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NOTE TO: D. Eisenhut, Assistant Director
for Systems & Projects
Division of Operating Reactors

FROM: L. C. Shao, Chief,
Engineering Branch
Division of Operating Reactors

SUBJECT: STATUS OF STEAM GENERATOR OPERATION AT OCONEE UNIT 1,
ST. LUCIE UNIT 1, AND INDIAN POINT UNIT 2

DATE: APRIL 27, 1978

POOR ORIGINAL

The following is a summary of the current status of the steam generator at Oconee Unit 1, St. Lucie Unit 1, and Indian Point Unit 2.

OCONEE UNIT 1

A primary to secondary steam generator leak was detected at Oconee Unit 1 on the morning of Thursday, April 20, 1978 at 4:30 A.M. The leak increased steadily until it leveled off at a rate of 0.25 GPM at 9:00 P.M. It then fluctuated just above 0.25 GPM until Friday, April 21 at 10:15 A.M. when the leak rate exceeded the unit's 0.3 GPM technical specification leakage rate limit and the unit was shut down. The plant was operating at 100% power up to the time of shut down. Inspection of the steam generator for the leak did not begin until Wednesday, April 26 because of excessive airborne reactivity in the containment. No results from the on-going inspection are available at this time. Duke Power Company has not postulated the nature of the leak although they believe it is in Steam Generator "B" and because of the sudden indication and relatively rapid increase in leak rate they do not believe that it is a leaking tube plug. Duke Power Company is working closely with Babcock and Wilcox in establishing an inspection program and has indicated that they intend to perform tube inspections possibly including all tubes with previously known degradations. Although the inspection program has not been officially established we advised them that inspection of those tubes would be prudent. We are being continuously informed on the development of this situation and will provide additional information as it becomes available.

ST. LUCIE UNIT 1

St. Lucie Unit 1 (Florida Power and Light Co.) is currently conducting steam generator inspections during their first refueling outage. The

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unit which began commercial operation on December 21, 1976 has Combustion Engineering Steam Generators similar in design to Millstone Unit 2 and has operated continually with AVT secondary water chemistry. The inspection program to date included 380 hot leg tubes and 110 cold leg tubes in one steam generator. Preliminary results indicated 55 tubes with dent signals. The average dent magnitude is in the range of 0.001" to 0.002" with the maximum dent magnitude observed being 0.004". We requested through P. Erickson, ORPM, the following from Florida Power and Light Company:

- (i) a tube map indicating the locations and elevations of the dented tubes,
- (ii) the number of condenser tube failures during the first cycle of operation/
- (iii) the measured chloride levels following condenser tube failures, and
- (iv) to look for signs of support plate cracking.

WE have also requested that a detailed report of the inspection results be submitted prior to the plants tentative restart date of May 20, 1978.

INDIAN POINT UNIT 2

POOR ORIGINAL

On April 25, 1978 Con Edison (licensee) removed a section of the No. 1 support plate containing the Inconel tubes from steam generator No. 23 at Indian Point 2. The support plate section contained the first two rows of tubes in columns 3 thru 13 occupying an area ~14" by 5". The procedure specified cutting the section including the Inconel tubes by the EDM process and removal was through a 6 inch diameter hand hole, ~38 inches below the No. 1 support plate near the tube sheet area. While guiding the support plate through the hand hole, the support plate broke resulting in six of twenty-two tubes falling away from the support plate, and three other tubes were loose. Thirteen tubes remained intact in the support plate in which the crevice areas appeared packed with magnetite.

Preliminary visual examination revealed the following:

1. Corrosion products appear to be holding the tubes in the support plate.
2. Measurement of the flow slots indicated flow slot closure on the hot leg side of .3 inches while .1 inches was measured on the cold side.
3. Flow holes between rows 1 and 2 were deformed into an elliptical shape where the difference in the major and minor diameters is ~1/4 inch. The major axis is perpendicular to the flow slot.

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4. Flow holes between the second and third rows were not as distorted as those between rows one and two.
5. Flow holes beyond the 3rd row of tubes do not appear distorted by boroscope observations.
6. Cracks in the support plate appeared between the flow holes and the tube holes (ligaments) with missing tubes. These cracks do not appear to have occurred during support plate removal.

The licensee is preparing a report on this matter and has requested to meet with the staff on May 5, 1978. Presently the plant is shut down and start-up is expected between May 8 and May 23, 1978.

L. C. Shao, Chief
 Engineering Branch
 Division of Operating Reactors

- cc: V. Stello, Jr.
 J. Reece
 B. K. Grimes
 A. Schwencer
 P. Erickson
 T. Wambach
 M. Fairtile
 B. D. Liaw
 F. M. Almeter
 D. DiIanni
 R. G. LaGrange
 J. R. Strosnider
 R. Mattson
 J. P. Knight

POOR ORIGINAL

OFFICE →	EB:DOR 28060	EB:DOR	EB:DOR	EB:DOR	
SURNAME →	JStrosnider:mb	BDLiaw	DDiIanni	LCShao	
DATE →	5/1/78	5/2/78	5/2/78	5/3/78	