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May 20, 1983
IPN-83-46

Director of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Mr. Steven A. Varga, Chief
Operating Reactors Branch No. 1
Division of Licensing

Subject: Indian Point 3 Nuclear Power Plant
Docket No. 50-286
Verification of Steam Generator Repair Information

Dear Sir:

In a telephone conversation on this date you requested that certain aspects of the repair effort relative to the Indian Point 3 steam generators be verified. To simplify the response the statements requiring verification are repeated below followed by the verification statement as appropriate.

Statement: Utilizing eddy current equipment and processes specifically developed for verification of the presence of sleeving expansions and determination of sleeve inside diameters of various expanded regions, data will be collected on 100% of the installed sleeves.

Verification: Data has been collected on 100% of the installed sleeves utilizing an eddy current technique that is capable of verifying the presence of the various expanded regions.

Statement: After all hydraulic expansions and hard rolls are performed, eddy current testing of each sleeve tube will be conducted.

Verification: All of the sleeves installed at Indian Point 3 have been eddy current tested subsequent to completion of the installation processes.

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Statement: Eddy current data will be analyzed for all the sleeve installations to verify that all sleeves received the required hydraulic and roll expansions.

Verification: The complete and correct installation of all sleeves has been verified through the analysis of the eddy current data.

Statement: Additional analyses of the same eddy current data will be performed on 10% of the sleeve installations from each lot to obtain average diameters of roll regions for engineering assurance that equipment/tooling is performing satisfactorily.

Verification: The eddy current data analysis for expansion and roll inside diameters (upper and lower joints) was performed on 100% of the installed sleeves.

Statement: The average diameter measurements will be evaluated versus the expected tolerances established through the design requirements, laboratory testing results, and previous experience.

Verification: The eddy current testing diametrical measurements for each tube were evaluated versus the established acceptance criteria.

Statement: If process data is determined to be outside of expected ranges, further analyses will be performed and tubes not satisfying the basic process tech criteria will be dispositioned on a tube by tube basis.

Verification: The conditions in which eddy current testing analysis yielded data that was outside of the expected ranges were documented and dispositioned on a tube by tube basis.

Statement: The inservice inspection program consists of the following: the sleeves will be eddy current inspected to attain a base line signature.

Verification: The eddy current testing base line inspection has been performed on 100% of the sleeves installed at Indian Point 3.

Request: Provide documentation that training for workers involved in the steam generator repair effort is in accordance with Regulatory Guides 8.13, 8.27, and 8.29.

Documentation: All workers involved in the steam generator repair effort at Indian Point 3 were trained in radiation safety in accordance with Indian Point 3 lesson plans and procedures. These

lesson plans take into account and meet the intent of Regulatory Guides 8.13, 8.27 and 8.29. This fact is evidenced by the successful inspections and reviews by both NRC and INPO of our radiation safety training program (i.e., NRC inspections 81-14, 79-21, 79-28, and the 1981 and 1982 INPO Appraisals of Indian Point 3).

Request: Provide information on the job specific training given to workers involved in the steam generator repair effort.

Information:

A. Sleeving: Extensive job-specific training was given to the workers for the sleeving repair effort. Workers received a very extensive mockup training in full radiation protection gear. This mockup training was provided for all automatic and manual evolutions; the manual training was conducted in Peekskill, New York and the automatic training was conducted in Pittsburgh, Pennsylvania.

B. Girth Weld: Job-specific training was undertaken for workers involved in the girth weld repair. In addition to the normal welder qualifications, the grinders and welders were shown and practiced with properly ground and welded cracks.

Request: Provide information on the steam generator channel head decontamination method used.

Information: Decontamination was performed in the cold leg channel heads using the Westinghouse mechanical method, which utilized boron grit and water sprayed through jet nozzles onto the channel head bowl, divider plate, and tube sheet. The decontamination reduced general area exposure rates in the channel head by a factor of 2.7.

Question: Provide information on shielding utilized.

Information:

A. Shielding: The installation of nozzle cover shielding contributed to the ALARA effort by reducing exposure in the vicinity of the nozzle cover to about 70%. A minimum of two layers of lead were placed over the specially designed nozzle covers to achieve this dose savings. This shielding was most important for the worker who had to work on or near the nozzle cover. In addition, to remedy a problem of bad footing in the bowl, a layer of lead flooring was placed in the channel head. This significantly improved worker efficiency thereby saving dose.

B. Girth Weld: Lead shielding was installed in the girth weld area by hanging long lead blankets from the feed ring. Approximately 4000 lbs. of shielding was added to each generator. In addition, the water level in the steam generator was kept to within one inch of the working platform to maximize the water shielding. The combination of these two shielding efforts reduced the general area exposure rates from 1500 mR/hr to approximately 60 mR/hr.

Request: Provide information regarding video surveillance of the workers involved in the sleeving repair effort.

Information: Television cameras were used to observe workers during the sleeving operation. These were monitoring the tube sheet, the manway area, and the steam generator platform. The monitoring stations were located in low radiation areas.

Request: Provide information regarding the total dose expended on the steam generator repair effort.

Information:

	Estimate	Final Total
Sleeving	868*	733
Girth Weld	431**	387
Total	1,299	1,120

More detail is provided in the attached tables.

*Provided in PASNY letter IPN-83-2 dated 1/11/83.

**Provided in PASNY letter 83-6 dated 1/19/83.

Very truly yours,

J. P. Bayne
Executive Vice President
Nuclear Generation

cc: Office of Resident Inspector
Indian Point Unit 3
P. O. Box 66
Buchanan, New York 10511

STEAM GENERATOR SLEEVING

Dose Breakdown By Major Task and Total Dose

SG - SLEEVING TASK	MAN-REM
Pre-Sleeving Checks	17
SG Decon	32
Area & Equipment Set-up	6
Auto Sleeving - Honing/Fiber Optics	45
Auto Sleeving - Sleeve Insert/Expand	102
Auto Sleeving - Lower Hard Roll	16
Auto Sleeving - Upper Hard Roll	27
Manual Sleeving	358
Eddy Current	13
Tube Plugging	25
Mandril Loading	3
Equipment Maintenance	39
Honing Filter System	3
HP	26
Decon/Rad Waste	8
QA/Engineering	5
Reaming	8
Total =	733 man-rem

The breakdown of exposure by task is approximate since there was some mis-assignment of dose. However, the total of 733 man-rem represents an accurate account of the total dose for the sleeving effort.

STEAM GENERATOR GIRTH WELD REPAIR

Dose Breakdown By Major Task and Total Dose

GIRTH WELD REPAIR TASK	MAN-REM
Grinding, Welding	235
QA/Engineering	91
Radiography	6
Stress Relief Support	14
Decon Support	17
HP Support	24
	Total = 387 man-rem

The breakdown of exposure by task is approximate since there was some mis-assignment of dose. However, the total of 387 man-rem represents an accurate account of the total dose for the Girth Weld Repair Effort.