



United States Department of the Interior

WM DOCKET CONTROL BUREAU OF MINES
CENTER

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November 14, 1984

Mr. David H. Tiktinsky
U.S. Nuclear Regulatory Commission
Engineering Branch
Division of Waste Management
Washington, DC 20555

WM-RES

WM Record File

B-6934

BOM

WM Project 10, 11, 16

Docket No. _____

PDR ✓

LPDR B, N, S

Distribution:

TIKTINSKY

(Return to WM, 623-SS)

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Dear Mr. Tiktinsky:

Enclosed is our review comments on the draft Environmental Assessment for BWIP. I'm sorry we could not complete the review by November 2nd, but we did not receive the document until October 29th. Dr. Michael Sokaski completed the majority of the review with some assistance from other specialists at the Spokane Research Center.

Sincerely,

Ernest L. Corp
Supv. Mining Engineer

Enclosure

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Section 4.2.1 Exploratory Shaft
Page 4-15, Figure 4-6,
Inadequate instrumentation at breakout station

The brow of the breakout station, i.e. at the intersection of the shaft and the breakout station, should be instrumented with borehole extensometers because this area is usually unstable.

Section 4.2.3 Occupational Safety and Health
Page 4-36,
Omission of safety issues

In last sentence item (6), change imperative hoist to hoist system malfunction. Also, additional safety issues are dust, lighting, explosive and noxious gases, temperature, humidity, and safety training. They should be included in the safety program for the repository.

Section 5.1.2 Description of Existing Conceptual Design
Page 5-14, paragraph 4,
Consider additional environmental monitoring

Dust, airflow, temperature, relative humidity, differential pressure between airways, and gases such as methane, hydrogen sulfide, carbon dioxide, and carbon monoxide should be monitored. The Bureau of Mines is investigating environmental monitoring systems, especially their reliability. Unacceptable performance of these systems involves failure to give an alarm, giving a false alarm, or giving inaccurate information. Research is underway to determine the reliability of sensors, data transmission systems, and computer hardware and software. Automatic data verification systems, establishment of environmental profiles, recommended alarm rates, sensor locations, and redundancy of components are also being investigated. The results of this research should be considered in environmental monitoring at the repository.

Section 5.1.2 Description of Existing Conceptual Design
Page 5-23, paragraph 2,
Inappropriate extrapolation of data

Shaft drilling technology is well established for diameters up to about 12 feet. Problems with mud circulation, cuttings removal, drill pipe handling, as well as others are greatly increased at larger diameters. Therefore, extrapolating data (not interpolating as stated) to larger diameters is not appropriate. We are aware of only one shaft that has been attempted at a 20-foot diameter. Overall drilling rate was slow and breakdowns were frequent. The attempt is generally regarded as only partially successful with additional research and development clearly necessary for drilling over 12-foot-diameter shafts.

Section 6.3.1 Postclosure Technical Guidelines
Page 6-92, paragraph 3,
Inadequate consideration of role of structural defects in roof failure

The analysis of roof failure in this paragraph assumes homogenous rock. However, structural defects in the rock such as faults, cracks, and joints can dominate failure to the extent that roof collapse penetrates through

the vesicular zone and into the flow top. These structural defects could be present during repository construction or could develop later as a result of tectonic activity. All roof failure modes should be considered in evaluating the structural integrity of the repository.

Section 6.3.3 Preclosure Technical Guidelines

Page 6-135, paragraph 1,

Additional factors influencing rock support

In addition to rock quality and stress field, the amount of rock support will depend upon the sizes, shapes, and spatial relationships of openings. These additional factors should be considered in the rock support design.

Section 6.3.3 Preclosure Technical Guidelines

Page 6-145, paragraph 2

Possible reliance on inadequate technology

Microseismic monitoring has not been advanced to the state where rock bursts can be predicted with an acceptable degree of reliability. The time of rock burst occurrence can not be predicted. Rock bursts usually do not follow microseismic buildup, and some rock bursts occur without microseismic buildup.

The Bureau of Mines is continuing research on microseismic monitoring to improve the performance and increase the reliability of these systems. The results of this research should be applied to the repository monitoring system.

See: Microseismic Applications for Mining - A Practical Guide, Wilson Blake, Bureau of Mines contract J0215002.

Section 6.3.3 Preclosure Technical Guidance

Page 6-150, items 4 and 5,

Possible exception to stated task

If the repository is classified as gassy, it may not be possible to seal inactive workings. The mining laws may require them to be ventilated. Also, a gassy classification will significantly increase the cost of the repository.

Section 6.4.2 Postclosure Preliminary System Performance

Page 6-171, paragraphs 2 and 3,

Alternate interpretation of data

The wide range of hydraulic conductivities in the flow tops suggest the high values may be associated with large fractures, tubes, and channels. These features will dominate flow and therefore the average of the conductivities from all boreholes has little validity. It is necessary to collect more hydrogeologic data as stated, but the possible existence of large fractures, tubes, and channels should be determined, their locations mapped, and their influence on flow evaluated.

Earthquakes and other tectonic activity can greatly alter ground water flow patterns. Flows can increase in some areas and decrease in others. The possibility of altered hydraulic conductivities and, therefore, altered ground water flow patterns should be considered in the repository site evaluation.

See: Pay Dirt - Big Sky, 1984, Flooded Clayton Silver Mine may be back in production soon: No. 41, p. 17A.