Application for Aid in an Exploration Project

Submitted to Office of Minerals Exploration

March 1965

1. FINANCIAL RESPONSIBILITY.
   (a) See attached sheets.

   (b) None.

   (c) Rental of Company owned equipment and the use of company funds.

2. APPLICANTS RIGHT IN LAND.
   (a) Owner.
   (b) S.E. 1/4, N. W. 1/4, Sec. 16, TWP 25 S., R. 4 W.
   N.E. 1/4, S. W. 1/4, Sec. 16, TWP 25 S., R. 4W.
   N.W. 1/4, S. W. 1/4, Sec. 16, TWP 25 S., R. 4 W.
   (c) None.

3. PHYSICAL DESCRIPTION.
   (a) There is now no mining activity at the Bonanza Mine, at this writing. In 1936, the company known as Bonanza Mines, Inc., was organized in the State of Oregon. The company now is known as Industrial Minerals, Inc. (Formerly Bonanza Oil & Mine Corp.) and (Bonanza Mines, Inc.). A 40 ton capacity Herreshoff furnace was installed on the property and mining of the south ore body immediately was begun. As new ore bodies were developed, an expansion program to increase production was introduced which included the addition eventually of 2 - 4 ft. x 60 ft. Gould Rotary Kilns increasing the over all tonnage to 160 to 170 tons daily. Later, one of the Gould kilns was moved to the Hermes Mercury Mine in Valley County, Idaho where the Bonanza company had negotiated for the Hermes mine. During the period 1945 through 1960, the mine could support only one furnace effeciently; the remaining 4 ft. x 60 ft. Gould was selected for the job.

   Market conditions combined with a low ore reserve prompted the Bonanza Company to suspend operations at the Bonanza Mine for the periods May 1950 to May 1951, a short time in 1953 and the third closure in October 1960. Because of favorable market conditions, combined with the possibility of obtaining Federal Aid in re-juvenating the mine and finding new ore reserves, a great amount of interest has been indicated.

   Ore has been mined from the following levels: 200, 370, 500, 600, 700, 830, 900, 1050, 1150, 1200 and the deepest level 1400. The 11 adit or 370 level is considered the main haulage level. Ore is loaded into 40 cu. ft. C. S. Card rocker type mine cars and trammed to the surface plant. The Bonanza Mine mineralization occurs along a S.E. dipping shearing. Therefore all rock between the 370 and 830 levels is hoisted through a 45 deg. dipping winze located 1000 ft. in from the No. 11 portal. This winze was sunk along the footwall of the Bonanza Vein, but at a point 30 ft. above the 500 level the winze passed into the Footwall sandstone and continued into the sandstone to the 830 level. Levels are separated by distances

3. (a) Continued.
ranging from 70 ft. to 130 ft. on dip of winze. Provisions had been made for ore pockets and water sumps on each level. The mine is considered as a dry mine taking into consideration the amount of underground openings. There has been no heavy or swelling ground encountered and little timbering is necessary. The highest timber consumption has been in those zones particularly on the upper levels where stoping by square setting was necessary where the vein reached widths of 20 to 40 ft. in width. Where the overlying shale is exposed near the surface considerable spauling of the rock is evident and the main haulage is closely timbered for a distance of 150 ft. As depth is gained in the mine local shearing within the ore structures and overlying shale-siltstone hanging wall necessitate the use of rock bolts and stulls in places.

On the 370 level ore has been mined along a very strong shear zone for a distance of over 1500 ft. Mercury deposition along this shearing has become more erratic between the 500 and 1400 levels and the ore shoots are separated sometimes for a distance of 200 to 300 ft. The 1400 level exposures show excellent continuity along the shear zone and it is now believed, although values in cinnabar are low, on this level, the possibility of encountering large bodies of commercial ore is very good.

At a point 500 ft. N. E. of No. 19 winze or main service winze to the mine another winze was sunk in the footwall sandstones and continued down to the present 1400 level on a 45 deg. dip. The maintenance cost of both the 19 and 40 winzes is very low. Crosscuts are driven in a S.E. direction on each station to intersect the mineralized zone and drifts driven N.E. and S. W. along and in the vein structures. Seldom are there problems relative to following the contact.

Single drum hoists with rope speeds of 350 ft./ min. are used for hoisting the rock. The rock is loaded into 22 cu. ft. self dumping skips hoisted and sumped into storage pockets. All working levels and hoisting levels are equipped with ore pockets having a storage of 20 tons to 50 tons. Mancha Battery trammers are used to transport rock to the station pockets, from No. 40 winze to No. 19 winze and from No. 19 winze on 370 level to the surface ore bin. All pockets are grizzlied with 10 inch spacing, many have cross grizzlies to provide for safer and faster skip loading functions. The footwall sandstones and the vein filling break favorably by using conventional blasting methods. It has been found a light Joy L-37 Jack drill provides for the highest drilling effeciency. Copco-Atlas carbide insert with chisel bit combined with the L-37 Joy Jack drill give excellent results. Normally a 40 % Gel. 1-1/8" x 8" cartridge powder is used in all phases of mining. No. 6 Dupont blasting caps with Black Sequois triple taped safety fuse are used in all stoping, drifting and raising. Electric delays are used in sinking. Equipment at Bonanza includes Elmco 12 B loaders for Horizontal advances and I. R. Double drum slusher hoists in stopes and flat dipping raises.

A raise driven in 1957 off the top of No. 57 stope located at the north

3. (a) Continued.
end of the mine provides for an auxiliary exit and for ventilation. Most of the mine workings are naturally ventilated to the 830 level. Air doors extend the good ventilation to the lower levels.

Surface Plant for crushing and treating the ore consist of a complete crushing unit, conveyor belts, ore bins, a Gould 4 ft. x 60 ft. Rotary kiln and all facilities necessary for a high recovery. This plant is in need of many repairs before production can begin.

(b) 100% participation.

(c) 50,000 flasks.

(d) ORE RESERVES.
There are no known ore reserves at this time at the Bonanza Mine. By mining the low grade zones along the 1400 level north and south of the No. 40 winze averaging 2.0 lbs./ton may reveal ore of a much higher value. It is not uncommon for low grade zones at the Bonanza Mine to open up into good commercial ore bodies. Exposures on the 830 level, 1050, 1150 and 1200 levels may reveal another 5,000 tons of 2.5 to 3.0 ore. Therefore ore reserves estimate are classed as inferred and not outlined ore bodies.

Zones between the 1200 and 830 level:
5,000 tons 2.5 to 3.0 lbs./ton (inferred)

Zones between the 1400 and 1200 level:
5,000 tons 2.0 to 2.5 lbs./ton

These zones could be mined with the present price above $400.00 with a possibility of finding ore containing much higher value as stoping progresses. Mining and furnacing costs would total 12.00 per ton.

3 (e) GEOLOGICAL FEATURES.
Mineralization at the Bonanza Mine is almost wholly controlled by the presence of a shearing along and within the arkosic sandstone footwall and overlying shale contact. At some places in the mine, rich pockets of cinnabar ore occur beneath flat, gouge filled thrust faults that transect the bedding shears at an angle. Some steeply dipping shears also contain films of cinnabar, not only at points where they cut the tuffaceous sandstone vein filling, but also where they transect the sandstone beneath. This suggests that at least some of the solutions rose along steeply dipping shears until they reached the upper limit of the shear zone or the shale. Here slowed and diverted by the overlying less permeable rock, they deposited the ore minerals beneath it and below the flat shears. The bedding plane shears in the tuffaceous sandstone have clearly been the main channelways followed by the ascending solutions at the Bonanza Mine, but the steeply dipping faults and flat thrust faults served to spread the solutions throughout this fractured and sheared zone. This mode of occurrance of Bonanza ore bodies is in evidence on all levels. The overlying impermeable shale exposed in the upper levels continues down the dip to the 830 level along the south ore body, but farther to the north the predominating hanging wall rock consists of a siltstone. Exploration

3. (e) Continued.
by drifting south of No. 40 winze on the 1150 level indicated the shearing to be more localized, limiting the mineable ore tonnages to 6,000 to 8,000 tons without some pinching of vein or interruption in mineralization. 700 ft. of drifting north and south on the 1400 level shows a much higher degree of alteration than the 1050 and 1150 levels and a greater vein width exists although values were somewhat lower. Some low grade 2 to 2.5 ore remains between the 1400 and 1200 levels and it is hoped that with the present price in the $400.00 area better ore will be encountered in the zone. Some core drilling was done early in 1960 prior to the suspensing of operations at Bonanza, but it is felt the manner in which the recovered core was treated does not represent good exploration practices. The core was bought to the surface and transferred onto corrogated roofing for storage, identification of core distances and core numbers was written on paper slips and tucked beneath that part of the core the description was to represent. The core was not split until later to determine values, relying on the sludge sample assay results is not representable.

Core drilling below the 830 level from stations on the 830 level was completed about the same time as the 1400 drilling was to begin. Therefore it is felt that strong possibilities exist that descriptive tags along with some of the core recovered representing the 830 level actually may be that core recovered from below the 1400 level. The author of this application was employed by the Industrial Minerals, Inc., early in 1961 to make an appraisal of the Bonanza Property. The core was split and assayed by conventional assay methods, values mapped and an overall appraisal of that zone below the 1400 level was made. Results were particularly good as indicated on the accompanying plans and sections of the zone, but there remains the doubt as to what had transpired between the time the core was delivered to the surface and the time the appraisal was made. Therefore examining this zone through other means than core drilling is necessary. If the core drilling program is correctly presented it is reasonable to believe 15,000 to 20,000 tons of 6 of 7 lbs./ton ore could be mined from the 1550 level with no indication in structure that the mineralization does not extend far below the 1550 level.

(f) REASONS FOR EXPLORATION.
The 1958 exploration by drifting and raising on the 1400 level was favorable. Vein widths from 6 ft. to 20 ft. carrying values in cinnabar averaging 3.5 to 4.0 lbs. per ton along 43 percent of the drift indicated the 1400 level is near the top of a major ore body. Large car samples of broken rock from each round, assayed and recorded on the accompanying assay plan of the 1400 level represents correct conditions relative to values on that level.

Giving consideration to a high degree of alteration within the vein structure, the presence of a chocolate colored shale which is commonly an indicator that good commercial ore is nearby, combined with the fact little mineable ore was encountered between the 1400 and 1200 levels horizon suggests ore containing 6 lbs. to 8 lbs./ton exists for several hundred feet on dip below the present 1400 level.

Prior to the mine closure in October 1960 some core drilling was done

3. (f) Continued.
from the 1400 level. Some holes reached depths of 80 to 90 ft. vertically below the level. Accepted standards for handling, transporting, filing in core boxes, logging and assaying were disregarded. Therefore it is the opinion of several engineers who have made examinations of the Bonanza property that this core drilling program does not represent actual conditions below the 1400 level. However, a plan and cross section of the drill program accompany this report to assist in orientation.

Burt Avery was not present at the Bonanza operation during the drilling period, but returned in 1961 to make a re-appraisal of the mine. Available core was split and assayed by acceptable standards. Favorable findings were not conclusive as the descriptive data on accompanying core could have been altered and exchanged prior to Avery's participation. At $400.00 per flask, 6 lb./ton ore would net $16.00 per ton at Bonanza. 7200 tons @ 6.0 lbs./ton would be necessary to recover the total mine and plant expenditures. Mine and furnacing of 32,718 tons of 6.0 lbs. ore would repay Govt. participating funds at a 5 per cent royalty. The total Govt. participation would be $49,076.25.

Total mine and reduction plant rehabilitation, and exploration estimate is $115,152.50 and includes an expenditure amounting to $17,000.00 for surface plant improvements.

4. (a) ACCESSABILITY OF PROPERTY.
Contact Burt Avery, Bonanza Mine, Sutherlin, Oregon. Phone 459-3038. All mine workings 30 ft. above the 630 level are open for inspection. Workings below this elevation are under water. U. S. G. S. and U. S. Bureau of Mines have followed the Bonanza Mine operation closely for several years through a former DMEA contract. The mine has been opened to the 1400 level before suspension of operations in 1960.

Noted MLS 4/26/65

(b) The Bonanza Mine is located 9 miles east of Sutherlin, Oregon in Douglas County. 1 1/2 miles of road is rock road and maintained by the Industrial Minerals, Inc. 7 1/2 miles of the road to the mine is county road, hard surfaced to accommodate heavy traffic. Traffic is maintained throughout all seasons. The town of Sutherlin, Oregon has a population of 3,000 people.

5. EXPLORATION WORK.
(a) Proposed Work.
Item No. 1. Sink No. 40 winze from a point 30 ft. below the present face below the 1400 level to point 150 ft. @ 45 degrees. This distance will provide advance enough for a 30 ton storage pocket to service the proposed new 1550 level. The continuation of the present No. 40 winze will be in the footwall sandstones. The accompanying cross section of proposed exploration work shows position of winze with relation to mineralized structure. The desired size of winze to be 5 ft. x 10 ft. in the clear with divider in center to provide for manway skip way. Purpose of winze is to gain depth and establish a point from which to cross cut to intersect mineralized zone.

Item No. 2. Excavate for 30 ton pocket to service the proposed 1550 level. This work would be performed after the winze had reached the desired depth then by slabbing rock down onto doubled 2 in. lagging over the back of the