5275

104B/11E&W

GEOLOGICAL REPORT

QUINELLA CLAIMS

Bronson Creek Area, Liard Mining Division

Lat. 56° 40' Long. 131° 2'

Map 104B

Claims: Quinella 1-64

Owner: Ecstall Mining Ltd.,

Operator: Ecstall Mining Ltd.

Report by: A. L'Orsa

November, 1974 Vancouver, B.C.

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SUMMARY

At the Mt. Johnny prospect a northeasterly striking zone of pyrite veins with small amounts of chalcopyrite and very minor sphalerite and galena occurs in fracture fillings at the base of an intermediate to siliceous volcanic pile of probable late Upper Triassic Age. Chlorite and carbonate alteration is associated with the mineralization. The volcanic rocks rest unconformably upon Middle Triassic or Paleozoic clastic sedimentary rocks.

At the Red Bluff prospect chalcopyrite and other sulphide minerals are associated with an orthoclase porphyry intrusion in siltstones and shales of Middle Triassic Age or older. A large alteration zone of the type associated with porphyry copper systems accompanies the intrusion. Chip sample assays include five feet containing 0.66% Cu with 0.15 oz/t Au and 30 feet carrying 0.23% Cu.

INTRODUCTION

The Quinella claims were staked by Texasgulf Inc. in September, 1973, covering old prospects on Mt. Johnny and at Red Bluff on lower Bronson Creek. There are two groups of Crown-Granted mineral claims in the Red Bluff-Johnny Flats area, the exact locations of which have not been determined. The accompanying Quinella claims map shows the very approximate locations of the old claim groups based upon topographical descriptions in the original survey notes.

Geological mapping, trenching and prospecting were done in the Red Bluff area during the period 4 June - 4 July, 1974. Geological mapping, prospecting and reconnaissance I.P. and E.M. surveys were done in the Mt. Johnny area during the period 29 July - 14 September, 1974.

Personnel employed on the projects at various times during the summer, in addition to myself, were L.A. McJannett, E.W. Medley and, at Red Bluff only, Lloyd Hokazono and Ian Cormie.

The I.P. survey was made by a Geoterrex crew headed by John Lobach. The E.M. work was done by W. Gersteiger, Texasgulf Inc.

Rock exposure, except on Mt. Johnny, is generally poor.

TEXASGULF INC.

JOHNNY FLATS & RED BLUFF PROSPECTS

QUINELLA CLAIMS, LIARD M.D., B.C.

MAP 104 B 1:250,000

LOCATION AND ACCESS

The area is centered at approximately 56° 39' N. lat. and 131° 2' W. long., three miles south of the confluence of Bronson Creek and the Iskut River, Liard Mining Division, British Columbia.

The Mt. Johnny showings are between 3,700 and 4,200 feet elevation at the northwestern base of Mt. Johnny.

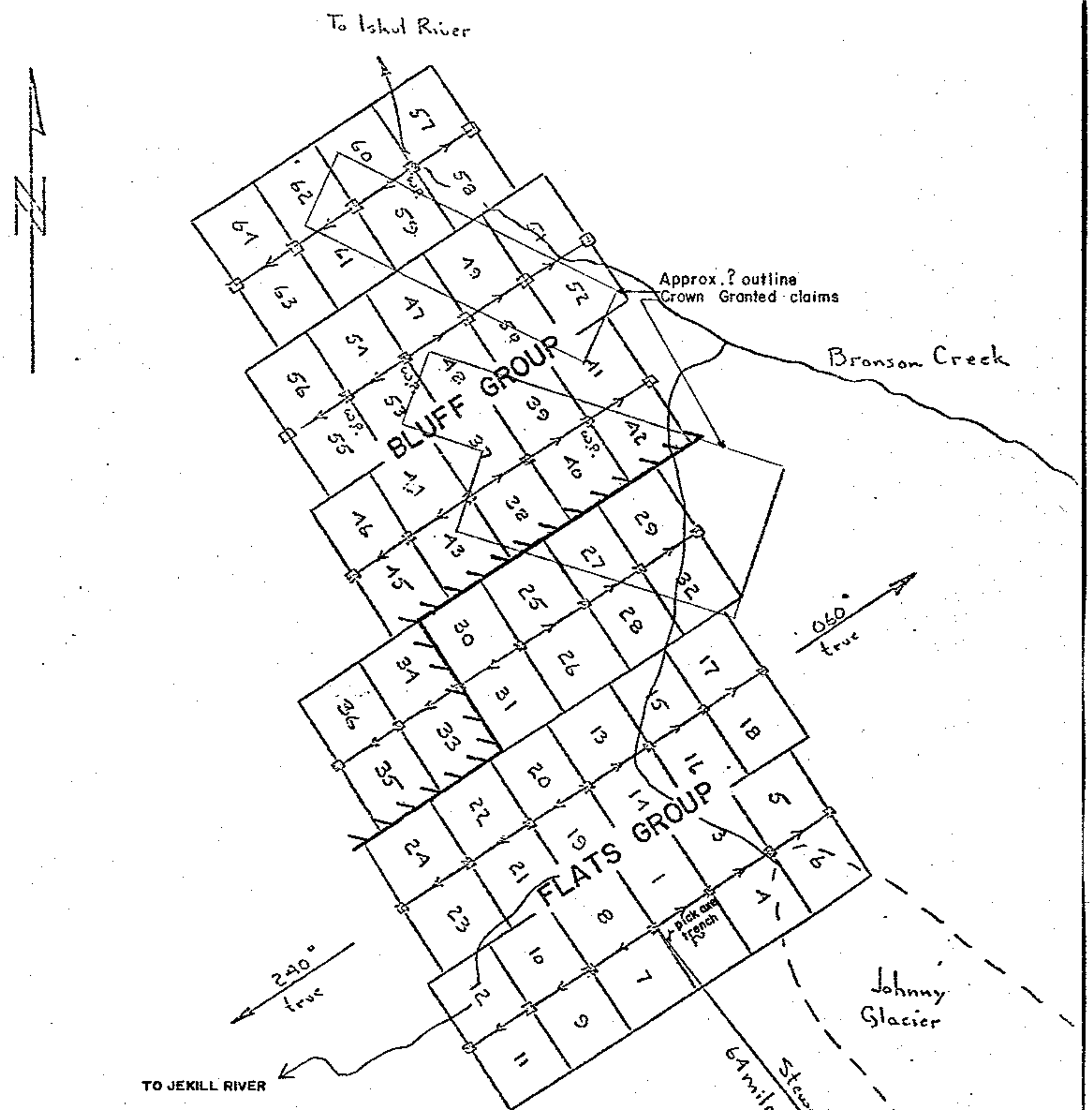
The Red Bluff trenching is at approximately 600 feet elevation just south of the lake on the lowest tributary of Bronson Creek shown on map 104B.

HISTORY AND DEVELOPMENT

The earliest record of work in the area dates from 1907 when E.S. Busby, Inspector of Canadian Customs and F.E. Bronson, Deputy Collector of U.S. Customs, Wrangell, Alaska, and their associates staked nine claims (Iskoot group) to cover some galena-spalerite veins on Johnny Flats. Johnny Flats is the rolling alpine tract that extends northwest from Mt. Johnny toward the Iskut River.

In 1909 the Red Bluff claim was located along Bronson Creek, followed in 1910 by three additional and adjacent claims staked by F.E. Bronson and others (Red Bluff group).

Both groups of claims were surveyed in 1912 and the Iskoot group claims were Crown-Granted in 1914. In 1918 the Red Bluff claims were also Crown-Granted.



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5275 MAP #2

0 1000' 2000' 3000' 4000' 5000'

5275
MAP 2

TEXASGULF INC.

QUINELLA CLAIMS

LIARD M.D.

SCALE 1 IN. = 1/2 MILE

Early development work included trenching on both claim groups and two adits on the Red Bluff group. An adit ten feet in length enters the southeastern end of the orthoclase porphyry at approximately 825 feet elevation and the other adit, 27 feet long, was driven in 1916 into altered siltstones on Bronson Creek below Red Bluff. The Iskut Mining Co. held and worked on both claim groups during the period of the First World War. Access was by boat from Wrangell.

Forty-eight claims were staked in the area for Consolidated Mining and Smelting Co. in 1929. There is no published record of important subsequent activity until the early 1960's, when Kennco, Noranda, Hudson Bay Mining and Smelting and, judging from debris at an old campsite, New Jersey Zinc Co., prospected in the region, (Minister of Mines). At least two short diamond drill holes were put down on the Mt. Johnny prospect during this time.

The most recent work has been done by Cominco Ltd., including detailed mapping on a scale of 1 inch = 200 feet at the Mt. Johnny prospect (Bagshaw, 1968) and 1,112 feet of diamond drilling in eight holes at Red Bluff (Parsons, 1966).

GEOLOGICAL SETTING

The area embraces Middle Triassic or older shales, limestones and coarse clastic rocks unconformably overlain by an eugeosynclinal assemblage of probable late Upper Triassic to Middle Jurassic Age which in turn is overlain by the successor basin clastics of the Bowser Group, outcropping to the east. Granitic rocks of the coast intrusions border the area on the west and south. Several stocks ranging from diorite to granitic in composition are present in the district (Souther and others, 1974). A number of northwest striking felsite dykes outcrop between the Jekill River and Mt. Johnny.

In the immediate area of the mineral claims, shales, siltstones, greywackes and conglomerates, assigned to the Middle Triassic or earlier, have been folded and subsequently intruded and covered by intermediate to siliceous intrusive and extrusive rocks of the Mt. Johnny igneous complex, probably in late Upper Triassic time (Souther, 1974).

MT. JOHNNY PROSPECT

GEOLOGY

Mt. Johnny is the erosional remnant of an igneous complex comprising both intrusive and extrusive rocks, which cuts through and rests unconformably upon Middle Triassic or older sedimentary rocks. Pyrite and chalcopyrite occur in veins associated with the contact between the igneous complex and the sedimentary rocks.

Sedimentary rocks. Aside from some schists and gneisses west of the claims, the oldest rocks in the Mt. Johnny area are black shales with subsidiary interbedded greywackes, local conglomerates and very minor limestone.

The conglomerates range from pebbly wackes to conglomerates with a few black shale lenses. The rocks contain cobbles and pebbles of argillite, greywacke and possible volcanic rocks. Scattered boulders up to two feet in diameter were observed. The conglomerates strike northwest and dip moderately steeply to the northeast. The rocks are dark grey in colour and weather a dark grey-brown. They are well exposed at the toe of the first glacier southwest of Mt. Johnny, where they extend northward up on to the west shoulder of the mountain and grade into black shales. Two corals were found in limestone lenses at the top of the conglomerate unit, above the glacier toe.

Black shales (including argillite, slate and local phyllite), with lesser amounts of interbedded siltstones and greywackes, underlie Johnny Flats and are the dominant rock types at lower elevations all the way around Mt. Johnny. These rocks strike northwesterly and appear to be in conformable contact with the conglomerates. The shales dip steeply northerly and southerly in the Johnny Flats area. The bedding is highly contorted, at least locally, at the eastern base of Mt. Johnny along the west side of Bronson Glacier.

On the western shoulder of Mt. Johnny there are three small exposures of limestone in the shale unit. The strongest of these is a bed of medium grey limestone with irregular, recrystallized masses of chert. The bed probably does not exceed 10 feet in width.

At the southeastern end of Johnny Flats, on the basal slope of Mt. Johnny, there are some small exposures of clastic sediments that appear to conform in attitude with the Mt. Johnny volcanic rocks rather than with the underlying shales. These rocks are probably of Upper Triassic age.

Volcanic rocks

The extrusive rocks on Mt. Johnny are predominately pyroclastics and range in composition from andesite to dacite or rhyolite. Breccias and tuff breccias are by far the most abundant rocks in the pile. Breccia blocks measuring one foot or more in diameter are fairly common. Siliceous, fine-grained, thin-bedded tuffs occur locally as do siliceous flow banded rocks.

South of Johnny Glacier the volcanic rocks generally dip gently north to west, away from the margins of the igneous complex as now exposed. On the ridge between Johnny Glacier and Bronson Creek dips are also gentle, but to the southeast, away from the felspar porphyry intrusion that marks the edge of the igneous complex south of Bronson Creek.

The andesitic rocks are commonly epidotized and in places carry quartz-chlorite-epidote-specularite veins. In some pyroclastic rocks the coarse fragments are completely epidotized.

No attempt was made to work out the stratigraphy of the volcanic pile. It was noted, however, that some of the most prominent andesite outcrops occur high in the section with coarse siliceous pyroclastics above and below.

Intrusive rocks

The intrusive rocks of the Mt. Johnny complex comprise two main types. The first type is a medium dark grey feldspar porphyry with plagioclase phenocrysts averaging approximately 2 mm in length. The rock does not carry conspicuous quartz. Disseminated magnetite is present locally. This feldspar porphyry borders the northern and at least parts of the eastern and southern edges of the igneous complex and forms dykes on all sides. This rock type is also common in volcanic breccias on Mt. Johnny and in some outcrops it is difficult to differentiate between intrusive and extrusive modes.

The second main type of intrusive rock is a pale grey, rusty weathering felsite with 2 mm plagioclase phenocrysts visible locally and 1% to 3% disseminated cubic pyrite generally present. This rock occupies the peak of Mt. Johnny and much of the west slope of the mountain down to 6,000 feet elevation. Some of the felsite dykes in the volcanic pile and adjacent sediments may be related to this intrusion.

There are several varieties of similar rocks which form dykes associated with the basal contacts of the igneous complex as well as dykes and sills in the surrounding sedimentary rocks. A conspicuous variety is a porphyry with feldspar phenocrysts 5 mm in length which occurs along the southern and western contacts of the complex.

Several large (up to 400 feet or more in width) north trending felsite dykes including at least one quartz-felspar porphyry intrude the sedimentary rocks between Mt. Johnny and the Jekill River. A thin section cut by Cominco Ltd. from one of the felsite dykes outcropping on the west side of Johnny Flats, reportedly contained quartz, orthoclase and minor sericite and fluorite (Parsons, 1966).

A few small (1-2 feet wide), northeast trending, vertical mafic dykes strike across Mt. Johnny and probably represent the last intrusive event in this sequence.

Structure

The only well exposed contact observed between sedimentary rocks and the extrusive phases of the Mt. Johnny volcanic pile is a fault contact at 5,200 feet elevation west of the peak of Mt. Johnny. Faulting is accompanied by extensive shearing, chloritization, local biotite and quartz-carbonate veins with minor sulphide minerals including galena. This is one of several substantial north to northwest striking and steeply dipping faults in the area. Others include a zone of bleaching and brecciation up to ten feet in width near the toe of Johnny Glacier with ankerite, quartz and minor pyrite; shearing along northwest flowing creeks on Johnny Flats and shearing accompanied by heavy pyritization locally along the northeast and east sides of Mt. Johnny.

A zone of west dipping shearing and fracturing approximately 600 feet wide strikes easterly across the lower south side of the cirque on the western side of Mt. Johnny. In this zone, particularly in the topographically higher parts, numerous quartz-filled tension gashes occur locally. These gash veins strike northeast and dip about 50° southeast suggesting, when considered together with the west dipping shearing, relative northwesterly movement by volcanic rocks along the contact zone at the base of the volcanic pile. This zone contains most of the mineralization described below.

Mineralization

There are two main environments of occurrence of potentially economic mineralization in the Mt. Johnny area. They are:

1. A zone of pyrite veins with subsidiary amounts of chalcopyrite and local quartz, associated with chloritization, carbonatization, shearing and intrusive rocks on the lower western slopes of Mt. Johnny, at the contact between sedimentary and volcanic rocks. This zone also includes quartz gash veins that contain minor galena and sphalerite.

2. Galena-sphalerite-quartz-calcite veins that occur in sedimentary rocks northwest of the base of Mt. Johnny. These veins are discussed on the following pages with the Red Bluff prospect to which they may be related.

Pyrite veins. The strongest sulphide mineralization occurs in veins, in a zone of shearing, chloritization, carbonatization and local brecciation in volcanic and sedimentary rocks, that extend for approximately 4,000 feet northeasterly along the northwestern base of Mt. Johnny. The zone gradually weakens and disappears in the pyroclastic rocks below the toe of Johnny Glacier, but to the northwest the zone continues under overburden.

Pyrite is by far the most abundant mineral in the veins, followed by minor quartz and local concentrations of chalcopyrite and magnetite. In a few outcrops sphalerite, galena and calcite are also present, particularly at the northeastern end of the vein system. The pyrite occurs in cubic crystals with a tendency towards coarseness; pyrite crystals up to 3 mm in diameter were observed in vugs.

The veins are subparallel and rarely exceed one foot in width. They strike northeast and generally dip between 45° and 70° northwest. In most instances, the veins are widely spaced with very little pyrite between them, although a zone of heavy pyrite fracture filling and dissemination extends for 70 feet along upper Tool Creek.

The host rocks for the veins are mainly pyroclastics at the base of the Mt. Johnny volcanic pile, although a few veins also occur in the underlying sedimentary rocks and in dykes. At the toe of Johnny Glacier and on Tool Creek, some of the veins occur at dyke contacts.

Galena-sphalerite gash veins. Associated with, but generally topographically above the pyrite veins, is a set of northeast striking quartz gash veins, generally less than four inches in width, that dip approximately 50° southeast. These veins commonly contain small amounts of coarse galena and sphalerite with very little pyrite, minor calcite and, rarely, chalcopyrite. At the northeastern end of the zone, below the toe of Johnny Glacier, the gash veins also carry specularite, chlorite and more calcite as well as vugs with quartz crystals up to two inches long. The veins occur in both volcanic and sedimentary rocks but are best developed in carbonatized sediments outcropping immediately east of the heaviest pyrite vein occurrences. Both the gash veins and the pyrite veins appear to be related to movement at the base of the volcanic pile.

Alteration. The alteration associated with the main zone of sulphide mineralization (i.e., trenches area) comprises two adjacent zones; a chloritized and pyritized zone in pyroclastic rocks to the northwest and a carbonatized zone, mainly in sediments, to the southeast. These zones may be at least in part dependant upon rock type.

The chloritized zone carries almost all the strong pyrite veins. The pyrite fracture filling increases uphill toward the carbonate zone and reaches its maximum at approximately the chlorite-carbonate transition. This transition also marks the basal contact of the volcanic pile. The chlorite zone commonly contains thin coatings of hematite on shear and fracture planes and very minor sericite, particularly in felsite dykes.

The carbonate zone exhibits local pervasive carbonatization and numerous ankerite and calcite veins. In addition, the quartz gash veins with galena and sphalerite are most common in this zone. The altered rocks include both sedimentary and pyroclastic rocks. However, the attitude of the rocks suggests that they all belong to the underlying pre-Upper Triassic sequence, although pyroclastic rocks were not observed elsewhere in the older sequence. Alteration at this locality makes the contact difficult to pick.

Epidote is erratically distributed in pyroclastic rocks below the toe of Johnny Glacier. The mineral occurs in veins and in coarse pyroclastic fragments. Locally, at least, epidotization is controlled by northwest striking f ractures. Although the epidote distribution coincides in part with the eastern end of the pyrite vein zone, there are no compelling reasons to believe that the two are genetically associated. Epidote is locally quite common higher on Mt. Johnny in a variety of volcanic rocks.

<u>Other mineralization</u>. The contact at the base of the Mt. Johnny igneous complex is weakly mineralized at several localities in addition to the Mt. Johnny prospect.

Northwest of Johnny Glacier small amounts of galena were found in a quartz-calcite vein along a feldspar porphyry dyke which marks the contact with the shales in this sector.

Sphalerite-pyrite veins occur along a pyritized, hornfelsic section of the southeastern contact, beside a dark grey porphyry with feldspar phenocrysts 2 mm long.

Galena and sphalerite are fairly common in float in the lower west lateral moraine of Bronson Glacier, below the eastern contact.

Elsewhere around Mt. Johnny, small galena-spalerite-chalcopyrite-pyrite-quartz-calcite veins and pyrrhotite-sphalerite veins occur in conglomerates at the foot of the first glacier south of the mountain. Some of the mineralization is associated with feldspar porphyry dyke contacts.

On Mt. Johnny itself, several small veins containing galena, sphalerite, pyrite, quartz and calcite are present in or near the felsite intrusion high on the mountain.

GEOPHYSICS

Four reconnaissance induced polarization lines totalling 12,800 feet were run across the main sulphide zone at the Mt. Johnny prospect. Scintrex time-domain equipment was used. An anomaly (chargeabilities + 100 millesecs) was detected with its peak over the main pyrite veins. In addition, several Crone C.E.M. reconnaissance lines were completed in the same area with little or no response from the sulphide mineralization. See the memo from J.A. Slankis (Appendix A) and I.P. profiles (in pocket).

GEOCHEMISTRY

Fifty-nine silt samples were collected in the project area, mainly from the western base of Mt. Johnny and from southeastern Johnny Flats. The samples were tested for total Cu, Pb and Zn by Bondar-Clegg and Co. Ltd., Vancouver. Sample locations and analytical results are shown on the accompanying geochemical map.

RED BLUFF PROSPECT

GEOLOGY

Interest at the Red Bluff prospect is centered about an orthoclase porphyry intrusion in Middle Triassic or older rocks. The orthoclase porphyry carries chalcopyrite, molybdenite and other sulphide minerals and has extensively altered the surrounding rocks.

Intrusive rocks

The Red Bluff orthoclase porphyry is a medium dark grey porphyry with pink to light grey orthoclase phenocrysts in a matrix of quartz, feldspar, chlorite and sericite. The phenocrysts average approximately 5 mm in length, but phenocrysts up to 3 cm have been observed, with small plagioclase crystal inclusions. Magnetite is very common. In places the magnetite content of the rock exceeds 15%. Pyrite rarely occurs in amounts exceeding 2%. For a petrographic description of the orthoclase porphyry see Parsons (1966) p.5.

The orthoclase porphyry intrusion is elongated in a northwesterly direction and extends for 8,000 feet along the south side of lower Bronson Creek. The body may be as much as 700 feet wide and appears to dip moderately southwest. At the site of the 1974 trenching the orthoclase porphyry dips 60° or less southwest and has a width of approximately 120 feet.

A second orthoclase porphyry, in this case a stock more or less circular in plan and about two miles in diameter, outcrops 2,000 feet north of the nearest Red Bluff orthoclase porphyry exposures and straddles the Iskut River. The stock contains orthoclase and albite-oligoclase phenocrysts locally exceeding 2 cm in length. For a petrographic description of the rock see Kerr (1948), p. 50. A garnet skarn is present along the southeastern contact between the stock and Permian (?) limestone.

Sedimentary rocks

Siltstones and shales, very thin-bedded in some outcrops, underlie most of lower Bronson Creek Valley. These rocks have been extensively chloritized and otherwise altered in the vicinity of the orthoclase porphyry. Graded bedding, noted in a few outcrops, indicates that bedding tops are up.

White, coarse, recrystallized limestone, locally altered to garnet skarn, occurs along Bronson Creek below Beaver Creek. Minor amounts of chert and micaceous metasediments are also present.

Mineralization

Small amounts of chalcopyrite and other sulphide minerals have been found scattered in and near the Red Bluff orthoclase porphyry.

In the intrusion, chalcopyrite occurs with quartz and minor pyrite as fracture fillings and, to a lesser extent, as fracture-controlled disseminations. The strongest chalcopyrite showings seen during this investigation are in the northwest sector of the orthoclase porphyry approximately 2,000 feet northwest of Texasgulf's 1974 compsite on Bronson Creek. At this locality massive chalcopyrite veins up to four inches in width, accompanied by a little disseminated chalcopyrite, are erratically distributed across the whole width (± 120 feet) of the orthoclase porphyry. The largest veins are located in the upper third of the intrusion. Quartz veins, sericite, chlorite, magnetite, pyrite and a very little galena and calcite are associated with the copper mineralization, as are significant gold values. Appendix B lists chip and grab sample assays from 1974 trenching. The assays are also plotted on the accompanying 1 inch = 1,000 feet scale geological map.

In the last known orthoclase porphyry outcrops to the southeast, an adit 10 feet in length has been driven into minor occurrences of chalcopyrite and molybdenite with which small galena-quartz-pyrite veins are associated.

Chalcopyrite is also found with pyrite and quartz and in galena-sphalerite-carbonate-quartz veins in fracture fillings in altered sediments near the orthoclase porphyry contact. Small amounts of molybdenite occur as coatings on joints near the same contact.

The area around the orthoclase porphyry is marked by a widespread zone of galena-sphalerite veins extending several thousands of feet away from the intrusion on both sides of Bronson Creek. Although none of the northern veins were visited, they are shown on a Cominco Ltd. map (Parsons, 1966). South of the orthoclase porphyry, on Johnny Flats and on the steep slopes above Bronson Creek, veins carrying galena, sphalerite, quartz and calcite are present in argillaceous sediments. Tetrahedrite, arsenopyrite and pyrrhotite are also reported and some assays are given by Mawer (1965). The veins are small and their distribution is very scattered.

If the galena-sphalerite veins on Johnny Flats are related to the Red Bluff intrusion then a Pb-Zn halo extends 8,500 feet out from known orthoclase porphyry outcrops. Silver/gold ratios in the southern veins show a tendency to increase southward, away from the orthoclase porphyry. There are, however, insufficient assays available for a statistically sound evaluation.

Alteration

An impressive alteration zone borders the orthoclase porphyry and is particularly strong around the southeastern end of the intrusion. Intense silicification accompanied by much magnetite, pyrite and local specularite occurs at Red Bluff. Other sections of the contact are at least chloritized and carry calcite and quartz veins and pyrite. Hornfels is locally present. Pyrite, occuring as fracture fillings and disseminations (totalling 20% pyrite or more) appears to form a distinct halo around the orthoclase porphyry. Pyritization was noted as far as 2,000 feet south of the orthoclase porphyry contact. Kerr (1948) observed alteration attributable to the orthoclase porphyry up to one mile from the contact. He also noted local albitization.

The chalcopyrite zone exposed in 1974 trenching contains quartz, magnetite, chlorite, sericite, pyrite and very small amounts of calcite. Rarely, quartz veins contain biotite flakes measuring one to two mm in diameter.

Weathering of the pyrite halo has resulted in the formation of substantial transported gossans above and below the southeastern end of the orthoclase porphyry. In one outcrop the gossan measures at least 15 feet in thickness.

At the southeastern base of the hill north of Beaver Lake, a garnet skarn occupies the contact between the Iskut River orthoclase porphyry and Permian (?) limestones. Andradite-grossularite garnet is by far the most abundant skarn mineral. Diopside is also present and actinolite occurs locally.

GEOCHEMISTRY

Six silt and drainage soil samples were collected in the skarn area northwest of camp and two silt samples were taken from creeks draining the projected strike of the Red Bluff orthoclase porphyry to the northwest across Beaver Lake. All samples were analysed for total Cu, Mo and Pb by Bondar-Clegg and Co., Ltd., North Vancouver, B.C. The results are shown on the accompanying geochemical map.

A. L'Orsa

AL:11

REFERENCES

Bagshaw, R.G. — 1968, Geological Report on Cat Group No. 1; Johnny Mountain-Iskut River Area: Cominco Ltd., Vancouver, B.C. (Dept. of Mines and Petroleum Resources Assessment Report No. 1657).

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Souther, J.G. — Brew, D.A. & Okulitch, A.V., 1974, Iskut River, (Geological Map): Open File 214, Geol. Survey, Canada.

APPENDIX A

GEOPHYSICAL WORK

Report by J.A. Slankis, Ph. D., P. Eng.

GEOPHYSICAL WORK

Three reconnaissance induced polarization profiles were run by Geoterrex Ltd. under contract to Ecstall Mining Ltd. The equipment used and the parameters of the survey are as follows:

Transmitter: Scintrex IPC-8 250 watts

Receiver: Scintrex IPR-7 (Time domain)

Charging time - 2 seconds

Off time - 2 seconds

Delay time - 0.45 seconds

Integration time - 0.65 seconds

Electrode Configuration: Pole-Dipole

a = 200 feet

n = 1 & 2

The three profiles along Lines 5W, 0 and 5E all show anomalous chargeabilities between approximately 24S and 32S. The anomalous zone is 700-800 feet wide, strikes E-W and, on the basis of similar anomaly amplitude and shape, it is likely that the zone is continuous between Lines 5E and 5W.

The I.P. response is undoubtedly caused by the scattered veinlets and stockwork of pyrite and chalcopyrite mineralization observed in the few outcrops along this trench.

Excepting Line 0, there are only very weak resistivity anomalies associated with the chargeability highs so that the total content of conductive sulphides is at most 5%. On Line 0, the near-surface resistivity is low, reflecting the massive sulphides present in the showing on this line. However, the massive mineralization must be limited in both lateral and vertical extent as the n=2 apparent resistivity is much greater than that for n=1.

In addition to the main anomaly, there are indications of slightly chargeable material between 4S and 10S on Line 5E and between 6S and 10S on Line 5W. The anomalous zone does not appear to be continuous between the two lines. As geological information is lacking in this area, the cause of the I.P. response is unknown - a few percent graphite or metallic sulphides would suffice to produce the observed anomalies.

JAS:ss

J. A. Slankis

REGISTERED PROFESSIONAL ENGINEER
J. A. SLANKIS
PROVINCE OF ONTARIO

STATEMENT OF QUALIFICATIONS

J. A. Slankis, Ph.D.

Received his B.A.Sc. from the University of Toronto, in Engineering Physics (Geophysics Option). His graduate work in geophysics was at the University of Western Ontario (M.Sc.) and McGill University (Ph.D.). Since 1971 he has worked as a geophysicist for Ecstall Mining Ltd. His professional affiliations include the Society of Exploration Geophysicists, the Canadian Exploration Geophysical Society and the Association of Professional Engineers of the Province of Ontario.

John Lobach, Field Geophysicist

540 Southvale Drive
Ottawa, Ontario

The induced polarization survey was carried out under the supervision of Mr. John Lobach, who is a Geoterrex staff geophysicist.

Mr. Lobach received his primary and secondary education in Vernon, B.C., where he graduated from The Clarence Fluton Secondary School in 1967. In 1968, he enrolled at the University of British Columbia in the applied geophysics course, graduating from the Geophysics Department in 1972 with a Bachelor of Science degree.

Since joining the Geoterrex staff after his graduation, Mr. Lobach has been exclusively involved in resistivity and induced polarization projects throughout various areas of Canada and the United States.

Mr. Lobach acted as the party-chief and receiver operator during the present project.

geoterrex

Cletus Newell, Geophyscist Operator

R.R. 1
Calumet Island, Quebec

Mr. Newell has been engaged in mining exploration work for many years as a geophysical operator. After the second world war during which he received training in electronics as a radar technician, Mr. Newell joined Radar Exploration Company as a magnetometer operator and since that time he has gained a thorough knowledge of electromagnetic, magnetic and induced polarization methods and their field applications.

Mr. Newell, who is considered a senior operator, has worked with Geoterrex exploration crews since 1970. On the present project he acted as the transmitter operator.

G. Rasmussen, helper

5888 Blackburn Road
R.R. 4
Sardis, B.C.

B. Marsh, helper

7338 Evans Road
Sardis, B.C.

APPENDIX B RED BLUFF ASSAYS

1974 Trenching

Trench	Sample No.	Width	Au Oz/t	Ag Oz/t	Cu %
Upper	8506	5' chip	0.04	0.70	1.70
Upper	8514	grab	1.66	3.4	15.20
Middle	8507	5' chip	0.15	0.25	0.66
"	8515	grab	0.48	1.4	5.65
Lower	8508	30'chip	0.04	0.07	0.23

APPENDIX C QUINELLA CLAIMS

Statement of Expenditures

Salaries and Fringes (Field Work)

A.T. L'Orsa	Geologist	4 June - 4 July 29 July - 5 Aug. 9 Aug. -15 Sept.		
	77 days @ $65		$5,005.00	
L.A. McJannett	Field Asst.	27 June - 4 July 29 July - 2 Sept.		
	44 days @ $25		1,100.00	
E.W. Medley	Field Asst.	4 June -17 June 22 June - 4 July 5 Aug. - 9 Aug.		
	23 days @ $35		805.00	
L. Hokozono	Field Asst. 13 days @ $25	4-16 June	325.00	
I. Cormie	Field Asst. 8 days @ $25	19-27 June	200.00	
W. Gersteiger	Geophysicist 5 days @ $55	19-24 Aug.	275.00	
J.M. Newell	Geologist 2 days @ $120	14-15 Sept.	240.00	
		TOTAL		$7,950.00

Contractors

Geoterrex Ltd. I.P. crew

2 days field time @ $360	720.00	
2 days travel time (in & out) @ $285	570.00	
Pro-rated portion of mob.& demob.	347.00	
TOTAL		$1,637.00

Room & Board

188 man-days @ $10/day	1,880.00

Equipment Rental

2 cobra rock drills - 1 mo.		$ 380.00	
1 Traeger radio - 2½ mo.		350.00	
	TOTAL		$ 730.00

Helicopter Support (Mob, Demob., resupply)

38.4 hrs. Bell 206-B @ $210	8,064.00
Fixed Wing Support (Mob & Demob.)	1,841.98

Geochemical Analysis

67 samples @ $2.25	150.75
Travel	575.00
Shipping	422.01
Communications	167.35
Miscellaneous Supplies & Equipment	500.00

REPORT PREPARATION

A.T. L'Orsa	Sept.19-Nov.8 20 Da.	$1,300.00	
J.M. Newell	1 da. @ $120	120.00	
J. Slankis (Geophyicist)	1 da. @ $ 95	95.00	
Drafting etc.		200.00	
	TOTAL		$ 1,715.00
	TOTAL EXPENDITURES		$25,633.09

Total claimed in Applications for Certificates of Work	$20,514.12
Surplus unclaimed	$ 5,118.97

N.B. At the time applications for Certificates of Work were submitted on 7 October 1974, detailed cost figures had not yet been completely compiled and conservative estimates were made. The above total figure is, therefore, substantially higher than the total submitted for assessment work purposes.

J.M. Newell, P. Eng.

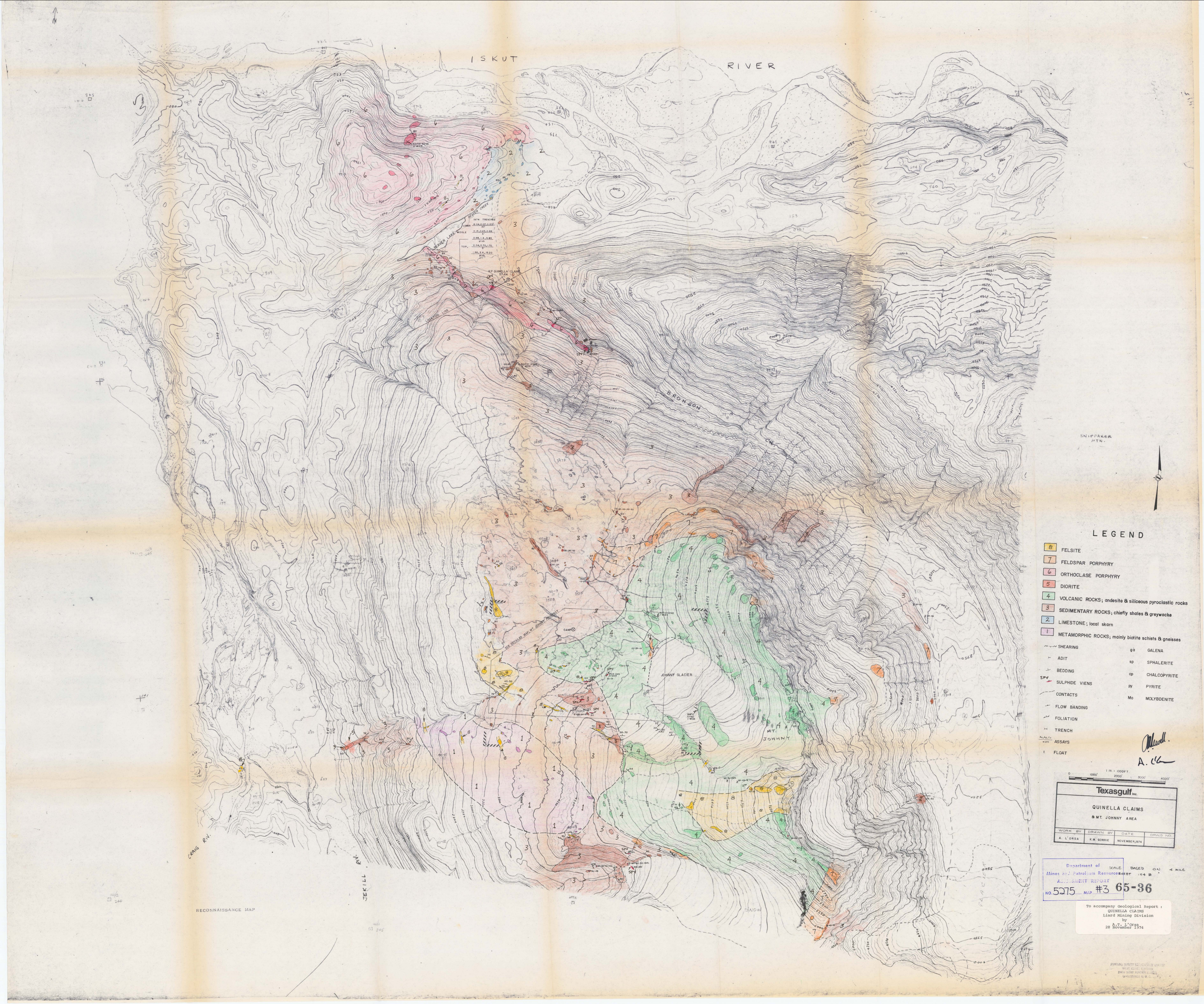
APPENDIX D

STATEMENT OF QUALIFICATIONS

I, A. L'Orsa, hereby certify that I received a B.Sc. in geology in 1961 from Tulane University, New Orleans, Louisiana and an M.Sc. in geology in 1964 from the same University.

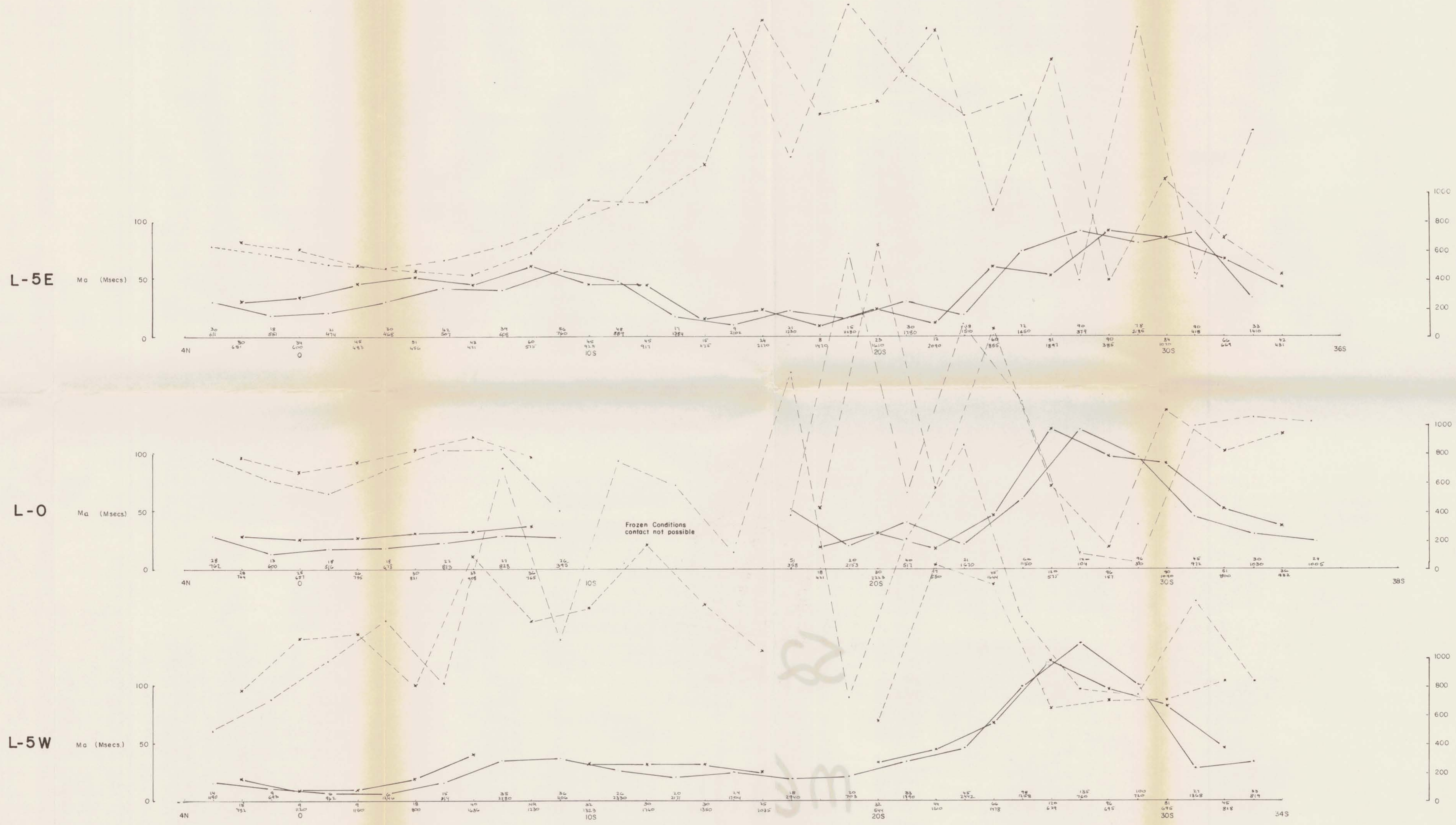
I am a Fellow of the Geological Association of Canada and I have been engaged in mineral exploration in B.C. and elsewhere since 1962.

A. L'Orsa


ISKUT
RIVER
BRONSON
SNIPPAKER MTN.
JOHNNY GLACIER
MT. JOHNNY
CRAIG RV.
JEKILL RV.
SNOW
RECONNAISSANCE MAP
LEGEND
8 FELSITE
7 FELDSPAR PORPHYRY
6 ORTHOCLASE PORPHYRY
5 DIORITE
4 VOLCANIC ROCKS; andesite & siliceous pyroclastic rocks
3 SEDIMENTARY ROCKS; chiefly shales & greywacke
2 LIMESTONE; local skarn
1 METAMORPHIC ROCKS; mainly biotite schists & gneisses
SHEARING
ADIT
BEDDING
SPV SULPHIDE VIENS
CONTACTS
FLOW BANDING
FOLIATION
TRENCH
Au, Ag, Cu / width ASSAYS
X FLOAT
ga GALENA
sp SPHALERITE
cp CHALCOPYRITE
py PYRITE
Mo MOLYBDENITE
1 IN. = 1000 FT.
0 1000' 2000' 3000' 4000'
Texasgulf Inc.
QUINELLA CLAIMS
& MT. JOHNNY AREA
WORK BY A. L'ORSA
DRAWN BY K.M. GORRIE
DATE NOVEMBER, 1974
DRW,G NO.
SCALE BASED ON 4 MILE SHEET 104 B
Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5275 MAP #3
65-36
To accompany Geological Report :
QUINELLA CLAIMS
Liard Mining Division
by
A.T. L'Orsa
28 November 1974
HUNTING SURVEY CORPORATION LIMITED
WEST COAST DIVISION
1409 WEST PENDER STREET
VANCOUVER 5, B.C.


LINE 5+00 E
LINE 0
4+00N
RECONNAISSANCE I.P. GRID
LINE 5+00 W
LINE 15+00 W
CAMP
MORAINE
Tool Creek
JOHNNY GLACIER
SNOW
ICE
LEGEND
D FELSITE
C FELDSPAR PORPHYRY
B VOLCANIC ROCKS; chiefly siliceous and intermediate pyroclastic rocks.
A SEDIMENTARY ROCKS; black shales, greywacke and minor limestone. May include minor pyroclastic rocks.
SILT SAMPLE
50 Cu
42 Pb
181 Zn
BEDDING
SPV SULPHIDE VEIN
DIAMOND DRILL HOLE
x x x APPROX. ALTERATION ZONE BOUNDARY
CLAIM POST
Q.1 QUINELLA CLAIM NO.1, etc.
0 500' 1000'
Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5275 MAP #4
To accompany Geological Report:
QUINELLA CLAIMS
Liard Mining Division
by
A.T. L'Orsa
28 November 1974
5275
M4
MINERAL KEY
cp CHALCOPYRITE
py PYRITE
sp SPHALERITE
ga GALENA
mag. MAGNETITE
spec. SPECULARITE
Texasgulf Inc.
MT. JOHNNY PROSPECT
QUINELLA CLAIMS
WORK BY A. L'ORSA
DRAWN BY K.M. GORRIE
DATE OCTOBER, 1974
A. L'Orsa

LOWER BRONSON CREEK SILT SAMPLES
SCALE ONE INCH = 1000 FT.
250 Cu
380 Zn
6 Mo
APPROX. S.E. EDGE PORPHYRY STOCK
RUSTY ZONE
BRONSON CREEK
BEAVER LAKE
APPROX. OUTLINE ORTHOCLASE PORPHYRY
CAMP
JEKILL RIVER
JOHNNY GLACIER
GLACIER
GLACIER
MT. JOHNNY
△ 7440'
PICK AXE TRENCH
Py-Cp-Sp
APPROXIMATE VOLCANICS CONTACT SEDIMENTS
3000
4000
5000
6000
7000
LEGEND
ANALYSES AT EACH SAMPLE POINT
50 Cu
110 Pb
308 Zn
TRENCH
CONTOUR
CREEKS
CONTACT; volcanic & sedimentary rocks
Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5275 MAP #5
To accompany Geological Report :
QUINELLA CLAIMS
Liard Mining Division
by
A.T. L'Orsa
28 November 1974
5275 M5
N
SCALE: ONE INCH = 1000 FT.
TEXAS GULF SULPHUR CO.
JOHNNY FLATS PROSPECT
QUINELLA CLAIMS
GEOCHEMICAL SAMPLES
WORK BY
A. L'ORSA
DRAWN BY
K.M. GORRIE
DATE
OCTOBER, 1974



5275

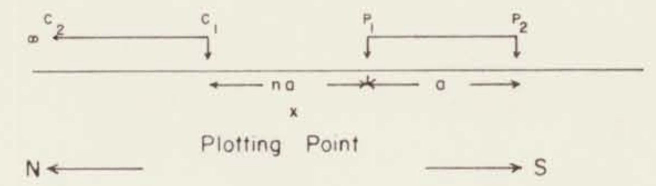
M6

To accompany Geophysical Report:
QUINELLA CLAIMS
Liard Mining Division
by
J.A. Slankis; Ph.D, P. Eng.

LEGEND

EQUIPMENT:
Transmitter - SCINTREX IPC-8,250 watts
Receiver - " IPR-7
Type - Time Domain
Charging time - 2 secs.
Off time - 2 secs.
Delay time - 0.45 secs.
Integration time - 0.65 secs.

SURVEY: Electrode Configuration - Pole - Dipole



PROFILES:
20 ← Apparent Chargeability M_a (Milliseconds) } for n = 1
875 ← Apparent Resistivity ρ_a (Ohm-m.)
25 ← M_a, 900 ← ρ_a } for n = 2

—— M_a, - - - - ρ_a } for n = 1
x——x M_a, x- - -x ρ_a } for n = 2

SCALE: One Inch = 200'

Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5275 MAP #6

ECSTALL MINING LTD.

INDUCED POLARIZATION SURVEY

QUINELLA CLAIMS

WORK BY	DRAWN BY	DATE
GEOTERREX LTD.	J.P.	Nov 1974

REGISTERED PROFESSIONAL ENGINEER
J. A. SLANKIS
PROVINCE OF ONTARIO

J.A. Slankis 11/27/74