February 25, 2004

MEMORANDUM TO: John A. Grobe, Chairman
Davis-Besse Oversight Panel

FROM: Geoffrey C. Wright, Leader, Davis-Besse Management ***/RA/***
and Human Performance Inspection Team

SUBJECT: RESTART CHECKLIST ITEM 4.b CLOSURE RECOMMENDATION

The Management and Human Performance inspection was designed to evaluate the licensee's actions in response to the degraded reactor vessel head issue. Specifically, the inspection was to evaluate the following areas: the licensee's root cause assessments, the licensee's corrective actions and their implementation, and the licensee's tools for monitoring the effectiveness of the corrective actions. Because of concerns which developed following the root cause analyses, the inspection also included an evaluation of the licensee's actions regarding safety conscious work environment (SCWE) and the employee concerns program (ECP). The inspection report for the Follow Up Management and Human Performance inspection, Report 50-346/04-03, will not be issued prior to the restart decision by the Oversight Panel. This memorandum serves to document the Team's overall conclusion with respect to Restart Checklist Item 4.b. Attachment 1 provides additional detail on the results of the Management and Human Performance inspection's three phases and the Follow Up inspection into the November 2003 SCWE survey results.

The Management and Human Performance inspection was divided into three phases to look at the three areas. Phase 1 evaluated the licensee's root cause analyses. Phase 1 concluded that while the initial analyses that the licensee had performed were acceptable, they had missed a number of areas and as such, the licensee needed to perform additional analyses to appropriately cover all potential areas of concern. Phase 1 results were documented in Inspection Report 50-346/2002015. Phase 2 reviewed the corrective actions associated with the root or contributing causes. The review looked at whether the actions would address the causes and the schedule for implementing the actions. Phase 2 concluded that the proposed corrective actions if properly implemented and monitored should preclude recurrence of the causes for the head degradation. Phase 2 results were documented in Inspection Report 50-346/2002018. Phase 3 evaluated the licensee's tools for monitoring the effectiveness of the management and human performance corrective actions. Phase 3 also evaluated the licensee's activities to improve the site's SCWE, the activities of the safety conscious work environment review team (SCWERT), and the current status of the employee concern program. Phase 3 concluded that the tools the licensee was using to monitor safety culture and SCWE were appropriate and provided valuable information in these areas. Further, Phase 3 concluded that the current ECP was appropriate and was functioning as designed. Phase 3 results were documented in Inspection Report 50-346/20003012.

Notwithstanding the generally positive characterizations above, the Team's review of the licensee's November SCWE survey, one monitoring tool that included safety culture attributes,

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identified that a number of key organizations had provided more negative responses to some questions then in March 2003. Specifically operations, plant engineering, quality assurance, and to a lesser extent maintenance provided more negative responses to questions dealing with production over safety/quality, SCWE, corrective action program, and management involvement then in May 2003. For example, operations went from 6% to 23.4% negative responses to the question “Management cares more about safety than cost and schedule,” Plant Engineering went from 6.6% to 12% negative responses to the question “I can raise nuclear safety or quality concern without fear of retaliation,” and Quality Assurance went from 0% to 8.7% negative responses to the question “I am aware of others who have been subjected to HIRD within the last 6 months.” Additional details are provided in Attachment 2. Because the responses raised questions regarding the continuing effectiveness of the licensee’s actions to improve safety culture, the Team determined that additional inspection was necessary to understand the cause(s) of the additional negative responses.

The Team developed a detailed inspection methodology to evaluate and independently validate the licensee’s assessment of the increases in negative responses. The inspection methodology included document reviews and interviews with approximately 120 individuals, in the departments of concern, to gain insights into why there was an increase in negative responses.

The Team validated, through independent inspection, that the licensee’s assessment of the causes for the increase in negative responses was appropriate. The licensee had used an appropriate approach to determine the causes of the decline and interviewed an acceptable sample of staff from the affected departments. Throughout the NRC interview process, the Team noted a less positive tone by the licensee’s staff when responding to questions dealing with the behavior and effectiveness of their management than the NRC Team noted during interviews in May 2003. The staff’s responses related in large part to work hours, schedule credibility, and management comments that appeared to be inconsistent with the licensee’s Leadership In Action training. The Team also noted that interviewees personally exhibited a high focus on safety and indicated that their management placed the highest priority on addressing safety concerns. While the licensee is developing additional corrective actions in response to their assessment, the Team concluded that the licensee’s immediate corrective actions were adequate for restart and that there were no outstanding issues that would preclude restart.

In summary, through the three phases and Follow Up inspections, the Management and Human Performance Team concluded that the licensee’s root cause analyses and associated corrective actions for the safety culture issues which resulted in the reactor head degradation, were appropriate. The Team also concluded that the corrective actions with the associated monitoring activities, have been sufficiently effective to provide reasonable assurance to preclude recurrence of the conditions which led to the degradation of Davis-Besse’s reactor vessel head. While additional actions are planned for continued improvement in the safety culture at Davis-Besse, no issues were identified that would preclude unit restart. Therefore, the Team recommended closure of restart checklist item 4.b.

Attachments:
1. Safety Culture Issues at the Davis-Besse Nuclear Power Station
2. Davis-Besse March and November 2003 SC/SCWE Survey Department Data - FENOC and Contract Employees

ATTACHMENT 1

SAFETY CULTURE ISSUES AT THE DAVIS-BESSE NUCLEAR POWER STATION

DEFINITION OF THE PROBLEM

On August 21, 2002, the licensee submitted its root cause analysis for the reactor pressure vessel head degradation. The licensee concluded that "there was a lack of sensitivity to nuclear safety and the focus was on justifying conditions," that there was "less than adequate nuclear safety focus," and that "there was less than adequate implementation of the corrective action program as indicated by addressing symptoms rather than causes." To address these cultural deficiencies in its past performance, the licensee created the Management and Human Performance building block in its Return to Service Plan. The building block was designed to further identify organizational performance and cultural causal factors, and to identify and track corrective action implementation.

NRC INSPECTION AND ASSESSMENT

The NRC structured its inspection in this area in three phases; (1) inspection of the root cause evaluations; (2) inspection of the corrective action development, prioritization and implementation; and (3) evaluation of the effectiveness of the corrective actions at improving organizational effectiveness and cultural.

Phase 1 - Inspection of the Root Cause Evaluations

The inspection's first phase was the assessment of the adequacy of the licensee's root cause evaluations. This inspection was conducted by Region III, NRR and contract staff experts in inspection and assessment, root cause evaluation techniques, and human and organizational performance. The licensee used the Management Oversight and Risk Tree (MORT) analysis technique to perform their overall root cause assessment. The inspection team found that the principles of MORT were properly applied; however, the scope of the assessment was not sufficient to reveal all potential causal factors. The licensee performed additional assessments in multiple areas including engineering, operations, and corporate support, among others. Review by the team revealed that the combined assessments resulted in sufficient breadth and depth to be confident that the causal factors were identified. During the course of these assessments, many contributors were identified, including deficiencies in the licensees safety conscious work environment, the ombudsman program, and safety culture at the facility.

Phase 2 - Inspection of the Corrective Action Development, Prioritization and Implementation

The same team returned to evaluate corrective action development and implementation to ensure those actions addressed all the causal factors. The licensee developed over 125 specific corrective actions. The team concluded that each of the causal factors was addressed in the corrective actions. In addition, the team concluded that the corrective actions were properly prioritized and sampled implementation of the corrective actions concluding that the

actions would be implemented properly. Corrective actions ranged from corporate governance issues and executive pay structures, policy and procedural alignment in safety culture areas, replacing the ombudsman program with a structured employee concerns program, establishing a formal safety conscious work environment program and addressing a multitude of organizational and communication issues.

Phase 3 - Evaluating the Effectiveness of Corrective Actions at Improving Safety Cultural

Recognizing the key role safety culture deficiencies played in the root cause of the head degradation event, the Panel determined that it was necessary to evaluate the effectiveness of the improvement in safety culture at the facility. Because the NRC has only broadly stated expectations in cultural areas, the approach the Panel employed was not to specifically assess organizational safety culture, but to ensure that the licensee had adequate tools to self-assess in the safety culture areas, that the assessments were appropriately performed and provided meaningful insights into organizational weaknesses, and that the licensee was responding to those assessment results by taking actions to ensure a continuing trend of improvement.

The Panel brought together a team of experts from Region III, NRR, RES, OE and contractors who were highly capable and credible in performing this type of assessment. The team utilized national and international guidance and standards as a foundation for its assessment. The team concluded that the combination of licensee internal management assessments, surveys, and independent assessments provided a solid foundation for understanding organizational safety performance strengths and weaknesses. The team also found that the licensee, with some exceptions, was using their corrective action program to address safety culture deficiencies. The team noted steady improvement in overall organizational performance in this area.

Recent Results of the SC/SCWE Survey

In November 2003, the licensee performed their third safety culture/safety conscious work environment survey of all staff. The results of all the surveys have been presented and discussed publicly. The first survey, conducted in August 2002, revealed significant cultural problems in many areas of the organization, including a significant lack of confidence in facility management's focus on safety. The second survey, conducted in March 2003, revealed double digit percentage improvements in many areas of the organization. The November 2003 survey showed steady or slightly improving overall organizational performance; however, several critical departments including operations, system engineering and quality assurance exhibited declines in some areas.

The NRC inspection team performed surveys of plant staff in May 2003 following the March 2003 survey to validate the veracity of the survey technique and implementation. Following the November 2003 survey results, an expanded team, including an individual from Region I, performed a follow-up inspection, to evaluate the licensee's assessment of the declines. The team performed detailed document reviews and conducted a survey of selected licensee staff in January 2004. The team found that in all cases, staff understood and would fulfill their responsibility for identifying safety concerns and had confidence that management would place the proper priority on addressing safety concerns. However, when the team contrasted its interview results from May 2003 with January 2004, the team identified a less positive perspective of some staff in their confidence in management's behaviors and effectiveness in other areas. The team concluded that the licensee had identified the

contributing factors to this decline, including excessive work hours, inadequate work scheduling resulting in schedule adherence problems, and poor or inappropriate communication vertically in the organization on critical management decisions. The team found that licensee management had identified and implemented short term actions to address these issues. The team concluded that the short term actions were adequate for the identified issues and, while some of the actions had not been in place long enough to obtain feedback on their effectiveness, other actions had received positive response from the licensee's staff. The licensee has committed to perform a follow up effectiveness evaluation, patterned after the initial evaluation, toward the end of the 2nd quarter 2004. The team considered this appropriate.

Conclusions

Overall, the three phases of the inspection and the Follow Up inspection revealed adequate cause assessments, sufficient corrective actions, and effective assessment techniques for measuring organizational improvement.

Attachment 2

Davis-Besse March and November 2003 SC/SCWE Survey Department Data - FENOC and Contract Employees

	All		Ops		Plant Engr		Maint		QA		Blank	
	Mar	Nov	Mar	Nov	Mar	Nov	Mar	Nov	Mar	Nov	Mar	Nov
Number of surveys	1139	780	100	77	107	75	285	167	24	23	87	14
Management care mor about safety than cost & schedule	15.2%	17.1%	6%	23.4%	18.7%	24.0%	21.4%	25.0%	0.0%	21.7%	18.6%	35.7%
Management expectations on safety and quality are reflected in appraisals, reward, and discipline	9.9%	12.5%	9.0%	11.7%	8.8%	16.0%	12.4%	16.2%	4.3%	13.0%	9.3%	8.3%
Resolution of nuclear safety and quality issues, including Root Cause is effective in our organization	10.2%	9.8%	6.0%	11.0%	16.9%	16.7%	11.2%	7.8%	4.2%	23.9%	11.2%	18.5%
CR issues are properly prioritized, evaluated and resolved in timely manner	13.2%	10.9%	6.0%	15.6%	16.8%	21.3%	14.4%	9.6%	4.2%	17.4%	12.8%	21.4%
CR process is effectively utilized by DB to resolve quality issues in timely manner	12.1%	11.4%	7.0%	14.3%	18.9%	18.7%	13.7%	7.2%	8.3%	26.1%	14.1%	21.4%
I can raise nuclear safety or quality concern without fear of retaliation	7.1%	6.5%	3.0%	5.2%	6.6%	12.0%	9.5%	11.4%	0.0%	0.0%	15.1%	7.1%
ECP will keep my identity confidential at my request	6.4%	9.3%	8.0%	11.8%	3.8%	12.0%	9.1%	7.2%	0.0%	13.0%	13.1%	14.3%
I am aware of SCWERT and its purpose	6.2%	8.5%	4.0%	11.7%	11.2%	14.7%	6.4%	10.2%	0.0%	13.0%	8.3%	14.3%
I have been subjected to HIRD within the last 6 months	8.1%	3.7%	5.0%	2.6%	8.5%	8.0%	9.5%	4.2%	0.0%	4.3%	21.2%	0.0%
I am aware of others who have been subjected to HIRD within the last 6 months	15.3%	7.3%	8.0%	13.0%	15.1%	18.7%	22.8%	4.3%	0.0%	8.7%	28.6%	7.7%