72-1014

From: Geoffrey Hornseth
To: Christopher Regan
Date: 2/4/03 4:10PM
Subject: closure of Holtec lid welding issue

see attached

It wound up longer than anticiapted, but I felt it was strange enough to warrant it.

Geoff

CC: Jack Guttmann

NMSS01

Evaluation of the Holtec investigation and corrective actions concerning the MPC lid material weldability issue,

by Geoff Hornseth, Senior Materials Reviewer, SFPO.

In Oct.-Nov. 2002, the staff became aware of problems with the structural lid closure weld on a Holtec MPC cask being loaded at Hatch. It became evident that something had adversely affected the weldability of the lid base material. Additional investigation by the plant staff uncovered another lid from stock that had the same problem. That problem was the formation of numerous, fine, connected cracks in the lid base material HAZ adjacent to the fusion line (weld toe). Crack orientation was parallel to the fusion line.

The staff requested Holtec to provide a copy of their root cause determination for review due to the implications of there being a potential generic problem with Holtec MPC lids. Review of the supplied documents, along with several conversations with the Holtec Staff, revealed that the observed cracks on the 2 lids in question was due to liquation cracking.

The 2 lids were noted to have very large grains (larger than ASTM size 00). It was determined that the forge shop that had produced the lids had either not subjected the forgings to sufficient upset during the final forging pass, or, had overheated the lid material during the forging process.

It was revealed that the Holtec subcontractor responsible for shop fabrication had previously scrapped two other lids due to the same weldability problems, but nothing had been done to determine the root cause.

The lids met the applicable ASTM specification, which does not specify grain size measurement/control.

As a result, Holtec implemented changes to their procurement and QA/QC procedures. The corrective actions included a purchase specification for grain size and a weldability test. Additionally, staff training was provided regarding the insufficient evaluation of the two lids scrapped by the fab shop and to provide additional guidance for evaluating the impact of deviations. All Holtec lids not yet in-service were field tested for grain size and also given additional weld test if grain size exceeded ASTM 1.

The SFPO staff found that the Holtec investigation and corrective actions were satisfactory and considers the incident closed.