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Docket Number 50-346  
License Number NPF-3  
Serial Number 1-1500

August 10, 2007

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

Subject: Submittal of the Independent Assessment Report of Operations Performance for  
the Davis-Besse Nuclear Power Station – Year 2007

Dear Mr. Caldwell:

The purpose of this letter is to submit the assessment report for the 2007 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.

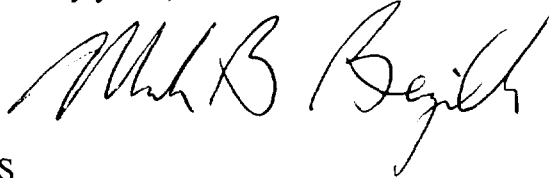
The on-site activities of the Operations Performance Independent Assessment were conducted from June 11 to June 22, 2007, in accordance with the Assessment Plan, Rev. 1, submitted via letter Serial Number 1-1492, dated April 12, 2007. The final debrief of results was presented to the DBNPS management on July 6, 2007, 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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If you have any questions or require additional information, please contact  
Mr. Raymond A. Hruby, Jr., Manager - Regulatory Compliance at (419) 321-8000.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Michael B. Bejlich". The signature is fluid and cursive, with the first name "Michael" and last name "Bejlich" clearly legible, and a middle initial "B." in between.

LJS

Attachment 1 - Commitment List

Enclosure 1 - 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

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Attachment 1, Page 1 of 1

### COMMITMENT LIST

The following list identifies those actions committed to by the Davis-Besse Nuclear Power Station (DBNPS) in this document. Any other actions discussed in the submittal represent intended or planned actions by the DBNPS. They are described only for information and are not regulatory commitments. Please notify the Manager - Regulatory Compliance at (419) 321-8000 at the DBNPS with any questions regarding this document or associated regulatory commitments.

#### COMMITMENTS

None

#### DUE DATE

N/A

Docket Number 50-346  
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Enclosure 1

CONFIRMATORY ORDER INDEPENDENT ASSESSMENT  
OPERATIONS PERFORMANCE  
DAVIS-BESSE NUCLEAR POWER STATION

(32 pages follow)

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

**Report Number**      **COIA-OPS-2007**

**Facility:**            **Davis-Besse Nuclear Power Station**

**Location:**           **5501 North State Route 2**  
                             **Oak Harbor, Ohio 43449-9760**

**On-site**  
**Observation:**       **June 11 – 22, 2007**

**Final Debrief:**      **July 6, 2007**

**Final Report:**

*Jerry E Briggs*      7/13/2007  
Independent Assessor Lead      Date

**Reviewed and  
Accepted:**

*Mike B. Bell*      7/24/07  
Site Vice President      Date

*Gannu M. Runkel*      7/20/2007  
Vice President, Oversight      Date

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## **A. EXECUTIVE SUMMARY**

### **Overall Conclusions of Operations Performance**

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 an improvement in the already 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, i.e., Conduct of Operations. Control room demeanor continues to improve over that which was observed a couple of years ago, in that, professionalism 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, Operations personnel seem to have a much better attitude and morale during this assessment than in any of those previous. Work week schedule assignments were considered reasonable with minor exceptions noted.

The team concluded that 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 2007 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 has improved since last year.
- Robust barrier program continues to help prevent operator errors.
- The Shift Manager's (SM) meeting allows decisions to be made at the appropriate level within the organization.
- Implementation of INPO SER 3-05, "Weakness in Operator Fundamentals" (issued 7/15/05).

Areas in Need of Attention -Area 1

- The Operational Decision Making Issue (ODMI) process is not effectively addressing industry experience.

Areas for Improvement - Area 1

- None observed

Area 2 – Interviews

Areas of Strength: Area 2

- Training was considered effective by 80 percent of those interviewed.

Areas in Need of Attention – Area 2

- Inability of Senior Reactor Operators (SROs) to advance or take leave due to lack of replacements.
- Large procedure backlog.
- Maintain continued emphasis on configuration control issues (also noted in Condition Report Review).
- Unwillingness of Operation's Department Reactor Operators (ROs) to advance to the SRO level.

Areas for Improvement: Area 2

- None

Area 3 – Condition Report Review

Areas of Strength: Area 3

- None

Areas in Need of Attention: Area 3

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

Areas for Improvement: Area 3

- None

Area 4 – Licensed Operator Continuing Training

Areas of Strength: Area 4

- Just-In-Time-Training, based upon interviews and good crew performance during infrequent plant evolutions.

Areas in Need of Attention: Area 4

- None

Areas for Improvement: Area 4

- None



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 were 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 SMs 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.

The actions being taken to implement INPO SER 3-05 is noteworthy.

***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 has improved significantly over last year's assessment primarily due to the 12-hour, 5-shift rotation and a manageable work week schedule.

Work week planning for the first time in four assessments was not considered an issue by the operators interviewed. This is noteworthy.

Operator training continues to improve and is considered a **Strength** by a majority of operations personnel.

All personnel interviewed appear to be dedicated employees carrying out their responsibilities to the best of their abilities.

Advancement of plant-experienced Operations Department ROs continues to be a problem as well as the ability of SROs to advance or take leave due to manning issues.

Actions taken to address Areas in Need of Attention identified during the 2006 Operations Assessment were overall **Effective**.

Maintain continued emphasis on configuration control by following clearance procedures and lineups during normal operations and especially during refueling outages. Performance in

this area during 14<sup>th</sup> Refueling Outage (14RFO) was *Marginally Effective* (2006 Assessment). The lack of configuration issues was considered a strength during the 2005 assessment.

Overall actions to address Condition Reports (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; however, they do not like some of the new fundamentals that are currently being instituted, i.e., static simulator examinations, and the list of required memory questions, thumb rules, etc. They also prefer taking the cycle written exam in the simulator as they had in the past.

The "white board" was effectively used by the shift engineer on shift 3 during their evaluated scenario, whereas the shift engineer on shift 5 did not utilize it as effectively.

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

### **Overall Conclusions of Self-Assessment Capability**

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 (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 (CAP), e.g. configuration control issues, procedure backlog, etc. Again, the Operations department assessments continue to improve in 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 database. The Fleet trending model and NOBP-LP-2018 "Integrated Performance Assessment/Trending" guidelines used to prepare the Operations Integrated Performance Assessment (IPA) appear to be an improvement upon previous 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.

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

## **B. INTRODUCTION**

A condition of the March 8, 2004, NRC Confirmatory Order Modifying License No. NFP-3 for restart of the Davis-Besse Nuclear Power Station following the reactor vessel head degradation event was to conduct an annual comprehensive, independent outside assessment of the Operations performance area. The assessment will be used 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 will also be used to assess the rigor, criticality, and overall quality of available Davis-Besse internal self-assessment activities in this performance area.

## **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 ten CRs initiated by Davis-Besse to address the Areas in Need of Attention (ANA) identified during the June 2006 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 one nuclear industry peer representative. The industry peer participated for part of one week (June 11 through 13, 2007) and the two independent consultants participated for two weeks, including the weekend (June 11 through 22, 2007). Abbreviated biographies of the team members are presented in Attachment 2 of this report.

NOTE: Due to a death in the family the industry peer could not participate for the full first week as scheduled.

## **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' shift assignments overlapped shift turnovers to compare consistency of crew operations.

The team observed Control Room shift activities of at least portions 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 five different Non-Licensed Operator (NLO) rounds.

The team interviewed 20 individuals, which included eight licensed (6 SRO and 2 RO), 5 management and 7 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 also informally interviewed several members of the Operations staff during the process of conducting the assessment.

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 during the off-site preparation weeks and while on site. The team also reviewed the CRs implemented to address the Areas in Need of Attention (ANA) identified in the 2006 Operations Performance Independent Assessment. Several other CRs related to Operations performance 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.

## **E. DETAILS AND RESULTS**

### **SECTION I**

The details and results are presented in 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 of five non-licensed Equipment Operators were also observed during the assessment period. The team attended five shift turnover meetings (6:30 a.m. and 6:30 p.m.) 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.
- Unit Supervisors briefed crews on Technical Specifications (TS) Limiting Conditions for Operations (LCO) entry, stating the reason for the entry, the actions and the time limits.
- Good use of updates. Operators verbalized when ready to begin. Appropriate updates were noted for RO At-The-Controls (ATC) and Command SRO changes of duty and shift changes. Changes in command were more noticeably verbalized than in previous year's observations.
- The risk matrix was reviewed and found 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. Additionally, however, there are many informational labels on the primary control panels that initially did not appear to meet the requirements of the operator aid program. As an example, the feed pumps have the following informational label: "Exercise Governor When Shutdown." Subsequent review indicates that these

information labels are direct quotes from system operating procedures and are controlled by DB-DP-00023, Label and Sign Control.

- One crew was observed performing end-of-shift briefs. The SM said that this was done to improve turnover. The operators were engaged in the brief, sharing relevant accomplishments from the day and changes in plant status. The supervision used the brief as an opportunity to reinforce positive behaviors and to coach for performance improvement. The supervision also used this as an opportunity to explain technical elements of issues raising the crew's level of understanding. This is in-line with SER 3-05, Operator Fundamentals. The crew also reviewed work for the next shift, improving the turnover process. The crew also reviewed work scheduled for the next day, making assignments to the responsible crew members. This gave the crew members an opportunity to prepare for the next day's work, reducing the likelihood of errors. ***This is viewed as a Good Practice*** (although not consistently applied across all of the crews).
- There are several recorders that have been upgraded in the simulator for several years which have not been upgraded in the plant. Review of the 15<sup>th</sup> Refueling Outage (15RFO) scope for recorder replacement indicates that eleven recorders are scheduled to be replaced 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.
- Reviewed the six ODMIs with actions outstanding. The Reactor Coolant Pump Motor 1-1 High Bearing Temperature was in a different format than the others (it was issued under a previous revision of the ODMI process procedure). Also two ODMIs had limited reference to industry operating experience. Specifically, Isophase Bus Excessive Vibration Noise did not document a review of industry operating experience relating to lamination failure mechanisms which have occurred in the power industry. Also, the Cycle 15 Fuel Defect Operations ODMI did not thoroughly document review of the industry data related to the subject. ***This is an Area in Need of Attention.***
- Reviewed four Abnormal Operating procedures (AOP). The procedures are detailed and thorough. Operators expressed some concern that the AOPs are not human factored to industry standard. Specifically, some steps specify multiple actions. In contrast to this observation, the operators were positive about the revision to the Emergency Operating Procedures (EOP) recently implemented. The EOPs were reviewed and commented on by the operators and then trained on prior to implementation. The team notes that AOPs are currently being revised by the same individual that revised the EOPs and should be in a similar format when completed.
- Reviewed Operations Section Directives. The station is currently retiring these documents to other procedural guidance. For instance, two of twelve Equipment Operation procedures remain, seven of seven Personal Issues procedures remain, three of seven PR procedures remain, one of seven Shift Routine procedures remains, and one of four Training procedures remain. Administrative Work process guides are being retired as well. There is only one remaining guide left of an initial eleven. This initiative reflects an important transition to fleet level procedures, incorporating the best elements of the fleet.
- Reviewed all six open Standing Orders. Standing Order 06-003 is an engineering evaluation that looks like an operability evaluation. Further review indicates that the Service Water system could not meet the required flow rates to the Control Room Emergency Ventilation System (CREVS) under certain lineups. This was identified

while shutdown during RFO-14. The system was declared inoperable and a Mode Restraint issued. Under these conditions, the Corrective Action Program directs that the appropriate department provide justification for mode change. In this case, Engineering wrote an engineering evaluation that closely paralleled an Operability Determination in content and format. If the plant had been operating, a Prompt Operability Evaluation would have been prepared using the Immediate and Prompt Operability Determination Procedure, not a Mode Change Determination.

- The team observed that peer checks were used for all control room main control board valve and back panel switch manipulations. This is an improvement from last year's assessment when some peer checks were conducted from as far away as 15 feet. This is considered 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 (IAW) the Conduct of Operations procedure.
- Surveillances DB-SP-03161, Auxiliary Feedwater (AFW) Train 2 Level control, interlock, and flow transmitter Test and DB-MI-03012, Channel functional test of reactor trip breaker A, Reactor Protection System (RPS) channel 2 reactor trip module logic, and Anticipatory Reactor Trip System (ARTS) channel 2 output logic were observed by the team. The AFW test was observed in its entirety, including the pre-job and post-job briefs. Excellent briefs were conducted, with the SM interjecting at the end of the pre-job brief, covering areas of precaution that had not been addressed, e.g., heat stress considerations. Also noted during the conduct of the AFW surveillance were the board operators' actions taken when an unexpected alarm occurred (T/G vapor extractor deltaP LO, 15-1-D). Appropriate actions were taken, including the announcement of an unexpected alarm to the crew via a crew update, referencing the alarm response procedure, and contacting the Zone 1 operator to investigate. Following their investigation, it was determined that maintenance had commenced work on the turbine bearing lift pumps, but had failed to contact the control room prior to commencing work. Peer checks were routinely performed for all manipulations observed during both surveillances. Also, a quality assessment observer was present for the AFW pre-brief and the conduct of the surveillance. The post-job brief captured a couple of items that were primarily procedural enhancements, including the heat stress precaution that was presented by the SM during the pre-job briefing.
- The team also observed Surveillance Test DB-SC-04271, Station Black-Out Diesel Generator (SBODG) Monthly Test, Revision 9. The team observed similar performance to that noted in the preceding paragraph. At the conclusion of the test and during the post-job brief, the RO conducting the test noted that the diesel is supposed to idle at 450 RPM; however, the indicator indicated about 490 RPM. The indicator read 890 RPM at full load, rated speed for 60 Hz is 900 RPM. The RO was not sure if the indicator was incorrect or the diesel was idling at the wrong speed. CR-07-22389 was initiated to address this problem.
- Night Orders were still not being implemented IAW the new Conduct of Operations procedure. By procedure, they are allowed to be effective for up to 14 days; however, several night orders were dated back to May 21 of this year. Following discussions with the Operations Support Manager, the night order log sheets were revised with a header that informed Operations personnel that night orders, per the Conduct of Operations procedure, are only valid for up to 14 days. This statement is adequate to ensure that operators know not to use night orders that are more than 14 days old.

- 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.
- 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 team observed Equipment Operators (EO) on a total of five area tours of Zones one, two, and three. The rounds included the main turbine, turbine support equipment, switchgear rooms, SBODG, emergency diesel generators, switchyard, and the auxiliary building. 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, including the use of gloves.
- EOs used the back of their hands when checking equipment running temperatures. In one instance, an EO displayed additional precautionary measures when removing a caution tag clearance. As each of the caution tags were removed, he cut the tag partially in half, to prevent the re-usage in the event one or all of the tags were dropped or mistakenly misplaced. This was viewed as an excellent initiative on his part.
- Excellent usage of human performance tools. These included the use of STAR (Stop, Think, Act, and Review) and three-way communications.
- Operations personnel were aware of and knew the contingency actions to address EO Work Arounds.
- All three zones had housekeeping that was marginally acceptable. Zone 1 seemed to have the most equipment storage and loose material, such as hoses and other maintenance equipment. Some equipment was staged for use and contributed to the appearance, such as a sump pump and hoses in the lube oil storage room. This equipment is used to pump the sump to a dirty drain system since the installed sump pump goes to a drain system that is transferred to the environment. Many hoses in lower levels of the turbine building are for operating equipment such as dewatering resin and the Kaydon oil purifier skid. The auxiliary building (Zone 3) housekeeping and material condition was acceptable. Although floor paint exhibited a good deal of scrapes from moving equipment, it appeared clean. Many areas were not well lit but there did not seem to be any existing lights that were burnt out. This same observation was noted during the 2006 Assessment. EOs cleaned up loose material during their rounds. The station has emphasized the importance of maintaining the cleanliness of the plant to all personnel, not just the Operations department. The Oversight Organization routinely identifies issues in the area of housekeeping. Also, it is reinforced during observation tours with the EOs. The Operations support group had just completed a revised draft on NG-DB-00215, Material Readiness and Housekeeping Inspection Program, in an effort to enhance and maintain the plant housekeeping conditions at an acceptable level.



- 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.*
- EOs frisked appropriately when exiting a radioactive materials area (RMA). In one instance, the EO discovered a roll of duct tape left in an RMA. He appropriately frisked the roll of tape, in addition to himself, upon exiting the area and returned the roll of tape to its appropriate storage bin location.
- In one instance, the EO debriefed with the SM following the completion of his mid-shift tour. The SM displayed a questioning attitude and had the EO follow-up on a couple of items.
- The team did not identify any equipment deficiency that did not have a deficiency tag attached.

*EO job performance was Effective.*

*Material conditions in the plant were Acceptable.*

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

The team attended five shift turnover (TO) meetings.

- The team observed one turnover for each of the five crews.
- These meetings were controlled by the SM. The meetings started with an industrial personnel safety topic and 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. Meetings were attended by supervisors from the various plant departments such as chemistry, health physics, maintenance, etc. The morning TO meeting was also attended by senior plant management, such as the Site Vice-President, the Plant Manager and/or the Operations Manager.
- The SM discussed activities planned for the shift, any problem areas, any special operating conditions, and any Technical Specification Limiting Conditions of Operation (LCO)s that were applicable and their associated time constraints.
- 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 was minimal. This is a potential missed opportunity for teamwork in the spirit of INPO SER 3-05. We note that during the SM meeting attended by the team, the Turnover Check List is being revised to more actively involve the EOs.
- The manner in which and the length of time each shift conducted their turnover was similar in nature for each of the shifts observed.

*The team considers the Shift Turnover Meetings to be Effective.*

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

Team members attended several of the 8:00 a.m. meetings.

- These meetings had senior management personnel from all site departments.

- The meetings were well run by the Operations Manager or designee (i.e., Operations Superintendent).
- 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 team considers the 8:00 a.m. management meetings to be Effective.*

#### **Shift Manager's Meeting on Thursday June 14, 2007**

The team attended the SM meeting, in which all shift managers were in attendance, along with the Superintendent Operations and his soon-to-be replacement. Also in attendance was the Superintendent, Operations Services. A meeting agenda was presented to all present to discuss a wide variety of issues, including not only plant, but also personnel issues. This meeting is held every two weeks. The team found the meeting to be well structured and controlled, with active participation and discussion by all those present. The SMs meeting allows shift decisions to be made at the proper management level. Some of the items discussed were:

- Number of watches a Shift Engineer (SE) must stand to maintain the SRO license and SE qualifications.
- Upcoming procedure changes, Conduct of Operations and Reactivity Management.
- Fleet focused self-assessment of Operator Fundamentals (implementation of INPO SER 3-05).
- Housekeeping discussions and reviews of pictures illustrating plant housekeeping deficiencies.
- Plant issues and work schedule issues.
- Training issues.
- Union issues update.
- Personnel issues.

A noteworthy initiative from the FENOC fleet is the incorporation of the recommendations identified in the INPO Significant Event Report, SER 3-05, Weakness in Operator Fundamentals into the newly revised Conduct of Operations procedure, NOP-OP-1002, which is forthcoming. ***This is a Strength.***

*The team considers the biweekly 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 has improved since last year.
- 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.
- Implementation of INPO SER 3-05.

#### **Areas in Need of Attention -Area 1**

- The ODMI process is not effectively addressing industry experience.

#### **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 were 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 meeting was evident for all five crews.

Management's expectations are being communicated/enforced the same across all crews. The SMs readily communicate with the crews the results and decisions that are made during the SM meetings. 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 Manager's meetings resolve problems and make decisions at an appropriate level.

The actions being taken to implement INPO SER 3-05 is noteworthy.

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

#### **Area 2 - Interviews**

##### **Scope - Area 2**

The team interviewed 20 individuals, which included eight licensed (6 SRO and 2 RO), 5 management and 7 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 plant challenges. The following is a summary of issues that were voiced by a majority of personnel during the formal interviews.

## **Observations and Findings - Area 2**

- Morale was a big issue during the previous three assessments. This year, well over 75 percent of those interviewed said that morale was good. This was primarily due to changing to a 5-crew, 12-hour shift rotation, a work week schedule that is manageable, and an increase in the number of equipment operators.
- Only one operator 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. However, SRO manning was expressed as a concern by about 30 to 40 percent of those interviewed, including non-SROs. Although on-shift levels are at desired levels, minus one, the SROs have to get their own reliefs and have a hard time getting staff SROs because no one wants to work someone's shift on their days-off. In addition, shift SROs find it difficult to get promotions because it would leave the shift crew shorthanded. The current SRO class should help with this shortage if they are put on shift or in some way assigned to allow the experienced on-shift SROs a relief for leave and promotional possibilities. ***This is an Area in Need of Attention.***
- Operations personnel interviewed during this assessment thought the Operations Procedures were high quality at all levels of the organization. Some expressed concern about the engineering procedures that were reassigned to Operations in 2005. At the conclusion of the 2005 assessment, there was a procedure backlog of about 400 procedure changes. Since that time, the Operations department has inherited about 370 test procedures from Engineering (June 2005). The backlog, as of June 19, 2006, was approximately 580. A complete review was conducted by the licensee's Operations Support group subsequent to the 2006 assessment to determine the significance of procedure changes in the procedure change backlog. The review concluded that all the procedure changes were of low safety significance (CR-06-02435). The licensee also identified that procedure changes initiated via the SAP process sometimes had several procedure changes on one SAP notification. This required all changes to be made before the SAP notification could be closed. The licensee separated these multiple changes and assigned each one its own Document Change Request (DCR); this increased the number of procedure changes outstanding. The team reviewed the backlog which is divided into three groups of procedure changes, with Condition Report related considered the most important (28 outstanding); DCRs which are less important changes, such as enhancements (about 600 outstanding); and Engineering Work Requests (EWR) and License Action Requests (LAR) which cannot be implemented until the design or license action is complete (about 150 outstanding). That makes a total of about 780 changes. The Operations Support Manager has initiated several changes in an attempt to get in front of the backlog and be more proactive. He currently has only three procedure writers assigned; a fourth was reassigned to Work Control. One of the writers takes care of emergent issues, the second writer conducts a T+6 week review of the work week schedule to identify any procedures and respective changes that will be needed to

implement the work schedule and schedules the revisions for those procedures, the third procedure writer is on rotation of assignment to the Training Section and is currently rewriting the Abnormal Operating Procedures, which does not help with the backlog. A fourth individual, not a writer, is involved with the Design Interface Evaluation (DIE) review to see if any modifications or temporary modifications being implemented will require procedure changes and provides feedback to all departments, including the Operation's procedure writers group. In addition, the 15RFO outage schedule has been reviewed and procedures needed for the outage have been assigned to the appropriate operating crews for review and to identify changes needed for the outage. Changes for the outage are required to be submitted by July 29, 2007. All outage-related changes are required to be incorporated by September 28, 2007. The goal is to have the total procedure backlog down to 450 by the start of the outage, about December 29, 2007. With only two procedure writers, this is not likely to happen since they are staying even at this point. They need at least three full time procedure writers to begin to bring down the backlog. The team feels that the backlog and the changes contained are much better understood this year; however, the procedure backlog remains as an *Area in Need of Attention*.

- When the team asked what the interviewees considered to be the greatest challenge that faces continued safe operation of the plant, the team received some varying answers, depending on the individual's perspective and position in the organization. Outage planning, which is a site wide issue, and configuration control were the two answers given most frequently. Personnel through all levels of the organization were aware of the ongoing activities to address configuration control. **Workweek planning for the first time in four assessments was not an issue.** Management is aware of the need to successfully plan and implement a successful outage. Continued emphasizes on the importance of configuration control *continues to be an Area in need of Attention*.
- About 80 percent 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 implementation of Just-In-Time-Training (JITT). Interviewees stated that initiation of JITT was very helpful in their ability to successfully perform infrequently performed maneuvers, i.e., startup, shutdowns and special operations. Also, the equipment operators were very receptive to their inclusion into the JITT efforts. They felt that this training enhanced their performance and effectiveness in the field. Training continues to be an *Area of Strength*.
- Another issue during the interviews was the unwillingness of ROs to advance to the level of SRO. There are several issues. The perception of some of the ROs is that the pay difference between RO and SRO appears to be insufficient to compensate for the additional duties and responsibilities. In fact, many ROs, with overtime, make as much as or more than the SROs. Many ROs did not like the fact that SROs do not begin receiving overtime pay until they had contributed 5 hours of free time over the normal work week hours. ROs also did 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 EOs expressed some interest in going to the RO level, but most would not even consider the SRO level. Management is aware of this issue and has taken action to increase the number of SROs by sending current site employees from other departments to licensing class, hiring from other plants and college graduates without

prior experience. There are 10 SRO candidates in training in the current class. Plant management is making efforts to increase pay and find ways to allow ROs to remain in the union until they pass the NRC SRO exam. RO to SRO advancement concerns remain an *Area in Need of Attention*.

### **Areas of Strength – Area 2**

- Training was considered effective by 80 percent of those interviewed.

### **Areas in Need of Attention – Area 2**

- Inability of SROs to advance or take leave due to lack of replacements.
- Large procedure backlog.
- Maintain continued emphasis on configuration control issues (also noted in Condition Report Review).
- Unwillingness of Operation's Department ROs to advance to the SRO level

### **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 has improved significantly over last year's assessment primarily due to the 12-hour, 5-shift rotation and a manageable work week schedule.

Work week planning for the first time in four assessments was not considered an issue by the operators interviewed. This is noteworthy.

Operator training continues to improve and is considered a *Strength* by a majority of operations personnel.

All personnel interviewed appear to be dedicated employees carrying out their responsibilities to the best of their abilities.

Advancement of plant experienced Operations Department ROs continues to be a problem as well as the ability of SROs to advance or take leave due to manning issues.

## **Area 3 - Condition Report Review**

### **Scope - Area 3**

The team reviewed the ten Condition Reports (CR) that were initiated to address the Areas in Need of Attention identified during the 2006 Operations Performance Independent Assessment.

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

### **Observations and Findings - Area 3**

#### **Condition Reports Initiated to Address 2006 Operations Performance Independent Assessment Areas in Need of Attention (ANA)**

- COIA-OPS-2006-CR-06-02670: Component Mispositionings. This CR was written because the Confirmatory Order Independent Assessment (COIA) of Operations Assessment was concerned that numerous configuration control issues had been identified by the licensee, but the cause determinations were for the most part at a low level. This CR reviewed nine other CRs, three had apparent cause levels of determination, one was assigned Condition Adverse to Quality (CAQ) Closed, and five were assigned CAQ Fix. The team thought there should be at least an apparent cause or a limited apparent cause determination for all configuration control events. This CR is technically sound as it relates to the causes of the errors; however, it did not address the Operations Assessment Team's concern of depth of analysis. The team was informed verbally that all mispositioning events now get a Limited Apparent Cause Determination. There were no written directions to support that comment; however, the limited apparent cause classification is assigned and monitored by the Management Review Board (MRB) during the collegial review of new condition reports. *Actions were marginally Effective.*
- COIA-OPS-2006-CR-06-03241: Area in need of Attention (ANA) – Night Orders. The response to this CR is that the 14-day time period for Night Orders to remain in effect is administrative guidance. Procedure DB-OP-00006, Night Orders and Standing Order Log, in Paragraphs 4.1 and 6.1.2, imply that they should generally not exceed 14 days; however, NOP-OP-1002, Conduct of Operations, in Paragraph 4.6.4.2, states that that they are for short-term communication only and are only valid for 14 days. The team checked the Night Order Book on June 18, 2007, and found several Night Orders that were over 14 days old. The oldest was dated May 21, 2007. Following a discussion with the Superintendent of Operations Services, the night order log sheets were revised with a header that informed Operation's personnel that night orders per the Conduct of Operations procedure are only valid for up to 14 days. This statement is adequate to ensure that operators know not to use night orders that are more than 14 days old. *Actions were Effective.*
- COIA-OPS-2006-CR-06-03242: ANA – Post Job Briefs. This CR was discussed at the July 13, 2006, SMs Meeting. This places the responsibility on shift management to ensure that post job debriefs are held when problems are encountered. Following the Surveillance observations by the team, thorough post job briefs were conducted. *Actions were Effective.*
- COIA-OPS-2006-CR-06-03243: ANA – Industrial Safety. The team noted several individuals that were not wearing hearing protection in areas that were posted that hearing protection was required in high noise areas. The licensee used the information contained in 29CFR1910.95, Occupational Noise Exposure, Table G 16 to determine stay times at certain noise levels. Based on this information, the door to the turbine building safe walkway was posted as exempt from hearing protection while proceeding to and from the Control Room. Other high noise activities and areas remain posted. *Actions were Effective.*

- COIA-OPS-2006-CR-06-03244: ANA – Performance Indicators (PI). The team identified several performance indicators that had not been updated at the time of the 2006 assessment. All PIs have been updated and corrected. One item requires industry benchmarking to finish and is scheduled for completion at the end of June 2007. ***Actions completed were Effective.***
- COIA-OPS-2006-CR-06-03245: ANA – Operational Decision Making (ODMI). The team identified two issues with the ODMI process. One was the lack of a clear trigger point for action when testing the main turbine Master Trip Solenoid Valves (MTSVs) that were a problem during the last assessment. The team also wondered if the ODMI was being effectively used to address the leakage across the Pressurizer Pilot Operated Relief Valve (PORV) and a slight tube leak in the main condenser. NOP-OP-1010, Operational Decision Making, did not contain clear guidance about when an ODMI should be initiated. A change to NOP-OP-1010 was issued to clearly define when an ODMI should be issued and ODMIs were developed for the PORV, the Pressurizer Code Safety Valve and the Main Condenser tube leak. ***Actions were Effective.***
- COIA-OPS-2006-CR-06-03246: ANA – Parallel Processes. The Assessment Team identified three parallel processes issues that provide similar functions that could possibly result in error-likely situations. 1) Procedures NOP-OP-1010, Operational Decision Making and NOP-ER-3001, Problem Solving and Decision Making Process. The licensee rejected this suggestion noting that although similar, they are used for two different purposes. 2) Information Tags (IT) are used to provide information for equipment deficiencies, but are loosely tracked such that they may or may not be removed when the condition is fixed. Work Repair Tags (WRT) are hung on equipment and also give deficient condition information. The team suggested doing away with IT and use WRT. The licensee rejected the suggestion stating that the WRT and IT have two separate purposes, WRT are controlled by FENOC level procedure NOP-WM-1003 and IT are controlled by FENOC level procedure NOP-WM-4006. 3) The third example concerned the barring of the SBODG. The operations procedure was used to bar the diesel in preparation for the monthly surveillance test and did not isolate one air header in preparation for the monthly surveillance test. If the surveillance test had been used, one header would have been isolated. If the team had not been observing the monthly surveillance, an invalid test would have been conducted requiring a second test to prove that the diesel would start on only one air header. The licensee explained that the two tests have two different purposes and no further action is necessary. ***No corrective actions were taken.***
- COIA-OPS-2006-CR-06-03247: ANA Procedure Backlog. At the conclusion of the 2006 Operations Assessment, the procedure backlog was approximately 580 procedure revisions. A review by the licensee was completed after the assessment to determine the safety significance of the backlog. The review indicated that there were no DCRs that required immediate procedure changes. There were about 20 changes that were entered into the system as General Activity Tracking (GAT) items that required procedure changes. ***Actions were Effective.***
- COIA-OPS-2006-CR-06-03248: ANA – Work Week Management. During the 2004, 2005, and 2006 Operations Assessment interviews, the Operations personnel expressed concerns about the balance between Operations manpower and the Work Implementation Schedule of activities. There were several factors that influenced these concerns. During the past year, improvements in work scheduling and SMs review of the T+4 and T+3 workweek schedules to ensure that work scheduled does



not exceed the Operations on-shift manpower seems to have resolved the problem. Corrective actions seem to have solved the problem since this was not expressed as a concern during the personnel interviews conducted this assessment. *Actions were Effective.*

- COIA-OPS-2006-CR-06-03249: ANA – Lack of RO to SRO desire. During the 2006 Operations Assessment, ROs expressed an unwillingness to progress to the SRO level. Several reasons were given, such as insufficient pay for the responsibility and lack of union protection. To date, management has developed a couple of approaches to try to get ROs interested in advancing to SRO. There are ongoing efforts to increase pay and to allow ROs to remain in the union until they get their SRO license, at which time they would become management and leave the union. To date, there have not been any ROs take the SRO class; however, two have expressed interest in the next SRO class. *Actions to date have been Ineffective.*

*The team considers the overall performance to address the Area in Need of Attention CRs from the 2006 assessment to be Effective.*

#### **Other Condition Reports**

- 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-07-16847: Requirements of NOBP-OP-0011 not followed for down power. During the March 24, 2007, down power, it was identified that the required notifications were not issued to the Fleet Leadership Team, the Senior Leadership Team, the Duty Team, and FENOC Fleet Managers as prescribed in “planned power changes at critical steps.” The responsible individual was coached on the requirements and appropriate notification notes were made to the subsequent return to power schedule to prevent error. There were no concerns with this CR.
- CR-07-18109: Caution tag hanging on component but records showed tag removed. A caution tag was found hanging on NV08610 the local control station for CT861, a non-Technical Specification valve. The event was evaluated and did not result in any consequences. The EOs were coached and standards and expectations were stressed concerning the tagging program requirements and component verification. There were no concerns with actions on this CR.
- CR-06-9637, Wrong Fuse Pulled in RC2825 For De-energizing RE5403 Aux Relays. Four corrective actions were assigned to this CR and were appropriately dispositioned. This CR was later used as an example under CR-06-9743, which dealt with an adverse trend in configuration control at the site. There were no concerns with actions on this CR.
- CR-06-8387, Corrections for Emergency Diesel Generator (EDG) 2 Monthly Test (DB-SC-03071). This CR was initiated to correct incorrect step references within the procedure. There were no concerns with actions on this CR.
- CR-06-9257, License Operator Exam Failure. A licensed operator failed the Job Performance Measure (JPM) portion of his annual requalification examination.

Removal from licensed duties and remediation and retesting followed this failure. There were no concerns associated with actions on this CR.

- CR-06-8468, Schedule Adherence Issue – Channel 2 Containment Hydrogen Analyzer Work Week 642. There were no concerns with actions on this CR.
- CR-06-9743, Adverse Trend in Configuration Control. As listed in this CR, four instances of configuration control events had occurred within a period of five weeks. An apparent cause analysis was performed and resulted in eight corrective actions, all of which were satisfactorily completed. Some events have still occurred since completion of these corrective actions, although not at the frequency previously noted. One significant CR (07-22275, Turbine Plant Cooling Water (TPCW) Heat Exchanger Tube Leaked Water During Removal) was written during this inspection, which is currently being reviewed for a possible root cause analysis, initially categorized at the apparent cause level. In this instance, the work scope had been expanded via an addendum; however, Operations review of this expanded work scope did not occur, thus resulting in the penetration of a pressurized system, when maintenance started to remove a tube from the heat exchanger. Work was immediately stopped upon evidence of leakage, and Operations was contacted to isolate the TPCW side of the leaking heat exchanger. Although not a configuration control event attributable to Operations, it is being evaluated for site wide implications. Configuration control was also noted in the interview portion of this report. **Configuration control continues to be an Area In Need of Attention.**
- CR-07-21802, Heat balance inoperable due to letdown flow off scan. The reactor heat balance was inoperable from June 7, 2007, at 1440 until June 8, 2007, at 0747 when the computer point was returned to scan. Over an 8-hour period, the average license limit of 2772 MWth was exceeded. The average power was 100.06 percent. The team thought that this event should be reported to the NRC. A review of the licensee's Technical Specifications and 10 CFR Part 50.72 indicated that the event was not reportable. There were no concerns with this CR.

*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 2006 Operations Assessment were overall *Effective*.

Maintain continued emphasis on configuration control by following clearance procedures and lineups during normal operations, especially during refueling outages. Performance in this area during RFO-14 was *Marginally Effective* (2006 Assessment). The lack of configuration issues was considered a strength during the 2005 assessment.

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
- INPO SER 03-05 integration into the training program
- 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 two evaluated scenarios by two different crews (shift 3 and shift 5) during the assessment period. Both of the scenarios were an evaluated “as-found scenario,” preceded by a warm-up scenario. 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.

- During the observation of one evaluated “as found” scenario, the crew did not perform to management’s expectations, although crew critical tasks were successfully completed. Identified weaknesses by the crew and/or individuals were appropriately identified by the Training and Operations department’s evaluators and captured as crew focus areas for improvement. In this instance, the shift identified focus areas dealing with equipment advocacy. For the evaluated scenario, the shift took too long in evaluating the trip criteria for the operating condensate pumps. As a result, the pumps seized and resulted in an electrical lockout on a critical bus that further complicated their recovery efforts following a reactor trip. The shift members appropriately identified their weaknesses and listed these as individual and crew focus areas for the next cycle of training.
- Also, it was noted that consistent adherence to Conduct of Operations procedure (NOP-OP-1002), regarding the use of “task complete” and “crew update,” were, 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.

#### **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 utilized, when warranted.
- Adherence to procedures was observed.
- “White board” entries during scenarios varied from crew to crew.
- 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 command SRO. Subsequently, the crew’s SM, together with the entire crew, compared each others’ evaluated performance. Also, the Operations Superintendent was present to listen and interject 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.

## Classroom

- The team observed the conduct of one formalized training session; two training sessions that started the training cycle for the crews; 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 for their respective crew. The training session observed dealt with a review of administrative topics that dealt with clearance and tagging procedures, temporary configuration control, inoperable equipment tracking log, door maintenance, and Probabilistic Risk Assessment (PRA) risk matrix.
- 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 administrative topics refresher segment did an excellent job in making an administrative topic (Clearance/Tagging Program) as interesting as possible. Safety tagging questions were handed out to each licensed operator (a different question to each) and they were given 10 minutes to come up with an answer to the question assigned to them. Excellent discussion was noted between the operators and the instructor. In one instance, it was noted that different crews interpreted the requirements differently when racking out a breaker to provide proper isolation. Because of the different interpretation, the instructor assigned this as a “parking lot” item, in which an individual was assigned sole responsibility for determining the correct procedural requirement and subsequently have it applied across all of the shifts. In this instance, the shift engineer accepted responsibility for determining the correctness for this type of clearance and would subsequently ensure that the requirements were applied consistently across all shifts. The team suggested, after the presentation, that answers for the questions handed out to the operators might subsequently be provided to them. This would provide clarification and excellent reference material for site specific issues that were somewhat vague. The instructor agreed to take this recommendation under consideration.
- 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 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 by at least one individual. Because of the tight timelines during the training week, only those questions missed were discussed and reviewed. The team suggested that, at the end of the missed question review, the instructor could ask the operators if they had a question on any of the other exam questions that were not covered. The Operations Manager said that he would consider doing that during future training cycles.

#### **Areas of Strength – Area 4**

- Just-In-Time-Training was considered a strength based upon interviews and good crew performance during infrequent plant evolutions.

#### **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; however, they do not like some of the new fundamentals that are currently being instituted, i.e., static simulator examinations, and the list of required memory questions, thumb rules. They also prefer taking the cycle written exam in the simulator as they had in the past.

The "white board" was effectively used by the SE on Shift 3 during their evaluated scenario, whereas the SE on Shift 5 did not utilize it as effectively.

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 an improvement in the already 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, i.e., Conduct of Operations. Control room demeanor continues to improve over that which was observed a couple of years ago. Professionalism 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, Operations personnel seem to have a much better attitude and morale during this assessment than in any of those previous. Work week schedule assignments were considered reasonable, with minor exceptions noted.

The team concluded that *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. The purpose of these reviews was to assess the rigor, criticality, and overall quality of these assessments. These review included the following:

- FENOC Company Nuclear Review Board Meeting Minutes, July 14, 2006
- FENOC Company Nuclear Review Board Meeting Minutes, February 09, 2007
- FENOC Davis-Besse Fleet Oversight Audit Report, DB-C-06-02, April 1 - June 30, 2006
- FENOC Davis-Besse Fleet Oversight Audit Report, DB-C-06-03, July 1 - September 11, 2006
- FENOC Davis-Besse Fleet Oversight Quarterly Performance Report, DB-PA-06-04, Fourth Quarter – 2006
- FENOC Davis Besse Fleet Oversight Quarterly Performance Report, DB-PA-07-01, First Quarter - 2007
- Operations Integrated Performance Assessment (IPA), November 1, 2005 through April 30, 2006
- Operations IPA, May 1, 2006 through December 31, 2006

#### **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). This assessment was similar to that noted during last year's assessment. It is felt that the Operation's department is significantly doing a much better job of identifying and categorizing areas of concern and subsequently entering these concerns into the CAP. As an example, the Operations department's latest assessment was again seen as an improvement over previous years' assessments. It is now 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 program procedure non-compliance 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 two IPA reports indicated the following:

- The operations review team is dedicated to a review of the past six months' performance.
- 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 provided the training that helped during the November pressurizer safety valve replacement, feedwater heater outage, etc.
- 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, operational decision making threshold development, program/procedure non-compliance, and procedure backlog and content.
- Positive noteworthy items also continue to be part of the assessments, i.e., JITT, staffing.

#### **Areas of Strength – Section II**

- None identified

#### **Areas In Need of Attention – Section II**

- None identified

#### **Areas For Improvement – Section II**

- None identified

#### **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, i.e., configuration control issues, procedure backlog, etc. Again, the Operations department assessments continue to improve in 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 appear to be an improvement upon previous 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.

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-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-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.

**William B. Carsky**  
**Operations Director**  
**Three Mile Island Unit 1**

- 2006 to Present: *Exelon, Three Mile Island Unit 1*
  - June 2006 – present: Operations Director
- 1998 – 2006: *Exelon, Clinton Power Station*
  - May 2004 – June 2006: Shift Operations Superintendent. Supervised the Station Shift Managers.
  - 2003 – 2004: Shift Manager on shift.
  - 2002 – 2004: Control Room Supervisor on shift, provided direction to plant operators in response to normal, abnormal, and emergency conditions. Acted to ensure compliance with licensing requirements and ensure to ensure the safe operation of the unit or equipment to protect the health and safety of the public and the environment.
  - 1998 – 2001: Manager (Various), recruited for an eight member team to restart Clinton Power Station. Implemented organizational, programmatic, and plant improvements necessary for the May 1999 restart of the plant. During this time, executed key management positions including Design Engineering Director, Plant Engineering Director, and Instrument Maintenance Director. During these assignments, drew on peers and experts in implementing the following initiatives:
    - Implemented workforce training program improvements including an Integrated Plant Operations Course to improve support staff responsiveness to Operations and redesigned Engineering Continuing Training to foster a self-critical, continuous learning culture.
    - Implemented incentivized backlog reduction programs.
    - Implemented plant material condition management tools.
- 1996 – 1997: *Exelon, Corporate Headquarters*
  - Mechanical/Civil Engineering Branch Manager. Led a large highly technical engineering team in support of PECO Nuclear power plants. Led the team to high levels of emergent issue resolution through close communication with plant staffs, regulators, and experts. Delegated project responsibilities including equipment upgrades and component management programs.
    - Recruited industry technical experts to complete the team.
    - Implemented new training/qualification programs for Technical Experts.
    - Implemented an outage support team of technical experts.
    - Developed strategies to manage generation threats from such issues as containment penetration over-pressurization, inadequate Emergency Core Cooling System (ECCS) pump Net Positive Suction Head (NPSH), strainer clogging, and steam line resonance.
    - Closed the regulatory driven Motor Operated Valve (MOV) Program.
- 1987 – 1996: *Exelon, Peach Bottom Atomic Power Station.*
  - Staff Engineer in Maintenance, Work Control, and Engineering.
    - Implemented margin improvement strategies for all valve types.
    - Implemented an integrated scheduling process.
    - Implemented maintenance efficiency strategies.
    - Implemented and Asbestos Management program.
- 1987: Graduated from Rensselaer Polytechnic Institute with a Bachelor of Science Mechanical Engineering