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SUBJECT: Responds to GL 95-03, "Circumferential Cracking Of Steam Generator Tubes."

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ROBERT C. MECREDY
Vice President
Nuclear Operations

June 27, 1995

U.S. Nuclear Regulatory Commission
Document Control Desk
Attn: Allen R. Johnson
Project Directorate I-1
Washington, D.C. 20555

Subject: Response to Generic Letter 95-03,
"Circumferential Cracking of Steam Generator Tubes,"
dated April 28, 1995
R. E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Mr. Johnson:

The subject Generic Letter requested licensees to evaluate recent operating experience with steam generator circumferential tube cracking, develop and submit a safety assessment to justify continued operation, and develop and submit plans for the next tube inspections. The following provides Rochester Gas & Electric Corporations (RG&E) response to this request:

1) Evaluation of Operating Experience

RG&E first discovered circumferential cracking at the roll transitions, located approximately 19.5 inches below the top of the tube sheet, in the Model 44 steam generators during the 1991 Refueling outage. Two indications were confirmed by Motorized Rotating Pancake Coil (MRPC) examinations (one in S/G A and one in S/G B). The discovery of these indications resulted in a limited expansion program bounding the subject tubes and no additional circumferential indications were located. From 1992 on, all roll transitions have been inspected using the 3-coil MRPC examination technique and several circumferential indications have been reported at each inspection. The circumferential eddy current indications appear to have initiated from the outside diameter (OD) of the tube and generally appear to be 50% through-wall, or less, by eddy current phase angle analysis. However, no depth sizing has been performed due to established sizing inaccuracies with the MRPC technique. In addition, the circumferential cracking appears to extend not more than 90 degrees around the circumference of the tubing in almost all cases. All circumferential, as well as axial, indications detected by MRPC have been repaired by either sleeving or plugging.

2) Safety Assessment

RG&E has performed inspections of all of the known tube high stress areas which are short radius tube u-bends, tube support plates and the tube roll transition within the tube sheet, to determine susceptibility to circumferential cracking. The only area identified to date exhibiting any circumferential cracking indication has been the roll transition area.

During each outage 100% of the roll transitions are inspected. To date there have been no through wall indications. All other indications that have been found have been repaired and the requirements for plant operation met. In addition, should a through wall condition at the roll transition occur during operation, the condition would be readily determined by station personnel through chemistry and radiation monitoring as well as primary system inventory changes and secondary side indicators. Further, leakage from a tube would be restricted to within the tube sheet since any outward tube movement is limited by the physical limitations of the tube bundle. This would limit the leak rate to less than that from a design basis tube rupture. Tube rupture considerations have been analyzed and provide bounding conditions for this consideration.

Based on the above considerations there are no safety concerns that would prevent continued plant operations.

3) Tube Inspections

RG&E will be replacing steam generators during the 1996 refueling outage. These steam generators will contain tubes manufactured from Thermally-Treated Inconel 690 which is more resistant to stress corrosion cracking than the mill-annealed Inconel 600 tubing in the current Ginna steam generators. RG&E will perform 100% inspection of new steam generator tubes prior to plant installation. Prior to plant start-up, a peripheral tube sample inspection will be performed to ensure that no damage occurred during installation. As part of the 1st refueling outage after installation a 100% baselining inspection will be performed to serve as a reference point for the future inspections. RG&E has kept abreast of developing technologies for the detection of steam generator tube

degradation and plans to use the most appropriate detection techniques for future eddy current examinations. RG&E will also continue to provide site specific training of all data analysis personnel supporting the evaluation of examination results.

Very truly yours,

Robert C. Mecredy

Subscribed and sworn to before me
on this 27th day of June, 1995.

Marie C. Villeneuve

MARIE C. VILLENEUVE
Notary Public, State of New York
Monroe County
Commission Expires October 31, 19[illegible]

REJ/384

xc: Mr. Allen R. Johnson (Mail Stop 14B2)
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US NRC Ginna Senior Resident Inspector