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Date 11/28/86

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2. cc: G. Langston, OCRWM		
3. T. Colandrea, GA Inc:		
4. cc w/o ATT: E. Benz		
D. Dahlem	W. Brumley	
5.		

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REMARKS attached are the three brief abstracts for the "Waste Packaging" session of the 2nd Topical Conference on Nuclear Waste Mgm't. Q.A. If you have any questions, please let me know

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FROM: (Name, org. symbol, Agency/Post)	Room No.—Bldg.
Mark W. Frei, OCRWM	Phone No. FTS 252-5355

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ABSTRACT

WASTE PACKAGE ACCEPTANCE CRITERIA

To be Presented to American Society for Quality Control
Energy Division
Second Topical Conference on
Nuclear Waste Management
Quality Assurance

February 9-11, 1987
Las Vegas, Nevada

by
E. F. Benz
Jacobs Engineering Group
Manager of Waste Package Development
Roy F. WESTON, OCRWM Technical Support Team
955 L'Enfant Plaza, S.W. (8th Floor)
Washington, D.C. 20024

The presentation will describe packages being developed for final emplacement of high level nuclear waste in DOE's geologic disposal programs. Regulatory requirements for waste disposal packages will be described and discussed. Waste forms being considered for disposal, especially spent nuclear fuel and solidified high level waste, will be described. The waste acceptance process being used by DOE to develop specifications and requirements for acceptance of waste from producers will be discussed. The waste acceptance preliminary specifications developed for the West Valley Demonstration Project and Defense Waste Processing Facility Waste will be briefly described with emphasis on the Quality Assurance Provisions thereof. Finally, a brief status report of DOE's waste package design and development activities will be presented.

07136

DEFENSE WASTE PROCESSING FACILITY: PRODUCT QUALITY ASSURANCE

William J. Brumley
U. S. Department of Energy
Savannah River Operations Office

ABSTRACT:

The Defense Waste Processing Facility (DWPF) will be the United States' first and the world's largest production scale vitrification facility. The 945 million dollar project is scheduled for initial operation in 1990, approximately ten years before a Federal repository will be available to receive the canisters filled with borosilicate waste glass. It will be necessary to provide sufficient documentation that the waste forms produced by the DWPF will be acceptable for disposal. Although product sampling will provide some information on product performance, the ability to take samples directly from the molten glass stream or from a solidified canister of waste glass will be exceptionally difficult.

The DWPF has been designed to reduce the need for direct product sampling. An extensive test program is continuing in order to demonstrate the ability to take representative samples from full scale DWPF process vessels. A testing program has demonstrated the ability to predict glass composition based on melter feed streams. Extensive laboratory work with simulated and actual waste has demonstrated the ability to predict glass (i.e. product) performance based on its composition.

The reliance on process controls for product performance is only part of the reason for the importance given to this topic. For many of the parameters which are controlled, particularly around the melter itself, the driving force is the ability to operate the melter successfully. In many cases, when the composition of the feed stream is allowed to vary from baseline composition, difficulties in melter operation (e.g. glass viscosity) have a greater impact on facility operation than product performance. Simply stated the allowable range in feed stream composition is greater for acceptable product performance than for melter operation.

Based on the testing program, the basic design of the DWPF, and the tight operational requirements , the DWPF will be able to ensure an acceptable product, based on process controls with confirmitory product samples.

PEER REVIEW IN THE GEOSCIENCES

D.H.Dahlem and K.M.Thompson

ABSTRACT

Geohydrology is a key technical concern in the Basalt high-level nuclear waste project because the candidate site is below the water table, is saturated and within 5 miles of the Columbia River. Closure on technical issues required for licensing involves a complex effort of testing to support the modeling basis for demonstrating compliance with performance goals identified in 10 CFR 60. The technical and regulatory community require sophisticated quality assurance and procedural control of the technical program. Of the requirements for demonstrating technical adequacy, the Peer Review process, involving qualified and independent reviewers, provides a documented trail for closure of issues requiring technical judgement. Peer Review is being used to validate the BWIP Geohydrology program and provide credibility prior to licensing review.

The BWIP Geohydrology program is comprised of (1)establishing a potentiometric baseline, (2) hydraulic stress testing, and (3) numerical modeling to evaluate site performance with respect to numerical goals identified in regulatory criteria. Each of these activities involves professional judgement on the choice of testing methods and application, and quality controls.

Applications of Peer Review in geohydrology include (1) identification of the groundwater conceptual model(s) as developed from the data and analyses; (2) the utility of inverse techniques to analyze large-scale stress test data typically yielding non-unique solutions; and (3) definition of hydraulic parameter fields and boundary conditions to numerical performance models.