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EXAMINATION OF PROPERTY OF NEW INDIAN MINES, LTD.  
SALMON RIVER AREA, PORTLAND CANAL,  
SKEENA MINING DIVISION

September, 1962

by: Wm.H. White, P.Eng.

DECLARATION

1. The author of this report is a registered member in good standing of the Association of Professional Engineers of the Province of British Columbia.
2. He has nothing but professional interest in the mining properties discussed herein.

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MAPS TO ACCOMPANY THIS REPORT (In pocket)

- Figure 1 - Indian Mine No.1 Level - geology 1" = 40'
- Figure 2 - Indian Mine No.2 Level - geology 1" = 40'
- Figure 3 - Sketch map of surface workings near Indian Mine. 1" = 200'
- Figure 4 - Sketch map of showings on the Lakeshore Claim. 1" = 200'

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## SUMMARY AND CONCLUSIONS

Ore bodies explored and mined in the Indian No.1 and No.2 levels were localized in splits, bends, and branches of a well-developed fault system. This structure persists throughout the workings and is believed to continue north-northwesterly to Payroll No.4 claim, at least 1500 feet beyond the face of Indian No.1 level.

Ores mined in 1952-3 from Indian were comparatively low grade, with a particularly low ratio of silver: lead. In contrast, mineralized material in cuts north of Indian mine, particularly on Payroll No.4 claim, have much higher silver: lead ratio.

No reserves of commercial ore, other than that in pillars and one small shoot that might interest a leaser, remain in the Indian mine. There is little doubt that other ore bodies similar in size and grade to those mined could be found within the limits of existing workings. However, it is felt that the costly underground exploration required to find such ore bodies is unwarranted under present conditions of access, treatment facilities, and base metal market conditions.

A persistent mineralized fracture zone traverses Lakeshore claim for 1500 feet and probably continues a good deal farther. Associated with it are several branches and sub-parallel fracture zones. Silver-copper mineralization is exposed at several places along this structure, but its continuity and economic value must await further exploration.

## RECOMMENDATIONS

The general recommendation is that a limited program of surface exploration be undertaken in the area north of Indian mine and on Lakeshore claim. The cost of the program outlined below, inflated an unknown amount by lack of access, may approach \$50,000.

(1) The Indian fault system should be open-cut at frequent intervals from 1-2 raiss northward to the alder slide area on Payroll NO.4 claim, then mapped and thoroughly sampled. A crew of three good miners with a gasoline drill could do this work with minimum supervision. Some further surface work, (the amount depending on results), mapping, and sampling should be done on mineralized exposures on the crest of Big Missouri ridge near the southeast corner of Morn claim.

(2) The showings on Lakeshore claim can be most efficiently investigated by diamond drilling. It is recommended that 3000 feet of EX diamond drilling be done. The rock is competent, full core recovery anticipated, and there is little overburden. About 15 angle holes spaced at 100-foot intervals should be drilled from the hangingwall side, spotted so as to crosscut the zone at depths of about 100 feet.

Both projects could be supervised by a competent young geological engineer who would do the necessary surveying, sampling, and core logging.

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The writer spent five days, August 25th to 30th, inclusive, on property owned or controlled by New Indian Mines, Ltd, in the Salmon River part of the Portland Canal mining district. The objects of this visit were to inspect a project of geological mapping and prospecting being done by a 5-man crew under R.V. Best, and to examine briefly those parts of the property that appeared to be of economic interest.

#### LOCATION AND ACCESS

This property comprises some 70 mineral claims and fractions surrounding property of Silbak Premier Mines, Ltd., on the west and north. A 14-mile road extends from Stewart, B.C., on tidewater, northward up the valleys of Salmon River and its large tributary, Cascade Creek, to Silbak Premier mine, and a 6-mile branch continues up Cascade Creek to Big Missouri mine. Much of this road is in Alaska, and for many years it has been maintained by both British Columbia and Alaskan governments.

In December, 1961, a catastrophic flood, caused by sudden release of Summit Lake southward beneath Salmon Glacier, washed out about 2 miles of this road on the Alaskan side. Cost of repair to provide truck access has been estimated by a local contractor at \$50,000, but thus far no government has indicated its intention to repair the damage. With no maintenance possible, that part of the road above the wash-out is being severely damaged by uncontrolled run-off waters and sloughing of road cuts. In a year or two it will be impassable. At the present time the upper Salmon River area is accessible only on foot or by helicopter. Dr. Best's crew spent a good deal of time improving a footpath across the washout, back-packing supplies, and brushing out heavily overgrown trunk trails on New Indian property.

Without assurance that the road connection to Stewart will be re-established it will be difficult to justify any but the most modest exploration activities in the area. Exploration costs will be unnecessarily high and for large-scale exploration programs may be prohibitive.

#### GEOLOGICAL MAPPING AND PROSPECTING

Dr. Best and his party mapped and prospected some 70 claims embracing a topographically rough area on Big Missouri ridge, Cascade Creek Valley, Slate Mountain, and southern part of Long Lake valley that is about 6 miles long in north and northeasterly directions and up to  $1\frac{1}{2}$  miles wide. A geological map on a scale of 500 feet to the inch and a report are being prepared.

Because of many factors such as difficult access, heavy brush, rain and fog, and particularly, the large area that had to be covered, the work must be considered of reconnaissance nature. However, Dr. East was able to outline the main rock units and to identify and trace certain structural features that may prove economically significant. The writer discussed with Dr. East some general problems but spent most of his time examining in somewhat greater detail showings in and near Indian mine and those on Lakeshore and nearby claims.

#### MINERAL DEPOSITS OF INDIAN MINE

Discovered in 1910, by 1925 the Indian mine had been developed essentially to its present extent, with about 6000 feet of workings on three levels and 9000 feet of diamond drilling. In 1925, thirty-seven tons of ore was shipped, grading: 0.12 oz. gold per ton; 13.0 oz silver per ton; 33% lead; and 18% zinc (E.C. Dept. of Mines, Ann. Rept. 1925, pp.A 101-102)

In 1952 and the spring of 1953 Silbak Premier Mines, Ltd. mined 14,113 tons of ore that averaged: 0.09 oz. gold per ton; 3.4 oz silver per ton; 4.3% lead; and 5.4% zinc. This ore was sent across the valley of Cascade Creek by aerial tram to Premier, where it was milled (The mill since has been destroyed by fire).

At this time the only structures standing are both tram terminals, strongly constructed and in good condition. Excepting one fallen tower, the tram-line itself is intact and at small cost could be made operational. A portable 210 c.f.m. diesel compressor in good condition is stored in the Indian terminal. Several mine cars and a mucking machine are rusty but probably usable. All levels have rails, water, air, and ventilation pipe. No.1 and No.2 levels are accessible, but No.3 level cannot be entered on account of bad air.

Data available to the writer is listed below:

Geologic plans of all levels on 20 and 40-scales, titled, "Premier Gold Mining Co, Ltd., dated, Feb and March, 1926. These show drill holes and some but probably not all assays.

Composite plan and vertical projection on 40-scale.

Assay plans and section of 1-2 raise., dated March, 1926.

A small stope north of 1-2 raise, designated 22E, on later records, evidently was the source of the small ore shipment of 1925.

Assay plan and section of 1-1 and 2-1 raises, Feb., 1926

Stope maps and projections that record the mining by

Silbak Premier up to March, 1953.

Report by B.W.W. McDougall, Consultant, dated, Sept.4th, 1946.

Report by J.F. Mandy, Consultant, dated, October 16th, 1946.

## 1. Rock Types

Volcanic rocks including flows, tuffs, and coarse fragmentals, collectively referred to as 'greenstones', and porphyry are the main types of rock in the Indian workings. When fresh the rock type is easily distinguished. Textural features distinguish volcanic flows from fragmentals, and porphyry is identified by its blocky fracture, finely-crystalline matrix, and large crystals of potash feldspar. Unfortunately, field distinction in many places is obscured by alteration and shearing that change volcanics and porphyry alike into a dull green, somewhat fissile rock lacking textural or other characteristics. Other kind of rock present in lesser amount include large dykes of medium-grained, dark-coloured, mafic-rich diorite, and small lamprophyre dykes.

Figures 1 and 2 show the distribution of rock types in No.1 and No.2 levels, respectively, in so far as these could be identified with some assurance. Elsewhere alteration and shearing mask the original character of the rock. No.2 level is entirely in porphyry, cut by two or more highly-faulted diorite dykes; whereas, in No.1 level, fragmental greenstone occurs near the portal and in two footwall (west) crosscuts.

## 2. Structure

No.1 level explores a complex fault system comprising many sub-parallel, branching, curving, and en echelon faults. This zone as a whole strikes north 10 degrees west and dips steeply east, but individual faults curve and diverge considerably from this average attitude. Where a fault changes direction it commonly splits into two or more branches separated by thin wedges of of sheared and/or mineralized rock. In places such as near the face of the main drive a persistent fault plane may curve and die out, its place being taken by several less distinct en echelon faults. Most faults dip eastward at angles ranging from 50 to 85 degrees. A few dip moderately to steeply to the west (i.e. near 1-1 and 1-2 raises).

On No.2 level the fault pattern has a striking difference to that on No.1 level only 50 feet above. Most of the faults within what is obviously the same general system and arranged in the same branching and en echelon fashion have steep westward dips. Very few east-dipping faults are present, and such are cut off by west-dipping faults (Section A-A). Furthermore, some steep west-dipping faults are cut off by others that dip less steeply westward (Section B-B). All faults on both levels bear evidence of normal movement (i.e. hangingwall relatively down) parallel to the dip.

### 3. Mineralization & Ore Controls

Mineral deposits of Indian mine are silicified rock, quartz-filled stockworks or breccias containing variable amounts of pyrite, sphalerite, and galena, plus in places a little chalcopyrite. These sulphides occur as disseminations, irregular masses, and as discontinuous, lenticular bands that roughly parallel bounding faults. Distribution of barren silicified zones and quartz lodes and of zones containing ore minerals are shown on Figures 1 and 2. It will be noted that base metal sulphides occur in economic abundance (as shown by the positions of stopes) only in 'crotches' where faults change direction and split into two or more slightly divergent branches. Mineral deposition is most intense immediately at the split, widening but weakening as the fault branches diverge. Furthermore, in all instances but one, ore mineralization occurs in splits of east-dipping faults, terminating where east-dipping faults are cut by west-dipping faults. The exception is a small ore shoot on No.2 level, 2208 drift, related to faults that dip steeply westward. This terminates both upward and downward against faults that dip westward at lesser angles.

Tabulated below for comparison are the 1946 tonnage and grade estimates of B.W.W. McDougal and J.T. Mandy and tonnage and grade actually mined by Silbak Premier Mines in 1952-3.

	McDougal	Mandy	Silbak Premier
	26,000 tons	32,000 tons	14,113 tons
Au oz/ton	0.125	0.13	0.09
Ag oz/ton	5.26	5.80	3.40
Pb %	3.70	6.10	4.30
Zn %	3.27	7.10	5.40

Tonnage mined amounts to roughly half the estimates at a significantly lower grade. However, it must not be assumed that between 10,000 and 15,000 tons of ore remain in the mine. Each consultant was careful to point out that a major portion of his estimate was in the 'possible' category, the existence of which depends on assumptions of continuity not yet proven.

From examination of Silbak Premier stope maps and of the workings total production can be distributed roughly as follows:

Working Place	Production
22A - 22F Stopes	10,000 tons
22E stope and backs taken down on either end	2,500 "
22C and 22D stopes	1,000 "
22B stope & some backs	600 "



Most of the ore came from one ore body represented by 22A and 22F stopes. Stope maps show that this ore shoot had a horizontal length of 70 feet, a pitch length from surface to No.2 level of 160 feet, and a pitch of 50 degrees northward. Excepting a few chute pillars, this ore shoot has been completely mined down to No.2 level where it terminates against a west-dipping fault. Mining elsewhere appears to have been experimental. No stope extends more than 40 feet above No.1 level, some barely started, and most places that show mineralization have had the backs taken down. It seems fairly clear that the quantity of commercial ore remaining in the workings is very small.

#### 4. Further Ore Possibilities

The complex fault system to which ore bodies of Indian mine are intimately related persists both horizontally and vertically far beyond the mine workings and there is little doubt that other ore bodies comparable in size, shape, and grade to those already mined exist within the structure. However, judging from past records, such ore bodies would be comparatively small, low grade, and difficult to find. Unit exploration costs might be excessive. Under present conditions, therefore, further underground exploration of Indian mine for such ore bodies is not justified.

A possible exception to this general conclusion, assuming improved access, is the 'Hangingwall Vein' on No.2 level. Past records and one sample taken by the writer (No.28464 - see assay on attached Certificate) indicate that this vein has a comparatively high content of gold and silver across widths of one to two feet. Small but profitable production, perhaps on a leasing basis, is possible from this vein.

#### MINERAL SHOWINGS NORTH OF INDIAN MINE

A number of old cuts re-discovered by members of Dr. Best's party were examined by the writer. Figure 3 shows these surface workings in relation to Indian Mine. Cuts were found at intervals of about 500 feet northward from 1-2 raise across the Morn claim that expose pyritic siliceous rock, quartz breccias and stringer lodes, in places containing small amounts of galena and sphalerite, very similar to vein matter seen underground. The most northerly surface working ~~is~~ on Payroll #4 claim is of considerable interest.

This is a very old cut, partly caved and overgrown, on the southern edge of an extensive alder slide devoid of outcrops. It is on a mineralized fault zone that strikes northwesterly and dips steeply to the northeast. Complete width of mineralized rock is obscured but is at least 4 feet. The zone is breccia composed of fragments of both greenstone and argillite cemented by quartz that is well mineralized with pyrite, sphalerite, galena, and chalcopyrite, and in places, grey copper (tetrahedrite). A grab sample of mineralized rock from the dump assayed: gold, 0.40 ounces per ton; silver, 74.95 ounces per ton; copper, 1.70%; lead, 4.80%; and zinc, 16.12%. A selected specimen with much grey copper but little chalcopyrite assayed: gold, 0.72 ounces per ton; silver, 143.60 ounces per ton; copper, 2.90%; lead, 13.17%; and zinc, 18.57%.

On the crest of Missouri ridge, in the general vicinity of the southeast corner of Morn claim, there are numerous quartz-filled breccia and stringer lodes, all of which trend north-northwesterly. Cuts have been made on several of these. Most are barren, but at least two old cuts contain base metal sulphides that carry some silver (see assays, Figure 3).

Lacking sufficient exposures and a detailed survey, evaluation of surface showings north of Indian mine is difficult and should await further exploration. However, the following points are encouraging:

- (1) Ratio of silver to lead is very much greater than at Indian mine. This is ascribed to the appearance of grey copper.
- (2) All showings have a north-northwesterly trend that is persistent and characteristic of the area.
- (3) Payroll No. 4 showing is aligned with, and probably an extension of the Indian fault system.

#### MINERAL SHOWINGS ON LAKESHORE CLAIM

Lakeshore claim is in open country at the southern end of Long Lake valley. The only access now open is an old pack trail from Hig Missouri road about  $1\frac{1}{2}$  miles long that crosses a shoulder of Slate Mountain, climbing 1000 feet and descending 400 feet. A much shorter and less difficult route is by way of Hig Missouri power dam and Long Lake valley, but at present this is blocked by the impassable state of Hig Missouri road.

A persistent fracture zone striking southerly and dipping to the west crosses Lakeshore claim, continues across a corner of EX No. 8 Fraction (owned by Silbak Premier), and re-appears on Sunshine claim. Northward on Bush No. 1 claim it disappears



beneath gravels in the valley floor at the south end of Monitor Lake. (See Figure 4). Its course across Lakeshore claim is marked by a gully filled with gravel and snow so that only a few feet on the east (footwall) side is exposed. Total width of the zone is unknown but may be as much as 50 feet. A few old cuts and one short adit have been made. The zone is a quartz breccia and quartz stringer lode, in places rather vuggy, containing a good deal of coarsely crystalline pyrite. Chalcopyrite occurs at several places both as scattered grains and large masses inter-mixed with pyrite and on oxidized surfaces is almost indistinguishable from pyrite. Sample No. 28467 representing 2 feet of the footwall at one locality assayed: gold, 0.015 ounces per ton; silver, 7.60 ounces per ton; copper, 2.10%; lead, 1.55%; and zinc, 0.22%. Two hundred feet south of this place is a large cut in the footwall of the zone that displays good copper mineralization across several feet. ("Main cut" on Figure 4). At this point a branch lode that also carries chalcopyrite extends some 300 feet southeasterly where it merges with another southerly-trending quartz stringer lode. An old adit driven at shallow depth at this point is inaccessible but has material carrying pyrite and chalcopyrite on the dump. Near the southwest corner of the claim is a barren quartz stringer lode at least 50 feet thick that strikes northeasterly and dips gently to the northwest. Its juncture with the main zone is obscured.

Other fracture zones and linear depressions that may conceal fracture zones occur in this vicinity. Pyritic quartz veins, one striking northerly and one striking easterly, occur on Bush No. 4 claim. Apparently these contain no chalcopyrite. A fracture zone of regional extent, striking northeasterly, shown on Dr. Best's map, would intersect the Lakeshore zone near the south end of Monitor Lake.

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Respectfully submitted,

September 30th, 1962

  
Wm. H. White  


FILE NO.  
File #209088/096

PROVINCIAL ASSAYERS

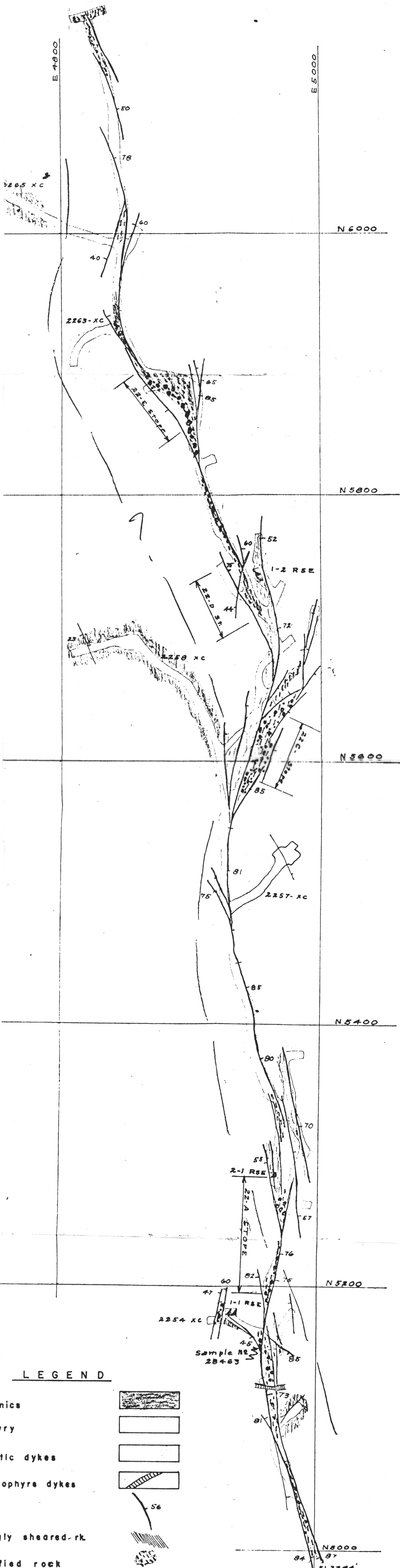
580 NELSON STREET

VANCOUVER 2, B.C., September 7th, 1962

RESULTS of Assays made on samples of ore submitted by: New Indian Mine Limited

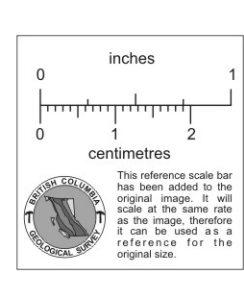
MARK		Gold Ozs.	Silver Ozs.	Copper %	Lead %	Zinc %	Ag oz/unit Pb
28459	Poyrell * 4 Cat Dump Grab	0.40	74.95	1.70	4.80	16.12	15.5
28460	" " Spec. (Guy Cee)	0.72	143.60	2.90	13.17	18.57	11.0
28461	Mom (NW) out Spec.	0.01	7.80	0.97	2.70	18.60	2.9
28462	Mom (SW) out Spec	Trace	4.80	0.95	0.40	19.30	12.0
28463	Indian * 1 low 6" vein	0.03	4.55	0.33	19.47	18.60	0.2
28464	Indian * 2 low 12" HW vein	0.88	5.60	0.28	4.62	13.57	1.2
28465	x1000 cut 7' channel	0.01	0.80	0.17	0.03	2.30	-
28466	" " Spec.	0.01	2.20	0.10	1.70	0.05	1.3
28467	Lakeshore N. cut Dump Grab.	0.015	7.60	2.10	1.55	0.22	4.9

Assays made by: 



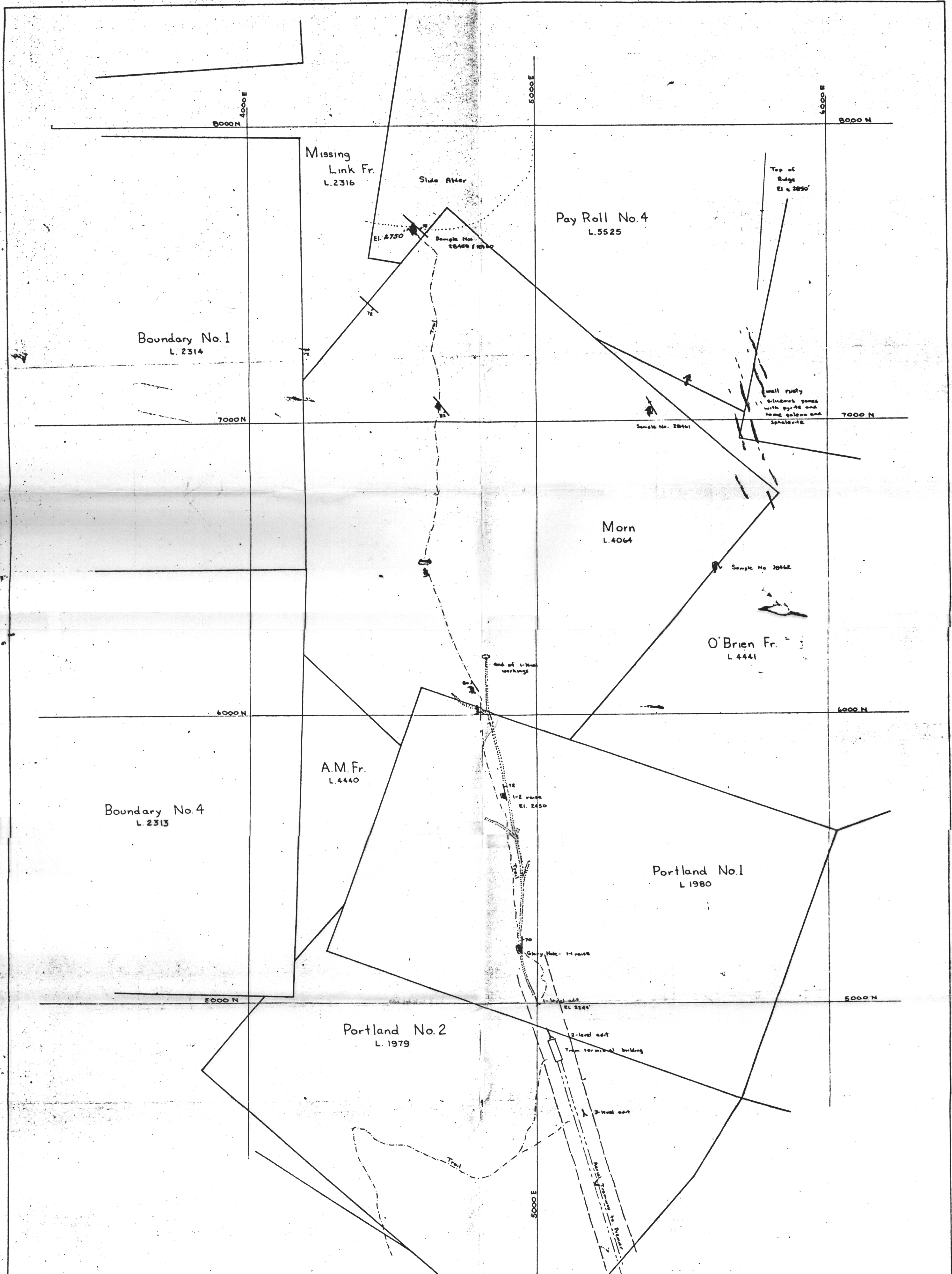
**LEGEND**

- mica
- gneiss
- felsitic dykes
- porphyre dykes
- highly sheared-rk.
- metamorphosed rock
- mineralization - pb-zn



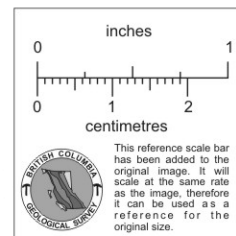
**NEW INDIAN MINES, LTD.**  
**GEOLOGY OF INDIAN MINE - I LEV.**  
 scale: 1" = 40'

date: Sept. 15, 62 signed: *[Signature]*



**ASSAYS**

Sample No.	Type	Gold Oz/ton	Silver Oz/ton	Copper %	Lead %	Zinc %	oz. Ag. per unit Pb.
28459	Grab	0.40	74.95	1.70	4.80	16.12	15.5
28460	Specimen	0.72	143.60	2.90	13.17	18.57	11.0
28461	Specimen	0.91	7.80	0.97	2.70	18.60	2.9
28462	Specimen	Tr.	4.80	0.95	0.40	19.30	12.0



NEW INDIAN MINES, LTD.  
 SURFACE WORKINGS NEAR  
 INDIAN MINE  
 scale: 1" = 200'  
 compass & chain survey

date: Sept 15/62 signed: *W. H. [Signature]*

FIG. 3.