Indian Point 3
Nuclear Power Plant
P.O. Box 215
Buchanan, New York 10511
914 739.8200

New York Power Authority

February 2, 1987
WAJ-87-008Z
MPC-87-012B

Docket No. 50-286
License No. DPR-64

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

Attention: Mr. Steven A. Varga, Director
PWR Project Directorate No. 3
Division of PWR Licensing - A

Reference (1): W. A. Josiger letter to S. A. Varga, dated January 30, 1987.

Subject: Indian Point 3 Nuclear Power Plant
Relief Request for ASME Boiler
and Pressure Vessel Code Requirements
Regarding Component Cooling Water
Heat Exchanger No. 31

By letter dated January 30, 1987, the Authority requested relief from Section XI of the ASME Boiler and Pressure Vessel Code pursuant to 10CFR50.55a(a)(3). The basis for the relief request, as described in Reference (1), is contained in the attached Nuclear Safety Evaluation, NSE 87-03-012 AC, Rev. 2.

This Nuclear Safety Evaluation is filed at the Indian Point 3 site and is provided for your information in support of the Reference (1) relief request.

If you have any questions regarding this matter, please call Mr. M. P. Cass of my staff.

Sincerely,

W. A. Josiger
Resident Manager
Indian Point 3 Nuclear Power Plant

WAJ:MPC:lg

A047
1/1

cc: Resident Inspector's Office
Indian Point Unit 3
U. S. Nuclear Regulatory Commission
Buchanan, NY 10511

Mr. J. D. Neighbors, Sr. Project Manager
PWR Project Directorate No. 3
Division of PWR Licensing - A
U. S. Nuclear Regulatory Commission
7920 Norfolk Avenue
Bethesda, MD 20014

NEW YORK POWER AUTHORITY
Indian Point No. 3 Nuclear Power Plant

NUCLEAR SAFETY EVALUATION

NSE 87-03-012 AC, Rev. 2
NUMBER

Subject: Justification For Operation Of CCW HX #31 with Temporary Mechanical Sealing Device.

For Technical Service Department Reply

A. The proposed Installation test or Modification:

1. ( ) Does (X) Does not - Increase the probability of occurrence or consequences of an accident or malfunction of structures, systems, or components important to safety previously evaluated in the FSAR.

2. ( ) Does (X) Does not - Create the possibility of an accident or malfunction of safety-related structures, systems, or components of a different type than any previously evaluated in the FSAR.

3. ( ) Does (X) Does not - Reduce the margin of safety as defined in the basis for Technical Specification.

4. ( ) Does (X) Does not - Involve a change in the Technical Specifications.

5. ( ) Does (X) Does not - Degrade the Security Plan or the Detection and Suppression Systems of the Fire Protection System.

6. ( ) Does (X) Does not - Affect the environmental impact of the plant.

7. ( ) Does (X) Does not - Involve an unreviewed safety question

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MVG M. V. Garofalo 2/2/87
Prepared by/Date

Review [signature] 2-2-87
Tech. Serv. Engr. /Date

Approved [signature] 2-2-87
Tech. Serv. Supr./ Date

Reviewed [signature] 2/2/87
PORC/Date

Distribution:
SRC Chairman
PORC Chairman
Q.A. Superintendent

Justification For Operation Of CCW HX #31 With Temporary Mechanical Sealing Device

I. PURPOSE

To evaluate the operation of Component Cooling Water Heat Exchanger #31, with a corrosion-induced hole in the service water outlet waterbox.

II. DESCRIPTION

CCW Heat Exchanger #31 is part of the Component Cooling Loop of the Auxiliary Coolant System. The component cooling loop was designed to remove residual and sensible heat from the Reactor Coolant System via the residual heat removal loop during plant shutdown, to cool the letdown flow to the Chemical and Volume Control System during power operation, and to provide cooling to dissipate waste heat from various primary plant components.

Active loop components which are relied upon to perform the cooling function are redundant. Redundancy of components in the process cooling loop does not degrade the reliability of any system which the process loop serves.

Component Cooling Water Pumps and component cooling water heat exchangers are normally operated to provide cooling water from the components located in the Primary Auxiliary Building and the Containment Building. The water is normally supplied to all components being cooled even though one of the components may be out of service.

The two component cooling water heat exchangers are of the shell and straight tube type. Service water circulates through the tubes while component cooling water circulates through the shell side. The outlet water temperature of the component cooling heat exchangers is controlled manually by throttling the service water throttle valves.

In the normal mode of plant operation, the service water outlet waterbox of CCW HX #31 developed an approximately 3/8" diameter hole. The cause for development of the hole is unknown, but it is believed that it is an imperfection in the application of Belzona Molecular Ceramic Metal Coating. In the vicinity where a sacrificial anode support lug had at one time been installed, it is believed that localized corrosion was initiated through the 1/2" wall thickness of the service water outlet waterbox of the Heat Exchanger.

III. EVALUATION

The CCW Heat Exchangers were designed and fabricated in accordance with the requirements of Section VIII of the ASME B & PV Code and have an ASME U-1 Data Report to document the design and fabrication. 2

As previously stated, the service water outlet waterbox of CCW-HX #31 has developed a small hole, approximately 3/8" in diameter. The flowing medium on the service water outlet waterbox is service water, which eventually returns to the river. The leakage of the service water through the hole in the service water outlet waterbox of the heat exchanger does not affect the operation of the Service Water System, the Component Cooling Water System, nor does it pose a concern in the operation of other plant systems. Also, the operation of the CCW HX #31 is not impaired, in any way, by the leak on the outlet side.

The small diameter of the hole and the low operating pressure of the Service Water System at this point result in negligible leakage through the outlet water box. The small amount of leakage does not represent any potential flooding concern. The leakage through the outlet waterbox would be collected to the Waste Holdup Tanks via the normal PAB floor drain system necessitating that it be processed as radioactive waste although not from a contaminated source.

As a means of mitigating the leak, a combination of red rubber and Viton gasket materials with a 16 gauge stainless steel backing plate was placed over the hole and banded in place via two - 2700# rated nylon slings wrapped around the periphery of the waterbox with two small hand winches attached to maintain sufficient force on the slings to prevent leakage. Due to the low pressure of operation of the service water system in this mode, less than 50 psig at this location, the elastic bands serve as a suitable means of temporarily mitigating the leak without violating the integrity of the CCW HX #31, nor affecting the ASME Section VIII certification for the vessel. A force of approximately 5-6 pounds exerted by the gasket over the effective area of the hole is all the force that would be necessary to contain the leakage against the design pressure rating of 150 psig. Mitigation of the leak will enable the radwaste processing to be minimized as a result of PAB floor drain accumulation. While the hole is not expected to enlarge appreciably during the remainder of the operating cycle, paragraph UG-36 of Section VIII of the ASME B & PV Code provides allowance for up to a two inch (2") diameter hole. It has been demonstrated by calculation that with the use of the two - 2700# rated nylon slings and the 16 gauge stainless steel backing plate, a hole greater than two (2) inches in diameter, could be accommodated. 2

To assure that the identified hole was a small localized condition, a sample UT inspection along the entire periphery of the waterbox was performed. The results show that this is an isolated condition. A minimum wall calculation performed by Technical Service (ref. T.S. Calc. No. 91) in accordance with ASME Section VIII, Article UG-27 for the design pressure-temperature rated condition indicates a minimum allowable wall thickness requirement of 0.237 inches. The UT results show that for the vast majority of the entire waterbox periphery, the base metal thicknesses are in excess of 0.45 inches and all thicknesses are well above the allowable minimum wall thickness.

The structural integrity of the heat exchanger is unaffected as the 3/8" hole is not a stress induced defect but a corrosion induced phenomenum. This hole could not cause crack propagation under stresses that would be imposed under design basis loading. There could not, therefore, be any gross loss of pressure boundary or deformation.

Undetected leakage would not occur in this area since operations conduct routine tours of the area of the plant twice per shift, or approximately every four (4) hours. 2

Before returning to service from the scheduled 5/6 refueling outage, the CCW HX #31 will be taken out of service and the 3/8" diameter hole in the outlet waterbox of the HX will be repaired to ensure that the original design standards for the vessel are maintained.

This modification can be performed based on the following conclusions:

A. This modification will not increase the probability of an occurrence or consequences of an accident or malfunction of equipment important to safety previously evaluated in the FSAR.

B. This modification does not create the possibility of an accident or malfunction of any type other than those previously evaluated in the FSAR.

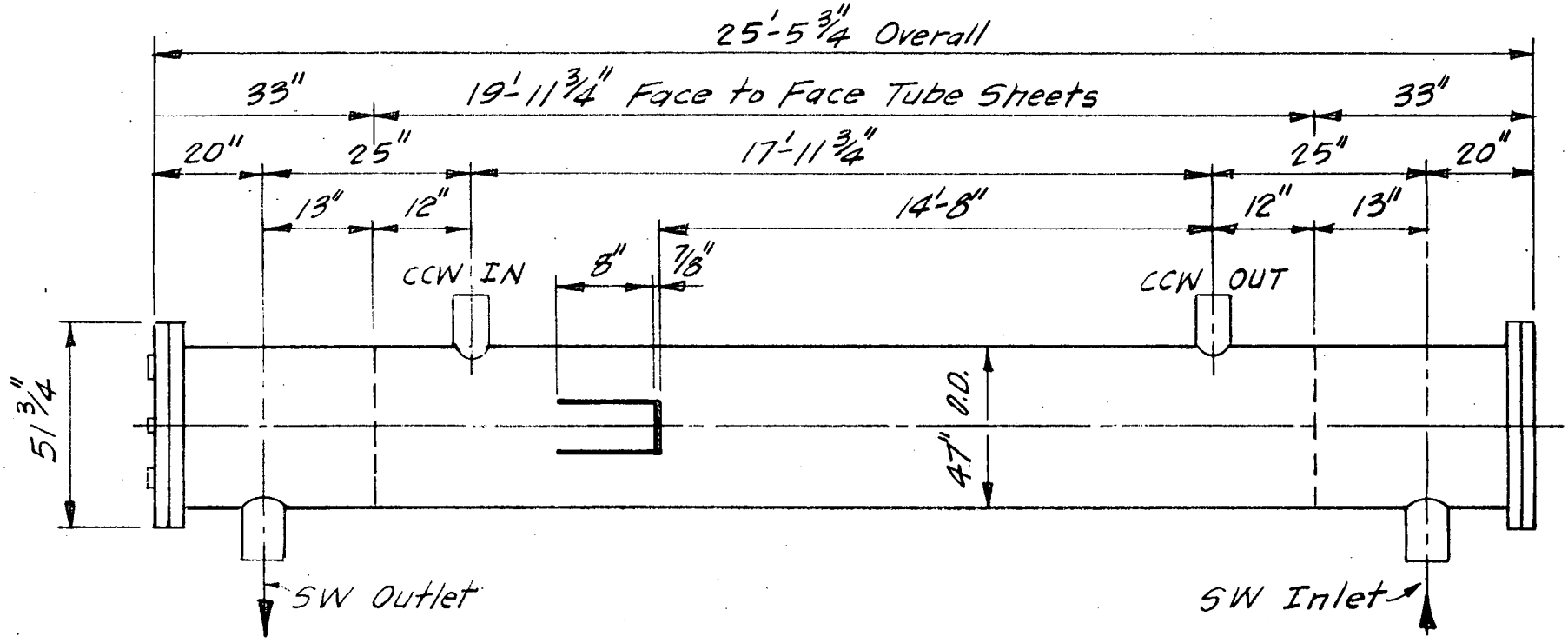
C. This modification does not reduce the margin of safety as defined in the basis for the Technical Specifications.

D. This modification does not involve a change in Technical Specification.

E. This modification does not affect the environmental impact of the plant.

F. This modification does not degrade the Security Plan or the Fire Detection System and Suppression Systems.

It is therefore concluded that this modification does not involve an unreviewed safety question.



CCW HEAT EXCHANGER

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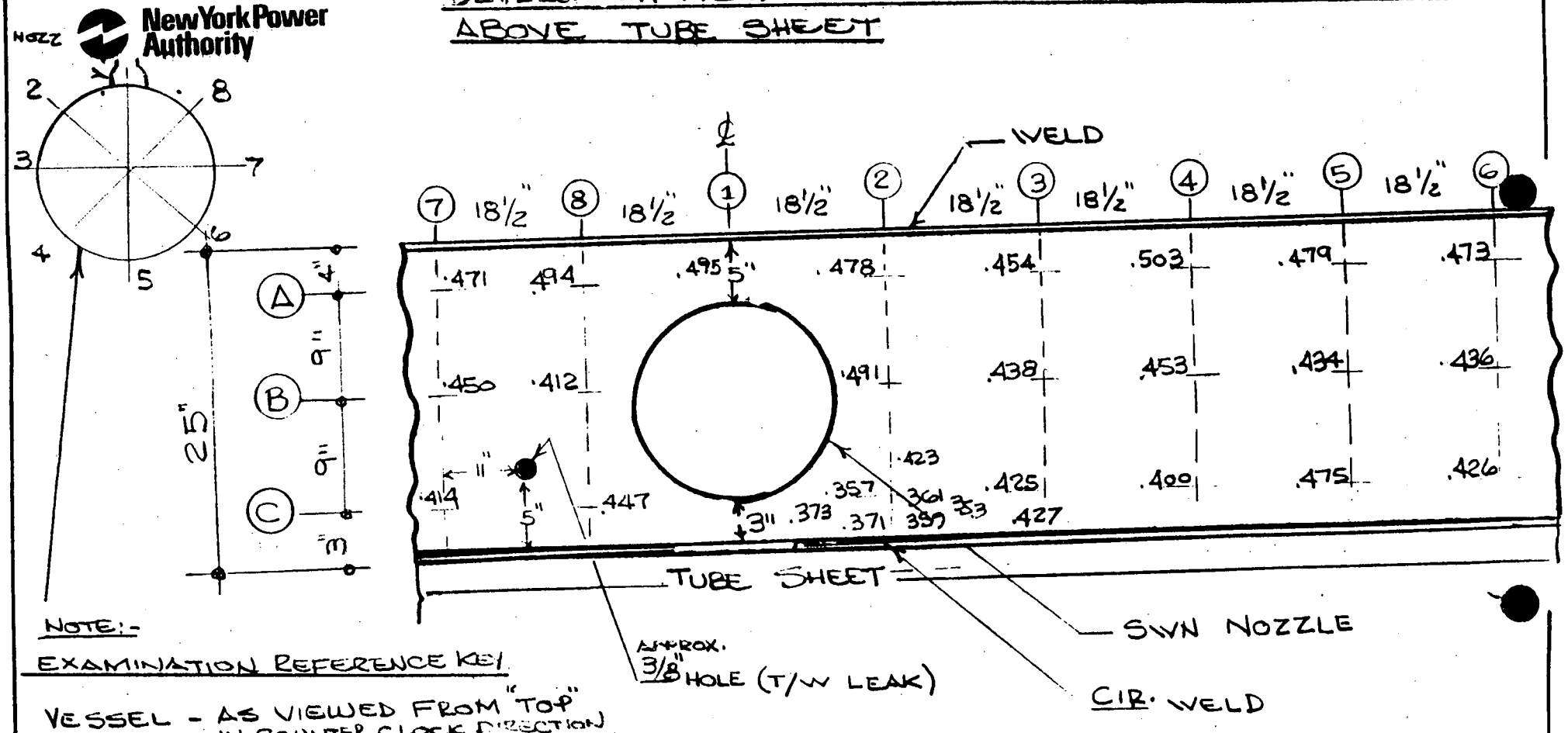
New York Power Authority

ULTRASONIC THICKNESS MEASUREMENTS OF CCW HX #31

DEVELOPMENT VIEW OF TOP CHANNEL HEAD SHELL ABOVE TUBE SHEET



NOTE:-

EXAMINATION REFERENCE KEY

VESSEL - AS VIEWED FROM "TOP" IN COUNTER CLOCK DIRECTION ORIENTATION ℄ OF SWN NOZZ.

NDEP: 9.4-12

DATE: 3-10-86

REVISION: 1

EXAMINERS 1 SIRAJ MEMON Date 1-29-87 Level III

2 _____ Date _____ Level _____

REVIEWER _____ Date _____

REVISION -- 1