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TASK CLOSE OUT DOCUMENT

Task Scope [illegible handwriting]

To: M. Levenson
S. Levy
E. Zebroski

Task No. 14 Date Complete [illegible]

Reason felt task is complete:

[illegible handwriting] The [illegible] document discusses several considerations ~~[illegible]~~ in calculating boron and gas concentrations when the system is in natural circulation

Members of Committee

[illegible]

R. CHRISTIANSON

[signature]
Signed
Committee Leader

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TASK 14 BORON AND GAS CONCENTRATIONS IN PRIMARY SYSTEMS

Problem:

Identify important factors in determining the boron and gas concentrations in the primary system in current mode of operation. (i.e. natural circ on "A", "B" stratified.)

Boron Concentration:

1) Make-up line enters primary system on discharge side of RCP 1B. Flow splits with part going into "B" steam generator and part going into Reactor Vessel.

2) Boron could be concentrating at Bottom of "B" steam generator if Tcold B is less than the make-up temperature.

3) Boron in pressurizer is concentrating because of low (or zero) flow out of pressurizer into coolant lines and because of steaming in pressurizer.

4) Let-down line comes off of suction side of RCP 1A. As long as there is natural circulation in "A" loop, boron concentrations measured from the let-down flow is representative of boron concentrations in core. However, if natural circulation on "A" loop is lost, it will be very difficult to interpret the results of boron concentration measurements. Depending on the mode of cooling, the measurements could be completely unreliable. In that case DHR operation would be the preferred alternative method of operation.

Gas Concentration:

1) Gas in make-up system should be reduced by degassing make-up water.

2) If local boiling occurs in the core, gas can be released. The gas content measured in the let-down line sample will be subject to the same uncertainties as the boron concentration.