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U. S. Nuclear Regulatory Commission
Washington DC 20555

Attention: Richard W. Borchardt, Director
Standardization Project Directorate

Subject: Responses to the Referenced Letters

Reference: Letter, T. R. McIntyre to R. W. Borchardt, Responses to the Referenced Letters, dated September 26, 1994.

The Enclosures to this letter contain revisions to responses to Requests for Additional Information (RAIs) 900.73 and 900.94, which were enclosures to the referenced letter.

Sincerely,

R H Buchholz

R. H. Buchholz, Acting Manager
Advanced Plant Technologies

Enclosures: Responses to RAIs 900.73 and 900.74

cc: P. A. Boehnert (ACRS)
F. W. Hasselberg (NRC)
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REVISED

RAI Number 900.73

Question:

Specify as precisely as possible at what time in the accident sequence the PANDA tests that are to represent the "early" phases of main steam line breaks will begin.

GE Response:

Although the detailed procedures for the PANDA Integral Systems Tests with an early start have not been completed, it appears that these tests (M7 and ~~M8~~ M9) can simulate the SBWR containment response to a steam line break as early as 10 minutes into the transient.

At approximately 10 minutes into a main steam line break accident, the RPV pressure is calculated to have dropped to approximately 300 kPa and is nearly equal to the drywell and wetwell pressures. The PANDA vessels and connecting piping have the capability to model this transient directly from this time on except for the decay heat and the GDCS inventory addition to the RPV.

The PANDA power supply is capable of providing 1.5 MW to the electrical heaters in the RPV. The SBWR scaled decay heat at one hour after scram is approximately 1 MW. The remaining 0.5 MW is available to simulate the RPV structural stored energy for those tests beginning at one hour into the simulated SBWR accident. 1.5 MW matches the scaled SBWR decay heat at approximately 20 minutes following scram.

The PANDA GDCS was designed to provide good simulation of the PCCS condensate drain discharge geometry and discharge conditions after draining of the initial GDCS inventory to the RPV has stopped. Representation of the full GDCS capacity was not an objective for the PANDA design. As a result, the capacity of the GDCS is approximately 40% of the scaled SBWR GDCS volume.

The approach in PANDA for modeling the SBWR transients prior to one hour after scram will take advantage of the fact that a significant fraction of the SBWR decay heat during this period is used to heat the subcooled GDCS water which has drained into the RPV. By running the PANDA tests with a constant power of 1.5 MW for the period simulated prior to one hour and adjusting the initial conditions in the RPV and the GDCS, it is expected that the test start time can correspond closely to 10 minutes into the SBWR main steam line break.

As stated above, the detailed test procedures for M7 and M9, the PANDA Integral Systems Tests with an early start, have not been completed. For test M7, however, the approach described above will provide data to demonstrate the PCC capability to start-up when it is initially filled with air and RPV conditions are representative of SBWR conditions immediately following blowdown. For test M9, the RPV and GDCS conditions will be adjusted to cause vacuum

breaker opening and reintroduction of air to the drywell and PCC. Test M9, therefore, will demonstrate the PCC startup capability if air is reintroduced to the drywell via the vacuum breakers early in the transient.

Revised

RAI Number: 900.94

Question:

Provide a listing of the TRACG code version used for each TRACG run analyzed and presented during the "scaling" part of the August 18, 1994, meeting, including a discussion of any differences in the results obtained with the "preliminary" and the "Level 2 " versions of the TRACG code.

GE Response:

The results discussed at the meeting are contained in Figures B.3-1 to B.3-4 for GIST and Figures B.3-5 to B.3-6 for GIRAFFE. For GIST, TRACG calculations are shown for the test, for the current SBWR design and the 1988 SBWR design. Of these, the test predictions and the calculations for the current SBWR design were made with the Level 2 version of the code, while the calculations for the 1988 SBWR design were old calculations. Calculations made with the preliminary code version and the Level 2 version have shown very little differences for other similar calculations. The GIRAFFE test predictions ~~as well as~~ also were made with an earlier non-level 2 version of TRACG while the corresponding calculations for the SBWR in Figures ~~B.3-5 and B.3-5~~ B.4-1 through B.4-3 were ~~all~~ made with the Level 2 version of the code. No significant differences are expected because of the different versions.