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MEETING REPORT

(Return to W.M. 623-SS) _____

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

DATE: 1/12/84

LOCATION: U.S. Bureau of Mines
Bureau of Mines Research Center
Bruceeton, PA

PURPOSE: To discuss the status of the project "State-of-the-art
Assessment of Large Diameter Horizontal Nuclear Waste
Emplacement holes".

PARTICIPANTS: NRC-David Tiktinsky, Project Manager
Lawrence Chase, NRC Consultant
EI- Frank Kendorski
BOM- Ed Thimons, Project Manager
Other BOM participants involved in subject project

SUMMARY OF COMMITMENTS, CONCLUSIONS, AND AGREEMENTS:

1. Mr. Claude Goode of the BOM stated that efforts by the Bureau and other countries for 20 years to develop remote-controlled underground mining equipment has 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 the Bureau's opinion it is highly unlikely that remote mining equipment suitable for high temperature environments such as would be encountered in a backfilled retrieval operation cannot be developed, tested, and made into proven technology by 1997.

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2. Mr. Edward Thimons of the BOM 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 of the BOM 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 a 12-inch deviation. He further stated that large holes of only 200 feet in length could not be drilled within this allowance.
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 of the BOM commented that based on Bureau of Mines investigations to date the overpack (Backfill) around canisters in horizontal emplacement holes will be difficult to emplace with single pipes and even if it is accomplished, it will also 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.
7. 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 for the BOM's progress under this program.

8. Dr. Lawrence Chase of the NRC requested that the BOM provide written definitions of certain key terms used in their proposal and monthly reports. The Bureau agreed to this request.
9. NRC and the Bureau agreed to continue the program without any changes in the Scope of Work.
10. 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 four 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 the performance requirements of 10 CFR 60?
2. In long horizontal holes, how can hole integrity be predicted and maintained to allow the retrieval option to be maintained?
3. In long horizontal holes, how can overpack placement be monitored to insure that voids do not occur that might compromise the engineered barrier system?
4. In vertical shafts, how can grout placement be monitored to insure that voids between the shaft liner and the rock face do not occur which may compromise the shaft sealing system?

NOTE: These commitments, conclusions, and agreements were read and agreed to by Lawrence Chase, Ed Thimons, David Tiktinsky prior to adjournment.

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