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December 8,1972

Mr. R. Kruesi, Director
Directorate of Regulatory Operations
United States Atomic Energy Commission
Washington, D. C. 20545

Dear Mr. Kruesi:

SUBJECT: THREE MILE ISLAND NUCLEAR STATION UNIT 1
DOCKET NO. 50-289
ULTRASONIC INDICATIONS IN REACTOR COOLANT PIPING

This letter is to further clarify the telephone conversation with Region I DRO Office on November 8, 1972, concerning anomalous conditions in seven shop welds during pre-baseline inservice inspection.

Pre-baseline ultrasonic examinations performed of welds in the reactor coolant system indicated that there were five welds that had ultrasonic reflectors greater than permitted by the ANSI B31.7 Code. All these welds are B&W shop welds. The welds are identified as follows:

WELD NO.	LOCATION/TYPE
CON-057	Pump 1C (Northwest) Suction Leg -- Stainless Steel Girth Weld.
RC-078	Pump 1C (Northwest) Suction Leg -- Stainless Steel Carbon Steel Transition Girth Weld.
RC-097	Pump 1D (Southwest) Suction Leg -- Stainless Steel Carbon Steel Transition Girth Weld.
CON-022	Hot Leg Elbow on Top of West Steam Generator -- Carbon Steel Girth Weld
CON-019	Hot Leg in Elbow on Top of East Steam Generator -- Carbon Steel Longitudinal Weld.

NOTE: Two other carbon steel welds, numbers RC-063 and RC-013 were previously identified as containing UT indications; however, the indications are acceptable per ANSI B31.7 requirements.

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Radiographic examinations of stainless steel welds CON-057 and RC-078 were performed. The RT films were evaluated independently of the UT results, and the RT evaluation essentially confirms the presence of indications at the same locations found by UT. A UT examination was performed from the inside of weld CON-057 and this examination confirmed the original UT examination which was performed from the outside surface. The third stainless steel weld, RC-097 located in the southwest leg below the reactor coolant pump, is not accessible from the inside for radiographic examination since the pump internals are installed in that leg.

Early in November 1972, B&W performed additional UT examination of weld CON-057. Concurrently, they reviewed the RT films of welds CON-057 and RC-078. The following is a summary of B&W's results:

1. B&W confirmed the presence of reflectors in their UT examination performed from the outside surface of weld CON-057. They were also able to locate these same type reflectors in the weld when performing UT from the inside surface. In addition, loss of back reflection of the UT signal through the weld using a longitudinal beam was observed. B&W concluded that the UT reflectors were caused by the coarse granular structure in the weld and near the line of fusion between the weld and base metal. B&W would not classify the reflectors as unacceptable linear indications.

2. B&W stated that none of the indications shown on the films of both CON-057 and RC-078 exceeded code limits of acceptability. In the case of CON-057, B&W concluded that the film indications which appeared to be pockets of slag were not interconnected. In the case of RC-078, B&W concluded that the linear indications are granular phenomena occurring at the line of fusion as a result of a scalloping effect induced during welding. B&W requested that an additional RT examination of CON-057 be made to obtain films for composite viewing, rather than for single film reviewing.

3. B&W has agreed with the UT examination of the two carbon steel welds CON-022 and CON-019. They are attempting to either justify the acceptance of the indications or the carbon steel welds will have to be repaired.

Since the parties cannot agree concerning the acceptability of the indications in the stainless steel welds, we are preparing to perform exploratory sampling of one of these welds. The results of this destructive sampling will determine if the indications are grain anomalous conditions or actual defects. Once the question to the existence of the indication in a stainless steel weld is settled, this will resolve the questions in the two remaining welds.

The indications in the carbon steel welds are being analyzed by B&W. If in their analysis they cannot justify the UT indications, i.e., code case or fracture mechanics, then the indications will be removed and the welds repaired.

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Any further technical information you require will be available at the Three Mile Island site for your review.

Very truly yours,

J. G. Miller
Vice President

mw
cc: Mr. J. P. O'Reilly

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