

JUL 07 1982

MEMORANDUM FOR: TMI Unit #1 - Docket No. 50-289

THRU: Jacque P. Durr, Chief, Materials & Processes Section, DETP *JD 7/6/82*

FROM: ✓ Harold Gray, Reactor Inspector, MPS, DETP

SUBJECT: June 15, 1982, GPU MEETING ON STEAM GENERATOR EXPLOSIVE TUBE/TUBESHEET SEALING

The meeting purpose was to review the technical status of the repair of Steam Generator Tubes to achieve a better than allowable leak rate. The plan is to explosive expand the tubes for a distance of about 10" into the tubesheet to achieve leak tightness.

The FRC (Franklin Institute Research) is contracted to the NRC to study, observe and conduct supplemental tests as required to monitor the explosive expansion development and later application to the steam generators.

Meeting attendees included GPU, FRC and NRC representatives.

The GPU presentation included review of the ACRS report of 6/7/82 (portions attached) and detailed presentation of the tube explosive expansion program. Arrangements were made for FRC to observe test shots at Foster Wheeler Corp. (Livingston Research) during the week of 6/21/82 and for a follow-up meeting in Bethesda on 6/29/82 (Conrad McCracken - (301) 492-8595).

The Region I (H. Gray) concerns at this time as discussed with C. McCracken include:

1. Will explosive expansion seal the type defects present at TMI? Two (2) unusual factors include an Iron oxide layer in the tube holes and the factor of tubes being in tension when at ambient temperature.
2. To what extent will tube elongation resulting during expansion change the tube loading (stress) at ambient temperature?
3. The plan as of 6/15/82 included plugging all tubes ( 1000) with defects below the 6" level from the top of the upper tubesheet. The region based inspector questioned if other options would be evaluated such as expanding the 1000 tubes that would otherwise be plugged to below the 10" level (but not below the 22" level).
4. Would the ordinance cord method of detonation result in a slight time delay between neighboring tube expansions? What are the time delay variables between the two types of detonation?

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5. Will individual tube explosive loads be determined on the minimum or maximum tube yield strength or close to the yield strength of the tube sheet ligament? What is the required grain/foot load for each of these conditions?
6. What provision is in progress to provide a list of essential and non-essential variables similar to those in ASME Section XI, IWB 4453 for tube plugging by explosive welding?

*Harold Gray*

Harold Gray  
Reactor Inspector

cc:  
S. Ebnetter  
C. McCracken