity manipulations were observed. All manipulations were in accordance with written procedures and instructions that are consistent with industry standards.
- Good use of updates. Operators verbalized when ready to begin. Appropriate updates were noted for the At-The-Controls (ATC) reactor operator (RO) and Command senior reactor operator (SRO) changes of duty and shift changes. Changes in command were formally verbalized with one exception.
- The risk matrix was reviewed and continues to be a very effective tool for the operators to assess changes in plant risk with coincident unplanned availability. *This is a Strength.*
- Pre-job and post-job briefs observed were formal, professional and covered all attributes of an effective brief.
- Several Operator Aids were identified on the Main Control Room primary panels. These Operator Aids were properly controlled in accordance with DB-OP-00004, Operator Aids Control.
- There are several recorders that had been upgraded in the simulator for several years which had not been upgraded in the plant. These eleven recorders were replaced during the 15th Refueling Outage (15RFO) with Yokagawa recorders as follows: Panel C5703, Makeup Tank Level; Panel C5705, Pressurizer Level, Reactor Coolant (RC) Pressure Loop 2 Wide Range, RC Pressure Loop 1 and 2 Narrow Range; Panel C5707, Nuclear

Instrumentation (NI) Intermediated Range, NI Power Range, and RC Coolant Temp Unit T-ave; Panel C5710, RC Temp Unit T-hot and Turbine Throttle Press; Panel C5718, RC Total Flow.

- Operations Section Directives were in the process of or being retired last year to other procedural guidance. This initiative was accomplished and reflects an important transition to fleet-level procedures, incorporating the best elements of the fleet.
- Reviewed all nine in-effect Standing Orders. No concerns were identified.
- The team observed that peer checks were used for all control room main control board valve and back panel switch manipulations. This continues to be a *Strength*.
- Reactor Operators overseeing or performing surveillance activities were observant of plant conditions during those activities. Alarms were announced as expected in accordance with the Conduct of Operations procedure.
- The Required Reading Log was reviewed, and personnel are reviewing information on a regular basis, within the required time frame.
- Control Room activity level was well-controlled for the shifts observed.
- Control Room turnovers between oncoming and offgoing shift personnel were observed on several occasions. Turnover information was detailed and conducted in a professional and orderly fashion. Turnover checkoff sheets were appropriately checked and signed by all personnel involved.
- The Station continues to have a Robust Barrier program that uses a systematic approach to identify the most appropriate components to have barriers and is implemented using station business practice DBBP-OPS-0010, "Covers for Selected Control Room Switches and Reactivity Addition Potential Labels." Additionally, the Operators have the capability to add a barrier when required for a specific evolution. This *continues to be a Strength*.

Overall licensed operator performance was Effective.

Equipment Operator Shift Observations

The members of the assessment team each accompanied an equipment operator (EO) on his initial tour of his zone following shift turnover. The team observed EOs on a total of four area tours of Zones 1 and 3. These rounds, although not all inclusive, included the main turbine, turbine support equipment, switchgear rooms, station blackout diesel generator (SBODG), emergency diesel generators (EDG), switchyard, and the auxiliary building, control rod cooling booster pumps, makeup pump room, containment spray pumps, decay heat pumps and the high pressure injection pumps. The purpose of these observations was to ascertain the level of behaviors, standards and expectations of the non-licensed operators. All Operators were knowledgeable and professional and answered questions when asked. The following attributes were observed:

- Proper use of personnel protective equipment (PPE), including the use of gloves.
- EOs used the back of their hands when checking equipment running temperatures.
- Excellent usage of human performance tools. These included the use of STAR (Stop, Think, Act, and Review), 2-minute rule, and three-way communications.
- Operations personnel were aware of and knew the contingency actions to address EO Work Arouns.

The following specific observations were noted during these tours:

The management expectations for 100% peer checking were not clearly understood by all personnel. During a Zone 1 operator round, the operator stroked VS926. His application of human performance tools for the valve manipulation was as expected. The Control Room (CTRM) was notified and approval was obtained to stroke the valve. The communication to the CTRM met management expectations; however, a peer check was not obtained per the requirements of Standing Order 08-003 "Interim Operations Actions to Prevent Mispositioning Errors." The EO stated that peer checking was not required for manipulations during rounds. Another EO stated that peer checking was expected except for alarm functional tests. The alarm functional exception was also stated by Operations Management. During the monthly Shift Managers Meeting on 5/15/08, the Operations Manager reviewed with all Shift Managers the purpose of the Standing Order and he made it clear to all that his expectations were that all "component" manipulations in the field shall be observed by a peer until further notice. Data gathering and alarm testing that could not possibly cause a component manipulation or change in plant configuration were allowed.

The protected equipment barricade entering the train 2 Low Voltage Switch Gear Room is a roped barrier to preclude inadvertent entry into the protected equipment room. The access between the train 1 and train 2 rooms is posted only with a sign on the door.

The safe walkway to the CTRM was not identified on the door as an exception to PPE. The station took action to post doors with safe walkways as such and that PPE is not required. This provides clear expectations for PPE in these areas.

The expectation for hearing protection in the Low Voltage Switch Gear Room is not clearly understood by those personnel questioned. This area is now posted to identify PPE required.

One EO did not challenge workers with an acetylene tank approaching the protected equipment barrier for the Low Voltage Switch Gear Room. This is a behavior that needs to be fostered to show that Operations owns the station and that all operators are engaged in the protection of vital equipment. When questioned, the EO stated "they have a supervisor with them."

The Condensate Demineralizer Hold Up Tank Sump had a piece of conduit with tape applied. The EO did not know what it was for. The Station followed-up and found the item was used by the Instrumentation and Control (I&C) department for calibration of level switches. This item was subsequently removed by station personnel.

In the vicinity of the Main Feedwater Pumps, there were two signs that stated "overhead work in progress" and "scaffold work in progress." These signs were left over from the outage. These signs were removed by the station.

Use of catch containments is good for housekeeping controls. There was one observable leak that did not have a catch containment. This was in the area of the Heater Drain Pumps.

Operator performance was generally in keeping with station and industry standards. All senses were used during the tour, including touch checks of some equipment and demonstrable STAR when taking readings.

One improvement opportunity: Two items (1) a label laying on the floor near panel E-61 and (2) a cable connection (pull box) leading to MS107A has some material (insulating braid) sticking out of the connector (approximately 1 – 2 feet of material). Neither of these items was identified by the EO until prompted.

Housekeeping in the Auxiliary Building was generally acceptable, with some issues noted. Examples include bits of rag or other trash on the ground in some areas, a rag stuffed on top of a panel in the Evaporator Room, a small orange sledgehammer used for a scaffold build in Decay Heat Removal area, and some other small hand tools not properly stowed away.

Zones 1 and 3 had housekeeping that was acceptable. Zone 1 seemed to have the most equipment storage and loose material, such as hoses and other maintenance equipment. The station has emphasized the importance of maintaining the cleanliness of the plant to all personnel, not just the Operations department.

Numerous breakers throughout the plant had blue tape identifying the normal position during at-power operations. The Zone tours require verification of the breaker positions using the tape. This is addressed by the Operator Aid Procedure and *appears to be a good practice*.

The team did not identify any equipment deficiency that did not have a deficiency tag attached.

During a Zone 3 initial tour walkdown, the EO identified a suspected small leak on the floor in the #1 Mechanical Penetration Room (MPR). The source of the boric acid appeared to be leakage from a pipe cap downstream of MU235A. The EO subsequently generated a Condition Report (CR 08-40511) and notified the SM. Further action is to complete the as-found inspection and possibly increase the closed torque on MU235A and reapply thread sealant and further tighten the pipe cap. The identification of this leakage was indicative of thorough inspections by the equipment operators during their tours.

- *EO job performance was Effective.*
Material and housekeeping conditions in the plant were Acceptable with opportunities for improvement.

Shift Turnover Meetings (6:30 a.m. and 6:30 p.m.)

The team attended six shift turnover (TO) meetings.

- The team observed at least one turnover for each of the five crews.
- These meetings were controlled by the SM. The meetings started with a request for any personnel praise for any individuals that exhibited good practices or effective performance of a task, followed by an industrial personnel safety topic and then proceeded through plant status and planned activities throughout the shift, ending with a reactivity brief.
- The “At-the-Controls” (ATC) reactivity briefing included makeup/reactivity operations performed by the previous shift and the current control rod index and any planned reactivity changes expected during their shift. The SM also presents the Technical Specification Limiting Conditions of Operation (LCO)s that are applicable and their associated time constraints. Meetings were attended by supervisors from the various

plant departments, such as Chemistry, Radiation Protection, Maintenance, etc. The morning TO meeting was also attended by senior plant management, such as the Site Vice-President, the Director of Site Operations and/or the Operations Manager.

- The SM discussed activities planned for the shift, any problem areas, any special operating conditions.
- Each EO assigned a Zone (1, 2, or 3) presented expected activities and standing issues with their assigned watch stations, such as operator workarounds. The engagement from extra EOs continues to be minimal, as noted during previous assessments. This is a potential missed opportunity for teamwork in the spirit of INPO SER 3-05.
- The manner in which, and the length of time, each shift conducted their turnover was similar in nature for each of the shifts observed.

Shift Turnover Meetings continue to be Effective.

Management Alignment and Ownership Meeting (MAOM) (8:00 a.m.)

Team members attended several of the MAOM meetings.

- These meetings included senior management personnel from all site departments.
- The meetings were well run by the Operations Manager or designee.
- The SM provided plant status.
- The meetings were not excessively long.
- The discussions during the meeting were pertinent and open.
- Equipment issues were adequately presented to ensure that all department personnel were kept informed of plant equipment issues.
- Ownership of problems and issues were clearly defined.
- The meetings kept all department managers up to date on activities and issues in the plant.
- A questioning attitude prevailed, when appropriate.

The MAOM meetings continue to be Effective.

Shift Managers Meeting on Thursday May 15, 2008

The team attended the SM meeting, in which all Shift Managers or a designee were in attendance, along with the Superintendent Operations and the Superintendent of Licensed Operator Training. A meeting agenda was given to all present to discuss a wide variety of issues, including not only plant, but also personnel issues. This meeting is held once every month and a phone discussion is held once a week whenever there is no formal meeting. The team found the meeting to be well structured and controlled, with active participation and discussion by all present. The SM meeting allows shift decisions to be made at the proper management level. Some of the items discussed were:

- Fleet Oversight Performance Reports for first quarter of 2008, and the NRC first quarter integrated inspection report.
- Plant issues and work schedule, such as Daily Status, and the possibility of moving some outage activities to on-line.
- The large number of configuration control issues.

- Training issues such as the Human Performance Success Lab Evaluations and JITT for the June 6 down power to repair the No. 1 Main Feed Pump speed control oscillations.
- Several upcoming procedure changes.

The team considers the shift managers meeting to be a Strength.

Areas of Strength – Area 1

- The Risk Matrix is a useful tool to evaluate changes in plant risk due to unplanned equipment availability.
- Operations personnel self and peer checking both in-plant and the control room.
- Robust barriers system continues to help prevent operator errors.
- The Shift Managers meeting allows decisions to be made at the appropriate level within the organization.

Areas in Need of Attention -Area 1

- None observed

Areas For Improvement - Area 1

- None observed

Conclusions - Area 1

The Robust Barrier program to prevent reactivity events and inappropriate manipulation of plant equipment continues to be a *Strength*.

Expectations for procedure usage are well-known. Proficiency in this was evident during the control room, equipment operator and simulator observations.

Personnel are kept well-informed of plant status and emergent plant equipment conditions via the well-organized shift turnover and daily management meetings. Standardization of shift turnover meetings was evident for all five crews.

Management's expectations are being communicated/enforced the same across all crews. The SMs readily communicate the results and decisions that are made during the SM meetings with the crews. This enhances the uniformity of crew performance across all shifts. The team noted that all levels of the on-shift personnel were aware of the need to be alert to address configuration control issues.

The threshold for problem identification continues to be low.

Shift Managers meetings resolve problems and make decisions at an appropriate level. *This is a Strength.*

The team concluded, based on observations, that plant operations are being conducted safely and effectively.

Area 2 - Interviews

Scope - Area 2

The team conducted formal and informal interviews with 21 individuals, which included ten licensed, three management and eight NLO individuals. The team asked questions that were directed towards previously-identified problem areas at the station. In addition, the team allowed interviewees to discuss areas they thought should receive attention or were plant challenges. This year there were few problems identified by the personnel interviewed. The following is a summary of issues that were voiced. Only one or two issues were noted by a majority of personnel during the formal interviews.

Observations and Findings - Area 2

- Morale was a big issue during the first three assessments. Last year and this year almost no one felt that morale was a significant issue.
- Only two operators stated that the eight-hour shift was more desirable than the 12-hour shift with five-crew rotation. Many noted that a 12-hour shift with 6-crew rotation would be even more preferable.
- Almost everyone thought that Operation's manpower was adequate to continue safe operation of the plant, and the assessment team did not see any examples that would lead us to conclude that manpower is in any way impacting safe plant operation.
- Only one operator expressed concern about the Operations Section's procedure backlog. The procedure backlog is discussed in Condition Report review (CR-07-23702)
- When the team asked what the interviewees considered to be the greatest challenge that faces continued safe operation of the plant, the team received a few different answers, depending on the individual's perspective and position in the organization. This year configuration control was the answer given most frequently. Personnel through all levels of the organization were aware of the ongoing activities to address configuration control. Configuration control was one of the answers given last year but the incidents occurred in RFO 14. RFO 15 had a very low occurrence of errors, with the configuration control issues happening after coming out of the outage.

Peer checks for all in-field manipulations are not liked by most operators, but most seemed to understand that such actions are necessary to eliminate or minimize configuration control errors (see discussion in CR review). Although the facility has self-identified this problem, continued effort to minimize configuration control issues is imperative. *Configuration Control continues to be an Area in Need of Attention.*

- Most of those interviewed thought that training continues to be high quality in both the curriculum content and presentation. Much of this was attributed to the rotation of Operations staff to the training center and Just-In-Time-Training (JITT). Interviewees stated that initiation of JITT was very helpful in their ability to successfully perform infrequently performed maneuvers, e.g., startup, shutdowns and special operations, such as the power reduction scheduled for June 6, 2008, to repair Main Feed Pump Control Oil

oscillations. Also, the equipment operators were very receptive to their inclusion into the JITT efforts. They also were amenable to the initiative of "high intensity training" just recently incorporated into the licensed operating continuing training program. They felt that both of these initiatives enhanced their performance and effectiveness in the field. Training continues to be an *Area of Strength*.

- An issue during the interviews last assessment was the unwillingness of ROs to advance to the level of SRO or for EOs to advance to licensed duties. There are still some issues concerning the small pay difference between EO, RO and SRO that some think is insufficient to compensate for the additional duties and responsibilities. ROs also do not like leaving the union to become an SRO, since getting back into the union is not an option if they fail to complete the SRO training program or the NRC license examination, thus leaving them with very limited job possibilities.

The facility has made considerable progress to address this issue and fill the pipeline with SROs and one RO during the last year. Some of the newer EOs are degreed and are considering going to license class, as either RO or instant SRO. There are currently 11 personnel in license class, 2 EO3 to instant SRO, 1 EO3 to RO, 2 engineers to SRO, 2 training instructors to SRO, 4 Navy personnel to instant SRO and in July, 2008, 2 ROs joining the SRO class. *The team considers this effort to be a strength.*

- Several operators noted that when the turbine repair was in progress at the end of RFO 15, they were kept on outage hours without any overtime. Some felt that other items that were removed from the outage scope could have been worked during that time, e.g., the new controller for the electric fire pump was one example given. The team was informed by management that this particular plant modification has not yet been designed and currently does not have funding, although the controller is in the warehouse.
- Some operators noted that management seems to be more pro-active concerning equipment repairs since most of the operator work-arounds in the field have been corrected.
- Operators all stated that they are not afraid to issue a condition report if a defective condition is observed. This positive Safety Conscious Work Environment has been observed during all five years of the Operations Assessment.

Areas of Strength – Area 2

- Training was considered effective by the majority of those interviewed.
- The facility has made considerable progress to address the unwillingness of non-licensed operators to go to licensed status and union ROs to go to non-union SRO status. Management has filled the pipe line with 10 SROs and 1 RO in the current license class with 2 more plant ROs going to join the SRO class in July.

Areas in Need of Attention – Area 2

- Maintain continued emphasis on configuration control issues (also noted in Condition Report Review).

Areas for Improvement - Area 2

- None observed.

Conclusions - Area 2

Operations personnel understand, are on board with, and are working to implement a safety conscious work environment.

Operations personnel morale continues at a high level.

Work week planning was, again, not considered an issue by the operators interviewed this year.

Operator training continues to improve and is considered a *Strength* by a majority of operations personnel. JITT and “High Intensity Training” is well received by the operators.

Configuration Control issues continues to be a problem and *continues to be an Area in Need of Attention*.

The facility has made considerable progress to address the unwillingness of non-licensed operators to go to licensed status and union ROs to go to non-union SRO status. Management has filled the pipe line with 10 SROs and 1 RO in the current license class with 2 more plant ROs going to SRO to join the class in July. *This effort is considered a Strength.*

Area 3 - Condition Report Review

Scope - Area 3

The team reviewed the 5 Condition Reports (CR) that were initiated to address the Areas in Need of Attention identified during the 2007 Operations Performance Independent Assessment.

As part of the Assessment Plan, the team reviewed about 34 additional CRs to independently evaluate the cause determination and corrective actions taken.

Observations and Findings - Area 3

Condition Reports Initiated to Address 2007 Operations Performance Independent Assessment Areas in Need of Attention (ANA)

- COIA-OPS-2007-CR-07-23703: Maintain Continued Emphasis on Configuration Control Issues. This CR was written on July 18, 2007, because the Confirmatory Order Independent Assessment (COIA) of Operations Assessment wanted to ensure that the facility continued to place emphasis on correcting configuration control problems. The facility has implemented a Mispositioning Review Committee that has management personnel from all on site disciplines, chaired by the Superintendent of Operations. It meets quarterly and provides a written summary to the Director of Site Operations. There were no concerns with action on this CR.
- COIA-OPS-2007-CR-07-23700: Operational Decision Making Issue (ODMI) Process. The Operations Assessment team thought the ODMI process was not making effective use of industry experience. This matter was brought before the Operations Manager Fleet peer group. It was identified that there is guidance in Step 4.3.2 of Section 2 of NOP-OP-1010, Operational Decision Making, that addresses use of Operating Experience. The team verified that the referenced step does direct the ODMI team to investigate Industry Operating Experience and to reference sources. There were no concerns with action on this CR.
- COIA-OPS-2007-CR-07-23701: Inability of SROs to advance or take days off. Licensee management has taken action to address this issue. See Paragraph in Interviews on Page 17 of this report. There were no concerns with action on this CR.
- COIA-OPS-2007-CR-07-23702: Operations Procedure Backlog. Procedure backlog has been a continuing problem at Davis-Besse. There is currently over 800 revisions awaiting incorporation and implementation. Most of the changes are routine enhancements or design changes (cannot be implemented until modification is complete) with only about 35 more significant procedure changes with CRs issued. One of the goals is to get the CR related changes to 10 or less during non refueling outage periods. A subsequent CR (07-26472) related to the same topic was issued when the World Association of Nuclear Operators (WANO) Peer review was conducted at Davis-Besse. This CR resulted in two action plans, one to reduce the Operations Procedure Backlog and the second to upgrade the Operations Department Abnormal Operating Procedures. Both are in progress. There were no concerns with action on either CR.
- COIA-OPS-2007-CR-07-23705: Unwillingness of ROs to advance to SRO. Although most SROs at Davis-Besse come from outside hires and from other departments the facility has made significant progress with 2 Davis-Besse ROs currently enrolled in the SRO class. There were no concerns with action on this CR.

The team considers the overall performance to address the Area in Need of Attention CRs from the 2007 assessment to be Effective.

Other Condition Reports

- The following nine Configuration Control CRs issued since April 1, 2008, were reviewed by the team:

CR-08-37551: Main Generator Condition Monitor Found in and Undesired Mode.

CR-08-38092: Inadvertent De-energized MCC F63.

CR-08-38206: LO-54 Found out of Position.

CR-08-38307: BF1134, DH Pump 2 LPI Suction (BWST or Emergency Sump) DH2734 Discovered Open.

CR-08-38361: Valve mispositioning during performance of DB-PF-03153.

CR-08-38486: TD4981 air supply found closed.

CR-08-38559: Adverse Plant Status Control Trend (evaluates several CRs).

CR-08-39040: Incorrect Slide Link Opened During Functional Test (this was I&C error)

CR-08-39741: Internal Flooding when Service Water Pump 1 Strained Placed in Service.

The team noted that most corrective actions seemed to be to assess if a station or section clock needed to be reset. The facility practice of closing CRs without an investigation, if corrective action such as coaching has been promptly carried out (e.g. human performance issues), gives the impression that little or no corrective action has been or will be taken. This is consistent with station CR procedure and the CR is used to track the identified problem. The team noted that CR-08-38361 was well written, explained the problem and detailed the Corrective Actions taken. There were no concerns with action on these CRs. The team understands that these configuration control issues were self-identified by the facility; however, *configuration control continues to remain an Area in Need of Attention.*

Miscellaneous Condition Reports with comment.

- CR-07-15095: Moisture Separator Drain (MSD) Demineralizer Station Air Connection. This CR involves an air valve on the MSD skid. The valve, SA-22 was a no-tag valve that was placed in the open position and vibrated closed twice. The valve required very little force to close and is a normally-closed valve. A notification was written to tighten the packing. There were no concerns with the actions of this CR.
- CR-08-39759: No. 1 MFP Control Oil Pressure and Control Arm Oscillation. On 5/4/08 this CR was generated to document that MFPT #1 control oil pressure and control arm are oscillating. Oil pressure is oscillating about 5 to 6 psig resulting in visible control arm movement of approximately 1 to 2 inches (team field observation) and speed changes of 20 – 30 rpm. (Note: System engineering stated that speed is not oscillating, it is a scaling issue with how Operations is reading the indication. However, the MAOM document on 5/16/08 still says that speed is oscillating.) This CR references notification 600461664.

On 4/25/08, based on an interview, the station performed a down-power to allow removal of the No. 1 Main Feed Pump Turbine (MFPT) from service to repair an oil leak. This MFPT was restored to service following repairs, with Notification

600461664 generated on 4/27/08 stating that control oil pressure was oscillating approximately 7 psig. It does not document any oscillations of control arm position or MPFT speed or any other parameters. This notification was updated on 4/30/08 stating that oil pressure was still oscillating about 5 psig. It also documents that this was discussed with the system engineer and that he suggested waiting a few days to see if the condition was caused by air that may not have been properly vented (during restoration following the oil leak repair). No additional evaluation or actions are documented until the CR was generated on 5/4/08 (one week later), at which point a Problem Solving Team was called in to address the issue. On 5/4/08 data collection begins and oil pumps were swapped to eliminate them as the cause. (Note: This action was taken even though pump discharge pressure was normal (240 psig and 70 psig away from the auto start setpoint).

The problem solving team generated a plan that was approved by the issue owner on 5/8/08 (document review) and by a Shift Supervisor on 5/9/08. On 5/13/08, control oil filter F70-1 was swapped to eliminate it as a cause.

Information from follow up discussions:

1. Operations Manager stated that he was not aware of the oil pressure oscillation condition before he went on vacation (5/2/08)
2. Issue owner stated he was not aware of oil pressure oscillations until 5/4/08.
3. The system engineer stated he believed he knew of the oscillations as early as 4/28/08, and wanted to wait to see if the system had an air issue that would eventually purge itself. (Documentation in notification 600461664 says a discussion with the system engineer occurred on 4/30, with the same stated desire to wait to see if air would self purge.)
4. The Director of Site Operations stated that he was not aware of the oil oscillations until the day of forming the Problem Solving Decision Making (PSDM) team, learning about the condition from the Shift Manager on the duty phone call.
5. Several personnel stated that the condition changed on 5/4/08, with a noticeable oscillation starting on the control arm at that point.
6. The Operations Superintendent believed that the information indicating oil pressure oscillations had occurred as far back as 4/27/08 was based on trend data and was not identified until after the report of the change in conditions on 5/4/08.
7. An engineering manager stated that the issue would be processed as an Operational Decision Making Issue (ODMI) in the near term (next several days) but was not officially an ODMI at this point to prevent having conflicting priorities between the PSDM and ODMI process resources.
8. The PSDM team members did not know if additional monitoring was being performed by Operations.

The team believes that Operations Management should have been informed of the problem with the MFPT control oil oscillations in a more expedient manner. Overall actions are proceeding in a slow conservative manner based on the minimal effects the oscillations are having on the plant.

- CR-07-22776: EDG 2 Monthly Test DB-SC-03071, 6/28/07 Duty Observation DBF-2007-1620. Duty observation of a prejob brief for a task that caused a change in Probabilistic Risk Assessment (PRA) risk to yellow identified that no post job brief was scheduled to be conducted. Procedure NOBP-LP-2604 Attachment 1 indicates

that for a simple or repetitive task with medium or high risk, a post-job brief should be performed. Corrective action for this condition stated “Coached all individuals that a post-job brief may have been beneficial...” but did not indicate there was a procedure requirement for the brief. The team questions the accuracy and completeness of the corrective action since failure to hold the Post-Job Brief violated the procedural requirements.

- CR-07-19345: Problem Experienced During Spent Resin Storage Tank (SRST) Decant. When starting the SRST transfer pump to perform a decant, system flow was initially seen and then stopped. The transfer pump was immediately stopped. Investigation identified that WC355 pump suction valve was closed. The CR states that it became apparent during the post-job brief that the decant crew was challenged by radio communications. The Investigation Summary for this CR states that a missed communication resulted in a missed step. Two issues were identified: (1) the evaluation for a section clock reset did not identify this as a reset even though criteria 18 of the Operations section criteria (last page of NOBP-LP-2602) has criteria for errors resulting in a missed procedure step (the team was later informed that this criteria was not in effect at the time of the event), (2) The investigation summary does not address why the communications issues were not identified and addressed when identified, rather than allowing them to interfere with event free performance of the task.
- CR-08-39741: Internal Flooding when Service Water Pump 1 Strainer Placed in Service. On 5/4/08, CT924 was not verified to be closed during restoration of a service water clearance resulting in significant in-rush of water. This issue was assigned as an Apparent Cause Evaluation (ACE). This valve does not have a position indication, and it was learned that it has a history of tripping on thermal overload. There appears to be several contributing factors in not identifying that the valve was not closed. The ACE was in progress at the close of the assessment on 5/23/2008.
- CR-07-18003: Disabling of seismic monitoring system impacted emergency assessment capability. This condition was discovered in April 2007 with a Root Cause evaluation completed on 6/27/07. The root cause on this issue identified inadequate written guidance as the root cause, with a contributing cause of inadequate corrective action for implementation of industry operating experience for compensatory measures for inoperable seismic monitoring equipment. This root cause does not address some potential issues, such as depth of technical evaluation to ensure understanding of the impact of longer-term deficiencies, organizational or management aspects of the issue, (including ensuring that turnover of personnel did not impact adequate assessment or action to address industry operating experience), or potential operator knowledge deficiency on the seismic monitoring instrumentation and associated Technical Requirements Manual. The Evaluation Review Checklist for this root cause scored the evaluation as 100 points (no points deducted). One of the attributes discusses all potential causes addressed, including organizational and programmatic issues. The team was not the only entity to question the depth of the Root Cause of this CR. The CNRB issued CR-07-27355, CNRB Concern-Condition Report 07-18003 Root Cause Depth. A review of the Root Cause Evaluation by the facility determined that it appropriately addressed the cause of the event.

- CR-07-21210: AF 6451 Stroke Time. The CR was generated due to a problem obtaining a correct stroke time on valve AF 6451. The cause identified in the CR was incorrect use of a multimeter by an operator. The CR was closed with no additional investigation or corrective actions linked. The action taken in the CR was to revise the pre-job brief to check the HOLD button while stroke timing. No action or evaluation was performed to ensure operators understand the use of the tool (multimeter).
- CR-07-21486: Annunciator 5-4-1 Spurious Alarm. Reactor Protection System (RPS) Channel 3 Bypassed alarm operability screening information states the 'spurious alarm' was 'most likely caused by a dirty alarm card and this does not prevent RPS Channel 3 from performing its design function'. There is no information in the CR to support why this is the most likely cause or why it does not prevent the channel from performing its design function. Subsequent information indicated that the annunciator is downstream of the RPS channel. If the alarm was real it would have locked in the RPS alarm. All RPS indications were normal.
- CR-07-22996: Procedure use and Adherence Less Than Adequate during Self-Contained Breathing Apparatus (SCBA) Requalification Training. During SCBA training an instructor stated as a class objective that the students should use the 'reference' procedure as a 'step-by-step' procedure for placekeeping purposes. This did not occur, so the instructor stopped the class to coach the individuals. Operators still did not perform the task using the expected placekeeping standard as provided in the objective. No corrective actions were assigned from this CR, with the only correction documented in the investigation summary as a post-shift review of the placekeeping requirements. No follow up on the performance issue associated with following instruction or (potentially) instructor performance were included. Note that this was written in July 2007, and placekeeping standards are still being discussed at the time of this assessment.
- CR-08-35840: Power Loss to the Main Steam (MS) Demin Skid when F33A Removed from Service. Review of the work did not identify the impact on the MS demin skid when removing F33A from service. E-1040-A did not identify C3407 was fed from breaker 1 on BY6. Plant drawings were not reviewed to validate the loads from BY6. The team relied on controlled document E-1040-A for their review. The change process used to install the MS demin skid did not update E-1040-A. The failure or breakdown in the change process was not evaluated in the CR.
- CR-08-34043: Core Flood Tank (CFT) 1 Discharge; 08-34050 Gas Void at CFT 1-1 Discharge Pipe. Human performance issue that resulted in the CFT being discharged into the Reactor Coolant System (RCS). The crew recognized the possibility of water transfer between the CFT and the RCS. A log entry was carried over shift-to-shift until the activity was completed. During the first performance of the valve stroke, the CFT was at the same pressure as the RCS. At the time of the second performance, the CFT was pressurized 80 psig to support testing which intentionally injects water from the CFT to the RCS. The change in plant conditions was not recognized as to the impact on the maintenance PM. This resulted in the CFT being injected into the RCS. CR 08-34050 was written to evaluate the voiding potential in the RCS.

Investigation found voiding present in the discharge piping up to the elbow downstream of CF1B (at the grating). Piping in the E/W tunnel was not checked due to locked high radiation access. Decay Heat piping was not checked due to insulation. The corrective actions for this CR was to vent the piping using an Operation Evolution Order (OEO), DB-OP-06000, "Filling and Venting the RCS," section 3.8, "Venting RCP Seal Cavity Lines," and 4.7 "Venting the RCS for Conditions other than RCS Fill." The Clock reset criteria evaluation considered if this was a misposition or configuration event and any adverse consequences of the event. It was determined this was not a clock reset. The CR does not address the evaluation of dose that was received to perform the corrective action for venting. The venting activities may have resulted in exposures greater than 5 mrem. In regards to Operator fundamentals, reference SER 3-05, Weakness in Operator Fundamentals, this event did not meet standards for controlling evolutions or clearly understanding plant response and system interactions. This event was not considered a departmental clock reset.

- CR-08-36555: Important Feedwater (FW) Heater Drain Path Found Closed When 1-5 Heater began to Reheat; and CR-08-36573, Inadvertent Addition of Station Air into the Condenser Causing Degraded Vacuum. The corrective action for this condition was to develop a case study. This study was to detail and place emphasis on operator fundamentals, including sensitivity to potential reactivity effects and performance of pre-job briefs. The corrective action above does not contain enough detail to capture the shortfalls identified in CR 08-36734, Davis-Besse Snapshot Self Assessment DB-SA-08-037. Fundamentals identified include: command and control, procedure use and adherence, and narrative log quality. The assessment identified several lessons learned that are not captured in the corrective action program such as: prejob briefs which should be conducted using checklists, prejob briefs should also include a review of applicable configuration control documents such as drawings and prints, prejob briefs should include a SAFER dialog. Operation Evolution Orders (OEO) need to be used for more complex evolutions in support of maintenance activities. OEOs provide better communications and control of evolutions for complex tasks than short term DB-OP-00016, Temporary Configuration Control directions. The CR generated for the event did not address the human performance issues. The CR supporting the self assessment was a detailed look at the human performance aspects of the event. The team concluded that a combination of the above documents identified adequate problem identification but did not seem to complete the task of ensuring that appropriate corrective actions were implemented.
- CR-08-38361: Valve Mispositioning During Performance of DB-PF-03153. This CR is very clear on the corrective actions taken, the cause analysis and evaluation. This CR is a good example for complete documentation. Some Condition Reports lack detail in the actions taken or in analysis.
- CR-08-34797: Steam Generator Blowdown Valves Closed 6 Hours Before Reaching 15% Power. This CR does not contain any corrective actions, any cause analysis, or any documentation how the CR was closed. Discussion with station personnel indicated that this is a recurring issue with Chemistry. The EPRI guidance referenced indicates blowdown should be in service until 15% power. Operations procedure DB-OP-06901 requires blowdown to be removed from service at 14% power.

Actions could have been documented to take exception to the EPRI guidance based on plant design. Communications with the Chemistry department could have been taken to clarify the station's design restraints associated with Steam Generator (SG) blowdown. Chemistry standards or procedures could have been updated to reflect the station's design requirements. The fact that blowdown was removed 6 hours premature was not addressed in the CR. Blowdown was removed from service at 12% power, according to the CR. Operations procedures do not remove blowdown until 14% power. This issue was not addressed in the CR. The team determined that *Corrective Action for this CR was Ineffective.*

- CR-08-34338: Pressurizer Temperature Exceeds That Allowed for Dissolved Oxygen (DO) Concentration. The CR was closed with no actions being taken. CR-08-34341 EPRI Dissolved Oxygen Criteria Exceeded During Startup was a duplicate CR that addressed this issue. A note or comment in CR-08-34338 could have been used to state CR 08-34338 is being closed to CR-08-34341. In the immediate actions for 08-34338 there is "1/28/08 MRB comment: CR-08-34341."
- CR-08-34341 EPRI Dissolved Oxygen Criteria Exceeded During Startup. When discussed with Operations Management, it was stated that the corrective actions for this CR need to be revisited. The corrective actions did not address or coordinate with Operations. Operations will reevaluate the corrective actions for this CR. This CR also provides an opportunity for DB to benchmark other similar designs to see how EPRI DO criteria are met. *Teamwork between Chemistry and Operations needs improvement.*
- CR-08-34807 Delay in Performance of Reactor Coolant Pump (RCP) Seal Leakage Test, DB-OP-03356. The causal analysis does not address actions taken with the individual regarding the human performance error. The documentation within this CR for the corrective actions taken is not as strong as other CRs. Reference CR-08-38361: Valve Mispositioning During Performance of DB-PF-03153, above.
- CR-08-34819: Near Miss - Caution Tags Were to be Used Instead of Red Tags for Personnel Safety. The unit was at Normal Operating Temperature and Pressure (NOT/NOP). The turbine steam supply was not included on the initial clearance. The CR determined the cause was a communication breakdown between the craft and Operations. Operations, as stated in the CR, tagged the equipment based on the tagging request submitted. This request did not include the main turbine. The CR states the clearance was adequate for the work identified in the original request, turbine support systems (note: at Watts Barr Nuclear, Operations is responsible for clearly understanding the work scope and ensuring the boundary is adequate for the work. This is done by reviewing the work document. A request is submitted for a suggested boundary). In addition, this clearance removed lube oil from service for the main turbine. The turbine steam supplies should have been tagged with a danger card for equipment protection. This was not considered a clock reset. The corrective actions taken for this CR were to create an adequate clearance boundary, and to evaluate the necessity for a clock reset. No actions were documented regarding the stated problem of miscommunication or the Operations review of the clearance or work scope. Additional discussion with Operations indicated that Maintenance only wanted the turbine support systems tagged and no mention was made of entry into the

generator. Operations added the caution tag to the Control Room turbine reset switch because the lube oil was tagged out of service. Entry into the generator was not learned until after the caution tags were hung. Further explanation of the communication problem and time line would make this CR much clearer to independent party reviews.

Additional Condition Reports Reviewed Without Comment

- CR-07-26393: Observation of AFP 1 Monthly Test Peer Check Vs. Independent Verification.
- CR-07-26469: WANO 2007 AFI OP. 1-1, Operator Performance During Simulated Event.
- CR-07-25743: WANO 2007 Shortfalls Identified in Operator Performance During Simulator Training.
- CR-07-25129: Two Licensed Operators Failed Simulator Evaluation.
- CR-07-26557: DBF-2007-2291, Unsatisfactory Operations Observation.

The team observed varying degrees of depth of review and various levels of detail/discussion on the Condition Reports reviewed. Some weaknesses are discussed with the individual CRs.

The team considers the overall performance to address Other Condition Reports to be Effective.

Area of Strength – Area 3

- None observed.

Areas in Need of Attention – Area 3

- Continuing effort to reduce the number of configuration control events.

Areas for Improvement - Area 3

- None Observed

Conclusions - Area 3

Actions taken to address Areas in Need of Attention identified during the 2007 Operations Assessment were *Effective*.

Maintain continued emphasis on configuration control by following clearance procedures and lineups during normal operations and refueling outages. Performance in this area continues to be a challenge to the plant. Performance in this area is *Marginally Effective*.

Overall actions to address CRs were considered *Effective*.

Area 4 - Licensed Operator Continuing Training

Scope - Area 4

Through a series of observations and discussions, the team observed simulator and classroom training to assess the effectiveness and usefulness of licensed operator continuing training. Discussions were held with various department leaders to ascertain the appropriateness of training that was given to both the licensed and non-licensed operators. Also, reviews were performed in various areas of training in an effort to ensure that program requirements were being met. Discussions were held with licensed and non-licensed operators, instructors and training management personnel. Observations during simulator training were compared with what the team observed in the Control Room during normal operations, to verify that the demeanor of the crew and the way that they performed and presented themselves was consistent and standardized in both environments.

The following areas were assessed during this review:

- Conduct of simulator training
- Simulator evaluations
- Simulator crew communications
- Post-simulator scenario critiques
- Simulator crew "focus areas"
- Conduct of classroom training
- Training cycle "kick-off" sessions
- Operations crew performance evaluations
- End-of-week debriefs
- Classroom environment
- Management involvement and oversight
- Utilization of human performance tools
- Procedure adherence during the performance of simulator scenario training and evaluation

Observations and Findings - Area 4

Simulator

The team observed the conduct of one evaluated scenario of crew 4 during the assessment period. Crew 1 was informally evaluated during the performance of an unannounced scenario, because it was not a normal cycle training week because of the training dedicated for the upcoming change over to Integrated Standardized Technical Specifications. Both crews were evaluated by Training department personnel, the Operations Superintendent, extra crew personnel, and team observers. Both crews were determined to have effectively completed all critical tasks associated with both drill scenarios, however the following observations were noted.

- The instructors discussed the potential need to make adjustments to Makeup Tank (MUT) level if it starts bouncing for simulator guide OTLC-2008-02 DB-S100, Titled: Rising Condenser Pressure, Loss of Component Cooling Water (CCW) from

Containment and RCP failure. The training supervisor says this may be related to a known simulator deficiency. If this is necessary, it should be addressed either as part of the scenario guide or a standard simulator operator instruction and should not have required special instruction to the simulator operator. Making this type of adjustment without proper validated guidance could impact simulator performance during a scenario, thus presenting a potential negative training situation. In follow up, the training supervisor stated that this discussion pertained to a known simulator indication issue and should have been written in a guide for the instructor to ensure their actions did not challenge the scenario.

- Communications from the simulated control room to personnel outside the control room were routinely answered within seconds of the control room paging the individual. This may lead to an unrealistic expectation for response.
- This scenario (DB-S100) was written based on a closure of the CC-5097 valve causing a dynamic response, including lowering surge tank level. Operator actions or behaviors section state that the Balance of Plant (BOP) operator would attempt to re-open the CC-5097. This was not done by the crew.

Setting this as an acceptable response without setting clear expectations on what should be validated prior to opening the valve places the operator in knowledge based response (the crew observed did NOT take this action based on not knowing if there was a leak in the line which could be aggravated by re-opening the valve).

Operations personnel stated that it was acceptable based on the Conduct of Operations Handbook to start an out of service CCW pump and swap non-essential loads based on immediate operator action. It was also stated that it would be acceptable to re-open the valve to restore the loop. It is not clear what section(s) of the handbook permits this performance. The scenario guide does not clearly identify what conditions should be validated or what management expectations are for this allowance to be used.

Clear criteria from the Operations Manager was not presented as part of this scenario to ensure management expectations for procedure compliance and operation in rule-based versus knowledge space. At the root of the team's concern for this issue is that it appears to endorse taking action outside of pre-established procedure guidance when a clear understanding of conditions may not exist. This places the operator in a potential knowledge-based arena. If the operator has misdiagnosed, then the decision is flawed. If the diagnosis is correct, but the operator does not understand prerequisite conditions for performing the operations of a system operating procedure (which are NOT pre-defined immediate operator actions) then an error-likely situation is created. If the operator makes an error while performing the activity (doesn't remember the sequence clearly, selects the wrong component, etc) then the outcome of the action could make conditions worse, not better.

In follow up discussions the following information was obtained.

- The Operations Manager stated that he had not piloted the scenario; and when he was part of the scenario, they were unsuccessful in diagnosing the event.

- The Operations Manager stated that opening the isolation valve that closed and swapping to the opposite loop were both acceptable to be performed as ‘immediate operator actions’ as discussed in the Conduct of Operations Handbook (green book), section on transient response, page 54 item 12.
- Procedure guidance for starting a CCW pump (DB-OP-06262) has 1 ½ pages of prerequisites. The procedure section for starting the pump is 5 pages long. The procedure for transfer of non-essential CCW isolation valves is over a page long. DB-OP-02515 has guidance for a loss of component cooling water to all RCP’s with Annunciator 6-5-B listed as an alarm that would indicate this condition (also listed as one of the annunciators received in the scenario). There are NO Immediate Operator Actions for this procedure. Supplementary actions include reference to DB-OP-02523 Component Cooling Water Malfunctions if the loss of CCW to the RCPs is due to the loss of the running CCW pump. This procedure does not include immediate operator actions applicable to the simulated malfunction. In summary, Operations and Training should be cautious in placing operators in knowledge- based space versus rule- based situations during training, without clear guidance concerning what training result is expected.
- Also, it was noted that consistent adherence to Conduct of Operations procedure (NOP-OP-1002), regarding the use of “crew update,” was, for the most part, consistently used by both crews observed. This consistency was also observed in the control room during various evolutions. This was an area of concern that was identified during last year’s assessment; however, it was felt by the station and the evaluators that the issuance of the new Conduct of Operations procedure and reinforcement by management and training personnel aided in standardizing this management expectation regarding crew communications. The team noted the improvement in this area over last year’s assessment. However, the use of “task complete” was still not consistently vocalized following completion of actions by the Reactor Operator or the BOP Operator, as directed by the Unit Supervisor. This still appears to be an area of weakness that does not fall in line with the guidelines addressed in the Conduct of Operations procedure.

Other General Observations

- Three-way communications were consistently used, with a few exceptions noted.
- Human performance tools, including STAR, were used by crew members.
- Peer checking was used, when warranted.
- Adherence to procedures was observed.
- “White board” entries during scenarios were made as necessary.
- Transient briefings and crew updates were held when deemed necessary.
- Plant announcements were appropriately made.
- The crew and individuals were self-critical of their evaluated performances

Post-Simulator Scenario Critiques

Following the conduct of the “as found” scenario, the Superintendent Operations, together with the Operations Training lead evaluator, discussed with the SM, areas of strengths and weaknesses (plus/deltas). The crew, minus the SM, separately evaluated their performance and

listed their plus/deltas for the evaluated scenario. This review was led by the crew's Shift Engineer. Subsequently, the crew's SM, together with the entire crew, compared each others' evaluated performance. Also, the Operations Superintendent was present to listen and comment as necessary, thus ensuring management expectations were being met for all crews' evaluated performances. For the most part, the two comparisons aligned with each other. The plus/deltas were appropriately listed and captured by the crew, resulting in focus areas of improvement for future training sessions and in-between training cycles. It was noted that the plus/deltas observed by the team evaluators were also identified by the crew. Plus/deltas and subsequent focus areas for improvement were entered in the electronic data base, thus allowing the individuals and the crew to subsequently focus on those areas during that time between training cycles.

An initiative undertaken by the training department involved having the crews' non licensed operators (NLOs) gather together in the simulator briefing room, during the same time in which the licensed operators performed in the simulator. This "high intensity training" scenario was simulcast to the briefing room where the NLOs discussed actions they would take when called upon by the control room. An instructor was present and he controlled the training environment for the NLOs. Since this was a new initiative on the part of the training department, feedback on future improvements to this process was requested by the training instructor. Primarily, feedback involved improved video resolution, which the training department had already identified. All of the NLOs felt that this type of training would be beneficial and that it greatly surpassed efforts initiated in the past, e.g., stationing them behind the control room (simulator) panels.

Another noteworthy initiative was the incorporation of the recommendations identified in the World Association of Nuclear Operators (WANO) assist visit, in which CR 07-26269, was generated to address their concerns identified during their visit. Changes that were made to the training program as a result of this review included the following:

- Replace the Crew's Choice simulator period with Immediate Action Drill Quick Hitters and rotating all licensed operators through the control board positions of At-the-Controls (ATC) and Balance Of Plant (BOP).
- Remove the shift reactivity brief from the simulator setting, thus maximizing the time in the simulator to responding to casualties.
- Remove the "warm up" drills from the licensed operator training curriculum. (This recommendation had previously been suggested by COIA team members during past assessments.)
- Perform a Systematic Approach to Training Gap Analysis for inclusion in the 2008 OTLC training plans.
- Implement the "Crew Performance Notebook" database.

A review of the above recommendations from WANO revealed that all the changes had been acted upon for training cycle 2008.

Classroom

- The team observed the conduct of one formalized classroom training session; two training sessions that started the training cycle for the crews; two Operations Crew Performance Evaluations; one Operations Manager meeting; and two "end of the week"

crew debriefs. The management introduction sessions were led by the Operations Superintendent, along with the lead Operations Training representative (crew mentor) for their respective crew.

- The training session observed dealt with a review of a recently revised abnormal procedure, “Loss of Service Water Pump/ Systems AB DB-OP-02511.” The station is presently revising all of their abnormal operating procedures to parallel the format used for the previously revised Emergency Operating Procedures. As the Abnormal operating procedures are revised, the training department is providing a review and familiarization training on the new format changes. This provides an opportunity for the operators to become comfortable with the new format changes and also an opportunity to identify any inconsistencies or errors they may discover during this review prior to actual implementation.
- The training sessions were presented as scheduled, and all time frames were met. Classroom interaction between licensed operators and the instructors was noted. Available training tools were effectively utilized during the class presentation, including PowerPoint, white board, handouts, etc.
- The instructor for the Loss of Service Water Pump Abnormal did an excellent job in making the procedure review as interesting as possible. Lesson objectives, along with system simplified drawings, were handed out to each licensed operator. Considerable discussion was noted between the operators and the instructor. A couple of instances were noted in which the instructor was unable to answer the operator’s question and he subsequently made note of the questions and assigned this as a “parking lot” item, in which he would assume the responsibility for discussing these questions with the author of the procedure. He subsequently would inform the individual and the crew the answers to their questions. If the procedure warranted any changes, the procedure author would be informed and asked to make the necessary corrections prior to the next crew’s training cycle.
- Regarding the presentation for the cycle kick-off session presented by the Operations Superintendent and the crew Operations Training representative, the crew was presented with a training package entailing objectives and schedules for the upcoming training week. The Operations Superintendent presented the present cycle focus areas and the crew’s Shift Manager, along with individual crew members, presented crew focus areas, and individual’s areas of strength and weaknesses.
- The team observed the end-of-the week debrief with the shift and the training representative(s).
- The team observed the review of the end-of-the week written examination with the individual licensed operators. The written examination was graded and passed out to the licensed operators for their review. The training instructor reviewed with the shift each question that was missed. During last year’s assessment, the team suggested that, at the end of the missed question review, the instructor should ask the operators if they had a question on any of the other exam questions that were not covered. This had not been previously done due to tight timelines during the training week. The Operations Manager said that he would consider doing this during future training cycles. During this year’s assessment, the team noted that the instructor concluded his review of the written examination by asking if there were any questions on any questions that were not previously reviewed. The team noted that a couple of operators did ask for clarification on a couple of additional written exam questions. The team acknowledged the training department’s receptiveness to their previous year’s recommendation.

Operations and Training Meetings

The Operations department together with the Training department initiated an effort to periodically assess a shift operating crew's performance during each training cycle. This assessment was performed in accordance with the Nuclear Operating Business Practice procedure NOBP-OP-0003, "Operations Crew Performance Evaluations." The team observed the conduct of two evaluations during this assessment period. In attendance for each meeting were the Shift Manger, Unit Supervisor, Shift Engineer, Operations Superintendent and Manger, Training Superintendent of Operations, and the Crew Mentor. The Plant Manager (Director – Site Operations) was unable to attend during this time period, however is normally in attendance. This new process is an effort to identify and eliminate performance gaps in individual and crew behaviors, and identify improvements in the Operations training programs and apply it consistently across all crews. The Shift Manager is essentially in charge of the meeting and presents to other mangers the past performance of his crew and future expectations for improved crew performance. Areas addressed during this review included the review of the following areas:

- Last cycle's focus areas
- Any crew clock resets
- Significant issues and trends
- Non-green performance indicators
- Crew and individual performance feedback and improvement plans, including qualification status
- Crew performance both on shift and in training
- Safety and human performance observations
- Crew open item report
- Crew and individual focus areas for the next cycle

The assessment team members found these meetings to be concise and to the point, and all focus areas were adequately covered within one hour. The Shift Manager is held accountable for all facets of his crew's performance, which includes both licensed and non licensed operators. Some questions came up as to the accessibility of the electronic crew notebooks, to which the Superintendent of Operations Training stated that he would look into any accessibility problems. The electronic crew notebooks play a vital role in determining if any crew gap analysis exists and if performance improvement plans are warranted.

The team concluded that the Operations crew performance evaluations is an important tool that can be used effectively to improve and sustain good continued crew performance. This is an area of *Strength*.

Areas of Strength – Area 4

- Just-In-Time-Training was considered a Strength based upon interviews and good crew performance during infrequent plant evolutions. JITT was in the planning stages for a scheduled June 6, 2008, down power evolution for repairs on the #1 Main Feedwater Pump. Crews involved were tentatively determined and schedules for training were discussed.

- Initiatives undertaken by the training department, in an effort to improve upon that which had been previously established, was noteworthy, e.g., WANO assist visit, NLO involvement in licensed operator continuing training, Operations crew performance evaluations.
- Operations crew performance evaluations is an important tool that can be used effectively to improve and sustain good continued crew performance.

Areas in Need of Attention- Area 4

- None identified.

Areas for Improvement - Area 4

- None Identified.

Conclusions - Area 4

Similarities in crew/individual performance were noted in both the simulator and the control room.

The Training department continues to provide training that is responsive to the needs of the shift personnel.

Just-in-Time-Training (JITT) is considered by all to be an essential training tool that results in efficient and continued safe plant operations. The inclusion of the equipment operators with their respective crew's JITT for upcoming critical evolutions was an excellent initiative on the part of training and operations departments. The equipment operators were very receptive to having been included in this type of training.

Operators expressed their satisfaction with the quality of training that is provided to them on a regular basis, They do not like some of the new fundamentals that are currently being instituted, e.g., list of required memory questions, thumb rules; however, they are satisfied with the percentage of memory questions that are part of the weekly cycle exam. They also are pleased that the cycle written exam is again being administered in the simulator now that the newly licensed operator training has been completed.

Non-licensed operator training involvement with licensed operator simulator training was a noteworthy initiative on the part of the training and operations department.

Operations crew performance evaluations is an important tool that can be used effectively to improve and sustain good continued crew performance. This is an area of ***Strength***.

The team considers overall training performance to be ***Effective***.

Overall Conclusions of Operations Performance for Section I

The team concluded, based on observations of control room and simulator performance, interviews, observations of classroom training, Quality Assurance Assessments, and Condition Report evaluations, that the plant is being operated safely, both in the control room and in the plant. Personnel practice and display a questioning and safety conscious attitude. The team noted very good self and peer checking by those observed during the assessment. Operations personnel are knowledgeable of the plant and plant conditions, including workarounds, deficiency tags, etc. All control room operations observed were conducted in accordance with procedures, e.g., Conduct of Operations. Professional demeanor was displayed in every instance in which the team observed control room and simulator operations. Similarities in crew/individual performance were noted in both the simulator and the control room. In addition, based on interviews and observations, Operations personnel displayed a good attitude and high level of morale during this assessment. Work week schedule assignments were considered reasonable, with minor exceptions noted. Considerable progress has been made to address the issue of licensed and non-licensed personnel advancement and alleviating the SRO shortage. There continues to be issues with configuration control and human performance errors. Condition reports and the corrective action system appear to be effective, but level of detail and depth of review and analysis continue to be of varying quality.

The team concluded that overall *Operation's performance is Effective.*

SECTION II

Davis-Besse Self Assessments

Scope

The team reviewed several assessments associated with the conduct of operations within the Operations department at Davis-Besse that had been conducted since the last assessment (June 22, 2007). The purpose of these reviews was to assess the rigor, criticality, and overall quality of these assessments. These reviews included the following:

- FENOC Company Nuclear Review Board Meeting Minutes, March 14, 2008
- FENOC Company Nuclear Review Board Meeting Minutes, September 14, 2007
- FENOC Company Nuclear Review Board Meeting Minutes, June 8, 2007
- FENOC Davis-Besse Fleet Oversight Quarterly Performance Report, DB-PA-07-02, April 1 - June 30, 2007
- FENOC Davis-Besse Fleet Oversight Quarterly Performance Report, DB-PA-07-03, July 1 - September 30, 2007
- FENOC Davis-Besse Fleet Oversight Quarterly Performance Report, DB-PA-07-04, October 1 - December 29, 2007
- FENOC Davis Besse Fleet Oversight Quarterly Performance Report, DB-PA-08-01, December 30 - March 31, 2008
- Operations Integrated Performance Assessment (IPA), DB-SA-07-055, January 1, 2007 - June 30, 2007
- Operations IPA, DB-SA-08-009, July 1, 2007 – 12/31/2007

Observations and Findings

The team, following their review of the above listed reports, felt that the organizations were appropriately identifying and prioritizing areas of concern within the Operations department. Findings were being appropriately captured within the Corrective Action Program (CAP) e.g., human performance errors and the above-mentioned WANO assist visit report. This assessment was similar to that noted during the past couple of years' assessments. It is felt that the Operations department continues to do a very good job of identifying and categorizing areas of concern and subsequently entering these concerns into the CAP. The Operations department's latest assessments continue to improve in regards to identifying station weaknesses. It continues to be modeled after a Fleet trending model and follows the guidelines detailed in NOBP-LP-2018 "Integrated Performance Assessment/Trending." The latest IPA continues to identify such areas as configuration control, procedure backlog, and human performance issues as areas for improvement. The team noted similar concerns during their reviews and interviews with shift and management personnel.

The team's review of the past year's assessment reports indicated the following:

- The operations review team is dedicated to a review of the past six months' performance regarding operations self assessments.
- Station management performs adequate reviews of the findings and recommendations made by the Operations review team.
- The review adequately captures not only negative trends but positive attributes that contribute to the safe operation of the plant. Just-In-Time-Training was still recognized as a strength, in that it provides the training that is needed or desired during any infrequently planned plant maneuvers, e.g., tentatively planned June 9, 2008 downpower, for the #1 Main Feedwater Pump repairs.
- Several areas for improvement were captured in the latest IPA report, which coincided with the offsite and independent team assessments. Of importance were the following negative/emerging trends: configuration control, human performance issues, and procedure backlog and content.
- Positive noteworthy items also continue to be part of the assessments, e.g., JITT; staffing, both in operations and training.

Areas of Strength – Section II

- None identified

Areas In Need of Attention – Section II

- None identified

Areas For Improvement – Section II

- None identified

Self Assessments Conclusions – Section II

The Davis-Besse Fleet Oversight Audit Reports, Quarterly Performance Reports, CNRB minutes, and the Davis-Besse Operations department IPAs continue to be factual, in-depth, and accurate in identifying areas of weakness within the Operations department. Findings were appropriately captured within the Corrective Action Program, e.g., configuration control issues, procedure backlog, human performance issues, etc. Again, the Operations department assessments continue to maintain an emphasis on quality and depth, with an increased emphasis on areas of concern that may have an effect on continued safe operation of the plant. These assessments continue to identify problem areas and are subsequently captured in the CAP. The Fleet trending model and NOBP-LP-2018 guidelines used to prepare the Operations IPA continue to be an important guideline for developing/conducting assessments. Each year, the Operations department has made significant improvements upon the manner in which they assess their performance. The results of these assessments continue to be in line with the assessments of outside organizations, e.g., WANO assist visit.

Operations' self-assessments, coupled with Davis-Besse Fleet Oversight and CNRB assessments, were determined by the team to be *Effective*.

ATTACHMENT 1: REFERENCES:

- DB-OP-00000, Conduct of Operations
- DB-OP-00004, Operator Aids Control
- DB-DP-00023, Label and Sign Control
- DB-OP-00005, Operators Logs and Rounds
- DB-OP-00006, Night Orders and Standing Order Log
- DB-OP-00016, Temporary Configuration Control
- DB-OP-00018, Inoperable Equipment Tracking Log
- DB-OP-00100, Shift Turnover
- DB-OP-00200, Shift Engineer
- DB-OP-01002, Component Operation and Verification
- DB-OP-01003, Operations Procedure Use Instructions
- DB-OP-02511, Loss of Service Water Pump
- DB-OP-06316, Diesel Generator Operating Procedure
- DB-SC-04271, Station Blackout Emergency Diesel Generator
- DB-SP-03161, AFW Train 2 Level Control, Interlock, and Flow Transmitter Test
- DB-MI-03012, Channel Functional Test of Reactor Trip Breaker A, RPS Channel 2 Reactor Trip Module Logic, and ARTS Channel 2 Output Logic
- NOP-WM-0001, Control of Work
- NG-DB-00018, Operability Determinations
- NG-DB-00215, Material Readiness and Housekeeping Inspection Program (draft)
- NOP-WM-2001, Work Management Process
- NOP-LP-2001, Condition Report Process
- NOP-OP-1002, Conduct of Operations
- NOBP-OP-0003, Operations Crew Performance Evaluations
- NOBP-LP-2604, Job Briefs
- DBBP-OPS-0001, Conduct of Operations
- DBBP-OPS-0010, Covers for Selected Control Room Switches and Reactivity Addition Potential Labels
- TR-01, Operations Section Required Reading
- Work Process Guideline (WPG) – 2, Operation’s Equipment Issues
- NRC Inspection Procedure (IP) 71715, “Sustained Control Room and Plant Observation”
- NRC IP 71707, Plant Operations
- NRC IP 93802, Operational Safety Team Inspection (OSTI)
- NRC IP 93806, Operations Readiness Assessment Team Inspections
- The “Work Week Schedule” for the on-site assessment weeks
- The licensed operator training schedule for shift 3 and shift 5 on-site assessment weeks
- 2007 Operations Shift Two Semiannual Crew Summary
- Last two Fleet Oversight Assessment Reports, DB-C-06-03 (July 1 through September 11, 2006), DB-C-06-02 (April 1 through June 30, 2006).
- Fleet Oversight Quarterly Performance Report DB-PA-06-04, Fourth Quarter: DB-07-01, First Quarter.
- Applicable recent internal Operation’s self-assessments, IPA 2006-01 (November 1, 2005 through April 30, 2006), and DB-SA-07-05, (May 1 through December 31, 2006).
- Applicable Company Nuclear Review Board minutes from the Davis-Besse Meetings dated July 14, 2006, February 9, 2007.

ATTACHMENT 2: ASSESSMENT TEAM BIOGRAPHIES

**Larry E. Briggs
Independent Consultant
Silver Fox Synergies, LLC**

- 2004 – 2006 *Silver Fox Synergies, LLC*; Team Lead, Davis-Besse Nuclear Power Station (DBNPS) Operations performance area independent assessment to identify areas for improvement and other improvement opportunities as required by the DBNPS Restart Confirmatory Order. A similar Operations performance assessment was conducted at the Perry Nuclear Power Plant in 2004.
- 2001 - 2004: *Onsite Inc.*; Senior Consultant - Developed NRC written examination for the Oyster Creek Facility (May 2002 examination).
- 1977 - 2001: *U. S. Nuclear Regulatory Commission (NRC)*; Held various positions with the NRC. Duties included: Senior Operations Engineer (Chief License Examiner and Senior Inspector) - Certified Chief Examiner on General Electric (GE), Westinghouse, and Combustion Engineering plants. Responsible for review, oversight, and administration of licensed operator examinations. Scheduled and made personnel assignments for Region I licensed operator examinations and re-qualification inspections. Responsible for leading team inspections as assigned, such as maintenance rule and for cause re-qualification inspections. Also led numerous NRC routine operator licensing examination teams and re-qualification inspections. Participated in nuclear event response both in Region 1 and at the facility.

NRC Senior Resident Inspector - Responsible for NRC inspection program at assigned facility and maintained constant interface with utility and NRC concerning plant activities and status; Senior Engineer - Responsible for oversight of NRC pre-operational testing inspection program for Region I facilities; Project Engineer - Responsible for general inspection of assigned NRC Region I facilities and coordinated NRC inspection activities at assigned facilities.

- 1972 - 1977: *Burns and Roe Inc*; Senior Startup Engineer - Responsible for development, implementation, and coordination of pre-operational test and startup procedures for assigned systems at Three Mile Island (TMI) Units 1 and 2. Also, provided on-site engineering resolution to Unit 2 problem reports during construction.
- 1960 - 1972: *U. S. Navy*; Leading CPO (USS Whale SSN 638) for Reactor Control Division. Leading In-hull instructor/Reactor Control Division Officer on D1G Prototype. Engineering Office of the Watch (EOOW) qualified on D1G Prototype. Qualified on S3G Prototype, S2Wa, and S5W Navy power plants.

Paul H. Bissett
Independent Consultant
Silver Fox Synergies, LLC

- 2005 - 2006 *Silver Fox Synergies, LLC*; Team Member, Davis-Besse Nuclear Power Station (DBNPS) Operations performance area independent assessment to identify areas for improvement and other improvement opportunities as required by the DBNPS Restart Confirmatory Order.
- 2004 - *Silver Fox Synergies, LLC*; Davis-Besse Nuclear Power Station (DBNPS) Operations performance area independent assessment to identify areas for improvement and other improvement opportunities as required by the DBNPS Restart Confirmatory Order. A similar Operations performance assessment was conducted at the Perry Nuclear Power Plant.
- 2004 - *Performance, Safety & Health Associates, Inc.*; Independent Consultant – Assisted in the conduct of Licensed Operator audit examinations at the St. Lucie Nuclear Power Plant.
- 1989-2003: *U. S. Nuclear Regulatory Commission (NRC)*; Senior Operations Engineer (Chief License Examiner/Inspector) - Certified Chief Examiner on Babcock and Wilcox (1990), Westinghouse (1988) and General Electric (1999) facilities. Effectively led and conducted licensing examinations, and requalification examinations / inspections at Region I facilities.

Assisted in the administration of operator licensing examinations in Region II (Surry) and Region III (Davis-Besse).

Responsible for leading team inspections, including, but not limited to, operator licensing requalification, maintenance rule, problem identification and resolution, Event-V, PRA, Emergency Operating Procedure (EOPs) and operational startup inspections.

Participated in numerous Region I plant restart inspections (TMI-1, IP-2, Salem 1/2, etc.), primarily focusing on operational safety assessments.
- 1982-1989: *U. S. Nuclear Regulatory Commission (NRC)*; Responsible for the conduct of reactor operations inspections, including the areas of maintenance, surveillance and calibration, and in-service testing of pumps and valves, including the review and approval of a licensee's 10 year In-service Test program submittal. Responsible for the review of licensee QA plan submittals and subsequent inspection of licensee QA/QC programs.
- 1977-1982: *U. S. Nuclear Regulatory Commission (NRC)*; Responsible for the accountability and security of special nuclear materials at fuel fabricating facilities, including the decommissioning of one major nuclear facility, utilizing non-destructive assay techniques.
- 1970-1976: *U. S. Navy*; Four year assignment on the USS California (CGN-36) included the participation in the construction and testing of the engineering plant, nuclear core installation, pre-critical testing, initial criticality, power range testing and sea trials. As the Leading Machinery Watch (LMW), supervised aft engine room mechanical work activities. Administered preventive maintenance program.

Mark A. Shaffer
PSEG Nuclear
CFAM - Operations / Chemistry

- 1990 - Present: *PSEG Nuclear*: Corporate Functional Area Manager (CFAM) - Operations / Chemistry. July 2007 to present: Responsible for governance and oversight of Salem and Hope Creek Operations and Chemistry programs and processes. Ensure PSEG processes are aligned with industry best practices. Perform periodic review and assessment to ensure best practices are implemented and alignment between the stations.

Operations Staff Superintendent. April 2007 to July 2007: Support shift coverage, Operations support of projects including Extended Power Uprate, observations to identify gaps to excellence, support of department initiatives for the Hope Creek Operations department.

INPO Loanee - Senior Evaluator, Operational Focus. October 2005 to April 2007: Performed observations and evaluations at nine domestic nuclear plants and two international plants in support of INPO / WANO using the INPO Performance Objectives and Criteria. This included in plant and simulator observations of crew performance in all aspects, and observation of station support to ensure proper operational focus.

Senior Reactor Operator – Hope Creek. October 1996 to October 2005: Performed the roles of Control Room Supervisor and Shift Manager, with increasing levels of responsibility for station operations and operations oversight.

Operations Training. January 1990 to October 2006: Responsibilities and roles included simulator configuration control and testing (1990 – 1995), licensed operator instructor (1995), operations training supervisor (1996).

1987 – 1990: *General Physics*; Supported simulator certification of the E.I. Hatch simulator to ANSI standards. Additionally, performed classroom instruction for Hatch operator requalification and new General Physics hires for instructor certification.

- 1985 - 1987: *General Electric*; Senior Reactor Operator (SRO)-certified instructor performing classroom and simulator training and material development for various stations.
- 1977 - 1985: *United States Navy*; Machinist Mate with increasing levels of responsibility, including staff instructor at prototype (1978 – 1980), and leadership roles aboard a United States submarine, both at sea and in a shipyard overhaul.

Gregory A. Evans
Tennessee Valley Authority - Watts Bar Nuclear Plant
Shift Manager

- October 1990 to Present: *Tennessee Valley Authority – Watts Bar Nuclear Plant*

Shift Manager. April 2006 – Present: Decision-making authority during the shift to provide instructions and guidance to operation and station personnel to ensure plant activities are conducted in an effective, safe, and consistent manner in accordance with the operating licenses, plant procedures, regulatory requirements, and established standards.

Senior Reactor Operator/Shift Technical Advisor. January 2003 - April 2006: Performed the duties of the Unit Supervisor, Shift Technical Advisor, Work Control Center SRO and Fuel Handling SRO.

Senior Reactor Operator training program. April 2001 - January 2003

Program Manager Radiological Control. May 1999 – April 2001: Supervised the Radiation Control Technical Staff. Responsible for: As Low As Reasonably Achievable (ALARA) program, Radiation Work Planning, Instrumentation, Respiratory Protection, Dosimetry, and Source Control. As the Operations Staff Supervisor - Responsible for: the daily implementation of work plans, Radiation Work Permits (RWP), providing and coordinating the radiological controls necessary to support plant operations and activities. Outage support included: serving as the lead for the Containment Coordination Hit Team for Refueling Outage 3 (RF03); served as the Upper Containment Coordinator for RF03 and RF04.

Radioactive Waste Supervisor/Engineer. October 1990 – May 1999: Developed and implemented the Radioactive Waste Management Program. Outage support included: Lower Containment Coordinator for RF01; and Upper Containment Coordinator for RF02.

- April 1986 – October 1990: *Entergy Operations, Inc. Grand Gulf Nuclear Station*

Radioactive Waste Specialist. June 1986 – October 1990: Managed and administered the radioactive waste program.

Radiological Control Technician. April 1986 – June 1986: Responsible for radiological controls program implementation, RWP development, job planning, and job coverage.

- April 1980 – April 1986: *United States Navy; Leading Engineering Laboratory Technician/Engine Room Supervisor.* Managed radiological and chemistry controls during operational and overhaul periods. Responsible for dosimetry control and exposure records. Supervised operational and shutdown personnel standing watch, performing duties in nuclear, steam, and other fluid systems and components.