

PRELIMINARY ECONOMIC GEOLOGY REPORT

on the

SNOW PEAK PROPERTY

The Mack No. 1 to No. 28 Mineral Claims
Centered 16 air miles west of the
Settlement of Dease Lake

LIARD MINING DIVISION
Northern British Columbia
Latitude 58°30'N; Longitude 130°20'W
N.T.S. 104 j/8

and owned by TOURNIGAN MINING EXPLORATIONS LTD.,
of Vancouver, B.C.

(Molybdenum - Copper - Tungsten)

Report by:

"D. R. Cochrane"

D. R. Cochrane, P. Eng.,
Delta, B.C.
July 18, 1971

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PART A

A-1 INTRODUCTION:

Early in July 1971, the author visited the Snow Peak Property of Tournigan Mining Explorations Ltd. The mineral claims are located at an elevation of just over 6,000 feet above sea level and are situated 16 air miles west of the south end of Dease Lake in Northern B.C. The purpose of the visit was to examine and evaluate a molybdenum-copper occurrence exposed mainly on a cirque rim of Snow Peak. This report describes the molybdenum-copper occurrence and contains recommendations and an estimate of cost of the recommended work. It is based on a personal examination of the "showings" and a review of all available data.

A-2 SUMMARY:

1. Tournigan Mining Explorations of Vancouver, B.C. owns outright a total of 28 full sized mineral claims located on Snow Peak in the Liard Mining Division. Access by helicopter from a temporary summer base is facilitated from the settlement of Dease Lake.
2. Dease Lake will be the railhead of the proposed extension of the P.G.E. railway and its presence will substantially alter mineral economics. (1)*
3. The molybdenite occurrence was staked in 1966 by a local prospector and allowed to lapse the next year. To the author's knowledge, no thorough exploration work has ever been conducted on the property.
4. The Mack claims cover a quartz monzonite stock which intrudes Lower Jurassic metasedimentary rocks. The stock is pyritized, and fractures and veinlets of quartz contain molybdenite and chalcopyrite. Bedrock outcrops are not extensively mineralized but mineralization is quite widespread. Molybdenite and chalcopyrite are exposed along a cirque rim for a distance of 2,000 feet and samples of decomposed rock and soil range from 50 to 4,000 p.p.m. molybdenum, (0.005 to 0.4 percent Mo) and copper between 140 and 650 p.p.m. (3)
5. Photogeological studies suggest that extra-polated geological contacts intersected by distinct photo linears occur in overburdened areas. The loci of linear intersection fall in the center of a small tarn lake and intensive shattering of the intrusions is suspected in this area. (5)

* numbers in brackets refer to bibliography tabulated in Appendix II

A-3 CONCLUSIONS:

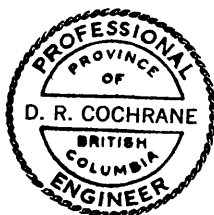
There are sub-ore amounts but sufficient copper and molybdenum metalization to warrant a preliminary exploration program of the Mack claims on Snow Peak.

A program is recommended to:

- (a) explore by indirect geochemical and geophysical methods areas now covered by overburden;
- (b) provide more economical ground access route to the property and area;
- (c) evaluate by direct geological, stripping and drilling methods the most favourable areas of the Mack Group.

The estimated cost of the program detailed in Section C-4 is \$45,000.00.

Respectfully submitted,



"D. R. Cochrane"

D. R. Cochrane, P. Eng.,
July 18, 1971,
Delta, B.C.

PART B

B-1 LOCATION AND ACCESS:

The Mack claims on Snow Peak are centered 16 air miles west of the settlement of Dease Lake in northern British Columbia. Dease Lake is accessible from Watson Lake, Y.T., via the Cassiar-Telegraph Creek Road which joins the Alaska Highway a few miles west of the town of Watson Lake. A D.O.T. landing strip close to the weather station at Dease Lake is suitable for small aircraft, and in the summer months, a helicopter base operates from near the south end of Dease Lake. The Dease Lake-Telegraph Creek Road extends southwest from the south end of Dease and crosses Auguschidle Creek some 16 miles west of the settlement. Auguschidle Creek drains the south flank of Snow Peak, and at this point the claims are 8 air miles north of the road. The Pacific Great Eastern railway extension through to the south end of Dease Lake has been surveyed and clearing of the right-of-way is proposed. (1) The presence of the rail head some 16 miles west of the Snow Peak property will certainly significantly alter mineral economics.

The claims center reference co-ordinates are: Latitude 58°30'N; Longitude 130°20'W and the N.T.S. reference code is 104 J/8. (See figure 1)

B-2 CLAIMS AND OWNERSHIP:

The Mack Numbers 1 to 28 claims form a contiguous block of full sized located mineral claims. (See Figure 2) They are owned outright by Tournigan Mining Explorations Ltd., of 1177 West Hastings Street, Vancouver, B.C. The claims are located in the Liard Mining Division and are outlined on B.C. Department of Mines Claims Map 73M-3. Mack Claims Numbers 1 to 28 have corresponding record numbers of 39272 to 39299 inclusive. The author inspected a claim post and claims appear to have been staked in accordance with the regulations set out in the Mineral Act of the Province of British Columbia.

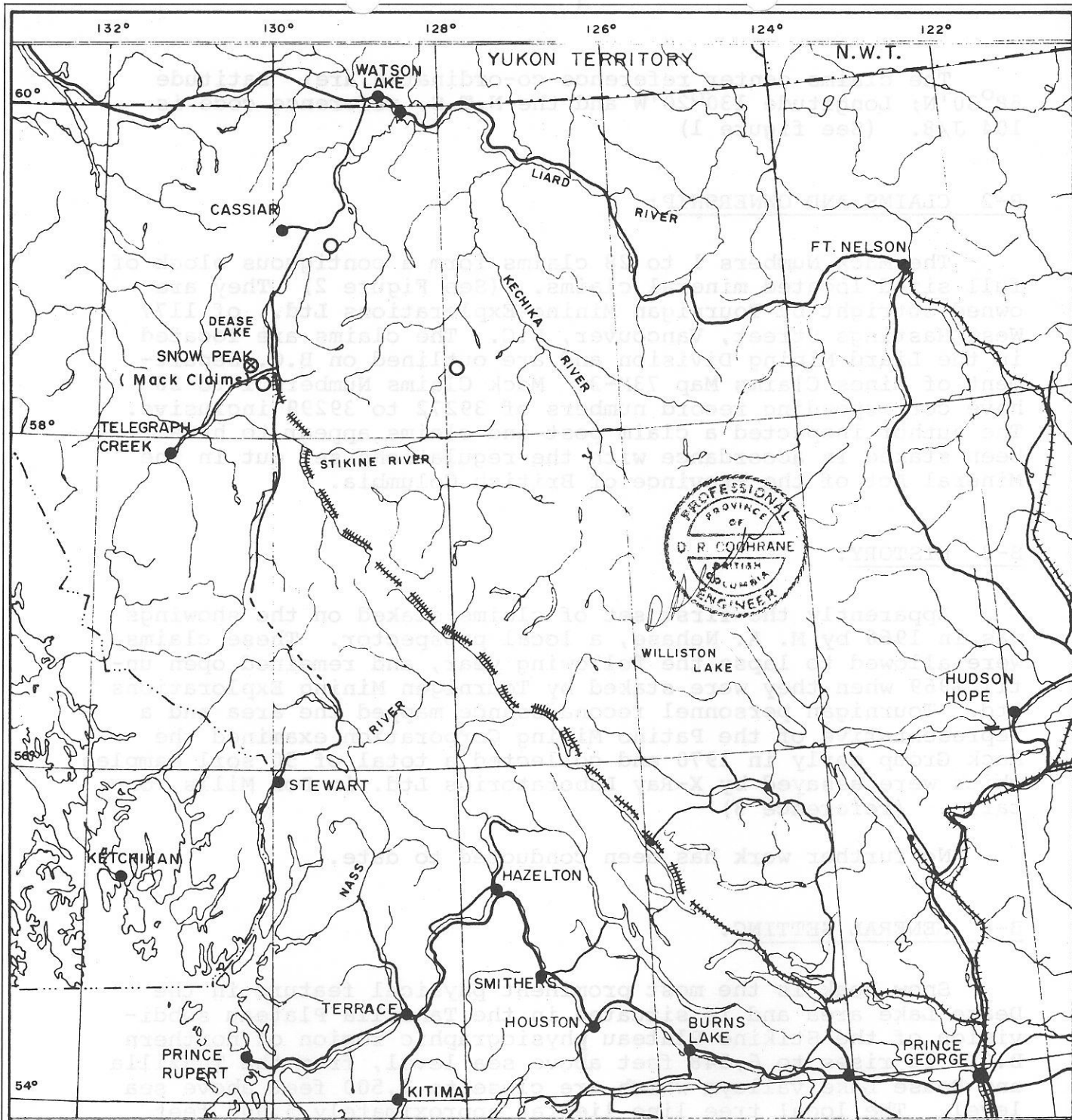
B-3 HISTORY:

Apparently the first set of claims staked on the showings was in 1966 by M. A. Nehase, a local prospector. These claims were allowed to lapse the following year, and remained open until 1969 when they were staked by Tournigan Mining Explorations Ltd. Tournigan personnel reconnaissance mapped the area and a representative of the Patino Mining Corporation examined the Mack Group early in 1970 and collected a total of 50 soil samples which were assayed by X-Ray Laboratories Ltd. in Don Mills, Ontario. (reference 3)

No further work has been conducted to date.

B-4 GENERAL SETTING:

Snow Peak is the most prominent physical feature in the Dease Lake area and is situated in the Tanzilla Plateau subdivision of the Stikine Plateau physiographic region of northern B.C. It rises to 6,348 feet above sea level, from the Tanzilla and Dease Lake valleys which are close to 2,500 feet above sea level. The local tree line lies at approximately 5,000 feet and thus the claims are covered by alpine flora. A small tarn lake is located in the north claims area, and drainage is northerly into Little Dease Creek. The south claims area is drained by an upper branch of Tatsho Creek and Auguschidle Creek. The Dease Lake area was mapped by H. Gabrielse, J. G. Souther and E. F. Roots during "Operation Stikine" in the late 1950's. The Geological Survey Map number is 21-1962. (2)



LEGEND

- ##### P.G.E. Riwy.
- ## ## P.G.E. (proposed)
- Highways
- ▷ Cities and Towns
- ⊗ Properties

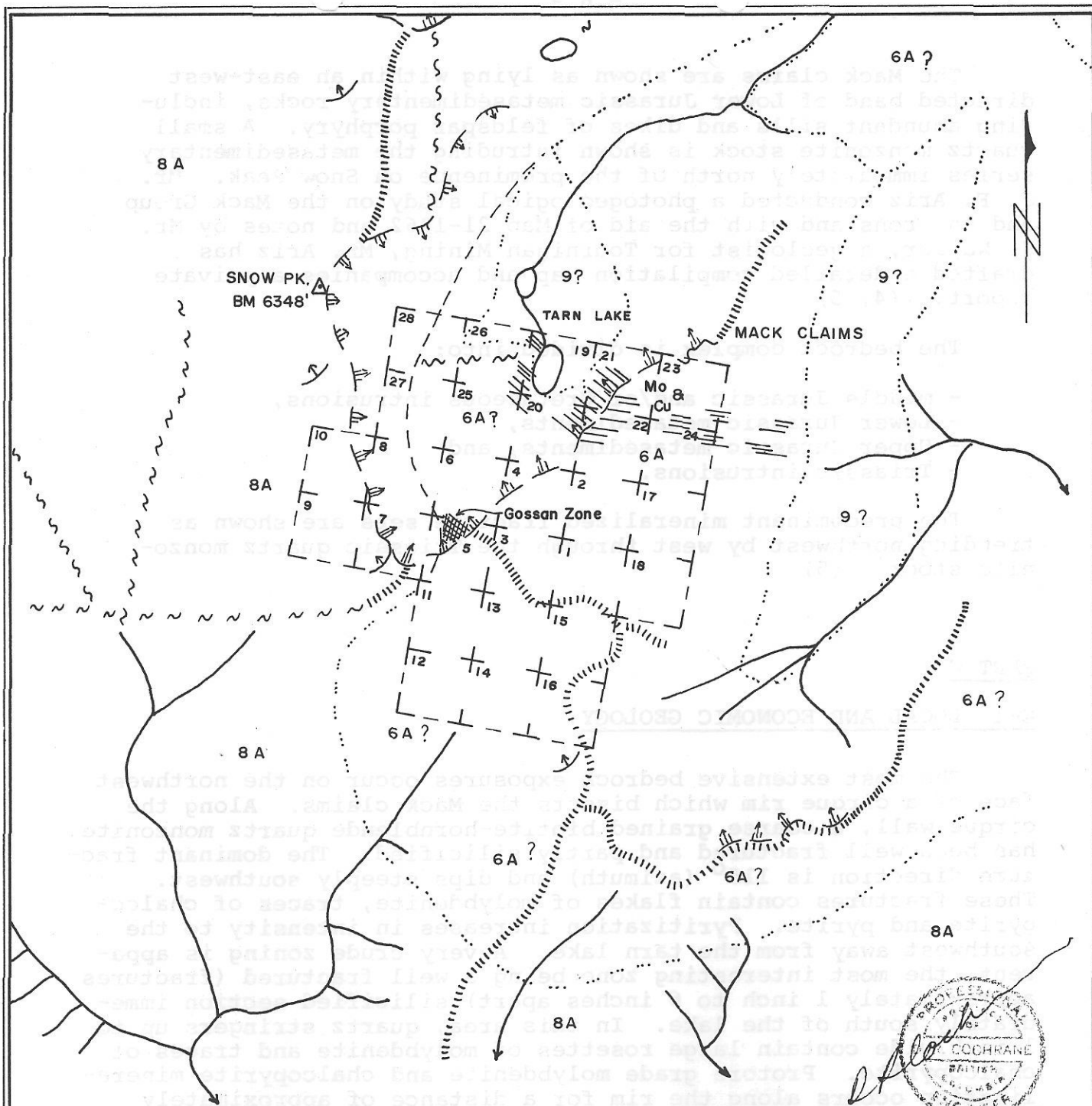
FIGURE 1

TOURNIGAN MINING EXPLORATIONS LTD.
LOCATION MAP
SNOW PEAK PROPERTY

To accompany report by
 D. R. Cochrane, P. Eng.
 on the Snow Peak
 Property in the Liard M.D.
 located 10 miles West
 from Dease Lake, B.C.
 Dated July 18, 1971 at
 Delta, B.C.

Scale of miles





LEGEND

- 6 A Triassic Intrusive
- 8 A Lower Jurassic Metasediments (Hornfels)
- 9 Middle Jurassic and/or Cretaceous Intrusives
- ... Photogeologic Rock Boundary
- ↷ Approx. Bedding Trend
- ⌒ Cirque
- ▨ Ridge Line
- ≡ Mo - Mineralized Joints

TOURNIGAN MINING EXPLORATIONS LTD.

**SNOW PEAK PROPERTY
CLAIMS AND GEOLOGY MAP
FIGURE 2**



To accompany report by D. R. Cochrane, P. Eng. on the Snow Peak Property dated July 18, 1971 at Delta, B. C.

Geology after J. F. Ariz

The Mack claims are shown as lying within an east-west directed band of Lower Jurassic metasedimentary rocks, including abundant sills and dikes of feldspar porphyry. A small quartz monzonite stock is shown intruding the metasedimentary series immediately north of the prominence on Snow Peak. Mr. J. F. Ariz conducted a photogeological study on the Mack Group and environs and with the aid of Map 21-1962 and notes by Mr. H. Naylor, a geologist for Tournigan Mining, Mr. Ariz has drafted a detailed compilation map and accompanies a private report. (4, 5)

The bedrock complex is divided into:

- middle Jurassic and/or Cretaceous intrusions,
- Lower Jurassic metasediments,
- Upper Jurassic metasediments, and
- Triassic intrusions.

The predominant mineralized fracture sets are shown as trending northwest by west through the Triassic quartz monzonite stock. (5)

PART C

C-1 LOCAL AND ECONOMIC GEOLOGY:

The most extensive bedrock exposures occur on the northwest face of a cirque rim which bisects the Mack claims. Along the cirque wall, a coarse grained biotite-hornblende quartz monzonite has been well fractured and partly silicified. The dominant fracture direction is 115° (azimuth) and dips steeply southwest. These fractures contain flakes of molybdenite, traces of chalcopryrite and pyrite. Pyritization increases in intensity to the southwest away from the tarn lake. A very crude zoning is apparent, the most interesting zone being a well fractured (fractures approximately 1 inch to 6 inches apart) silicified section immediately south of the lake. In this area, quartz stringers up to 1 inch wide contain large rosettes of molybdenite and traces of chalcopryrite. Protore grade molybdenite and chalcopryrite mineralization occurs along the rim for a distance of approximately 2,000 feet. South and east of the cirque rim bedrock is covered by what appears to be a relatively thin mantle of drift. Definite outcrop does not occur for about 2,500 feet southeast of the rim, where "natural" glacier scoured trenches expose rocks similar to the rim area. Trace molybdenite and chalcopryrite mineralization is present in the natural trenches.

C-2 GEOCHEMISTRY:

Seven soil samples were collected by the author immediately south of the cirque rim and in the "natural" trenches area. The molybdenum content ranged from a low of 30 to a high of 480 p.p.m. and the copper content from 58 to 980 p.p.m. (6) Patino Mining Corporation collected weathered bedrock and soil samples along the cirque rim and the molybdenum content was found to range between 40 and 4,000 p.p.m. These results are most impressive considering that the average content is normally considered to be about 2 p.p.m. for molybdenum and 20 p.p.m. for copper. (7)

C-3 RECOMMENDATIONS:

The following exploration program is recommended on the Mack No. 1 to 28 (inclusive) claims:

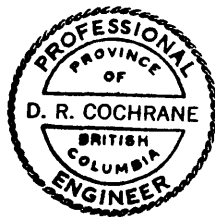
- A. Mobilize a linecutting crew and establish camp. Lay out, flag and picket approximately 30 line miles of grid. The base line should be directed east of north, with cross lines spaced 400 feet apart and approximately 8,000 feet long.
- B. Soil sample the grid area, on all lines, and at 200 foot intervals. The soil samples should be analyzed for Mo and Cu.
- C. Geologically map the grid area, and reconnaissance map environs.
- D. Conduct a hammer seismic survey in areas of apparent heavy overburden to aid in the drilling program and to facilitate the interpretation of the geochemical data.
- E. Construct a cat (access road) trail from the Dease-Telegraph Creek Road, at Auguschidle Creek to the Mack claims. Bulldoze trench in areas of interesting geochemical response and shallow overburden.
- F. Rotary-percussion drill areas of interesting geochemical response characterized by deeper overburden, and systematically core short sections for geological and assay control.

C-4 ESTIMATE OF COST:

The estimate of the above recommended work is:

1.	Cat road, trenching	\$ 10,000.00
2.	Soil sampling: 30 line miles @ \$135/line mile (complete with analysis for Mo & Cu)	4,050.00
3.	Linecutting (picketing, flagging) 30 line miles @ \$35/line mile	1,050.00
4.	Seismic lines for drill sites and geo- chemical interpretation: 10 line miles @ \$425/line mile	4,250.00
5.	Percussion drilling: 2500 feet @ \$3.50/foot 500 feet of coring @ \$8	8,750.00 4,000.00
6.	Geology, engineering, supervision	2,500.00
7.	Assaying	1,250.00
8.	Camp and supplies	3,000.00
9.	Transportation	<u>2,000.00</u>
	SUB-TOTAL	\$ 40,850.00
10.	Contingencies @ 10 percent	<u>4,085.00</u>
	TOTAL	\$ 44,935.00
	Say	\$ <u>45,000.00</u>

If economically interesting zones are outlined in this preliminary work, further expenditures will be required to implement additional drilling.



Respectfully submitted,

"D. R. Cochrane"

D. R. Cochrane, P. Eng.,
July 18, 1971,
Delta, B.C.

APPENDIX I

Certificate

I, D. R. Cochrane, of the Municipality of Delta, Province of British Columbia, hereby certify that:

1. I am a geological engineer with an office at 4952 8A Avenue, Delta, B.C.
2. I am a graduate of the University of Toronto (B.A.Sc.) in 1962, and a graduate of Queen's University (M.Sc. Eng.)
3. I have practiced my profession since 1962 while employed with U.S. Steel, Noranda Explorations and Meridian Syndicate.
4. I am a member of the Association of Professional Engineers of British Columbia and also the Association of Professional Engineers of Ontario and Saskatchewan.
5. I have no interest, direct or indirect, in the property or securities of Tournigan Mining Explorations Ltd., nor do I expect to receive any such interest.
6. The foregoing report is based on my personal examination of the Snow Peak property early in July, 1971, and a review of available data on the claims and the region in general.
7. I hereby consent to have the information contained herein published in a prospectus of Tournigan Mining Explorations Ltd., or in any official or unofficial communications of Tournigan Mining Explorations Ltd.

"D. R. Cochrane"

D. R. Cochrane, P. Eng.

4952 8A Avenue,
Delta, B.C.

July 18, 1971.

APPENDIX II

Bibliography

- (1) B.C. Financial and Economic Review, Thirtieth Edition, July, 1970, Chapter II
- (2) GABRIELSE, H; SOUTHER, J.G.; ROOTS, E.F.; (1962) Geological Survey of Canada, Map 21-1962, Geology of the Dease Lake Area, B.C.
- (3) X-Ray Laboratories, August 10, 1970, Certificate of Analysis No. 5040
- (4) ARIZ, J.F. (1969), Preliminary Survey Report, Mack Molybdenum-Copper Property, Dease Lake, B.C. (Private Report)
- (5) ARIZ, J.F., Photogeology of the Snow Peak Area, Mack Mo-Cu Property, Liard Mining Division, February 26, 1970, Private Report to Tournigan Mining Explorations Ltd.
- (6) Crest Laboratories (B.C.) Ltd., Geochemical Analytical Report on Lot No. 578G, Dated July 9, 1971.
- (7) HAWKES and WEBB (1962), Geochemistry in Mineral Exploration, Harper and Row, New York