United States Department of the Interior EUSDOIMI

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

March 6, 1984

WM Record File B-6934
WM Project 10, 11, 16
Docket No. ____
PDR
LPDR B, N, S
Distribution:
D. Tiktinsky, T. Ticket
Palitto
(Return to WM, 623-SS)

U.S. Nuclear Regulatory Commission
Division of Contracts
Washington, D.C. 20555

ATTN: Cindy Fleenor
Technical Assistance Contracts Branch

SUBJECT: Monthly Progress Report - January 1984 Interagency Agreement Number NRC-02-80-075, "State-of-the-Art Assessment for Large Diameter Horizontal Nuclear Waste Emplacement Holes"

Dear Mrs. Fleenor:

Enclosed is our fifth monthly progress report on the subject interagency agreement for January 1984. This is in accordance with Article I, Number 3.1-Reporting Requirements.

Sincerely,

Earle B. Amey

Earle B. Amey, Staff Engineer
Division of Health and Safety
Technology

Enclosure

WM DOCKET CONTROL CENTER
'84 MAR 23 P3:40

January 1984 Monthly

STATE-OF-THE-ART ASSESSMENT OF LARGE DIAMETER HORIZONTAL NUCLEAR WASTE EMPLACEMENT HOLES

1.0 Drilling of Emplacement Holes

Principal Investigator - Gerald L. Finfinger

Work Completed During Reporting Period

Research this month continued on borehole surveying techniques. Two major corporations which conduct near horizontal directional drilling for pipeline installations under rivers were contacted for determining borehole trajectory accuracy. One corporation indicated that at distances of 1000 to 2000 feet the target location was missed by 3 to 10 feet. Concerning deviation control during tunneling operations it appears that at horizontal distances of 700 feet a target can be intercepted to within 0.5 inches using a laser guidance technique.

Drillability information such as rate of advance and required thrust and torque for generic tuff and basalt formations is being collected.

Work Completed To Date

All computer literature searches on drilling, tunnelling and surveying have been completed. Leading manufacturers have been contacted and product information has been obtained.

A preliminary draft on drilling and tunnelling has been completed.

2.0 Maintaining Integrity of Emplacement Holes

Principal Investigator - Daniel R. Babich

Work Completed During Reporting Period

A preliminary draft report containing the findings to date on methods of casing and materials (section 2.2) was completed. The literature search on grouting techniques (section 2.3) is continuing. A preliminary draft on grouting techniques was started. The three rock mechanics drafts for section 2.1 were combined.

Work Completed To Date

Literature searches on rock mechanics and hole casing were completed. Three rock mechanics drafts and one hole casing draft were completed.

3.0 Backfilling of Emplacement Holes

Principal Investigator - Robert Evans

Work Completed During Reporting Period

During this reporting period work continued on drafting the sections "Materials for Backfilling," (Task 3.3) and "Mechanical, Pneumatic and Hydraulic Systems for Backfilling." (Task 3.4) No significant findings for this period are presented.

During the next reporting period the section "Materials for Backfilling" will be reviewed and revised as necessary (Task 3.6). Work will begin on the section "Methods to Detect Void Spaces in Backfilling (Task 3.5).

The time reported below includes 10 hours of attendance at the January 11, 1984 meeting between representatives of the Bureau of Mines and the Nuclear Regulatory Commission.

4.0 Retrieving Waste Canisters from Emplacement Holes

Principal Investigator - Gerald L. Finfinger

Work Completed During Reporting Period

Literature searches on retrieval options and overcoring technology have been completed. Information pertaining to ensuring the waste canisters are not damaged during overcoring operations is virtually nonexistent. Blue line drawings on a 48 inch diameter core barrel have been received. Industry sources indicate the overcoring operation for retrieving the waste canister would take 5 to 10 times longer than was required for the drilling of the emplacement holes.

Work Completed To Date

All literature searches have been completed.

Man-Effort

Task	Man-Hours This Period	Total Man-Hours to Date	Percent of Available Hours used
1.0	200	572	50%
2.0	176	748	63%
3.0	78	346	55%
4.0	50	159	46%

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

Chief, Engineering Branch (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
Reading File, DHST
Chrono
Files: Mining Research

EBM:EBAmey:bcc:1/24/84