

December 24, 2008

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of

DAVID GEISEN

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Docket No. IA-05-052

ASLBP No. 06-845-01-EA

NRC STAFF SUMMARY

Pursuant to the Board's request, the Staff hereby files the attached summary of key points in the Staff's case. The summary focuses on the evidence demonstrating Mr. Geisen's knowledge of the inaccuracies and omissions in submittals to the NRC. These points will be supplemented in the Staff's final brief due to be filed January 16, 2008.

Respectfully submitted,

/RA/
Lisa Clark
Shahram Ghasemian
Kimberly Sexton

Dated at Rockville, Maryland
This 24th day of December, 2008

NRC STAFF HEARING SUMMARY

This summary is focused on the primary issue contested in the proceeding – Mr. Geisen’s knowledge of inaccuracies and omissions which concealed the fact that the entire reactor head could not be inspected and that the existence of boric acid on the head prevented detection of popcorn-like deposits indicative of nozzle leakage. The following summary is divided in two parts. The first part establishes Mr. Geisen’s knowledge before the first submittal. The evidence shows that he knew (1) the importance of thorough inspections to find nozzle leakage and (2) inspections of the reactor head were limited because of restricted access and because of existing boron deposits. The second part establishes that all of the subsequent information received by Mr. Geisen, during the time he approved or made submissions to the NRC, confirmed his prior knowledge that inspections of the reactor head were limited.

I. Mr. Geisen’s Knowledge Prior to Serial Letter 2731, Dated September 4, 2001.

A. Mr. Geisen Knew That the Adequacy of Head Inspections to Detect Nozzle Cracking was a Safety Concern to the NRC

As a member of the B&W Owners Group, beginning in March 2000, Mr. Geisen was briefed about the small, popcorn like deposits found at Oconee. Tr. 1804-6. He also was informed that Oconee had found a large circumferential crack, measuring 165 degrees. Tr. 1808. Mr. Geisen knew, from the information in the NRC Bulletin issued on August 3, 2001, that the findings at Oconee raised a NRC concern that reactor head inspections were adequate to find small indications of leakage before significant circumferential cracking occurred. NRC Bulletin at pp. 2, 3, 4, 5 and 8; Tr. 1817-18, 1819. He knew that, because of that concern, the NRC was requesting specific information about past inspections of the head. He believed that the NRC was looking for a VT-2 inspection, including a full 360 degree view of every nozzle. Tr. 1820-22.

Mr. Geisen read trip reports prepared by Mr. Goyal. Tr. 1850-1. A report of January 2001 informed him that Oconee had found boric acid because they had a pristine head and their flanges did not leak. Staff Ex 22; Tr. 1853. Mr. Geisen conceded that he knew that Davis-Besse satisfied neither condition, since he knew at the time that Davis-Besse had a history of flange leakage and the head had not been satisfactorily cleaned. Tr. 1854. Mr. Geisen understood the NRC’s expectation that a visual examination of all nozzles was necessary to reliably detect indications of leakage, as reported in a trip report he received in August 2001. Staff Ex 40, Tr. 1863–64.

B. Mr. Geisen Knew That Davis-Besse Head Inspections Were Impeded

1. Mr. Geisen Knew Boron Deposits Impeded Inspections

Entering the 12th RFO, in April 2000, Mr. Geisen knew that Davis-Besse had a history of flange leakage and knew that this would have resulted in boron deposits on the head. Tr. 1846. From reading the Outage Insider, in April, 2000, he knew that the flange leakage had deposited a lot of boric acid on the head and that access to the top of the head was very difficult through the weep holes. Staff Ex 18; Tr. 1848.

During the 12th RFO, Mr. Geisen saw two condition reports (“CRs”) which identified the presence of large boron deposits on the reactor head. CR 2000-1037, identified large accumulations of boron on the reactor head. Staff Ex 18; Tr. 1831. Mr. Geisen was directly

involved in resolving the CR because he removed it from the mode restraint list based on his review and assessment that the necessary cleaning would be accomplished. Tr. 1838. He was also directly involved in the cleaning because he approved the use of pressurized hot water on the head after the methods regularly used were not working. Tr. 1840. His understanding of the regular method was vacuuming and possibly using rods to break up clumps. Tr. 1840.

The other CR, 2000-0782, identified the presence boric acid leakage from the weepholes that was lava like and red brown in color. Staff Ex. 19, Tr. 1841. Mr. Geisen recognized that the coloration indicated that the boron had corrosion products in it. Tr. 1841. Mr. Geisen saw a photograph of the boron leaking from the weepholes similar to those attached to CR 2000-1037 ("red photo"). Staff Ex. 66; Tr. 1569, 1844. He agreed with the description of the boron flow as lava like, meaning that it was in a liquid-like form. Tr. 1845. The presence of a liquid state was not consistent with what he expected to see on the reactor head because the ambient temperature, close to 600 degrees, would dry the boron. Tr. 1843. He recognized that the photo was "ugly." Tr. 1569, 1844.

The significance of the conditions described above and shown in the red photo was explained by witnesses knowledgeable about PWRs. Jack Martin, an engineering consultant and former NRC Regional Administrator, testified that the red photo should have been viewed as a substantial problem. Tr. 1521. He noted that Davis-Besse, like other B&W plants, had had a problem with leaking flanges. Tr. 1520 – 21. He then explained that it had been thought that boric acid deposits would be a snow-like material that could be easily cleaned since it would not adhere to a head at 600 degrees. Tr. 1521. He noted that the ceramic-like red deposits seen in the photo were indicative of corrosion products. Tr. 1521. Dr. Hiser, the Staff technical member with lead responsibility for the Bulletin, testified that the red photo indicated a significant corrosion event on the vessel head. Tr. 1289. He noted that the red photo would have been very material to the NRC's understanding of the condition of the vessel head during the fall of 2001. Tr. 1289-90. In fact, he stated his belief that if he had been provided with a copy of the red photo, it would have caused him to push for immediate shutdown of the reactor. Tr. 1289.

In June, 2001, Mr. Geisen approved an engineering evaluation which reported that, during the 12th RFO, large boron leakage did not permit detailed inspection of the nozzles. Staff Ex. 31. This information did not surprise him because he already knew that large boron deposits prevented a detailed inspection of the nozzles. Tr. 1870.

Mr. Geisen saw the results of the inspections first-hand by viewing videotapes and pictures obtained from the videotapes for the first time in August 2001. Jack Martin interviewed Mr. Geisen during a management and organizational evaluation conducted at Davis-Besse in March 2002, immediately after discovery of the cavity. Tr. 1474-75. Based on his interview notes, Mr. Martin testified that Mr. Geisen told him that he reviewed videotapes of the inspections for interactions with the NRC in August 2001.

2. Mr. Geisen Knew Limited Access to the Reactor Head Impeded Inspections

The head inspections conducted at Davis-Besse before the issuance of the Bulletin were conducted using a camera mounted on a stick. The camera was inserted through small openings at the bottom of the head called "mouse holes." Because of the geometry of the head and service structure, the camera could not reach the top of the reactor head using this technique. According to Staff expert testimony, only the first three of five rows of nozzles could be viewed using this inspection method. Tr. 899, 901. Accordingly, it was impossible to view

the nozzles at the top of the reactor head. Mr. Geisen acknowledged that he was aware of the structural limitation on inspection of the head. Tr. 1822-23, 1934-35, 1936, 1958-59.

A trip report of July 2001, noted that one lesson from Oconee was that service structure access was necessary to clean and inspect the head. By that time, Mr. Geisen knew Davis-Besse did not have access holes although a modification for them, dating back to 1994, was outstanding. Tr. 1858-60, 1879. He testified that a volumetric examination was to be conducted for the next outage (13RFO) because he knew that they could not examine the top of the head using the camera on a stick inspection technique. Tr. 1880.

II. Additional Inspection Information Mr. Geisen Obtained While Responding to NRC Bulletin

As explained above, Mr. Geisen knew that the purpose of the NRC Bulletin was to determine whether head inspections were adequate to detect small popcorn-like deposits indicative of nozzle leakage. He also knew that Davis-Besse had been unable to conduct inspections of the entire head because of limited accessibility and because of existing boron deposits. Nevertheless, he read and approved Serial Letter 2731, dated September 4, 2001, even though it failed to identify any impediment to inspection in response to the NRC's request to "[i]nclude a description of any limitations (insulation or other impediments) to accessibility of the bare metal of the RPV head for visual examinations." Staff Ex. 9 at p. 2; Staff Ex 10. Mr. Geisen conceded that this was not a fair answer to the Staff's question. Tr. 1939-40.

Mr. Geisen was again informed of inspection limitations in a report prepared by Gregory Gibbs, a consultant to FENOC. According to the report, (1) access to the head was severely restricted by the mouse holes and (2) large boron deposits were on the head in a consultant report of September 2001. Staff Ex. 44. This document pertained to matters within his responsibilities and was prepared at the request of his supervisor. Tr. 1887. As such, it was an important matter for him to review in his duties. Tr. 1887. He conceded receiving and reading the document, Tr. 1892 -93, and that he would have read it according to the priority assigned to it. Tr. 1895. Because he would have noticed that it was prepared at this supervisor's request when prioritizing it, Tr. 1895-96, it is likely that he read this document before the teleconference of October 3, 2001.

Mr. Geisen's involvement in the NRC submittals increased after a September 28, 2001, call from Brian Sheron of the NRC to Bob Saunders, FENOC's President and CNO. FENOC management expressed significant concerns relating to the Bulletin responses after Mr. Sheron suggested "Davis-Besse [should] reconsider [its] response to the bulletin and consider shutting down by the end of the year and perform an inspection of the reactor vessel head CRD nozzles." Staff Ex. 46. Accordingly, a teleconference with the NRC staff was scheduled for October 3, 2001. According to Mr. Geisen, the only inspection information he reviewed to prepare for the meeting was Serial Letter 2731. Tr. 1693. However, Mr. Geisen was unable to point to any language in that submittal that supported his concededly false statements during the conference call that 100% of the head had been inspected during 12 RFO and, based on that inspection, the existence of boric acid deposits precluded definitive conclusions for only 5 – 6 nozzles at the top of the head. Tr. 1920-1.

Following the October 3, 2001 conference call, Mr. Moffitt gave Mr. Geisen two tasks: oversee the development of (1) a nozzle-by-nozzle table requested by the NRC and (2) a crack growth rate model. Tr. at 1690. Mr. Geisen assigned Mr. Siemaszko to develop the nozzle table. Tr. at 1692. Mr. Geisen met with Mr. Siemaszko for about an hour within the week after the assignment, but before the October 11, 2001 technical assistants' briefing, to check Mr.

Siemaszko's methodology and acceptance criteria. Tr. at 1697-8. During that meeting, Mr. Siemaszko showed him portions of the videos of past inspections.

During a meeting on October 10, 2001, when the slides to present to the NRC Commissioners' technical assistants were developed, Mr. Geisen acted as the scribe and put in the information regarding inspections. Tr. 1925. On October 11, 2001, Mr. Geisen presented two slides to the Commissioners' technical assistants: (1) Slide 6 stated "[c]onducted and recorded video inspection of head during 11RFO (April 1998) and 12 RFO (April 2000) . . . No head penetration leakage was identified" and (2) Slide 7 stated "[a]ll CRDM [control rod drive mechanism] penetrations were verified to be free from "popcorn" type boron deposits using video recordings from 11RFO or 12RFO" and "[p]opcorn" type boron deposits were found to be evidence of a circumferential nozzle crack on the RPV head at the Oconee Nuclear Power Plant." Staff Ex. 77 at 4-5; Tr. 1720, 1926-7.

By the time of the TA briefing, Mr. Geisen had obtained no information to support these statements from Mr. Siemaszko, as the nozzle-by-nozzle table had not been completed and his review of the inspection videos with Mr. Siemaszko was limited to portions of the inspections. Tr. 1925. Mr. Geisen conceded that his knowledge of head inspections contradicted the statements he made during that meeting. Tr. 1930, 1945-6. He further testified that he knew the nozzle table could not be reconciled with his statements when it was completed. Tr. 1931-32, 1945.

Based on all of the foregoing information, Mr. Geisen knew that Davis-Besse had been unable to conduct inspections of the entire head because of limited accessibility and because of existing boron deposits. Nevertheless, he read and approved Serial Letter 2735, dated October 17, 2001. Serial Letter 2735 stated that a whole head inspection had been conducted during the 10th, 11th and 12th RFOs in accordance with the Boric Acid Corrosion Control Program (BACCP). Staff Ex. 11 at p. 2, Staff Ex. 12. Mr. Geisen conceded that he knew that compliance with the BACCP required access to the bare metal of the head for visual examination, and that Davis-Besse had not complied with that requirement. Tr. 1939. Mr. Geisen read and approved the submittal of the same inaccurate and incomplete statements in Serial Letter 2744, dated October 30, 2001. Staff Ex. 13 at p. 2.

In Serial Letters 2735 and 2744, Mr. Geisen wrote notes for the attached nozzle tables prepared by Mr. Siemaszko. Tr. 1952, 1960. He explained the absence of any nozzle-by-nozzle information for the 1996 inspection by the absence of any orientation narration on the video. Tr. 1960. Nevertheless, he wrote that the entire RPV head had been inspected (in 2735, Staff Ex. 11 at Attach. 2, p. 2 of 2), that 100% of the nozzles were inspected by visual examination and that except for nozzles 1, 2, 3 and 4, none of the nozzles showed any evidence of leakage (in 2744, Staff Ex. 13 at 8). Mr. Geisen wrote those notes knowing that those representations could not be accurate because the entire RPV head could not be inspected using the technique employed during 1996. Tr. 1934-36.

During the ACRS meeting of November 9, 2001, Mr. Geisen provided an incomplete answer in response to a question as to the extent of limitations on the 1998 and 2000 inspections. Although he knew the inspections were limited because of restricted access through the weepholes and because of boric acid deposits, he failed to mention either in his response. Staff Ex. 59; Tr. 1972-73.

During the ACRS meeting, Mr. Geisen also provided inaccurate and incomplete information when he stated that the 1996 inspection provided the best views of the head because it was

following a vacuum and probe looking for head wastage. Staff Ex. 59 at 398. As explained by Staff expert Mr. Holmberg, the cleaning video showing the vacuum was only a few minutes long and did not provide any afford any additional views of the nozzles. Tr. 937-38. Mr. Geisen knew the inspection information was obtained only from the as found inspection, which was conducted before cleaning. Tr. 1702. Mr. Geisen knew, but did not tell the ACRS, that the 1996 inspection afforded better views of the nozzles because the later inspections were obscured by substantial boron deposits which had accumulated on the head. Tr. 1969-73.

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CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF SUMMARY" in the above captioned proceeding have been served on the following persons by deposit in the United States Mail; through deposit in the Nuclear Regulatory Commission internal mail system as indicated by an asterisk (*); and by electronic mail as indicated by a double asterisk (**) on this 24th day of December, 2008.

Michael C. Farrar * **
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Mail Stop: T-3 F23
Washington, D.C. 20555
E-mail: Mike.Farrar@nrc.gov

Chief Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Mail Stop: T-3 F23
Washington, D.C. 20555
E-mail: Roy.Hawkens@nrc.gov

Nicholas G. Trikouros * **
Administrative Judge
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Mail Stop: T-3 F23
Washington, D.C. 20555
E-mail: Nicholas.Trikouros@nrc.gov

Office of Commission
Appellate Adjudication * **
U.S. Nuclear Regulatory Commission
Mail Stop: O-16 G4
Washington, D.C. 20555
Email: OCAAMAIL.Resource@nrc.gov

Adjudicatory File *
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Mail Stop: T-3 F23
Washington, D.C. 20555

Richard A. Hibey, Esq. **
Andrew T. Wise, Esq.
Miller & Chevalier
655 Fifteenth Street, N.W., Suite 900
Washington, D.C. 20005-5701
E-mail: rhbey@milchev.com
awise@milchev.com

Office of the Secretary * **
Attn: Rulemaking and Adjudications Staff
U.S. Nuclear Regulatory Commission
Mail Stop: O-16 G4
Washington, D.C. 20555
E-mail: Hearing.Docket@nrc.gov

E. Roy Hawkens * **

Johanna Thibault * **
Board Law Clerk
Atomic Safety and Licensing Board Panel
U.S. Nuclear Regulatory Commission
Mail Stop: T-3 F23
Washington, D.C. 20555
E-mail: Johanna.Thibault@nrc.gov

Karen Volloch* **
Board Staff
Atomic Safety and Licensing Board Panel
Mail Stop: T-3 F23
Washington, D.C. 20555
E-mail: Karen.Volloch@nrc.gov

/RA/

Lisa Clark
Counsel for the NRC Staff