UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

AUG 25 1992

MEMORANDUM FOR: James L. Blaha
Assistant for Operations, OEDO

FROM: B. J. Youngblood, Director
Division of High-Level Waste Management
Office of Nuclear Material Safety
and Safeguards

SUBJECT: TRIP TO WHITESHELL LABORATORIES, PINAWA, MANITOBA, CANADA AND NEARBY UNDERGROUND RESEARCH LABORATORY

The following discussion explains why three representatives of the Geology and Engineering Branch (HLGE) are planning a trip together to Canada in September 1992. The three representatives are R. Ballard, (Chief, HLGE), R. Weller (Materials Section Leader, HLGE) and M. Nataraja (Geotechnical Engineering Section Leader, HLGE). In the interest of using our travel resources most efficiently, two separately planned trips (the first involving R. Ballard and M. Nataraja and the second involving R. Ballard and R. Weller) have been consolidated into a single trip with the three principals inasmuch as both trips involve meetings at Whiteshell Laboratories (Pinawa, Manitoba, Canada) and visits to the nearby Underground Research Laboratory (URL). The subject matter of both trips is related, involving in-situ testing in the field of rock mechanics and waste package design and laboratory testing of the parameters affecting the performance characteristics of the spent fuel waste form. As such, the separately planned trips have been combined into a single visit with M. Nataraja focusing on the rock mechanics issues and potential impacts on the waste package and R. Weller focusing on waste package design and performance issues with a special interest in the Canadian work on the spent fuel waste form component of the waste package.

The purpose of the geotechnical portion of the trip is to observe the experimental geotechnical engineering program in the URL and the Canadian approach to assessing the performance of underground openings and structures. The extensive Canadian experience should provide practical insight to the design and preclosure performance assessment modelling activities that are being initiated within the Geotechnical Engineering Section. Some of the in-situ experiments that are being performed at the URL, such as, excavation damage assessments, backfill performance testing and 'mine-by' tests are of immediate interest to the Geotechnical Engineering Section staff in preparing for the review of the Yucca Mountain Exploratory Studies Facility and the associated study plans. The Materials Engineering Section is in a similar developmental stage and will benefit directly by learning of the in-situ testing of waste packages. An additional objective of the Materials Engineering Section is to evaluate the Canadian research activities related to spent fuel performance. Staff and Resource limitations preclude the initiation of an effective spent fuel assessment program within the Agency,

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even though spent fuel will be the predominant waste form to be considered in evaluating the repository source term. We hope to benefit from the work being done at the Whiteshell Laboratories.

M. Nataraja served on the Nuclear Energy Agency (NEA) advisory group on in-situ testing along with Dr. Gary Simmons of Atomic Energy of Canada, Limited, (AECL) who subsequently invited Dr. Nataraja to visit the Canadian Underground Research Laboratory and the Whiteshell Laboratories. A trip by R. Ballard and M. Nataraja was scheduled earlier this year to the Canadian facilities but was postponed until September 1992 because of other priorities. Dr. Gary Simmons of AECL responded to Dr. Nataraja's invitation and visited NRC in 1988, and gave a technical presentation to the staff on the Canadian program.

R. Weller established contact in May 1992 with the manager of the AECL Fuel Waste Technology Branch at Whiteshell Laboratories to discuss our interest in the Canadian research program on the spent fuel waste form. The Canadians subsequently invited (see enclosed letter) NRC staff to visit the Whiteshell Laboratories to discuss their program and observe the work in progress. This planned trip was simply combined with the aforementioned planned visit with M. Nataraja to the Whiteshell Laboratories and nearby Underground Research Laboratory. R. Ballard will be the lead NRC staff representative for the combined visits and meetings.

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Enclosure:
As stated