

June 26, 2002

MEMORANDUM TO: File (Davis-Besse)

FROM: Douglas V. Pickett, Senior Project Manager, Section 2 */RA/*
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

SUBJECT: DAVIS-BESSE NUCLEAR POWER STATION - SUMMARY OF
NUCLEAR REGULATORY COMMISSION (NRC) ACTIVITIES FOR THE
WEEK OF APRIL 1, 2002, RE: CONTROL ROD DRIVE MECHANISM
(CRDM) NOZZLE PROJECT (TAC NO. MB4479)

April 1:

We held a telecon with the Augmented Inspection Team for a final debrief prior to their April 5 public exit meeting. Items discussed included the following:

- Reactor coolant system (RCS) leakage is only a contributing factor and not the sole consideration.
- Containment air coolers required cleaning when RCS leakage increased in the 1998 time frame. Not considered a smoking gun.
- 17 containment entries documented to examine for RCS leak source.
- 15 five gallon bags of boron crystals removed from containment air cooler plenum.
- Most significant indicator of problem was radiation element filters. Filter paper analyzed as deposits identified as corrosion products. Not a general surface problem, but a ferritic source. Licensee apparently confused over meaning. Frequency of filter paper change-out increases from monthly in May 1998 to nearly daily by November 1998.
- Reactor pressure vessel (RPV) head ventilation outlet had corrosion. Plume of corrosion throughout containment. Missed opportunity.
- Principal source of boric acid on the RPV head in the 1980s came from flange leakage. Common Babcock & Wilcox problem. Flange gaskets replaced.
- Service structure has 18 "weep" or "mouse-holes" for inspection. They measure 5" x 7".
- April 1990 they had 22 leaking flanges. April 1991 they had 21 leaking flanges. During latter outage, only 15 repaired as they ran out of outage time.
- Scant documentation of cleaning RPV head of boron buildup in 1991. They vacuumed and brushed boron crystals. Nozzles cleaned based on a priority basis. No irregularities noted on RPV head.
- Boric Acid Control Program should have required licensee to clean boron, perform inspections, and repair leakage paths.
- March 1993 licensee repaired 11 of 14 leaking flanges. Performed washdown of RPV head. Brown and white deposits, discrete patches noted on head. Boron concentrated on center of head.
- 1994 outage where 8 leaking flanges were identified and all were repaired. No record of RPV head examination or video tapes.

- 1996 outage documentation shows 9 flanges were repaired but not clear how many flanges were found to be leaking. Several patches of boron deposits noted. Brown stains referred to as either flange or nozzle leakage. Boron vacuumed. Licensee did not expect corrosion. Approximately 50-60 percent of RPV head examined via video tape. Clumps of boric acid seen and a layer of crystals identified at center of RPV head. Licensee realized they were not conforming to boric acid control program by not cleaning RPV head.
- 1998 outage one flange found leaking, but it was not repaired. Uneven layer of boric acid observed in center of RPV head. Rust in color. Head cleaned as best they could. Leakage considered minimal and flange leakage considered solved.
- Video tape used in response to Bulletin 2001-01. Nineteen penetrations obscured by boron deposits. Penetrations 3 & 11 covered. Physical appearance changed.
- 2000 outage five leakage flanges were all repaired. Boron deposits take on reddish color. Boron leakage observed from weep holes.
- 2002 outage shows 12 penetrations obscured by deposits. No leaking flanges. Flange around nozzle 3 had 9" high deposit of boron.
- Nozzles 1, 2, 3, 5, & 47 had cracks. Nozzle 46 had shadows but no indications.
- Degradation around nozzle 3 described as 6" by 4-5" with undercut. Cladding bulged and some debonding observed.
- Nozzle 2 had degradation surrounding nozzle.
- Results show Nozzle 1 with 9 cracks; Nozzle 2 with 8 cracks (later to become 9) with 5 through-wall and 1 circumferential; Nozzle 3 with 4 cracks; Nozzle 5 with 1 axial crack; and Nozzle 47 with 1 axial crack.

Participants included:

Keith Wichman	Allen Hiser	Tony Mendiola	Bill Cullen
Stephen Sands	Singh Bajwa	Steve Long	Ho Neih
Ken Karwoski	Stephanie Coffin	Terence Chan	Andrea Lee
Jay Collins	Doug Pickett		

April 1:

Attachment 1 is the licensee daily status summary, which is used as the agenda for the daily status call. Licensee is grinding on nozzle 46 and intends to pull nozzles 2 & 11 this week.

Participants included:

Allen Hiser	Carol Moyer	Jay Collins	Stephen Sands
Steve Long	Ken Karwoski	Tim Steingass	Andrea Lee
Keith Wichman	Doug Pickett		

April 2:

A telecon was held with the licensee (Dale Wuokko, Mike Leisure, Rob Borland) with Reactor Systems Branch (Tony Attard, Frank Akstulewicz) and Doug Pickett to discuss licensee's plans to relocate control rods. Items from telecon included:

- We conclude that Item #4 of the confirmatory action letter (CAL) requires staff approval of control rod relocation.
- We believe licensee can conduct maneuvers via 50.59, but CAL requires our involvement. We will probably document our review via a safety evaluation.
- Davis-Besse RPV head has eight spare CRDM penetrations. One is a vent and the remaining seven are capped with a flange. Revised design to retain 53 rods.
- Fortunate in that rod relocations are symmetric. All mods to be done electronically. No safety impact seen. Power distribution will not change.
- Startup testing to verify rod grouping. No impact on design-basis accidents.
- We agree that April 10 public meeting on repair concepts to include session on relocation of control rods.
- Nothing unique cited in relocation plans. Frank Akstulewicz predicts 4-week turnaround. This review will not be critical path. Power uprate amendment not anticipated prior to mid-June or July restart. Licensee can assume Caldon uprate for the CRDM relocation.

April 3:

Attachment 2 is the licensee daily status summary, including the revised integrated plan for Nozzle No. 2. Items discussed included:

- The staff questioned potential noncompliance with the quarantine requirements of CAL Item No. 1, as noted in Attachment 3. Nozzle 2 and 3 had already been removed without our pre-approval. Nozzle 3 had already been shipped to Framatome in Lynchburg, VA, without our knowledge.
- Licensee to provide plan for cutting 13" cavity next week.
- We provide approval for Items 9 & 10 of Nozzle 2 inspection plan.
- No call for Friday

Participants included:

Tony Mendiola	Bill Bateman	Allen Hiser	Keith Wichman
Bill Cullen	Tim Steingass	Ken Karwoski	Andrea Lee
Terence Chan	Ed Andruszkiewicz	Steve Long	Stephen Sands
Doug Pickett			

April 4:

NRC Information Notice 2002-13, "Possible Indicators of Ongoing RPV Head Degradation," was issued.

April 5:

Region III issued PNO-III-02-006B (second update to the original PNO).

Docket No. 50-346

Attachments: 1. April 1 licensee status summary (1 page)
2. April 3 licensee status summary with revised integrated plan for nozzle No. 2 (5 pages)
3. E-mail from D. Pickett (NRR) to A. Hiser (NRR), et al., dated April 3, Davis-Besse question of quarantine (2 pages)

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DATE	06/22/02	06/13/02	06/26/02