

WM DOCKET CONTROL
CENTER

'83 SEP -1 P2:46

WM Record File

1212

Distribution:

MR

(Return to WM, 623-SS)

AUG 30 1983

John J. Jicha, Acting Director
Division of R&D and Byproducts
Defense Waste and Byproducts Management, DP-123

J. William Bennett, Director
Geologic Repository Division, S-10

MINUTES OF AUGUST 3-4, 1983 SRL/BWIP WORKSHOP

Attached is a copy of the subject minutes covering a workshop held at Denver, Colorado on August 3 and 4, 1983. Due to delays in resolving some key technical points of the test protocol, the Phase I testing will not begin until about October 1, 1983. This should not severely impact the schedule to develop supporting data for verifying the DWPF waste form's acceptability in a basalt repository. Also, please note on page three of the minutes that there is still some concern expressed by BWIP due to the lack of defense (AR) funds for carrying out the Phase I tests at their laboratories. If this is still a real concern, it needs to be resolved soon to avoid further delays.

Original signed by
Thomas B. Hindman Jr.

Thomas B. Hindman, Jr., Acting Director
Defense Waste Processing Facility
Project Office

PD:WBW:crt

Attachment

cc w/att:
Carl Cooley, S-10
Ray Walton, DP-123
O. Lee Olson, RL
Jeff Neff, CH/NPO
Don Vieth, NV
Joel Haugen, CH/MIO

bcc w/att:
Mike Bell, NRC

8309080306 830830
PDR WASTE
WM-1 PDR

00551



E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED

ATOMIC ENERGY DIVISION

SAVANNAH RIVER LABORATORY
AIKEN, SOUTH CAROLINA 29808

(TWX: 810-771-2670, TEL: 803-725-6211, WU: AUGUSTA, GA.)

CC: P. F. Salter, BWIP (5)
S. J. Basham, ONWI (5)
V. Oversby, LLNL (5)
C. C. McPheeters, MIO-ANL (5)
T. O. Hunter, WIPP (5)

August 23, 1983


Mr. T. B. Hindman
Acting Director
DWPf Project Office
Savannah River Operations Office
U. S. Department of Energy
Aiken, South Carolina 29801

Dear Mr. Hindman:

MINUTES OF SRL-BWIP REPOSITORY WORKSHOP

We are enclosing five copies of the approved minutes of the Second SRL-BWIP Repository Workshop that was held in Denver, Colorado, August 3-4, 1983. These workshops were initiated at the request of the Materials Steering Committee. The workshop is part of a series of repository workshops that are aimed at developing programs for characterizing the behavior of the DWPf waste form in various geologic environments leading to ultimate disposal in a deep geologic repository.

Very truly yours,


Edward J. Henegally
Planning Coordinator
Waste Management Planning

EJH:hp
Enclosures (5)

MINUTES

SRL-BWIP, DHLW REPOSITORY WORKSHOP

HOLIDAY INN, AIRPORT
DENVER, COLORADO

AUGUST 3-4, 1983

PREPARED BY E. J. HENNELLY

AUGUST 23, 1983

MINUTES SRL-BWIP WORKSHOP

AUGUST 4, 1983

Introduction

The second SRL-BWIP workshop was held in Denver in order to discuss two major technical problems that needed mutual resolution before Phase I of the SRL/BWIP experimental program could begin. The workshop is part of an overall DWPF/Repositories Coordination effort that is directed toward assuring that DWPF borosilicate glass is acceptable for disposal in a repository.

The Phase I testing program has been developed in detail by SRL and BWIP representatives over the past several months. These tests, which are given in a soon-to-be-published test protocol, include use of radioactive and non-radioactive Savannah River borosilicate glass. The glass samples are tested at SRL in a simulated in situ medium of BWIP basalt using simulated BWIP groundwater (GR-3) and comparison studies at BWIP are to be conducted at higher temperatures and pressures using facilities unique to their laboratory.

Scouting studies at SRL revealed that when using the GR-3 simulated ground water, made from a formula provided by BWIP, it was not possible to achieve a low enough chemically reducing environment in the SRL in situ experiments that BWIP believed is necessary to simulate repository conditions. These two experimental problem areas were the primary topics of the discussion at the workshop.

Summary of Workshop

The consensus at the workshop was as follows:

Groundwater

Specific site investigations at BWIP in the Cohasset Horizon (near field), which is now the most likely location of the repository, have revealed a somewhat different groundwater from the surrounding media (far field). Therefore, to begin Phase I leaching experiments by October 1, it was agreed that two simulated groundwaters would be used in the test program.

- o GR-3, the current synthetic groundwater, would be used in far field studies, i.e., those experimental studies related to the movement of dissolved HLW through the geologic medium.
- o GR-4, a new synthetic formulation, would be used in near field simulation, i.e., for leaching of glass and for liquid movement through packing material selected to

surround the waste form in the repository disposal system. The formulation is to be available by September 1.

Cohasset groundwater contains about 700 ppm of methane, under pressure, and it was not resolved at the workshop how the presence of methane in the groundwater would be investigated in the test program. Currently SRL has no provision in the test facilities to handle methane under pressure. It was reported by BWIP that gamma irradiation tests made using GR-3 water containing 700 ppm methane showed polymer formation at fairly reasonable "total dose" irradiations although at very high dose rates. A preliminary resolution of the test program with methane is expected by October 1.

Eh Control in Phase I Experiments

Keeping a low Eh, i.e., maintaining a chemically reducing environment in the glass leaching experiments which maintains pH at the proper level, is believed by BWIP to be very important. The expected reducing environment in the BWIP repository, an Eh of approximately -0.4, is very beneficial to the retention of radioactive species within the waste package in basalt. This condition is one of the primary benefits of a basalt repository. What has not been established is whether a rigorously maintained negative or low Eh is necessary in order to establish the leaching of glass. Control of pH has been less difficult to maintain. Some tests will be conducted at SRL to verify the need for strict low Eh control of Phase I experiments and also to develop methods for maintaining negative Eh during leaching experiments. Future discussions between the respective laboratory staffs will resolve these questions. At present, SRL is conducting some experiments using a negative Eh and results of these and similar experiments will help in the resolution of the questions about Eh. Most leaching experiments will begin, without strict Eh control, about October 1.

Phase I Experiments

- o A new groundwater formula is to be provided by BWIP by September 1.
- o Phase I testing at SRL is expected to begin October 1. The maximum length of any Phase I experiment is one year.

Phase II Experiments

Phase II experiments, to follow Phase I using a variety of different experimental conditions, will not be planned in detail until sufficient results from Phase I are available.

Protocol Document

A protocol document will be issued in September. This document will outline in detail the Phase I test program.

BWIP Funding of Defense Waste Testing

BWIP indicated that funding by DOE-DP of BWIP testing of Savannah River waste glass has not been forthcoming. This issue, first discussed at the first workshop in September 1982, and at the last Materials Steering Committee meeting at Germantown Headquarters, needs prompt resolution in order for Phase I activity at BWIP to proceed on schedule.

Third Workshop Scheduled

The next SRL/BWIP workshop will be scheduled when sufficient data from Phase I experiments are available. Tentatively the meeting is scheduled to be held at BWIP in February or March 1984. Preliminary discussions of Phase II will be held at the same time.

EJH:hp

AGENDA

DWPF/BWIP REPOSITORY WORKSHOP

HOLIDAY INN-DENVER AIRPORT

TARTAN ROOM

AUGUST 4, 1983

8:15 a.m.	<u>Opening Remarks</u>	BWIP-SRL
8:25	Agenda changes or additions	All Parties
8:30	<u>Introduction - Background</u>	
	o Review Rock Characteristics	BWIP
	o Review Glass Preparation	SRL
	o Review Groundwater Composition	BWIP
9:00	<u>Eh Discussions</u>	All Parties
	o Measurements:	
	In the Field	BWIP
	In the Lab	SRL
	o Controlled Eh Experiments	All Parties
LUNCH		
1:00 p.m.	<u>Status of Phase I Experiments</u>	SRL
3:00	<u>Summation</u>	All Parties
	- Current Studies	
	- Schedules	
3:30	<u>Future Programs - Detailed Plans</u>	All Parties

DINNER

Followup discussions in p.m. or Friday Morning.

ATTENDEES

SRL-BWIP Repository Workshop
Holiday Inn, Denver, Colorado
August 4, 1983

Pat Salter	BWIP
Mick Apted	BWIP
Phil Lamont	RL
Carol Jantzen	SRL
John Plodinec	SRL
George Wicks	SRL
Ed Hennelly	SRL
Gordon Pine	SRL
Ned Bibler	SRL