

JAN 21 1977

Dockets Nos. 50-269/270/287

MEMORANDUM FOR: L. C. Shao, Chief, Engineering Branch, DOR

FROM: A. Schwencer, Chief, Operating Reactors Branch #1, DOR

SUBJECT: STEAM GENERATOR TUBE FAILURES AT OCONEE NUCLEAR STATION

The following information is provided concerning the steam generator tube leaks at Oconee. There have been five tube leaks which have resulted in shutdown of the plants for repair.

1. Unit 3 was shut down on July 21, 1976, due to a leak in steam generator 3B. The leak rate was about 1 gpm. The rupture (0.04 inches in diameter) was about 10 feet below the top of the upper tube sheet and in the eleventh row of tubes from the outside. Eddy current inspections were made of nine selected tubes surrounding the damaged tube and no indications of failure, wall thinning or fretting were observed. Further investigation indicated no tube leakage, but two tubes were discovered to have damage at the upper tube sheet weld. A total of three tubes were plugged. Exact cause of rupture was undetermined but it was concluded that it was an isolated occurrence.
2. Unit 1 was shut down on October 31, 1976, with a leak in steam generator 1A. The tube was #17 in row 77, and had a circumferential crack near the interface of the tube with the bottom of the upper tube sheet. The crack extended from 150° to 180° of the tube's circumference. The leak was about 1 gpm. Inspection of 15 adjacent tubes revealed no other defective tubes. Two tubes were plugged because of a questionable eddy current signal to a second tube. This tube defect occurred within three inches of the radial position of the Unit 3 "3B" leak (see above) but at a different elevation.
3. Unit 2 was shut down on December 4, 1976, with a 2 gpm leak. One tube was cracked (circumferential) near an open tube lane next to the upper tube sheet. Inspection of tubes surrounding the leaking tubes revealed no other tubes leaking. This tube was removed from the steam generator for examination by B&W.

This has been kept informed by Project Manager, Don Neif

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- 4. Unit 1 was shut down on December 8, 1976, with a tube leak (crack) in steam generator 1B. This leak was about 1 gpm and was located in the northeast quadrant away from tube lane near upper tube sheet. Inspection of surrounding tubes revealed no other leaking tubes.
- 5. Unit 1 was shut down on January 16, 1977, because of a tube leak in steam generator 1B. This leak rate was 12 gpm. This leak was the second for this steam generator, and was caused by a crack located next to a tube lane and next to the upper tube sheet. It was not removed because of the proximity of the curvature of the head.

We have requested the licensee to provide us with a cross section of the steam generator showing the locations of all the leaks. This will be provided to you when received.

A report has not been issued by B&W yet but discussions between B&W and the licensee indicate that the examined tube showed no apparent cause for the cracking. B&W has concluded that no wastage is involved and believes that no chemical attack is involved. The examinations are continuing and we will be informed of the results.

B. D. Liaw has been kept informed by Project Manager, Don Neighbors, of all of the above as data become available.

A. Schwencer, Chief
 Operating Reactors Branch #1
 Division of Operating Reactors

cc: K. R. Goller
 D. Eisenhut
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 D. Neighbors
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