

DENAK MINES

PF.

93K/3E

015177

Dr. J.T. Fyles,
Associate Deputy Minister.

November 8th 74

Re: Production Lease for Denak Mines

The report is a concise summary of the plans for extension of the Endako Pit to the northwest to form the Denak Open Pit. The tonnage and grade were checked crudely by hand and with comparison to Endako appear correct. The pattern of ore distribution is also similar. Endako's reserves in 1971 were calculated as 209 million tons at an average grade of 0.15% MoS₂ at calculated cut-off grade of 0.08% MoS₂. This compares with a total of 14.6 million tons at 0.17% MoS₂ at Denak and 9.9 million tons at 0.16% with a 0.09% MoS₂ cut-off grade² on the area for which the production lease is applied. The increase in cut-off and average grade seems reasonable.

The report does not supply proper geological plan and sections nor is there a drill hole plan and drill logs if proper check calculations are desired.

ASB/jr

A. SUTHERLAND BROWN,
Deputy Chief Geologist, Geological Division,
Mineral Resources Branch.

Attd: Report

PROPERTY FILE

934006 -06
07

REPORT ON PROPOSED DENAK MINES LTD.

OPEN PIT PLANS

To Accompany
Application For A Production Lease

Omineca Mining Division
Denak Mines Ltd.
Endako, B.C.

PROPERTY FILE

934006 - 06
07

October 7, 1974.

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I. INTRODUCTION

An application for a Production Lease covering the following mineral claims is being submitted by Denak Mines Ltd. .

<u>Mineral Claim</u>	<u>Record No.</u>	<u>Lot No.</u>	<u>Acreage</u>
Elk 3 Frac	40225	1557	8.71
Elk 4	13441	1555	43.92
Elk 5	13442	1556	41.60
Elk 12 Frac	81820	1559	0.41
Nu 1	14485	1565	51.65
Nu 2	14486	1558	51.65
Nu 3	14487	1564	51.62
Nu 4	14488	1560	51.65
	Total Acreage		301.21

Purpose for acquisition of Production Lease is to develop and produce molybdenite from a proposed open pit.

II. PLAN OF OPERATIONS

1. Location and Access

Denak Mines Ltd. property is situated about five miles southwest of Endako, B.C. in the Omineca Mining Division. It is geographically located in southeast quadrant of quadrilateral, Latitude 54°N and Longitude 125°.

The property is accessible by seven-mile road from Endako, B.C. which is on Highway 16 and a branch line of Canadian National Railway.

2. General Geology

The Denak molybdenum deposit occurs in the Topley batholith which extends for a distance of 180 miles in a northwesterly trend from Quesnel to center of Babine Lake. The orebody is a westerly extension to the Endako orebody which is roughly a 40° to 60° south-dipping elliptically-shaped zone.

Molybdenite mineralization occurs with quartz veins and as fracture-fillings in quartz monzonite host rock that has undergone

various degrees of hydrothermal alteration. Four types of pre-mineral and two types of post-mineral dykes intrude quartz monzonite. Ore pattern for proposed Denak open pit is characterized by a series of subparallel narrow 20- to 60-foot wide bands; stockwork is locally well-developed to produce irregular broader ore widths up to 150 feet. Numerous faults cross-cut and often parallel ore structures. Relative displacement along two major faults across Denak ore zone is in the order of 300 to 500 feet; more generally fault movement is less than 30 feet.

3. Current Development

The following sequential stages of development have been completed for the Denak ore zone.

- a) Preliminary wide-spaced exploratory diamond and percussion drilling were undertaken during period 1967 - 1972.
- b) Diamond drilling of easterly half of ore zone was completed in spring 1973.
- c) Ore interpretation and evaluation of drilling results were completed during summer 1973.
First stage of Denak Optimum open pit was designed.
- d) Diamond drilling for westerly half of ore zone was undertaken during spring 1974.
- e) Ore interpretation of 1974 diamond drilling results indicates that additional fill-in drilling is required for westerly half of ore zone.
- f) Reinterpretation of estimated overburden depth was recently completed. This study was based on additional information from percussion drilling program during summer 1974.

4. Proposed Open Pit Development and Mine Site

The proposed Denak optimum open pit will be developed as a westerly expansion of the present Endako Mines open pit. The pit design could be extended further westerly depending on future favourable evaluation of drill results.

Tentative development of Denak optimum open pit, as presently designed, will be to initially strip an estimated four and a half million cubic yards of overburden during 1975 and 1976, prior to commencement of open pit production in 1977.

Denak ore production will be processed through existing Canex Placer Limited, Endako Mines Division, plant facilities that have an average daily mill throughput of 27,000 tons.

5. Economic Feasibility

a) Pit Design Method

Denak ore zone was evaluated by utilizing the minimum profit criteria to produce an optimum pit design. Ore blocks for input data are derived from detailed cross-sectional geologic interpretation of diamond drill results within the ore zone. Blocks are systematically arranged in a grade matrix so as to conform to pit bench elevations and common reference line. Specific calculated grades according to geologic information are assigned to each block.

A three-dimensional form of the Lerchs-Grossman technique is used to produce an optimum pit design. The pit design is then evaluated by determining ore reserves within the pit boundaries. Refinements such as location of road systems, establishment of berms, and smoothing of pit wall configuration are incorporated into the pit design in order to comply with practical mining procedures.

Indicated average operating profit, excluding royalties, Federal and Provincial taxes, for Denak optimum pit is estimated at 78¢ per ton. This gross profit margin was derived from applying the following approximate cost factors, metal price and expected revenue to the evaluation.

Stripping Cost	\$ 4,000,000
Mining Cost	13,000,000
Milling Cost	12,000,000
Other Costs	7,000,000
Depreciation	3,000,000
Total Estimated Cost	\$ 39,000,000

Expected pounds of Mo = 24,000,000 lb.

Expected price for Mo = \$ 2.10 per lb.

Revenue generated = \$ 50,000,000

Total expected profit = \$11,000,000 from total reserve of 14,000,000 tons.

Therefore: Gross Profit margin per ton milled = 78¢ per ton

b) Financial Arrangements

Expenditures to develop the Denak optimum open pit will be provided by Canex Placer Limited.

c) Marketing

Two products, molybdic oxide and molybdenite concentrate are produced at Endako Mines. Products are packaged in drums, steel pails or compressed into briquettes for shipment to overseas markets at Japan, European countries and Australia. Products are also distributed to Canadian customers, mostly in Eastern Canada, and in almost every developed Western country except the United States.

6. Fraser Lake Townsite

Majority of mine employees reside at Fraser Lake Village which is located 14 miles from minesite along Highway 16. Living accommodations, designed and located in accordance with a community plan, include family homes, apartments, single men's quarters and trailer courts.

A modern 24-classroom school provides the most up-to-date educational facilities for 500 students from grade one to eleven. Recreational facilities include an arena, a recreation center with curling rink, a community hall, a boat-launching ramp, tennis courts and 15 acres of land for future recreational development. There is a 30-room hotel in the Village, a shopping center, a well-equipped medical clinic with two full-time doctors, and churches serving five denominations.

III. PRODUCTION PLAN

1. Ore Reserves

Total calculated ore reserves for Denak optimum open pit at 1.25:1 strip ratio are:

14.6 million tons @ 0.17% MoS₂

Of this total reserves, 9.9 million tons @ 0.16% MoS₂ with 0.09% MoS₂ cut-off grade are on the area that is being applied for a Production Lease.

2. Mining Method

Denak optimum open pit will be mined by open pit methods. Mining will be conducted on 33-foot-high benches with 30-foot-wide berms being established at two-bench intervals. Maximum

wall slope will be 49°30'. Run-away ramps will be maintained as precautionary measures. Mining practice will be in accordance and in compliance with the Mines Regulation Act and as directed by the local Mines Inspector.

The following mining equipment will be utilized:

- One P&H 2100, 13 yard electric shovel
- One Marion 191M, 13 yard electric shovel
- One Bucyrus Erie 150B, 8 yard electric shovel
- Three Bucyrus Erie 40R rotary blast hole drills
- One Marion M4 rotary blast hole drill
- Fleet of sixteen 85 and 100 ton Unit Rig Lectra Haul trucks
- Miscellaneous support equipment includes dozers, loaders, graders and light vehicles.

Ore and waste rock will be blasted with ammonium nitrate agent or special slurry mixtures. Broken high grade ore will be trucked a distance of approximately one and one-half miles to the primary crusher; low grade ore will be stockpiled for treatment at a later date. Waste material will be dumped in designated dumping areas.

The estimated four and one-half million cubic yards of overlying overburden will be removed by contractors utilizing earth-moving scrapers. Much of this material will be emplaced in an area 400 feet northeast of Denak open pit.

3. Mining and Metallurgical Recoveries

Stringent grade control is currently exercised for maximum mining efficiency. Control is primarily based on detailed surveying, blast hole assays and geological mapping. It is anticipated that this practice will be continued for Denak open pit to obtain maximum ore recovery.

Metallurgical recoveries of molybdenite from ore have averaged 82%, and it is anticipated that this recovery rate will be maintained.

4. Environmental Safeguards and Reclamation

Mining operation will be conducted in accordance to guidelines and regulations that pertain to protection and conservation of environment. More particularly, close surveillance and control will be rendered to mine waste dumping and tailings impoundment areas in order to insure compliance with regulatory specifications.

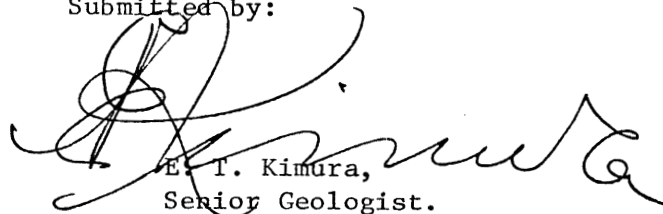
All merchantable timber will be logged from proposed open pit and dump areas prior to any development. Remaining slash will be windrowed and burned.

A program of environmental reclamation after completion of open pit mining will include; 1. returning as much of the disturbed area to its former state, 2. seeding and fertilizing waste dumps and tailings impoundment areas, and 3. allowing excavation to accumulate water.

5. Safety Standards

Open pit mining will be conducted according to and in compliance with the Mines Regulation Act.

Submitted by:



E. I. Kimura,
Senior Geologist.

CANEX PLACER LIMITED,
ENDAKO MINES DIVISION.



A. McQuire,
Senior Engineer.

CANEX PLACER LIMITED,
ENDAKO MINES DIVISION.

IV. APPENDICES

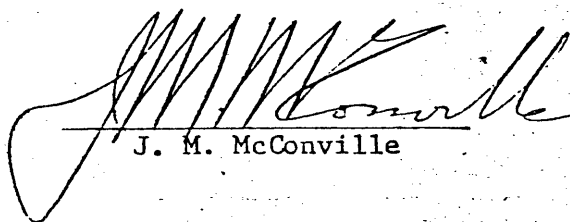
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4. Proposed open pit plan (in pocket)
5. Cross-section 6700 (in pocket)
6. Cross-section 7100 (in pocket)

APPENDIX I

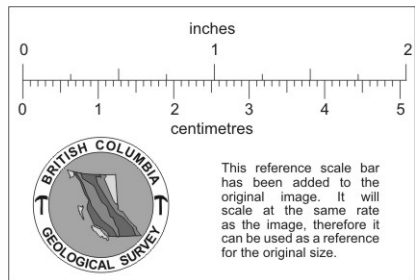
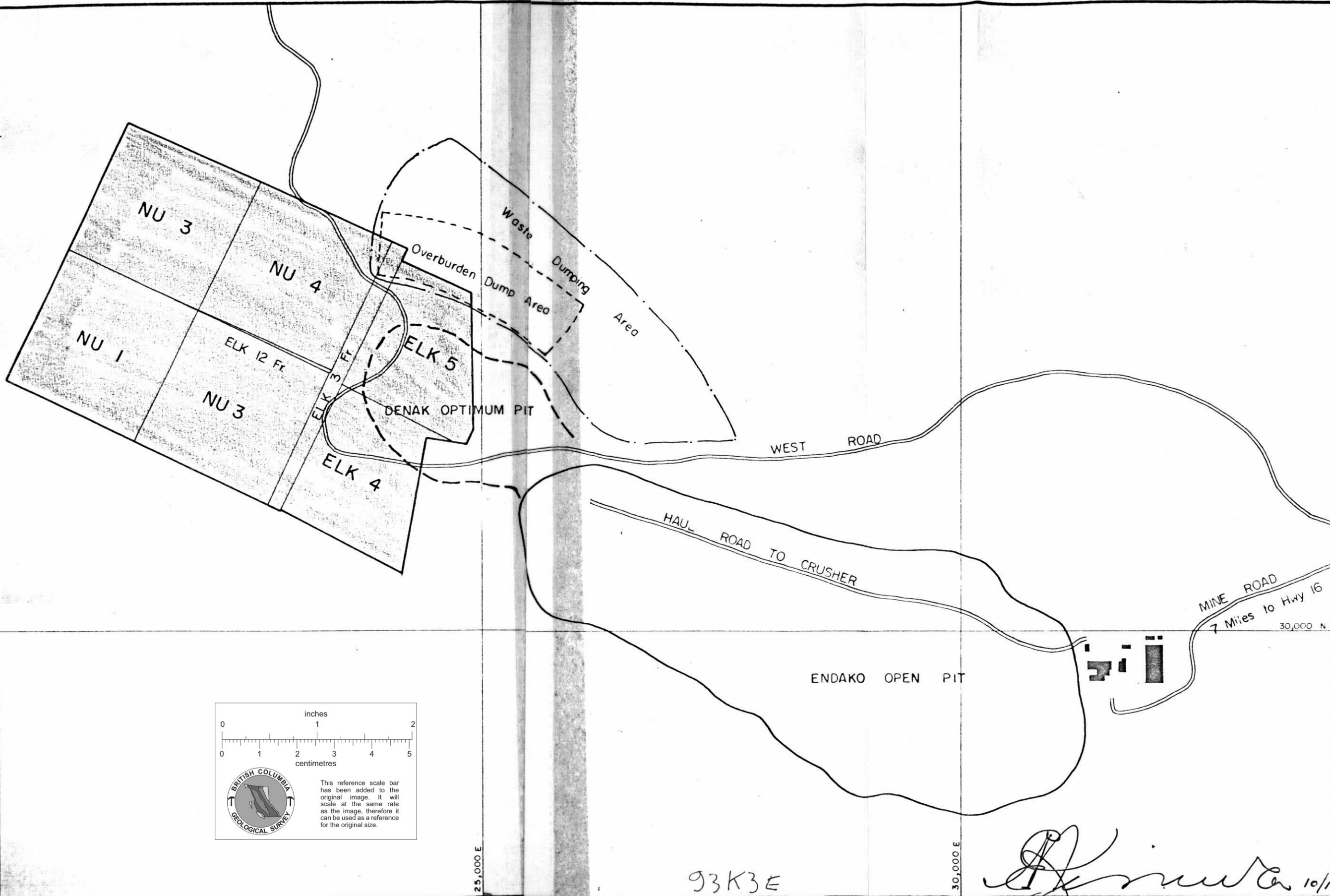
CERTIFICATION OF INFORMATION

I hereby certify that I am a Director and the Secretary for Denak Mines Ltd., and that the information presented in the annexed report was prepared by Canex Placer Limited, Endako Mines Division, on behalf of Denak Mines Ltd., and is to the best of my knowledge, information and belief true in every respect.

Dated this 9th day of October, 1974.



J. M. McConville



93K3E

[Handwritten Signature] 10/11

DRAWN L.E.T.	SCALE 1"=1000'	DENAK MINES LIMITED
TRACED	DATE SEPT. 19-74	PRODUCTION LEASE APPLICATION AREA
APPROVED		

APPENDIX 2
FILE No.