



United States Department of the Interior

BUREAU OF MINES
2401 E STREET, NW.
WASHINGTON, D.C. 20241

WM DOCKET CONTROL
CENTER

FEB 10 1984 21

Mr. John Greeves
Acting Branch Chief, Engineering Branch
Division of Waste Management
Nuclear Regulatory Commission
Washington, D.C. 20555

WM Record File
B6934

WM Project 10 1 0
Docket No. 5
PDR
LPCR

Distribution:
JG

(Return to Wm, 623-SC) C 2

Dear Mr. Greeves:

In accordance with NRC/BOM Interagency Agreement No. NRC-02-08-075, "Technical Assistance for Assessment of Repository Siting and Design," we are forwarding a summary of the January 12, 1984 meeting between the Bureau of Mine's Pittsburgh Research Center and the Nuclear Regulatory Commission. The purpose of this meeting was to discuss the status of the project, "State-of-the-Art Assessment of Large Diameter Nuclear Waste Emplacement Holes."

Sincerely,

Harry R. Nicholls
Assistant Director--Mining Research

Enclosure

8411080174 840207
PDR WMRES EUSDOIMI
B-6934 PDR

Distribution:

Mr. David H. Tiktinsky (5 copies)
Project Manager, M.S. 623-SS
High Level Waste Branch-MMSS
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Director, Office of MMSS (1 copy)
ATTN: Program Support Branch, M.S. 623-SS
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Director, Division of Waste Management (1 copy)
M.S. 623-SS
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

1 copy for:

Earle Amey, Div. of H&S Tech., BOM, MS 6010
David Barna, Div. of Extraction Metallurgy Tech., BOM, MS 7010
Charles Dozois, Div. of Procurement, BOM, MS 3040
Assistant Director--Mining Research, BOM, MS 6000
Chief, Div. of H&S Tech., BOM, MS 6010
Ed Thimons, PRC, MS 6050
Reading File, DHST
Chrono
Files: Mining Research

EBM:EBAmey:bcc:2/7/84

MEETING REPORT

U. S. Nuclear Regulatory Commission meeting with U.S. Bureau of Mines
under NRC Contract No. 02-80-075.

DATE: January 12, 1984

LOCATION: U.S. Bureau of Mines
Pittsburgh, PA

PURPOSE: To discuss status of the project "State-of-the-Art Assessment of
Large Diameter Nuclear Waste Emplacement Holes"

PARTICIPANTS: See attached list

SUMMARY OF COMMITMENTS, CONCLUSIONS, AND AGREEMENTS: See attached

NOTE: These commitments, conclusions, and agreements were read and
agreed to by Edward D. Thimons and Lawrence Chase
prior to adjournment.

USBM - NRC, 01/12/84, Pittsburgh, PA

Attendees

<u>Name</u>	<u>Office</u>	<u>Telephone No.</u>
David Tiktinsky	NRC	301-427-4131
Lawrence Chase	NRC	301-427-4242
Claude A. Goode	PRC	FTS 723-6094
Fred Kissell	PRC	FTS 723-6679
Edward Thimons	PRC	FTS 723-6683
Neil Styler	PRC	FTS 723-6542
Roy Grau	PRC	FTS 723-6562
Eric Bauer	PRC	FTS 723-6518
Daniel Babich	PRC	FTS 723-6578
Charles Taylor	PRC	FTS 723-6692
Robert Evans	PRC	FTS 723-6664
Gerald Finfinger	PRC	FTS 723-6543
Francis Kendorski	E.I.	312-963-3460

As noted in the attached memorandum, a meeting between the Bureau of Mines and the NRC was convened at the Bureau of Mines Research Center, Bruceton, PA, Jan. 12, 1984.

The following comments were submitted by PRC personnel:

1. Mr. Claude Goode stated that efforts by the Bureau and other countries for 20 years to develop remote-controlled underground mining equipment have resulted only in line-of-sight radio remote control systems for continuous mining machines which have capabilities of cutting a maximum distance of 75 feet in very uniform conditions.

In his opinion it is highly unlikely that remote mining equipment suitable for high temperature environments such as would be encountered in a backfilled retrieval operation can be developed, tested, and made into proven technology by 1997 unless an immediate commitment is made and adequate funds are available.

2. Mr. Edward Thimons stated that mine refrigeration techniques developed by the Bureau of Mines and the South African Chamber of Mines might well be applicable to control the high temperatures expected if it is necessary to retrieve canisters from backfilled drifts.
3. Mr. Gerald Finfinger stated that to date none of the Bureau's investigations have uncovered technology for drilling long (up to 700 feet) large horizontal diameter emplacement holes within the 12-inch deviation allowed by regulation. He further stated that large holes of only 200 feet in length would be difficult due to the uncertainty of borehole position based on surveying accuracies.
4. Mr. Finfinger also stated that a large amount of reference material (about 50%) on long hole drilling is oil field and quarry technology and is almost all related to vertical drilling which makes it of limited value for drilling horizontal emplacement holes.
5. Mr. Charles Taylor commented that based on Bureau of Mines investigations to date, the overpack (backfill) around canisters in horizontal emplacement holes will be difficult to achieve with single pipes and even if it is accomplished, it will be difficult to achieve a voidless overpack with current technology. The Bureau expressed the concern that they are not aware of any instrumentation to assure that a voidless overpack is being emplaced. Bureau experience has shown that it is difficult, if not impossible to achieve a voidless grout even in vertical holes.
6. Mr. Gerald Finfinger stated that it is the Bureau's opinion that if overcoring is required to retrieve canisters it may require significantly more time to accomplish retrieval than to emplace canisters because overcoring will have to progress at a slow rate to maintain control of the drilling direction and to avoid damage to a canister.

Mr. David Tiktinsky of NRC presented an overview of NRC's design information requirements technical position in order to acquaint the BOM with NRC's areas of responsibility leading to licensing of repositories. In addition, a discussion followed, concerning the information contained in and the format of the BOM monthly reports to NRC. Mr Tiktinsky expressed the opinion that the

reports were satisfactory and informative and provided an accurate gage of the BOM's progress under this program. Dr. Lawrence Chase requested that the BOM provide written definitions of certain key terms used in their proposal and monthly reports. The Bureau agreed to this request. NRC and the Bureau agreed to continue the program without any changes in the Scope of Work.

NRC requested that the Bureau submit written comments on Engineers International's final report #NUREG/CR-3489, "Assessment of Retrieval Alternatives for the Geologic Disposal of Nuclear Waste". The Bureau agreed to submit these written comments to NRC by 1/27/84.

In the ensuing discussion of the BOM presentations, NRC identified three possible issues which would require resolution before time of license application. These are:

1. In long horizontal holes, how can canister spacing density, gross thermal load, and canister mechanical performance be controlled to meet design and performance requirements?
2. In long horizontal holes, how can hole integrity be predicted and maintained?
3. In long horizontal holes, how can overpack placement be monitored to insure that voids do not occur?

Lawrence Chase


Edward D. Thimons