623-SS

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07 November, 1986
Ref. No. 1148-07-02
Letter No. 085

U. S. Nuclear Regulatory Commission
7915 Eastern Avenue
Silver Spring, MD 20910

Attention: Mr. John T. Buckley 623-SS

Subject: Trip Report for Visits to Lucky Friday Mine and Spokane Mining and Research Center, 19-20 August, 1986.

Ladies and Gentlemen:

Enclosed is the subject trip report. We hope this agrees with your own record of the visits. Please contact me should you have any comments or corrections.

Sincerely,

ENGINEERS INTERNATIONAL, INC.

Peter J. Huck
Project Engineer

PJH/crb

Enclosure

1148-07-02
3SPROJ

3502

Trip Report

Contract No. NRC-02-84-002

Task Order 007 - Subtask 2 - Assignment 11

ITINERARY

18 August, 1986
Travel to Coeur de Alene

19 August, 1986
Visit to Lucky Friday Mine
in Coeur de Alene District

20 August, 1986
Visit U. S. Bureau of Mines
Spokane Mining Research Center

PURPOSE

Visit to Lucky Friday mine to observe working conditions in deep workings under high lateral stress conditions.

Visit to Spokane Mining Research Center to discuss potential future Bureau of Mines contributions to NRC activities.

PARTICIPANTS

Lucky Friday Mine

J. Buckley - NRC
D. Tiktinsky - NRC
M. Nataraja - NRC
P. Huck - Engineers International, Inc.
Plus several other NRC contractors

Spokane Mining Research Center

M. Nataraja - NRC
P. Huck - Engineer International, Inc.

DISCUSSION:

The visit to the Lucky Friday Mine was intended to provide a first hand look at mining conditions in a deep hard rock mine subject to high lateral stresses and rock burst problems. The mine is temporarily inactive until methods of dealing with the rock bursts are developed. Being inactive, the ventilation is reduced, leaving the air at about 108° F and near 100 percent humidity.

The ore body is a thin vein of lead/zinc/silver ore which follows a near vertical fault. The mine workings presently extend below the 5,000 foot depth. Mining is conducted by extending several

horizons from the shaft to intersect the ore body, and then stoping upward to the previously mined level, 100 feet above. Although very heavy timbering is used, rock bursts tend to occur as the pillar at the top of the active stope narrows.

The group descended to the 5,200 foot level and climbed ladders into two stopes.

Air conditions in the poorly ventilated stopes tended to be oppressive. Rock bursts may occur anywhere within a hundred feet of the workings. Methods of dealing with rock bursts include an extensive microseismic monitoring net and attempts to de-stress the rock by blasting. Mining methods that will not leave thin pillars between working levels are also under consideration.

A short raised bore was also inspected. The high in-situ stresses had caused considerable slabbing, elongating the originally circular bore into an ellipse with perhaps a 2:1 aspect ratio. Similar slabbing has been observed in some small boreholes at the Hanford site. In a large diameter shaft, major problems could result if the same type of deterioration occurs.

The group descended to the 5,300 foot level and inspected the pumping and power distribution facilities. After coming back to the surface, the mine's microseismic system was inspected. This system has had success in identifying some potential rock burst activity, but has also failed to warn of other events.

On 20 August, 1986, Dr. Nataraja and myself visited the U.S. Bureau of Mines Spokane Mining Research Center (MRC). The purpose of this visit was to explore the possibility of upgrading the contributions of the MRC to NRC's program. In the past, NRC efforts have been distributed among several Bureau engineers. We were told that the Bureau would be willing to dedicate a more concentrated effort to NRC's needs, especially if a larger volume of work might be forthcoming. Following these discussions, a tour of the labs was provided.

TRAVEL COST:

The travel cost breakout for Mr. Huck is attached.

EMPLOYEE EXPENSE ACCOUNT

EMPLOYEE #: | NAME: R. Cummings

SHEET 1 OF 1 | APPROVED:

PROJECT/PROPOSAL #: NRC-02-84-002 | PROJECT SHORT TITLE OR OFFICE ACCOUNT: Technical Assistance for In Situ Testing

PERIOD: 10/13 TO 10/14 1986

DATE	LOCATION	EXPLANATION OF EXPENDITURE	RECEIPT/ VOUCHER #	AMOUNT U.S. DOLLARS
10/13/86	Tucson	Personal car drop-off @ airp't, $0.21/mi.		6 30
10/13/86	TUS-Wash. D.C.	Airfare, round-trip		485.-
10/13/86	Wash. D.C.	Taxi from National		16.-
10/13/86	Silver Spg	Motel		41.75
10/13/86	"	Meals		14.80
10/14/86	"	Meals		20.-
10/14/86	"	Taxi to Dulles		31.10
10/14/86	Tucson	Personal car pick-up @ airp't, $0.21/mi.		6.30
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		TOTAL (CREDIT ADVANCE ACCOUNT)		621.25

SIGNATURE: Robert Cummings DATE: 29 Oct 86

ACCOUNT # | REPORT #

ENTERED