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Foster Buck Stack  
holder →

Leon McDonald

6/4/76 Start 2/29/77 - July 5 - Aug 15 to present - Chester.  
Kenneth Harvey - ~~5th~~ no prof. - on payroll (both left)  
Terry Fogel - no prof. on payroll 7/1/77 - Aug 1 - 1977

Scattered - Feb? - Prospector as Ken Ferguson - did test  
work - Eng. came up once a week - <sup>no full equip for testing</sup> and night.  
Leach pad required patching - done by  
Leon Fogel.

~~Scattered~~ Swimming pool intact - March.  
Leach line back to S.P. zone - disassembled  
S.P. to construct levee. ~~Disassembled~~ about  
July 15 - (Leon laid off) - not reassembled.  
Ground instructions to reassemble. (Wednesday)

Equipment - Cat D-6 broke down 3/29 - D.F. K. loader  
operator - but broke gear - jaw crush - 1/4" - Good  
shape - motor needs to be replaced -  
New D-6 needs minor repair - Fader - Fader batteries  
and minor repair. (F.I. pump repair)

Leach Pad Ok now -

Pump water from shaft - to lower S.P. (10000 gals)  
pump to 2 upper tanks (1500 gals ea). Men - 10,000 gals  
and 500 lbs Men - 200' line - 60% Men del.

Spray on pad - <sup>(cont - 12 hrs)</sup> ~~from shaft~~ set - fill pad -  
10 days - electron from h. S.P.

~~Notes~~  
Electrowin - 3 tanks - gold - silver - Cu.  
D.C. Amps. 5.8 - .3 2.5 -  
300V.

25KW - English Ford motor.

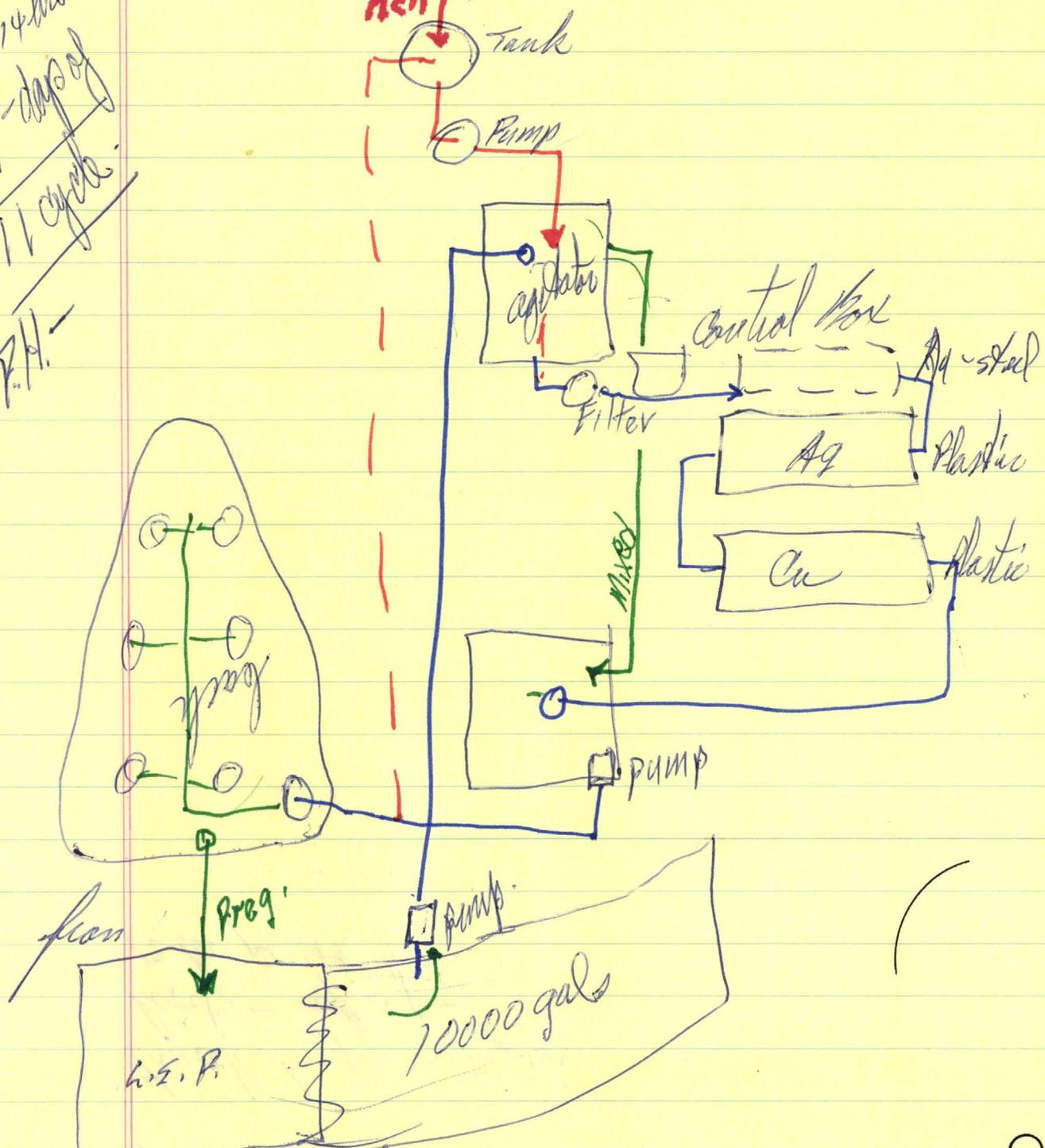
7.5KW 2.4 cly Willys - 440V. 220-110/

Dump truck - Ford 12 ton dump - good shape

Samples - Middleton vein

1-14 hrs to mix  
 10 days of  
 11 cycle  
 P.H. -

CaD 200\*  
 Men 500\*



sludge dump from  
 h.s.p.

from 200 kv.

[Handwritten scribbles and signatures at the bottom right of the page.]

Slush - from top down,  
Bin - not finished

Compactor

Crusher 20" to 1" -

Shute - bin, (covered) 45° slope

Trucks

truck dumps into pad.  
level - spray -  
12 hr period

XXXXXXXXXXXXXXXXXXXX  
XXXXXXXXXXXXXXXXXXXX

2940 N. Casa Tomas  
Phoenix, AZ 85016

Index Mines Ltd.  
#4 Spruce Bank  
Crescent S.W.  
Calgary, Alberta, CANADA

Gentlemen:

At the request of and authorization by Mr. Michael Harvey, by telephone and telegraph remittance of an advance retainer fee on November 16, 1975, the writer personally visited the Swastika silver mine property in Yavapai County, Arizona, expressly for the purpose of learning and observing sufficient facts of work completed by New Denver Exploration Ltd., Vancouver, B.C., Canada.

The ultimate requirement of the writer is his advise of and on the project after appraising and evaluating the factual data obtained, learned and observed by the writer during his personal visit to the property on November 17, 1975, when accompanied by Messrs. Steve Sersli of Sheffield Explorations Ltd., Burnaby, B.C. and Laurence Sookochoff, geologist with T. R. Tough and Associates Ltd., Vancouver, B.C.

#### HISTORY:

Based on the writer's August 1975 original report of the Swastika Silver Mine property, New Denver Exploration Ltd. acquired the property. The report and property itself were checked out by Mr. Don Tulley, Consultant, Vancouver, B.C.

New Denver Exploration Ltd., under the guidance of Mr. Steve Sersli, has caused certain work to be done - following to some degree the suggested recommendations in the writer's report of August 1975.

A joint venture is now being considered by New Denver Exploration Ltd. for financial assistance and to move the project forward.

#### WORK ACCOMPLISHED:

An expenditure of funds by New Denver Exploration Ltd. has been or is being made in the following directions:

##### General:

- (1) Examination of the property and a Report by Mr. Don Tulley.
- (2) Retainment of Mr. Sookochoff as Geologist on the property.
- (3) Retainment of Mr. Sersli on the property.

- (4) Retainment of two employees on the property.
- (5) Expenses for provision of meals for four persons and rental of transportation.
- (6) Camp maintenance expenses - heat, light, etc.

Physical:

- (1) Twenty some odd samples were taken in the underground workings by the geologist as a "get acquainted" type program in order to correlate the silver mineralization with evidenced structural, geological and mineralogical facts (a good procedure).
- (2) Mine dumps of the upper levels were surface sampled (top and peripheral slopes).
- (3) A metallurgical sample of several hundred pounds was taken of the dumps to determine the leachability and recovery of this material.
- (4) Some new road construction has been completed.

A greater share of any money expended has been for salaries, fees and personal expenses which, of course, is necessary and justified to accomplish such pre-requisite "dead work" to learn the fundamental facts to be able to intelligently and cautiously move forward with the project.

RESULTS of WORK COMPLETED:

The important work completed centers around the sampling that has been done since the results of same form the foundation and basis of a proposed and planned program to be initiated and for which financial assistance is required and sought.

Sampling of the underground workings is meaningful in indicating that silver mineralization is present in several portions or parts of the mine and the results (see included Map) suggest that these areas be more thoroughly sampled in detail to indicate a potential ore reserve for "down-the-line" use. Samples and assay results of interest are underlined in red.

Ore mined by the "old timers" had economic cut-offs (assays), thus, much mineralized material remains in the mine, which then was not ore, but with present day prices and improved technology, the material can be ore. Samples of interest range from 4 to 20 ounces silver per ton.

The upper level dumps were surface sampled and it appears the results could average about 8 ounces silver per ton. The "interior" of the dumps were not sampled by New Denver Exploration Ltd., consequently, the indicated average should not necessarily apply or be considered as an average of the entire dump.

A metallurgical sample, composited by Messrs. Sersli and Sookochoff, has been sent to Bishop, California, to be tested for leachability, retention times, recoveries and determination of the best mill flow sheet. Results of this test work will not be known for ten days to two weeks.

### PLANNED PROGRAM:

Discussions with Messrs. Sersli and Sookochoff as to their plans and program of pursuit resulted in the following:

- (1) Construct a leach pad (plastic lined) 20 feet by 100 feet (+ or - 600 tons heaped).
- (2) Construct and equip  $\frac{3}{4}$  mile, 3 wire, 3 phase, 440 volt power line to mine - camp area.
- (3) Operate leach plant utilizing dump material (7 to 10,000 tons of material available containing about 8 ounces silver per ton).
- (4) Sample in detail selected underground areas to "indicate" an ore reserve and/or help define areas of exploration. Geologically map underground workings.
- (5) De-water and rejuvenate the 365 level, and
- (6) Commence what underground exploration might be feasible at the specific time in the program.

The above outlined program is totally and completely based on one fact - that the ore is amenable to the leach method with good retention time and good recovery rate.

Time-wise, Messrs. Sersli and Sookochoff indicated a period of 2 to 3 months at an estimated total expenditure of \$25,000.00, not including any legal fees, etc.

### ANALYSIS and OPINION:

After fair consideration of the work accomplished by New Denver Exploration Ltd., the writer is of the opinion that \$10,000.00 (more or less) as an initial expenditure has been spent - wisely to a great degree - and cautiously.

As regards the timetable of the proposed planned program, the writer believes a six month time period rather than a three month period suits the property's position of distance from supply centers and the oncoming climatic conditions.

Expenditure-wise, the writer believes the proposed planned program would cost \$35,000.00 or more, mostly for the reasons given to extend the time schedule.

### RECOMMENDATIONS:

The writer's recommendations at this writing assume that the metallurgical sample tested will provide factual data of satisfactory value and feasibility to justify moving positively forward with the planned proposed program under consideration. With that thought in mind, the writer recommends:

- (1) Financial participation in the proposed planned program expending approximately \$35,000.00 should be considered.
- (2) Future financial support of the project should be considered

since the writer believes that proper and adequate exploration could develop substantial ore reserves for continued mine-mill production at planned and justified increased capacities and profit.

- (3) If the leach tests are not satisfactory and successful, cause metallurgical tests be completed for the flotation or other method of concentration and then consider financial support for an energetic exploration program prior to any thought of a production operation.

Respectfully submitted,

---

Richard E. Mieritz  
Mining Consultant  
Phoenix, Arizona

November 19, 1975

2940 N. Casa Tomas

August 16, 1977

Mr. Michael Harvey  
342 8th Avenue NE  
Calgary, Alberta, T2E OP9  
CANADA

Re: Swastika Mine  
Yavapai County, Arizona

Dear Mr. Harvey:

First, permit me to say that the transmission of our telephone conversation was extremely poor and it is sincerely hoped that I understood your requests as regards the Swastika property and what is desired. At times I heard one word out of four or five. I assume you had the same problem at your end. None-the-less, I will do the following:

- (1) Travel to the property on Thursday - examine the situation - check with your son Kenneth on his sampling of the Middleton structure obtain data, and attempt to learn what work has been done.
- (2) Prepare a letter report to you on exactly what I see - find and can learn about the conditions, etc., at the property.
- (3) Prepare a Report which can be submitted for fund raising to explore the Middleton structure or any other structure which could produce "ore" material for an operation of the property.

The other request you made was whether I could supervise the Project by guidance and recommendations, etc., and if so, what compensation would be required.

First, I can and would supervise the Project. The unanswerable question at the moment is to what degree the supervision and guidance is to attain. This depends on what Project activity consists of: - just exploration; exploration and operation design; and/or full operation. Thus, time spent could be from an occasional visit and office time through a 50% monthly time consumption to full monthly time.

As I analyze the situation - the Project is not ready for full time supervision unless you wish to consider a monthly fee of \$2,500.- plus out-of-pocket expenses for at least a three month period. For a period longer than six months the Fee is negotiable downward.

On the basis of a 50% time utilization per month - say up to 12 working days per month (field and Office) but no less than 8 days - a Fee of \$125.00/day plus out-of-pocket expenses.

As to the third category of an occasional visit and/or Office time -

from 4 to 8 days - a Fee of \$175.-/day for the first 4 days and \$150.- per day for the 5th thru the 8th day. For three days or less per month, a fee of \$200.-/day would be charged, plus out-of-pocket expenses.

I do not charge for use of my transportation.

Except for increased prices, I have used the above sliding scale format for other clients for the past 15 years. I try to be fair to all concerned.

The degree and kind of activity as well as your finances would dictate the supervision time required.

I enclose my Professional Resume for your review and edification.

Sincerely yours,

---

R. E. Mieritz,  
Mining Consultant.

P.S. If for any reason I have mis-understood your requests or if you should have any other request or information I should have, please call me.

Did New Denver complete the leaching tests on the ore as they said they would and if so, are the results of such test work at the property?



*From the desk of*

RICHARD MIERITZ

*Mr. & Mrs. Loft Hollamon  
P.O. Box 23  
Camp Verde, Az.*

**I-67-3538**

*Completed Reports for  
Canadians in 1973*

REPLY TO:  
11631 WHITE MOUNTAIN RD.  
SUN CITY, ARIZONA 85351  
TELEPHONE 1602-977-1711

# Richard E. Mieritz

MINING CONSULTANT

ARIZONA REGISTERED  
MINING ENGINEER AND GEOLOGIST

GEOLOGY  
EXPLORATION  
EVALUATION  
FEASIBILITY  
OPERATION

October 26, 1973

## LETTER of CERTIFICATION

TO WHOM IT MAY CONCERN, let it be known that:

I, Richard E. Mieritz with residence at 1634 West Hazelwood Street, Phoenix, Arizona, Maricopa County, 85015, with telephone number AC 602-277-6053, does hereby certify:

That:

- (1) I have visted the Swastika Mine property on two occasions, once in year 1957 and again on October 20, 1973.
- (2) I have no interest in the property, either direct or indirectly.
- (3) I graduated from the University of Wisconsin with a B. S. degree in Mining Engineering, June, 1939, became an Arizona Registered Mining Engineer in 1956 and An Arizona Registered Geologist in 1970, and,
- (4) The report to which this letter is attached and part of, has been prepared on the of the writers personal knowledge of the property, his having visited same on two occasions, and the writers general knowledge of the area in which the property is located.

Respectfully submitted,

---

R. E. Mieritz,  
Mining Consultant,  
Phoenix, Arizona.

A  
GEOLOGICAL EVALUATION

and

EXPLORATION

REPORT

on the

SWASTIKA MINE

Peck Mining District

in

Yavapai County, Arizona

by

Richard E. Mieritz  
Mining Consultant  
Phoenix, Arizona

October 26, 1973

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INCLUDED MAPS

- Map No. 1 - Index Map, Central Arizona
- Map No. 2 - Claim Map, Swastika Mine
- Map No. 3 - Vein System Map, Swastika Mine
- Map No. 4 - Mine Workings Map, Swastika Mine

INTRODUCTION:

On October 19, 1973, Mr. Charles Skinner, Beatty, Nevada, requested and authorized the writer to field examine and prepare a geologic evaluation and exploration report on the Swastika group of claims located mostly in Section 25, T. 11 N., R. 1 W., Peck Mining District, Yavapai County, Arizona. Accompanied by Charles Skinner and Loft Hollamon, owner of subject mining property, the writer completed a field examination on October 20, 1973.

The ~~writers report, herewith prepared and presented,~~ is based on the field examination, the writers geologic knowledge of the area and a review and study of factual data provided by the owner. Such data included recorded claim notices, recorded Amended claim location notices, recorded Affidavits of Proof of Labor of assessment improvements, for year ~~1972-73~~, available mine production records, three reports on the property by mining engineers dated November 1928, June 1941 and August 10, 1947 as well as underground maps of the workings and stopes which also show some simple geology and positions or locations of several samples taken by the engineers during their examinations. Such data is valuable, interesting and worthy of note. The random sampling however, means little except as being informative. None-the-less, the writer has not disregarded the results in his analysis of the property.

PROPERTY, LOCATION and ACCESSIBILITY:

The property consists of 25 claims, four of which are patented and 21 of which are unpatented - held by right of location. (See Map No. 2) The claims are identified as follows:

<u>Patented Claims:</u>	<u>Mineral Survey</u>	<u>Acres</u>
Silver Prince	Lot #38	19.970
Curtin	Lot #40, 652	20.090
Nora "B"	2529	20.143
Isis	2529	18.112
		<u>78.315</u>

<u>Unpatented Claims</u>	<u>Recorded Location</u>		<u>Amended Rec'd. Location</u>	
	<u>Bk.</u>	<u>Page</u>	<u>Bk.</u>	<u>Page</u>
Hardscrabble	56	555	152	398
Midget	85	39	153	537
Leftover	97	200	118	281
Contact	105	280		
Velvet	105	282	118	263
Peck-Swastika Ext.	105	283		
Peck-Swastika Ext. No. 10	105	293		
Peck-Swastika Ext. No. 11	105	294	153	39
Trinacaria No. 1	118	282	122	14
Trinacaria No. 2	118	283	122	15
Trinacaria No. 3	118	284	122	16
Trinacaria No. 4	118	285	122	17
Trinacaria No. 5	118	286	122	18
Trinacaria No. 6	118	287	122	19
Leftover Fraction	118	288		
Trinacaria No. 7	118	289		

	Recorded Location	
	Ek.	Page
Trinacaria No. 8	118	290
Trinacaria No. 9	118	291
Trinacaria No. 10	118	292
Cumaripa	153	538
Contact Amended	154	527

Total area of the group is approximately 450 acres including the 78.315 acres of the 4 patented claims.

Mr. and Mrs. Left Hollamon, P. O. Box 23, Camp Verde, Arizona are the sole owners of the property, having purchased same in 1966. *Left*

The 1972-73 Affidavit of Proof of Labor of improvements on the 21 unpatented claims is recorded as of September 4, 1973 in Ek. 865, page 565. The claims appear to be in good legal status. *Left*

Although the property is located in unsurveyed territory, the Meridian line between the East and West Ranges of the G. & S. R. B. & M. system is surveyed to a point 1/3 mile north of the property. (See Map No. 2) By projection, this places the property in the southeast portion of Sec. 25, T. 11 N., R. 1 W. and the southwest portion of Sec. 30, T. 11 N., R. 1 E., within the Prescott National Forest in Yavapai County, Arizona, some 60 airline miles north-northwest of Phoenix, Arizona or 25 airline miles southeast of Prescott, the County Seat for Yavapai County,

Travel to the property from Phoenix is north on I-17, a dual Highway, to the Cordes-Elody Basin off ramp, approximately 61 miles from City Center. From the off-ramp, turn left (west) to Cordes, about 3 miles, then south and west from Cordes to Cleator on the Crown King County maintained, gravel road (approximately 12 miles). From Cleator, travel west on the Crown King road for 4.5 miles to the junction with the Swastika access mine road on the right. From this point, it is approximately one mile by road to the Camp and Mine area. (See Map No. 1). Travel over this road by automobile is possible but can be a bit difficult.

#### FACILITIES:

No facilities, gas, electric power, water, as public utility supplied are available on the property.

The present camp consists of four buildings; a bunk house, a combination bunk house and "mess hall", a shop or garage type building and a smaller building-combination office and bunk house. In all, the camp could accommodate 12 to 15 persons and the mess hall could accommodate 8 persons at one sitting, probably more with different seating arrangements.

The mine itself makes water, reported as 50 gpm, from the 400 level. Static water level appears to be the 300 level as only a trickle exits from the 300 level edit. Previous reports indicate this water to be potable - for domestic and commercial use, but should be tested and analyzed.

Two usable pieces of equipment as a small electric power plant for camp lighting, etc and a D-6 Caterpillar dozer are on the property. Both these units are the property of the owner and are available for rental, and use at the property. *and*

HISTORY, DEVELOPMENT and PRODUCTION:

The property, particularly the four patented claims on which the underground workings (development) are located, (See Map No. 4) have a history dating back to August 23, 1875 when the Curtin claim was located by Andy Curtin and on the same day the Silver Prince claim was located by Tom Eamon. After nine years the claims were sold and in 1887, Steve Mitt leased the property and sunk the Little Prince Shaft. In 1900, the Swastika Development Co. leased the Nora B. and Silver Prince Claims. After some raising from the Adit level to the surface and sinking immediately below the raise on the Big Prince vein and some drifting northward from the shaft on the 100 level, a stope was started and the first carload (about 30 tons) netted \$11,000.00.

In year 1915 the property was leased to F. W. Giroux, a Gleason, Arizona mining engineer and he mined for 4 years plus to May 9, 1919. On that day the Swastika Silver and Copper Co. was organized and took over the holdings of Swastika Development Co. A campaign of mine development work and milling plant was started and \$60,000.- worth of ore shipped. In 1923, organizational problems developed and further work was halted. Since then, the property has basically remained idle even though it probably changed hands several times since. Mr. Hollamon purchased the property from Holmardix Mining Corporation of Prescott in 1966.

The latest engineers report, August, 1947, credits the property with the following (patented claims only):

923 feet of shafts  
1500 feet of raises  
9000 feet of drifts and cross-cuts.  
11423 feet. plus various stopes.

\*  
Production-wise, it is reported that Curtins claim produced \$385,000.- and Eamons' Silver Prince claim produced \$480,000.- - from date of location to 1885. In 1887, Steve Mitt, who sank the Little Prince Shaft, mined an ore lense which netted \$80,000.-. With the silver price at a low ebb, there was no activity until 1910 when the Swastika Development Co. commenced operations, after owning the property for 10 years, and produced in excess of 600,000 ounces of silver from 1910 to 1915. Of this production, 36 carloads (35 tons) of ore shipped had a net return of \$185,000.-.

The engineer leasor who operated the mine from 1915 to 1919 shipped 33 carloads of "high grade" and 100 carloads of low grade with a net smelter return of \$150,000.- after deduction of \$142,000.- for purchase price, royalties, smelter charges and operation costs.

To demonstrate the grade of ore shipped, the writer has extracted some figures from the available production records and herewith lists a few

production figures from 1911 to 1918 - the Swastika Development Co and the private leasor.

Year	Carloads	Tons	Oz Ag/T	Avg. Silver Price	Silver	
					High	Low
1911	2	73.1	383.0	\$ 0.55		
1912	6	175.7	315.0	0.58	656.0	52.8
1912	7	259.9	64.6	0.62	117.2	51.5
1913	13	424.2	244.5	0.58	424.6	60.2
1914	3	106.3	161.1	0.52	159.8	136.4
1915	1	30.9	135.2	0.50		
1915	3	107.5	135.2	0.49	152.0	119.5
1916	8	340.8	889.6	0.64	149.7	64.2
1917	5	206.3	83.7	0.77	142.3	54.0
1918	5	127.5	136.9	0.93	145.8	129.0

The above tabulation includes what the writer believes to be representative of the many carloads shipped during those years. It is not the total production for those years. No production figures are available prior to 1910, however, it is reported that the property has produced around 3,000,000 ounces of silver during its life time thus far.

#### GEOLOGY and MINERALIZATION:

The rocks in the general area consist of Pre-Cambrian granite and Pre-Cambrian schist (Yavapai). At the northern portion of the Swastika claims and the southern portion of the DeSoto claims is the area where the northern end of the Bradshaw Complex begins to become quite noticeable. Here and southward the general geology is complicated by the appearance and intrusion of later rocks such as andesite dikes, rhyolitic dikes and diorite masses and dikes.

The Swastika property hosts the Yavapai schist-granite contact. This contact and the schist have a general N. 25°-30° E. strike. The dip of the schist is about 60° to 70° W., - with local variations - and the dip of the granite-schist contact appears to be about the same but could vary considerably in local areas.

The rhyolitic-andesitic dikes, for the most part, wholly contained in the schist, and as a general rule, parallel the schistosity in strike and dip, <sup>however,</sup> <sup>however</sup> cross traversing planes of weakness <sup>ed</sup> have resulted in filling by the rhyolitic-andesitic material but not for any great distances. So also, are cross-cutting tongues of granite or silicified quartz porphyry but usually in minor sizes. There perhaps is some genetic relationship of these various barren intrusions to the mode and type of mineralization present on the property, and if so, the writer is of the opinion that such relationship is distant rather than a "next of kin" situation.

Mineralization-wise, the metal of immediate economic importance is silver, which occurs as native and as oxidation products--the chloride and bromide. Oxidation of the silver is deep and somewhat irregular; in places, found below sulphides which suggests varying rates of the descending water table - very rapid or very slow. Subordinate metals are lead and copper,

in that order and usually occur as galena and chalcopyrite and tetrahedrite at depth and in the oxide zone perhaps as cerussite and malachite. The galena, as well as the tetrahedrite, can be quite argentiferous but not so for the chalcopyrite. The silver sulphide at depth is argentite, either as an independent mineral or as a constituent in solid state with the two copper sulphides.

Associated gangue minerals, other than the host rock itself, are silica, siderite, pyrite and some manganese minerals. All veins do not have all these minerals as gangue, some being absent. Occasionally, some barite and calcite can be found in the vein matter.

The vein system, of which there are five known in number, (See Map No. 3), traverse the Nora B, Silver Prince, Hardscrabble, Isis claims and in part the Curtin claim, all of which are basically parallel to each other and for the most part, parallel to the schist strike and dip. Of these, only two veins have been developed and productive on a "mine" basis. The remaining three were only prospected and "high graded" or "chlorided" in small tonnages, thus not explored or developed.

The two developed and productive veins are named the Big Prince and the Little Prince. Both outcrop on the surface as jasperoid quartzite ledges (probably part of the schist) of rather high relief above the surrounding ground, the Big Prince varying in width from 10 to 250 feet, the Little Prince varying from 4 to 20 feet and is about 250 feet west of the Big Prince vein.

Several rhyolite dikes are present which parallel and cut the schist strike. The Big Prince vein lies on, but not in contact with, the footwall of one of the rhyolite dikes. The Little Prince on the other hand, lies on, but not necessarily in contact with, the hanging wall of another rhyolite dike. Similar conditions exist for the other three well defined veins on the property.

Although mentioned by others reporting on the property, a very important feature of the property, in the opinion of the writer, is the presence of a copper oxide outcropping vein or zone (See Map No. 3) which has the same general geologic appearance and characteristics rock-wise and mineral-wise as the DeSoto Mine (currently being explored and developed by *← out* Cutlass Exploration Inc.) It has been prospected by a few surface pits and one 240 foot, -65° inclined shaft. A prominent mining engineers report writing of this copper zone states: "Copper ore occurs as lenticular replacements in the schist; samples taken have given from 1% to 30% copper, 2 to 20 ounces silver and \$2.00 to \$14.00 gold per ton". "It is upon this continuation to the north that the large workings of the DeSoto Mine have been conducted and it promises great possibilities at depth in the Swastika ground". Another mining engineer reporting on the property and this copper occurrence states: "The DeSoto mine which end lines the Swastika group has been an old producer of highgrade copper, gold and silver." "The main DeSoto vein traverses the Swastika group and is traceable for 3000 feet, but little development work has been done on this vein on the Swastika, outside of the 240 foot Middleton Shaft, which produced quite a tonnage of high grade ore that was packed from the shaft on mules and hauled by wagon to the Colorado River and rafted to the Gulf of California where it was placed aboard ship and

and transported to Swansea, Wales, where it was treated." The same engineer also reported: "there is also a very large prominent vein exposed on the surface; this vein is composed of a copper carbonate with some chalcopyrite, which is six feet wide on the surface and broadens to twenty feet at the bottom of the Middleton Shaft";

The above quotes relate the exact conditions as observed by the writer. To this, the writer can only add that this occurrence of copper mineralization is definitely a target of extreme potential and a "bonus" to an exploration program of the property.

#### ORE RESERVES:

Ore reserves as such - measured, indicated or inferred - are non-existent at this writing simply because there is a lack of present sampling and assay results.

The mining engineer who operated the mine from 1915 to 1919 and reported on the property in late 1928 states; "There remains on dumps and in fills and stopes 125,000 tons of ore which assays 14 ounces silver per ton. The bottom of the 400 foot level has exposed three short shoots of high grade ore and a raise close to the north end line of the Silver Prince claim on this level is in high grade ore running from 100 to 123 ounces silver per ton." The writer of the 1947 report confirms the 100,000 ton figure but makes no mention of the high grade ore nor had sampled any.

In the writers opinion, it is best to consider the "no ore reserve" position at this time simply because there has been too great a time period of inactivity during which time unrecorded activity may have occurred and ore material removed which is not shown on Map No. 4 including such areas where early assay results indicate ore containing 80 to 344 ounces of silver.

#### PROPERTY POTENTIAL:

Future potential of the property can be categorized as follows:

- 1 - Silver vein potential
  - (a) - High grade lenses
    - (a.1) Unprospected portions of 5 veins
    - (a.2) Below 300 level in present workings
  - (b) - Milling Ore
    - (b.1) In present workings of property
    - (b.2) Unprospected portions of 5 veins
- 2 - Copper vein potential
  - (a) - Direct shipping ore
  - (b) - Milling ore
- 3 - Silver and copper vein potential
  - (a) - Milling ore from all veins

As mentioned under article "Geology and Mineralization" the subordinate metals are lead and copper. Only one of the three engineers reporting on the property had a few samples assayed for copper. Five samples were

from the copper outcrop or cuts; copper content ranged from 0.6 to 3.0%. A grab sample of the Middleton Shaft dump showed 4.6% copper. Such could be expected from the "copper vein", however, the same engineer took a sample from the Little Prince Shaft dump and it showed 4.6% copper. He also took a sample on the 300 foot level, 250 feet south of station (Curtin Shaft?) which showed 1.7% copper. A sample of the Mill Tailings showed 2% copper.

The writer can not vouch for these samples nor the results but the significant point here is that such values, when added to a "mill run silver ore" (about 15 ounces) greatly enhances the gross value of this type potential ore. Thus, it would appear, in the writers opinion, that potential (3) would be the ultimate goal, of any proposed exploration program. ~~Such a program would be an energetic one requiring much time and expense and would be a difficult program to maintain an enthusiastic continued interest and flow of finances to complete the program.~~

~~The forerunning categorised potentials (1) and (2), therefor, become "stepping stones" and support along the route to achieve the ultimate goal of category (3). At some point along this route, in the writers opinion, a plateau of success will be reached. At this level, the interest and finances veer toward plans of operation and production.~~

#### PROPOSED EXPLORATION REQUIREMENTS - COSTS:

~~Early exploration and development of the mine was by underground methods - drifting and cross-cutting - and more or less a "hit and miss" or "hunt and peck" situation. Today, this method is almost prohibitive cost-wise. Failure of previous operators, and for that matter, the present owner, to maintain or obtain good geological surface and underground mapping and sampling, presents some problems for the explorationists to determine and justify exact targets. This so called "dead work" is usually a forgotten item but is most certainly a pre-requisite and basis to determine exploration targets.~~

~~The burden of obtaining such information therefor rests with the explorationist and, in the opinion of the writer, will be the complete, sound foundation on which to build a systematic, information seeking, exploration program now or "down the road".~~

~~The writer has therefor "built into" the proposed exploration program these important pre-requisites. The writers planned exploration program is also phased in order to systematically expand on the targets as time progresses and information gathered.~~

~~Initially, the writer suggests consideration of categories (2) Copper vein potential and (1-a.2) Silver vein potential below 300 level in present workings - downward continuance of present indicated ore lenses. Both these targets would utilize underground diamond drilling.~~

~~To explore the Copper vein, the writer envisions fanned horizontal holes from the face of the most western crosscut on the 100 level of the Curtin claim. These holes would also prospect the area between the veins.~~

*at the first phase*

*as a second phase*

To explore the silver ore potential below the 300 level, several short 50 foot holes into the footwall from the 400 level are required. The 400 level is driven in the hanging wall portion of the zone. Somewhat longer holes to the west would prospect the Little Prince vein at this level and perhaps the copper vein further to the west.

This drilling can be carried forward coincidental with the surface and underground geological mapping and surface sampling and underground sampling of the two veins of interest and as targets. This program can be considered as Phase I.

Phase II is somewhat vague at this point, pending results of the Phase I geologic mapping, sampling and drilling, however, a more energetic program of sampling and drilling is envisioned to carry forward if results of Phase I are encouraging.

The writer has not considered surface drilling for two reasons: (1) steep topography in the area requires expensive road and drill site construction, expensive water hauling or pumping and (2) excessive long holes of wasteful drilling footage to achieve the same goal or encounter the same target.

The suggested Phase I exploration program and its cost is as follows:

<u>Phase I</u>	
Geological mapping, surface and underground, Fee and Expenses	\$ 6,000.-
Surface and underground sampling (samplers and assaying)	\$ 7,000.-
Underground diamond drilling, 3000 feet @ \$20.00/foot including drilling extras, sampling and assaying	\$ 60,000.-
Project Supervision, Fees and Expenses \$2000.-/mo., 6 months	\$ 12,000.-
Extras - underground cleanup, preparation, de- watering 400 level, airline, water line, etc	\$ 12,000.-
Contingencies, over run of work, under estimate	\$ 13,000.-
Phase I total	<hr/> \$110,000.-

As previously indicated, A Phase II planned program is dependent on the results of Phase I and Phase II would be formulated as Phase I progresses. An estimated expenditure of \$250,000.- for underground sampling, surface sampling, diamond drilling and perhaps some underground cross-cutting, is likely.

#### CONCLUSIONS:

It is the opinion of the writer that implimentation of a well planned, well executed exploration program carried to completion through the various necessary phases will result in the development of a silver-copper mine-mill operation which would be a credit to the district and the industry.

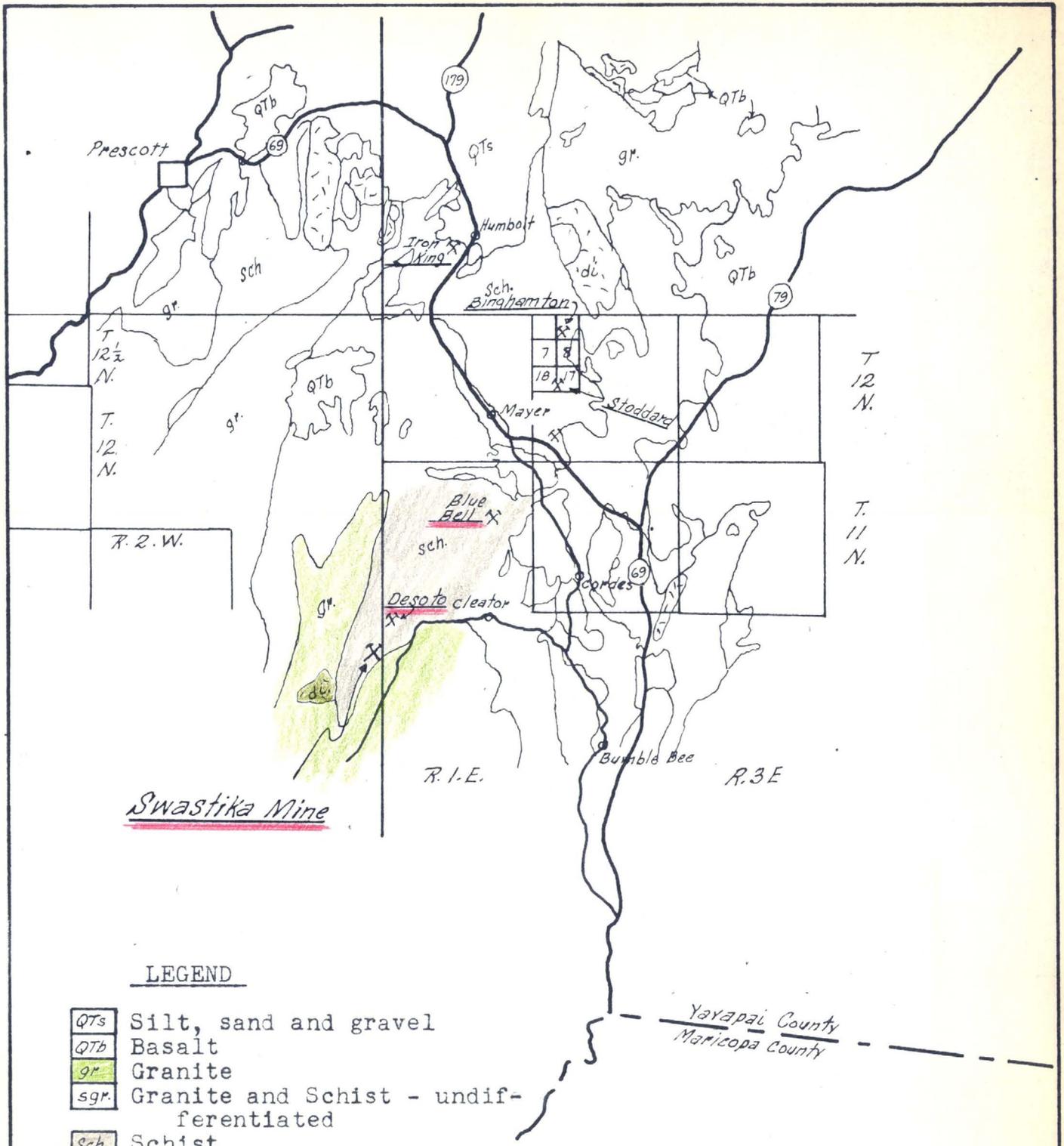
Respectfully submitted,

October 26, 1973

- 8 -

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R. S. Mieritz  
Mining Consultant  
Phoenix, Arizona

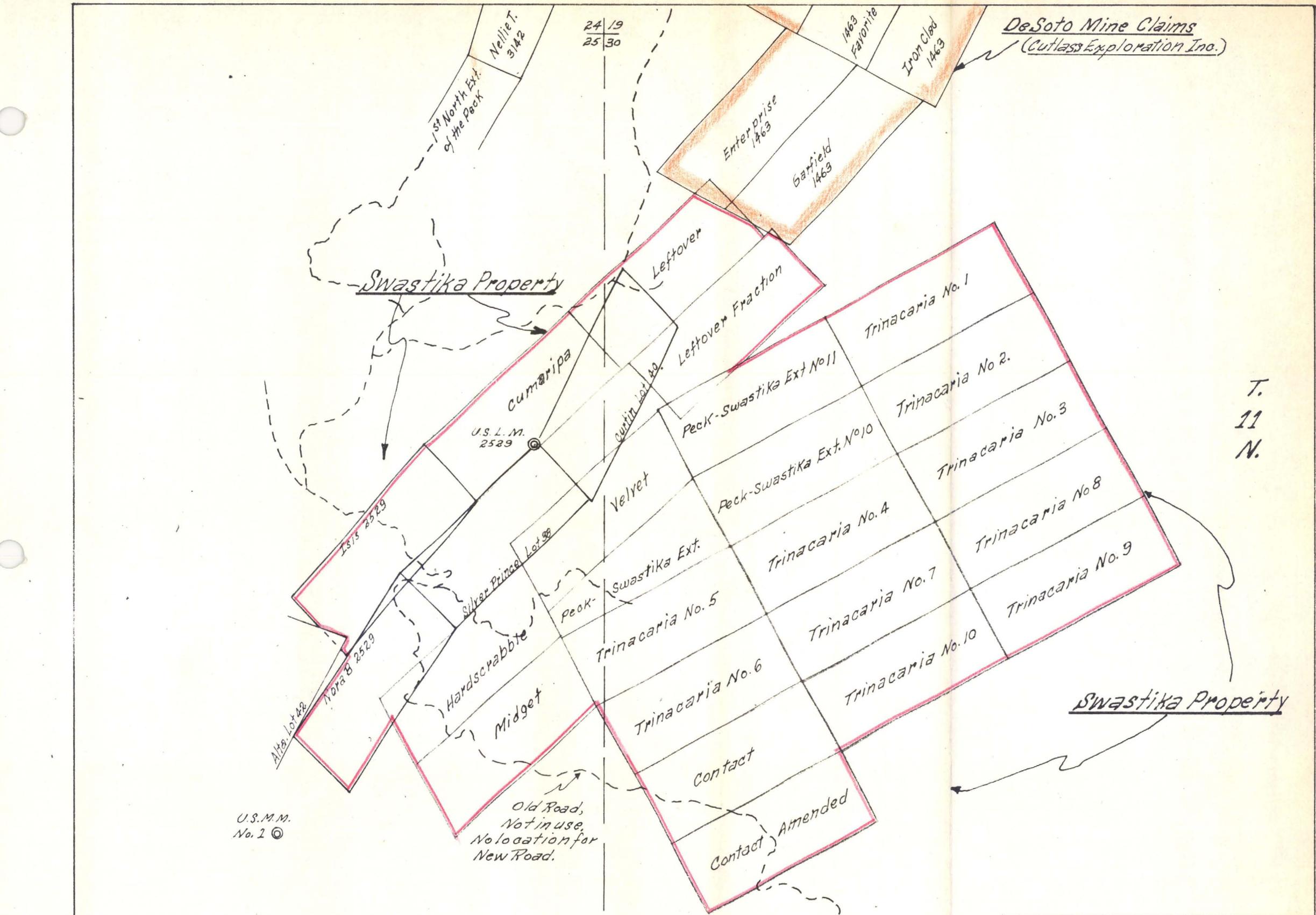


Swastika Mine

LEGEND

- QTs Silt, sand and gravel
- QTb Basalt
- gr. Granite
- sgr. Granite and Schist - undifferentiated
- Sch Schist
- di. Diorite porphyry

GEOLOGIC MAP  
 Portion of  
 Yavapai County, Arizona  
 Scale: 1" = 6 miles  
 Feb., 1969  
 R.E. Mieritz  
 Map 1



T.  
11  
N.

U.S.M.M.  
No. 1 ©

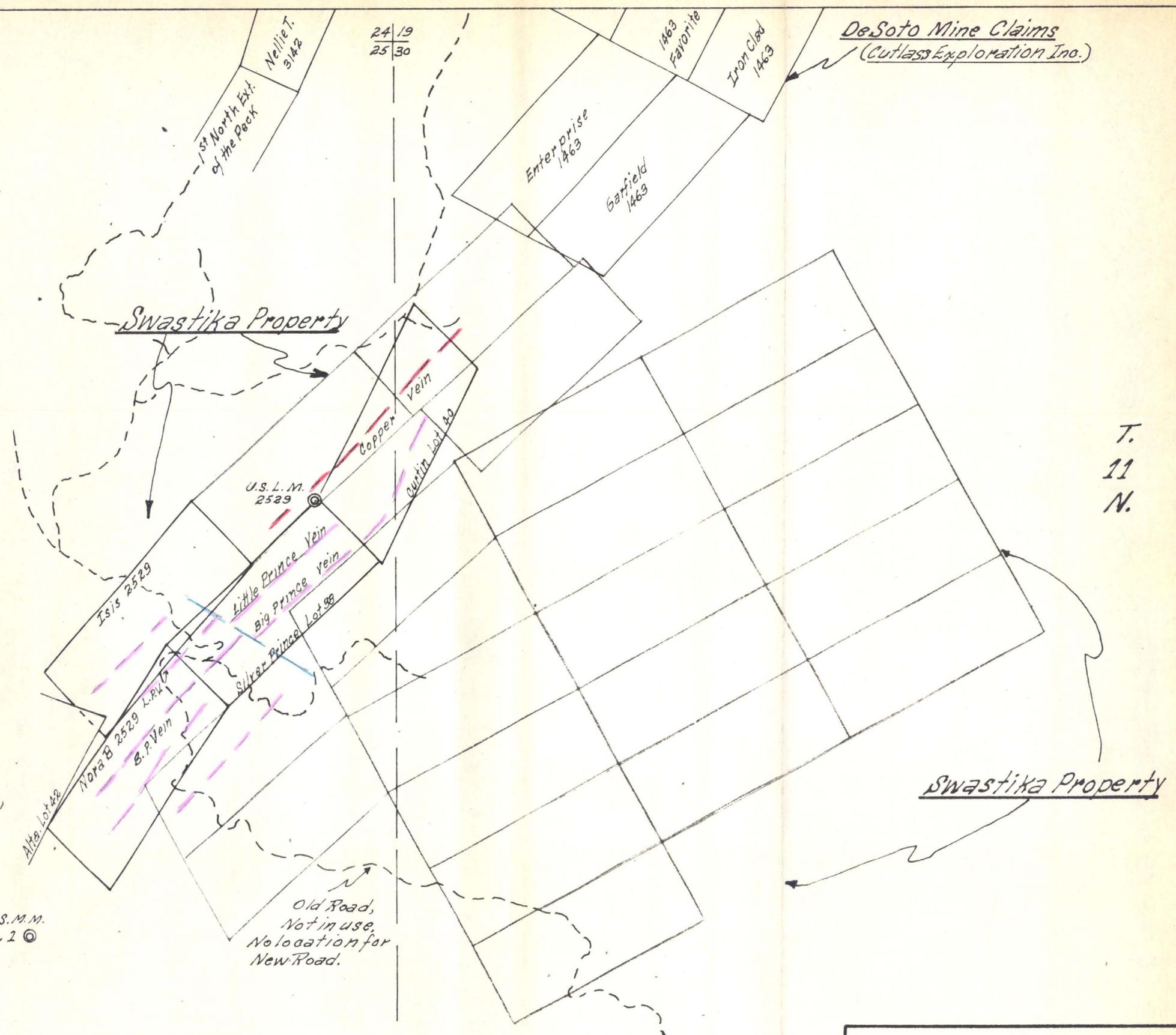
Old Road,  
Not in use,  
No location for  
New Road.

R. I. W. R. I. E.

**CLAIM MAP**  
 SWASTIKA MINE  
 PECK MINING DISTRICT  
 Yavapai County, Arizona

SCALE: 1" = 800 Ft..

October, 1973 R. E. Mieritz



T.  
11  
N.

U.S.M.M.  
No. 1 ©

Old Road,  
Not in use.  
No location for  
New Road.

R. I. W. R. I. E.

**VEIN SYSTEM MAP**

SWASTIKA MINE  
PECK MINING DISTRICT  
Yavapai County, Arizona

SCALE: 1" = 800 Ft..

October, 1973

R. E. Mieritz

MAP No. 3

October 26, 1973

LETTER of CERTIFICATION

TO WHOM IT MAY CONCERN, let it be known that:

I, Richard E. Mieritz with residence at 1634 West Hazelwood Street, Phoenix, Arizona, Maricopa County, 85015, with telephone number AC 602-277-6053, does hereby certify:

That:

- (1) I have visited the Swastika Mine property on two occasions, once in year 1957 and again on October 20, 1973.
- (2) I have no interest in the property, either direct or indirect. That I have no interest in Amber Resources Ltd., Vancouver, B. C. I have no securities in Amber Resources Ltd. That I expect no interest or securities in Amber Resources Ltd., now or in the future.
- (3) I graduated from the University of Wisconsin with a B. S. degree in Mining Engineering, June, 1939, became an Arizona Registered Mining Engineer in 1956 and An Arizona Registered Geologist in 1970, and,
- (4) The report to which this letter is attached and part of, has been prepared on the writers personal knowledge of the property, his having visited same on two occasions, and the writers general knowledge of the area in which the property is located.

Respectfully submitted,

---

R. E. Mieritz,  
Mining Consultant,  
Phoenix, Arizona.

2940 N. Casa Tomas

August 4, 1975

LETTER OF CERTIFICATION

I, Richard E. Mieritz of 2940 N. Casa Tomas, Phoenix, Maricopa County, Arizona, do hereby certify that:

- (1) I am a mining engineer, graduated from the University of Wisconsin with the degree of Bachelor of Science in 1939.
- (2) I have practised my profession continuously since then, receiving my Arizona State Registration as a Mining Engineer in 1956 and my Arizona State Registration as a Geologist in 1970, being a member in good standing.
- (3) The report to which this letter is attached and part of, has been prepared on the basis of personal observations on and of the property, on the writers general knowledge of the area and the review and study of available factual data.
- (4) I have no direct interest nor indirect interest in the property.
- (5) I have no direct nor indirect interest, nor do I expect to receive any interest, direct or indirect in the properties or securities of New Deaver Exploration Ltd. (NPL), Vancouver, B. C., Canada.
- (6) Permission is hereby granted for application of this report in a prospectus and for filing of it with any Securities Commission and Stock Exchange.

Respectfully submitted,

\_\_\_\_\_  
R. E. Mieritz,  
Mining Consultant  
Phoenix, Arizona.

REM/cm

*typed 8/12/75*

XXXXXXXXXXXXXXXXXXXX  
XX16

2940 N. Casa Tomas

August 4, 1975

LETTER OF CERTIFICATION

I, Richard E. Mieritz of 2940 N. Casa Tomas, Phoenix, Maricopa County, Arizona, do hereby certify that:

- (1) I am a mining engineer, graduated from the University of Wisconsin with the degree of Bachelor of Science in 1939.
- (2) I have practised my profession continuously since then, receiving my Arizona State Registration as a Mining Engineer in 1956 and my Arizona State Registration as a Geologist in 1970, being a member in good standing.
- (3) The report to which this letter is attached and part of, has been prepared on the basis of personal observations on and of the property, on the writers general knowledge of the area and the review and study of available factual data.
- (4) I have no direct nor indirect interest in the property.
- (5) I have no direct nor indirect interest, nor do I expect to receive any interest, direct or indirect in the properties or securities of Pinal Mine Management & Contractors, Inc., Phoenix, Arizona.
- (6) The contents of this report may be utilized by and made public by Pinal Mines Management & Contractors, Inc., and any Mining Company in Canada as so designated by Pinal Mines Management & Contractors, Inc.

Respectfully submitted,

\_\_\_\_\_  
R. E. Mieritz  
Mining Consultant  
Phoenix, Arizona

REM/cm

REPLY TO:

1634 W. HAZELWOOD STREET  
PHOENIX, ARIZONA 85018-0  
TELEPHONE (602) 277-6053

2940 N. Casa Tomas

# Richard E. Mieritz

MINING CONSULTANT

ARIZONA REGISTERED  
MINING ENGINEER AND GEOLOGIST

GEOLOGY  
EXPLORATION  
EVALUATION  
FEASIBILITY  
OPERATION

August 4, 1975

## LETTER OF CERTIFICATION

I, Richard E. Mieritz of 2940 N. Casa Tomas, Phoenix, Maricopa County, Arizona, do hereby certify that:

- (1) I am a mining engineer, graduated from the University of Wisconsin with the degree of Bachelor of Science in 1939.
- (2) I have practised my profession continuously since then, receiving my Arizona State Registration as a Mining Engineer in 1956 and my Arizona State Registration as a Geologist in 1970, being a member in good standing.
- (3) The report to which this letter is attached and part of, has been prepared on the basis of personal observations on and of the property, on the writer's general knowledge of the area and the review and study of available factual data.
- (4) I have no direct nor indirect interest in the property.
- (5) I have no direct nor indirect interest, nor do I expect to receive any interest, direct or indirect in the properties or securities of Pinal Mine Management & Contracting, Inc., Phoenix, Arizona, or its affiliates.

Respectfully submitted,

---

R. E. Mieritz  
Mining Consultant  
Phoenix, Arizona

REM/cm

INTRODUCTION:

At the request of and authorization by Pinal Mine Management & Contracting, Inc., Phoenix, Arizona, the writer visited the Swastika group of claims located mostly in Sec. 25, T. 11 N., R. 1 W., Peck Mining District, Yavapai County, Arizona. The re-examination of the property was completed on July 27, 1975. Earlier visits to the property were in mid October, 1973 and in late 1957.

This report, updated as a result of the recent visit, is based on the field examination, the writer's geologic knowledge of the area and a review and study of factual data provided by the owner. Such data included recorded claim notices, recorded Amended claim location notices, recorded Affidavits of Proof of Labor of assessment improvements, available mine production records, three reports on the property by mining engineers dated November 1928, June 1941 and August 10, 1947, as well as underground maps of the workings and stopes which also show some simple geology and positions or locations of several samples taken by the engineers during their examinations. Such data is valuable, interesting and worthy of note. The random sampling, however, means little except as being informative. Nonetheless, the writer has not disregarded the results in his analysis of the property.

PROPERTY, LOCATION and ACCESSIBILITY:

The property consists of 25 claims, four of which are patented and 21 of which are unpatented - held by right of location. (See Map No. 2) The claims are identified as follows:

<u>Patented Claims:</u>	<u>Mineral Survey</u>		<u>Acres</u>	
Silver Prince	Lot #38		19.970	
Curtin	Lot #40, 652		20.090	
Nora "B"	2529		20.143	
Isis	2529		18.112	
			<u>78.315</u>	
<u>Unpatented Claims:</u>	<u>Recorded Location</u>		<u>Amended Rec'd. Location</u>	
	<u>Bk.</u>	<u>Page</u>	<u>Bk.</u>	<u>Page</u>
Hardscrabble	56	555	152	398
Midget	85	39	153	537
Leftover	97	200	118	281
Contact	105	280		
Velvet	105	282	118	263
Peck-Swastika Ext.	105	283		
Peck-Swastika Ext. No. 10	105	293		
Peck-Swastika Ext. No. 11	105	294	153	39
Trinacaria No. 1	118	282	122	14
Trinacaria No. 2	118	283	122	15
Trinacaria No. 3	118	284	122	16
Trinacaria No. 4	118	285	122	17
Trinacaria No. 5	118	286	122	18
Trinacaria No. 6	118	287	122	19
Leftover Fraction	118	288		
Trinacaria No. 7	118	289		
Trinacaria No. 8	118	290		

	Recorded Location	
	Bk.	Page
Trinicaria No. 9	118	291
Trinacaria No. 10	118	292
Cumaripa	153	538
Contact Amended	154	527

Total area of the group is approximately 450 acres including the 78.315 acres of the 4 patented claims.

Mr. and Mrs. Loft Hollamon, P. O. Box 23, Camp Verde, Arizona, are the sole owners of the property, having purchased same in 1966.

Although the property is located in unsurveyed territory, the Meridian line between the East and West Ranges of the G. & S. R. B. & M. system is surveyed to a point 1/3 mile north of the property. (See Map No. 2) By projection, this places the property in the southeast portion of Sec. 25, T. 11 N., R. 1 W. and the southwest portion of Sec. 30, T. 11 N., R. 1 E., within the Prescott National Forest in Yavapai County, Arizona, some 60 airline miles north-northwest of Phoenix, Arizona or 25 airline miles southeast of Prescott, the County Seat for Yavapai County.

Travel to the property from Phoenix is north on I-17, a dual Highway, to the Cordes-Bloody Basin off ramp, approximately 61 miles from City Center. From the off ramp, turn left (west) to Cordes, about 3 miles, then south and west from Cordes to Cleator on the Crown King, County maintained, gravel road (approximately 12 miles). From Cleator, travel west on the Crown King road for 4.5 miles to the junction with the Swastika access mine road on the right. From this point, it is approximately one mile by road to the Camp and Mine area. (See Map No. 1) Travel over this road by automobile is possible but can be a bit difficult.

#### FACILITIES:

No facilities, gas, electric power, water, as public utility supplied, are available on the property.

The present camp consists of four buildings; a bunkhouse, a combination bunkhouse and "mess hall", a shop or garage type building and a smaller building-combination office and bunkhouse. In all, the camp could accommodate 12 to 15 persons and the mess hall could accommodate 8 persons at one sitting, probably more with different seating arrangements.

The mine itself makes water, reported as 50 gpm, from the 400 level. Static water level appears to be the 300 level as only a trickle exits from the 300 level adit. Previous reports indicate this water to be potable - for domestic and commercial use, but should be tested and analyzed.

Two usable pieces of equipment as a small electric power plant for camp lighting, etc. and a D-6 Caterpillar dozer are on the property. Both these units are the property of the owner and are available for rental and use at the property.

## HISTORY, DEVELOPMENT and PRODUCTION:

The property, particularly the four patented claims on which the underground workings (development) are located, (See Map No. 4), have a history dating back to August 23, 1875, when the Curtin claim was located by Andy Curtin and on the same day the Silver Prince claim was located by Tom Eamon. After nine years, the claims were sold and in 1887, Steve Mitt leased the property and sunk the Little Prince Shaft. In 1900, the Swastika Development Co. leased the Nora "B" and Silver Prince Claims. After some raising from the Adit level to the surface and sinking immediately below the raise on the Big Prince vein and some drifting northward from the shaft on the 100 level, a stope was started and the first carload (about 30 tons) netted \$11,000.00.

In year 1915, the property was leased to F. W. Giroux, a Gleason, Arizona, mining engineer and he mined for 4 years plus to May 9, 1919. On that day, the Swastika Silver and Copper Co. was organized and took over the holdings of Swastika Development Co. A campaign of mine development work and milling plant was started and \$60,000.00 worth of ore shipped. In 1923, organizational problems developed and further work was halted. Since then, the property has basically remained idle even though it probably changed hands several times since. Mr. Hollamon purchased the property from Holmardix Mining Corporation of Prescott in 1966.

The latest engineer's report, August, 1947, credits the property with the following (patented claims only):

923 feet of shafts
1500 feet of raises
<u>9000</u> feet of drifts and cross-cuts
11423 feet, plus various stopes

Some exploration drilling was done in late 1973 on the copper vein exposed on the Leftover claim just south of the DeSoto Mine property, (Cutlass Exploration). Data or results of this drilling are not available to the writer.

Production-wise, it is reported that Curtin's claim produced \$385,000.00 and Eamon's Silver Prince claim produced \$480,000.00 - from date of location to 1885. In 1887, Steve Mitt, who sank the Little Prince Shaft, mined an ore lense which netted \$80,000.00. With the silver price at a low ebb, there was no activity until 1910, when the Swastika Development Co. commenced operations, after owning the property for 10 years, and produced in excess of 600,000 ounces of silver from 1910 to 1915. Of this production, 36 carloads (35 ton cars) of ore shipped had a net return of \$185,000.00.

The engineer lessor who operated the mine from 1915 to 1919 shipped 33 carloads of "high grade" and 100 carloads of low grade with a net smelter return of \$150,000.00 - after deduction of \$142,000.00 - for purchase price, royalties, smelter charges and operation costs.

To demonstrate the grade of ore shipped, the writer has extracted some figures from the available production records and herewith lists a few production figures from 1911 to 1918 - the Swastika Development Co. and

the private lessor.

Year	Carloads	Tons	Oz Ag/T	Avg. Silver Price	Silver	
					High	Low
1911	2	73.1	383.0	\$ 0.55		
1912	6	175.7	315.0	0.58	656.0	52.8
1912	7	259.9	64.6	0.62	117.2	51.5
1913	13	424.2	244.5	0.58	424.6	60.2
1914	3	106.3	161.1	0.52	159.8	136.4
1915	1	30.9	135.2	0.50		
1915	3	107.5	135.2	0.49	152.0	119.5
1916	8	340.8	89.6	0.64	149.7	64.2
1917	5	206.3	83.7	0.77	142.3	54.0
1918	5	127.5	136.9	0.93	145.8	129.0

The above tabulation includes what the writer believes to be representative of the many carloads shipped during those years. It is not the total production for those years. No production figures are available prior to 1910, however, it is reported that the property has produced around 3,000,000 ounces of silver during its lifetime thus far.

#### GEOLOGY and MINERALIZATION:

The rocks in the general area consist of Pre-Cambrian granite and Pre-Cambrian schist (Yavapai). At the northern portion of the Swastika claims and the southern portion of the DeSoto claims, is the area where the northern end of the Bradshaw Complex begins to become quite noticeable. Here and southward the general geology is complicated by the appearance and intrusion of later rocks such as andesite dikes, rhyolitic dikes and diorite masses and dikes.

The Swastika property hosts the Yavapai schist-granite contact. This contact and the schist have a general N. 25°-30° E. strike. The dip of the schist is about 60° to 70° W., with local variations - and the dip of the granite-schist contact appears to be about the same but could vary considerably in local areas.

The rhyolitic-andesitic dikes, for the most part, wholly contained in the schist, and as a general rule, parallel the schistosity in strike and dip, however, cross traversing planes of weakness have resulted in filling by the rhyolitic-andesitic material but not for any great distances. So also, are cross-cutting tongues of granite or silicified quartz porphyry but usually in minor sizes. There perhaps is some genetic relationship of these various barren intrusions to the mode and type of mineralization present on the property, and if so, the writer is of the opinion that such relationship is distant rather than a "next of kin" situation.

Mineralization-wise, the metal of immediate economic importance is silver, which occurs as native and as oxidation products - the chloride and bromide. Oxidation of the silver is deep and somewhat irregular; in places, found below sulphides which suggests varying rates of the descending water table - very rapid or very slow. Subordinate metals are lead and copper, in that order and usually occur as galena and chalcopyrite and tetrahedrite at depth and in the oxide zone perhaps

as cerrusite and malachite. The galena, as well as the tetrahedrite, can be quite argentiferous but not so for the chalcopyrite. The silver sulphide at depth is argentite, either as an independent mineral or as a constituent in solid state with the two copper sulphides.

Associated gangue minerals, other than the host rock itself, are silica, siderite, pyrite and some manganese minerals. All veins do not have all these minerals as gangue, some being absent. Occasionally, some barite and calcite can be found in the vein matter.

The vein system of which there are five known in number, (See Map No. 3) traverse the Nora "B", Silver Prince, Hardscrabble, Isis claims and in part the Curtin claim, all of which are basically parallel to each other and for the most part, parallel to the schist strike and dip. Of these, only two veins have been developed and productive on a "mine" basis. The remaining three were only prospected and "high graded" or "chlorided" in small tonnages, thus not explored or developed.

The two developed and productive veins are named the Big Prince and the Little Prince. Both outcrop on the surface as jasperoid quartzite ledges (probably part of the schist) of rather high relief above the surrounding ground, the Big Prince varying in width from 10 to 50 feet, the Little Prince varying from 4 to 20 feet and is about 250 feet west of the Big Prince vein.

Several rhyolite dikes are present which parallel and cut the schist strike. The Big Prince vein lies on, but not in contact with, the footwall of one of the rhyolite dikes. The Little Prince, on the other hand, lies on, but not necessarily in contact with, the hanging wall of another rhyolite dike. Similar conditions exist for the other three well defined veins on the property.

Although mentioned by others reporting on the property, a very important feature of the property, in the opinion of the writer, is the presence of a copper oxide outcropping vein or zone (See Map No. 3) which has the same general geologic appearance and characteristics rock-wise and mineral-wise as the DeSoto Mine currently being explored and developed by Cutlass Exploration Inc. It has been prospected by a few surface pits and one 240 foot,  $-65^{\circ}$  inclined shaft. A prominent mining engineer's report writing of this copper zone states: "Copper ore occurs as lenticular replacements in the schist; samples taken have given from 1% to 30% copper, 2 to 20 ounces silver and \$2.00 to \$14.00 gold per ton." "It is upon this continuation to the north that the large workings of the DeSoto Mine have been conducted and it promises great possibilities at depth in the Swastika ground." Another mining engineer reporting on the property and this copper occurrence states: "The DeSoto mine which end lines the Swastika group has been an old producer of highgrade copper, gold and silver." "The main DeSoto vein traverses the Swastika group and is traceable for 3000 feet, but little development work has been done on this vein on the Swastika, outside of the 240 foot Middleton Shaft, which produced quite a tonnage of high grade ore that was packed from the shaft on mules and hauled by wagon to the Colorado River and rafted to the Gulf of California where it was placed aboard ship and transported to Swansea, Wales, where it was treated." The same engineer also reported: "There is also a very large prominent vein exposed on the surface; this vein is

composed of a copper carbonate with some chalcopyrite, which is six feet wide on the surface and broadens to twenty feet at the bottom of the Middleton Shaft."

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#### ORE RESERVES:

Ore reserves as such - measured, indicated or inferred - are non-existent at this writing simply because there is a lack of present sampling and assay results.

The mining engineer who operated the mine from 1915 to 1919 and reported on the property in late 1928 states: "There remains on dumps and in fills and stopes 125,000 tons of ore which assays 14 ounces silver per ton. The bottom of the 400 foot level has exposed three short shoots of high grade ore and a raise close to the north end line of the Silver Prince claim on this level is in high grade ore running from 100 to 123 ounces silver per ton." The writer of the 1947 report confirms the 100,000 ton figure but makes no mention of the high grade ore nor had sampled any.

In the writer's opinion, it is best to consider the "no ore reserve" position at this time simply because there has been too great a time period of inactivity during which time unrecorded activity may have occurred and ore material removed which is not shown on Map No. 4 including such areas where early assay results indicate ore containing 80 to 344 ounces of silver.

#### PROPERTY POTENTIAL:

Future potential of the property can be categorized as follows:

- 1 - Silver vein potential
  - (a) - High grade lenses
    - (a.1) Unprospected portions of 5 veins
    - (a.2) Below 300 level in present workings
  - (b) - Milling Ore
    - (b.1) In present workings of property
    - (b.2) Unprospected portions of 5 veins
- 2 - Copper vein potential
  - (a) - Direct shipping ore
  - (b) - Milling ore
- 3 - Silver and copper vein potential
  - (a) - Milling ore from all veins

As mentioned under article "Geology and Mineralization," the subordinate metals are lead and copper. Only one of the three engineers reporting on the property had a few samples assayed for copper. Five samples were from the copper outcrop or cuts; copper content ranged from 0.6 to 3.0%.

A grab sample of the Middleton Shaft dump showed 4.6% copper. Such could be expected from the "copper vein," however, the same engineer took a sample from the Little Prince Shaft dump and it showed 4.6% copper. He also took a sample on the 300 foot level, 250 feet south of station (Curtin Shaft?) which showed 1.7% copper. A sample of the Mill Tailings showed 2% copper.

The writer cannot vouch for these samples nor the results but the significant point here is that such values, when added to a "mill run silver ore" (about 15 ounces) greatly enhances the gross value of this type potential ore. Thus, it would appear, in the writer's opinion, that potential (3) would be the ultimate goal of any proposed exploration program. Such a program would be an energetic one requiring much time and expense and would be a difficult program to maintain an enthusiastic continued interest and flow of finances to complete the program.

The forerunning categorized potentials (1) and (2), therefore, become "stepping stones" and support along the route to achieve the ultimate goal of category (3). At some point along this route, in the writer's opinion, a plateau of success will be reached. At this level, the interest and finances veer toward plans of operation and production.

#### PROPOSED EXPLORATION REQUIREMENTS - COSTS:

Early exploration and development of the mine was by underground methods - drifting and cross-cutting - and more or less a "hit and miss" or "hunt and peck" situation. Today, this method is almost prohibitive cost-wise. Failure of previous operators, and for that matter, the present owner, to maintain or obtain good geological surface and underground mapping and sampling, presents some problems for the explorationists to determine and justify exact targets. This so-called "dead work" is usually a forgotten item but is most certainly a pre-requisite and basis to determine exploration targets.

The burden of obtaining such information therefore rests with the explorationist and, in the opinion of the writer, will be the complete, sound foundation on which to build a systematic, information seeking, exploration program now or "down the road."

The writer has therefore "built into" the proposed exploration program these important pre-requisites. The writer's planned exploration program is also phased in order to systematically expand on the targets as time progresses and information gathered.

Initially, the writer suggests consideration of categories (2) Copper vein potential and (1-a.2) Silver vein potential below 300 level in present workings - downward continuance of present indicated ore lenses. Both these targets would utilize underground diamond drilling.

To explore the Copper vein, the writer <sup>suggests</sup> ~~envisions~~ fanned horizontal holes from the face of the most western crosscut on the 100 level of the Curtin claim. These holes would also prospect the area between the veins. To explore the silver ore potential below the 300 level, several short 50

foot holes into the footwall from the 400 level are required. The 400 level is driven in the hanging wall portion of the zone. Somewhat longer holes to the west would prospect the Little Prince vein at this level and perhaps the copper vein further to the west.

This <sup>to ex</sup> Drilling can be carried forward coincidental with the <sup>extended</sup> surface and underground geological mapping and surface sampling and underground sampling of the two veins of interest and as targets. This program can be considered as Phase ~~I, II~~

<sup>III</sup>  
II Phase ~~II~~ is somewhat vague at this point, pending results of the Phase ~~I~~ geologic mapping, sampling and drilling, however, a more energetic program of sampling and drilling is envisioned to carry forward if results of Phase ~~I~~ <sup>II</sup> are encouraging.

The writer has not considered surface drilling for two reasons: (1) steep topography in the area requires expensive road and drill site construction, expensive water hauling or pumping and (2) excessive long holes of wasteful drilling footage to achieve the same goal or encounter the same target.

The suggested Phase I exploration program and its cost is as follows:

<u>Phase I</u>	
Geological mapping, surface and underground, Fee and Expenses	\$ 500.-
Surface and underground sampling (samplers and assaying)	1,000.-
Underground diamond drilling, 1000 feet @ \$20.00/foot including drilling extras, sampling and assaying	20,000.-
Project Supervision, Fees and Expenses, \$2,000.-/month	2,000.-
Contingencies, over run of work, under estimate.	1,500.-
Phase I total	<u>\$25,000.-</u>

As previously indicated, a Phase II planned program is dependent on the results of Phase I and Phase II would be formulated as Phase I progresses. An estimated expenditure of \$30,000.- <sup>add't'l items</sup> for underground sampling, surface sampling, diamond drilling and perhaps some underground cross-cutting is likely.

Respectfully submitted,

*Polyped 8/6/75*  
*Polyped 8/12/75*  
*as inked above*  
\_\_\_\_\_  
R. E. Mieritz,  
Mining Consultant  
Phoenix, Arizona.

August 4, 1975

foot holes into the footwall from the 400 level are required. The 400 level is driven in the hanging wall portion of the zone. Somewhat longer holes to the west would prospect the Little Prince vein at this level and perhaps the copper vein further to the west.

*to explore the Copper vein*  
~~This~~ Drilling can be carried forward coincidental with the surface and underground geological mapping and surface sampling and underground sampling of the two veins of interest and as targets. This program can be considered as Phase I.

Phase II is somewhat vague at this point, pending results of the Phase I geologic mapping, sampling and drilling, however, a more energetic program of sampling and drilling is envisioned to carry forward if results of Phase I are encouraging.

The writer has not considered surface drilling for two reasons: (1) steep topography in the area requires expensive road and drill site construction, expensive water hauling or pumping and (2) excessive long holes of wasteful drilling footage to achieve the same goal or encounter the same target.

The suggested Phase I exploration program and its cost is as follows:

Phase I

Geological mapping, surface and underground, Fee and Expenses	\$ 6,000.- <del>1000.-</del>
Surface and underground sampling (samplers and assaying)	7,000.- <del>1000.-</del>
Underground diamond drilling, <del>1200</del> 2000 feet @ \$20.00/foot including drilling extras, sampling and assaying	60,000.- <del>20,000</del> <sup>24,000</sup>
Project Supervision, Fees and Expenses \$2000.-/mo., 1 months	12,000.- 2000
Extras - <del>underground cleanup, preparation, de-</del> watering 400 level, airline, water line, etc	<del>12,000.-</del>
Contingencies, over run of work, under estimate	13,000.- <del>1500</del>
 Phase I total	 \$110,000.- <del>24,000</del> <sup>\$ 29,500</sup>

As previously indicated, a Phase II planned program is dependent on the results of Phase I and Phase II would be formulated as Phase I progresses. An estimated expenditure of ~~50,000.-~~ <sup>additional</sup> for underground sampling, surface sampling, diamond drilling and perhaps some underground cross-cutting, is likely. *\$25,000.-*

Respectfully submitted,

\_\_\_\_\_  
 R. E. Mieritz  
 Mining Consultant  
 Phoenix, Arizona

S.P.

A. Skinner

903-2033

V.C.-

- Beach Ave.





ALEY C SKINNER. -

*authorized for self.*

○ BOX 111

~~39 MAIN~~

BEATTY

NEVADA

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○

## LOCATION

The Swastika Group is ten miles westerly from the junction of the Crown King Road and State Highway 69. In general the road to the mine follows the old railroad grade. The mine is one mile up on the flank of the hills on the north side of a deep valley. Altitude is 5200 feet. Timber is scarce on these claims but is abundant higher up near Crown King. The mine makes enough water for domestic and mining purposes.

The property has been owned until very recently by Richard Kingdon, who resides at the mine. The nearest post office is Cleator. Mail is delivered daily to the box on the Crown King Road.

## EXTENT

There are four patented claims:

CURTIN  
NORA B  
ISIS  
SILVER PRINCE

The nineteen unpatented claims are:

LEFTOVER FRACTION  
LEFTOVER  
PECK SWASTIKA EXTENSION  
VELVET  
HARDSCRABBLE  
PECK SWASTIKA EXTENSION #10  
PECK SWASTIKA EXTENSION #11  
CONTACT  
TRINACRIA NO. 1 to NO. 10, inclusive  
WILDCAT

## HISTORY

The earliest operations started in 1876 and continued until 1885 under F. W. Curtin. From then until 1910 the mine was inactive at which time it was reopened by F. W. Wood. Up to this time reported production was \$480,000 from the Silver Prince and \$385,000 from the Black Warrior which is the same vein on the Nora B. Claim. The latter production occurred about 1878 under Tom Eamon.

From 1910 until 1915 production is said to have been 600,000 ounces. From 1915 until May 1919, Frank Giroux operated the property and he reports that his operations paid out about \$142,000 in purchase price and royalties above operating costs. It is evident that all three of these operations were satisfactorily profitable.

Mr. Kingdon has been mining on a small scale for the past twenty years. During 1935 and 1936 Polk-Peterson obtained a lease, put up a mill, mined and shipped some ore developed by Mr. Kingdon, and milled dump ore and fills. I have been unable to get a satisfactory record of their operations. It appears that their work disclosed no new ore, but they did very little crosscutting.

Mr. Giroux, a reputable engineer and assayer of Mayer, estimates that the production from the property is about three million ounces of silver.

The Kingdon Arizona Mining & Milling Corporation has just acquired the property from Mr. Kingdon.

## GEOLOGY

The mine workings are wholly in the pre-Cambrian Yavapai Schists. This formation consists of typical chloritic fissile to dense schists, with some sericite, and with numerous large quartzite lenses. On the Curtin claim are at least three rhyolite dikes which strike nearly parallel to the schistosity. Two of the dikes appear

in the crosscut tunnel #2, the easterly one is apparently the tail end of the 40 foot dike which cuts across tunnel #1. This narrow end is more a decomposed andesite, and the same transition from hard rhyolite to soft greenish weathered dike material was noted on surface, as a rather typical terminal phase. The westerly of the two dikes cut in tunnel #2 is forty feet wide and apparently correlates with the dike in the Prince 100 level crosscut to the Little Prince vein. A third heavy rhyolite dike appears in the north east corner of the Silver Prince claim. While these dikes have some genetic connection with the mineralization, the ore does not develop on contacts to the same extent as it does in vein fissures in the quartzite near the dikes. Some so called quartzites are apparently a highly silicified porphyry, resembling quartzite but exhibiting traces of the original phenocrysts.

The vein system consists of two principal fissures, the Prince and Little Prince, some 250 feet apart. Parallel fissures and branch fissures are common to both. There are a number of faults, none of very great displacement, striking in general N 70° W. These appear to have considerable bearing on ore deposition.

The veins have an average strike of N 25° E. and dip about 70° West. The vein matter ranges from a clean quartzite to siderite with dolomite and various manganese minerals. The only important mineral is silver and it occurs as the chloride, bromide, native and tetrahedrite. Some chalcopyrite was noted and high-silver galena is not uncommon.

Oxidation is deep and the depth of oxidation irregular, as on the Prince claim, according to Mr. Giroux, sulfides were found above oxides and oxides below sulfides in places. The sulfide stopes on the 400 level of the Prince showed no appreciable decrease in value according to Giroux.

The Peck Mine, one mile west bottomed at shallow depth after having enjoyed a remarkable concentration of silver in the upper levels. The absence of ore on the 400 level of the Curtin claim may exemplify this; however, this is not true of the Prince where high grade sulfides extend below the level floor.

The quartzite when intersected and fractured by the fissures seems to be receptive to deposition. It is probable that the absence of ore on the 400 level of the Curtin is due more to the fissure traversing schist, whereas on the level above, good ore is associated with quartzite. The footwall quartzite showing in the shaft station on the 400 level of the Curtin is dense and tight, the vein fissure is in a soft complex of schist and siderite usually about 16 feet wide.

#### DEVELOPMENT

The Silver Prince claim is developed by a four hundred foot shaft and three adit crosscut tunnels, all on the same elevation and only several hundred feet apart. From the most southerly of these a winze has been sunk 125 feet and it is from this that the Black Warrior production was taken. The Prince shaft is equipped with a gas hoist and is in fair repair. Four levels have been opened at approximately 100 foot intervals with an average length of 800 feet.

On the Curtin claim are three adit-X-cut tunnels. Number 2 connects with the 100 level of the Prince, and Number 3 with the 200 level. At the end of tunnel #3 is a shaft 165 feet deep. Sixty-five feet below the collar is a level which connects with the 300 level of the Prince, and at the bottom, 165 feet down is the level which connects with the Prince 400. The shaft is in perfect shape, and most of the mine openings on the Curtin, being of fairly recent date, are in good repair.

Numerous crosscuts have been driven from the various levels, a better and clearer picture of which can be obtained by inspection of the mine map.

Most of the work on the Curtin claim, except for the adit crosscuts, are mapped by the writer from Brunton surveys and are accurate only to that degree.

The Little Prince vein has been developed to a limited extent by a tunnel and a shaft 135 feet higher than camp, by Number 2 crosscut tunnel where it had been drifted on, and by the crosscut from the Prince 100 level. It is reported by Mr. Giroux that considerable production came from the latter work. The drifts are now largely backfilled or caved to the extent that tope areas cannot be ascertained.

#### MILLING

It is apparent that unless excellent recovery were obtained, these high grade ores should be shipped, not milled. The presence of oxidized silver minerals precludes the opportunity of good recovery, and this was demonstrated by Polk Peterson. Cyanide would probably give better results but this must be determined. The sulfide ores will float to better advantage, and if intermediate grade ores are developed there will be an opportunity to mill these ores. On the high grade ores, even the sulfides, the combined milling cost and tailing loss will probably exceed the shipping costs of crude ore.

The flotation mill on the property is an excellent one. The grinding section can be used to advantage and should cyanide work satisfactorily. The cyanide process will call for two agitators and probably three counter current washing thickeners, using the present tailing thickener as a primary. A small precipitation plant would also be required.

## ORE POSSIBILITIES

From old records of assays on the Silver Prince, it is evident that the ore was narrow and high grade, very often the width in inches times assay in ounces gave a product of about 1500 units or more. Under these conditions one cannot expect to find appreciable amounts of ore left. The twenty samples taken by the writer are chip samples taken more for indications of value. Samples 2, 9 and 10 indicated good ore above the 300 level, and #20 that good ore is being broken below the 365 level north of the Curtin shaft. These sample widths, assays and locations are given on the enclosed map.

It is probable that some ore suitable for leasing operation may be obtained from present openings, but if the mine is to become an active producer then a program of prospecting and development must first be accomplished.

This program may be divided into two classes, one of short distances and relatively low cost, a second of longer prospects which will cost more but which will have greater possibilities because they open new country. The 4th level of the Curtin has been so devoid of crosscuts that the hanging wall should be explored.

Under the first group I recommend the following work, subject to modification as new information is gained.

- a. Cross cut into hanging wall 400 level  
200ft. S. of Curtin shaft:- 50'
- b. Additional 50' into hanging wall 400  
level 60' of shaft. 50'
- c. Crosscut hanging wall 400 level 180  
ft. north of shaft. 90'
- d. Drift south on 365 level on the hanging  
wall vein from the point of connection  
to the Giroux work. This to get under  
the ore showing on the 300. 100'
- e. Drive the south 400 level Curtin about  
50' southerly, connect with the old

raise below 303 stope, rehabilitate this raise if necessary and sub level off for stoping. The old records show some exceptional ore below the level floor at 303 stope.

60'

- f. Drive south on the 200 level of the Prince Shaft to prospect the ground under 101 stope.

151'

Total footage

500'

The direct cost of this work should be about \$3000 exclusive of the necessary repair work in the shaft and in the raise. With blacksmithing, hoisting, supervision and taxes the total cost will be close to \$6,000.

### Second Group of Prospecting

These will be modified according to developments in the first group and further study.

- a. Crosscut about 260 feet from the 200 level Prince shaft to intersect the Little Prince vein
- b. Drifting on same north and south
- c. Crosscut from this drift
- d. Drift north 300 feet from No. 2 tunnel on the Little Prince vein, and at least 60 feet south to observe the effects of the fault in the Prince vein east of here.
- e. If the work south on the Prince 200 level is encouraging drive south an additional

260'

200'

80'

360'

600'

Total

1500'

Probable cost both development programs, \$20,000.

## CONCLUSION

This property purchased by the Kingdon Arizona Mining and Milling Corporation from Richard Kingdon embraces an extensive area of well mineralized ground. Three claims of the group, the Nora B., the Silver Prince and the Curtin have had a considerable and profitable production of high grade silver ores.

But little ore is left in the mine for immediate mining purposes. Because the ore has occurred in rather small high grade lenses, not always on the same fissures, close prospecting is necessary. There are a number of areas close to present mine workings which should be investigated for new ore. In addition to these, the hanging wall country, especially in the zone of the Little Prince vein offers favorable opportunities over a considerable length of strike.

The property must be regarded only from the aspect of being favorable for a program of prospecting and development in ground which has yielded high grade silver ores and which may be made to yield more.

While there is a possibility that the ore does not persist with depth, this must not be accepted until proved beyond doubt. The area available at and above present depths is extensive enough that the problem of depth is of no immediate concern.

The price of silver will strongly affect the success of future operations.

The cost of the program outlined in this report is moderate, and I believe that the chances are excellent that sufficient ore will be found to return the cost, and favorable that a profit above this will be made.

The mine is well equipped with everything necessary for this program.

ENCLOSURES

- 1 - Plan and longitudinal section
- 2 - Claim map.

Chip Samples Taken

<u>No.</u>	<u>Wd.</u>	<u>Au.</u>	<u>Ag.</u>	<u>Description</u>
1	60"	Tr.	Tr.	300L. Footwall crosscut quartzite.
2	28"	Tr.	17.4	300 L Curtin on Prince Claim
3	36"	Tr.	0.6	400 L. at connection to Prince
4	36"	Tr.	0.1	Tunnel #2 North drift underhand
5	36"	.01	0.6	Nora B. south of X-cut
6	18"	Tr.	Tr.	Little Prince 100 level X-cut
7	8"	.01	15.2	Little Prince between #1 & #2 tunnels
8	27"	.02	6.8	Little Prince Tunnel #2
9	28"	.01	30.4	Upraise 300 level south
10	30"	.01	17.4	Upraise 300 level (north of #9)
11	30"	Tr.	6.7	300 level south end of stope.
12	48"	--	43.4	North end stope above 365 level
13	30"	--	6.8	North end sublevel below 365
14	36"	--	13.5	365 sublevel near winze.
15	36"	--	0.5	400 level first crosscut south
16	18"	--	1.3	Back of drift north of 303 stope
17	24"	--	1.4	20' north of #16
18	20"	.01	1.7	F.W. X-cut 365 level-east fissure
19	24"	.00	1.8	X-cut North end 400, FW quartzite
20	Grab	.01	25.6	Broken ore under 365 level north

NOTE: All samples are more definitely located on plan map.

REPORT OF THE SWASTIKA MINE  
LOCATED IN THE PECK MINING DISTRICT  
YAVAPAI COUNTY, ARIZONA

BY

H. E. DODD, E.M.

AUGUST 10, 1947

LOCATION:

THE SWASTIKA GROUP OF MINING CLAIMS is situated in the Peck Mining District, Yavapai County, Arizona, one mile west of the Crown King Highway, and 22 miles south of Mayer, the terminal of the Santa Fe Railroad Branch, running from Prescott, the county seat, which is 53 miles northwest of the property.

GROUND AREA:

The property consists of the following patented mining claims: Curtain, Mora B., Isis and Silver Prince, and the following unpatented claims: Peck-Swastika, Velvet, Hardscrabble Midget, Left-over, Left-over Fraction, Peck-Swastika Extension No. 11 & 10, Contact, Trinacria, Nos. 1 to 10 inclusive.

GEOLOGY:

The mine workings are wholly in the Pre-Cambrian Yavapai Schists. This formation consists of typical chloritic fissile to dense schists, with some sericite, with numerous large quartzite lenses. On the Curtain Claim there are three or more rhyolite dykes appear in the Crosscut tunnel #2, the easterly one is undoubtedly a continuation of the one that cuts across tunnel No. 1, which appears to be more of a decomposed andesite, and the same transition from hard rhyolite to metamorphosed soft greenish dyke material is noted on the surface, as a rather terminal phase. The westerly of the two dykes that cut tunnel No. 2 is forty feet wide and apparently correlates with the dyke in the Prince 100 foot level cross cut to the Little Prince vein. A third heavy rhyolite dyke appears in the northeast corner of the Silver Prince Claim. While these dykes have some genetic connection with the mineralization, the ore does not develop on the contacts to the same extent that it does in vein fissures in the Quartzite but near the dykes.

Some of the so-called Quartzites are apparently a highly silicified porphyry, resembling quartzite but traces of the phenocrysts are discernable.

The topographical relief is strong, and the oxidation is well advanced, with some metamorphization in several of the different materials, in the exceptionally strong outcroppings that transverse the entire property.

VEIN SYSTEM:

The vein system consists of two principle fissures, viz., The Prince and the Little Prince, about 250 feet apart, Parallel fissures and transverse branch fissure are common to both. There are a number of faults, of which none are of very great displacement, and appear to be pre-mineral, with a general strike of North 70° West. These faults appear to have considerable bearing on the deposit.

The veins have an average strike of N. 25 degrees East, and dip about 70 degrees west. The vein matter ranges from a clean quartzite to Siderite with dolomite and various manganese materials.

The only important material is silver and it appears, as a chloride, bromide, native and tetrahedrite. Some Chalcopyrite was noted and high silver galena is not uncommon.

While the Peck Mine located one mile west and on a distinctively different vein bottomed at a shallow depth after enjoying a remarkable concentration of silver on the upper levels, and the absence of ore on the Curtain Claim, would signify that the ore did not extend below the water table, but on the other hand, this theory is most certainly exploded, by the very fact that high grade sulphides extend below the level floor in the Prince.

The quartzite when intersected by and fractured by, the fissures seems to be receptive to deposition. It is probable that the absence of ore on the 400 level of the Curtain is due more to the fissure traversing schist, whereas on the wall quartzite showing in the shaft station on the 400 level of the Curtain is dense and very tight, the vein fissure is in soft complex schist and siderite about 16 feet wide.

???

#### HISTORY:

The earliest operations started in 1876 and continued until 1885 under F.W. Curtain. From then until 1910 the mine was inactive at which time the mine was reopened by F.W. Wood. Up to this time reported production was \$480,000 from the Silver Prince and \$385,000 from the Black Warrior which is the same vein as the Nora B. Claim. The latter production occurred about 1878 under Tom Ramon.

From 1910 until 1915 production was said to have been 3,000,000 ounces silver. From 1915 until May 1918, Frank Giroux operated the property and he reports that his operations paid out about \$142,000 in purchase price and royalties above operation costs. It is evident that all three of those operations were satisfactorily profitable.

Mr. Kingdon has been mining on a small scale from the past twenty years. During 1935 and 1936 Polk-Poterson obtained a lease, put up a mill, mined and shipped some ore developed by Mr. Kingdon and milled dump ore and fills. No satisfactory record of their operations is available, but the workings show very little cross cutting, and no new ore was developed, while they were operating, and only the high grade ore and the fills that were most accessible were mined. However, the writer has been informed that their operations were very profitable, if not ethical. Their operations lasted only four months, trying to mill oxide ore by floatation, recovery 60%.

This mine has been a bonanza producer of high grade silver ores for many years, and undoubtedly new and very important bodies of high grade silver ores can be developed by further exploration work.

In the meantime, there are large tonnages of mill grade ores available that could be profitably handled while carrying on further mine developments.

The 'Desoto' mine which end lines the Swastika group has been an old producer of high grade copper and gold and silver, has a production record up to 1930 (according to the Arizona Bureau of Mines) of 18,200,000 pounds of copper, \$250,000 in gold and \$150,000 in silver. The main Desoto vein traverses the Swastika group and is traceable for 3,000 feet, but little development work has been done on this vein on the Swastika, outside of the 240 foot Middleton Shaft, which produced quite

a tonnage of high grade ore that was packed from the shaft on mules and hauled by wagon to the Colorado River and rafted to the Gulf of California, where it was placed aboard ship and transported to Swansea, Wales, where it was treated.

DEVELOPMENT:

The Silver Prince claim has been explored by a 400 foot shaft with four levels, each 800 feet in length. Also raises and stopes at intervals. The Little Prince has been developed to a limited extent by a tunnel and a 135 foot shaft, and also drifted on from the Prince 100 foot level. Considerable production came from this development. Aside from the two levels referred to above, there are three well defined veins on the Nora B, Hardscrabble and Isis claims respectively. On the Nora B, some 900 feet of drifting has been done and it is reported that considerable pay ore was extracted and shipped to smelters.

The veins on the Hardscrabble and Isis claims are more or less unexplored to date.

On the curtain claim there are three tunnels. No. 2 contacts with the 100 foot level on the Prince. No. 3 connects with the 200 foot level. The No. 3 tunnel is 700 feet long and intercepted the vein at 650 feet. At this point a station was cut, a 52 HP electric hoist installed, and a 4' x 10' shaft sunk to the 400 foot level. At a point 65 feet below the collar the 365 foot level was driven south connecting with the 300 foot level of the Prince. The level was extended 400 feet to the North. A stope 100 feet in length extending to the 300 foot level was worked. On the north side of the shaft a stope 200 feet long was also worked to the 300 foot level. Four feet of ore north face of stope assays 43.4 ozs. silver per ton. Some stoping below this level was done to a depth of 35 feet. Grab samples of ore assays 25.6 ozs. silver per ton. Some stoping below this level was done to a depth of 35 feet. At a point 100 feet below this level a short station was cut. A 300 foot pump provided and a centrifugal water pump installed with a 10 HP motor. Capacity of pump, 100 g.p.m. under a 200' head. A drift was driven to the north for 350 feet, but no stoping was done. Another drift to the south connecting with the Prince 400 foot level was run but no stopes opened up.

The approximate mine footage is as follows:

Shafts-----	923	feet
Raises-----	1500	feet
Drifts & X-cuts-----	9000	feet
Total-----	11423	feet

Aside from the silver bearing veins on the Silver Prince and Curtain claims, there is also a very large and prominent vein exposed on the surface; this vein is composed of a copper carbonate with some chalcocopyrite, which is six feet wide on the surface and broadens to twenty feet at the bottom of the Middleton Shaft, which was sunk on a 65° incline to depth of 240 feet. Little or no exploration was made by the writer on Hardscrabble and Isis claims.

PROPOSED DEVELOPMENT:

It is the recommendation of the writer that the 120 foot cross cut on the Curtain claim be extended approximately 250 feet to intersect the copper vein which is more clearly described as the Desoto vein. Then a drift should be driven on the vein 120 feet to intersect the Middleton Shaft. A drift should also be driven on this vein to the south or in the opposite direction from the Middleton Shaft at this level.

All ore and material broken in this development can be transferred thru raises to the 300 foot level and there transported to the ore bins thru the adit of this level.

It is apparent that the primary development of this mine should commence at the Giroux raise on the 465 foot level, this raise is slightly caved at the time of my inspection, but quite a lot of high grade ore has been taken from this workings, and from sampling there appears to be a reasonable chance of getting a good tonnage of reasonably high grade ore.

I would also recommend going to the raises on the north end of the 465 foot level and explore the old underhand stope between the 365 and the 465 foot levels. My reason for recommending this work is in view of the fact that there has been a lot of production on this point above the 365 and 300 foot levels. I would next recommend that stope 402 on the South of the Giroux raise would be rehabilitated and the winze sunk at this point below the 465 level.

Plenty of interesting places have been noted for further development and exploration by the writer, but is not necessary to go into detail at this time.

#### RECAPITULATION:

From all the data at hand it is only reasonable to assume that development work on the copper showings in this property will prove very important ore bodies that will average approximately 20 per ton in gold, silver and copper. A 210 foot drift from the 100 foot level to the Middleton Shaft with a 240' back and a vein six feet wide will produce over 300,000 cubic feet of ore. Allowing 12 cu. ft. per ton which is correct for this character of ore, in other words this ore body alone will contain over 25,000 tons above the 100' level and the gross value should amount to over \$300,000 in this block alone; as these ore lenses are known to occur in regular intervals for a distance of 3,000 feet, and the Curtain and Leftover claims the potential possibilities for this property are great.

It appears only logical that the above development work should be commenced after the 380' level, the 365' level, and the 465' level have been cleaned up and production started, for no doubt enough high grade ore can be extracted from these three levels to carry the expense of the development to the big copper vein.

In order that the gamble may be entirely eliminated from this venture it will be necessary to erect a 150 ton per day capacity cyanide mill on the foundation that is already in and in good condition at the mouth of the 300' adit.

There is in the aggregate of 100,000 tons of ore on the several dumps in the fills and stopes inside the mine, beside the old tailings dump that will average over \$7.00 per ton all the way through, which makes a very desirable mill-head.

An abundance of water to operate a mill of this size can be taken from the 465' level with little or no expense, as the pumps, pipelines and tanks are already installed; the high-tension power line complete with transformers are already on the property. The cost to erect a mill of this character should not exceed \$40,000.00.

By referring to the list of equipment contained in this report it will be noted that there is ample equipment in good condition and ready for immediate use to handle the mining of the ore that will be taken out of the mine but it will be necessary to install a bulldozer or a dragline or both, in order to handle the ores from the dumps and from the old tailings dump.

A boarding house and the bunkhouses are sufficiently large to handle a crew of 50 men, the boarding house is well equipped but the bunkhouses will require some furniture. There is an office building and two residences, a large garage and a workshop and assay office, a change house, blacksmith shop, timber framing sheds and 200 ton ore bin, all in fair condition.

The assay office will require a new furnace, a new set of button balances, some glassware and hand tools; otherwise it is equipped with the necessary requisites, including pulverizer, chipmunk crusher, etc.

There is an abundance of machine and stoper steel all sharpened and in condition for immediate use; the drill sharpener and punch are also in good condition and ready for immediate use.

It will be necessary to install four or five toilets and bathtubs on the premises; also a hot water heater in the change house.

Some hand tools such as picks, shovels, single jacks, double jacks, nails, bars, axes, saws, etc, will have to be provided. There is a pickup truck in fair condition now at the mine, but a larger truck will be necessary. All electric motors will need cleaning and reconditioning, as dust and dirt has settled in them and would most certainly cause damage if an attempt was made to use them without an overhaul job.

The drilling machines will, in all probability, need an overhaul job but probably not very extensive.

There are two roads from the main highway to the mine, and both need work on them, but I have been assured that the County would share the expense, and furnish the equipment to make the repairs.

300' level

Tabulation of Assays

<u>Sample No.</u>	<u>Width</u>	<u>Place</u>	<u>Description</u>	<u>Au.</u>	<u>Ag.</u>	<u>Value</u>
1	2'6"	Mills #10	Oxd. Mat.	.02	9.07	\$8.86
2	3'	Mills #9	" "	.01	4.96	5.26
3	4'	Mills #2	" "	.03	8.88	9.94
4	4'	Swastika Connection		.00	.66	0.00
5	3'	Edge of old stope		.02	6.44	6.50
6	4'6"	Face of spur vein		.02	6.13	6.20
7	3'6"	Old stope above 300		.01	6.10	5.75
8	4'	20' S. #7		.02	7.60	9.54
9	4'	10' above #8		.03	6.96	7.31
<u>365' level</u>						
10	4'	N. end of stope		.03	8.65	8.74
11	6'	Roof of stope		.02	6.10	6.80
<u>100' level</u>						
12	2'	S. Giroux winze		.02	6.02	6.11

200' level

13	4'	#1 Stope	Oxd. Mat.		13.66
14	3'				.09
15	6'	Little Prince Outcrop	100' N. Peck Rd.		14.20
16		Grab from old shaft	dump		27.86
17		Dump Main Shaft F. - W Side of Port Side			15.39
18		Screenings, Dump at old shaft			1.80
19	5'	Copper vein	Cu. <sup>3%</sup> \$13.86 Au. \$1.05		14.91
20	4'	Oxd. Mat. Copper vein	<sup>0.65</sup>		3.47
21	9'	opposite #20	Cu. <sup>0.6</sup> \$3.00 Au. \$2.10		5.10
22	3'	Copper vein, open cut	<sup>1/8</sup>		10.92
23	6'	Outcrop	Cu. vein		.80
24	5'	Open cut			1.40
25		Grab dump, Middleton shaft	Au. & Cu. <sup>1.6%</sup>		23.10
26		Dump, Little Prince Shaft	Au. & Cu. <sup>4.6%</sup>		24.80
27	3' 5	250' South of Station on	300 ft. level from roof. Au. 170 Cu. St. <sup>1.7%</sup>		10.38
28		Specimen taken form	Middleton Shaft		103.26
29		" " " Swastika "			56.60
30		Mill Tailings Dump	Au. .01 Cu. 2%		10.00
31		Outcrop in saddle above 100 level	Cu. 2.75% Au. .05		8.75

Samples from Middleton, and Swastika shafts not shown on assay map.

Samples from all outcrops not shown on assay map.

Samples from Tailings Dump not shown on assay map.

These samples are shown on a large blue print which is not available at this time, also all samples from the Middleton vein are shown on blue print.

Several samples taken by Syverson are shown on blue print.

15.51  
17.5  
13.51  
17.5  
27.5  
27.5  
27.5

244.55

9.65  
24.82

2.60  
7.00  
3.00  
1.50  
15.50

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2000' track 12#	750.00
Hoist	275.00
TOTAL OF ALL EQUIPMENT.....	<u>1,025.00</u>

CONCLUSION:

In conclusion of this report, the writer does not hesitate to state that this mine, and in fact the entire property, is Cui Generous. In view of the fact that it is practically fully equipped so that operations could be started immediately, further, the inside workings of the mine are exceptionally well timbered and in first class condition with the exceptions of a few minor caves in the untimbered stopes and raises, which would be a very small job to put in condition for further exploration and working.

There is a very good chance of encountering shipping grade ore shortly after operations were commenced, because judging from the reports of old miners and operators who have worked in this property. All make the same statement that high grade lenses of ore predominate and will consistently average over 200' in length; therefore, it is only reasonable to suppose that the same condition will exist with further development.

The big copper vein is in my judgement the paramount feature of this property which can be tapped to a depth of 240' with about 450' of drifting and over 200' of this is probable ore.

I sincerely recommend either of these investments, for I am certain with efficient management and with sufficient capital, this property can be made one of the big mines of Arizona.

Respectfully submitted,

(signed) H. E. Dodd, E.M.

Dated August 8, 1947.

REPORT ON THE  
PROPERTY OF THE  
SWASTIKA SILVER & COPPER COMPANY

Pecksiding, Yavapai County, Arizona

BY

E. W. Giroux  
Gleason, Arizona.

**PROPERTY:**

The group of mining claims belonging to Swastika Silver & Copper Company consists of eight claims, three of which are fractions. They extend in a line north-easterly and southwesterly 3,000 feet in length on the strike of the mineralization and consists of the following claims:

<u>NAME</u>	<u>TITLE</u>	<u>AREA</u>
Nora B.	U. S. Patent	20
Silver Prince	"	20
Isis	"	20
Hardscrabble	Location	10
Midget	"	3
Peck-Swastika Ext. No. 10	"	20
" " " No. 11	"	20
Contact	"	20

**LOCATION:**

The property is situated in the famous Peck Mining District, Yavapai County, Arizona, which has produced about \$10,000,000.00. Part of the group is located in the south-west and joins property of Gold Crown Silver Mining Company. The Nora B., Silver Prince, Isis, Hardscrabble and Midget claims are contiguous. The balance are attached claims. The property is situated three miles in a south-westerly direction from Middleton Station, on the Bradshaw Mountains Railroad, a branch line of the Santa Fe. From Middleton, the property is reached by a good truck road. Prescott, the county seat and largest town in northern Arizona, lies to the north a distance, by road of about fifty miles.

### ACCESSIBILITY:

The property is easily accessible over a fine county highway built to Federal specifications to Cordes. The roadway has a finished width of 20 feet and is a gravel surfaced road. To this point, the maximum grade is six per cent, which is reached only for short stretches. From Cordes the road to the foot of the Antelope Hill is narrow and of steeper grade but good. From the foot of Antelope Hill to Middleton, a distance of seven miles, the road is narrow and full of steep grades. From Middleton to Peck Siding the road is excellent, following an old railroad grade. From Peck Siding to the portal of the Adit level, a distance on one mile, the road is narrow and crooked and has numerous heavy grades. However, any make of truck can negotiate the road with capacity loads. Train service from Prescott to Middleton is weekly.

### TRANSPORTATION:

Prescott is served by the Santa Fe Prescott & Phoenix Branch of the Santa Fe system, which reaches all of the important points of the county; there being branch lines to smelters at Clarkdale, Clemenceau and Humboldt.

### TELEGRAPH AND TELEPHONE:

There is an office of the Western Union Telegraph Company in Prescott with a sixteen hour service daily, with the usual messenger service. At Meyer a telegraph office is also maintained. The Hard-scrabble and Nora B. claims are crossed by local and long distance lines of the Mountain States Telegraph and Telephone Company, with telephones at the property giving bell service at small cost at all times.

### TOPOGRAPHY:

The claims lie on the east slope of the Bradshaw Mountains at an elevation above sea level of from 4,300 feet to 5,500 feet, with the general drainage to the east. The terrain is very rough and precipitous. The vegetation is characteristic of the district, composed mostly of scrub oak and chaparral with a few cottonwood in the canyons.

### WATER:

In sinking 3 wastike main shaft water was struck 100 feet below the level of the Adit tunnel. The flow increased as depth was attained and at the 400 foot level a flow of 10,000 to 20,000 gallons per 24 <sup>107 gals/</sup> <sub>1 min</sub> hours, (depending on wetness of seasons), has to be handled. By further sinking, enough water will be developed for a mill of large capacity.

### CLIMATE:

Quite contrary to popular belief, this high plateau, although in the southern part of the United States, has a very equable climate. The average temperature for a period of ten years was 58 degrees Fah. with a maximum of 104 degrees Fah. and minimum of 20 degrees Fah. The average annual precipitation over the ten year period was 15.2 inches. The lowest Temperature usually comes in January and the highest in the first part of July. January, February, July and August have the highest monthly precipitation; May, June and July the lowest. Although the summer temperature frequently goes to 100 degrees Fah. it is never unbearable owing to the very low relative humidity.

### LABOR:

There is no difficulty in obtaining plenty of men at standard wages  
e., \$5.50 to \$6.00 for machine men, \$6.00 for hoistman, \$6.50 for  
timber men and \$4.00 for laborers on surface.

### TIMBER:

Such as is needed in the mine is delivered on the ground for  
\$40.00 to \$60.00 per M.

### POWER:

The Arizona Power Company's high tension line passes across the  
property. This power is furnished for about 2½¢ per kilowatt hour, de-  
pending upon the amount of power used. This allows a considerable saving  
in power plant construction and the difficulty in handling fuel. A  
transformer house has been established on the Hardscrabble claim, from  
which point power is distributed over the property and to the plant  
of the Gold Crown Silver Mining Company.

### GEOLOGY:

General: The important rocks of the northern and middle of the  
U.S.G.S., Bradshaw Mountain Quadrangle, (U.S.G.S. Folio 126), are schist,  
diorites, rhyolites and granites. The schist is found to be pre Cambrian  
in age and of probable sedimentary origin. On the property of the S was-  
tika Silver & Copper Company the rocks are silicious schist of the  
Yavapai formation, cut by numerous dykes of rhyolite, some granite  
and quartz porphyry which appear to be off shoots from the main granite  
mass, both east and west. The schist trends north 26 degrees east.

and the dykes cutting through and across the schists also have a general northerly course. The Swastika vein system is composed of immense quartzite ledges, running in places parallel to the schistosity, in other places diagonal to the schistosity. The broad schistose belt is cut by several prominent dykes of diorite, quartz porphyry and rhyolite and a softer, coarser grained porphyry, of various widths and similar strike and dip to the schists. Three prominent cross faults are noted. The conditions are good for mineral deposition.

Vein System: Five well defined veins cross the Nora B., Silver Prince, Hardscrabble and Isis claims, giving 3,000 feet of prospecting area along the strike of the veins, with 1,500 feet in cross section. The Main, or Big Prince vein on which are the principal workings of the Swastika, appears on the Nora B. and Silver Prince claim as a big jaspery quartzite ledge with high reef outcrops for many feet in places and at others covered with detritus, but maintaining where exposed a true course in conformity with the schistosity. It varies from ten to fifty feet wide along its strike and shows much oxidation; it lies on the foot wall side of a rhyolite dyke. Assays taken from the outcrop of this vein run from 4 to 150 ounces silver per ton. The Little Prince vein, some 300 feet to the west of the Big Prince vein, is not so bold or pronounced in its outcrop; it lies above the rhyolite dyke, making the dyke its foot wall and a band of schist for its hanging wall. Both of these veins, as they go toward the Curtin claim to the north, outcrop boldly as they enter the ground of the Gold Silver Mining Company. The copper condition is about 200 feet west of the Little Prince vein. Several small pits and one shaft have been sunk along this condition. Copper ore occurs in this condition as lenticular replacements

in the schist; samples taken have given from 1% to 30% copper, 2 to 20 ounces silver and \$2.00 to \$14.00 gold per ton; no ore concentration of commercial value in quantity has been encountered as yet. It is upon this continuation to the north that the large workings of the De Soto Mine have been conducted and it promises great possibilities at depth in the Swastika ground. On the Hardscrabble claim the vein shows strong following a rhyolite dyke at its footwall with a band of schist for a hanging wall. About midway between the Hardscrabble vein and Big Prince vein is another vein unnamed which shows on the surface. This vein was exposed by road grading. Samples taken at this point gave results of 15 ounces silver per ton. No development work has ever been done on this vein. The preponderance of ore in the silver veins will be of milling grade with bands or lenses of very high grade smelting products which will have to be carefully broken as some of it runs well into the thousands of ounces silver to the ton.

#### DEVELOPMENT:

The property has been developed to date by two adit tunnels, one on Silver Prince Claim and one on Nora B. claim; also by three shafts— one shaft on Nora B. 250 feet deep on Big Prince vein, a shaft on Silver Prince claim 225 feet deep and the main shaft 448 feet deep also on Silver Prince claim, this shaft being on the Big Prince vein. Reference is made to the maps which accompany this report for details of development work. The greatest amount of development work was done in the Silver Prince and Nora B. claims with less but important amount in the Little Prince vein. There was also a large amount of surface prospecting by means of shallow shafts, tunnels and open cuts on the numerous out-croppings of the property. The total amount of footage driven is as follows:

Shafts	923 feet
Drifts	} 6670 feet
Crosscuts	
Raises	900 feet

### EQUIPMENT

The Swastika is equipped with a well filled complement of hand tools for mining. There is no air compressor, all mining work having been done by hand. The camp is amply supplied with buildings, such as a boarding house, bunk houses, for dwelling houses, garage, assay office, all fairly well furnished to accomodate about thirty men with living quarters for the officers. The camp is lit throughout with electricity. Buildings for operating purposes consist of blacksmith shop, work shop and sample grinding house, ore bins, head frame and hoist house at main shaft. Mining machinery consists of one 12 H.P. Fairbanks Morse gasoline hoist; one 6 H.P. gasoline engine and cornish pump (these at main shaft), with one 9 H.P. gasoline engine, rock breaker and pulverizer at sampling department. There is also a five-ton Garford truck. The erection of a fifty-ton cyanide mill was started in 1919 - the concrete foundations were laid and some of the machinery was brought to the site but was not erected. No work was done on this building. All buildings and machinery have been well cared for and are in good condition. There is a little deterioration of some of the concrete piers due to weathering.

### HISTORY OF THE PROPERTY:

The Peck Mining District, Yavapai County, Arizona, was discovered by T. M. Alexander, Wm. Cole, E. G. Peck and Hon C. G. Bean June 18, 1874. Early in 1875 the Silver Prince location was made by Andy Curtin.

On the same day the Black Warrior Claim was located by Tom Eamon, which joins the Silver Prince on the south and is now known as the Nora B. Both of these claims were reported separately by the above locators and they became rich from the proceeds of the mines. After exhausting the high grade ores (which went down 150 feet from the surface on the Silver Prince and to 250 feet on the Nora B.) these men lost interest and disposed of their holdings, principally due to the fact that silver had dropped from \$1.29 per ounce to \$0.70 per ounce. Work ceased on these properties about 1884. In 1887 Steve Mitt, an old miner, took a lease on the Silver Prince claim and sunk the Little Prince shaft and struck an ore body which netted \$ 80,000.00. There work ceased again except that which was done by various small lessees. In 1900 the property was acquired by F. W. Wood and associates who organized the Swastika Development Company to operate the Silver Prince and Black Warrior (Nora B.) Very little work was done on the Nora B. claim, however, all work being confined to the Silver Prince. At the time that the Swastika Development Company went to work, no shaft had been sunk on the Big Prince vein. This company put a raise through from the adit level to the surface. Under this raise a shaft was started and sunk 100 feet; thence drifting was done to the north on the vein. After driving some 200 feet, a high grade body of ore was encountered, the first carload of which netted \$11,000.00. The shaft was continued to the four hundred level-- this point being 448 feet from the surface -- and drifts run out from the three- and four-hundred foot levels. Ore was encountered on all levels, one shoot of which came to within a few feet of the old adit level which had been run out by Curtin. Thirty-six carloads of ore were shipped by

Swastika Development Company with a net return of \$185,000.00 from 1911 to 1915. In March 1915 the property was leased. The leases operated until May 9, 1919 and shipped thirty-three carloads of high grade ore with one hundred carloads of low grade ore, which netted approximately \$150,000.00. All these values came from the Silver Prince Claim and from four ore shoots. On May 19, 1919 the Swastika Silver & Copper company was organized and took over the holdings of the Swastika Development company. A campaign of development work, which included a milling plant, was started and some sixty thousand dollars worth of ore shipped. Owing to differences in organization, work was stopped in 1923, the mill not completed and the property remaining idle to this day.

#### ORE IN SIGHT:

There remains on dumps and in fills and stopes 125,000 tons of ore which assays 14 ounces silver per ton. The bottom of the 400 foot level has exposed three short shoots of high grade ore and a raise close to the north end line of the Silver Prince Claim on this level, is in high grade ore, running from 100 to 123 ounces silver per ton.

#### SUMMARY AND RECOMMENDATIONS:

Summarizing the different advantages in favor of Swastika Mine, attention is drawn to:

- (1) The mineral belt on which it is located and its close proximity to other noted mines with the same geological characteristics.
- (2) The high grade of the different ores from several workings.
- (3) The adaptability of the ores to direct smelting and milling.

A forty-ton lot of low grade ore was taken from dumps and fills from Swastika and shipped to the Dorr Company, Denver, Colorado, which tested the ore at the Golden Cycle Mill, Colorado Springs, Colorado, worked out a flow sheet showing that this low grade could be treated #0

at a profit by the cyanide method.

(4) The fact that the formation is favorable for economical mining.

(5) The nearness to railroad and smelter.

(6) The further important fact that water is abundant for milling purposes.

(7) That it has been proven that ore bodies without diminishing of values go to five hundred feet in two neighboring mines and 448 feet on Swastika and that the values have not bottomed at that point.

(8) Consideration of all these favorable conditions warrants the recommendation of the Swastika Silver & Copper Company's property as being an excellent basis for profitable mining operations, where ore deposition on an extensive scale is foretold by characteristics which, from long experience in the majority of instances shows, are the guide to mines.

The writer's long and successful association with some of the profitable mines of this district is the basis for recommending the following development:

Swastika main shaft should be dewatered and repaired in its entirety, sinking it five hundred feet deeper should be the plan followed. Drifting should be done south on the 400 foot level as far as the south end line of the Nora B. claim, thus cutting the ore bodies which were worked to the 250 foot level, by shaft on that claim. This would also prospect the southern portion of the claim where considerable surface ore was found, mined and shipped. A cross-cut should be driven from the four-hundred foot level to the Little Prince vein to cut the downward projection of the ore shoot

mined by Steve Eott above that point. Several cross-cuts should be run into the foot wall of the 400 foot level with the view of cutting the vein which shows between the Hardscrabble vein and the Big Prince vein and also to cut the Hardscrabble vein and prospecting the same. After reaching the Little Prince vein, it should be drifted upon both north and south and at a point approximately 500 feet south of the Little Prince Shaft. Cross-cuts should be run into the hanging wall and the foot wall to thoroughly prospect the massive quartzite at this point and one of the crosscuts should be continued to the west, or hanging wall side, until it should have cut the Isis vein. The Isis vein is worthy of prospecting due to the fact that in the territory indicated, a very fine body of ore was taken out in the early days of the Peck Mining District. At the present time, remnants of the rich ore taken out can still be found in the old shaft. History will repeat itself here as it did in the Silver Prince claim. I wish to emphasize the fact that I am thoroughly convinced, from the experience that I have had in this district, that deep mining will be amply repaid.

It is the opinion of the writer that a very profitable mine will be developed on the property of Swastika Silver & Copper Company if the plan of development outlined in this report is carried out.

Respectfully submitted,

(SIGNED) F. W. Giroux.

Gleason, Ariz.

November 23, 1928

Crude Oil - Swastika Mining Co.

1911 41.7 1592257 (282.1)  
 21.4 1206288 (284.2) 383.0 Avg. 1911 - 2mo  
 1911 73.1 T 2712776 383.0

36.8 253.1 931,408  
 37.0 179.7 664,890  
 34.1 490.5 1,672,605  
~~32.3~~ (656.0) 872,480 315.0 Avg - 6mo.  
 21.9 197.8 433,182  
 1912 175.7 32.6 294.8 961,048 20- 51.5  
 37.2 53.6 199,292 5,535,613 HV 656.0  
 42.5 (51.5) 213,725  
 44.2 58.2 252,244  
 32.7 65.4 213,858  
 28.3 61.5 174,045 64.6 Avg. 6mo.  
 43.9 55.8 244,962  
 32.1 117.2 376,212 1,679,438  
259.9 435.6 T 7,215,051 165.6 Avg - 1912

1913 29.8 209.6 624,608  
 26.0 (60.2) 216,720  
 32.6 260.2 848,252 60- 60.2  
 31.9 82.5 261,525 HV - 424.6  
 32.0 79.5 254,400  
 38.0 100.0 359,700  
 32.6 (424.6) 1,384,196  
 34.2 353.8 1,209,996  
 31.6 417.1 1,318,026  
 33.2 413.1 1,371,492  
 32.6 170.3 555,178  
 30.0 420.3 1,260,900  
 34.7 203.8 707,186  
477.2 10,372,189 244.5 Avg. 1913

1914	33.0	136.4	450,120
	26.2	185.0	469,700
	37.1	159.8	592,858
	<u>106.3</u>		<u>1,712,678</u>

161.1 Avg, 1914

1915 38.9 135.2 Avg.

F.N. Giroux

8/15 = 738.2 @ 103.87 20-18.2 (540)  
 5/18 14 152.0

76,699.00 total.  
 Price 47¢ to 99¢

73.1	x	283.0	2,799,730
435.6		165.6	7,213,534
424.9		244.5	10,371,690
106.3		161.1	1,712,493
32.9		135.2	417,769
<u>1070.1</u>			<u>210.4 avg.</u>

Price 48¢ to 64¢  
 225,000.00

1915	37.3	152.0	566,960
	34.6	133.4	461,564
	35.6	119.5	425,420
	<u>107.5</u>		<u>1453,944</u>

avg 135.2 avg

1916	40.3	149.7	603,291
	41.0	102.0	418,200
	43.2	124.0	535,680
	42.0	130.0	546,000
	48.2	18.2	87,224
	42.7	75.5	322,385
	40.7	65.8	267,806
	42.7	64.2	274,134
	<u>340.8</u>		<u>3055,220</u>

avg 89.6 avg

385,710  
 446,380  
214,420  
 1,746,510

Avg 136.9 avg

1917	43.0	74.6	320,780
	43.0	86.3	371,090
	41.5	54.0	224,100
	43.2	70.5	304,560
	35.6	142.3	506,588
	<u>206.3</u>		<u>1727,118</u>

avg 83.7 avg

129.0  
 133.0  
145.8  
 2- 29.9  
 2- 48.6  
 2- 49.0  
127.5

RECORDS OF SOME SHIPMENTS OF ORES IN THE CRUDE  
FROM THE  
SWASTIKA MINING PROPERTY  
YAVAPAI COUNTY,  
ARIZONA

SETTLEMENT SHEET	DRY WGT LBS	SILVER ASSAY	LEAD ASSAY	PRICE AG OZ	NET AFTER FRGHT TREATTT
11/3/11	83,298	382.1	26.8	\$0.543	\$ 8,030.92
12/15/11	62,850	384.2	18.3	0.555	6,078.73
1/3/12	84,491	52.8		0.627	7,805.22
1/12/12	73,696	253.1	11.6	0.546	4,362.22
3/14/12	74,092	179.7	"	0.583	3,002.47
3/21/12	68,230	490.5	23.8	0.593	9,211.65
5/3/12	27,612	656.0	26.7	0.605	5,173.62
5/3/12	43,786	197.8	9.4	0.6050	2,091.90
7/1/12	65,280	294.8	10.2	0.603	5,089.37
8/1/12	74,343	53.6		0.604	625.51
8/21/12	83,110	51.5		0.612	968.73
9/23/12	88,471	58.2		0.626	979.73
9/6/12	65,472	65.4		0.620	839.27
10/10/12	56,686	61.5		0.637	697.30
11/26/12	87,810	55.8	-	0.633	937.11
12/6/12	64,290	117.2	18.1	0.630	2,295.80
2/3/13	59,618	209.6	21.3	0.631	3,542.60
5/8/13	72,072	60.2	2.2	0.605	7,886.66
5/3/13	65,122	260.2	10.2	0.605	3,415.95
6/9/13	63,826	82.5	1.8	0.597	1,039.27
5/12/13	64,042	79.5	2.2	0.581	7,989.88
7/3/13	66,050	109.0	3.6	0.581	1,542.43
7/3/13	65,162	424.6	14.6	0.590	7,453.53
7/9/13	68,370	353.8	10.3	0.532	6,329.67
7/29/13	63,303	417.1	13.0	0.584	7,026.91
7/27/13	66,360	413.1	16.5	0.591	7,729.76
9/24/13	65,266	170.3	5.3	0.595	2,744.23
11/3/13	60,035	420.3	21.2	0.596	7,006.08
10/21/13	69,401	203.8	4.0	0.592	3,484.76
4/21/14	66,074	136.4	12.1	0.583	2,182.64
8/12/14	72,389	185.0		0.520	1,644.31
11/4/14	74,167	159.8	10.8	0.481	2,368.42
4/5/15	61,806	135.2	8.0	0.498	1,639.21

FOLLOWING SOME SHIPMENTS MADE BY F.W. GIROUX. E.M.

REPLY TO:

PHOENIX, ARIZONA 850 16  
TELEPHONE (602) 277-6053  
2940 N. Casa Tomas

# Richard E. Mieritz

MINING CONSULTANT

ARIZONA REGISTERED  
MINING ENGINEER AND GEOLOGIST

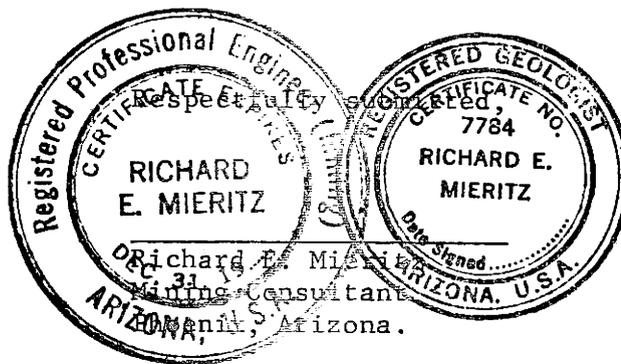
GEOLOGY  
EXPLORATION  
EVALUATION  
FEASIBILITY  
OPERATION

August 20, 1977

## LETTER OF CERTIFICATION

I, Richard E. Mieritz of 2940 N. Casa Tomas, Phoenix, Arizona, Maricopa County, do hereby certify that;

- (1) I am a Mining Engineer, graduated from the University of Wisconsin with the degree of Bachelor of Science in 1939.
- (2) I have practised my profession continuously since then, receiving my Arizona State Registration as a Mining Engineer in 1956 and my Arizona State Registration as a Geologist in 1970, being a member in good standing.
- (3) The report to which this letter is attached and part of, has been prepared on the basis of personal observations on and of the property, on the writers general knowledge of the area and the review and study of available factual data.
- (4) I have no direct nor indirect interest in the property.
- (5) I have no direct nor indirect interest, nor do I expect to receive any interest, direct or indirect in the properties or the securities of Index Mines Ltd., Calgary, Alberta, Canada, or its affiliates.



A  
GEOLOGICAL EVALUATION

and

EXPLORATION REPORT

of the

SWASTIKA MINE

in

Peck Mining District

Yavapai County, Arizona

by

Richard E. Mieritz  
Mining Consultant  
Phoenix, Arizona

August 20, 1977

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INCLUDED MAPS

- Map No. 1 - Index Map, Central Arizona
- Map No. 2 - Claim Map, Swastika Mine
- Map No. 3 - Vein System Map, Swastika Mine
- Map No. 4 - Sample Map, Swastika Mine

INTRODUCTION:

By telephone conversation on August 15, 1977, Mr. Michael Harvey, Index Mines Ltd., Calgary, Alberta, Canada, requested and authorized the writer to visit and examine the Swastika Mine, Yavapai County, Arizona, with a view to re-evaluate its mineral-metal possibilities and potential and to justify and recommend exploration of such possibilities.

The writer is acquainted with and knowledgeable of the property, having visited same in year 1957, October 1973 and August and November 1975. This report is based on the writer's August 18, 1977 visit, his geologic knowledge of the general area and the property and on factual data supplied by others including Index Mines Ltd.

PROPERTY, LOCATION and ACCESSIBILITY:

The property consists of 25 claims, four of which are patented and 21 of which are unpatented - held by right of location. (See Map No. 2.) The claims are identified as follows:

<u>Patented Claims:</u>	<u>Mineral Survey</u>	<u>Acres</u>
Silver Prince	Lot #38	19.970
Curtin	Lot #40, 652	20.090
Nora "B"	2529	20.143
Isis	2529	18.112
		<u>78.315</u>

<u>Unpatented Claims</u>	<u>Recorded Location</u>		<u>Amended Recorded Location</u>	
	<u>Book</u>	<u>Page</u>	<u>Book</u>	<u>Page</u>
Hardscrabble	56	555	152	398
Midget	85	39	153	537
Leftover	97	200	118	281
Contact	105	280		
Velvet	105	282	118	263
Peck-Swastika Ext.	105	283		
Peck-Swastika Ext. No. 10	105	293		
Peck-Swastika Ext. No. 11	105	294	153	39
Trinacaria No. 1	118	282	122	14
Trinacaria No. 2	118	283	122	15
Trinacaria No. 3	118	284	122	16
Trinacaria No. 4	118	285	122	17
Trinacaria No. 5	118	286	122	18
Trinacaria No. 6	118	287	122	
Leftover Fraction	118	288		
Trinacaria No. 7	118	289		
Trinacaria No. 8	118	290		
Trinacaria No. 9	118	291		
Trinacaria No. 10	118	292		
Cumaripa	153	538		
Contact Amended	154	527		



Total area of the group is approximately 450 acres including the

78.315 acres of the 4 patented claims.

Although the property is located in unsurveyed territory, the Meridian line between the East and West Ranges of the G. & S. R. B. & M. system is surveyed to a point 1/3 mile north of the property (See Map No. 2). By projection, this places the property in the southeast portion of Sec. 25, T. 11 N., R. 1 W. and the southwest portion of Sec. 30, T. 11 N., R. 1 E., within the Prescott National Forest in Yavapai County, Arizona, some 60 airline miles north-northwest of Phoenix, Arizona or 25 airline miles southeast of Prescott, the County Seat for Yavapai County.

Travel to the property from Phoenix is north on I-17, a dual Highway, to the Cordes-Bloody Basin off-ramp, approximately 61 miles from City Center. From the off-ramp, turn left (west) to Cordes, about 3 miles, then south and west from Cordes to Cleator on the Crown King, County maintained, gravel road (approximately 12 miles). From Cleator, travel west on the Crown King road for 4.5 miles to the junction with the Swastika access mine road on the right. From this point, it is approximately one mile by road to the Camp and Mine area (See Map No. 1). Travel over this road by automobile is possible but can be a bit difficult.

#### FACILITIES:

No facilities, gas, electric power, water, as public utilities supplied, are available on the property.

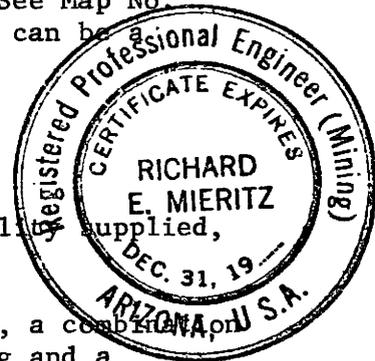
The present camp consists of four buildings; a bunkhouse, a combination bunkhouse and "mess hall", a shop or garage type building and a smaller building - combination office and bunkhouse. In all, the camp could accommodate 12 to 15 persons and the mess hall could accommodate 8 persons at one sitting, probably more with different seating arrangements.

The mine itself makes water, reported as 50 gpm, from the 400 level. Static water level appears to be the 300 level as only a trickle exits from the 300 level adit. Previous reports indicate this water to be potable - for domestic and commercial use, but should be tested and analyzed.

#### HISTORY, DEVELOPMENT and PRODUCTION:

In August 1975, the writer prepared a Report on the Swastika Mine for New Denver Exploration Ltd (NPL), Vancouver, B.C. This report contained in excess of one page of single spaced typed information, facts and figures as regards history, development and production. The facts are on file at the writer's office.

May it suffice to say that the property is credited with in excess of 3,000,000 ounces of silver as produced from the extensive underground workings over the past century as shown on Map No. 4.



## GEOLOGY and MINERALIZATION:

The rocks in the general area consist of Pre-Cambrian granite and Pre-Cambrian schist (Yavapai). At the northern portion of the Swastika claims and the southern portion of the DeSoto claims is the area where the northern end of the Bradshaw Complex begins to become quite noticeable. Here and southward the general geology is complicated by the appearance and intrusion of later rocks such as andesite dikes, rhyolitic dikes and diorite masses and dikes.

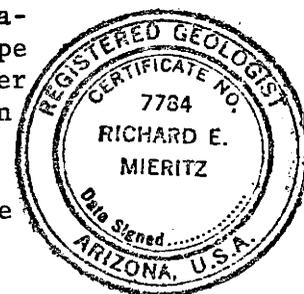
The Swastika property hosts the Yavapai schist-granite contact. This contact and the schist have a general N. 25°-30° E. strike. The dip of the schist is about 60° to 70° W., with local variations - and the dip of the granite-schist contact appears to be about the same but could vary considerably in local areas.

The rhyolitic-andesitic dikes, for the most part, are wholly contained in the schist, and as a general rule, paralleled the schistosity in strike and dip. Cross traversing planes of weakness have, however, resulted in being filled by the rhyolitic-andesitic material but not for any great distances. So also, are cross-cutting tongues of granite or silicified quartz porphyry but usually in minor sizes. There perhaps is some genetic relationship of these various barren intrusions to the mode and type of mineralization present on the property, and if so, the writer is of the opinion that such relationship is distant rather than a "next of kin" situation.

Mineralization-wise, the metal of immediate economic importance is silver, which occurs as native and as oxidation products -- the chloride and bromide. Oxidation of the silver is deep and somewhat irregular; in places, found below sulphides which suggests varying rates of the descending water table - very rapid or very slow. Subordinate metals are lead and copper, in that order and usually occur as galena and chalcopyrite and tetrahedrite at depth and in the oxide zone perhaps as cerrusite and malachite. The galena, as well as the tetrahedrite, can be quite argentiferous but not so for the chalcopyrite. The silver sulphide at depth is argentite, either as an independent mineral or as a constituent in solid state with the two copper sulphides.

Associated gangue minerals, other than the host rock itself, are silica, siderite, pyrite and some manganese minerals. All veins do not have all these minerals as gangue, some being absent. Occasionally, some barite and calcite can be found in the vein matter.

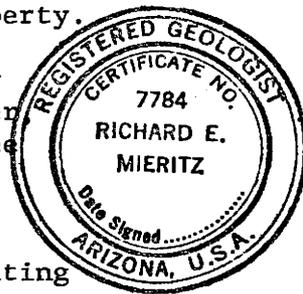
The vein system, of which there are five known in number, (See Map No 3), traverse the Nora "B", Silver Prince, Hardscrabble, Isis claims and in part the Curtin claim, all of which are basically parallel to each other and for the most part, parallel to the schist strike and dip. Of these, only two veins have been developed and productive on a "mine" basis. The remaining three were only prospected and "high graded" or "chlorided" in small tonnages, thus not explored or developed.



The two developed and productive veins are named the Big Prince and the Little Prince. Both outcrop on the surface as jasperoid quartzite ledges (probably part of the schist) of rather high relief above the surrounding ground, the Big Prince varying in width from 10 to 50 feet, the Little Prince varying from 4 to 20 feet and is about 250 feet west of the Big Prince vein.

Several rhyolite dikes are present which parallel and cut the schist strike. The Big Prince vein lies on, but not in contact with, the footwall of one of the rhyolite dikes. The Little Prince, on the other hand, lies on, but not necessarily in contact with, the hanging wall of another rhyolite dike. Similar conditions exist for the other three well defined veins on the property.

Although mentioned by others reporting on the property, a very important feature of the property, in the opinion of the writer is the presence of a copper oxide outcropping vein or zone (See Map No. 3) which has the same general geologic appearance and characteristics rock-wise and mineral-wise as the DeSoto Mine. It has been prospected by a few surface pits and one 240 foot, -65° inclined shaft. A prominent mining engineer's report writing of this copper zone states: "Copper ore occurs as lenticular replacements in the schist; samples taken have given from 1% to 30% copper, 2 to 20 ounces silver and \$2.00 to \$14.00 gold per ton." "It is upon this continuation to the north that the large workings of the DeSoto Mine have been conducted and it promises great possibilities at depth in the Swastika ground." Another mining engineer reporting on the property and this copper occurrence states: "The DeSoto mine which end lines the Swastika group has been an old producer of highgrade copper, gold and silver." "The main DeSoto vein traverses the Swastika group and is traceable for 3000 feet, but little development work has been done on this vein on the Swastika, outside of the 240 foot Middleton Shaft, which produced quite a tonnage of high grade ore that was packed from the shaft on mules and hauled by wagon to the Colorado River and rafted to the Gulf of California where it was placed aboard ship and transported to Swansea, Wales, where it was treated." The same engineer also reported: "There is also a very large prominent vein exposed on the surface; this vein is composed of a copper carbonate with some chalcopyrite, which is six feet wide on the surface and broadens to twenty feet at the bottom of the Middleton Shaft."



The above quotes relate the exact conditions as observed by the writer. To this, the writer can only add that this occurrence of copper mineralization is definitely a target of extreme potential and a "bonus" to an exploration program of the property.

#### ORE RESERVES:

Ore reserves as such - measured, indicated or inferred - are non-existent at this writing simply because there is a lack of present sampling and assay results.

The mining engineer who operated the mine from 1915 to 1919 and reported on the property in late 1928 states: "There remains on dumps and in fills and stopes 125,000 tons of ore which assays 14 ounces silver per ton. The bottom of the 400 foot level has exposed three short shoots of high grade ore and a raise close to the north end line of the Silver Prince claim on this level is in high grade ore running from 100 to 123 ounces silver per ton." The writer of the 1947 report confirms the 100,000 ton figure but makes no mention of the high grade ore nor had sampled any.

In the writer's opinion, it is best to consider the "no ore reserve" position at this time simply because there has been too great a time period of inactivity during which time unrecorded activity may have occurred and ore material removed which is not shown on Map No. 4 including such areas where early assay results indicate ore containing 80 to 344 ounces of silver.

#### PROPERTY POTENTIAL:

Future potential of the property can be categorized as follows:

- 1 - Silver vein potential
  - (a) - High grade lenses
    - (a.1) Unprospected portions of 5 veins
    - (a.2) Below 300 level in present workings
  - (b) - Milling Ore
    - (b.1) In present workings of property
    - (b.2) Unprospected portions of 5 veins
- 2 - Copper vein potential
  - (a) - Direct shipping ore
  - (b) - Milling ore
- 3 - Silver and copper vein potential
  - (a) - Milling ore from all veins



As mentioned under article "Geology and Mineralization," the subordinate metals are lead and copper. Only one of the three engineers reporting on the property had a few samples assayed for copper. Five samples were from the copper outcrop or cuts; copper content ranged from 0.6 to 3.0%. A grab sample of the Middleton Shaft dump showed 4.6% copper. Such could be expected from the "copper vein," however, the same engineer took a sample from the Little Prince Shaft dump and it showed 4.6% copper. He also took a sample on the 300 foot level, 250 feet south of station (Curtin Shaft?) which showed 1.7% copper. A sample of the Mill Tailings showed 2% copper.

The writer cannot vouch for these samples nor the results but the significant point here is that such values, when added to a "mill run silver ore" (about 15 ounces) greatly enhances the gross value of this type potential ore. Thus, it would appear, in the writer's opinion, that potential (3) would be the ultimate goal of any proposed exploration program. Such a program would be an energetic one requiring much time and expense and would be a difficult program to maintain an enthusiastic continued interest and flow of finances

to complete the program.



RECENT DEVELOPMENT:

After acquisition of the property, New Denver Exploration caused the taking and assaying of some twenty odd samples from the accessible underground workings (See Map No. 4) as a "get acquainted with the mineralization" program, completed some underground geologic mapping (not available to the writer) and some surface dozing preparatory to a construction "start up" for a leaching operation utilizing dump material from the large dump of the 200 level.

In late 1975, Index Mines joint ventured with New Denver Exploration Ltd., but because of a severe winter, further work was delayed until year 1976. During the same year, Index Mines completed negotiations and acquired full and sole ownership of right to purchase and operate the property.

As a result of this move and at the expenditure of funds by Index Mines, a leaching - electro-winning plant has been constructed and operated. A gold bullion was produced, a silver bullion produced and a plating of copper occurred.

At the time of the writer's visit to the property, August 18, 1977, the leach plant was shut down to complete certain operational changes for a more efficient type operation.

An assay of the "sludge" in the lower holding tank of the operation assayed 0.58 ounces/ton gold and 561.98 ounces silver/ton. The total weight of five barrels of the sludge, collected from the lower tank, is not known, however, the writer could estimate about 2 to 2½ tons.

This work has demonstrated that even the "waste" ore is amenable to a leaching process and operation.

The sampling, though sparse, of the underground workings does indicate the existence of material which could be available as a source of crude ore for the mill.

Earlier in the report, the writer described the characteristics of the Middleton vein. Index Mines has caused two surface samples of the vein to be taken and assayed; The results of these samples are as follows:

	<u>Oz/ton Gold</u>	<u>Oz/ton Silver</u>	<u>% Copper</u>
#1	Tr.	0.34	0.18
#2	Tr.	1.66	6.40

Sample #2 compares favorably with the facts reported by engineers previously reporting on the property.

PROPOSED EXPLORATION REQUIREMENTS - COSTS:

The writer suggests consideration of categories (2) Copper vein potential as the first phase and (1-a.2) Silver vein potential below 300 level in present workings - downward continuance of present indicated ore lenses as a second phase. Both these targets would utilize underground diamond drilling.

To explore the Copper vein, the writer suggests fanned horizontal holes from the face of the most western crosscut on the 100 level of the Curtin claim. These holes would also prospect the area between the veins. To explore the silver ore potential below the 300 level, several short 50 foot holes into the footwall from the 400 level are required. The 400 level is driven in the hanging wall portion of the zone. Somewhat longer holes to the west would prospect the Little Prince vein at this level and perhaps the copper vein further to the west.

Surface and underground geological mapping, as well as surface and underground sampling, can be carried forward coincidental with the underground drilling for exploring the copper vein.

The writer has not considered surface drilling for two reasons: (1) steep topography in the area requires expensive road and drill site construction, expensive water hauling or pumping and (2) excessive long holes of wasteful drilling footage to achieve the same goal or encounter the same target.

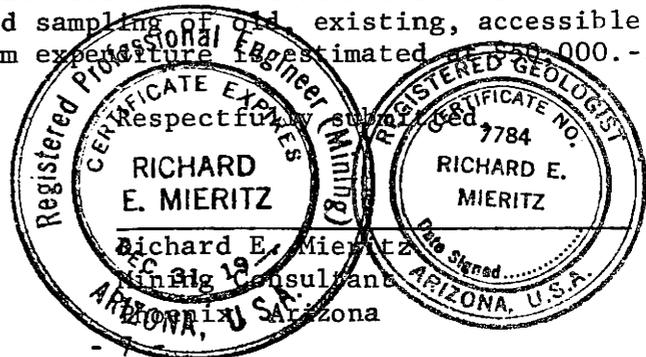
The suggested Phase I exploration program of the Middleton Vein and its cost is as follows:

Phase I

Geological mapping, surface and underground, Fee and Expenses	\$ 1,000.-
Surface and underground sampling (samplers and assaying)	1,000.-
Underground diamond drilling, 1200 feet @ \$20.00/foot including drilling extras, sampling and assaying	24,000.-
Project Supervision, Fees and Expenses \$2,000.-/mo. - 1 month	2,000.-
Contingencies, over run of work, under estimate	1,500.-
Phase I total	<u>\$ 29,500.-</u>

A Phase II program would include underground drilling to explore the silver vein potential below the 300 level with short holes as well as continued underground sampling of old, existing, accessible workings. A Phase II program expenditure is estimated at \$50,000.-.

August 20, 1977



## REPLY TO:

PHOENIX, ARIZONA 850-16  
TELEPHONE (602) 277-6053  
2940 N. Casa Tomas

# Richard H. Mieritz

MINING CONSULTANT

ARIZONA REGISTERED  
MINING ENGINEER AND GEOLOGISTGEOLOGY  
EXPLORATION  
EVALUATION  
FEASIBILITY  
OPERATION

August 20, 1977

Index Mines Ltd.  
342 - 8th Avenue NE  
Calgary, Alberta, T2E, OP9  
CANADA

Attn: Mr. Michael Harvey

RE: SWASTIKA MINE  
Yavapai County, Arizona

Gentlemen:

As requested and authorized by Mr. Michael Harvey, the writer visited the Swastika Mine property on August 18, 1977, to, among other things, observe the conditions at the property with regard the leach plant, its accessories, etc., and to report to you the writer's findings.

First off, Mr. Kenneth Harvey was not at the property nor did he arrive while the writer was present at the property. A Mr. Leon McDonald was at the property - busily pumping water into tanks.

The writer questioned Mr. McDonald at length - about many things concerning the operation, work done, the process, equipment, etc. Mr. McDonald has been at the property by himself since Sunday, August 14.

My last visit to the property was in November 1975 and at that time only some dozer work had been accomplished. The fact that some silver bullion and some gold bullion had been produced by electro-winning and that five (35 gallon?) cyanide barrels contain a fair amount of "sludge" - scrapings from the lower holding tank, would indicate that at some stage the leach plant and all its components were in operative condition.

At the time of my visit, August 18th, I did not find the leach plant, its components nor the earth moving equipment in operating condition. Frankly and bluntly, much is in disrepair - not that it cannot be revitalized, but would require many man hours to restore and put into an operative condition.

In talking with Mr. McDonald, the following was learned:

- (1) The D-6 dozer needs minor repairs.
- (2) The D-6 loader needs minor repairs - fuel injection pump, one brake, batteries.
- (3) Jaw crusher not in place and motor not connected to it.
- (4) The 25 kw and the 7.5 kw generators operative and in good shape.
- (5) The 12 ton Ford dump truck operative and in good shape.
- (6) The company pickup was demolished a short time ago.

My personal scrutiny and observation of the complete leach plant revealed the following:

- (1) The mixing tank, upper tank and middle tank all in place and appear to be in good, operative condition.
- (2) The lower, large tank dismantled and the pieces on the ground.
- (3) The fiberglass electro-winning gold and silver bullion tanks in place but not connected for service.
- (4) The metal electro-winning copper recovery tank not in place (in the weather at the shop). Needs to be coated on the inside to resist the chemical erosion of the pregnant solution.
- (5) The filter arrangement preceding the electro-winning section not in place, not connected.
- (6) The leach pad almost wholly cleaned out and in good shape but, in the opinion of the writer, would not hold 8,000 tons of broken material, much less 10,000 tons, the tonnage for which the plant was designed.
- (7) The dike arrangement for the lower tank is almost non-existent and would require almost complete new construction.
- (8) Many of the plastic piping connections were separated.

Included herewith are Polaroid photos of various components of the leach plant to indicate some of the conditions observed and of which the writer speaks.

For your review and edification, I have prepared a flow sheet of the leach plant indicating the various types of equipment and the route the solutions follow.

The overall picture and scheme appear to be satisfactory, however, the writer has some concern as to the operations efficiency. The plant apparently is designed to produce a gold bullion and a silver bullion by plating, yet, the "sludge" collected from the lower tank, as sampled, contained 0.58 oz/ton gold and 561.98 oz/ton silver.

This situation prompts the writer to opine that:

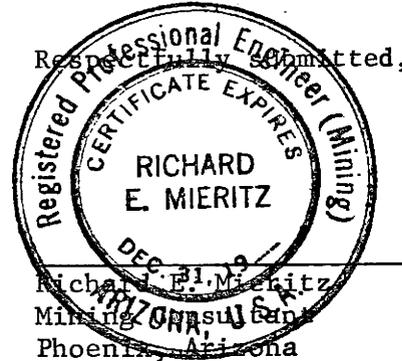
- (1) A slime circuit must be incorporated into the system, and/or
- (2) the leach retention time is not long enough, and/or
- (3) the leach solution is not strong enough, and/or
- (4) some of the silver minerals and/or copper minerals containing gold and silver are not attacked by the cyanide solution.

The writer has no idea as to the "head" content (gold-silver) nor the tonnage that was used to produce the 2½ tons (plus or minus) sludge, plus 44 pounds of silver bullion (524 ounces) and 9 pounds (108 ounces) of gold bullion. (These figures from Mr. McDonald.) The five barrels could contain 1,400 ounces silver which plus the bullion would indicate approximately 2,000 ounces silver were produced. The gold in the barrels plus the bullion would indicate 110 ounces of gold were produced. Unfortunately, the writer cannot relate this production to the crude material used because of the lack of grade and tonnage figures.

The writer opines that additional metallurgical test work must be completed in order to make proper and necessary changes to obtain a smooth flow scheme with high, efficient recovery rates for the gold, silver and copper metals.

It is the opinion of the writer that at least 1 to 1½ months of work would be required to repair the equipment to be used, rehabilitate the plant making the necessary changes, accomplish the necessary engineering work and metallurgical testing, the taking of sufficient samples of the crude material and establishing a routine procedure for sampling of the "heads" as the leach pad is filled, daily sampling of the pregnant solution and sampling of the leached material as it is being removed from the pad.

The writer believes the operation can be successful and efficient, but experienced, knowledgeable laboring personnel and professional personnel are a definite requirement.

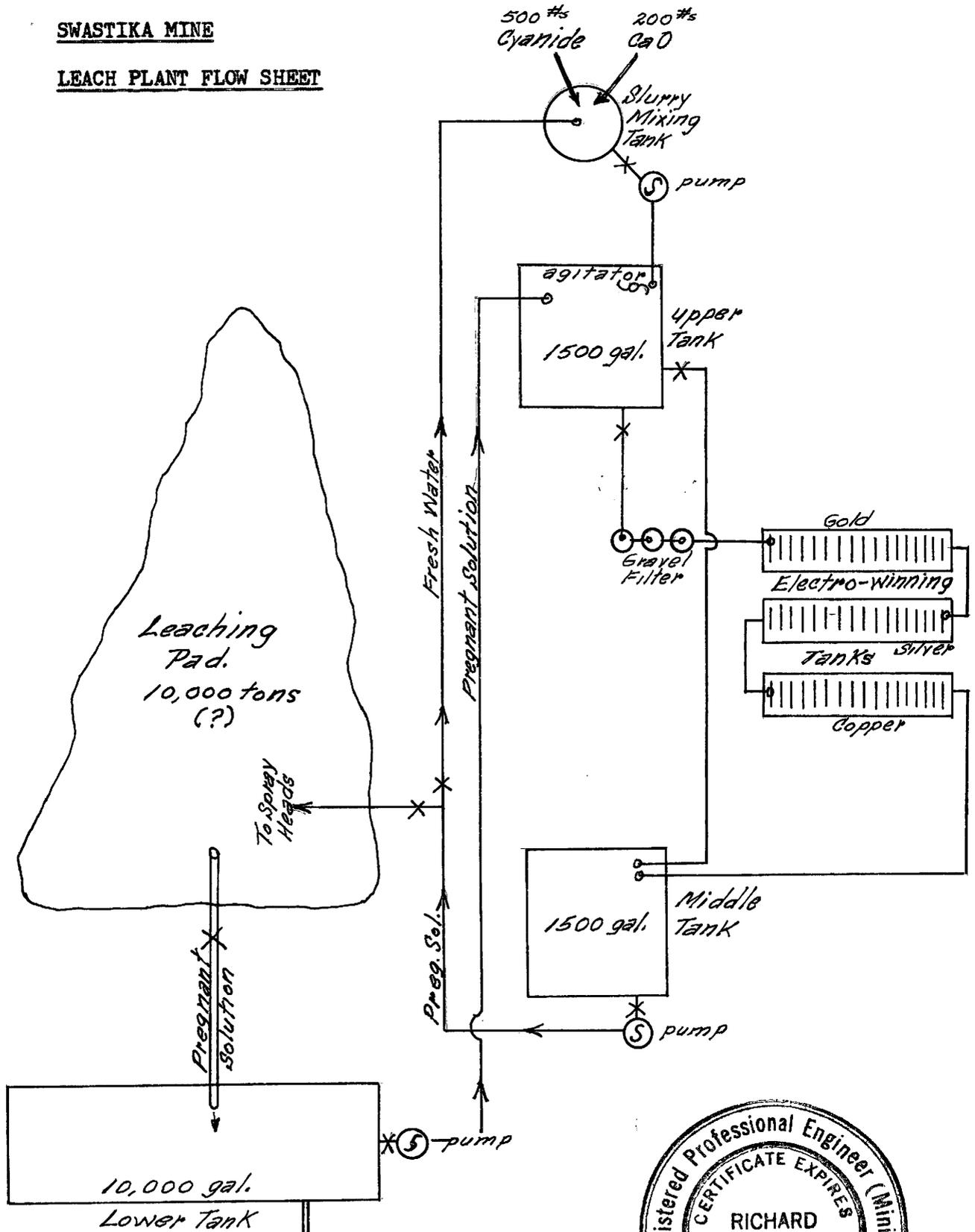


Aug. 20, 1977

REM/cm

SWASTIKA MINE

LEACH PLANT FLOW SHEET



July 20, 1977

Mr. Michael Harvey  
Index Mines Ltd.  
342 - 8th Avenue NE  
Calgary, Alberta, T2E, OP9  
CANADA

PRIVATE and CONFIDENTIAL

Dear Mr. Harvey:

From what I have seen on my visit to the Swastika on August 18th, from discussions with Mr. McDonald and Tommy Cleator on the same date, I am left with a very saddened heart to say the least. It was disheartening to learn that so much time - so much expense were devoted to the project to end in the state it is in at this moment.

If I am any judge of character at all, I would have to say that Mr. McDonald would make a good, hard working, serious and honest employee with fair qualifications towards or for supervision on a plane as "straw-boss." A higher level of supervision would be warranted after Mr. McDonald has worked on the operation for a period of time under experienced professional guidance and/or supervision.

I was made to understand that Kenneth Harvey had been at the property for some period of time - back to late 1976. Mr. McDonald advised he worked at the property from March 29 to July 15, was laid off and returned on August 15th. Mr. Terry Fogo worked at the property from April 7, 1977 to August 1, 1977 on which date both Messrs. Harvey and Fogo left the property. Assumedly it remained unattended from August 1 to August 15, 1977.

Mr. McDonald advised of other things, however, I neither credit nor discredit this information and thus will not comment as to what I was advised, which is now all in the past.

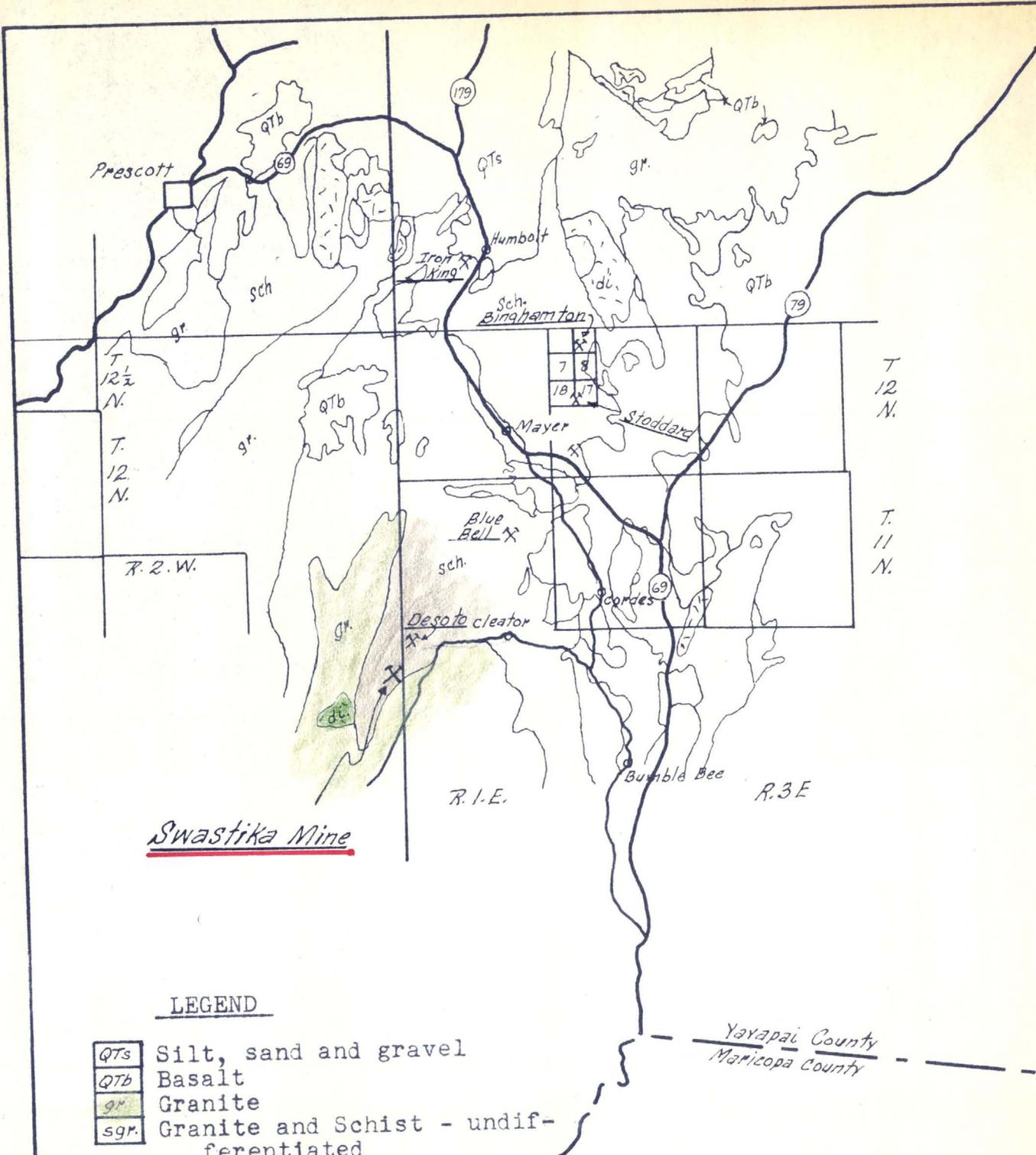
There is, however, one point I wish to mention which Mr. McDonald advised and that is the fact that both the gold bullion and the silver bullion are not in the office building where they were placed some time ago. I must assume this was produced during the period of last operation, however, it is Mr. McDonald's work and information.

Normally, I refrain from discussing or writing about personnel and personnel problems, but in this case with you in Calgary and with no responsible company representative at the property, I felt a certain responsibility to you - as a client.

Sincerely yours,

Richard E. Mieritz

REM/cm



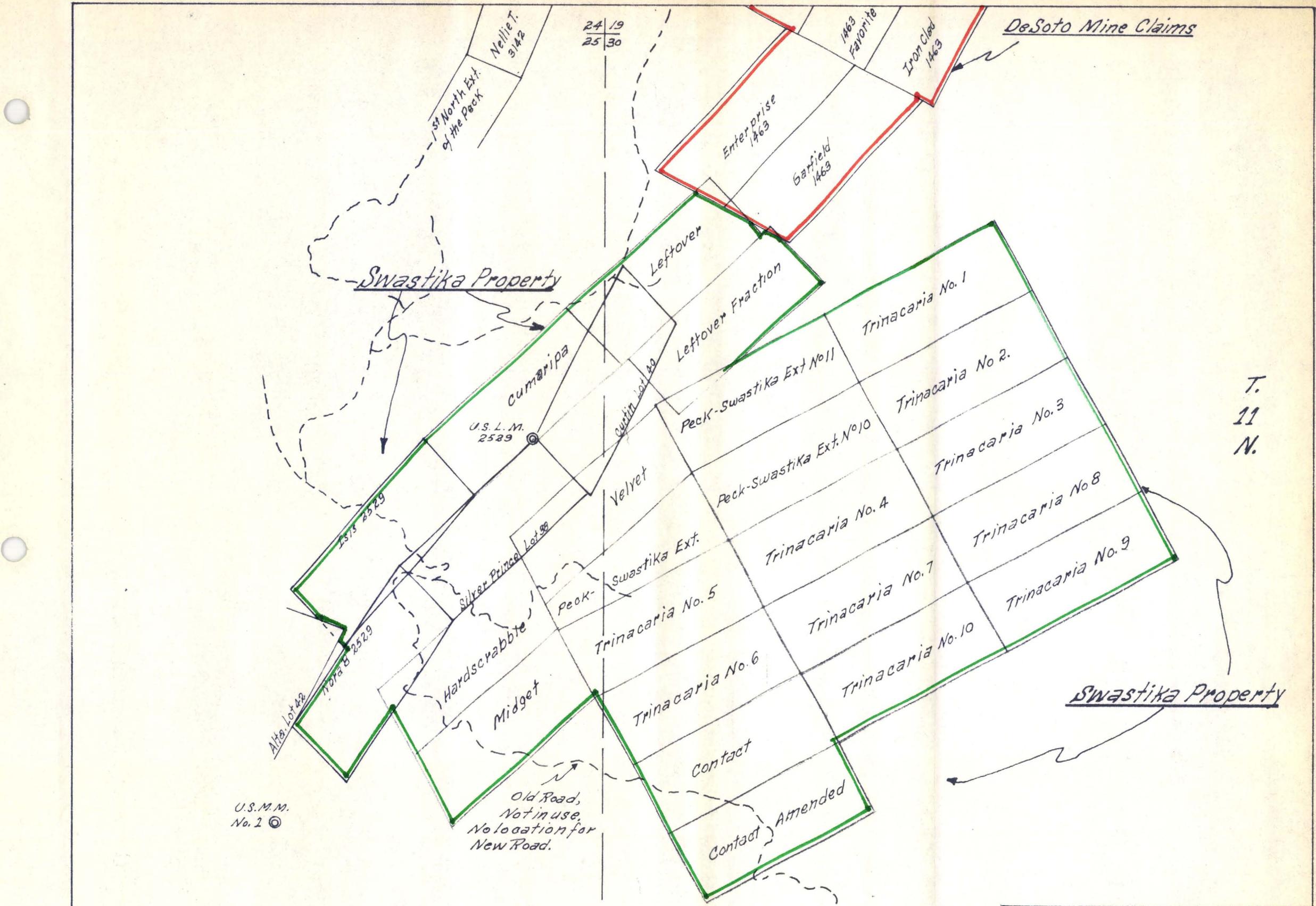
Swastika Mine

LEGEND

- QTs Silt, sand and gravel
- QTb Basalt
- gr. Granite
- sgr. Granite and Schist - undifferentiated
- Sch. Schist
- dt. Diorite porphyry

Yavapai County  
Maricopa County

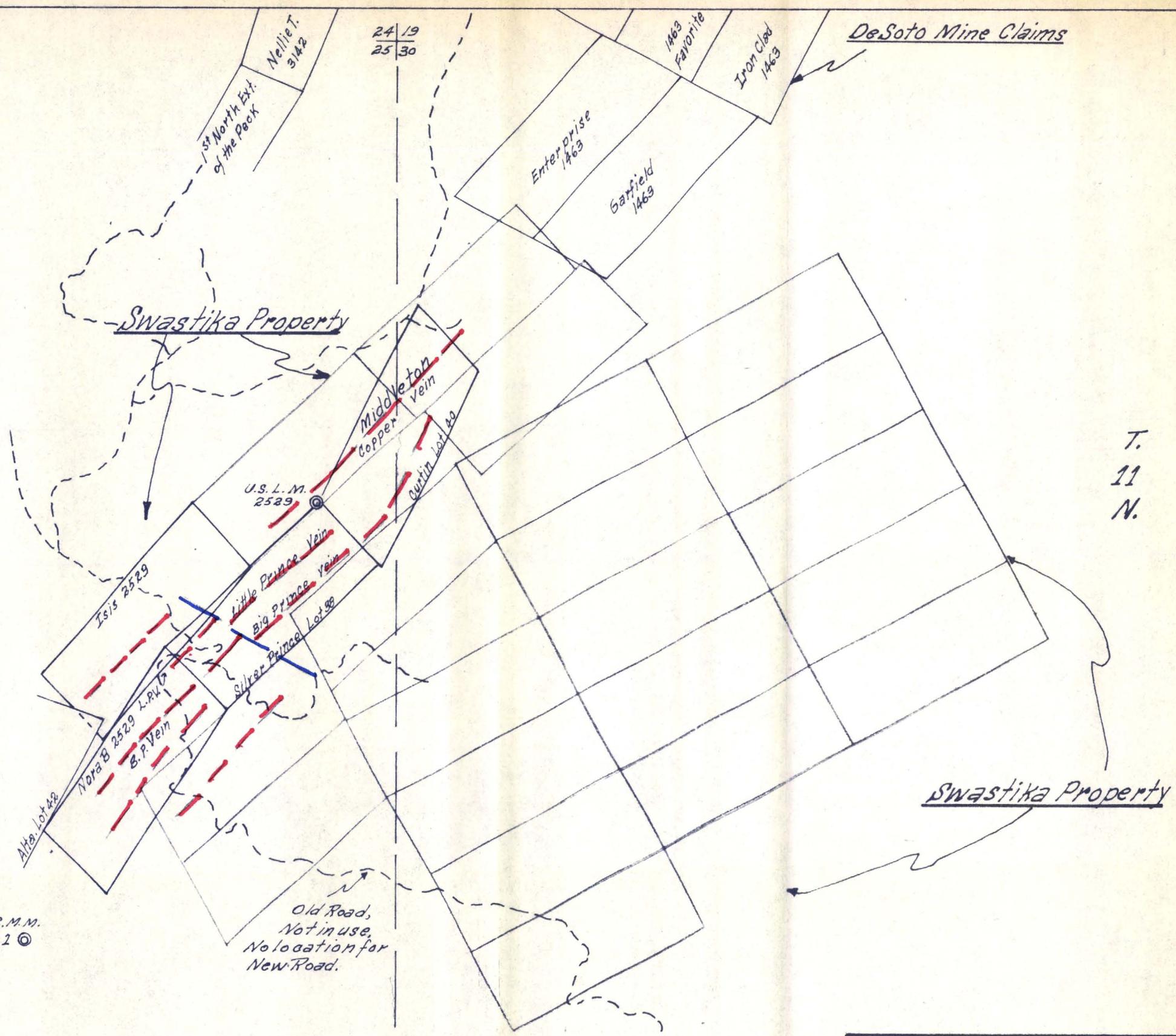
GEOLOGIC MAP  
 Portion of  
 Yavapai County, Arizona  
 Scale: 1" = 6 miles  
 Feb., 1969  
 R.E. Mieritz  
 Map 1



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**CLAIM MAP**  
 SWASTIKA MINE  
 PECK MINING DISTRICT  
 Yavapai County, Arizona  
 SCALE: 1" = 800 Ft..  
 October, 1973 R. E. Mieritz

R. I. W. R. I. E.



**VEIN SYSTEM MAP**  
 SWASTIKA MINE  
 PECK MINING DISTRICT  
 Yavapai County, Arizona  
 SCALE: 1" = 800 Ft..  
 October, 1973 R. E. Mieritz

MAP No. 3