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Arizona Department of Mines and Mineral Resources Mining Collection

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DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine BORIANA TUNGSTEN MINE

Date October 6, 1942

District Owens, Mohave Co.

Engineer Elgin B. Holt

Subject: Production Possibility

OWNER: Molybdenum Corp. of America; Mark Hirsch, Pres., 500 5th Avenue, New York City; W. H. Munds, Resident Manager, Yucca, Arizona.

METALS: Tungsten and copper - tungsten predominating.

LOCATION: Property is located on west side of the Hualpai Mountains, Mohave County, Arizona, around 20 miles S. E. of Yucca, and is reached from Kingman, Via Yucca, by a fairly serviceable dirt road, which is maintained by the County.

INTERVIEW: On October 5, 1942, I had an interview in Kingman with Mr. W. H. Munds, Resident Manager of this property, and he gave me the following data concerning the same:

AREA: The Boriana group consists of 16 unpatented mining claims.

VEINS: There are 4 veins, each vein being made up of a series of stringers of tungsten ore from 1" to 15"wide.

DEVELOPMENT WORK: Development work consists mainly of tunnels and raises, aggregating 15,000 feet. There is one inside winze sunk vertically to a depth of 450', at a point 2,900 feet from portal of main tunnel. There are three levels in said winze with 5,000' of lateral work.

MILL, TYPE & CAPACITY: A 200-ton combination gravity and flotation mill is located at property, and produces a product running 70% WO_3, which is shipped to the company's own tungsten reduction and manufacturing works at Washington, Pennsylvania.

1941 PRODUCTION: Ore milled during 1941, per Munds, amounted to 16,000 tons, assaying 1.12% WO_3. Tails assayed 0.12 WO_3. Concentrates produced contained 6,000 units of WO_3.

ORE RESERVES: Mr. Munds stated that no attempt is made to maintain large ore reserves in the mine, due to swelling ground. Therefore, ore is practically mined as fast as developed in order to save maintainence costs of keeping drifts open. However, around from 4 to 6 months supply of ore is kept blocked out ahead of stoping operations, in order to keep the mill operating without closing down.

OPERATING COSTS: Munds also stated that he is not at liberty to give full details regarding operating costs, as such information would have to be secured from Mr. C. Q. Schlereth, consultant for company, Box 258-B, Route #8, Phoenix, Arizona. Or such information might be secured from the company's New York office, as above set forth. However, Munds stated that the company is now paying the regulation scale of wages generally paid Mohave County miners and other worken, which now amounts to an average increase of 22.5% over rate

BORIANA TUNGSTEN MINE

of pay for 1942.

DIFFICULTIES: Mr. Munds further stated that due to the scarcity of skilled workmen during 1942, as well as to the fact that many of his first class men left Boriana in order to take higher paid jobs at nearby defense projects, and which skilled men have been partly replaced by unskilled miners and muckers, which resulted in the new underground employees mixing ore with waste and waste with ore, - that for all these reasons, the production of tungsten, as well as a small amount of copper concentrates, which is produced as a by-product, have fallen off at least 50% during 1942 over what the production of these metals amounted to during 1941. He also stated there is now a 25% shortage of mine workers and these mainly consist of a very poor quality, as it takes fully 6 months time to train muckers and miners, in this particular mine, to selectively mine and sort the tungsten ore underground. He also stated that the type of men now employed, or rather available manifest a spirit of indifference in the work they are carrying on.

BORIANA OPERATING AT A LOSS: Munds also stated that operations at Boriana are now being carried on at a loss, as far as the mining and milling of ore are concerned. That if the present pegged price for tungsten could be increased to a figure covering production costs, and no more, that Boriana could go along and probably increase production to around 3,000 units of WO_3 monthly, due to the fact that his company manufactures its own tungsten output. But in such event, he stated there would have to be provisions made to increase labor costs sufficiently to compete with the defense projects mentioned.

Elgin B. Holt

*

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DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA

OWNERS MINE REPORT

Report by
A. Brodie Campbell

Date June 7, 1942

1. Mine Boriana
2. Mining District & County Yucca District
Mojave County
3. Former name Yucca Tungsten Mining Co.
4. Location 17 miles NE Yucca. Nearly at top of Hualapai Mts.
5. Owner Molybdenum Corp. of America
6. Address (Owner) Yucca, Arizona
7. Operator Molybdenum Corp.
8. Address (Operator) " "
9. President -----
10. Gen. Mgr. Bill Munds
11. Mine Supt.
12. Mill Supt.
13. Principal Metals Wolframite, scheelite, chalcopyrite.
14. Men Employed 100--120
15. Production Rate 40 tons per day. 40 units WO3 day.
16. Mill: Type & Cap. Combined gravity and flotation. 150 tons/24 hrs.
17. Power: Amt. & Type 500 hp. transmitted elect. Stand by diessel.
18. Operations: Present Develop, mine mill.

19. Operations Planned Same

20. Number Claims, Title, etc. Many but some are held by lease and some by part ownership.

21. Description: Topography & Geography Rugged mountainous country. Elevation, 4,000'. Semi-arid climate Small precipitation.

22. Mine Workings: Amt. & Condition Many thousand feet of drifts, winzes and raises. The older portions are in bad shape. The newer ones require timber. The schist is of the swelling ground nature.

(over)

23. Geology & Mineralization Two prominent quartz veins running parallel with the scistocity and extensive schist bed in granite. The veins fade out to the SW while still in schist. The veins terminate in a granite stock to the NE. They do not terminate at the contact but penetrate the stock. The veins average about 1' in width. The strike is N 35 E and dip is 80 to 90 to the SE. Mineralization is wolframite, scheelite and chalcopyrite of the quartz.

24. Ore: Positive & Probable, Ore Dumps, Tailings There is no developed ore on this property. The ore is taken out nearly as soon as it is developed. Development is slow because of a step faulted condition of vein structure. The structure continuity on the surface indicates that there is still considerable tonnage left.

24-A Vein Width, Length, Value, etc. The ore body is approximately 1500' long. The veins average 1' in width. The mine is 700' deep and sinking a shaft an additional 200'.

25. Mine, Mill Equipment & Flow Sheet Mine run to bins to conveyor to 10" by 16" jaw, to 8 mesh screen. O'size screen to hi-speed gyratory. U'Size to Classifier. Hi-speed Gy. closed on 8 mesh wet screen. U'size to class. (6 spig.) Class. products to individual tables (7). Table conc. to float section. Midds to ball mill return to circuti via class. Float section; Table conc to ball mill closed on drag class. O'flow to float. Sulphides floated away from WO_3. WO_3 tails thickened filtered and dried. About 60% WO_3.

26. Road Conditions, Route Sulphide conc. filtered and sold.

Take road going NE 2 miles S of Yucca. Road well signed. Go 17 miles NE up canyon to mine. Fair mountain road.

27. Water Supply Good. More than enough water from underground workings.

28. Brief History Started as tungsten producer in 1908. Has produced more or less since that time. Probably the most consistent tungsten producer in state. Has produced between 80,000 and 100,000 units WO_3.

29. Special Problems, Reports Filed Wilson, Tungsten Deposits of Arizona. The special problem here is labor. The property would be on double production if labor was available.

30. Remarks This property is a good example of the need for large capital background for tungsten properties in this state. The Boriana mine does not show on the surface as good as some of the other districts. It has become a successful operation only after considerable capital has been expended.

31. If property for sale: Price, terms and address to negotiate.

32. Signed.....

33. Use additional sheets if necessary.

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA

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6-803
(January 1952)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Dale No. 194

SUMMARY REPORT OF MINERALS EXAMINATION

State Ariz. County Mohave Mineral Products ~~molybdenite~~ molybdenum copper tungsten

Name of property or deposit Bariana

Date examined 2/18/59 Engineer V. B. Dale Date of this report 4/1/59

Reason for examination Appraisal of tungsten deposits, Reg. III, Act 3423.

Engineer accompanied by No one Address

Extent of property 28 unpatented lode claims

Owner Dye and Bathrick Mining Co. Address Kingman, Ariz.

Leased or optioned to No one Address

Location of property (be specific) Secs. 12 and 13, R. 15 W. and secs 7, 18, and 19, R. 16 W., T. 18 N. on the west slope of Hualpai ~~Peak~~ Mountains

Type of deposit and mineralogy (brief description) Quartz veins cut phyllite. Wolframite, scheelite, and chalcopyrite occurs as pockets & narrow veins in quartz in 2 groups of small veins & Ore zones about 90 feet apart. Veins rake about 45° NE.

Known dimensions of the deposits

Length 1200 ft. Width 10 inches Depth 1100 ft.

Attitude of the deposit (strike, dip, etc.) Veins and schistosity strike N. 30° to 40° E. and dip from 75° SE to vertical.

Possible extensions; correlation of known showings This ore deposits extends onto the Bull Canyon property to the northeast. Considerable depth extension is reasonably probable.

Mine workings (brief description or attach map or sketch) (indicate whether accessable)

Nine levels at 100-foot intervals and 3 sublevels; flooded to 500-level, and less than 50% accessible above 500-level. See mine maps in Geol. Sur. Bull. No. 940-I.

(over)

Mining and milling equipment on property A complete 400 to 500 tons crushing, screening and concentrating plant less a 400 to 500 ton float-sink unit, and other miscellaneous equipment.

Past production (if any) 118,000 units of WO_3, a few tons of 30% Cu concentrates.

Present rate of production (if any) None

Sampling (describe briefly, or attach sketch) See Geological Survey Bull. 940-I.

Tentative Estimate of Reserves

(Subject to revision when assays are received or after engineering calculations)

Measurable 30,000 dump tons ~~tungsten~~ tungsten ore Grade 1.5 lbs WO_3/ton

Indicated 10,000 tons tungsten ore Grade 1% to 1.5% WO_3

Inferred 44,000 tons tungsten ore Grade 1% WO_3

It is reported that gob in mine contains 0.3% WO_3 - Not verified.

Mining method (actual or ~~suggested~~) Cut and fill.

Milling or processing method (actual or ~~suggested~~) Flotation or heavy-media separation.

Processing tests suggested None

Tentative conclusion and decision This mine is the biggest Arizona producer. It is capable of producing more Tungsten in the future than it has produced in the past.

To be accompanied by brief letter giving examining engineer's general impression of the deposit, his impression of the owner, and any other confidential information he may care to submit. Refer to any known prior examinations and reports. May be executed in pencil. Should be mailed within 24 hours after examination is completed.

Send original and one copy to Washington Office.

Interior--Duplicating Section, Washington, D. C.

76412

Boriana file

DEPARTMENT OF MINERAL RESOURCES
STATE OF ARIZONA
FIELD ENGINEERS REPORT

Mine GUNSLINGER (McCracken) Date June 3, 1980

District Owens (Mohave County) Engineer Clifford J. Hicks CJH

Subject: Field Visit To Mill

In a joint venture Fischer-Watts (property position and exploration) and Canadian Natural Resources, Ltd. (financing), have let a management contract to American Mine Services of Denver to operate the Gunslinger Mine (formerly the McCracken Mine) and the mill at Yucca (formerly the Boriana Mill).

The DMR engineer met with concerned parties in the office trailer at the mill site four miles south of Yucca, Arizona. Present were: M.D. Rowswell, Executive VicePresident, Canadian Natural Resources Ltd., 300 5th Avenue S.W., Calgary, Alberta T2P 3C4 Canada, phone (403) 264-4036; and Perry Durning, Geologist, Fischer-Watts, 114 Tucker, Kingman, Arizona 86401, phone 753-1622 (office), 753-1671 (home). Robert Green is the Project Manager.

Lead-silver ores from the Gunslinger Mine tailings will be truck hauled 45 miles to the mill. There are 25,000 tons of +4.0 oz.Ag/ton tailings at the mine which will eventually be open pitted. Primary and secondary crushing will be done at the mine and tertiary grinding at the mill. The mill is being expanded to handle 400-500 tpd. Heavy equipment is being purchased in Mesa, Arizona.

Hiring will be done locally with a labor force of 38 anticipated. They now need a mill superintendent, a mine superintendent, a mining engineer, a metallurgist, and mill hands experienced in flotation.

Start-up is expected by July 1, 1980.

CJH:mw

BORIANA MINE & MILL LIQUIDATION SALE

NO PRIORITIES

Write or Wire, W. D. Lindsay, Yucca, Ariz.
Care Boriana Mine

2—Mine Safety Appliance Co. Battery Charging Units Style No. 9816-250 volt, 2 amp, Control Panel with General Electric Battery Charger and Bulb No. 45x674.

All Portable Miner Lights and Batteries Complete with Rubber-Covered Lead Wire, etc.

1—Panel Switchboard, all wood plank construction 9"x5' fitted with the following:

1—690 amp enclosed terminal line switches.

1—AC Ammeter, 200amps, General Electric Type ARZ No. 1070914.

1—Lot of miscellaneous items.

1—Roots Connerville Rotary Blower 10"x15", S.D. Type R.B. No. 12970. 20 hp G.E. Motor and Switch.

3—Ore Reagent Feeder Bins. 20 Cells, Pipe and Fitting. Clarkson Reagent Feeder No. 234.

1—Roots Connersville Rotary Blower 102x152, S.D. Type R. B. No. 12969. 20 hp G.E. Motor, Starter and Switch.

2—Reagent Feeder Bins, 14 Cells. Pipe, Fittings, etc.

1—6'x6' Redwood Tank with Agitator. 3 hp U. S. Motor.

1—Storage Tank (feeding tank).

2—Cone Storage Feeding Tanks.

1—2'x4" Marcy Rod Mill No. 284, 7½ hp Westinghouse Motor No. 1236 and 1 hp Master Motor No. KD3566. Conveyor and Clarkson Reagent Feeder No. 470.

1—2'x4' Marcy Rod Mill No. 285, 7½ hp Westinghouse Motor No. 636.

9—Assorted Switchboxes, Conduit, Pipe, Etc.

1—1½" Deming Pump with 3 hp Motor.

1—Agitator with 8'x10' Steel Tank. 2 hp U.S. Motor with Suction Pump.

1—Rake Classifier. 2 hp Motor and Dorco Filter.

1—Rotary Dryer, 5 hp Motor, Shafting and Pulleys.

1—Denver Thickener No. 10961 Agitator, 6x8 Steel Tank, 3 hp Allis-Chalmers Motor No. 508D. Denver Lift Pump No. F258, Belt and Pulleys.

1—Dorco Filter and Rotary Dryer No. 48. 2 hp U.S. Motor No. 95812, Shafting, Pulleys and Belt.

1—7x4 Oliver Pump No. 1730, 3 hp G.E. Motor No. 460013.

1—9½x8 Oliver Vacuum Pump No. 10-912, 5 hp U.S. Motor No. 99984.

2—Centrifugal Pumps. 3 hp Westinghouse Motor No. 330929. Tanks, Pulleys

Switch, Throwout Switch, Valves and Pressure Gauge.
1—Throwout Switch.
1—Corrugated Iron Building. All Pipe, Electrical Wiring, Conveyor Chute, Crusher Room, Ore Dump Building, Etc.
69—Mine Cars (all) 24x24x42, 18 Gauge, 4-Wheel Roller Bearing 11½" Dia. 2¾ Tire, 17" Wheelbase.
1—6'x20' Redwood Tank.
1—8'x20' Redwood Tank with agitator and 8 hp U.S. Motor No. 97479.
1—3'x7' Galvanized Steel Tank.
1—6'x8' Redwood Tank.
1—5½'x5' Redwood Tank.
1—19½'x9' Redwood Tank.
21—Car Wheels.
1—Lot of Car Parts.
1—11x23 Water Tank.
1—19'x25' Water Tank.
3½ tons Rod Mill Rods.
1 Bldg. 14'x60' (office warehouse).
1—Oil Switch.
7—Ore Bins, Chutes, Doors, Etc.
1—Metal Cabinet.
1—Flotation Table.
1—Rainbow Water Softener 80,000 Gr. Capacity.
1—Sawmill 5 hp Cutoff Saw and 1 7½hp Rip Saw.
1—5 hp Friction Hoist, 300' ⅝" Cable and Incline, Flat Car.
2—Reels ⅝" Cable Lumber I Bram Corr. Galv. Iron, Etc.
Misc. Office Equip., Coolers, Filing Cabs, Filing Safe, Etc.

1 CONCRETE ASSAY OFFICE
1 LARGE OIL REFINING &
2 LARGE THICKNESS
200 4" HEAD TUBING
50 LENGTHS ETC, ETC.

TRENCH NO.8

TRENCH NO.7 - 3'- WO_3 - 12.40%

TRENCH NO.6 - 2' WO_3 - TRACE

TRENCH NO.5

TRENCH NO.3 - 3'- WO_3 3.33%

TRENCH NO.4 - 3'- WO_3 8.34%

TRENCH NO.1

LONGITUDINAL PROJECTION

PLAN

ASSAY MAP

OF THE

BORIANA MINE

BORIANA MINING COMPANY

YUCCA, MOHAVE COUNTY, ARIZONA

JULY, 1933

100 50 0 100 200