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GEOLOGICAL REPORT
on the
JOANNA I and II MINERAL CLAIMS
Omineca Mining Division
British Columbia

for
ARMOR DEVELOPMENT CORPORATION

by
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Victoria, B.C.

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SUMMARY

Armor Development Corporation owns the Joanna I and II mineral claims which are situated in the Toodoggone River area of north-central British Columbia.

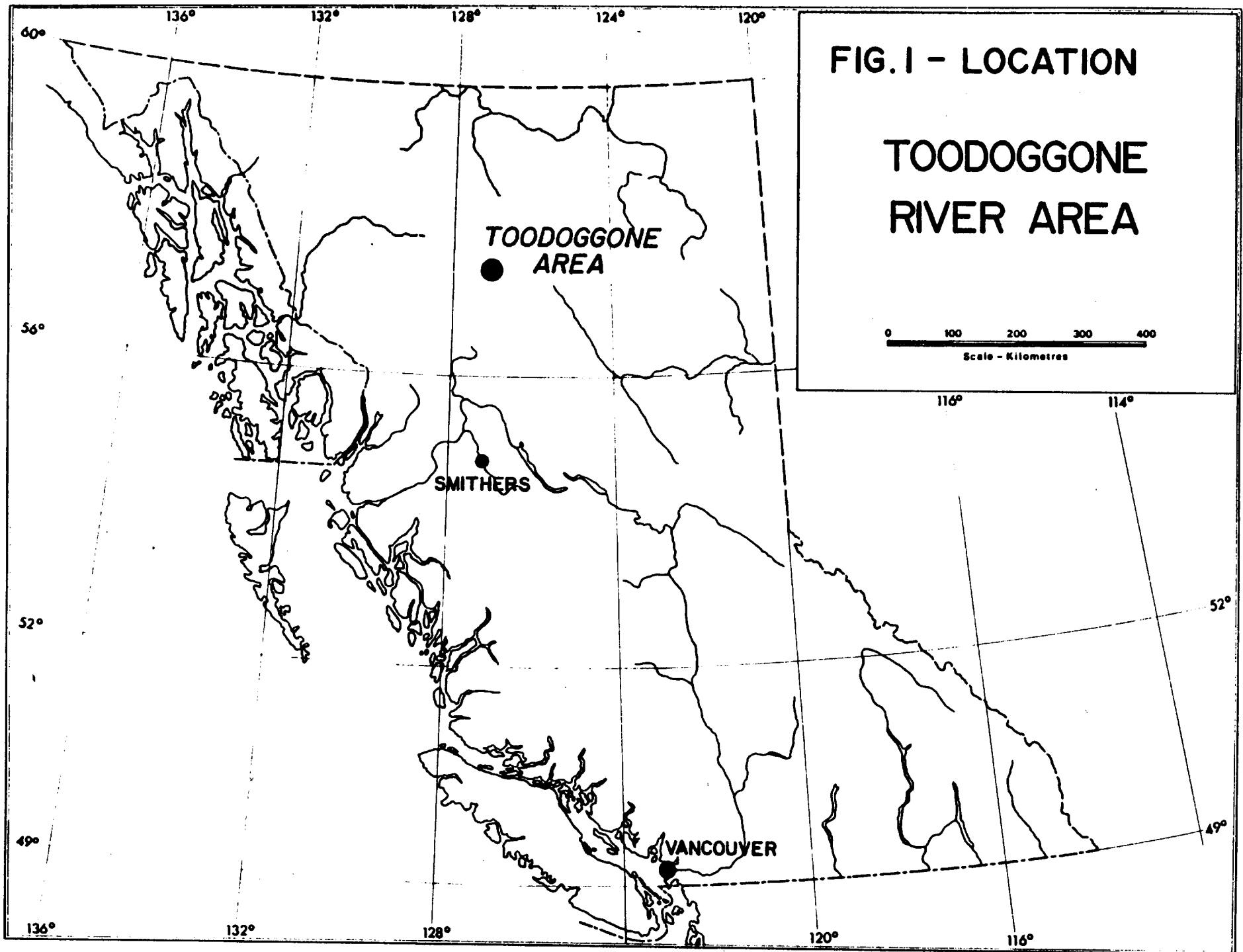
The mineral claims are 300 km north of Smithers and are accessible by fixed-wing aircraft and helicopter.

The Toodoggone River area is a significant epithermal precious metals district. Proven deposits include the formerly producing Baker gold-silver mine and the Lawyers property which has a reported reserve of 1 million tonnes grading 7.27 grams/tonne gold and 254 grams/tonne silver. The Lawyers and several other significant gold-silver prospects in the area are hosted by early Jurassic Toodoggone volcanic rocks.

The Joanna I and II claims are underlain principally by Hazelton and Takla Group volcanic rocks which are slightly older than Toodoggone volcanics, but which are known to also host precious metals mineralization in the district. The claims include at least one major fault structure and previous work has indicated the presence of fracture controlled sulfide mineralization with interesting copper and silver mineralization. No gold analyses are available from previous work on or near the claims.

A two-phase exploratory program is recommended for the Joanna I and II claims on the basis of their geological setting and results of previous work in the area of the claims.

Phase I, to include geochemical sampling and analysis, geological mapping and prospecting, is estimated to cost \$45,500. A second phase, contingent on results of Phase I work, and recommended to include follow-up sampling and possibly hand trenching, has estimated costs of \$60,000.



INTRODUCTION

Armor Development Corporation owns the Joanna I and II mineral claims, comprising 40 units and situated in the Toodoggone River area of north-central British Columbia.

This report, prepared at the request of Armor Development Corporation, is based principally on published and unpublished maps and reports pertaining to the general Toodoggone area. These are listed in the References section at the end of this report.

The writer has not visited the Joanna I and II mineral claims but has examined prospects situated several kilometres to the southwest. Further, the writer has a good knowledge of the Toodoggone area based on numerous property examinations and supervision of several exploration programs over the past 14 years.

LOCATION AND ACCESS

The Joanna I and II mineral claims are situated 300 km north of Smithers in the Toodoggone River area of north-central British Columbia (Figure 1). The geographic centre of the claims is at latitude 54°28' North and longitude 127°06' West in NTS map-area 94E/6E.

Access into the Toodoggone area is by fixed wing aircraft to a 1600 metre long gravel airstrip on the Sturdee River (Figure 2). The claims are a 40 km helicopter flight north

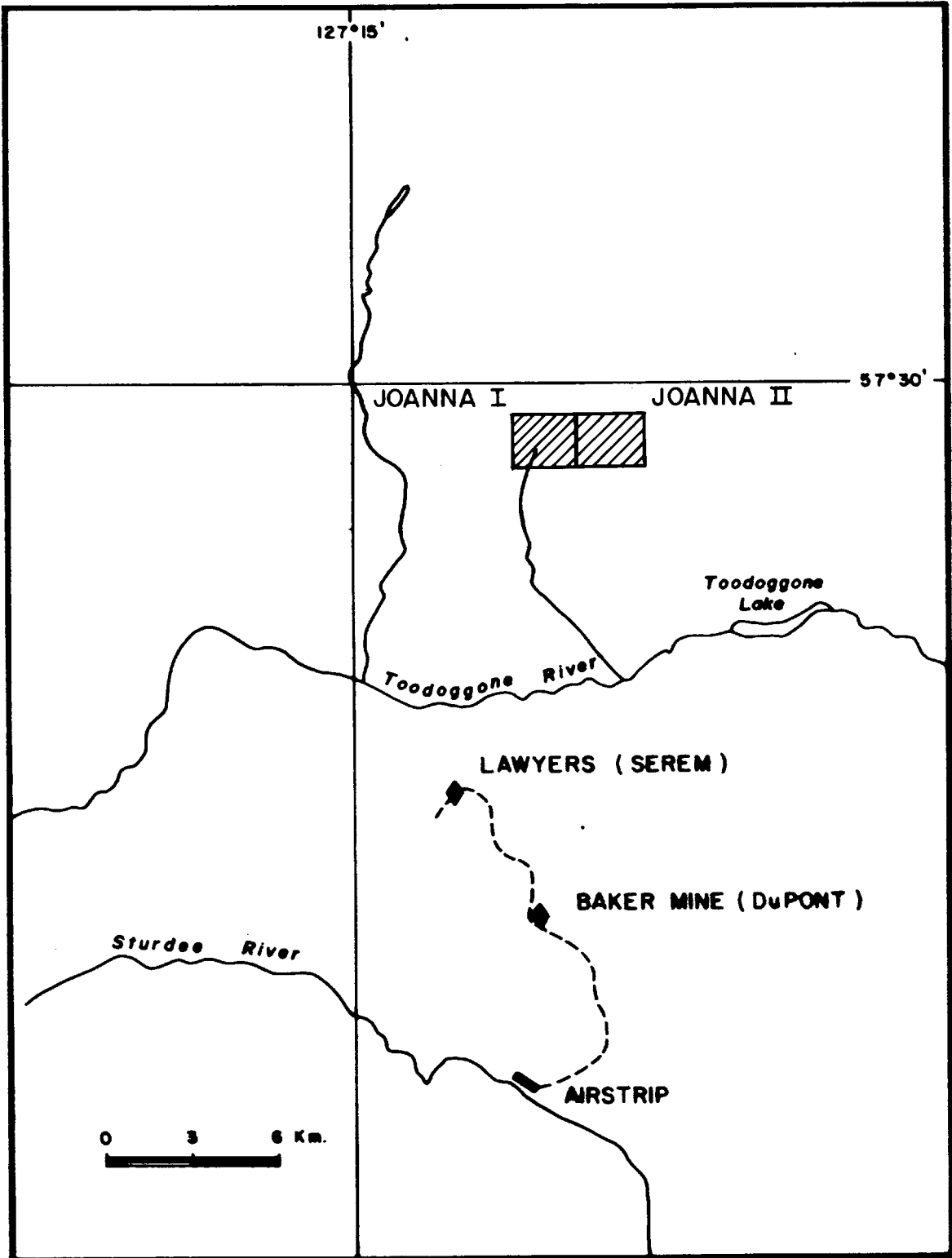


FIGURE 2 - LOCATION - JOANNA I and II MINERAL CLAIMS

of the airstrip.

A road currently links Baker mine and the Lawyers property with the Sturdee airstrip (Figure 2). An application has been made to the Provincial Government for assistance in extending the Omineca Mining Road into the area from its present terminus 70 km to the southwest. A positive decision in this regard would have a major impact on current logistics by affording conventional access to Prince George and points south.

MINERAL PROPERTY

The Joanna I and II modified grid claims comprise 40 units in the northern part of the Omineca Mining Division near its boundary with Liard Mining Division. (Figures 2 and 3)

The claims are believed to have been located in accordance with procedures as specified by the Mineral Act Regulations for the Province of British Columbia. The claims were located a few months ago, subject to winter conditions.

The writer has reviewed data provided by the locators of the claims and available claim records on file with the Mineral Titles office, Victoria.

Details of the claims are as follows:

Name of Claim	Units	Record Number	Expiry Date
Joanna I	20	6939	March 25, 1986
Joanna II	20	6940	" " "

PHYSICAL FEATURES

The Toodoggone River area forms the east side of the Spatsizi Plateau, an open gently rolling upland surface dissected by wide valleys. The Toodoggone area proper features more rugged relief, broken by broad, alluvium-filled valleys. Steep-walled cirques are common on north-facing slopes while southerly slopes are generally more gentle and rounded.

The Joanna I claim covers relatively moderate topography including the open Belle Creek valley (Figure 3). Elevations range from less than 1400 metres near the south end of Lower Belle Lake to more than 1600 metres on the east and west boundaries of the claim. The area adjacent to Belle Creek is open tundra with locally dense buck brush and willows. Above this, tree line extends to the borders of the claim. A prominent topographic feature is Gordonia Gulch in the centre of the claim and in which a creek flows west into Belle Creek drains two tarn lakes.

The Joanna II claim covers rugged topography and includes the summit of Mt. Gordonia at 2180 metres elevation (Figure 3). Steep slopes and cirque headwalls prevail and the area of this claim is well above tree line.

Bedrock exposures in lower areas of the Joanna I claim are probably confined to Belle Creek and tributary drainages and to some of the steeper slopes. Bedrock should be well exposed

on the Joanna II claim with abundant talus and felsenmeer being marginal to cirque headwalls and on most slopes.

Much of the claims area is snow free between late June and early October, with the exception of higher areas.

HISTORY

The Toodoggone area was investigated for placer gold in the 1920's and 1930's. A public company, Two Brothers Valley Gold Mines Ltd., undertook considerable test work including drilling in 1934. Most of this work was directed to extensive gravel deposits principally near the junction of McClair Creek and Toodoggone River 10 km south of the Joanna I and II claims.

Lead-zinc mineralization near the north end of Thutade Lake and south of Baker mine was also investigated in the 1930's.

Gold-silver mineralization was discovered on the Chappelle (Baker mine) property by Kennco Explorations (Western) Ltd. in 1969. DuPont of Canada Exploration Ltd. acquired the property in 1974 and began production at a milling rate of 90 tonnes per day in 1980.

Numerous other gold-silver discoveries were made in the area in the 1970's and 1980's, including the Lawyers deposit which was discovered by Kennco in 1973 and optioned to SEREM Ltd. in 1979. Work on this property to date has included considerable trenching, drilling and underground development and

a feasibility study is currently underway.

The Toodoggone area has been the scene of intense exploration activity during the past four years with numerous companies exploring over 3,000 mineral claim units. Exploration and development expenditures to date are estimated to be in the order of \$33 million.

Early work in the area of the Joanna I and II mineral claims includes reported limited diamond drilling by Cominco in the 1930's on Oxide Peak immediately west of the Joanna I claim. The Oxide Peak area was relocated by DuPont in the early 1980's and preliminary surveys were done (Harron,1981; Drown,1982).

Part of the present claims area was held by Alakon Metals Ltd. in 1970 who undertook a magnetometer survey and limited bedrock sampling (McKelvie,1970). An area northeast of the claims was explored by Union Miniere Explorations in 1974 (Burgoyne,1974).

Considerable work, including drilling and trenching, has been carried out by Kidd Creek Mines Ltd. on Energex Minerals' JD prospect 5 km southwest of the Joanna I and II claims in the past few years.

REGIONAL GEOLOGICAL SETTING AND MINERAL DEPOSITS

The Toodoggone River area is situated near the eastern margin of the Intermontane tectonic belt. Oldest rocks in the area are late Paleozoic limestones in the vicinity of Baker mine

where they are in fault contact with late Triassic Takla Group volcanic rocks.

A distinctive lithologic volcanic sequence of early Jurassic age, called Toodoggone volcanics, is a subaerial pyroclastic assemblage of predominantly andesitic composition (Panteleyev, 1983). These unconformably overlie, or are in fault contact with older rocks, principally Takla Group volcanic rocks and undivided Hazelton Group flows and fragmental rocks.

Toodoggone volcanic rocks are contained in a 100 by 25 km northwest-trending belt extending from Thutade Lake in the south to Stikine River in the north.

Several major stratigraphic subdivisions of Toodoggone volcanics have been identified (Panteleyev, 1982; Diakow, 1983). These and older layered rocks of the Takla and Hazelton Groups are cut by Omineca granitic rocks of similar early Jurassic age near the eastern margin of the Toodoggone volcanic belt, and by subvolcanic intrusions related to Toodoggone volcanics.

Clastic sedimentary rocks of the Cretaceous-Tertiary Sustut Group overlie older rocks near the Stikine River and form the southwestern exposed margin of the Toodoggone volcanic belt.

Regional fault systems trend northwesterly and northerly through the area.

Several styles of economic mineralization have been identified (Schroeter, 1981) of which the most important are epithermal precious and base metal deposits hosted principally by lower

and middle units of Toodoggone volcanics, and to a lesser degree by Takla and Hazelton Group volcanic rocks. Gold-silver mineralization occurs in fissure veins, quartz stockworks, breccia zones and silicified zones in which ore minerals are fine-grained argentite, electrum, native gold and silver and lesser chalcopryrite, galena and sphalerite. Alteration mineral assemblages are typical of epithermal deposits with internal silicification, clay minerals and locally alunite, grading outward to sericite and clay minerals, chlorite, epidote and pyrite.

Examples include Baker mine, a fissure vein system developed in Takla Group volcanic rocks, but spatially related to porphyry dykes believed to be associated with Toodoggone volcanic rocks. Pre-mining indicated reserves were 90,000 tonnes grading 30 grams/tonne gold and 600 grams/tonne silver. Recovered grades during the three year mine life were about half the indicated grades due to initial mill recovery problems and greater than expected dilution during mining.

The Lawyers deposit has gold-silver mineralization in banded chalcedony-quartz stockwork veins and breccia zones developed in Toodoggone volcanic rocks. Three potential ore zones have been defined to date and recently announced reserves (Schroeter, 1985) are 1 million tonnes grading 7.27 grams/tonne gold and 254 grams/tonne silver. Numerous other epithermal gold-silver deposits in the area are hosted by lower and middle

units of the Toodoggone sequence. These include the Sha, Saunders, Moosehorn, Mets, Metsantan, Al, JD and Golden Lion prospects. Some prospects, such as Mt. Graves, are in Hazelton Group volcanic rocks, and the previously described Baker mine is hosted by Takla Group volcanics.

It is interesting to note that most of the known deposits and occurrences are adjacent to two northwesterly striking regional fault structures; the Sha-Baker-Lawyers-Alberts Hump structure and the Saunders-McClair fault system which is 1 km southwest of the Joanna I claim. Significant gold values associated with base metals mineralization have been encountered in several zones on Energex Minerals' JD property adjacent to the Saunders-McClair fault system.

Soil, rock and stream sediment geochemistry have proven to be useful tools in the search for epithermal precious metals deposits in the area. Gold and silver give diagnostic signatures, but analyses for copper, lead and zinc are also helpful.

PROPERTY GEOLOGY

The area of the Joanna I and II claims is one of varied geology (Gabrielse et al, 1976). The summit of Mt. Gordonia is underlain by north-northwest striking Hazelton Group flows and pyroclastic rocks. This sequence is apparently terminated a short distance north of the summit by a west-northwest fault along Gordonia Gulch north of which are more massive,

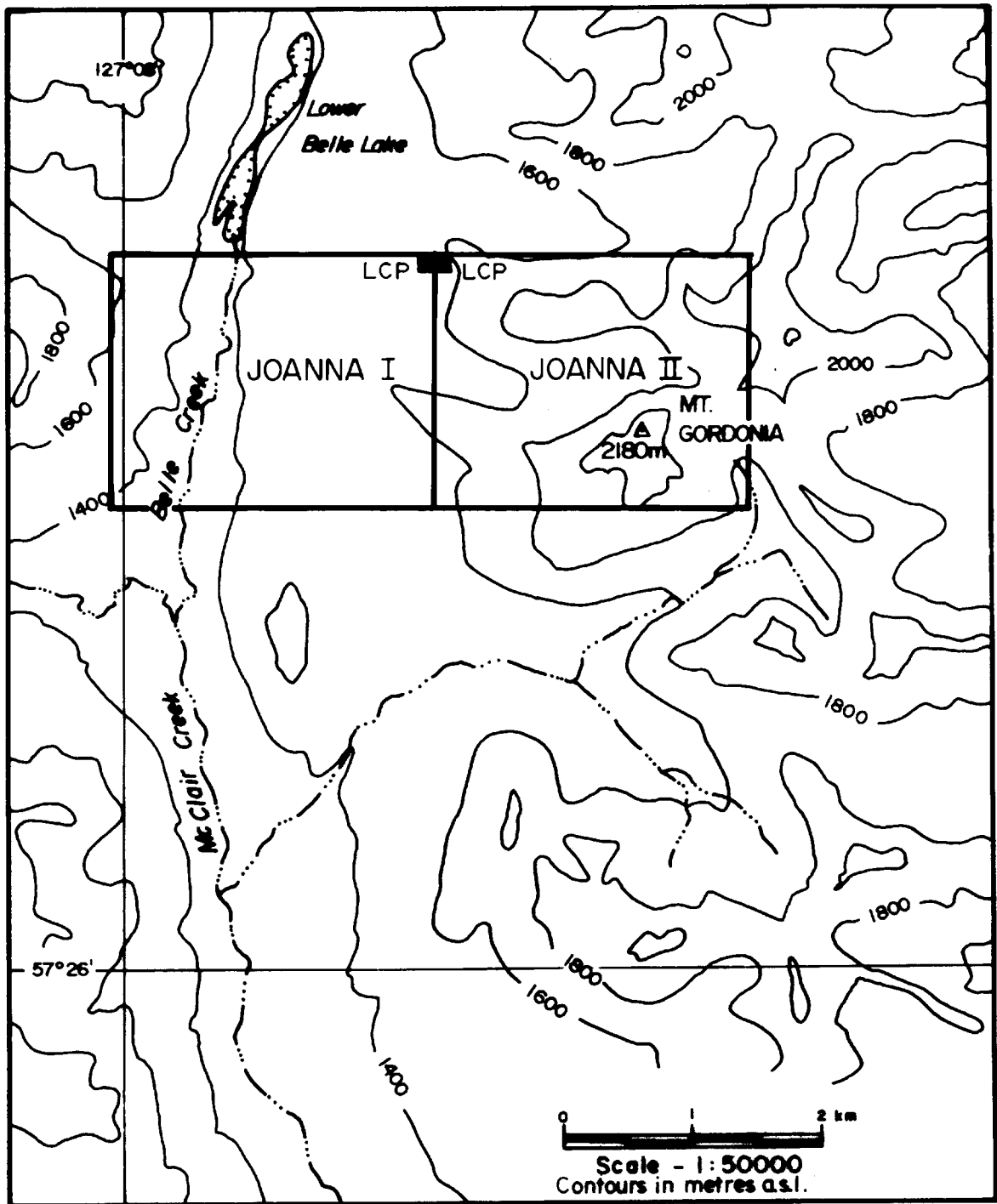


FIGURE 3 - JOANNA I and II MINERAL CLAIMS

basic volcanic rocks of the Takla Group. Gently dipping Toodoggone volcanic rocks apparently underlie Oxide Peak and the slope west of Belle Creek on the Joanna I claim.

A report of work by Alakon Metals Ltd. in 1972 (McKelvie, 1972) in the area of the present claims refers to pyrite, specular hematite, some copper staining and numerous quartz veinlets occurring in the bottoms of creeks draining cirques on the west side of Mt. Gordon. A grab sample from a 13 mm stringer of bornite reportedly assayed 6.7% copper and 133 grams/tonne silver.

Work by Union Miniere on claims northeast of the Joanna I and II (Burgoyne, 1974) identified two types of mineralization in Takla Group green and purple andesite flows and pyroclastic rocks. These included chalcopyrite in quartz-carbonate veinlets in fractured volcanics and chalcopyrite, galena, sphalerite and pyrite in bleached, silicified and carbonate altered volcanics reflected by prominent gossans. Two chip samples over 2 metre widths of a quartz vein and a rusty carbonate altered zone, both containing disseminated sulfides returned base metal values and 16 to 30 ppm silver. No analyses for gold were apparently carried out.

Several large soil geochemical anomalies with coincident high copper, lead, zinc and silver values were thought to be due to chemical and mechanical dispersion of metal values from restricted areas of fracture controlled mineralization.

The most significant known mineralization in the vicinity of the Joanna I and II claims is that on the JD property of Energex Minerals Ltd., five km southwest. A number of zones have been identified, including the Gumbo zone where recent drilling by Kidd Creek Mines Ltd. has outlined a geological reserve of 27,000 tonnes averaging 5.48 grams/tonne gold within a thrust fault in Toodoggone volcanic rocks.

CONCLUSIONS

The Joanna I and II mineral claims are situated in the Toodoggone River area which is noted for epithermal gold-silver deposits and occurrences.

The claims feature varied geology with at least one known major fault structure present. The claims include volcanic rocks of the Toodoggone, Hazelton and Takla Groups, all of which are known to host precious metals mineralization elsewhere in the district.

Previous work in the area of the claims has indicated the presence of fracture controlled sulfide mineralization with interesting copper and silver values. No analyses for gold are known to have been done on samples from the claims area.

An exploratory program of the Joanna I and II claims is warranted on the basis of their geological setting and results of previous exploratory work in the area of the claims.

RECOMMENDED PROGRAM

A first phase program of geochemical sampling , geological mapping and prospecting is recommended for the Joanna I and II mineral claims.

Soil and/or rock samples should be collected at 50 metre stations along 100 metre spaced east-west flagged compass lines on the Joanna I claim. Possible organic material adjacent to Belle Creek should be avoided and the possibility of weak concentrations of placer gold causing contamination of samples should be borne in mind. Stream sediment samples should be collected from drainages on the east side of Belle Creek and soil, rock and stream sediment samples should be analyzed for gold, silver, copper, lead and zinc.

More rugged topography on the Joanna II claim may render some areas inaccessible. Where possible, samples should be collected at 50 metre intervals along 100 metre spaced elevation contours. Talus fines samples could be collected at the base of steep cirque headwalls.

Geological mapping of the claims area should be complemented by diligent prospecting with particular attention being paid to alteration zones.

Contingent on favourable results being obtained from first phase work, phase two would include more detailed geochemical sampling and possibly hand trenching in selected areas.

COST ESTIMATE

PHASE I

Geological mapping, prospecting	\$4000.00
Crew wages	\$6000.00
Camp and support costs	\$5000.00
Mobilization-demobilization	\$5000.00
Helicopter support	\$5000.00
Analytical costs	\$10000.00
Engineering, supervision	\$3000.00
Report preparation	\$1500.00
Contingencies	<u>\$6000.00</u>
Total, Phase I	<u>\$45500.00</u>

PHASE II

Follow-up geochemical sampling, hand trenching	<u>\$60000.00</u>
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CERTIFICATE

I, NICHOLAS C. CARTER, do hereby certify that:

1. I am a Consulting Geologist resident at 1410 Wende Road, Victoria, British Columbia.
2. I am a graduate of the University of New Brunswick with B.Sc.(1960), Michigan Technological University with M.S.(1962), and the University of British Columbia with Ph.D.(1974).
3. I am a registered Professional Engineer in the Association of Professional Engineers of British Columbia.
4. I have practised my profession in eastern and western Canada and in parts of the United States over the past 24 years.
5. This report is based on research of published and unpublished reports and maps and on my background knowledge of the Toadogone River area.
6. I have no direct or indirect interest in the Joanna I and II mineral claims or in Armor Development Corporation.

N.C. Carter, Ph.D. P.Eng.

Victoria, B.C.
May 27, 1985