

Department of Energy

Albuquerque Operations Office
P. O. Box 5400
Albuquerque, New Mexico 87115

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MAY 6 1985

Mr. Leo Higginbotham, Chief
Low Level Waste & Uranium
Recovery Projects Branch
U.S. NRC, 7915 Eastern Ave.
Silver Springs, MD 20910

WM Record File

WM Project

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Docket No.

PD7

LPDR

Distribution:

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G. NURNOLT

SOLLENBERGER

(Return to WM, 623-SS)

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Dear Mr. Higginbotham:

The UMTRA Project Office contractor who designs radon covers for uranium mill tailings makes use of a handbook by V.C. Rogers and K.K. Nielson (Radon Attenuation Handbook for Uranium Mill Tailings Cover Design, NUREG/CR-3533, U.S. Nuclear Regulatory Commission, Washington, DC, 1984). The handbook provides basic equations based on diffusion theory to calculate the cover thickness to satisfy a given radon flux criterion. It provides methods of determining radon diffusion coefficients and provides a computer code, RAECOM, for calculating cover thicknesses and surface fluxes.

Because of the importance of the proper design of radon covers, a validation study of the handbook techniques was undertaken by D. R. Kalkwarf, H. D. Freeman and J. N. Hartley of Pacific Northwest Laboratory (Validation of Methods for Evaluating Radon-Flux Attenuation Through Earthen Covers, NUREG/CR-3457, U.S. Nuclear Regulatory Commission, Washington, DC, 1984). They found that the handbook overestimated radon cover thickness by a factor of up to 1.5. The implication is that this unnecessary conservatism could result in extra cost for the UMTRA Project.

Rogers and Nielson have published a Technical Information Memorandum (TIM) (Review of Pacific Northwest Laboratory Report NUREG/CR-3457 "Validation of Methods for Evaluating Radon-Flux Attenuation Through Earthen Covers", TIM-68-2, Rogers and Associates Engineering Corporation, February 1985) reviewing the validation study. They point out several serious defects in the study which cast doubt on any of its conclusions.

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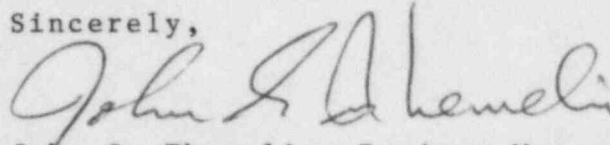
Leo Higginbotham

- 2 -

MAY 6 1985

The position of the UMTRA Project Office, based on the TIM and comments by another UMTRA contractor, International Engineering Company, is that the handbook has at this point been neither validated nor invalidated. For the present, the Project Office plans to continue to rely on the handbook for radon cover design.

Sincerely,

A handwritten signature in cursive script, appearing to read "John G. Themelis".

John G. Themelis, Project Manager
Uranium Mill Tailings Project Office