

ENCLOSURE

HARTSVILLE (UNIT B-1) AND PHIPPS BEND (UNIT 1) NUCLEAR PLANTS
RADIOGRAPHIC EXAMINATION OF HARTSVILLE B-1 DRYWELL VENT STRUCTURE
AND PHIPPS BEND UNIT 1 REACTOR PRESSURE VESSEL PEDESTAL WELD BUILDUP
MADE AND EVALUATED IMPROPERLY
REPORT NO. 1 (FINAL)
NCR S-7 AND S-13

Reference: Letter from L. M. Mills to James P. O'Reilly dated October 1, 1979.

On January 15, 1980, TVA informed NRC-OIE Region II, Inspector R. W. Wright, of a potentially reportable condition under 10CFR50.55(e) concerning improper exposure and evaluation of radiographic examination (RT) film on weld buildup edges (buttering) of the Hartsville unit B-1 drywell vent structure and Phipps Bend unit 1 reactor pressure vessel (RPV) pedestal by McManus Inspection Service of Milwaukee, Wisconsin.

Description of the Deficiency

This deficiency is a combination of (1) defects (slag inclusions, etc.) in buttered edges of plates provided to Hartsville for use in the unit B-1 drywell vent structure and to Phipps Bend for use in the unit 1 RPV pedestal and (2) inadequate exposure and evaluation of RT film made on the edge of the same plates. The RT's were performed by McManus Inspection Service (McManus) on a contract with Lakeside Bridge and Steel (Lakeside), the plate supplier. Evaluation of the film was accomplished by either McManus or Lakeside NDE Level III inspectors.

These plates were being provided to TVA by Lakeside as part of contracts on the drywell vent structure and RPV pedestal for all six Hartsville and Phipps Bend units. Previously, as reported to your office (see the final report referenced above), defects were found in plates fabricated by Lakeside which contained buttered edges. As a result of those deficiencies, GE instructed Lakeside to perform 100-percent RT on buttering and Lakeside agreed that, "For all RPV pedestal and drywell vent structure segments shipped from Lakeside on or after June 1, 1979, Lakeside will perform 100-percent RT and repair, as necessary, all buttered edges before the segments are shipped to TVA."

McManus performed the RT's as agreed, but due to an apparent misunderstanding between McManus and Lakeside as to the specific use of the radiographs and/or applicable specifications for the RT's, McManus did not consistently place the penetrameters on the source side of the plate. McManus placed the penetrameters in the most convenient position which was often on the film side and gave a much better penetrameter image than if they were placed on the source side. Some of the radiographs made by McManus were of insufficient density to be read accurately. Part of the evaluation or interpretation of the RT film was performed by an NDE Level III inspector from McManus and the remainder by a NDE Level III inspector from Lakeside. The inspectors for both companies approved RT's for plates which contained obvious (as evaluated by a TVA NDE Level III inspector) slag inclusions apparent in the film and which were marked by the interpreter(s) as "surface defects."

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The defects in the plates were noted by the TVA resident inspector at Lakeside when he was reviewing the RT film, but since the defects were signed off by either the McManus NDE Level III or by the Lakeside NDE Level III as being surface defects, the TVA inspector released the plates for shipment to the TVA job sites.

Cause of the Deficiency

The presence of the slag in the subject plates was not detected due primarily to the inaccurate interpretation of the slag inclusions as "surface defects" and only partially to the low density or quality of the RT's themselves. TVA can offer no explanation for the failure of both McManus and Lakeside NDE Level III inspectors to accurately evaluate the RT film.

Safety Implications

Had the defects in the buttering performed by Lakeside gone undetected, the structural integrity of the Hartsville unit B-1 DVS and the Phipps Bend unit 1 RPV pedestal could be jeopardized under dynamic loading during an earthquake or LOCA.

Corrective Action

TVA will remove and repair all defects which are apparent on the McManus RT film. Then, TVA will reexamine with 100-percent RT all buttered edges of the subject plates at Hartsville and Phipps Bend and make any further repairs necessary to bring them into compliance with applicable specifications or criteria.

Action Taken to Prevent Recurrence

A TVA NDE Level III inspector has investigated the quality of recent RT work being performed by McManus at Lakeside on plate weldments and buttered edges. This work is being performed in accordance with acceptable standards of the industry. Evaluation of these RT's is now being performed properly by Lakeside. (McManus is no longer evaluating RT film for Lakeside.) TVA has verbally requested that Lakeside not let any further inspection contracts with McManus on items fabricated for TVA. TVA will also examine closely the work of any new companies under contract by Lakeside for inspection of items fabricated for TVA. The TVA resident inspector at Lakeside has also been instructed to evaluate more closely RT film at Lakeside before release for shipment.

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