

From: William Cullen , RES
To: Carolyn Fairbanks; Cayetano Santos; Deborah Jackson; Jeffrey Hixon; Mark Kirk; Nilesh Chokshi; Robert Tregoning; Shah Malik
Date: 9/12/02 4:56PM
Subject: Re: Draft SOW for Davis Besse Crack

I just finished reading the document about the defects in six-wire clad that Mike got from Merschoff (?). While reading, I realized a couple of things I had not thought about earlier.

(1) Residual stresses at the clad/LAS interface. When the clad solidifies at the interface first, I think I remember that the LAS is put into compression, and the clad is put into tension. So when the LAS corrodes away, and the compressive stresses disappear with it, the clad on the interface side is going to be left in tension, giving a lot of stress favoring initiation of cracks. This stress is probably independent of orientation.

(2) The report describes interdendritic cracking at the surface, with slag (presumably flux) inclusions. While the chances of having flux entrapment all the way down at the interface are really, really minimal, I do suppose that the interdendritic grain boundaries are still the weak link in the system.

(3) The report speaks of archived nozzle dropouts (this was a nuclear Navy vessel). I don't think the nuclear Navy ever throws anything out of its closet, and it may be possible that we could get our hands on some six wire clad from the early 70's era by working with the right people. I know that working with the nuclear Navy is a PITA, but it might be worth a try, in this case.

BC

William H. Cullen, Jr., Sr. Materials Engineer
Materials Engineering Branch
Office of Nuclear Regulatory Research
(for mailing, abbreviate as "RES/DET/MEB")
US Nuclear Regulatory Commission
Mail Stop: T-10 E10
Washington, DC 20555

Ph: 301 - 415 - 6754
FAX: 301 - 415 - 5151
whc@nrc.gov

>>> Cayetano Santos 09/12/02 04:39PM >>>

Attached is draft SOW we put together today to try to address the cracking found in the cladding of Davis Besse.

H-4