



United States Department of the Interior

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

March 20, 1984

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

WM Record File
B-6934

WM Project 10, 11, 16
Docket No. _____
PDR _____
LPDR B, H, S

ATTN: Cindy Fleenor
Technical Assistance Contracts Branch

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TIKTINSKY Witt
Witt
(Return to WM, 623-SS)

SUBJECT: Monthly Progress Report - February 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 sixth monthly progress report on the subject interagency
agreement for February 1984. This is in accordance with Article I, Number
3.1-Reporting Requirements.

Earle B. Amey

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

Enclosures

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February 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 continued on borehole surveying techniques. Raw survey data near horizontal holes is being obtained from a directional drilling company. The newer borehole surveying instruments are being investigated for their accuracy. Drillability information is continuing to be collected for generic tuff and basalt formations. Additional information on small diameter (48 inches) tunnel boring machines has been received.

Work Completed to Date

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

Preliminary drafts for sections 2.1-Rock Mechanics, 2.2-Methods of Casing, 2.3-Methods of Grouting, and 2.5- Satisfying Retrieval Requirements of 10 CFR 60 have been typed and are currently being reviewed. Work has begun on section 2.4-Review of DOE Nuclear Waste Repository Reports to see if the technology proposed in these reports is in line with the findings of the state-of-the-art study completed in sections, 2.1, 2.2, and 2.3.

Work Completed to Date

Literature searches on rock mechanics, hole casing, and grouting were completed. Preliminary draft reports containing the findings of sections 2.1, 2.2, 2.3, and 2.5 were prepared.

3.0 Backfilling of Emplacement Holes

Principal Investigator - Robert Evans

Work Completed During Reporting Period

During this reporting period, the sections, "Materials for Backfilling (Task 3.3) and "Mechanical, Pneumatic and Hydraulic Systems for Backfilling" (Task 3.4) were revised. The initial draft for the section "Methods to Detect Void Spaces in Backfilling" (Task 3.5), was completed. No significant findings for this period are presented.

During the next reporting period work on the second drafts for all three sections of the paper will be completed (Tasks 3.6, 3.7, and 3.8). Figures for all sections of the paper will be submitted for drafting.

4.0 Retrieving Waste Canisters from Emplacement Holes

Principal Investigator - Gerald L. Finfinger

Work Completed During Reporting Period

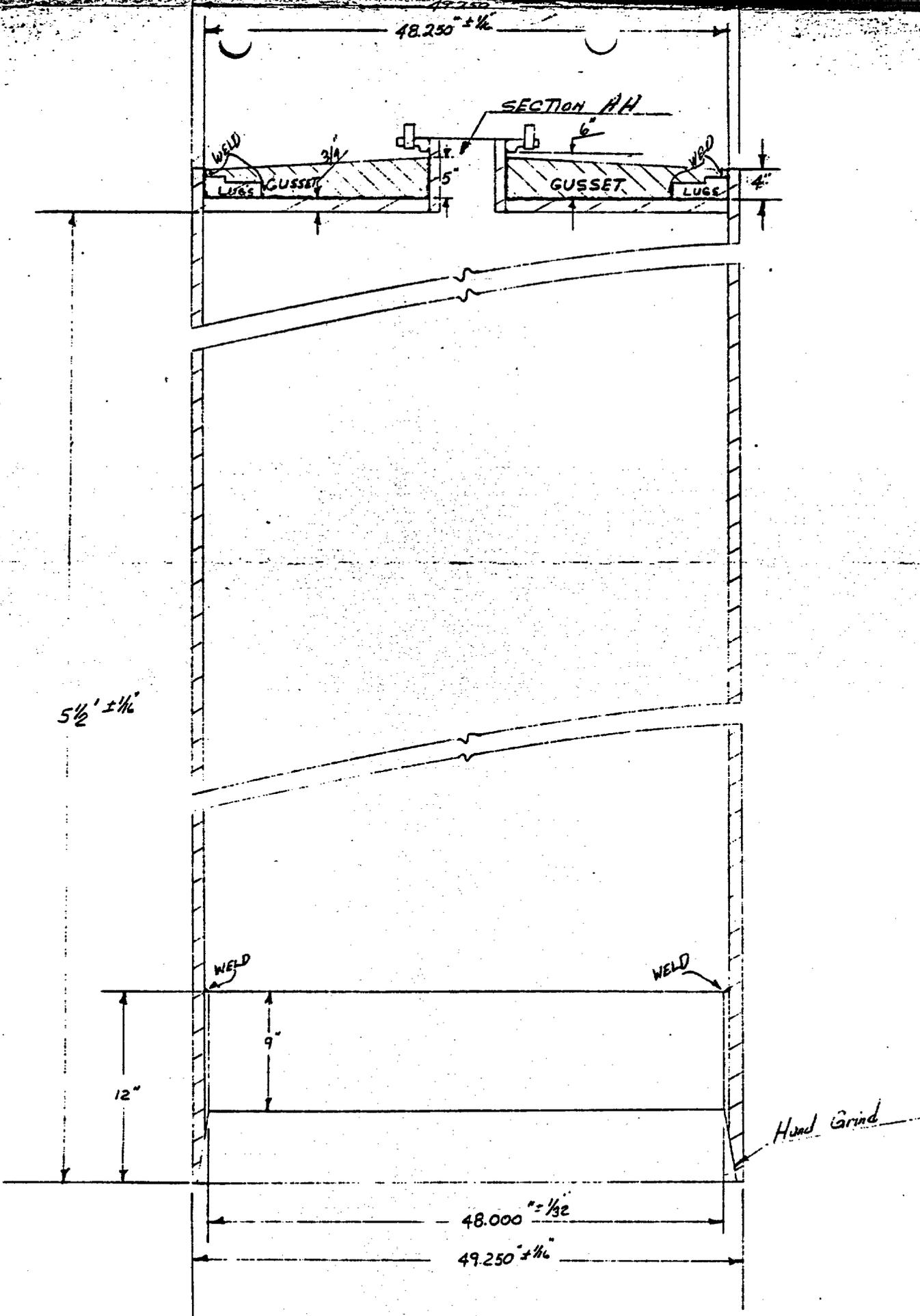
A drawing has been received from the Corps of Engineers Diamond Drill Division, Dallas, Texas, which shows the design used for the construction of a core barrel for 48 inch diameter holes [drawing enclosed]. Companies which have been contacted for information on retrieval by overcoring generally agree that while this technique may be successfully used it is extremely expensive and time consuming. The consensus seems to be that any overcoring operation requiring equipment greater than 12 inches in diameter would be imprudent. However overcoring operations have been conducted to dislodge stuck pipelines in near horizontal holes [up to 10 inches in diameter] at depths of 1500 feet. Most individuals agreed that preventing the core barrel from damaging the canisters if overcoring is used would be difficult particularly if strata movement occurs.

Work Completed to Date

A computer implemented literature search has been conducted. Overcoring technology has been explored and equipment has been investigated.

Man-Effort

<u>Task</u>	<u>Man-Hours This Period</u>	<u>Total Man- Hours to Date</u>	<u>Percent of Available Hours</u>
1.0	214	786	69%
2.0	280	1028	87%
3.0	120	466	74%
4.0	50	209	60%



48000 CORE RETRIEVER

SCALE: NONE
DRAWING NO 2

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