

June 1, 2006 (4:20 pm)

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

Before the Atomic Safety and Licensing Board

In the Matter of	:	Docket No. IA-05-054
	:	
STEVEN P. MOFFITT	:	ASLBP No. 06-847-03-EA
	:	

STEVEN P. MOFFITT'S DISCOVERY
REQUESTS ADDRESSED TO NRC STAFF

Pursuant to 10 C.F.R. §§ 2.708 and 2.709, Steven P. Moffitt requests that the U.S. Nuclear Regulatory Commission (NRC) Staff respond to the following formal discovery requests.

GENERAL DEFINITIONS

1. The words "you or your" shall be construed to mean the U.S. Nuclear Regulatory Commission (NRC), including all offices and personnel.
2. "FENOC" refers to FirstEnergy Nuclear Operating Company.
3. "Davis-Besse" refers to FENOC's Davis-Besse Nuclear Power Station.
4. "The Bulletin" refers to NRC Bulletin 2001-01 "Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles."
5. "Serial No. 2735" refers to Davis-Besse's October 17, 2001 correspondence related to the NRC Bulletin.
6. "OI" refers to the NRC's Office of Investigations.
7. "OIG" refers to the NRC's Office of the Inspector General.
8. "NRR" refers to the NRC's Office of Nuclear Reactor Regulation.

TEMPLATE = SECY-037

SECY-02

9. "LOCA" refers to Loss of Coolant Accident.
10. "RPV head" refers to the Reactor Pressure Vessel head.
11. "CRDM" refers to Control Rod Drive Mechanism.
12. "RFO" refers to Refueling Outage.

I. INTERROGATORIES

Each Interrogatory shall be answered separately and fully, in writing, and under oath or affirmation and shall include all pertinent information available to NRC personnel with knowledge of the facts or as designated to respond pursuant to 10 C.F.R. § 2.709(a)(2).

INTERROGATORY NO. 1:

State the name, business address, and position or title of each person who was consulted or supplied information in answering the Interrogatories set forth below. Designate the Interrogatory or the part of each Interrogatory, for which the identified person was consulted or supplied information.

INTERROGATORY NO. 2:

State the name, business address, employer, and position or title of each person you intend to use as a witness in this enforcement proceeding. State the subject matter for which each of the witnesses is expected to testify.

INTERROGATORY NO. 3:

State the name, business address, employer, and position or title of each person you intend to rely upon as an expert witness, including the details of each expert's education, professional qualifications, employment history, and the subject matter on

which the expert is expected to testify. State a summary of the grounds for each expert's opinion and identify all documents, data, or other information that each expert has reviewed, or is expected to rely upon for his or her testimony.

INTERROGATORY NO. 4:

Identify by name, business address, position or title all NRC personnel who were involved in the evaluation or issuance of the Enforcement Order directed to Steven P. Moffitt.

INTERROGATORY NO. 5:

Identify by name, business address, position or title all NRC personnel who participated in the conference call between the NRC and Davis-Besse on October 3, 2001.

INTERROGATORY NO. 6:

Identify by name, business address, position or title the individual or individuals whose handwriting appears on document NRC001-0574, "10/3 Davis-Besse phone call" (attached as Exhibit A).

INTERROGATORY NO. 7:

Identify by name, business address, position or title the individual or individuals whose handwriting appears on document NRC001-0575 dated 10/3/2001 (attached as Exhibit B).

INTERROGATORY NO. 8:

Identify by name, business address, position or title the individual or individuals who prepared the memorandum "Davis Besse conference call 10/3/2001" (NRC001-0571) (attached as Exhibit C).

INTERROGATORY NO. 9:

Identify by name, business address, position or title the individual or individuals who prepared the memorandum "Current Status of High Susceptibility Plants That May Receive Orders" (19960-19962).

INTERROGATORY NO. 10:

If you contend that Mr. Moffitt attended an August 11, 2001 meeting to discuss the pending response to the Bulletin, state all facts in support of the contention with references to the specific testimony or documents relied upon.

INTERROGATORY NO. 11:

If you contend that Mr. Moffitt prepared any of the slides presented to the Commissioners' Technical Assistants on October 11, 2001 (attached as Exhibit D), state all facts in support of the contention with references to the specific testimony or documents relied upon.

INTERROGATORY NO. 12:

Identify by name, business address, position or title all NRC personnel who attended the Technical Assistants' briefing on October 11, 2001. Include with your answer the names of the Technical Assistants who attended the October 11, 2001 briefing and their current positions or employers, if known.

INTERROGATORY NO. 13:

State the basis for your contention that Mr. Moffitt was involved in preparatory meetings for the October 3, 2001 conference call with the NRC. Provide all facts in support of the contention with references to the specific testimony or documents relied upon.

INTERROGATORY NO. 14:

Identify the information that was developed during the October 10, 2001 meeting, as referenced on page 9 of the Enforcement Order directed to Mr. Moffitt. State all facts in support with references to any testimony or documents relied upon.

INTERROGATORY NO. 15:

State the basis for your contention that Mr. Moffitt's actions affected the health and safety of the public in a manner that requires his prohibition from employment in NRC-licensed activities for a period of five years from the date of the Enforcement Order.

II. SPECIFIC DOCUMENT REQUESTS

The following requests are for the production of specific documents already in the custody of the NRC. Copies of the referenced redacted pages or omitted documents are not otherwise available to Mr. Moffitt and are necessary to his defense against the matters raised in the January 4, 2006 Enforcement Order. Redacted portions of the documents referenced below contain statements of Mr. Moffitt, or statements or testimony of witnesses, NRC personnel, or investigative agents with specific knowledge of the matters already charged in this proceeding.

DOCUMENT REQUEST NO. 1:

An unredacted copy of the OI Report for Case No. 3-2002-006 dated August 22, 2003 (30000-30232), including the redacted parts of or entire pages labeled 30003-30005, 30007-30010, 30017, 30030-30031, 30042-30053, 30063-30074, 30080-30082, 30101-30102, 30105-30106, 30124-30126, 30130-30131, 30134-30135, 30174-30178, 30185-30186, 30193-30195, 30197, and 30200-30210. Please include OI Report pages 17 and 18.

DOCUMENT REQUEST NO. 2:

An unredacted and complete copy of all Exhibits issued on September 5, 2003 to the OI Report dated August 22, 2003 (02554A). A list of the exhibits is set out at 02555A-02571A.

DOCUMENT REQUEST NO. 3:

An unredacted copy of Steven Moffitt's July 1, 2002 LLTF Record of Interview Form (NRC-029-1088-9).

DOCUMENT REQUEST NO. 4:

An unredacted copy of unidentified "LLTF Record of Interview Form" (NRC003-0262-3).

DOCUMENT REQUEST NO. 5:

A complete, unredacted copy (except for personal privacy information) of the Wednesday, August 21, 2002 Interview of Andrea Lee conducted by OIG Special Agents Joseph Bodensteiner and Richard Scenna (NRC003-0001-NRC003-0085).

DOCUMENT REQUEST NO. 6:

A complete, unredacted copy (except for personal privacy information) of pages 1-24 of the Friday, August 23, 2002 Interview of Andrea Lee conducted by OIG Special Agents Joseph Bodensteiner and Cheryl Montgomery White (NRC003-0086 - NRC003-?).

DOCUMENT REQUEST NO. 7:

A complete, unredacted copy (except for personal privacy information) of the Tuesday, August 20, 2002 Interview of Allen Hiser conducted by OIG Special Agents Joseph Bodensteiner, Cheryl Montgomery White, and Richard Scenna (NRC003-0161-NRC003-0261).

DOCUMENT REQUEST NO. 8:

A copy of Allen Hiser's "notes from a conference call that took place on October 3, 2001" referenced by OIG Special Agent Bodensteiner on August 22, 2002, transcript page NRC002-2044 (NRC002-2039-NRC002-2054).

DOCUMENT REQUEST NO. 9:

A copy of Andrea Lee's notes from the October 3, 2001 conference call between the NRC and Davis-Besse, referenced during her August 21, 2002 Interview by OIG Special Agents Joseph Bodensteiner and Richard Scenna (NRC003-0066-7).

DOCUMENT REQUEST NO. 10:

A complete, unredacted copy (except for personal privacy information) of the Tuesday, August 20, 2002 Interview of Stephen Long conducted by OIG Special Agents

Joseph Bodensteiner, Cheryl Montgomery White, and Richard Scenna (NRC002-2055-NRC002-?).

DOCUMENT REQUEST NO. 11

A complete, unredacted copy (except for personal privacy information) of the Wednesday, May 8, 2002 Interview of Richard Barrett conducted by OIG Special Agent Joseph Bodensteiner (NRC001-0376-NRC001-?).

DOCUMENT REQUEST NO. 12

A complete, unredacted copy (except for personal privacy information) of the approximately 44-page NRC Interview of Richard J. Barrett, dated Friday August 23, 2002 (NRC003-0114- NRC003-?).

DOCUMENT REQUEST NO. 13:

Complete, unredacted copies (except for personal privacy information) of any NRC interviews conducted of Jack Strosnider.

DOCUMENT REQUEST NO. 14:

Complete, unredacted copies (except for personal privacy information) of any NRC interviews conducted of Jacob Zimmerman.

III. REQUEST FOR DOCUMENT ADMISSION

1. Pursuant to 10 C.F.R. § 2.708(a), admit the genuineness and authenticity of the attached slides as a true and correct copy of those presented by Guy Campbell, Steven Moffitt, David Geisen, David Lockwood, and Stephen Fyfitich to the Commissioners' Technical Assistants on October 11, 2001. (Attached as Exhibit D; SPM 00000111-SPM00000126; SPM00000126A).

IV. REQUESTS FOR ADMISSION

In accordance with 10 C.F. R. § 2.708(b)(1), each requested admission shall be considered made unless a sworn statement is filed on or by June 15, 2006, specifically denying the relevant matter or setting forth, in detail, the reasons why it can neither be truthfully admitted nor denied. If made, objections must be in writing, stating the reasons why some or all of the matters involved are privileged, irrelevant, or otherwise improper in whole or in part.

1. During 2000 and 2001, Steven P. Moffitt was Davis-Besse's Director, Technical Services.
2. During 2001, Jack Strosnider was the NRC's Director of the Division of Engineering. This division reviewed Bulletin responses and made decisions on the timing of plant inspections.
3. Jack Strosnider told OIG that the NRC's focus in 2001 was on circumferential cracking, not corrosion.
4. In 2001, Andrea Lee was Senior Materials Engineer in the Division of Engineering. (NRC003-0005)
5. Andrea Lee was a reviewer for the Bulletin, reviewed Davis-Besse's inspection plans, and participated in discussions leading up to the NRC's decision to allow Davis-Besse to continue operating past December 31, 2001. (NRC003-0005-6).

6. On August 23, 2002, Andrea Lee told OIG "all of our deliberations and speculations at that time [2001] were whether or not Davis Besse had leaking CRDM nozzles." (NRC003-0093).

7. On August 23, 2002, Andrea Lee told OIG: "[t]here was never anybody sitting in a room saying we think that Davis-Besse's going to blow a nozzle before February and there's going to be a LOCA. So that was true then. It's still true even in retrospect." (NRC003-0093-4).

8. According to Andrea Lee, the NRC's bottom line was whether Davis-Besse needed "to shut down and look and do adequate inspections . . . [I]t was really just a timing issue. The fact that they couldn't see four or five or 19 nozzles before means that they just need to do that much better of a job when they do shut down and look." (NRC003-0072-3).

9. Andrea Lee was aware, during the Fall of 2001, that from the time of its 10th Refueling Outage, Davis-Besse was unable to inspect the top area of the RPV head, because Davis-Besse "provided a document showing successively where they had masking with their reactor vessel head." (NRC003-0077).

10. Andrea Lee testified that based upon the ASME Code as "rolled into NRC regulations," Davis-Besse only had "to do inspections on the top of the insulation;" therefore, Davis-Besse was in full compliance with the NRC regulations and the provisions of their operating license. (NRC003-0091-2).

11. According to Andrea Lee, Davis-Besse, in the fall of 2001, was in compliance with its surveillance requirements. (NRC003-0092-3).

12. In the fall of 2001, Richard Barrett was the Chief of the Problem Assessment Branch. Mr. Barrett's Branch along with the Engineering Division "thought up the possibility" that an order to an unacceptable Bulletin response "could be based on a risk-informed logic." (NRC003-0114-NRC003-0118).

13. On May 8, 2002, Richard Barrett testified that the NRC was looking at Davis-Besse's 1996, 1998, and 2000 inspections in a different light in 2002, because the head degradation was a "new phenomenon". (NRC001-0376-NRC001-0378).

14. According to Richard Barrett, "a lot of this other information" looked at in 2002 relevant to the head degradation issue and inspection, "really isn't relevant to the question of whether or not there's cracking." (NRC001-0378).

15. Richard Barrett could not identify anything about Davis-Besse's risk characterization that he wished he had known in the fall of 2001. (NRC001-0379).

16. Richard Barrett declared it was not easy doing risk analysis, when "you're under the gun like that especially when you have to answer to the NRC," and "sign on the dotted line that this is true to the best of your knowledge." (NRC001-0379).

17. In 2001, Allen Hiser was lead reviewer for the Bulletin responses. (NRC004-0533).

18. Allen Hiser participated in an October 3, 2001 telephone conference with representatives of the NRC, Davis-Besse, and Framatome ANP. (NRC002-2045).

19. According to Allen Hiser, Davis-Besse's October 3, 2001 teleconference statement that five to six nozzles were obscured, revealed to the NRC that a 100 percent inspection did not occur. (NRC002-2047-8).

20. Allen Hiser was not concerned with Davis-Besse's October 3, 2001 statement of 100 percent inspection based on the conference participants' characterization of the boric acid interferences. (NRC002-2048).

21. According to Allen Hiser, once the NRC heard that there were problems with Davis-Besse's head inspection in 2000, the NRC requested "information to try to understand the extent of that and how that may have impaired the inspection." (NRC002-2051).

22. An NRC document titled "Davis Besse Conference Call: 10/3/01" states: "for 5-6 nozzles near the center of the head, boric acid from CRD flange leakage precluded definitive conclusions that the CRD nozzle welds were not leaking." (NRC001-0571).

23. According to NRC document "Davis Besse Conference Call: 10/3/01," NRR requested the videotapes of the head examinations and a nozzle-by-nozzle listing of inspection results/conclusions. (NRC001-0571).

24. Based upon "Davis Besse Conference Call: 10/3/01," NRR stated that if the April 2000 inspection was considered "a qualified" inspection by the staff, the maximum acceptable operating time based on staff analysis was 18 months. (NRC001-0571).

25. "Davis Besse Conference Call: 10/3/01" observed that the licensee [FENOC] was "pursuing approval through the company board of directors for vessel head replacement in RFO-14 (next outage after RFO-13 scheduled for April 2002)." (NRC001-0571).

26. By e-mail dated October 17, 2001, the NRC's Douglas Pickett told Dale Wuokko, Davis-Besse's Supervisor of Regulatory Affairs' Licensing unit, that he had heard "encouraging words describing your 100% inspection from your last outage. I'll keep you informed." (NRC020-2633).

27. By e-mail dated October 19, 2001, Licensing Supervisor Dale Wuokko forwarded Mr. Pickett's October 17, 2001 e-mail to David Lockwood, Mark McLaughlin, David Geisen, Rodney Cook, Michael Leisure, Prasoon Goyal, Steven Moffitt, Lonnie Worley, Dale Miller, and Kendall Byrd. (NRC020-2633).

28. Licensing Supervisor Wuokko's October 19, 2001 e-mail asked the above-listed recipients to note Mr. Pickett's 100% inspection statement, adding: "Our letter sent on Wed. 10/17/01 will correct their [the NRC's] misunderstanding." (NRC020-2633).

29. On October 17, 2001, Davis-Besse filed Serial No. 2735, that referred to Davis-Besse's October 3 and October 11, 2001 conferences with the NRC and reported: "This submittal provides updated and additional information in support of the basis for the continued safe operation" of Davis Besse. (NRC001-0388-NRC001-0395).

30. Attachment 2 to Serial No. 2735 bolded the five flanges where leaks were discovered and repaired during 12RFO, noting on page 2: "Bold letters indicate CRDM bolting flanges discovered and repaired during 12 RFO (April 2000)." (DLM 00000495-496).

31. On August 20, 2002, Allen Hiser testified that when the NRC looked at Davis-Besse's 1998 videotape at a 2001 evening meeting, "there was sufficient boric acid, that we did not think any credit could be given." (NRC 003-0259).

32. At the 2001 evening meeting Allen Hiser attended, when Davis-Besse's representative told the NRC that the 2000 video was "even worse," the NRC "did not view any portions of the 2000 video." (NRC 003-0258-9).

33. During the fall of 2001, William Bateman served as Chief, Materials and Chemical Engineering Branch. (July 11, 2002 LLTF Record of Interview Form; 21062-3).

34. William Bateman recalled that FENOC's David Geisen showed videotapes of Davis-Besse's head cleaning "in an evening after a public meeting with the licensee". (July 11, 2002 LLTF RIF; 21062-3).

35. At the videotape presentation, William Bateman told David Geisen he did not see giving any credit to Davis-Besse for its head inspections. (July 11, 2002 LLTF RIF; 21062-3).

36. At the videotape presentation, David Geisen "essentially gave up" and agreed with William Bateman that Davis-Besse should not receive credit for its inspections. (July 11, 2002 LLTF RIF; 21062-3).

37. William Bateman did not recall "anyone in EMCB during his tenure making a prior connection between the VHP cracking issue and boric acid degradation on the head." (July 11, 2002 LLTF RIF; 21062-3).

38. Project Manager Stephen Sands's meeting summary dated November 26, 2001 stated that on November 8, 2001, the licensee brought videotapes made during the 1996, 1998, and 2000 refueling outages. (SPM 00000171-3).

39. According to the November 26, 2001 meeting summary, FENOC requested a November 8, 2001 closed meeting "in order to supplement their response to" the NRC Bulletin (SPM 00000171-3).

40. The November 26, 2001 summary reported that the November 8, 2001 "meeting consisted of viewing videotapes and determining whether an independent assessment of the reactor vessel penetrations could be made." (SPM 00000171-3).

41. The November 26, 2001 meeting summary stated that the Staff, on November 8, 2001, "made various comments concerning the quality of the inspections and their results." (SPM 00000171-3).

42. The November 26, 2001 summary enclosed a list of participants at the November 8, 2001 meeting including David Geisen from Davis-Besse, and "John Zwolinski, Bill Bateman, Singh Bajwa, Keith Wichman, Allen Hiser, Steve Long, Stacey Rosenberg, Jake Zimmerman, Andrea Lee, [and] Doug Pickett" from the NRC. (SPM 00000173).

43. Until the RPV head degradation was discovered in 2002, both NRC and Davis-Besse personnel believed that high temperatures provided a dry environment on the top of the head, and corrosion either did not take place or took a long time to progress to a significant stage. (Jack Strosnider 7/15/02 LLTF RIF; 20971) (NRC Davis-Besse Reactor Vessel Head Degradation Lessons-Learned Task Force Report, p. 25).

44. A September 20, 2001 pre-decisional NRC table titled "Plants with Cracking/Leakage History (Bin 1) and High Susceptibility Plants (Bin 2)" described Davis-

Besse's inspection dated "03/2000" as "Visual-Partial," and proposed regulatory action against FENOC. (20060).

45. An NRC table dated September 20, 2001 describing Davis-Besse's 2000 inspection as "Visual-Partial" was circulated by Jacob Zimmerman as part of a September 24, 2001 e-mail sent to Richard Barrett, William Bateman, Farouk Eltawila, Allen Hiser, Ian Jung, Douglas Kalinousky, Margie Kotzalas, Andrea Lee, Steven Long, James Medoff, F. Mark Reinhart, Jack Strosnider, Keith Wichman, and John Zwolinski (20056-20066).

46. On September 18, 2001, Allen Hiser sent an e-mail to "CRDM reviewers" about the "Summary of Staff Review of Bulletin Responses" (20051-20055).

47. A preliminary summary table dated 9/13, attached to Allen Hiser's September 18, 2001 e-mail, stated Davis-Besse's qualified visual inspection was scheduled for April 2002. (20051-20053).

48. A preliminary summary table dated 9/13, attached to Allen Hiser's September 18, 2001 e-mail, stated the Staff had "issues" with Davis Besse's inspection timing, its technical basis was inadequate, and it employed a regulatory argument. (20051-20053).

49. On September 28, 2001, Dr. Brian Sheron told Davis-Besse that its Bulletin response did not provide sufficient basis for delaying an inspection until April 2002. (19960).

50. Davis-Besse's approved Restart Readiness Review Minutes dated May 9 and 10, 2000, included Plant Engineering's report: "Cleaned the reactor head to get a good base line." (NRC005-2890-NRC005-2895).

51. At Log Date April 7, 2000 and Log Time 7:00 p.m., Davis-Besse's 12RFO Log reflected that flanges D10, C11, F10, and F8 were "confirmed leakers," G9 was "questionable," but after evaluation by Ed Chimahusky and Andrew Siemaszko, the engineering recommendation was "to repair all 5." (NRC020-0582).

52. An Intra-Company Memorandum dated May 22, 2000, sent by Audit Supervisor Charles Ackerman to David Geisen and David Eshelman, said Design and Plant Engineering would be audited beginning June 5, 2000. (NRC032-2014).

53. "Technical Specialist" Gregory A. Gibbs was listed as a member of the Quality Assessment audit team, whose scope was "to evaluate the effectiveness of the Davis-Besse Engineering Program." (NRC032-20014-15; NRC032-2007-8; NRC032-2065).

54. The Quality Assessment Audit Report reviewed issues from 12RFO. (NRC032-1961).

55. The Quality Assessment Audit Report never stated that cleaning of the RPV head was unsuccessful during 12RFO.

56. The Quality Assessment Audit Report never stated that the RPV head service structure weep holes restricted access for head inspection and cleaning.

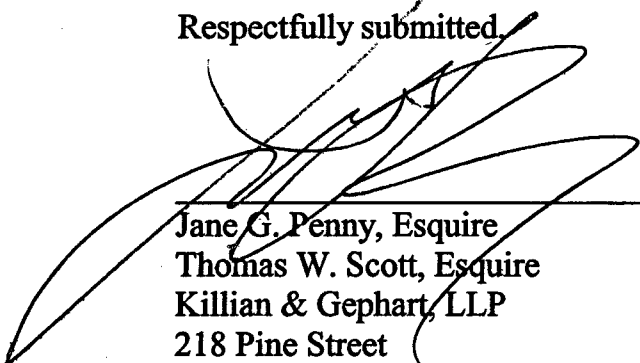
57. Gregory A. Gibbs, Principal Consultant, Piedmont Management & Technical Services, Inc., sent a letter dated September 14, 2001 to Mark McLaughlin,

with copies to Steven Moffitt, Scott Coakley, David Geisen, Andy Wilson, and "Project Team Members". (NRC023-0778-NRC023-0782).

58. Mr. Gibbs's September 14, 2001 letter stated he had reviewed Davis-Besse's preparations to date for addressing CRDM cracking issues and its response to the Bulletin. (NRC023-0778).

59. Mr. Gibbs's September 14, 2001 letter did not report that Davis-Besse's Bulletin response provided inaccurate or incomplete information to the NRC. (NRC023-0778-NRC-0230782).

Respectfully submitted,



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June 1, 2006

**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

Before the Atomic Safety and Licensing Board

In the Matter of	:	Docket No. IA-05-054
	:	
STEVEN P. MOFFITT	:	ASLBP No. 06-84703-EA
	:	

CERTIFICATE OF SERVICE

I certify that on June 1, 2006, copies of Stephen P. Moffitt's "Discovery Requests" and Exhibits were served upon the following persons through the U. S. mail, and electronic mail where indicated by an asterisk (*):

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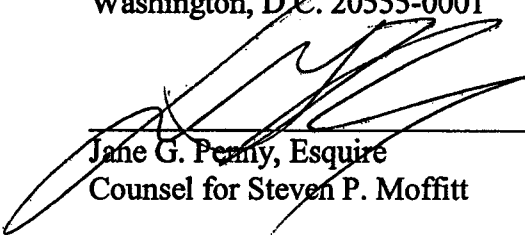
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Jane G. Penny, Esquire
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EXHIBIT “A”

1-3/5

10/3 Davis-base shore call

past inspection~~to inspect~~ inspection of headbovic acid interferences on some nozzles → S-bayonet
looked at base of nozzlesfuture inspectionqualified individual - have measured
end of next week to get the SIA report

Examination

modified Peter Scott

60 in. flaw

180° around

3½ yrs. through wall, 4 years for another, 90°

environment is not much different from PW

- prior inspection results
- video?
- qualified head



by 10/25

MRP

meeting ends today -- should have something raised
next week

EXHIBIT "B"

1-415

10/3/2001

Pro Mem. for Commissioner TH brief &
DR QED

- Davis Herse did usual - partial inspection before
Covers done on acceptable exam. During last
inspection. Such 2 in in the same position ^{since}
- Not Nov. vs. March/April. Now is there. ^{not} ^{not}
- Bird plants never govt & are also in
same light. CR3 found coverage.
- Davis Herse is a R & W plant.
- Need to clarify what the partial usual included
(10%, 15% etc.)

~~Davis Herse did usual - partial inspection before~~ 10/3/2001 (1)

- Allen - looking at response past & future inspection
- Corbin - coverage of inspection usual exam
during last RFD in Apr. 100% inspection of head
some sulfur acid accumulation down 5
feet. Flanges (into tubes & CRH samples)
could do better above insulation than accumu-
lation below.

→ Initial inspection was slow but did
have indication that they removed EXH NO
coverage from north. Also removed
upward from RFD 10 & 11.

→ did mechanical cleaning in Apr. 98 (RFD)
accumulation. On April 2000 covered to
water & got all but a few small areas
Future Plans

→ SIA doing plant spec for analysis - expected

EXHIBIT "C"

MS A document

Davis Besse Conference Call: 10/3/2001

NRR - W. Bateman, S. Sanders, A. Hiser, A. Lee, J. Zimmerman
Region III - Jacobson, Holmberg, Collins
Licensee (See attached included Guy Cambell) - Site VP)

NRR Questioned the scope of the April 2000 head examinations. The licensee stated that 100 percent of the head was inspected which included the CRD housing to head interfaces. However, for 5-6 nozzles near the center of the head, boric acid from CRD flange leakage precluded definitive conclusions that the CRD nozzle welds were not leaking. NRR requested the video tapes of the head examinations and a nozzle by nozzle listing of inspection results/conclusions. Licensee to provide this to NRR by October 25th.

Licensee has estimated a crack growth rate based on the Peter/Scott model which predicts that it will take 7.5 years to reach a structurally limiting circumferential flaw size after first detecting leakage around the CRDM housing. This information could be available to the NRC in a few weeks.

NRR stated that if the April 2000 inspection was considered "a qualified" inspection by the staff, that the maximum acceptable operating time based on staff analysis is 18 months. The staff's analysis assumes that a pre-existing circumferential flaw less than 165 degrees in extent grows an additional 165 degrees in 18 months. The staff analysis is based on Oconee data with input from an expert panel review documented by RES. The staff position and analysis will be documented in a NUREG with an indeterminate issue date. The licensee noted that growth rate is dependant on CRD location (residual stress is greater at periphery rod housing welds) and that an unqualified inspection was done at Oconee in the past. However, the licensee intends to review the NRR staff analysis basis in more detail with support from their contractors.

Licensee is pursuing approval through the company board of directors for vessel head replacement in RFO -14 (next outage after RFO-13 scheduled for April 2002).

NRR informed the licensee that they do not intend to let this issue drag out. Based on NRR analysis operation beyond 18 months could result in operation with structurally significant flaws and therefore the staff will continue to pursue regulatory actions.

EXHIBIT “D”

NRC Bulletin 2001-01,
***“Circumferential Cracking of Reactor
Pressure Vessel Head Penetration
Nozzles”***

Presenters:

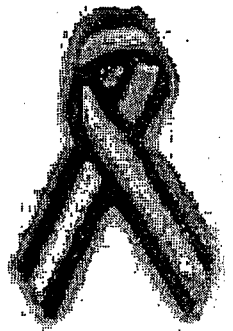
Guy G. Campbell, Vice President - FENOC

Steven P. Moffitt, Director - Technical Services

David C. Geisen, Manager - Design Basis Engineering

David H. Lockwood, Manager - Regulatory Affairs

Steve Fyitch, Framatome Engineering



Why We're Here:

- R NRC Bulletin 2001-01 response provided
- R Telephone call received on September 28
- R Teleconference on October 3



Today's Objective:

Provide Reasonable Basis for Assurance that Davis-Besse is safe to operate until next refueling outage (March 2002) and should continue 24 month operating cycles



NRC Bulletin 2001-01

Titled, "***Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles***," dated August 3, 2001

- R Requests that plants provide design information, rankings, previous inspection results, and future inspection plans.
- R Response requirements were based upon plant ranking in Susceptibility Model as published in EPRI MRP-48.



Susceptibility Model

EPRI - PWR Materials Reliability Program Response to NRC Bulletin 2001-01 (MPR-48), 1006284, dated August 2001

- ✎ Ranked Davis-Besse as 7th out of 69 plants.
- ✎ 6.6 actual EFPY away from Oconee 3 but 3.1 EFPY away after normalizing on head temperatures down to 600 degrees.
- ✎ Model is purposely simplistic in that PWSCC is influenced by *Environment* (Chemistry & Temperature), *Stress*, and *Time*. The model does not account for Stress, Chemistry, or specific plant as-built conditions.



Davis-Besse's NRC Bulletin Response

- ✎ Conducted and recorded video inspections of the head during 11 RFO (April 1998) and 12 RFO (April 2000)
- ✎ Re-reviewed video inspections of head in light of boron leakage seen at Oconee and Arkansas Nuclear.
- ✎ No head penetration leakage was identified.
- ✎ Committed to submit follow-up response on January 29, 2002 based upon further industry developments.
- ✎ Committed to perform a qualified visual of Reactor Pressure Vessel head in 13 RFO currently scheduled for April 2002.



Facts

- All CRDM penetrations were verified to be free from "popcorn" type boron deposits using video recordings from 11RFO or 12RFO.
- All through wall cracks in the industry have been identified by visual inspection.
- Plant specific finite element analysis shows that 65 out of 69 will open up sufficiently to provide visual indication.
- Remaining 4 CRDMs located in lowest stress area where there have been no circumferential cracks found in the industry.
- Critical crack size is 273 degrees which is still a safety factor of 3 (aligns with ASME code).



Assumptions

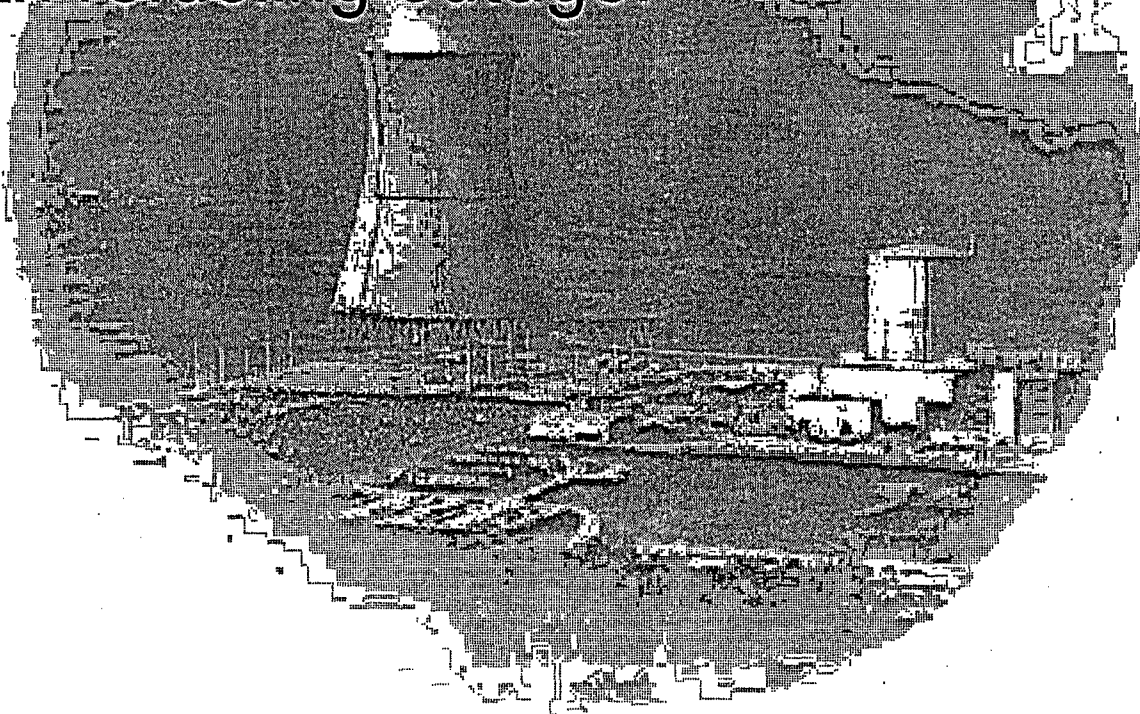
- ✎ Initial conservative crack size of 180° at beginning of Cycle 12 (1998)
- ✎ Crack propagates in two directions
- ✎ Industry accepted crack growth rates for Alloy 600 are applied
- ✎ Ignores effect of decreasing stresses as crack grows which would also decrease crack growth rate



Reasonable Assurance

Results of Analysis:

This conservative analysis shows that a potential crack would not grow to critical crack size before the 13th refueling outage.



Additional Supporting Information

- R Continuing industry effort to refine crack propagation**
- R Continuing industry effort to define effects of chemical environment**
- R Plant specific fracture mechanics evaluation and crack growth analysis by SIA (Structural Integrity Associates)**
- R Plant specific leakage analysis for critical crack size by SIA**



Risk-Informed Evaluation

⌚ NSSS vendor-specific risk assessment provides estimated core damage frequency of 3.4 E-7

⌚ Per RG 1.174 this is categorized as a “very small” increase in risk



Summary:

- ☞ There is a reasonable basis for Assurance that Davis-Besse is safe to operate based on deterministic and probabilistic assessments until next refueling outage (March 2002)
- ☞ We want to have the opportunity to continue dialog



Industry References

Electric Power Research Institute (EPRI) - PWR Materials Reliability Program Interim Alloy 600 Safety Assessments for U.S. PWR Plants (MRP-44), TP-1001491, Part 2, dated May 2001.

EPRI - PWR Materials Reliability Program Response to NRC Review Comments Transmitted by Letter Dated June 22, 2001, to the NEI Relating to MRP-44, dated June 29, 2001

EPRI - PWR Materials Reliability Program Response to NRC Bulletin 2001-01 (MRP-48), 1006284, dated August 2001



CRDM NOZZLE CRACKING TIMELINE

1991 - Originally CRDM cracking was identified at Bugey Unit 3 in France

June, 1993 - Safety Assessment Written by all three NSSS Owners Group (NUMARC)

October, 1994 - NUREG/CR-6245, "Assessment of Pressurized Water Reactor Control Rod Drive Mechanism Nozzle Cracking"

April, 1997 - NRC Generic Letter 97-01, "Degradation of Control Rod Drive Mechanism Nozzle and Other Vessel Closure Head Penetrations", was issued. Industry Responded with Probabilistic Rankings and head inspection plans.

1997 - Electric Power Research Institute (EPRI) - Crack Growth and Microstructural Characterization of Alloy 600 Vessel Head Penetration Materials, TR-109136 (Proprietary)

June, 2000 - Electric Power Research Institute (EPRI) - Crack Growth of Alloy 182 Weld Metal in PWR Environments (MRP-21)

December, 2000 - One Leaking Nozzle at Oconee 1

February, 2001 - Nine Leaking Nozzles at Oconee 3

March, 2001 - One Leaking Nozzle at ANO 1

April, 2001 - Four Leaking Nozzles at Oconee 2

April, 2001 - Framatome ANP - RV Head Nozzle and Weld Safety Assessment 51-5011603-01 (FTI ANP Proprietary) and 51-5012567-00 (Non-proprietary)

April 30, 2001 - NRC IN 2001-05, "Throughwall Circumferential Cracking of Reactor Pressure Vessel Head Control Rod Drive Mechanism Penetration Nozzles at Oconee Nuclear Station, Unit 3"

May, 2001 - Electric Power Research Institute (EPRI) - PWR Materials Reliability Program Interim Alloy 600 Safety Assessments for U.S. PWR Plants (MRP-44), TP-1001491, Part 2



CRDM NOZZLE CRACKING TIMELINE, cont.

June 29, 2001 - EPRI - PWR Materials Reliability Program Response to NRC Review Comments Transmitted by Letter Dated June 22, 2001, to the NEI Relating to MRP-44 (MRP-50)

August 3, 2001 - NRC Bulletin 2001-01, "Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles."

August 19, 2001 - EPRI - PWR Materials Reliability Program Response to NRC Bulletin 2001-01 (MRP-48), 1006284

August 24, 2001 - Davis-Besse enters contract with SIA.

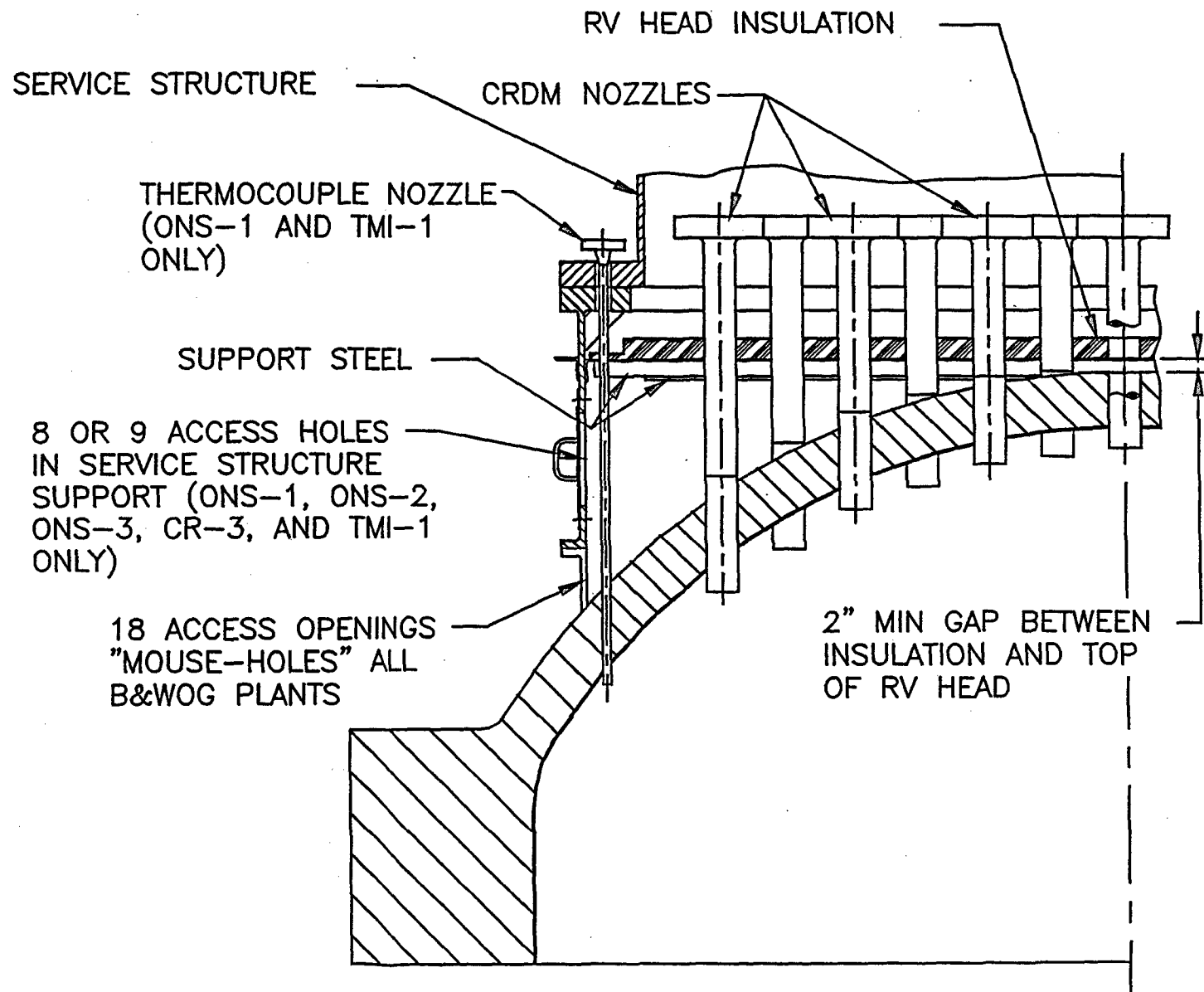
September 4, 2001 - Davis-Besse responds to NRC Bulletin 2001-01

September 24, 2001 - NRR transmits via letter Flaw Evaluation Criteria to NEI.

September 28, 2001 - Dr. Brian Sheron telecon with FENOC CNO Robert Saunders urging fall inspection at Davis-Besse

October 3, 2001 - NRR conference call with Davis-Besse technical personnel to understand NRC Bulletin 2001-01, "Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles."





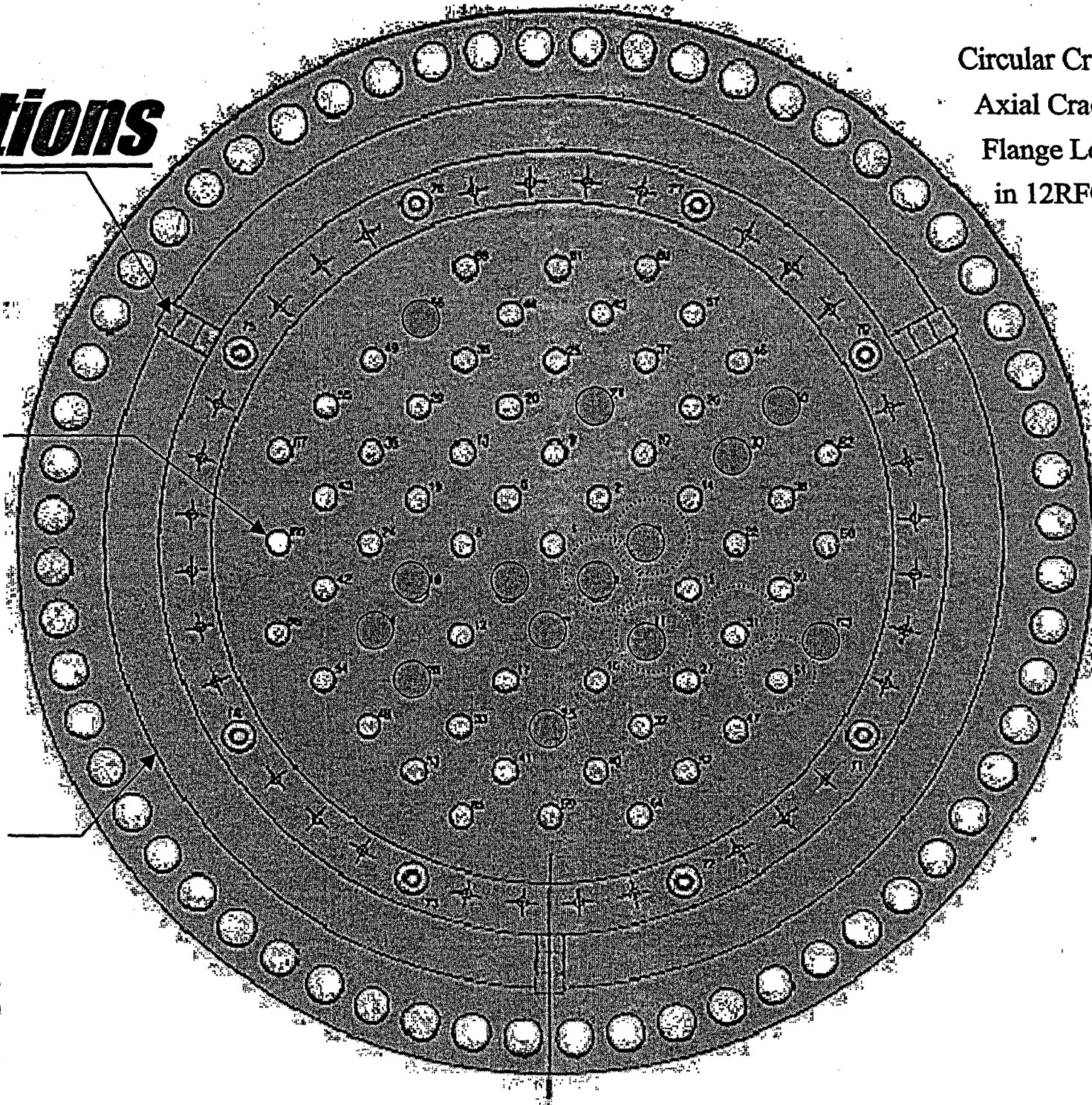
Leak Locations

Lifting Lug
(3 Total)

CRDM Nozzles
(69 Total)

Service Structure
Support Flange

Circular Cracks - ●
Axial Cracks - ●
Flange Leaks in 12RFO - ○



SPM 00000126



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