

THREE MILE ISLAND NUCLEAR STATION, UNIT NO. 1

DOCKET NO. 50-289

RESULTS OF INVESTIGATION OF SCRATCHES ON THE  
REACTOR VESSEL INTERNALS THERMAL SHIELD

A. Description of Incident

On May 14, 1973, the upper section of the Lower Core Support Assembly (LCSA) shipping container was removed in preparation for assembly of the TMI #1 Reactor Internals. The LCSA shipping container was located in a vertical position at elev. 306 of the Reactor Building fuel transfer canal. Lifting of the shipping container upper section was accomplished with the Reactor Building polar crane.

Although there was no indication of rubbing while the container section was being raised, as the top section of the LCSA was exposed, scratches were observed at eight (8) locations around the top outer surface of the thermal shield.

The scratches varied in depth from .031" to .002" and in length from approximately  $2\frac{1}{4}$ " to  $10\frac{1}{2}$ ". There were two areas in which the metal was raised .010" and .030" respectively. Transfers and measurements of the affected areas were taken and recorded on May 15, 1973. A copy of this data is attached.

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Six (6) of the scratches were in locations opposite the shipping container cover screw pads; these pads had not been released prior to removal of the shipping container upper section.

Removal of the shipping container upper section was performed in accordance with an approved construction procedure, NCP-10B, and Babcock & Wilcox Field Specification FS-III-1e. Neither of these procedures identified a requirement for backing off the six support pads prior to cover removal.

The remaining two scratches were located opposite shipping container gusset plates on the W-Y axis. While it is obvious that the scratches resulted from the gussets rubbing the thermal shield, it cannot be concluded that these scratches definitely occurred during shipping cover removal on 5/14/73. The gussets are diametrically opposed.

During subsequent inspection of the thermal shield outer surface, three additional areas of minor nicks and scratches were discovered. These varied in depth from .015" to .002" and from approximately  $3\frac{1}{2}$ " long to nicks of approximately  $1/16$ " and  $3/16$ " in diameter. These areas were located at 8" and 2'-0" above the flange of the lower section of the shipping container (see location sheet for radial position). There is no evidence that these minor scratches occurred during removal of the shipping container section.

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B. Analysis of Safety Implications

The scratches are considered minor and do not compromise in any degree the integrity or function of the thermal shield, which is a lowly stressed component in service.

C. Corrective Action

Repair of all scratch areas has been accomplished in accordance with the following:

1. Mechanically remove all raised metal above base (or parent surface) and loose metal by conventional manual methods (hand filing and stoning). Power grinding shall not be allowed.
2. Visually inspect using 5X magnification. Any evidence of raised and/or loose metal shall be cause for rejection and further rework.
3. Quality Control to witness and document all repairs.

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