May 24, 1983

Docket No. 50-244
LS05-83-05-053

LICENSEE: ROCHESTER GAS AND ELECTRIC CORPORATION

FACILITY: R. E. Ginna

SUBJECT: SUMMARY OF MAY 12, 1983 MEETING WITH ROCHESTER GAS AND ELECTRIC CORPORATION (RG&E) ON STEAM GENERATOR SLEEVING PROGRAM

On May 12, 1983, members of the NRC staff met with representatives of Rochester Gas and Electric Corporation (RG&E) to discuss the history and status of the steam generator tube sleeving at Ginna. The licensee informed the staff of modifications made to the basic steam generator tube sleeving procedure that was approved on April 1, 1983. The major modifications include the use of sleeves which are entirely within the tube sheet and the pre-tensioning of tubes prior to brazing. The discussions were general and covered tube inspections and criteria for acceptance, sleeving proeedures, and sleeving inspection techniques. A meeting to discuss the details of the sleeving inspection results is scheduled for May 20, 1983. The attendance list (Enclosure 1) and a copy of the slides used by RG&E (Enclosure 2) are enclosed.

The meeting began with a review of the eddy current inspection technique and the results of the eddy currenting sections of the "B" steam generator. Historically, damaged tubes were removed from service through plugging. However improvements, such as sleeving techniques have permitted the licensee to keep more tubes in service. Before the current outage which began March, 1983, 21 sleeves were installed in the "B" steam generator.

SEO's
DSU use(07)

Eddy current inspections during this current outage identified 78 tubes in the "B" steam generator and 4 in the "A" generator with varying degrees of defects. Of the 78 defects found in the "B" steam generator, 23 were above 40% which would have required either plugging or sleeving.

The Safety Evaluation issued by the staff on April 1, 1983 covered the use of 36 inch sleeves which were explosively welded at the bottom to the tubes within the tubesheet and brazed at the top to the tubes as they extended above the tubesheet. Some of the damaged tubes were near the periphery of the bundle. Space limitations would not permit the

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use of the standard sleeve. Consequently, a 22 inch sleeve which was explosively welded at both top and bottom was subsequently used on 29 of the tubes. The sleeve installation and eddy current inspection procedures were reviewed with the staff.

During installation of the standard sleeves, the licensee noted that the ultrasonic inspections indicated inadequate braze joints. An investigation concluded that movement of the tubes was restricted at the lowest tube support plate. The tube "lockup" situation restricted thermal growth during brazing. Instead of axial movement the tube would bulge (about 30 mil increase in diameter) at the braze joint. The licensee modified the procedure by heating the tube below the upper joint prior to brazing thus increasing the diameter at that point. When the upper joint was brazed, no additional stresses were introduced and acceptable seals were obtained. The licensee is performing an analysis of the additional stresses introduced to determine if they were significant.

The staff considered the sleeving modifications to be adequate pending formal submittal of the modified procedures and review of the inspection results and stress analysis.

Original signed by/

George F. Dick, Jr., Project Manager
Operating Reactors Branch #5
Division of Licensing

Enclosures:
As stated

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ENCLOSURE 1

ATTENDANCE LIST

MAY 12, 1983 MEETING

Name	Affiliation
George Dick	NRC
H. F. Conrad	NRC
Robert Mecredy	RG&E
J. C. Hutton	RG&E
Albert E. Curtis III	RG&E
B. D. Liaw	NRC/MTEB
C. Y. Cheng	NRC/MTEB
Louis Frank	NRC/MTEB
Jai Rajan	NRC/MEB

ENCLOSURE 2

Ginna Station
Steam Generator Sleeving
NRC Meeting
May 12, 1983

Agenda

A. Introduction — Bob Mecredy

B. Eddy Current Results — Al Curtis

- o Spring 1983
- o summary

C. Ginna Sleeving Background — Al Curtis

- o Fall 1980
- o Spring 1981
- o Spring 1983

D. Tubesheet Sleeves — Al Curtis

- o sleeve design
- o inspectability

E. Brazed Sleeves — Jim Hutton

- o process overview
- o tube lockup
- o braze procedure changes
- o ultrasonic examination

F. Analysis/Test Program — Jim Hutton

- o analyses
- o tests

G. Conclusion — Bob Mecredy

Ginna Station
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B Steam Generator
Eddy Current Data Review

	not sizeable	0-25%	26-50%	51-75%	76-100%	TOTAL
March 1979	0	0	0	2	0	2
December 1979	0	0	6	5	0	11
April 1980*	18	1	2	7	2	31
November 1980	2	0	0	1	0	3
April 1981	0	5	4	5	0	14
February 1982	1	0	1	6	5	13
October 1982	28	4	5	7	16	59(31**)
April 1983	38	3	20	7	15	78
	87	13	38	40	38	211

* Crevice flushing implemented

** Number of tubes repaired (plugged)

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B-Steam Generator
EDDY CURRENT DATA REVIEW

A. Tubes above plugging criteria > 40% — 23 tubes

16 ~~old~~ new
7 ~~new~~ old

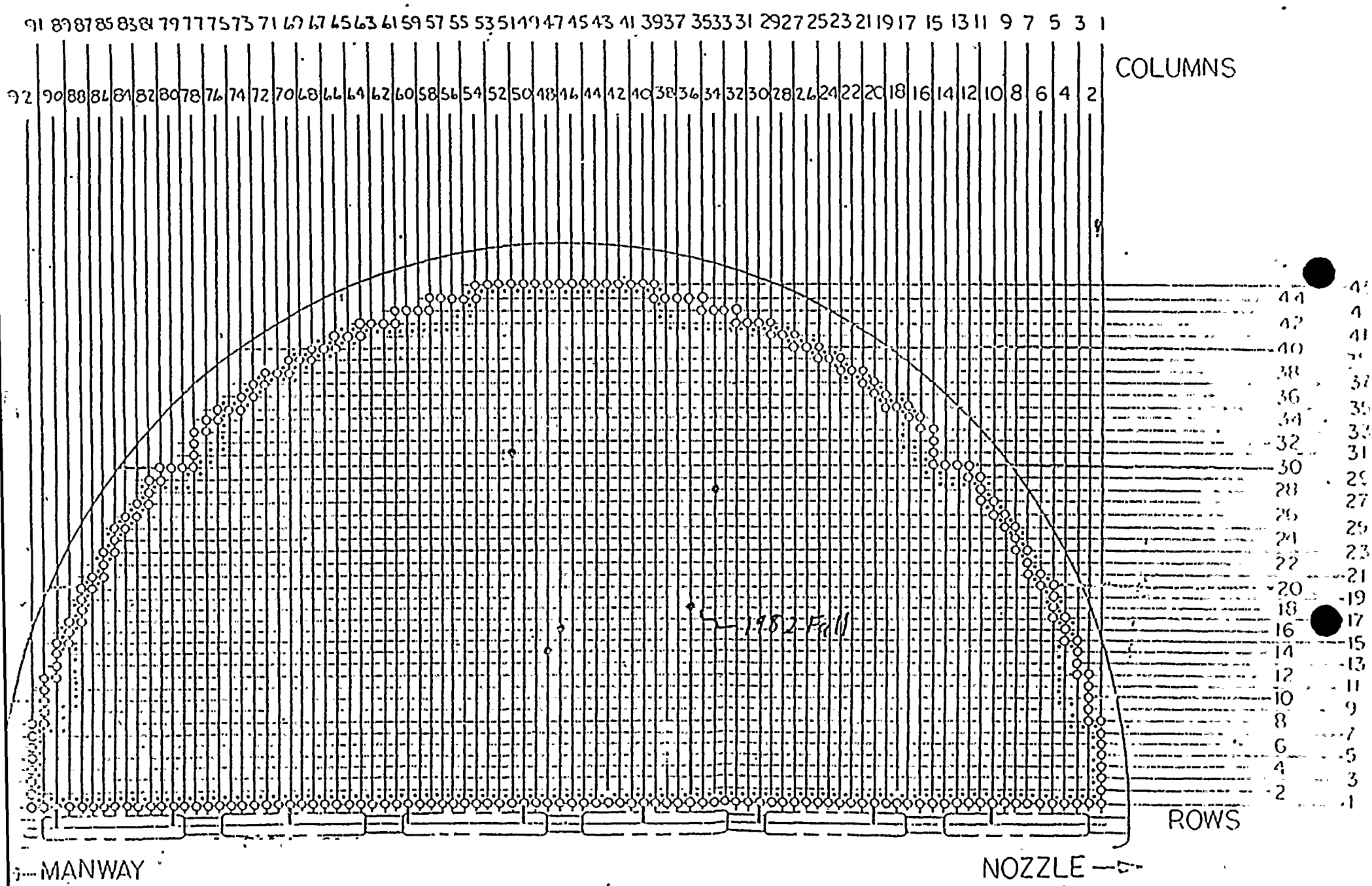
B. Tubes below plugging criteria < 40% — 55 tubes

35 new
20 old

C. Out of 78 tubes
- 51 were new defects
- 27 were there in the fall.
- of the 27, 24 had changed since the fall.

"A" S/G Hot Leg

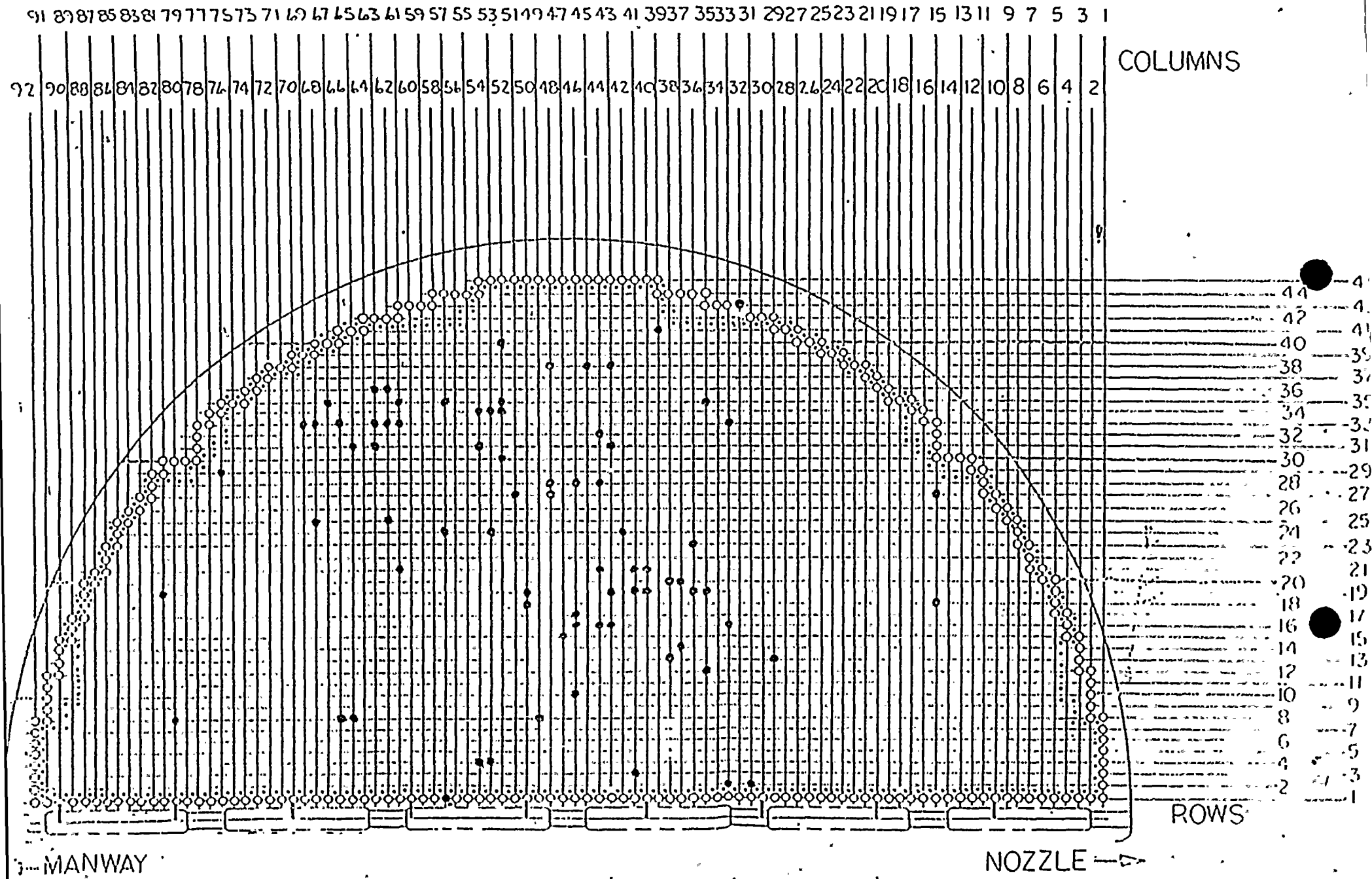
RG&E Steam Generator Spring 83 IGA



AEC 3
5/5/83

B SIG

RG&E Steam Generator Spring 83 IGA



AEC 3
5/2/83

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Steam Generator Sleeving
NRC Meeting
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Spring 1983 Summary

Category	Qty	U/T Exam Tested	U/T Exam Accepted	Pressure Test Tested	Pressure Test Accepted
Fall 1980	5	5	2	3	0*
Spring 1981	16	15	13	3	0*
Spring 1983					
o tubesheet	29(4+25)	N/A	N/A	N/A	N/A
o 36"	19	19	15	4	4
o 36" PTD	22	17	17	5	5
o 28" PTD	9	4	4	5	5
o pulled	1	N/A	N/A	N/A	N/A
o plugged	2	N/A	N/A	N/A	N/A
o repairs	4(3+1)	N/A	N/A	N/A	N/A

Ginna Station
Steam Generator Sleeving
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Analysis/Testing

A. Testing

- o locked tube braze
- o tube material tensile
- o bulged tube tensile
- o cold lockup
- o bulged brazed qualification

B. Analysis

- o main steam line break
- o operating transient loads
- o tube code stress calculations
- o sleeve code stress calculations