

November 20, 2000

MEMORANDUM TO: John Larkins, Executive Director
Advisory Committee on Reactor Safeguards

FROM: Jack Strosnider, Director */ra/*
Division of Engineering
Office of Nuclear Reactor Regulation

SUBJECT: DOCUMENTATION PROVIDED TO ACRS SUBCOMMITTEE ON
DIFFERING PROFESSIONAL OPINION ISSUES

In support of the subject ACRS subcommittee, the staff provided numerous background documents. The purpose of this memorandum is to document the materials supplied to the subcommittee. A list of the documents is provided in the attachment.

If the ACRS needs any additional information regarding this issue, please feel free to contact me at (301) 415-3298.

Attachment: As stated

CONTACT: K. Karwoski, EMCB/DE
415-3951

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The following documents were provided to the ACRS Subcommittee on Differing Professional Opinion Issues prior to the October 10th-14th meetings.

1. Note from J. Hopenfeld dated December 23, 1991, "Differing Professional Opinion."
2. Compact Disk titled, "SCDAP/RELAP5 Analysis Supporting a Review of ANO2 SG Inspection Interval."
3. Letter from Stuart A. Richards, NRC, to Mr. Craig G. Anderson, Vice President, Operations ANO, dated July 21, 2000, "Arkansas Nuclear One, Unit No. 2 - Denial of Amendment Re: License Change for Cycle 14 Operation Based on a Risk-Informed Demonstration of Predicted Steam Generator Tube Integrity (TAC No. MA8418)."
4. Memorandum from Ashok C. Thadani, RES, to Samuel J. Collins, NRR, dated November 29, 1999, "Failure Prediction of Electrosleeved Tubes Under Severe Accident Conditions."
5. Memorandum from Richard J. Barrett, NRC, to Stuart A. Richards, NRC, dated May 21, 1999, "Revised Probabilistic Safety Assessment Branch Input to Safety Evaluation Report on the Change to Technical Specifications at Callaway Plant to Allow Use of Framatome Electrosleeve Steam Generator Tube Repair Method."
6. Letter from L. Mark Padovan, NRC, to D.N. Morey, Vice President - Farley Project, dated August 17, 1999, "Joseph M. Farley Nuclear Plant, Unit 1, Issuance of Amendment Re: Cycle 16 Extension Request (TAC No. MA5356)."
7. Letter from Mel Gray, NRC, to Garry L. Randolph, Vice President and Chief Nuclear Officer Union Electric Company, dated May 21, 1999, "Amendment No. 132 to Facility Operating License No. NPF-30- Callaway Plant, Unit 1 (TAC No. MA3954)."
8. N.E. Bixler, Sandia National Laboratory, "VICTORIA Studies of Induced Steam Generator Tube Rupture During the Early Stages of a TMLB' Sequence," October 20, 1996.
9. E-mail from Jason Schaperow, NRC, to Akihide Hidaka, JAERI, dated November 17, 1998, "Analysis of Fission Product Heating of Steam Generator Tubes."
10. E-mail from Akihide Hidaka, JAERI, to Jason Schaperow, NRC, dated November 18, 1998, "Re: Analysis of Fission Product Heating of Steam Generator Tubes."
11. JAERI-Research 99-067, "Evaluation of Steam Generator U-Tube Integrity during PWR Station Blackout with Secondary System Depressurization," October 1999.
12. N. E. Bixler, Sandia National Laboratory, "Investigation of the Applicability of the Steam Dryer and Separator Models used in VICTORIA to PWR Accident Sequences," January 28, 1997.

Attachment

13. N. E. Bixler, Sandia National Laboratory, "VICTORIA Studies of Fission Product Release from an Induced Steam Generator Tube Rupture Sequence," July 9, 1997.
14. Memorandum from Charles E. Ader, NRC, to Carl H. Berlinger and James E. Lyons, NRC, dated August 4, 1997, "Offsite Fission-Product Releases from an Induced Steam Generator Tube Rupture."
15. NUREG/CR-0718, "Steam Generator Tube Integrity Program Phase I Report," September 1979.
16. NUREG/CR-5117, "Steam Generator Tube Integrity Program/Steam Generator Group Project," May 1990.
17. NUREG/CR-6521, "Estimating Probable Flaw Distributions in PWR Steam Generator Tubes," August 1998.
18. NUREG/CR-6575, "Failure Behavior of Internally Pressurized Flawed and Unflawed Steam Generator Tubing at High Temperatures - Experiments and Comparison with Model Predictions," March 1998.
19. NUREG/CR-5752, "Assessment of Current Understanding of Mechanisms of Initiation, Arrest, and Reinitiation of Stress Corrosion Cracks in PWR Steam Generator Tubing," February 2000.
20. NUREG/CR-6664, "Pressure and Leak-Rate Tests and Models for Predicting Failure of Flawed Steam Generator Tubes," August 2000.
21. Memorandum from Themis P. Speis, NRC to Joram Hopenfeld, NRC, undated, "Your Differing Professional Opinion (DPO) dated 12/13/91."
22. Ugo Piomelli, "Numerical Study of the Jet-Impingement Flow Due to a Steam-Generator-Tube Leak," June 2, 2000.
23. Ugo Piomelli, "Numerical Study of the Jet-Impingement Flow Due to a Steam-Generator-Tube Leak, Second Report," August 12, 2000.
24. INEEL/EXT-98-00286, Revision 1, "SCDAP/RELAP5 Evaluation of the Potential for Steam Generator Tube Ruptures as a Result of Severe Accidents in Operating Pressurized Water Reactors," September 14, 1998.
25. Memorandum from Ashok C. Thadani, RES to Samuel J. Collins, NRR, dated September 7, 2000, "NRR Users Need Request Related to Steam Generator Severe Accident Response and Testing of Steam Generator Tubes During Severe Accident Conditions."
26. INEL-95/0641, "Steam Generator Tube Rupture Induced From Operational Transients, Design Bases Accidents, and Severe Accidents," August 1996.

27. U.S. NRC Generic Letter 95-05, "Voltage-Based Repair Criteria for Westinghouse Steam Generator Tubes Affected by Outside Diameter Stress Corrosion Cracking," August 3, 1995.
28. U.S. NRC Generic Letter 95-03, "Circumferential Cracking of Steam Generator Tubes," April 28, 1995.
29. U.S. NRC Information Notice 96-38, "Results of Steam Generator Tube Examinations," June 21, 1996.
30. U.S. NRC Information Notice 96-09, Supplement 1, "Damage in Foreign Steam Generator Internals," July 10, 1996.
31. U.S. NRC Information Notice 96-09, "Damage in Foreign Steam Generator Internals," February 12, 1996.
32. U.S. NRC Information Notice 95-40, "Supplemental Information to Generic Letter 95-03, 'Circumferential Cracking of Steam Generator Tubes'," September 20, 1995.
33. U.S. NRC Information Notice 94-88, "Inservice Inspection Deficiencies Result in Severely Degraded Steam Generator Tubes," December 23, 1994.
34. U.S. NRC Information Notice 94-62, "Operational Experience on Steam Generator Tube Leaks and Tube Ruptures," August 30, 1994.
35. U.S. NRC Information Notice 94-43, "Determination of Primary-to-Secondary Steam Generator Leak Rate," June 10, 1994.
36. U.S. NRC Generic Letter 97-05, "Steam Generator Tube Inspection Techniques," December 17, 1997.
37. U.S. NRC Generic Letter 97-06, "Degradation of Steam Generator Internals," December 30, 1997.
38. U.S. NRC Information Notice 98-27, "Steam Generator Tube End Cracking," July 24, 1998.
39. U.S. NRC Information Notice 97-88, "Experiences During Recent Steam Generator Inspections," December 16, 1997.
40. U.S. NRC Information Notice 97-49, "B&W Once-Through Steam Generator Tube Inspection Findings," July 10, 1997.
41. U.S. NRC Information Notice 97-26, "Degradation in Small-Radius U-Bend Regions of Steam Generator Tubes," May 19, 1997.

42. U.S. NRC Information Notice 94-87, "Unanticipated Crack in a Particular Heat of Alloy 600 Used for Westinghouse Mechanical Plugs for Steam Generator Tubes," December 22, 1994.
43. NUREG-1604, "Circumferential Cracking of Steam Generator Tubes," April 1997.
44. Memorandum from Brian Sheron, NRR, to John Larkins, ACRS, dated April 6, 1995, "ACRS Review of Generic Letter (GL) 95-xx, 'Voltage-Based Repair Criteria for Westinghouse Steam Generator Tubes.'"