From: Poole, Justin
Sent: Wednesday, May 26, 2010 9:43 AM
To: Hale, Steve; COSTEDIO, JAMES
Subject: Draft - Request for Additional Information from Mechanical and Civil Branch on HELB RE: EPU

Steve

By letter to the U.S. Nuclear Regulatory Commission (NRC) dated April 7, 2009 (Agencywide Documents Access and Management System Accession No. ML091250564), FPL Energy Point Beach, LLC, submitted a request to increase each unit's licensed core power level from 1540 megawatts thermal (MWt) to 1800 MWt reactor core power, and revise the technical specifications to support operation at this increased core thermal power level.

The Mechanical and Civil Branch has reviewed the information provided, with respect to the HELB reconstitution effort, and determined that in order to complete its evaluation, additional information is required. We would like to discuss the questions, in draft form below, with you during the public meeting on 5/27/2010.

This e-mail aims solely to prepare you and others for the proposed conference call. It does not convey a formal NRC staff position, and it does not formally request for additional information.

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DRAFT

RAI-1
Does the proposed EPU have an effect on the high energy line break (HELB) methodology and does it affect existing postulated pipe failures or does it result in new ones?

RAI-2
EPU licensing report, Section 2.2.1, states that:

> "The determination of stress values for rupture postulation evaluations were calculated using ASME Section III, 1986 edition requirements".

And that:

> "The stress thresholds for identifying break and crack locations from MEB 3-1 (Postulated Rupture Locations In Fluid System Piping Inside And Outside Containment, Revision 2, dated June 1987) were also adopted."
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Section 2.2.1 also indicates that code cases N-318-5, N-392-1 and the 1979 PVP Spring Conference Paper 79-PVP-51 were utilized to determine local stresses due to pipe welded attachments.

PBNP UFSAR App A.2.2, "Criteria", states that:

> "Break locations are selected in accordance with [the AEC, December 19, 1972, Giambusso letter and consequent Schwencer errata (herein refer to as the "Giambusso letter".]"

The pipe stress requirements and equations are also stated in A.2.2(9), "Piping Stress Analysis". UFSAR Appendix A.5 provides the requirements for seismic calculations. The UFSAR indicates that pipe stresses are in accordance with ANSI B31.1, 1967 and that pressure, deadweight, seismic and thermal stresses are combined in accordance with the equations of ASME Section III, 1965.

The EPU licensing report also lists two equations for postulating breaks and cracks. These equations are neither in conformance with the Giambusso letter requirements nor with the PBNP licensing and design basis for pipe stress evaluations.

The PBNP current licensing and design bases for HELB evaluation in postulating high energy piping failures is neither the SRP nor the BTP MEB 3-1 of SRP 3.6.2 but that of the Giambusso letter and the PBNP UFSAR which provide the requirements, equations and stress limits for postulating piping failures. The proposed EPU uses different stress limits, equations and different piping code. In addition, it is implied that PBNP is seeking relief from postulating breaks due to thermal expansion stresses (which is a "Giambusso letter" requirement) by leaving out the thermal expansion stresses requirement of $0.8S_A$ limit.

GL 87-11 states that "arbitrary intermediate pipe ruptures" are "no longer mentioned or defined in MEB 3-1." This is not to be confused in that the Giambusso letter criteria can be mixed with MEB 3-1 criteria. GL 87-11 also states that "requirements for postulated terminal end pipe ruptures, postulated intermediate pipe ruptures at locations of high stress and high usage factor and for leakage cracks are retained in the revision to MEB 3-1." Relief from the $0.8S_A$ limit on thermal expansion stresses is not included nor is the postulation of leakage cracks. PBNP need not postulate arbitrary intermediate pipe rupture locations based on GL 87-11, but without further justification, it is required to postulate intermediate pipe rupture locations when thermal expansion stresses exceed $0.8S_A$.

a) Please confirm that the proposed EPU changes in HELB evaluations utilize the ANSI B31.1, 1967 power piping code stress allowable values.

b) What is the PBNP current design basis for calculating local stresses due to integral piping attachments on straight runs of pipe and elbows?

c) Provide a detailed technical justification which reconciles the above mentioned code and HELB criteria differences. For each deviation of the Giambusso letter criteria, provide a detailed comparison of the Giambusso letter criterion to the PBNP proposed EPU LAR HELB criterion. In addition, for each deviation, provide a corresponding technical justification. Or use the PBNP current licensing basis for HELB analyses in postulating piping failures.

d) Provide a submittal which shows that pipe breaks have been postulated where the expansion stress exceeds $0.8S_A$ as defined by your current licensing basis (item 2.b.2 of the Giambusso letter).

EPU EMCB RAI-3

a) Provide a background which contains the PBNP HELB history.
b) Provide the PBNP HELB methodology and evaluation criteria.
c) Provide the evaluation of the PBNP to the HELB regulatory requirements (i.e. the 21 Giambusso letter items and show in extensive detail how PBNP has met these requirements. Include reference to calculations. This should be a lengthy document.
d) Provide a section which contains a list of generated plant controlled HELB calculations with a brief description for each one of them.
e) For each system analyzed provide a description of the HE lines, the HE line boundaries and HELB locations. Graphically show HE line boundaries and HELBs on P&IDs or flow diagrams.

EPU EMCB RAI-4

Provide a list and description of modifications required to mitigate the postulated high energy piping failures.