From: BURFORD, FRANCIS G [FBURFOR@entergy.com]
Sent: Monday, September 12, 2011 6:08 PM
To: Wang, Alan; Alley, David
Cc: BURFORD, FRANCIS G; MILLAR, DANA; BROADBENT, GREGORY E; King, Larry W. (GE Power & Water)
Subject: RE: EPU problem

Alan, David - I'd like to provide some information and then suggest a phone call to provide further discussion, if needed:

> We have reviewed the referenced ELTR2 Section 3.6.1 and wanted to clarify a particular aspect. That LTR outlines a general uprate evaluation methodology for BWRs and that section in particular describes uprates involving a primary pressure increase. Note that the GGNS EPU is based on a constant primary pressure approach and thus the expected changes in temperature and pressure, and thus their effect on IGSCC, are even smaller.
>
> For the GGNS uprate there are no changes to the main steam temperature or pressure, no change to the feedwater temperature, and slight decreases (on the order of 0.2 to 2.0 degrees) in piping system temperatures for the Reactor Recirculation System, and other system connections including SLCS, HPCS, LPCS, and RWCU.

If you would like to discuss this further or you need additional details, please let me know.

Jerry Burford

From: Wang, Alan [mailto:Alan.Wang@nrc.gov]
Sent: Friday, September 09, 2011 3:01 AM
To: BURFORD, FRANCIS G
Subject: FW: EPU problem

Jerry, Dave is reviewing section 2.1.4. If you can answer his question on the temperature variation please send to him directly or if you need a call to clarify his question first let me know. Is tomorrow your off Friday? Alan

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From: Alley, David
Sent: Thursday, September 08, 2011 10:31 AM
To: Wang, Alan
Cc: Lupold, Timothy
Subject: EPU problem

Alan,
Stopped by to see you but you weren't in.

I have run into a bit of a problem with the Grand Gulf EPU. On page 2-8 of the application the applicant states

Operation at EPU conditions results in an insignificant change to temperature and flow conditions for portions of the RCPB piping and does not affect the other susceptibility factors

associated with IGSCC. This is consistent with the conclusions presented in Section 3.6.1 of ELTR2.

The first part of this problem is that relatively small changes in temperature can, potentially, cause significant changes in time to initiate cracks and crack growth rates. Temperature also affects general corrosion rates. The second part of the problem is that I haven't been able to find anywhere where "significant" or "insignificant" is defined in terms piping temperature changes. Section 3.6.1 of ELTR2 is not sufficiently specific to be of value.

In PWR EPUs we address changes in temperature as low as a couple degrees. While these sorts of temperature changes rarely require a change in a plant's inspection programs they do affect the initiation and growth of PWSCC and, therefore, require some degree of discussion in the SE.

Under normal circumstances asking an RAI might be the appropriate course of action at this point. Given the current time constraints I am hoping to avoid this. A phone call with the applicant may be beneficial at this point as they may be able to point us to already docketed sources for this temperature variation information.

Absent specific information on the temperature changes to which the applicant refers, I may still be able to find the proposed approach acceptable based on the concept that the maximum temperature in the system has not increased because the pressure of the system has not increased. While this may be possible, it would be a much cleaner analysis if I knew the magnitude of the temperature changes involved.

Your thoughts?

Dave