From: Belkys Sosa
To: Langman, Vince
Date: 4/30/04 9:44AM
Subject: CATHENA Conference Call

Vince,
Please note the items listed in the attached document. The staff will like to add them to the discussion during the subject teleconference scheduled for Monday May 3, 2004.

Thanks,
Belkys Sosa
Project Manager

CC: Jensen, Walton; Kim, James; Robert, Ion,

Additional Discussion Items for the CATHENA Conference Call Monday May 3, 2004

A. The reactor inlet and outlet headers of ACR-700 are modeled in the current CATHENA input description as single nodes. The headers are 11 meters long and have connections all along the lengths. Is it realistic to model the headers as single nodes? Will they be modeled differently by the CATHENA input description used for DCD analysis? How will the header modeling be validated against experimental data?

B. Section 5.3.3.3 of the CATHENA theory manual COG-00-008 states that changes in pressure tube geometry (ballooning) is not included in thermal/hydraulic calculation (i.e. flow area or hydraulic diameter) or heat transfer calculations. The thermal radiation view factor matrix changes that would result from ballooning are also not included in the calculations. Are these effects important to analyses to be performed for ACR-700? How will the effect of pressure tube ballooning be evaluated for the DCD analyses to determine if it has significant consequences?

C. Will fuel element sagging occur for any of the accidents to be evaluated for the DCD? How will the degree of sagging be evaluated? If sagging is calculated to occur how will the perturbations on channel flow and heat transfer be evaluated in the safety analyses since these effects are not modeled in CATHENA.

D. CNSC Position Statement PS-00G01 is titled "Channel Voiding During a Large LOCA." The discussion states that there have been no direct void fraction measurements applicable to CANDU fuel channel conditions. For ACR-700 it has been postulated that following a large LOCA caused by a header break that voids will form in alternate channels at the core face closest to the break in a checkerboard fashion. Furthermore for an inlet header break the fuel bundles affected first will be the freshest bundles which were loaded last. How will the voiding that is predicted by CATHENA which will be passed to the neutronics codes be validated by comparison to test data?