DR-1: 3D ROOM FLOW MODEL WITH DIP
Planning Memo of Record

TO: D. R. Anderson

FROM: S. Webb

SUBJECT: FEP Screening Issue DR-1

STATEMENT OF SCREENING ISSUE

Waste and backfill (if present) permeabilities and porosities vary widely within the repository. As discussed in detail in the *issue statement for screening issue* DR-6 (Puddling), this variation may lead to much different fluid flow behavior than the current homogeneous model. Screening issue DR-6 addresses the issue by simply varying the active brine flow fraction, or the puddling parameter. If the puddling parameter is shown to be important, more detailed calculations will be necessary to try to predict the appropriate values for the puddling parameter. These values can be evaluated with a 3D room model with dip with detail on the drum scale. If the puddling parameter is shown to not be important, this study is unnecessary for this purpose. Therefore, the need for this study (DR-1) depends on the results of the puddling parameter study (DR-6).

APPROACH
Calculation Design

In order to evaluate the active regions for fluid flow within a room, a detailed 3D room model including dip will be developed with detail on the drum scale. Individual drum permeabilities will be randomly assigned according to the data obtained by Barry Butcher for compacted waste. Gas generation will be included at a constant rate, and the porosity surface will be used for room closure. Brine inflow, brine outflow, and gas outflow will be calculated to evaluate the active flow regions for the various processes. Human intrusion boreholes will be included to determine the difference between undisturbed and disturbed conditions. Multiple realizations (up to possibly 25) will be performed with different randomly assigned drum permeabilities to evaluate the range of active fluid flow.

SWCF-A: 1.1.6.3 · PA · NO · TSK · DR · FEP · SCRN (rep)

Resource estimate for DR-1: 3D ROOM FLOW MODEL WITH DIP

Estimated cost for development of the model $150 K (cannot be completed by 9/95).

The above approach and estimate is provided by Department 6115 as a possible approach and a rough idea of the cost. Since Department 6115 is not involved in these actual calculations, the approach and cost may differ considerably from that suggested above.