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6220 Culebra Road • San Antonio, Texas, U.S.A. 78228-5166
(210) 522-5160 • Fax (210) 522-5155

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U.S. Nuclear Regulatory Commission
ATTN: Mrs. Deborah A. DeMarco
Two White Flint North
11545 Rockville Pike
Mail Stop T8 A23
Washington, DC 20555

Subject: Programmatic Review of an Abstract

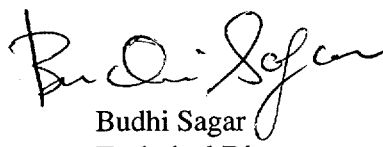
Dear Mrs. DeMarco:

The enclosed abstract, which will be submitted for presentation at the Health Physics Society Annual Meeting, to be held June 10-14, 2001 in Cleveland, OH, is being submitted for programmatic review. The title of the abstract is:

“Assessing the Consequences of an In-package Criticality Event at a High-Level Nuclear Waste Repository” by J.R. Weldy, M. Rahimi, and S. Mohanty.

Please advise me of the results of your programmatic review. Your cooperation in this matter is appreciated.

Sincerely,



Budhi Sagar
Technical Director

BS/cw

cc:	J. Linehan	W. Reamer	C. McKenney	W. Patrick	P. LaPlante
	B. Meehan	S. Wastler	T. McCartin	CNWRA Dirs	R. Benke
	E. Whitt	K. Stablein	R. Codell	CNWRA EMs	O. Pensado
	J. Greeves	J. Firth	D. Esh	J.R. Weldy	
	J. Holonich	T. Ahn		S. Mohanty	
	T. Essig	M. Rahimi		M. Smith	



Washington Office • Twinbrook Metro Plaza #210
12300 Twinbrook Parkway • Rockville, Maryland 20852-1606

ASSESSING THE CONSEQUENCES OF AN IN-PACKAGE CRITICALITY EVENT AT A HIGH-LEVEL NUCLEAR WASTE REPOSITORY.* J.R. Weldy¹, M. Rahimi², and S. Mohanty¹ (¹Center for Nuclear Waste Regulatory Analyses, 6220 Culebra, San Antonio, TX 78238; ²U.S. Nuclear Regulatory Commission, Two White Flint North, 11545 Rockville Pike, Rockville, MD 20852)

The Nuclear Regulatory Commission (NRC) has the responsibility for reviewing any license application that may be submitted for the proposed high-level waste repository at Yucca Mountain, Nevada. In preparation for such a review, the NRC and Center for Nuclear Waste Regulatory Analyses have jointly developed the Total-system Performance Assessment Code, Version 4.1 (TPA 4.1). The TPA 4.1 code is a probabilistic performance assessment code designed to simulate various natural and repository-induced events and processes that may affect the long-term performance of the proposed repository. One unlikely such event that may occur within the repository is a nuclear criticality of the spent nuclear fuel within the waste package. A steady-state criticality event could result in the generation of additional radionuclide inventory and an increase in the temperature within and around the waste package. A transient criticality event could cause mechanical damage to the fuel and waste package or expedite the release and transport of radionuclides from the waste packages in other ways. These effects could increase the dose to a member of the critical group as defined in proposed 10 CFR Part 63. The TPA 4.1 code was used to model consequences of a criticality event and its effect on the overall performance of the repository.

*(This work is based on the activities performed on behalf of the NRC, Office of Nuclear Material Safety and Safeguards, Division of Waste Management, under contract number NRC-02-97-009. This abstract and the corresponding presentation are independent products of the Center for Nuclear Waste Regulatory Analyses and the NRC staff and do not necessarily reflect the views or regulatory position of the NRC.)