From: "Tom Thompson" <TThompson@nacintl.com>
To: Tim McGinty <TJM1@nrc.gov>
Date: Wed, Jun 21, 2000 1:44 PM
Subject: Re: Fwd: MY SAR Revision, 6/19/00

Tim/David:

Mike Yaksh has been on vacation since the middle of last week, but will return to the office tomorrow. If my response does not resolve this open item, Mike will get involved tomorrow.

I certainly am not an expert in fracture toughness/critical flaw size evaluation, but I consider myself knowledgeable in that area. Yesterday, in Mike's absence, in order to obtain some additional confidence in providing a response to David's question on the bounding critical flaw size for SA-182 (forging) versus SA-240 (plate) structural lid material as determined by the J-integral/tearing modulus approach, I called the subcontractor (Structural Integrity Associates, Inc.) who performed the critical flaw size evaluation for NAC. They confirmed my thinking and understanding of this item.

The weld between the structural lid and the canister shell is evaluated, i.e., the flaw is assumed to be located in the weld material (not the Type 304L stainless steel lid or the Type 304L stainless steel canister shell). A typical weld filler metal for this weld is E308L. Standard practice is to select a weld filler metal with higher material ultimate and yield strengths than that of the base metal(s) and that is the case for this application. The critical flaw size determination utilized elastic-plastic fracture mechanics (EPFM) principles employing the J-integral/Tearing modulus (J/T) approach. The evaluation conservatively assumed the weld material to be the same as that of the lid and shell base metal because its ultimate and yield strengths are lower than those of the actual weld material. The parameters used in the EPFM evaluation are functions of the type of material and its ultimate strength (higher ultimate strength results in a larger allowable flaw size), but it is not a function of the form (forging or plate) of the material. Since NAC is specifying that the SA-182, Type 304L stainless steel have ultimate and yield strengths greater than, or equal to, those of the SA-240 material, the evaluation is applicable to either form of the material and the critical flaw size is bounding for both.

Please advise if can close this item or if further discussion is needed.

Thank you for your consideration.

Tom

Tim McGinty <TJM1@nrc.gov>
06/20/00 04:17 PM

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