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RECOMMENDATIONS FOR FURTHER MINERAL EXPLORATION

on the

ATAN LAKE PROPERTY
NORTHERN BRITISH COLUMBIA

prepared by

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for

TOURNIGAN MINING EXPLORATIONS LTD.
Vancouver, B.C.

February 23, 1977.

CONTENTS

SUMMARY

1. The Atan Lake property consists of 41 mineral claims and 3 mineral claim fractions, and is owned entirely by Tournigan Mining Explorations Ltd. The property is located in northern British Columbia on the right-of-way of the proposed extension of the P.G.E. Railway and is accessible by road from the nearby Cassiar-Stewart road.

2. The property contains showings and drill hole intersections of sphalerite, galena and barite in a dolomite unit exhibiting much secondary porosity. The mineralization appears to be Mississippi Valley type.

3. The property merits detailed exploration.

4. A two stage exploration program is recommended. The first stage consists of a small drill program to explore a zone of encouraging mineralization encountered during previous drilling. It will cost approximately $30,000 and should be financed by Tournigan Mining Explorations Ltd. The second stage consists of a drill program to systematically explore the property. It will cost approximately $200,000 and should be financed through an option arrangement.

INTRODUCTION

This report was prepared at the request of Mr. Hembling, President of Tournigan Mining Explorations Ltd. It is based on a review and interpretation of geological and engineering reports that are in the files of Tournigan Mining Explorations Ltd. These reports are listed in the bibliography. The writer has not visited the property.

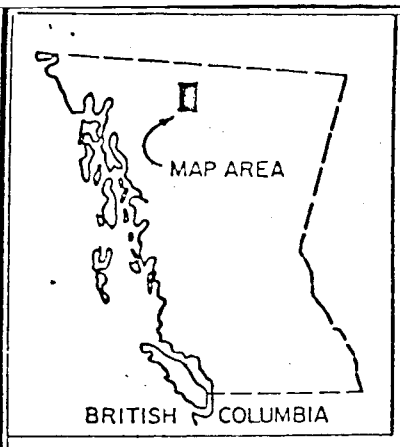
LOCATION AND ACCESS

The property is at Lat. 59°12'N, Long. 129°12'W, about 2 miles by bush road from the old post of McDame in the Liard Mining Division (Fig.1). It is accessible by motor vehicle via the Alaska Highway and the Cassiar-Stewart road or by float plane to Atan Lake or Dease River, both of which intersect the property. The right-of-way for the proposed extention of the Pacific Great Eastern Railway from Prince George to Lower Post on the Alaska Highway passes through the property.

PROPERTY AND TITLE

The property consists of 41 mineral claims and 3 mineral claim fractions. These are listed below. Tournigan Mining Explorations Ltd. owns the entire and only interest in the property.

Claim Name	Record Nos.	Work Expires	Rental Expires
Atan 1 to 4	28358-28361	Sept.28, 1980	1979
Fox 1	26935	May 16, 1986	1979
Adair 1 to 8	26936-26943	May 16, 1980	1980
Ski 1	26948	May 16, 1988	1979
Ski 2	26949	May 16, 1986	1979



CASSIAR ASBESTOS MINE

To Lower Post

DRESSER MINERALS

ATAN LAKE
(ZINC - BARITE)

McDame

CASSIAR - STEWART ROAD

N

Dease Lake

Dease Lake

To Telegraph Creek

B.C. RAILROAD - UNDER CONSTRUCTION

KUTCHO CREEK ASBESTOS

FIGURE 1

TOURNIGAN MINING EXPLORATIONS LTD.

LOCATION ATAN LAKE

0 4 8 12 16 20 24

SCALE IN MILES

NOTE: CLAIMS LOCATIONS APPROXIMATE

Claim Name	Record Nos.	Work Expires	Rental Expires
Ski 3	26950	May 16, 1987	1979
Ski 4	26951	May 16, 1986	1979
Ski 5 and 6	26952-26953	May 16, 1987	1980
Ski 7 to 17	26954-26964	May 16, 1985	1980
Ski 18	26965	May 16, 1982	1977
Wolf 1	26927	May 16, 1980	1980
Wolf 3	26929	May 16, 1980	1980
Wolf 5	26931	May 16, 1980	1980
Wolf 7	26933	May 16, 1980	1980
August 1 to 6	31212-31217	Aug. 5, 1980 -	1980
Fraction 'A' Fr.	38159	June 24, 1978	1977
Fraction 'B' Fr.	38160	June 24, 1978	1977
Fraction 'C' Fr.	38161	June 24, 1978	1977

REGIONAL GEOLOGY

The Atan Lake showings occur in the predominantly limestone and dolomite upper member of the Atan Group. This group is part of a conformable sequence of Precambrian and Lower Cambrian limestone, dolomite, quartzite and shale that forms a northwesterly trending anticlinorium on the northeast flank of the Cassiar Mountains and Cassiar batholith.

An important stratigraphic control is evident for lead-zinc occurrences in northern British Columbia, southeastern Yukon and southwestern District of Mackenzie, namely that most of them are in Lower Cambrian and possibly Eocambrian strata. Locally, the upper Atan Group is host to five zinc occurrences, including the Atan Lake showings, in the 16 miles between McDame and Mt. Haskin and to two other occurrences near Cassiar, 12 miles west of Mt. Haskin. Most of these occurrences lie within metamorphic aureoles of the Cassiar batholith or related stocks and exhibit

some features of metasomatic deposits. However, their restricted stratigraphic distribution strongly suggests to the writer that the primary nature of these occurrences is that of 'Mississippi Valley type' deposits.

GEOLOGY AND MINERALIZATION ON THE PROPERTY

The rocks on the property consist of shale and quartzite, referred to in company reports as the older Atan Group, overlain by chiefly limestone and dolomite with minor interbedded shale, sandstone, chert and quartzite referred to as the younger Atan Group. In general the strata strike northwesterly and dip 40° to 60° southwestward. Northeasterly trending lineaments, which parallel regional faults, suggest that faults with this orientation are common.

The dolomite unit in which most of the mineralization occurs appears to be more than 100 ft. thick and is exposed intermittantly for a strike distance of about 8,800 ft. In places it appears that either there are two similar units or the one unit is repeated by folding or faulting.

In the favourable dolomite unit barite, galena and sphalerite, with or without pyrite and minor tetrahedrite, chalcopyrite and chalcocite, occur in a variety of forms ranging through veins, stringers, pods, lenses, blebs and disseminations. These structures both parallel and cross-cut bedding. Mineral textures suggest deposition by both cavity filling and replacement.

In shale beds pyrite is the dominant sulfide and small amounts of chalcopyrite, galena and sphalerite may be present. The mineralization occurs in bands or laminae parallel to the bedding. This type of mineralization is probably not as economically significant as the mineralization in dolomite.

PREVIOUS WORK AND MINERAL SHOWINGS

The main exploration programs on the Atan Lake property were:

1968 12 line miles of induced polarization and geochemical soil sampling done for Tournigan Mining Explorations Ltd. by Geo-X Surveys under the supervision of D.R. Cochrane.

1969 Bulldozer trenching, geological mapping and 1266 ft. of diamond drilling by Tournigan.

1970 New Jersey Zinc Exploration Co. (Canada) Ltd. optioned the claims and conducted a gravity survey over part of the property. The option was allowed to lapse early in 1971.

1972 Tournigan conducted bulldozer trenching and stripping over I.P. Anomaly 3 under supervision of J.N. Hembling.

1973 Tournigan employed Cochrane Consultants Ltd. to conduct a gravity survey over Atan Lake while it was frozen and later in the summer to continue the survey over the area surrounding the lake.

1973 Brinex optioned the property, contracted Scintrex Ltd. to assess the gravity data, and drilled 8 holes totalling 1,388 ft., two of which were abandoned in overburden. The option was dropped in 1974.

1975-1976 Imperial Oil Ltd. optioned the property in December, 1975, re-evaluated the gravity data, re-mapped the areas of principal interest and drilled two holes totalling 982 ft. Imperial dropped their option in November, 1976.

Outcrop in the area is sparse, and although the property has been prospected and geologically mapped most exploration has consisted of soil geochemistry, self potential, resistivity, induced polarization and gravity surveys, trenching, and diamond drilling. The geochemical and geophysical work outlined four principal areas of interest in which most of the subsequent trenching and drilling was concentrated. These areas are Barite Hill, 800' north of Dease River, I.P. Anomaly 1, 1,700' N.W. of Barite Hill and boardering the south side of the west end of Atan Lake, I.P. Anomaly 2, 2,000' north of I.P. Anomaly 1 and I.P. Anomaly 3, 3,000' N.W. of I.P. Anomaly 1 and 2,200' west of I.P. Anomaly 2.

Barite Hill is underlain by a positive gravity anomaly, contains a copper soil anomaly and is flanked by a zinc soil anomaly. Small pods and lenses of barite with minor galena and copper minerals have been exposed by trenching in an area about 400' in diameter. A 238' long diamond drill hole beneath Barite Hill intersected a 30' interval of dolomite breccia healed with dolomite, calcite and quartz and locally containing a little barite, galena, chalcopyrite and pyrite in vugs and veins. The best assay obtained was 0.2% Pb, 0.01% Cu, < 0.05% Zn and 0.2 oz/ton Ag over 4.3 ft.

I.P. Anomaly 1 is underlain by a weak positive gravity anomaly and is overlapped by copper and zinc soil anomalies and a probable lead soil anomaly. The area has been tested by 3 drill holes 370' to 503' long. All holes intersected intervals of brecciated dolomite, one intersected 1.7' of massive barite adjacent to dolomite breccia and another hole intersected 5' assaying 0.15% Zn in dolomite. A 744' hole drilled beneath the southeastward projection of I.P. Anomaly 1 intersected a 78' interval of dolomite

breccia healed mainly with quartz, calcite and dolomite veins. Traces of barite and sulfides were found in vugs.

I.P. Anomaly 2 is partially overlapped by an area of weak positive gravity anomalies and a small zinc soil anomaly. Trenching was attempted on this anomaly but bedrock was not reached.

I.P. Anomaly 3 is partly underlain by a positive gravity and overlapped by a strong zinc soil anomaly. Bulldozer trenching in this area exposed lenses and patches of barite with knots of galena and traces of chalcocite, tetrahedrite and chalcopyrite. In one 7' deep trench 24' of massive barite was exposed from which 7 samples of about 100 lbs. each proved to be pharmaceutical grade Ba SO_4. Four drill holes 200' to 221' long beneath I.P. Anomaly 3 all intersected significant intervals of vuggy, brecciated or veined dolomite healed with coarse-grained white dolomite. Barite and sulfide minerals are present in some of these intervals. The best intersections are tabulated below.

D.D. Hole No.	Footage	Core Length	% Zinc	Associated Minerals
73-1	165.0'- 176.3'	11.3'	3.07	Pyrite, white dolomite
(includes 1.7' of 17.0% Zn)				
73-2	107.0'- 113.0'	6.0'	0.10	Pyrite, galena
73-3	54.0'- 56.0'	2.0'	--	Massive barite
	196.0'- 198.5'	2.5'	3.40	Barite
73-4	12.0'- 21.0'	9.0'	0.30	Pyrite, barite, tetrahedrite
	47.2'- 50.5'	3.3'	--	Mainly barite
	131.7'- 134.1'	2.4'	--	Mainly barite

Elsewhere on the property there are several other positive gravity anomalies and separate zinc and copper soil

anomalies and one area of coincident zinc and copper soil anomalies. A 200' hole drilled midway between I.P. Anomalies 1 and 3 intersected spotty barite and pyrite in vuggy, veined or fractured dolomite. Several other drill holes to one side of the main areas of work were abandoned in overburden.

POTENTIAL OF THE PROPERTY

It is the writers opinion that the McDame - Mt. Haskin belt of Upper Atan Group rocks is an area of Mississippi Valley type Pb-Zn-Ba mineralization. This is based on the fact that the same stratigraphic unit of relatively porous dolomite-limestone appears to host all the showings in the area. The theory is enhanced by the propensity of lead-zinc mineralization in the Canadian northwest for Lower Cambrian or Eocambrian strata.

Mineralization on the Atan Lake property has many features that, when they occur together, are characteristic of Mississippi Valley type deposits. Exploration procedure should therefore be appropriate for this type of deposit.

Experience has shown that geochemical and geophysical techniques have limited use in detailed exploration for Mississippi Valley type deposits. The most effective method of exploration is grid drilling of favourable rock units that are identified mainly by geological study.

Options on the Atan Lake property have been dropped because drilling failed to give encouragement. However, the amount of drilling to date is insufficient and has been too widely spaced to test for the presence of a Mississippi Valley type deposit. In fact the drilling has perhaps been misguided by the positive gravity anomalies.

In some Mississippi Valley type districts lead and/or zinc ore bodies are associated with local negative gravity anomalies that reflect the highly porous nature of the host rocks.

In the writers opinion the potential of the Atan Lake property has not been adequately tested, and the property merits an extensive drill program carefully monitoured by geological analysis of drill core and outcrop data.

RECOMMENDED EXPLORATION

The Atan Lake property merits an exploration expenditure in the neighbourhood of $200,000.00. It is recommended that exploration proceed in two stages. The first stage should be conducted by Tournigan Mining Explorations Ltd. and will cost about $30,000.00. The second stage should be conducted by a major company through an option arrangement and will cost about $200,000.00. The object of the first stage is to explore the zone containing 3% Zn over 11' that was intersected by drill hole 73-1. This can be done by three 250' holes drilled along strike from hole 73-1 at 50' to 100' intervals. The possibility that the high-grade interval (17% Zn over 1.7') within this zone is a marginal off-shoot of a larger body of mineralization warrants such a modest program financed by Tournigan.

The object of the second stage is to systematically explore the property by drilling. This stage is recommended regardless of the success or failure of the first stage. This program should first determine the stratigraphy by drilling two or three 1,000' holes perpendicular to bedding in the area southwest of I.P. Anomaly 1 or 3. The information obtained should provide guidance for drilling eight or ten 500' holes into favourable

horizons. The drilling should be preceeded by a 'thumper' type seismic survey to establish approximate depths of overburden.

COST ESTIMATE OF RECOMMENDED EXPLORATION

Stage 1: Two weeks

Drilling, 750' at $26.50 per ft. (includes camp costs, mobilization and demobilization)	$ 19,875
Bulldozer	2,000
4X4 vehicle rental & gas	1,250
Core boxes	200
Shipping core	100
Assaying	300
	$ 23,725
Contingency 10%	2,375
	$ 26,100
Consulting and drill supervision:	
In field 12 days @ $150/day	1,800
Report 6 days @ $150/day	900
Travel costs	500
Stage 1 Total	$ 29,300

Stage 2: about 2 months

Drilling, 7,000' at $22.00 per ft. (includes camp costs, mobilization and demobilization)	$ 154,000
Bulldozer	6,000
4x4 vehicle 2 months rental and gas @ $1,000 per mo.	2,000
Core boxes, $200 per 1,000 ft.	1,400
Shipping	1,000
	$ 164,400

forward	$ 164,400
Assaying	1,000
Geologist 3 mo. @ $1,500/mo.	4,500
Thumper seismic survey	4,000
Consultant 10 days @ $200/day	2,000
	175,900
Contingency 10%	17,600
Stage 2 Total	$ 193,500

Expiry Date Sept. 1, 1977

Respectfully submitted

W.G. Smitheringale, Ph.D., P. Eng.

February 23, 1977.

CERTIFICATION

I, William G. Smitheringale, do hereby certify that:

1. I am a practicing Professional Geological Engineer, resident in Vancouver, B.C.

2. I am a graduate of the University of British Columbia with a degree in Geological Engineering (B.Ap.Sc., 1955) and of the Massachusetts Institute of Technology with the degree of Doctor of Philosophy in Geology (Ph.D., 1962).

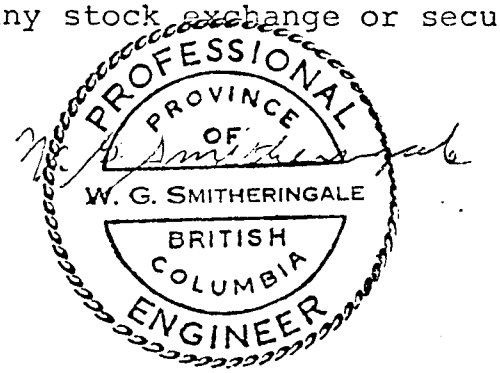
3. I have practiced my profession continuously for fourteen years as geologist with the Geological Survey of Canada, as Assistant and Associate Professor, Department of Geology, Memorial University of Newfoundland, and since 1974 as a Consulting Geologist.

4. I am a member in good standing of the Association of Professional Engineers of the Province of British Columbia and of the Association of Professional Engineers of Newfoundland.

5. This report is based on information from sources listed in the bibliography of this report.

6. I have no financial interest in the Atan Lake property or in Tournigan Mining Explorations Ltd.

7. Permission is granted for use of this report in a prospectus or for filing with any stock exchange or securities commission.



Expiry Date Sept. 1, 1977

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