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Dr. Dade W. Moeller
Environmental Health Science Department
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Dear Dade:

The discussion of the reaction of the Skirpa granite in Sweden to the heat applied to bore holes in that rock has been of some concern to me since I returned from Hanford.

As you will remember the higher heat caused the rock to spall and flake off producing a pile of granite flakes at the bottom of the drill holes. This suggested that a canister in place in the bore hole would become locked in place by the wedging action of the chips when the canister was moved vertically as during withdrawal. This would negate one of the desired characteristics of storage, i.e. the recovery of the waste sometime in the future.

This problem of collapse of the wall of a bore hole is one that has been with the drilling business, I suppose, since before the day of Col. Drake, more than 120 years ago. Bore hole walls have always been caving in for one reason or another. Look at the crude masonry supporting the walls of dug wells in the pre-Christian era in the Middle East.

We have progressed from those days to the use of drilling mud and steel casing in drilling oil and gas wells.

The probable answer to the flaking of the walls of the holes in the Skirpa granite is steel casing placed in the holes before the heat is applied or later before the deposition of the canisters containing the radioactive waste. The holes must be increased in diameter to allow for the thickness of the casing but this is a normal matter in drilling.

I therefore recommend that the experiments at Skirpa include the casing of the drill holes. If one doesn't want to spend the money for that, I am sure that calculations can be made that would show the feasibility of using casing to insure the stability of the walls of the drill holes for a period of time long enough to cover the span of desired retrievability.

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Sincerely yours,

Shailer S. Philbrick

Shailer S. Philbrick
Consultant