



# Davis-Besse Reactor Vessel Head Damage NRC UPDATE

January 2004

This is the seventeenth periodic update on the NRC response to the reactor vessel head damage at the Davis-Besse Nuclear Power Station. The updates will be available at public meetings of the NRC Davis-Besse Oversight Panel which is coordinating the agency's activities related to the damage.

## Inspection findings presented December 19, followups continue

Two NRC inspections at Davis-Besse, discussed in a public meeting on December 19, identified issues that required further evaluation and action by FirstEnergy.

The Restart Readiness Assessment Team had been reviewing the capabilities of plant staff and safety systems for possible startup of the plant. The second team evaluated management and human performance, focusing on the Davis-Besse's improvements in the areas of safety culture and safety conscious work environment.

As a result of these inspection findings, further NRC inspections were planned to review FirstEnergy's response to the issues raised. The followup management and human performance inspection began January 12. The followup inspection by the Restart Readiness Assessment Team was originally scheduled to begin the same day, but was deferred at the request of FirstEnergy.

In the December inspection, the restart readiness team observed issues associated with the control and coordination of work activities, adhering to procedures, and communications among the plant staff. None of the issues involved an immediate safety concern.

The Management and Human Performance Inspection (Phase III - Safety Culture) focused on FirstEnergy's actions to improve management effectiveness and human performance and on its processes to survey and assess the safety culture

### **NRC Process for Reviewing Possible Restart**

Before the NRC makes a decision on the possible restart of the Davis-Besse plant, the oversight panel will meet with FirstEnergy officials in a public meeting in the Oak Harbor area to discuss the utility's basis for requesting the agency's authorization for restart. The meeting, which has not been scheduled, will include a period for questions and comments from the public.

In addition to the presentation by the utility, the oversight panel will consider the results of an inspection to be performed by the Restart Readiness Assessment Team as a followup to its two-week inspection in December and a followup inspection looking at safety culture issues, which began January 12.

The NRC oversight panel will review the information presented in the restart meeting as well as the findings of NRC inspections and reviews since the plant was shut down in February 2002.

The panel will submit a recommendation to James Caldwell, NRC Regional Administrator, on the readiness of the plant, including its management and staff, to resume operations. The panel will also prepare a report discussing the basis of its recommendation.

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among the staff at Davis-Besse – how the management and workers identify and deal with safety concerns

The safety culture team had significant positive findings:

- FirstEnergy had implemented programs to address safety culture and safety conscious work environment issues that go well beyond regulatory requirements.
- The tools used by FirstEnergy to assess the safety culture and safety conscious work environment are adequate and appropriately implemented.

However, the team also observed that November 2003 survey of the safety culture attitudes of the plant staff had shown a significant – and unexplained -- decline in certain survey responses by the operations and engineering staffs when compared to the results of a survey eight months earlier.

More evaluation and assessment by FirstEnergy was needed to understand this issue.

The safety culture team's followup inspection was to review FirstEnergy's response to the survey results and to conduct an independent analysis of the issue.

The restart readiness team includes experienced NRC senior resident inspectors from across the country and other skilled NRC inspectors:

- Rick Skowkowski, Team Leader - Senior Resident Inspector, Byron (Illinois)
- George Wilson - Senior Resident Inspector, Duane Arnold (Iowa)
- John Zeiler - Senior Resident Inspector, Vogtle (Georgia)
- Jerry Blake - Reactor Inspector, Region II
- Jack Rutkowski - Resident Inspector, Davis-Besse (Ohio)
- Tim Hoeg - Senior Resident Inspector, Grand Gulf (Mississippi)
- Dave Passehl - Project Engineer, Region III

The followup safety culture inspection team includes:

- Geoffrey Wright, Team Leader - NRC Region III.
- Clare Goodman - Office of Nuclear Reactor Regulation, NRC Headquarters.
- Lisamarie Jarriel - Office of Nuclear Reactor Regulation, NRC Headquarters.
- Julius Persensky - Office of Nuclear Regulatory Research, NRC Headquarters.
- Michael Brothers - consultant, Brothers Engineering and Consulting.
- James Heller - NRC Region III.
- June Cai - Office of Nuclear Reactor Regulation, NRC Headquarters.
- David DeSaulniers - Office of Nuclear Reactor Regulation, NRC Headquarters.
- Molly Keefe - Office of Nuclear Regulatory Research, NRC Headquarters.

### **NRC Decision Process - continued**

Mr. Caldwell will confer with other NRC officials before reaching his decision of whether the plant may resume operation.

The decision on restart will be announced publicly. Mr. Caldwell's decision, along with the panel's recommendation and supporting report, will be posted on the NRC's web site.

If the NRC authorizes restart, it will perform augmented inspections of plant activities, including round-the-clock coverage for 10 to 14 days. The three-person NRC resident inspection staff will be assisted by other NRC inspectors.

The NRC Oversight Panel will continue to monitor plant activities and meet periodically with the utility and the public until the agency is satisfied that the plant's performance warrants resuming normal regulatory oversight.

## NRC Issues Three Inspection Reports

- **Reactor Coolant System Leak Test Inspection** (Report No. 50-346-03-23), issued December 5, 2003, includes the results of NRC inspections of the reactor coolant system test while at normal operating pressure in September 2003 and a detailed evaluation of the utility's inspections of the reactor vessel bottom head following the pressure test. The report notes that the results of this test offer the NRC "reasonable assurance that there are no pressure boundary leaks in the reactor coolant system." The report details one finding of very low safety significance: During leak testing of the reactor coolant system, plant staff failed to identify an active steam leak through a seal weld on a pressurizer valve.
- **Resident Inspectors Report** (Report No. 50-346/03-22), issued December 23, 2003, includes the results of six weeks of inspection by the NRC resident inspectors. The report details two findings of very low safety significance: (1) control room staff did not adequately control reactor coolant system pressure during reactor system cooldown which resulted in a reactor trip; and (2) emergency diesel generator relays were not properly labeled.
- **Backlog of Engineering and Maintenance Activities Inspection** (Report No. 50-346/03-24), issued January 5, assessed the potential risk impact of the activities Davis-Besse does not plan to complete before start-up. The inspection focused on a review of the plant's process for tracking backlogged open items, a review of the effectiveness of the process in justifying deferral, as well as the potential risk implications of deferred items. No findings of significance were identified.

## NRC Inspection Reports Being Prepared

- **Corrective Action Team Inspection** - This inspection looked at the effectiveness of the corrective action program at Davis-Besse – how the utility finds, evaluates, and fixes problems.
- **Completeness and Accuracy Review** - This inspection evaluated the findings of a FirstEnergy review of documents previously submitted to the NRC to assure that the information submitted was complete and accurate.
- **Management and Human Performance, Phase III (Safety Culture)** - This inspection focuses on FirstEnergy's actions to improve management effectiveness and human performance and its processes to survey and assess the safety culture among the staff at Davis-Besse – how the management and workers will identify and deal with safety concerns.
- **Restart Readiness Assessment Team Inspection, Part I** - this inspection was performed in December to review the readiness of the plant and the plant staff to resume plant operations safely and in compliance with NRC requirements.

## NRC Davis-Besse Oversight Panel

An NRC Davis-Besse Oversight Panel was created in April 2002 to make sure that all corrective actions, required to ensure that Davis-Besse can operate safely, are taken before the plant is permitted to restart and that Davis-Besse maintains high safety and security standards if it resumes operations. Should the plant restart, the Oversight Panel will evaluate if Davis-Besse's performance warrants reduction of the NRC's heightened oversight and, if so, recommend to NRC management that the plant return to a regular inspection schedule. The panel was established under the agency's Inspection Manual Chapter 0350.

The panel brings together NRC management personnel and staff from the Region III office in Lisle, Illinois, the NRC Headquarters office in Rockville, Maryland and the NRC Resident Inspector Office at the Davis-Besse site. The eight-member panel's chair and vice chair are John Grobe, a senior manager from Region III, and William Ruland, a senior manager from NRC headquarters.

## Davis-Besse Restart Checklist

The Oversight Panel has created a "restart checklist" categorizing 31 actions in seven major areas which FirstEnergy needs to complete before the NRC can consider making a decision on whether Davis-Besse may restart. The NRC oversight panel has determined that the utility has adequately completed 24 of those actions.

NRC inspections are directed at evaluating the checklist items as well as reviewing the ongoing work at Davis-Besse.

The completed items are shown in italics and have a check mark in front of the item. For the completed items, the list also includes the inspection report which documents the NRC's review of the item. The items that remain to be completed are underlined.

### 1. Adequacy of Root Cause Determinations

- ✓ 1.a *Penetration Cracking and Reactor Pressure Vessel Corrosion* (Report No. 50-346/03-04)
- ✓ 1.b *Organizational, Programmatic and Human Performance Issues* (Report No. 50-346/02-18)

### 2. Adequacy of Safety Significant Structures, Systems, and Components

- ✓ 2.a Reactor Pressure Vessel Head Replacement
- ✓ 2.b *Containment Vessel Restoration Following Reactor Pressure Vessel Head Replacement* (Report No. 50-346/03-05)
- ✓ 2.c *Structures, Systems, and Components Inside Containment* (Report No. 50-346/03-10 - to be issued)
- ✓ 2.c.1 *Emergency Core Cooling System and Containment Spray System Sump* (Report No. 50-346/03-17)
- ✓ 2.d *Extent-of-Condition of Boric Acid in Systems Outside Containment* (Report No. 50-346/03-22)
- 2.e High Pressure Injection Pump Internal Clearance/Debris Resolution

### 3. Adequacy of Safety Significant Programs

- 3.a Corrective Action Program
- ✓ 3.b *Operating Experience Program* (Report No. 50-346/03-09)
- ✓ 3.c *Quality Audits and Self-Assessments of Programs* (Report No. 50-346/03-23)
- ✓ 3.d *Boric Acid Corrosion Management Program* (Report No. 50-346/03-17)
- ✓ 3.e *Reactor Coolant System Unidentified Leakage Monitoring Program* (Report No. 50-346/03-09)
- ✓ 3.f *In-Service Inspection Program* (Report No. 50-346/03-09)
- ✓ 3.g *Modification Control Program* (Report No. 50-346/03-09)
- ✓ 3.h *Radiation Protection Program* (Report No. 50-346/03-17)
- ✓ 3.i *Process for Ensuring Completeness and Accuracy of Required Records and Submittals to the NRC* - (Report No. 50-346/03-19 - to be issued)

### 4. Adequacy of Organizational Effectiveness and Human Performance

- ✓ 4.a *Adequacy of Corrective Action Plan* (Report No. 50-346/02-18)
- 4.b Effectiveness of Corrective Actions

### 5. Readiness for Restart

- ✓ 5.a *Review of Licensee's Restart Action Plan* (Report No. 50-346/03-22)
- 5.b Systems Readiness for Restart
- 5.c Operations Readiness for Restart
- ✓ 5.d *Test Program Development and Implementation* (Report No. 50-346/03-25 - to be issued)

6. **Licensing Issue Resolution** (Items 6a-6f discussed in Report No. 50-346/03-04 and Item 6g discussed in Report No. 50-346/03-17)

- ✓ 6.a *Verification that Relief Requests A8 and A12 regarding the Shell to Flange Weld (previously submitted by letter dated September 19, 2000) is not Impacted by the Midland RPV Head*
- ✓ 6.b *American Society of Mechanical Engineers (ASME) Code Relief Request for Failure to Maintain Original Radiographic Tests of the Midland Head to Flange Weld (Planned Relief Request A26)*
- ✓ 6.c *ASME Code Relief Request for Inability to Radiographically Test 100% of the Midland Reactor Pressure Vessel Head to Flange Weld (Planned Relief Request A27)*
- ✓ 6.d *Resubmit Relief Request A2 (previously submitted by letter dated September 19, 2000) for ASME Code for Inability to Perform 100% volumetric and surface examination of Head to Flange Weld*
- ✓ 6.e *Reconciliation Letter that Demonstrates How the New Reactor Pressure Vessel Head Correlates With the ASME Code and QA Index for Section III and Section XI - Commitments*
- ✓ 6.f *Verification Letter of Technical Specification Pressure/Temperature Curves for New Vessel Head - Commitment*
- ✓ 6.g *Request to relocate High Pressure Injection and Low Pressure Injection Subsystems Flow Balance Testing from Technical Specifications 4.5.2.h to Updated Safety Analysis Report Technical Requirements Manual*

7. **Confirmatory Action Letter Resolution**

- 7.a Verification that Confirmatory Action Letter Items are Resolved, Including a Public Meeting to Discuss Readiness for Restart

**Public Participation in the Process**

The NRC's experience is that members of the public, including public officials and citizens, often raise questions or provide insights that are important to consider. If you have questions or want to provide information or a point of view, please contact us. For feedback on this newsletter, contact Viktoria Mitlyng 630/829-9662 or Jan Strasma 630/829-9663 (toll free 800/522-3025 - ext -9662 or -9663). E-mail: opa3@nrc.gov. Extensive information about the Davis-Besse reactor vessel head damage and the ensuing activities is available on the NRC web site: <http://www.nrc.gov> - select "Davis-Besse" under the list of key topics.