104-J-8

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REPORT on the 107

Mack Fractional, Mack, Cubes, Fuzz, Fern, Dave and Bob Mineral Claims

(known as the Snow Peak Property)

situated 16 air miles west of

Dease Lake

Liard Mining Division

Northern British Columbia

Latitude 58°30' North; Longitude 130°20' West

N.T.S. 104 J/8

on behalf of

TORMEX RESOURCES LTD.

Report by:

D.R. Cochrane, P.Eng., December 8, 1972 Delta, B.C.



PART A:

A-1 PREAMBLE:

During July, 1971, the author completed a Preliminary Economic Geology Report on the Mack Mineral Claims, on the "Snow Peak Property" of Tournigan Mining Explorations Ltd. Since that time, the mineral claims have been acquired by Tormex Resources Ltd. (N.P.L.), and the initial portion of the recommended surface exploration program was completed in the summer of 1972, and also included the staking and surveying of 71 full sized claims and 8 fractions, contiguous to the original Mack No. 1 to 28 claims.

This report discusses the results of the 1972 geophysical, geochemical and geological program and in view of the encouraging results, contains recommendations for further work, and a cost estimate of such work.

The report is divided into four parts; Part A, including this preamble and the Summary and Conclusions (which follow in Section A-2); Part B describes the Setting, History and Previous Work; Part C describes and discusses the results of the 1972 program and Part D contains a Discussion, Recommendations and a Cost Estimate of further recommended work.

This report is based on the author's involvement in a consulting capacity on the property since July of 1971, and the supervision of the exploration program in 1972 (by Cochrane Consultants Ltd.), on behalf of Tormex Resources Ltd.

The author has no interest, direct or indirect in the property or securities of Tormex Resources Ltd. (N.P.L.) or in Tournigan Mining Explorations Ltd., nor does he expect to receive or acquire any such interest. (see Appendix I)

A-2 SUMMARY AND CONCLUSIONS:

1. Tormex Resources Ltd. (N.P.L.) of Vancouver, B.C., holds title to ninety-nine (99) full sized mineral claims and eight (8) fractional claims forming a contiguous block and located on Snow Peak, a topographic prominence situated sixteen air miles due west of the settlement of Dease Lake in the Cassiar district of Northern British Columbia.

2. At present, the only available facile access is by helicopter from Dease Lake, however the Dease-Telegraph Creek road passes within eight (8) miles of the property and roadbuilding in the area is not considered particularly difficult. Dease Lake will soon be the British Columbia Railway system rail head and work is in progress on this extension. The scheduled completion date is the fall of 1974 (1)* and the rail line substantially alters mineral economics in the region. (1)

3. The claims cover a molybdenum-copper occurrence centered in and around the abandoned Snow Peak cirque, and within an altered granodiorite intrusive body which is mainly drift covered but which appears to underlie an area approximately two miles wide and three miles long. It intrudes metasedimentary rocks (Lower Jurassic?) and several intrusive rock phases are indicated, presumably the latest being the silicification alteration and molybdenite-chalcopyrite mineralization of highly fractured zones. (2,3). The prospect may be described as a "Porphyry type" occurrence.

4. Approximately \$50,000.00 has been expended by Tournigan and Tormex on the surface exploration on the property to date, the majority on the 1972 program which was, in general, the first portion of the recommended work program outlined in the author's first report prepared in July of 1971.

5. Exploration work has included photogeological studies, establishing and surveying over 30 line miles of ground control grid, geological mapping, geochemical soil sampling and magnetometer surveys.

6. The geochemical results show widespread areas of high copper, and extremely high molybdenum in upper "B" horizon soil samples (see Figure 3). The average molybdenum content of the soils was found to be 66 parts per million (p.p.m.) and the peak value was 4000 p.p.m. One anomalous area out of a total of three is characterized by molybdenum in excess of 170 p.p.m. and is roughly coincident with a plus 200 p.p.m. copper rich zone. The areal extent of the latter is roughly 2000 feet by 1000 feet.

* numbers in parentheses at the end of sentences are references tabulated in Appendix II, end of report.



7. The magnetometer results show complex subsurface conditions interpreted as changes in rock type (intrusive) phases, and/or changes in alteration or fracture patterns.

8. Geochemical orientation work suggests the presence of residual soils at higher elevations indicating that a secondary enrichment zone may be present some distance below surface.

9. The cost of the 1972 exploration program was found to exceed the cost estimate outlined in the July 1971 report by a considerable margin. This is in part due to the necessity of air ferrying men, equipment, and supplies from Dease Lake. 10. Further investigation of the Cu-Mo occurrence is recommended and is to include:

- (a) the construction of a ten mile 4 x 4 tote road from the Dease-Telegraph Highway to the property; (b) ten line miles of a reconnaissance induced polarization survey to outline, if possible, the high pyritic (halo?) zone
- and other sulphide zones;
- (c) 4000 feet of percussion drilling to test the anomalous areas at depth;
- (d) geological mapping and bulldozer trenching
- 11. The estimated cost of the recommended program is \$70,000.00.

Respectfully submitted,

D.R. Cochrane, P. Eng., December 8, 1972 Delta, B.C.



PART B:

B-1 LOCATION AND ACCESS:

The Snow Peak property is situated in the Cassiar district of Northern British Columbia, some 700 air miles north-northwest of Vancouver, B.C. and 130 air miles southwest of Watson Lake in the Yukon. The claims are 16 air miles due west of the settlement of Dease Lake, a town lying between the 58th and 59th parallels which may be reached by road from Watson Lake on the all weather, gravel, Stewart Cassiar Highway.

Frontier Helicopters maintains a helicopter base at Dease Lake during the summer months, and at the present time helicopter service is the only means of facile access to the property from Dease Lake. The Dease Lake-Telegraph Creek road runs to the south of Snow Peak, and at one point lies within 8 air miles of the center of the claim group.

The claims lie in and around the main cirque of Snow Peak, the highest prominence in the Dease Lake Area (elevation 6348 feet). The latitude is 58°30'N, longitude 130°20'W, and N.T.S. code reference 104 J/8W:7E. (see Figure 1)

B-2 CLAIMS AND OWNERSHIP:

The total of 99 Mack, Cubes, Fuzz, Fern, Dave and Bob full size mineral claims and Mack No. 1 to No. 8 Fractional Mineral Claims form a contiguous claim block registered in the Liard Mining Division. The claims were surveyed in the summer of 1972 and claims have been staked in accordance with the regulations set out in the Mineral Act of the Province of British Columbia.

Pertinent claims information is tabulated below:

Claim Name	Record Number	Anniversary Date
Mack No. 1-28 incl.	39272 to 39299	August 13
Mack No. 1 & 2 FR	65059 and 65060	July 28
Mack No. 29-42 incl.	65045 to 65058	July 28
Mack No. 3-6 FR incl.	67211 to 67214	August 28
Mack No. 7 & 8 FR	67215 and 67216	August 28
Cubes No. 1-18 incl.	65068 to 65085	July 28
Fuzz No. 1-17 incl.	65086 to 65103	July 28
Dave No. 1-8 incl.	65104 to 65111	July 28
Fern No. 1-6 incl.	65112 to 65117	July 28
Bob No. 1-7 incl.	65061 to 65067	July 28

The above described claims are owned by Tormex Resources Ltd. (N.P.L.) of Suite 704-535 Thurlow Street, Vancouver, B.C.

B-3 GENERAL SETTING:

Tormex Resources' Snow Peak property lies within and around the main cirque of Snow Peak Mountain and at elevations which vary from some 6300 feet at the rim of the cirque to about 4700 feet on the east side of the property. At lower elevations patches of scrub balsam and buckbrush are present, but the bulk of the claims lie above the tree line within alpine meadows.

The rim of the cirque is quite steep having a slope in excess of 30 degrees in some areas, but the remainder of the grid area has generally moderate slopes on the order of 10 degrees. While patches of snow remain throughout the year, most of the area is snow free by July.

One of the key physiographic features in the area is a small Tarn Lake located in the abandoned cirque, and it is situated immediately northeast of 0 + 00 on the base line, and on the Mack No. 1 fraction. (See Figures 2 and 3).

Mr. N.J. Mistry (M.S.), geologist for Tournigan Mining Explorations Ltd., mapped the Snow Peak property in the summer of 1972, and prepared a geological map and report (reference 2). He describes the central claims areas as being underlain by a granodiorite intrusive about two miles wide and three miles long in contact with metasediments to the east, south and west. The intrusive is, in general, coarse grained and contains biotite with minor hornblende, and mild K-spar alteration. Along the south cirque rim, the only widespread outcrop area on the property, the intrusive is well fractured pyritic and contains veinlets and microveinlets of quartz with disseminated molybdenite, traces of chalcopyrite and pyrite. Mr. Mistry reports "Protore grade of molybdenite and chalcopyrite mineralization occurs along the rim of the cirque for a distance of about 3000 feet. South and east of the cirque rim, bedrock is covered with glacial moraine and non-directional eskers."

It is in the overburdened area southeast of the cirque rim that the most intense geochemical copper and molybdenum soil anomalies were outlined (see Section C-2, C-3 and Figure 3).



B-4 HISTORY AND PREVIOUS WORK:

Apparently the first set of claims were located on the cirque rim showings area in 1966 by Mr. M.A. Nehass, a local prospector. These claims were allowed to lapse the following year and the showings remained open until 1969 when Tournigan Mining Explorations Ltd. located the original Mack 1 to 28 claims. Tournigan conducted surface exploration programs in 1970 and 71 and at this latter date the claims were acquired by Tormex Resources Ltd. (N.P.L.). A total of about \$50,000 has been spent on the property by Tournigan and Tormex.

The following chronology briefly outlines exploration to date:

- 1970: Early in 1970 a photogeologic study was conducted on the Snow Peak area by Mr. J. Ariz (4). In the summer, Patino Mining Corp. examined the property and collected 50 soil samples from along the cirque rim. (5). Tournigan personnel reconnaissance mapped and prospected the Snow Peak area during the summer.
- 1971: In July, the author examined the property in the company of Mr. J.N. Hembling and collected check soil samples. This was followed by a report dated July 18, 1971, in which the author recommended further work consisting of integrated geophysical, geochemical, and geological surveys and included roadbuilding and a small percussion drill hole

test. The estimated cost of the program was \$45,000.00 (6). In the fall of 1971, a field crew, under the supervision of the author, established a small ground control grid and collected seven (7) line miles of soil samples on a 200 by 400 foot sample pattern. (7) Two highly anomalous areas of copper and molybdenum were located and one anomaly was "open" to the south.

- 1972: During the summer of 1972, Cochrane Consultants Ltd. conducted an intensive surface exploration program (8) on behalf of Tormex Resources which consisted of
 - (a) staking an additional 71 full sized claims and 8 fractional claims,
 - (b) establishing 30 line miles of grid,
 - (c) surveying of claims and ground control grid,
 - (d) conducting 19 line miles of geochemical soil sampling, and
 - (e) conducting 28 line miles of vertical field magnetometer surveying.

During this same period the property was geologically mapped by Mr. N. Mistry. Expenditures in excess of \$20,000 were incurred by Tormex in 1972 on this exploration work. Most of the information discussed in this report is based on the results of this 1972 program.

PART C:

C-1 MAGNETOMETER RESULTS:

The Snow Peak area is characterized by complex and variable magnetic response which has been, to a moderate extent, influenced by local topographic relief. The intrusive/hornfels contact is quite easily discernible on the isomagnetic plan and many northeasterly and northwesterly directed linears probably indicate major shear directions.

In very general terms, the up slope geochemically anomalous zones lie on the flank of a narrow ridge of high magnetic response, and largely within an area of "below average" magnetic amplitude. Variations of the magnetic surface within the indicated intrusive plug area (that are not believed to be seriously affected by topography), may be due to different intrusive phases, and/or in differing alteration zones or fracture patterns within a homogeneous phase.

C-2 GEOCHEMICAL SURVEY:

(a) General

Ground control grid lines were extended from the 1971 survey area and just under 400 soil samples were collected from 20 line miles of grid and from 5 orientation test pits. The samples were collected from a variety of physiographic settings, and from residual through hybrid to transported soil types. Analysis of the soils for their content in parts per million (p.p.m.) was completed by hot acid extraction atomic absorption means by Vancouver Geochem. (Dease Lake Laboratory).

The 1972 geochemical program "closed off" the strongly anomalous zones discovered in the 1971 work and also outlined an additional area of anomalous copper and molybdenum in upper B horizon soil samples.

The overall coefficient of correlation between coincident Mo and Cu results is +0.7, indicating the areas high in copper are, in addition, normally high in molybdenum. The high coefficient also suggests that the two metals share a common geologic setting and similar geologic origins.



(b) Copper

The arithmetic mean value of copper in Snow Peak soils is 77 p.p.m. and a high of 1550 p.p.m. was encountered. Values greater than 200 p.p.m. and 300 p.p.m. are designated as moderately and strongly anomalous respectively.

Three "strongly" anomalous high copper areas were outlined and the most widespread anomaly, although quite irregular in shape, is roughly 2000 feet long by 1000 feet wide. It is centered some 4000 feet southeast of the Tarn Lake on the Mack No. 1, No. 3 and No. 15 claims.

(c) Molybdenum

The average molybdenum content of the Snow Peak soils is 45 p.p.m. The soil is very definitely Mo rich. (Hawkes and Webb, Geochemistry in Mineral Exploration, Harper and Row, N.Y. report an average of 2 p.p.m. Mo in soils). Values between 66 and 170 p.p.m. are classed as weakly to moderately anomalous, and those above 170 p.p.m. as strongly anomalous. The peak value obtained in a sample to date is 4000 p.p.m. Mo, (or 0.4%).

Three main molybdenum soil anomalies were outlined (see Figure 3), and the main anomaly is coincident with the strongest copper anomaly as described above. The "strongly" anomalous molybdenum rich zone has an areal extent of just under one claim size.

PART D:

D-1 DISCUSSION:

Exploration work to date on the Snow Peak Mo-Cu occurrence has been mainly indirect since a widespread mantle of drift obscures the majority of the bedrock surface. The largest area of bedrock outcropping is along the cirque rim, and an altered, fractured biotite granodiorite is there exposed. It contains veinlets and microveinlets of quartz with accompanying molybdenite, chalcopyrite and pyrite and is situated about one claim length (1500 feet) north of the zone of prime geochemical interest.

The mineral occurrence may be described as a "porphyry type" and the isomagnetic plan indicates some complexity in bedrock conditions beneath the geochemically anomalous zones. The latter may be due to a change in rock type phase, and/or a change in alteration and fracture intensity within the intrusive. The pyrite content of the bedrock along the cirque rim increases to the west of the geochemically anomalous area and an IP survey designed to outline the pyrite zone (or possible halo) was scheduled in the fall of 1972. The survey was postponed due to inclement weather and severe electrical noise. The IP survey, most certainly still remains a worthwhile exploration project and hopefully will outline the high iron (pyrite halo) phase of the intrusive in order that further work may be centered in the high molybdenum and copper sulphide phase.

Geochemical orientation work has shown that the soil and drainage conditions are complex (references 7 and 8) and therefore the interpretation of the data is difficult and should be augmented by additional complimentary surface work such as an induced polarization survey. Furthermore, "residual class" soils were encountered which suggests the possibility of secondary enrichment of Cu-Mo at some depth. This is substantiated by exposures that show extensive leaching and oxidized molybdenum and copper products.

The B.C. Railway rail head will be situated 16 miles east of Snow Peak, and its presence will substantially alter mineral economics in the region. On Snow Peak there are large areas of anomalous Mo and Cu in soils close to altered and protore mineralized intrusive rock. The widespread and strongly anomalous zones have not yet been investigated by physical means. The 1972 program was essentially that recommended by the author in a formal report dated July 18, 1971, however the cost of the recent surface exploration work has been in excess of that estimated in the 1971 report. This is in part due to the necessity of using helicopter service to mobilize, demobilize and service field crews and equipment. The construction of a 4 x 4 tote road is a logical alternative to the continuing cost of an airlift service.

D-2 RECOMMENDATIONS:

In view of the encouraging exploration results to date, the author recommends further work on the Snow Peak property directed mainly towards outlining chargeable (high induced polarization) zones, testing of the geochemical anomalies at depth, and trenching to bedrock to aid geological control.

The following program is recommended:



1. Construction of a 4 x 4 (tote) access road beside Auguschidle Creek from the Dease Lake-Telegraph Creek road to the claims area;

2. Trench those areas which are geochemically anomalous and covered by a thin mantle of drift;

3. Conduct a deep penetrating induced polarization survey over the grid area, on widespread lines, in order to detect large polarizing bodies;

4. Percussion drill the anomalous areas in order to indicate grade and extent of the mineralized bedrock;

5. Geologically map trenched areas, log and assay drill hole cuttings.

D-3 COST ESTIMATE:

 Access Road Construction – approximately 10 miles @ \$1600 per mile 		\$16,000.00
2. Bulldozer trenching anomalous areas, preparation of drill sites – 100 hrs. @ \$50/hr.		5,000.00
3. Induced Polarization Survey 10 line miles @ \$600/line mile		6,000.00
4. 4000 feet of percussion drilling @ \$6/foot		24,000.00
5. Mapping, engineering, supervision		5,500.00
6. Establish camp, transportation and communication		7,000.00
	Sub Total	\$63,500.00
7. Contingencies @ 10%		6,350.00
	TOTAL	\$69,850.00
	SAY	\$70,000.00

Respectfully submitted,



D.R. Cochrane, P. Eng., December 8, 1972 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 4882 Delta Street, 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.) in 1964.
- 3. I have practiced my profession since 1962 while employed with such companies as U.S. Steel, Noranda Exploration 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 the Tournigan Mining Explorations Ltd. or Tormex Resources Ltd. (N.P.L.)
- 6. The foregoing report is based on an examination of the Mack Claim group in 1971 and 1972 and supervision of current exploration programs and a review of available data on the claims and the region in general.
- 7. This report or any portion thereof may be used in any official or unofficial communication Tormex Resources Ltd. (N.P.L.) may have.

D.R. Cochrane, P.Eng.

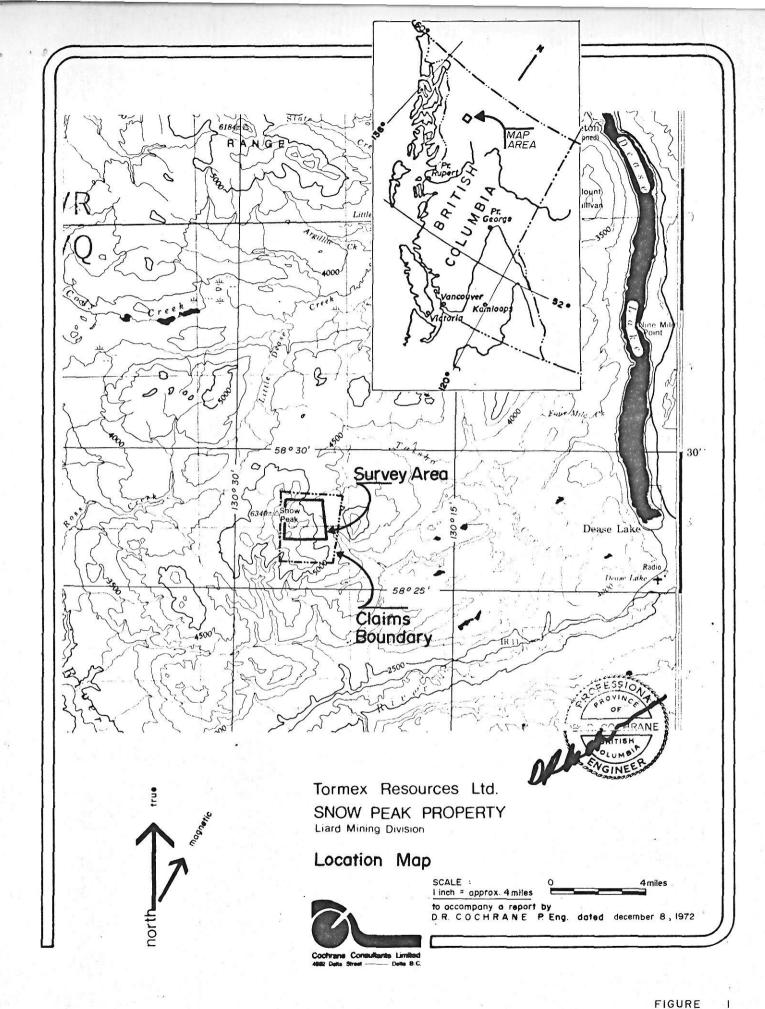
4882B Delta Street, Delta, B.C. December 8, 1972.

APPENDIX II

Bibliography

- (1) B.C. Railways General Offices, Vancouver, Personal communications
- (2) N. Mistry, August, 1972, Private report to Tournigan Mining Explorations Ltd. entitled "Comprehensive Geological Report, Snow Peak Property"
- (3) Gabrielse, Souther and Roots, (1962) Geological Survey of Canada Map 21 1962, Dease Lake Sheet
- (4) Ariz, J.F. (1970) Photogeology of the Snow Peak Area, Mack Mo-Cu Property, Liard M.D. dated February 26, 1970 (private report)
- (5) X-Ray Laboratories, August 10, 1970, Certificate of Analysis No. 5040
- (6) Cochrane, D.R. (1971) Preliminary Economic Geology Report on the Snow Peak Property, July 18.
- (7) Cochrane, D.R. and Scott, A. (Sept. 6, 1971), Geochemical Report on the Mack No. 1 to No. 28 Mineral Claims (Assessment Report)
- (8) Scott, A., and Cochrane, D.R. (August 31, 1972), Geophysical and Geochemical Report on the Mack, Cubes, Fuzz, Fern, Dave and Bob Mineral Claims (Assessment Report)





FIGURE

