POWER AUTHORITY OF THE STATE OF NEW YORK
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April 28, 1983
IPN-83-30

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
Steam Generator Girth Weld Repair Program Status

Dear Sir:

This letter serves to provide the NRC with a summary of the steam generator girth weld repair program progress and details the manner in which the Authority intends to complete the remaining corrective work.

Repair work on the girth weld of all four steam generators through post weld heat treatment (PWHT) has been completed. This program has included extensive NDE efforts including 100% radiography (single wall as opposed to the original panoramic) and 100% penetrant examination of the entire girth weld area before PWHT. These efforts have been fully documented in previous reports submitted by the Authority, in the NRC inspection reports, and in a presentation to the Commission in Bethesda on 8 April 1983.

Following PWHT, ID examination was performed by PT and visual inspection in the vicinity of attachment welds used to fasten heat treatment equipment and insulation. Several linear indications were recorded. The largest of these was 1" long and the majority were 1/4" long or smaller. The indications have been inspected by welding engineers and consultants. The consensus is that the indications existed prior to PWHT but because of their size and tightness PT was unable to detect them. During PWHT the forces associated with the heat treatment cause the indications to open and, at elevated temperatures, fill with oxide which, on cooling, rendered these indications more detectable.

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In order to assess the magnitude of this development shielding was reinstalled after PWHT in No. 33 steam generator and 100% penetrant examination performed. All indications were satisfactorily removed. The deepest excavation was 3/8". No welding was required and blending was well within the minimum wall requirements for the vessels. A parallel effort in the No. 34 steam generator has been begun.

The Authority conducted a stress and fracture mechanics analysis of the joint. This attached analysis performed in accordance with ASME Section XI demonstrates that a 360° circumferential crack halfway through the wall would not pose a safety question considering all operating and transient stresses postulated by the steam generator designer. The Authority has reviewed the ALARA concerns and concludes that an additional 22.4 Man-Rem would be required to remove the remaining indications in steam generators 31, 32, and 34. The indications in steam generator 34 have been mapped and will provide an adequate basis for follow up inspection. To map 31 and 32 steam generators would require 12 Man-Rem. The implications of continued repair were discussed with Region 1 Inspector, Mr. S. Reynolds and Mr. D. Smith of the NRR staff. An estimated Man-Rem summary for various options are summarized in the attached table.

These repairs were performed following provisions of Section III of the ASME code. Section III does not provide for analytical evaluation of indications. Section XI of the ASME code does contain a provision for analysis. The analysis discussed above has already been presented to the Commission and clearly demonstrates that the indications are acceptable. Application of the ALARA principle dictates that the Authority act to limit personnel exposure. Consequently, the Authority requests specific relief to apply the provisions for analysis contained in Section XI of the ASME code for this repair which was conducted under Section III. This will result in leaving steam generators 31, 32 and 34 as is.

The commission is requested to respond by May 4, 1983 on this approach. To perform corrective work after the generators are completely closed out and deemed inaccessible increases the man rem estimates significantly.

Should you or your staff have any questions regarding this matter, pelase contact Mr. P. Kokolakis of my staff.

Very truly yours,

J. P. Bayne
Executive Vice President
Nuclear Generation

Atts.
cc: attached

cc: Resident Inspector's Office
Indian Point Unit 3
U. S. Nuclear Regulatory Commission
P. O. Box 66
Buchanan, New York 10511

STEAM GENERATOR GIRTH WELD REPAIR

ESTIMATED MAN-REM SUMMARY

1. Removal of PWHT equipment, 100% dye penetrant examination and removal of all indications in all four steam generators.

51.35 Man-Rem

2. Removal of PWHT equipment, 100% dye penetrant examination, removal of indications in steam generator 33, mapping of and grinding to 1/8" indications in steam generator 31, 32 & 34.

40.95 Man-Rem

3. Removal of PWHT equipment, 100% dye penetrant examination, removal of indications in steam generator 33, mapping of and grinding to 1/8" indications in steam generator 34 and mapping of indications in steam generator 31 & 32.

33.95 Man-Rem

4. Removal of PWHT equipment, 100% dye penetrant examination of steam generator 33 & 34, removal of indications in steam generator 33 and mapping of and grinding to 1/8" indications in steam generator 34. Removal of PWHT equipment and dye penetrant testing of attachment weld areas in steam generators 31 & 32.

28.95 Man-Rem