REPORT ON

GEOLOGICAL AND GEOCHEMICAL SURVEYS

by .

G.R. Peatfield, P.Eng.

on the

AL 1-6 MINERAL CLAIMS



situated north of Metsantan Lake in the Liard Mining Division 57°28' N, 127°24'W NTS 94E/6W owned by

TEXASGULF CANADA LTD.

work by

TEXASGULF INC.

June 1981

Vancouver, B.C.

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INTRODUCTION

Location, Access and Terrain

The Al property is located east of the Stikine River and directly north of Metsantan Lake, in north-central British Columbia (see Figure 1). The nearest supply and transportation centres are Smithers, some 300 km due south, and Watson Lake in the Yukon, some 300 km to the north.

Access to the claims is by a combination of fixed wing aircraft from Smithers or Watson Lake to the Sturdee Valley airstrip 30 km southeast of the property, and local helicopter charter thereafter. Fixed wing aircraft can also land at Metsantan Lake. There is no road access although it has been suggested that the Omineca mining road to the south may be extended into the Toodoggone River area in the future.

The claims are located near the eastern margin of the Spatsizi Plateau and cover a subdued ridge of gentle to moderate relief with elevations ranging from 1400 m to 1690 m (see Figure 2). The lower most parts of the property are covered by an intermixed growth of spruce, balsam, fir and willow that give way to scattered, stunted growths of alpine fir, spruce and scrub willow above 1550 m. Extensive areas of alpine grassland occur above 1600 m which makes for easy foot travel. Water supplies may become scarce at all but the lowest elevations during midsummer.

Property History and Definition

The area was originally staked by Sumac Mines Ltd. in 1971 for its porphyry copper potential. The claims were allowed to lapse after several seasons fieldwork. Rising prices for both gold and silver and close proximity to the Chapelle and Lawyers deposits prompted Energex Minerals Ltd. to stake the Al 1-4 claims in 1979. Work described in this report was undertaken by Texasgulf Inc., on behalf of its wholly owned subsidiary, Texasgulf Canada Ltd., the current registered owner of the claims.

The property now consists of 8 MGS claims totalling 132 units (see Figure 3) entirely within the Liard Mining Division. Al 5 and 6 were located in June 1980; Al 7 and 8 in April 1981.





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Summary of Work Completed

Geological surveys

Between June 16 and June 23, H.R. Schmitt did a small amount of geological mapping on the claims. Mapping was carried out at a nominal scale of 1:31,680 using ITEC airphotos and was later transferred to an orthophoto topographic map at a scale of 1:5000. This work was to revise earlier mapping, as reported in Schmitt and Peatfield (1980).

Geochemical surveys

During the period June 16-23, a total of 172 soil samples were collected on three grids. They were analyzed for Cu, Pb, Zn, Mo, Au, Ag, Hg, and As. Some other scattered rock and silt samples are shown on the maps but not claimed for credit.

Work Distribution

Geological and geochemical surveys were conducted on Al 1-4 and Al 6, with the work distributed equally between the HUMP-81 group (Al 1, 2, 7 & 8) and RIDGE-81 group (Al 3, 4, 5 & 6).

GEOLOGY

Regional Setting

The Al property lies within a Mesozoic volcanic arc assemblage flanked to the east by the Omineca Crystalline Belt, and to the west and south by the Sustut and Bowser basin assemblages. Mapping by Gabrielse et al. from 1981 to 1975 defined a sequence known informally as the "Toodoggone" volcanic rocks, which underlie the property and are described as follows: LOWER AND/OR MIDDLE JURASSIC [UNIT 16]

Dacite, latite, rhyolite, tuff, breccia, flows; local maroon weathering conglomerate of uncertain age; includes local intrusive equivalents.

These volcanics may in part be coeval with the LOWER JURASSIC HAZELTON GROUP. The Ministry of Mines and the Geological Survey are considering field programs to more clearly define the regional geology.

Property Geology

The geology of the Al property is complex and has not been studied exhaustively. An overall understanding of the property geology is limited by a scarcity of outcrop over broad areas (see Figure 4 east and west). The following description is based on 2 man-weeks of field work without the benefit of examination of thin sections.

In summary, the claims cover an area underlain by a moderately thick section of (presumed) Lower to Middle Jurassic feldspar-hornblende porphyry flows and clastic rocks intruded by coeval(?) magnetite-bearing syenite and well altered monzonite dykes. Pyritic monzonite dykes are very often associated with striking gossans. Mineralization, other than pyrite, discovered to date consists of minor chalcocite in a rhyolitic breccia, and an as yet unidentified black sulphide associated with rare quartz veinlets. Individual rock units are discussed in more detail below.

Volcanic rocks

UNIT 1 - Volcanic rocks designated as UNIT 1 consist of green to grey feldspar-hornblende-biotite andesites and/or trachytes. These rocks occur predominantly in the south-east part of the claims at lower elevations and appear to have variable shallow dips. Fine- to medium-grained phases are characterized by abundant euhedral to anhedral white to salmon-pink feldspars altered to clay minerals, with lesser amounts of euhedral hornblende altered to a mixture of chlorite and specular hematite. Biotite is less common than hornblende and usually altered to a mixture of sericite and iron oxides. Pyroxenes, usually augite, were occasionally noted. A fine-grained to aphanitic matrix composed largely of feldspar is locally altered to epidote.

UNIT 2 and UNIT 2a - Maroon weathering feldspar-hornblende andesite occurs throughout much of the property. Feldspar and hornblende phenocrysts show similar textures and alteration features as in UNIT 1 although there is a tendency towards a more trachytic texture. Biotite and pyroxene are commonly replaced by specular hematite, which appears to be the cause of the maroon colouration. Flows commonly contain subrounded clasts of similar material. UNIT 2a represents a lithologically similar sequence of tuffaceous agglomerates and minor breccias that are intimately interbedded with the porphyry flows.

UNIT 5 - Feldspar porphyry rocks containing substantially less hornblende and biotite with occasional quartz grains in a felsitic to aphanitic groundmass are tentatively grouped under a dacite to latite classification. These rocks are often siliceous and appear spatially related to rhyolitic units. In the field they range from maroon-grey to green-grey in colour. Locally, there are very small (less than 2 mm wide), subparallel quartz veinlets.

UNIT 6 - Prominent ridges and resistant knolls are frequently underlain by a variety of well fractured light-grey to cream-coloured rhyolite breccias, feldspar and quartz-eye bearing rhyolites, rhyolitic crystal tuffs, and possibly silicified dacites. The well fractured nature of these rocks makes it difficult to obtain much textural information. Some varieties previously contained from 5% to 20% pyrite, however only exogenous boxwork structures now remain. An isolated occurrence of chalcocite and an amethyst bearing quartz veinlet were observed in this unit.

UNIT 7 - Light grey to cream-buff coloured quartz-eye rhyolites form resistant isolated ridges and may be related to volcanic centers. Quartz eyes are generally colourless to smoky and range from 1 to 4 mm across, commonly comprising 2% to 10% of the rock. Feldspar phenocrysts occur as altered white

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relicts or ghosty outlines in the glassy matrix. Uncommon biotite crystals are replaced by pyrite or later iron oxides. Near the western boundary of the claims hydrothermal activity has resulted in a substantial area of alunite alteration within the rhyolite.

UNIT 8 - Although not within the claim boundaries, UNIT 8 is a younger green-grey poorly sorted volcanic conglomerate and/or lithic wacke. Rounded to subangular clasts consist of feldspar-hornblende porphyry and occasional quartz-eye rhyolite fragments in a gritty feldspathic matrix. These rocks exhibit very shallow dips to the west, and lie topographically above UNIT 7.

Intrusive rocks

UNIT 3 - Feldspar porphyry dykes affected by intense pyrite-sericite <u>+</u> kaolinite-quartz alteration intrude andesitic to dacitic volcanic rocks and give rise to extensive gossans. They are very likely coeval with UNITS 1, 2 and 5 and may be related to the feeder system for these volcanics. Pervasive silicification and pyritization of volcanics occurs adjacent to monzonitic dykes.

UNIT 4 - Hornblende-feldspar-biotite porphyry intrusives occur at a number of locations as dykes or plugs. In the field these rocks are characterized by green-grey to salmon-green coloured blocky weathering outcrops. Large biotite books are invariably present and the rock is very often strongly magnetic. Some of these intrusives appear to be coeval with UNITS 1 and 2 and are often difficult to distinguish from them near their contacts.

Structure

An overall structural interpretation is limited by discontinuous rock exposure. Where good exposures are available the volcanic sequence generally appears to be nearly flat-lying with occasional shallow dips to the west or southwest. Local steep dips may be the result of faulting. As one proceeds up in elevation and simultaneously higher in the sequence, dacitic to rhyolitic rocks predominate. Intrusive units occur predominantly as subparallel dykes or elongate plugs.

Although there has been insufficient study to fully test the concept, it appears possible that an unconformity, perhaps of only local extent, exists below the rhyolitic rocks of UNITS 6 and 7. Some isolated occurrences of rocks mapped as UNIT 6 may represent volcanic necks or breccia pipes cutting older units. Much more detailed mapping will be necessary to define structural elements in these complex volcanic strata.

Mineralization

Very little visible economic mineralization was noted on the property. Minor chalcocite in a rhyolitic breccia and a black unidentified sulphide associated with quartz veinlets were the only noteworthy occurrences other than locally intense pyritization of volcanic and monzonitic rocks. This is not to be regarded as discouraging since at the Lawyers property significant gold and silver mineralization occurs in similar rocks devoid of other sulphides.

GEOCHEMISTRY

Soil, silt and rock samples were collected in the course of the mapping programme. A total of 172 soil samples, distributed in three grids as shown on Figure 5a (east & west), were collected and shipped to Bondar-Clegg & Co. Ltd. in North Vancouver for analysis. There the minus 80 mesh portion of the soils were analysed for Cu, Mo, Pb, Zn, As, Hg, Ag and Au. The maps show locations of many other samples for which assessment work credit has already been claimed.

Material from B 1 horizon at 15-30 cm depth

A summary of the extraction and analytical techniques is as follows:

<pre>Element(s)</pre>	Extraction	Method of Analysis
Cu, Mo, Pb, Zn, Ag	Hot Lefort Aqua Regia	Atomic absorption
Au	Fire assay and hot Aqua Regia	Atomic absorption
As	HC10 ₄ -HNO ₃ Arsine	Colorimetric
Нд	Aqua Regia	Closed Cell, flameless

The results of the geochemical analyses are plotted on Figures 5b-5e (east and west). Some anomalies, especially in Au and Ag, have been outlined and require further work.

6. R. Pea field

G.R. Peatfield, P.Eng. 09/06/8/

BIBLIOGRAPHY

GABRIELSE, H., DODDS, D.J., and MANSY, J.L. 1975. Geology-Toodoggone River (94E). Geological Survey of Canda, Open File 306.

SCHMITT, H.R. and PEATFIELD, G.R. 1980. Report on geological and geochemical surveys on the Al 1-4 Mineral Claims. Report submitted to the British Columbia Ministry of Energy, Mines and Petroleum Resources for assessment work credit.

APPENDIX A

Statement of Qualification

STATEMENT OF QUALIFICATION

H.R. Schmitt - Geologist

H.R. Schmitt obtained his B.Sc. degree in Geology from the University of British Columbia in 1977. He has been employed in a variety of positions by Texasgulf, for summer seasons from 1975, and was continuously employed by the Company from April 1978 to Sept. 1979. He is presently enrolled in post-graduate studies at U.B.C.

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APPENDIX B

Statement of Expenditure

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STATEMENT OF EXPENDITURES

AL PROPERTY

SALARIES AND FRINGE BENEFITS - TEXASGULF INC.

H.R. Schmitt - Geologist Period June 16-23, 6 days @ \$90	540.00		,
A.C. Edwards - Assistant Period June 16-23, 5 days @ \$40	200.00		
J. Pattison - Assistant Pariod June 16-23, 5 days @ \$40	200.00	• •	
	940.00		940.00
ROOM AND BOARD			
16 man-days @ \$30/day			480.00
HELICOPTER			
Texasgulf Bell 206B 3.0 hrs @ \$330 Viking Helis (invoice)	990.00 640.00		• •
	1,630.00		1,630.00
ANALYTICAL COSTS			
Soil geochemistry 172 samples @ \$15.80	•		2,717.60

Soil geochemistry 172 samples @ \$15.80

REPORT PREPARATION

Draughting, reproductions, maps, etc.	200.00	
G.R. Peatfield, P.Eng. 1 day @ \$180	180.00	
H.R. Schmitt - Geologist 2 days @ \$90	180.00	
	560.00	

pro-rate to: HUMP-81 Group -3,163.80 RIDGE-81 Group -3,163.80

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560.00 6,327.60















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