

'81-# 152-# 8968

# ASSESSMENT REPORT

Geological and Sampling Report

on the

INDEPENDENCE CLAIM GROUP

Independence	R1146	-	6 units
Independence No.1	R2023	-	16 units
Independence No.2	R2024	-	8 units
Banana	R1626	-	10 units

Located in the Skeena Mining Division

104A / 4W

Latitude 56°05'  
Longitude 129°55'

Owner and Operator of the Claim Group is

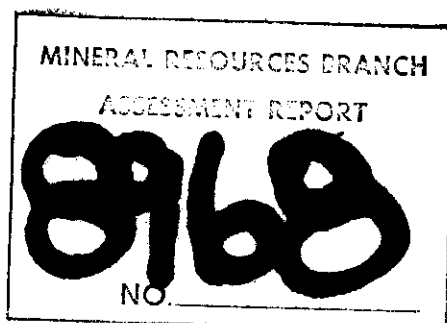
TOURNIGAN MINING EXPLORATIONS LTD.

Report by

JOHN DELEEN, P. Eng.

and

D. KLEPACKI



December 10, 1980.

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INTRODUCTION(i) LOCATION AND ACCESS

The Independence Claims are located on the western side of the Coast Range Mountains of British Columbia about 11 kilometers north of the town of Stewart, B.C. (See Figure 1). The relief on the claim group varies from 150 meters at the Bear River to 1,450 meters on the western side of the claim group, (See Figure 3).

Access to the claim group is by helicopter from the town of Stewart, B.C.

(ii) PROPERTY (Figure 2)

The Independence Group of claims includes the following claims:

				<u>Expiry Date</u>
Independence	R 1146	-	6 units	February 19, 1981
Independence No.1	R 2023	-	16 units	February 6, 1981
Independence No.2	R 2024	-	8 units	February 6, 1981
Banana	R 1626	-	10 units	August 20, 1981

The owner of the Independence Group is Tournigan Mining Explorations Ltd., Suite 704, 535 Thurlow Street, Vancouver, B.C.

The mineralization in the lower tunnel is galena, sphalerite, pyrite and tetrahedrite that occurs with quartz fragments in a vein structure.

The rocks mapped on the claim group are a series of andesite flow and tuffs which have been divided into five units. Forty-nine days were spent in mapping the surface and underground workings in August, 1980. The surface mapping was completed on a scale of 1:5000 and the underground mapping on a scale of 1:1200.

The property has a long history of exploration. The Independence Group was first noted in the 1909 Annual Report of the Minister of Mines. The early exploration consisted of drilling tunnels. Four tunnels were completed, however, only three tunnels remain open to date. The lower tunnel, Figure 4, has a total length of about 1200 meters. It is located at an elevation of about 900 meters. Two short tunnels are located in a ravine immediately to the east of the old camp-site. The lowest of these tunnels is located at an elevation of about 870 meters. This tunnel has a length of 25 meters. The upper tunnel, located 75 meters to the northwest, has a length of about 5 meters.

(iii) SUMMARY OF WORK COMPLETED

Geological mapping was carried out in the area of the old workings. The underground workings were sampled by Messrs. Klepacki, Foellmer and DeLeen, P. Eng. The surface geology was mapped by Messrs. Klepacki and Foellmer. The surface was mapped on a scale of 1:500 and an area of 1500 by 600 meters was mapped. The lower tunnel was mapped on a scale of 1:1200. The total length of workings investigated in the lower tunnel was 400 meters.

A total of 19 samples were taken from the underground and surface workings on the Independence Group.

GEOLOGY (Figure 3)

The geology of the mineralized area was mapped by D. W. Klepacki of Geotec Consultants Ltd. The following notes and Figure 3 were completed by Mr. Klepacki.

The bedrock of the Independence Claim Group is a sequence of massive volcanics and tuffs of intermediate composition overlain by bedded sediments and tuffs with some acidic units. These are intruded by dikes of porphyritic (plagioclase, amphibole, pyroxene) diorite,

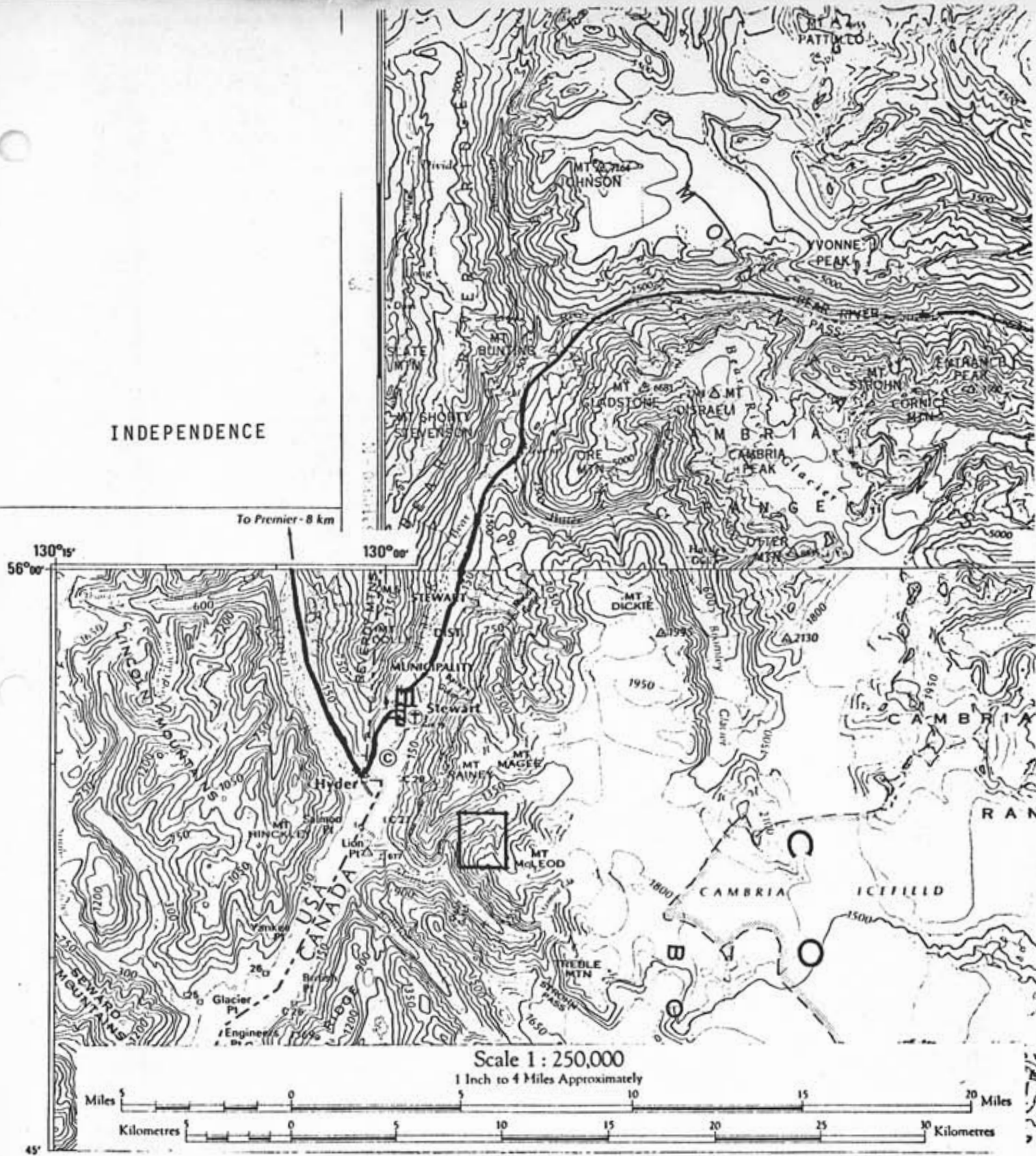


FIGURE 1  
 LOCATION MAP  
 INDEPENDENCE GROUP - STEWART AREA, B. C.

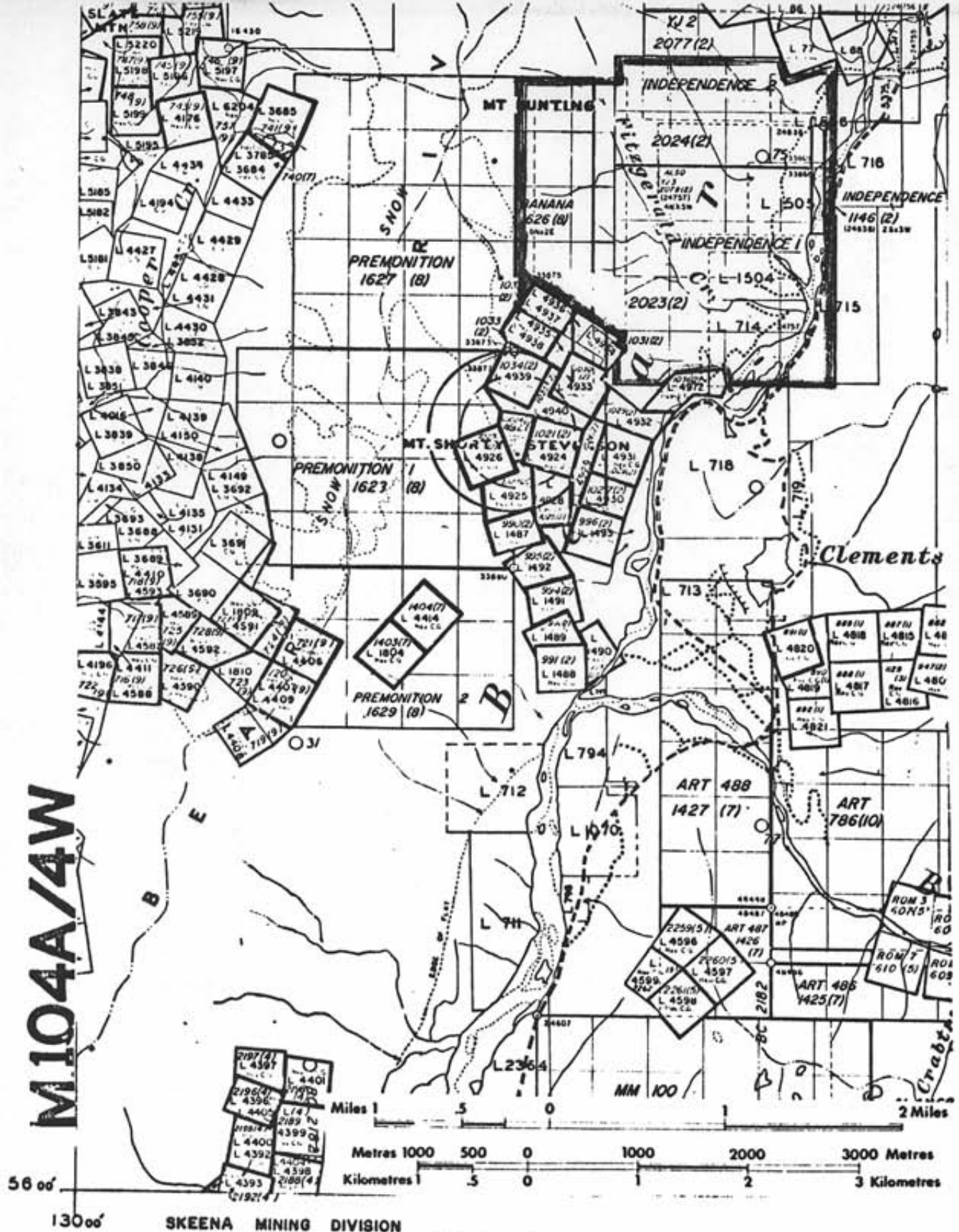


FIGURE 2

INDEPENDENCE CLAIMS

Bear River  
Stewart, B. C.

Scale 1:50,000

equigranular hornblende-biotite granodiorite and aphanitic dacite. Earlier regional work (B. C. Dept. of Mines and Petroleum Resources) has assigned the massive volcanic rocks to the lower to Middle Jurassic Hazelton assemblage, and the bedded tuffs and sediments to the Middle to Upper Jurassic Bowser assemblage. No evidence of angular unconformity or basal conglomerate was seen during this field work.

No good bedding was found in the massive volcanic units and the sequence of lithologies is structural and not necessarily stratigraphic. Graded beds in the bedded tuffs and sediments show these strata to be stratigraphically up right. The succession is as follows; starting with the uppermost unit.

- UNIT 5            Light grey-green and grey, fine to coarse-grained bedded sand stones, greywackes, tuffs and lithic tuffs, minor white rhyolite tuffs
- UNIT 4            Grey-green and red bedded tuffs, lithic tuffs and volcanic conglomerates. Local aphanitic dacite flows
- UNIT 3            Dark grey-green and reddish grey porphyritic (altered plagioclase and pyroxene) meta andesite flows and tuffs
- UNIT 2            Red and dark grey fine-grained massive tuffs, local medium grained lithic tuffs, minor porphyritic (feldspar) tuffs
- UNIT 1            Grey-green, fine grained porphyritic (plagioclase) meta-andesite flows and tuffs. Altered pyroxene phenocrysts locally present

Intrusive rocks of the Portland Canal dike swarm cut all strata mapped. These rock types are:

Light grey, equigranular, medium grained hornblende biotite granodiorite.

Grey, porphyritic (plagioclase, pyroxene) fine grained diorite.

Grey, fine grained dacite, often showing flow structures near margin.

Dikes typically have aphanitic chilled margins, trend approximately  $140^{\circ}$  and are vertical to steeply northeast dipping.

### STRUCTURE

The massive nature of Hazelton lithologies masked mesostructures. Mapped contacts resolved no large scale structures. Many small fault zones, indicated by sheared rock and fault breccia were found along dike contacts, trending parallel to the contact. Faults also are found in mineralized zones where vugs and fine well shaped quartz crystals are common. Drag folds in late dacite dikes show east side down movement. Bedding-cleavage relationships show anticline of post Bowser age to the east of the mapped area. Pre-existing structures in the Hazelton rocks were not resolved.

### MINERALIZATION

Mineralization on the Independence claims occurs as zones of banded jasper-silica with sulphides concordant to layering Barite crystals, as rectangular laths to 10 cm long are common in most showings. Sulphides are pyrite, phrrhotite, and chalcopyrite, with sphalerite and galena in higher grade layers. Infilled agate mineralization is common, as is layering of silica in various shades of green, red and black. The mineralized zones are adjacent to, and cut by, Portland Canal dike rocks. Late aphanitic dacite dikes cut mineralized

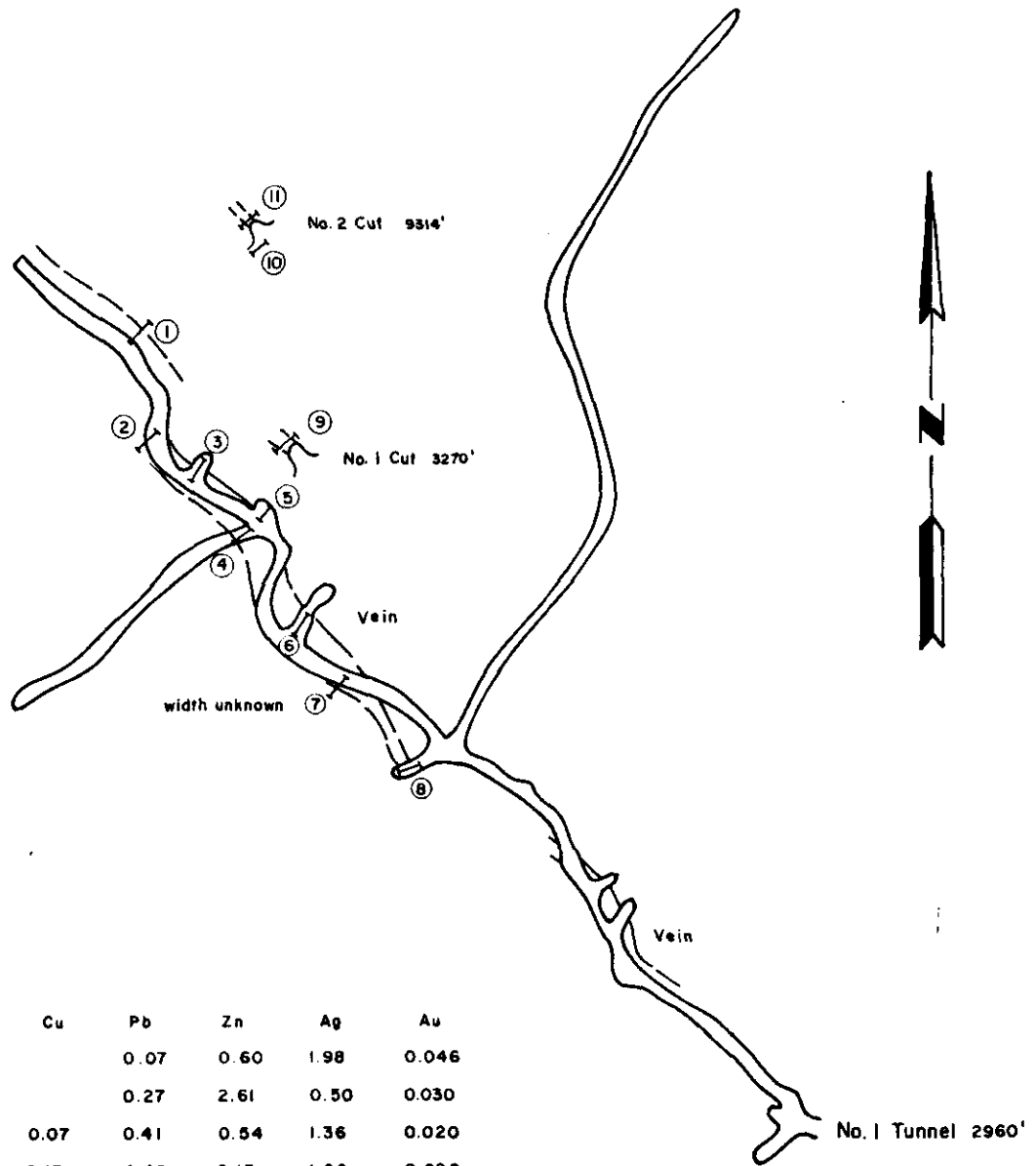


zones. Like the dikes the trend of mineralized zones and jasper layering runs from 140/70 NE to 123/90 which is perpendicular to contacts of the volcanic units. On these bases the mineralization event appears to be vein type mineralization associated with the intrusion of the Portland Canal dike system. Mineralized zones, mapped as oxidized sulfide zones on surface exposure are of limited strike length and thickness. They may be pictured as hand shaped tabular bodies whose greatest dimension is along strike, plunging gently into the mountainside. Criteria such as favourable stratigraphic horizons that host mineralization are not evident, so further exploration would follow extensions of exposed mineralized zones or search for similar zones adjacent to the same dike.

#### SAMPLING RESULTS (Figures 3 & 4)

Eight samples were taken from the vein in the lower tunnel. These samples have been plotted on Figure 4. The vein has a width of about 3 meters and a length in excess of 200 meters. The copper content in the vein samples varied from 0.7 to 4.66%, the lead from 0.07 to 4.40%, the zinc from 0.52 to 2.96%, the silver from 0.50 to 2.72 ounces and the gold from 0.020 to 0.46 ounces per ton.

The copper content of the surface samples varied from trace to 0.09%, the lead content from 0.01 to 0.24%, the zinc from 0.03 to 0.39%, the silver from 0.12 to 4.18 ounces per ton and the gold from trace to 0.004 ounces per ton.



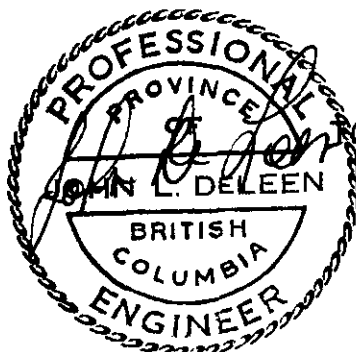
SAMPLE No.	WIDTH	Cu	Pb	Zn	Ag	Au	
1	3.0 m		0.07	0.60	1.98	0.046	
2	3.0 m		0.27	2.61	0.50	0.030	
3	6.0 m	0.07	0.41	0.54	1.36	0.020	
4	3.0 m	0.15	4.40	2.13	1.26	0.028	
5	1.5 m	0.33	0.25	0.21	0.80	0.040	
6	1.5 m	0.51	0.26	1.99	1.82	0.005	
7	+1.0 m	0.15	0.21	2.96	2.06	0.020	Width unknown
8	2.0 m	4.66	0.27	0.52	2.72	0.024	
9	3.0 m	0.09	0.24	0.39	2.08	0.005	Surface cut No.1
10	Grab-dump	0.01	0.04	0.07	4.18	0.003	Surface cut No.2 (Grab)
11	5.5 m	0.01	0.09	0.18	3.26	0.003	Surface cut No.2 Channel



Vein - Zone

**NOTE:**

Survey by Geological  
Survey of Canada



FOURNIGAN MINING EXPLORATIONS LTD.  
INDEPENDENCE PROPERTY

LOWER TUNNEL  
STEWART, B.C.



SCALE IN FEET  
1:1200

*David Klepodi*

SEPT 1980

FIGURE 4

CONCLUSION

The initial sampling has indicated that there are zones of economic mineralization on the Independence group of claims. A program of geological mapping, prospecting and trenching on the Independence Group of claims is warranted.

Respectfully submitted



*John DeLeen*

John DeLeen, P. Eng.

*David Klepacki*

D. W. Klepacki

December 10, 1980

INDEPENDENCE PROPERTY

Geological Mapping and Sampling

STATEMENT OF EXPENDITURES

July 31 - August 25, 1980

WAGES:	John Hembling, Geologist	4 days @ \$ 300/day	\$ 1,200.00
	Dave Klepacki, Geologist	18½ " @ 150/day	2,775.00
	Kurt Foellmer	15 " @ 73/day	1,095.00
	Don Duncan	15 " @ 91/day	1,365.00
HOTEL & MEALS:	J. N. Hembling	4 days @ \$ 56/day	224.00
	D. Klepacki, Duncan & Foellmer	15 days @ 56/day ea = 168.00	2,520.00
TRANSPORTATION:	Helicopter - 24 hours @ \$360/hr - \$8,640		
		50% =	4,320.00
FREIGHT TO VANCOUVER:	Shipping Samples		250.00
DRAFTING IN VANCOUVER			800.00
SAMPLING:	19 samples analyzed for Ag, Au @ \$9.50 ea.		180.50
	12 samples " " Pb, Zn @ 11.50 "		138.00
	5 samples " " Cu @ 5.50 "		<u>27.50</u>
			<u>\$14,895.00</u>

**DELEEN CONSULTING GEOLOGISTS LTD.**

1015 - 837 W. HASTINGS STREET  
VANCOUVER, B.C. CANADA V6C 1C4

TELEPHONE (604) 685-5533  
TELEX - 04 - 54575

**CERTIFICATE**

I, John L. DeLeen, of the City of Vancouver in the Province of British Columbia, hereby certify the following:

1. I am a geological and mining engineer with an office at 1015 - 837 West Hastings Street, Vancouver, B.C.
2. I am a graduate of the University of British Columbia with a B.A. Sc. (1943) and M.A. Sc. (1946) degrees in Geological Engineering. In 1950 I obtained the degree of Mining Engineer from the University of California.
3. I have practised my profession since 1946.
4. I am a member of the Association of Professional Engineers of British Columbia.
5. I have no interest, direct or indirect, in the Independence Property, or in Tournigan Mining Explorations Ltd., nor do I expect to receive any such interest in the future.
6. This report is based upon personal examination of the Property in July, 1980, and upon the reports of the British Columbia Department of Mines.

DATED at Vancouver, B. C. this 10th day of December, 1980.

John L. DeLeen, P. Eng.

## DAVID WALTER KLEPACKI

## SUMMARY OF EDUCATION, EXPERIENCE AND PUBLICATIONS

Education:

- 1980 M.Sc. Geology, University of British Columbia, Vancouver, B.C.  
 1978 B.Sc. Geology, University of Massachusetts, Amherst, Mass.

Experience:

Presently working for Geotex Consultants Ltd. and finishing write-up of thesis.

Summer 1980 Worked for Geotex Consultants as consulting Structural Geologist. Projects included property evaluation, structural analysis in producing areas, regional work resolving geologic hazards near potential damsites and Geologic Survey of Canada subcontract map areas (1:50,000). Extensive helicopter work.

1979 - 80 Teaching Assistant, University of British Columbia. 1st year Intro. Geology, 2nd year Structure and Stratigraphy, 3rd year Petrology, Structural Geology, 4th year Advanced Structure.

Summer 1979 Detailed mapping of 88 sq. km. at 1:25,000 in Cariboo Mountains for M.Sc. thesis to resolve complicated structural relations on margin of high grade infrastructure.

Summer 1978 Worked for Chevron Resources, Inc., Golden, Co. as summer assistant, evaluating properties for mineral resources in the southern Appalachians. Work involved geologic traverses, core logging, geochemical and geophysical data collection and analysis.

Spring 1978 Employed by United States Geological Survey, Reston, as a technical assistant under the supervision of Dr. Peter Robinson, to aid in the compilation of the Massachusetts State Geologic Map. Work involved reconnaissance mapping, mapping with a ground magnetometer and map compilation.

Summer 1977 Employed by Dr. Peter Robinson as a summer assistant for field work on the Mass. State Geologic Map.

Summer 1976 Field assistant to Dr. Richard Jackson as an aid in mapping his Ph.D. in West-Central Connecticut.

Publications:

Read, P.B. and Klepacki, D.W. (1981 in press):

"Stratigraphy and Structural Relations in the Shuswap Metamorphic Complex, Vernon East Half, Southern British Columbia, in Report of Activities," Geol. Surv., Canada, Paper 81-1A

Greenwood, H.J. Ross, J. V., Kelepacki, D., and Getsinger, J. (1979): Cariboo Mountains Project, B.C. Ministry of Energy, Mines & Pet. Resources, Geological Fieldwork, 1979, Paper 1980-1, pp. 150-155.

REFERENCES

"Bear River and Stewart Map Areas, Cassiar  
District, B.C."

G. Hanson, GSC Memoir 159, 1929

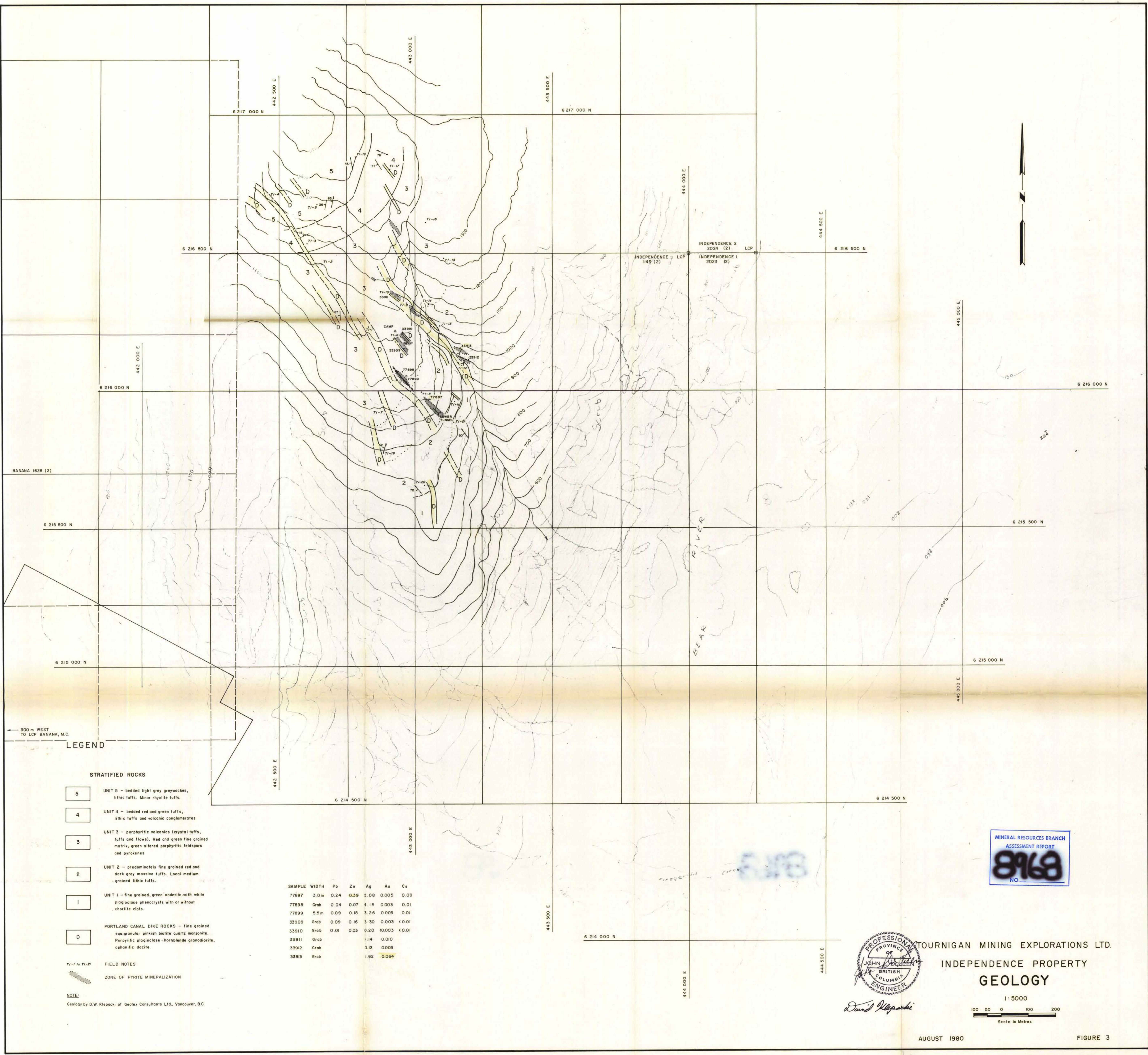
"Portland Canal Area, British Columbia",

G. Hanson, GSC Memoir 175, 1935

"Geology and Mineral Deposits of the  
Stewart Area"

E. W. Grove, Bulletin No.58,  
B. C. Department of Mines

Annual Reports of the Minister of Mines



BANANA 1626 (2)

300 m WEST TO LCP BANANA, M.C.

**LEGEND**

**STRATIFIED ROCKS**

- 5** UNIT 5 - bedded light grey greywackes, lithic tuffs. Minor rhyolite tuffs.
  - 4** UNIT 4 - bedded red and green tuffs, lithic tuffs and volcanic conglomerates
  - 3** UNIT 3 - porphyritic volcanics (crystal tuffs, tuffs and flows). Red and green fine grained matrix, green altered porphyritic feldspars and pyroxenes
  - 2** UNIT 2 - predominately fine grained red and dark grey massive tuffs. Local medium grained lithic tuffs.
  - 1** UNIT 1 - fine grained, green andesite with white plagioclase phenocrysts with or without chlorite clots.
  - D** PORTLAND CANAL DIKE ROCKS - fine grained equigranular pinkish biotite quartz monzonite. Porphyritic plagioclase-hornblende granodiorite, aphanitic dacite.
- T1-1 to T1-21 FIELD NOTES
- ZONE OF PYRITE MINERALIZATION

**NOTE:**  
Geology by D.W. Klepacki of Geotex Consultants Ltd., Vancouver, B.C.

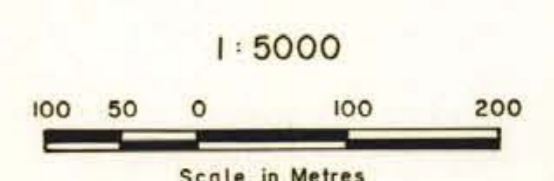
SAMPLE	WIDTH	Pb	Zn	Ag	Au	Cu
77897	3.0m	0.24	0.39	2.08	0.005	0.09
77898	Grab	0.04	0.07	4.18	0.003	0.01
77899	5.5m	0.09	0.18	3.26	0.003	0.01
33909	Grab	0.09	0.16	3.30	0.003	<0.01
33910	Grab	0.01	0.03	0.20	0.003	<0.01
33911	Grab			1.14	0.010	
33912	Grab			0.12	0.003	
33913	Grab			1.62	0.064	

MINERAL RESOURCES BRANCH  
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NO.



David Klepacki

TOURNIGAN MINING EXPLORATIONS LTD.  
INDEPENDENCE PROPERTY  
**GEOLOGY**



AUGUST 1980

FIGURE 3