4261

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4261 MAP

GEOPHYSICAL REPORT

on 92P/8E

MAGNETIC AND ELECTROMAGNETIC SURVEYS

WINDPASS PROPERTY

ASSES. WORK DONE JUNE 5/72 TO JULY 27/72

LITTLE FORT AREA, KAMLOOPS M.D., B. C.

June, July, 1972

Windpass Property: 5.2 miles N75E of Little Fort, B.C.

: 51° 120° SE

: NTS - 92P/8E

Written for: Dalton Resources Ltd.,
Gold River Mines Ltd.,
4075 Union Street,
Burnaby, B.C.

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September 25, 1972

Geotronics Surveys Ltd.
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SUMMARY

A combined magnetic and VLF-EM survey was completed over the Windpass property of 30 crown grants during June and July, 1972. The Windpass property was a producing gold mine during the 1930's in which the vein material was quartz, pyrite, chalcopyrite, pyrrhotite and magnetite. The object of these 2 surveys therefore was to delineate possible areas of sulphide mineralization, as new zones and extensions of old ones.

The property is located on the west slope of Baldy Mountain about 5.2 miles N75E of Little Fort which itself is under 60 miles north of Kamloops. Access is either from Barrier or Little Fort to the north end of Dunn Lake and from thence up a switch-backed road to the property. The central part of the property has gently to moderate slopes but the four sides have steep slopes. Average elevation is about 5,000 feet. The tree cover is largely that of conifers with light undercover, and only small streams traverse the property.

The central part of the property is underlain by a diorite-pyroxenite sill within which the economic mineralization has been found. It is a differentiated sill composed of

fine-, medium-, and coarse grained diorite and pyroxenite. On the west side of the sill are chert and greenstone of the Fennell Formation and on the east side is granite of the Baldy Batholith. The rock contacts strike north-south and mineralized faults as well as other faults strike northeasterly to southeasterly. Gold was mined from 2 different veins called the Windpass vein and Sweet Home vein which weremainly composed of quartz, magnetite, pyrrhotite, pyrite, chalcopyrite, and bismuthinite.

The magnetic survey reflected magnetite and pyrrhotite within the Windpass vein as well as other possible mineralized zones and magnetic pyroxenite in at least 2 different areas. The VLF-EM anomalies (or conductive zones) correlated very well with Lundberg's electrical survey over only 2 or 3 anomalous zones. Most of the conductive zones revealed by the VLF-EM strike in a northeasterly direction and are interpreted to reflect faults that could be mineralized by sulphides, especially where there is correlation with magnetic highs.

CONCLUSIONS AND RECOMMENDATIONS

1) The Sweet Home and Windpass veins are found within a diorite-pyroxenite sill that is located on the western flank of a north-trending aeromagnetic anomaly, about 4 miles by 2 miles. This aeromagnetic anomaly may be reflecting a larger sill and therefore should be thoroughly prospected, especially on the western flank.

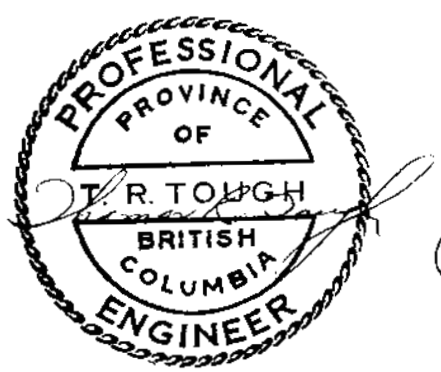
2) The VLF-EM has reflected both the Windpass and Sweet Home veins and the magnetics has reflected only the Windpass vein. These veins have been shown to be mineralized faults. The VLF-EM conductive zones quite probably are faults and therefore should be thoroughly explored for any possible signs of mineralization, especially where magnetic highs coincide with the VLF-EM zones. The 2 northeast-striking arms ofzone A and zone B are probably the most favourable, but all VLF-EM zones should be checked out.

3) The VLF-EM has shown that the Windpass vein is continuous across the talus slide to the eastern side of the survey area. However, there are no magnetic highs within the central portion of this VLF-EM zone and, as Lundberg pointed out, this part is therefore less

favourable to the occurrence of gold.

4) On the eastern end of the same VLF-EM zone occurs a strong magnetic anomaly to its immediate south. It is not known whether this part was drilled in the 1930's, but if it has not, it is recommended that it be done. If it has, further exploration may be advisable depending on the drill results.

The recommended work over any of the VLF-EM zones is prospecting, trenching and drilling. However, overburden no doubt covers much of each zone and consequently it would be too difficult to tell whether and where a fault-zone contains sulphides. A self-potential (SP) survey should be able to do this and therefore one is recommended. It is advisable to first test the SP instrument over the known mineralization and find out for certain whether it will work or not, before proceeding with the entire survey. Contigent upon its results, trenching and drilling would then be undertaken.



Respectfully submitted,
GEOTRONICS SURVEYS LTD.

David G. Mark,
Geophysicist

September 25, 1972

GEOPHYSICAL REPORT

on

MAGNETIC AND ELECTROMAGNETIC SURVEYS

WINDPASS PROPERTY

LITTLE FORT AREA, KAMLOOPS M.D., B. C.

INTRODUCTION AND GENERAL REMARKS:

This report discusses the procedure, compilation, and interpretation of a combined fluxgate ground magnetometer and a very low frequency electromagnetic (VLF-EM) survey carried out on the Windpass Property during June and July of 1972.

The surveys were under the supervision of the writer and the field work was carried out by Kel McCulloch and two assistants. 19.8 miles of survey were completed with readings taken at 100-foot separation and 1.2 line miles at 50-foot separation. The area covered by the survey is as shown on Figure 2.

The Windpass property was a producing mine primarily during the 1930's and was mined largely for gold. The gold occurred with magnetite and various sulphides including chalcopyrite. Therefore, the renewed exploration of the property was not only for gold, but also for copper. Consequently, the primary object of the magnetometer and VLF-EM surveys was to delineate probable areas of sulphide mineralization. The magnetometer is used because of the sulphide's association with magnetite and the VLF-EM because the sulphides are massive and they occur in shear zones. The VLF-EM is, as a rule, the best instrument for delineating structure.

PROPERTY AND OWNERSHIP:

The Windpass property is composed of 30 crown grants which have been grouped into seven mineral leases as follows. The crown grants are shown on Figure 2.

Mineral Lease No.	Name	Lot No.	Expiry Date
37R	Windpass 1	3839	Feb. 28/73
	Windpass 2	3840	Feb. 28/73
	Windpass 3	3841	Feb. 28/73

Mineral Lease No.	Name	Lot No.	Expiry Date
38R	Sweet Home	3844	Feb. 28/73
40R	Gott	3842	Feb. 26/73
	Jupiter	3971	Feb. 26/73
	Elise	3972	Feb. 26/73
	Erin	3974	Feb. 26/73
	Dolly Varden	3975	Feb. 26/73
	Maple Leaf	3976	Feb. 26/73
	Brenda Fr.	3977	Feb. 26/73
	Signe	3978	Feb. 26/73
42R	Dyke Fr.	1607	March 27/73
	Dyke	1615	March 27/73
	Best	1618	March 27/73
	Diamond	1619	March 27/73
	Nugget	1620	March 27/73
	Snowshoe Fr.	1621	March 27/73
	Sydney X	3521	March 27/73
	Bobby B Fr.	3523	March 27/73
	Kay Fr.	3524	March 27/73
44R	Blue Diamond	1875	March 27/73
	Silver Bell	1876	March 27/73
	Premier	3973	March 27/73
	Ridgeway	4851	March 27/73

Mineral Lease No.	Name	Lot No.	Expiry Date
45R	Fifty	1873	March 27/73
	Fifty-one	1874	March 27/73
46R	North Dann	3843	March 28/73
	Donegal	3979	March 28/73
	Belfast	3980	March 28/73

The property is owned by Kamad Silver Mines Ltd and is optioned to Gold River Mines Ltd and Dalton Resources Ltd., who can jointly acquire up to a 70% interest in the property.

LOCATION AND ACCESS:

The property is situated on the west slope of Baldy Mountain, east of Dunn Lake and about 5.2 miles N75E of Little Fort, British Columbia.

The geopgraphical coordinates are 51° 26.5' north latitude and 120° 05' west longitude.

Access to the property is by travelling the No. 5 Highway north from Kamloops about 58 miles to Little Fort. One then takes a ferry across the North Thompson River and

travels to the north end of Dunn Lake, a distance of about four miles. From thence, a multi-switch-backed road travels up the west slope of Baldy Mountain to the property. An alternate route is to travel 39 miles from Kamloops to Barriere and then about 20 miles up the east side of the North Thompson on a gravel road to the north end of Dunn Lake.

PHYSIOGRAPHY

The Windpass property is located within the Shuswap Highlands near the eastern border of the Thompson Plateau, both of which are physiographic divisions of the Interior Plateau. The property is found on a plateau which is half way between the peak of Baldy Mountain and Dunn Lake. The elevation varies from 4,000 feet in a tributary of Dunn Creek to 5,800 feet.

The central part of the property has quite moderate relief. However, the east side rises sharply towards the Baldy Mountain peak, the north side drops quite sharply into Teather Creek, the south side into Dunn Creek and its tributary, and the west side drops moderately towards Dunn Lake.

The vegetation consists of fir, pine, and spruce with some poplar and birch. The undercover is somewhat light and consists of second-growth conifers, alders and light brush.

No major creeks flow through the property, but only minor streams. Teather Creek is found off the north end of the crown grants and Dunn Creek off of the south end.

HISTORY OF PREVIOUS WORK:

The property was originally discovered around 1915. From this date until 1932, it was subsequently prospected, developed, and worked to produce several carloads of hand-cobbed ore. By 1932 a mill had been constructed near Dunn Lake and an aerial tramway from the workings to the mill. 81,206 tons of ore with 0.407 oz/ton of gold was mined from 1932 until 1941 when the affairs of the mining company were terminated. During this period in the summer of 1936 magnetometer and resistivity surveys were carried out by Hans Lundberg Limited of Montreal.

In 1951, Falconbridge Exploration Limited conducted radiometric and geological surveys over a portion of the property comprising the Windpass Group.

In 1960, Fort Reliance Minerals Limited carried out reconnaissance geological mapping and a magnetometer survey on 9 of the crown grants north of the Windpass and Sweet Home workings.

In 1969, Kamad Silver Mines Ltd. acquired all 30 of the crown grants and subsequently carried out magnetic surveying over specific areas, bulldozer stripping, and sampling.

GEOLOGY

A large part of the area is underlain by the Fennell Formation which is of Mississippian and/or later age. It is composed of pillow lava flows, greenstone, foliated greenstone, greenschist, argillite, chert, minor amphibolite, limestone, and breccia. Intruded into this is the Baldy Mountain Batholith of Cretaceous age which is composed of biotite quartz monzonite and granodiorite; minor pegmatite, aplite, biotite-hornblende quartz monzonite. A small area to the west of the property on the north end of Dunn Lake is underlain by the Skull Hill Formation, a member of the Kamloops Group, and is Eocene and (?) Oligocene in age.

It is composed of volcanic rocks which are dacite, trachyte, basalt, andesite, rhyolite, and related breccias.

The more detailed geology is largely taken from Lundberg and Pasieka and is only meant to summarize the main points in order to familiarize the reader. Figure 3 is a sketch of Lundberg's geology map. The description is as follows:

The central part of the property is underlain by a diorite-pyroxenite sill which is what carries the sulphide mineralization. Lundberg refers to it mostly as a diorite and Pasieka, a pyroxenite. The eastern part of the sill is a coarse, rusty weathering, very magnetic rock varying in mineral composition from gabbro to pyroxenite. The western part of the sill is a fine - to coarse-grained grey rock with long slender crystals of hornblende and laths of feldspar in equal proportion and minor amount of quartz. This rock, which has the appearance of a diorite, is fine-grained near the chert contact, but south of the Windpass group, is coarse-grained near the assumed greenstone contact. At about 15 S on lines 4 and 8 E, Lundberg noted a medium-grained, black, very magnetic rock composed almost entirely of a black ferromagnesium mineral with accessory magnetite and pyrrhotite.

Overlying the sill on the west is chert and metamorphosed basalt and andesite lavas (greenstone) of the Fennell Formation. A narrow, 1300-foot wide, north-south band of greenstone also occurs off of the east end of the survey area.

The Baldy Mountain Batholith, which Lundberg calls a granite, occurs to the east of the property near the tip of Mount Baldy. The granite is coarse-grained, slightly porphyritic, non-foliated, and pink to grey in colour. Uglow found the contact to dip 35-50 degrees westerly so that it probably underlies the formations of the Windpass property at a considerable depth.

The formations on the Windpass property strike about N15E and vary in dip from westerly on the east end of the property to slightly east in the cherts on the west side. Faults strike in a direction nearly perpendicular to that of the sill and dip at small angles to the north. The Windpass and Sweet Home mineralization are found within some of these faults. However, other faults are post-mineralization in age and displace the veins.

The Windpass vein strikes about N75W and dips from 28 degrees north at surface to 45 degrees north at depth and has a length of about 500 feet. It is found largely in the fine-

grained diorite (pyroxenite ?) and is composed of quartz, magnetite, pyrrhotite, chalcopyrite, pyrite, native bismuth, bismuthinite and gold. The gold seems to be closely associated with the bismuth.

The Sweet Home vein has been traced for about 550 feet, has a strike of N55W to almost E-W, and dips 30-40 degrees north. The vein is composed of quartz, pyrite, chalcopyrite, pyrrhotite, and bismuth. It is about 10 to 20 inches wide with irregular lenses of 5 feet.

DISCUSSION OF AEROMAGNETICS

The Federal Government published an aeromagnetic map of the area in 1968. It shows the Windpass mine to be on the western flank of a 2-by 4-mile, north-trending anomaly. The anomaly has strong intensity being about 3000 to 4000 gammas above background. From correlating it with Campbell and Tipper's geology map, it occurs within both the Fennell Formation and the Baldy intrusive along the contact. The background of the Fennell Formation is about 2500 to 3000 gammas and that of the Baldy intrusive, 4000 gammas.

The diorite-pyroxenite sill was noted to be quite magnetic and therefore it may be the sill that the aeromagnetics is

reflecting. This would then mean that the sill extends up to 2 miles east of the Windpass workings and south onto almost Cowell Creek. It is interesting to note that chalcopyrite mineralization is found on the north bank of Dunn Creek on 4 crown grants, and that these crown grants are also located on the west flank of the same aeromagnetic anomaly. As a result, it appears that this anomaly, especially the western flank, is favourable to sulphide mineralization.

INSTRUMENT AND THEORY

1) Magnetometer

The magnetic survey was carried out using a portable vertical component, Model G-110 fluxgate magnetometer manufactured by Geotronics Surveys Ltd. of Vancouver, B.C. This is a visual-null type instrument using digital dial readout with a range of 100,000 gammas and a reading accuracy of 10 gammas. The G-110 has a temperature coefficient of 2 gammas per degree centigrade.

Only two commonly occurring minerals are strongly magnetic; magnetite and pyrrhotite. Hence, magnetic surveys are used to detect the presence of these minerals in varying concentrations. Magnetic data are also useful as a reconnaissance

tool for mapping geologic lithology and structure since different rock types have different background amounts of magnetite and/or pyrrhotite.

2) VLF-EM

A VLF-EM receiver, Model G-28, manufactured by Geotronics Surveys Ltd. of Vancouver, B.C. was used for the VLF-EM survey. This instrument is designed to measure the electromagnetic component of the very low frequency field (VLF), transmitted at 18.6 KHz, from Seattle, Washington.

In all electromagnetic prospecting, a transmitter produces an alternating magnetic field (primary) by a strong alternating current usually through a coil of wire. If a conductive mass such as a sulphide body is within this magnetic field, a secondary alternating current is induced within it which in turn induces a secondary magnetic field that distorts the primary magnetic field. It is this distortion that the EM receiver measures. The VLF-EM uses a frequency range from 16 to 24 KHz, whereas most EM instruments use frequencies ranging from a few hundred to a few thousand Hz. Because of its relatively high frequency, the VLF-EM can pick up bodies of a much lower conductivity and therefore is more susceptible to clay beds, electrolyte-filling fault or shear zones and

porous horizons, graphite, carbonaceous sediments, lithological contacts as well as sulphide bodies of too low a conductivity for other EM methods to pick up. Consequently the VLF-EM has additional uses in mapping structure and in picking up sulphide bodies of too low a conductivity for conventional EM methods and too small for induced polarization (in places it can be used instead of IP). However, its susceptibility to lower conductive bodies results in a number of anomalies, many of them difficult to explain and, thus, VLF-EM preferably should not be interpreted without a good geological knowledge of the property and/or other geophysical and geochemical surveys.

SURVEY PROCEDURE

The combined survey was carried out over a pre-existing grid that had been put in for the resistivity and magnetometer survey in 1936. The cut-out lines were spaced 200 feet apart and 100 feet where detailed work was required. The survey lines run in a north-south direction and the base line, east-west. Readings were taken by both instruments at 100-foot intervals and 50-foot for detailing. Survey flagging, whereon was marked the grid coordinates, were placed at the 100-foot intervals.

Magnetic sub-stations were set up on the base line at each survey line. As the survey was carried out, these stations were read at about 1 to 3 hour intervals in order to monitor the magnetic diurnal change. Diurnal corrections were not made for changes of 20 gammas or less.

COMPILATION OF DATA

1) A cumulative frequency graph was drawn up of all the magnetic values after they were diurnally corrected, and from this a mean background was taken to be about 55,800 gammas. The data was then plotted on sheet 1 at a scale of 1" = 200 feet and contoured at a 200-gamma interval. The 55,800 gamma contour was left out since this was close to background and would therefore, only hinder the interpretability of the magnetic data. For ease of plotting, both the 1st and last digits were taken off of each value. For example, 57,320 gammas is drafted as 732.

2) VLF-EM

Sheet 2 shows the VLF-EM results after they have been reduced applying the Fraser filter. Filtered data is plotted between actual reading stations. The positive

dip-angle readings have been contoured at an interval of 10 degrees.

The Fraser filter is essentially a 4 point difference operator, which transforms zero crossings into peaks, and a low pass smoothing operator which reduces the inherent high frequency noise in the data. Therefore, the noisy, non-contourable data are transformed into less noisy, contourable data. Another advantage of this filter is that a conductor that does not show up as a crossover on the unfiltered data quite often will show up on the filtered data.

DISCUSSION OF RESULTS

1) Magnetic Survey

The cumulative frequency graph is divided into 3 distant straight line segments. The central one is the one from which the parameters are taken. The mean background value is noted at the 50% level to be 55,800 gammas. This value is a slightly high one for this latitude and therefore, no doubt, reflects the magnetic character of the sill. The range of the values is about 3300 gammas from a minimum of 54,700 gammas to a maximum of 58,000 gammas.

The sub-amomalous (a term used by the writer to denote those values that are not background nor anomalous but still important for interpretation) and anomalous threshold values for both the anomalous lows and amomalous highs are found by reading the values 1 standard deviation and 2 standard deviations away from the mean background value on each side to obtain 4 different parameters. One standard deviation away is at the 10% level on the high side and 84% level on the low side. Two standard deviations is 2½% and 97½% on each side, respectively.

Consequently, for the magnetic highs, the sub-anomalous and anomalous values are 56,050 and 56,250 gammas respectively. For the magnetic lows, they are 55,650 and 55,400 respectively. The approximate difference between each parameter including the mean background level is 200 gammas, andhence the 200 gamma contour interval. The 2 sub-anomalous values show the background to have a range of 400 gammas, which is rather narrow considering the range of values over the whole survey area. This therefore indicates that the Fennell Formation and the diorite-pyroxenite sill carry a consistent background amount of magnetite, and it is the mineralized zones containing magnetite and pyrrhotite and isolated occurrences of ultramafic rocks that cause the total range in values to be as large as it is.

This also causes the break in the graph at the 6½% level and partly at the 85% level. That is, these mineralized zones and ultramafic occurrences cause a great over-abundance of high values and a little overabundance of low values. Some of the lows are adjacent to highs and therefore are a result of the dipole effect of magnetite.

What the magnetic survey largely has done is confirm the results obtained by Lundberg in 1936. Through the use of more modern equipment, no new magnetic zones or extensions of old ones were revealed. However, the anomalies will be re-discussed here briefly, especially in how they correlate with the VLF-EM results.

Strong magnetic anomalies have been remeasured around the Windpass workings. They are somewhat different in intensity and shape from those of the old survey largely because of ore being mined out since the first survey was undertaken.

East and on strike of the Windpass vein is a strong magnetic anomaly occurring on lines 22 to 26 E just south of the baseline. Because of it occurring within favourable geology and because of its correlation with the electrical survey, Lundberg felt that is has a strong

possibility of reflecting Windpass-type mineralization. It is not known to the writer whether it was drilled or not and therefore it is not known whether the interpretation was confirmed.

On the south end of the survey on lines 12 and 14 E is the most prominent anomaly being the largest and of the highest intensity. Lundberg attributed its cause to a pyroxenite body of rock since float of this type was found in the area and since the anomaly strikes N-S which is the strike of the different rock-types and not E-W which is the strike of the Windpass and Sweet Home veins. Also, a black, ferromegnesian, magnetic rock, probably pyroxenite was found in trenches correlating with the magnetic anomalies on lines 2 to 6 E at 14 S. The above 2 cases therefore suggest that some of the magnetic anomalies which cannot be verified by bedrock exposure could well be caused by magnetic pyroxenite rather than sulphide mineralization.

It can be seen on sheet 1 that much of the east side of the survey area is magnetically low. It seems most likely that this anomalous low is caused by a different rock-type with a relatively lower amount of background magnetite. The Baldy intrusive, according to the aeromagnetic map,

is magnetically lower in intensity than the diorite-pyroxenite sill and therefore this anomalous low could be reflecting the intrusive. However, the position of the aeromagnetic high, the ground magnetic low, and the Baldy intrusive as shown on Campbell and Tipper's geology map do not coincide and therefore the writer feels that the intrusive is not the cause of the ground magnetic survey low.

Some of the anomalies will be discussed in the next section as to how they correlate with the VLF-EM results.

2) VLF-EM Survey

As can be noted on sheet 2, the VLF-EM results appear to strike mainly in a northeast-southwest direction. Some of this will be caused by the station being in roughly a southwesterly direction. That is, the VLF-EM will reflect those conductors that strike in the direction of the transmitter station most easily. For the same reason, the survey lines ideally should be in a direction perpendicular to that towards the station, which is parallel to those conductors one wants to pick up. This is an ideal condition, however, that many times cannot be met as in this case,

and consequently the resultant values will be lower than otherwise.

Both the electrical survey carried out by Lundberg in 1936 and the VLF-EM survey under discussion depend on conductive bodies for detection but differ in principle theory. This probably explains why there is good correlation between the 2 surveys on 2 or 3 anomalies but poor or no correlation on most of the anomalies.

For ease of discussion, the conductive zones (or anomalies) have been labelled by letters of the alphabet and are as follows:

Anomalous zone A is a large one that is felt by the writer to be composed of 3 small anomalies that is reflecting 3 fault zones striking in 2 directions. The northwest arm and the southeast arm both strike in a northeast direction and are open on the northeast end. The northwest zone is 2800 feet by 400 feet and the southeast zone, 1200 feet by 200 feet. The bottom zone appears to be reflecting a different fault which is striking in an easterly direction and is no doubt, that of the Windpass vein. The vein is on the southern flank of the anomaly.

The anomaly of very high intensity on L-24E almost on the base line is felt to be part of the east-west striking zone, especially considering its good correlation with the electrical survey anomaly which strikes in an east-west direction. Lundberg's geology map on L-20E at 8N, which is within the northwest arm, shows gouge and slickensided rock that is indicative of faulting which strikes in the same direction as the VLF-EM conductive zone. This case plus that of the mineralized Windpass fault strengthens the writers opinion that these conductive zones reflected by the VLF-EM are faults.

The east-west arm of anomaly A correlates quite well with the results of the electrical and magnetic surveys. The electrical survey could not take readings across the talus slide but the VLF-EM could and shows continuity between the 2 electrical survey conductors.

The southwestern part of VLF-EM zone A correlates excellently with the magnetics around the Windpass workings as was expected. Also a spotty magnetic amomaly on L-22E correlates very well with the northwest arm and therefore suggests a similar causative source as is the Windpass vein.

The VLF-EM anomaly of very high intensity on L-24E and mentioned above is found to the immediate north of the magnetic high on lines 22 to 26E. As Lundberg mentioned, it is on strike of the Windpass vein, has similar geology and geophysics and therefore was a prime exploration target. If it has not been drilled, it will still be an area of primary importance.

Conductive zone B is 1200 feet by 150 feet and strikes in a similar direction as the northwest and southeast arms of A and consequently is probably also a fault. It correlates quite well with 2 isolated magnetic anomalies and therefore gives a positive indication of sulphides occurring within the fault. Off of the southwest end of the conductive zone occurs a quartz vein and a fault but these strike in a perpendicular direction.

Conductive zone C is south of A, has a northeast strike direction also, and is 2400 feet by 200 to 400 feet. The central part of the anomaly correlates with magnetic highs at about L-16E, 15S which have been felt to be caused by black, magnetic pyroxenite found in pits, as previously mentioned. This may be also the cause of the higher values within the central part of the VLF-EM zone

but the whole zone is probably reflecting a fault.

Zone D is 1600 feet by 200 feet, strikes N 75 E, and has 2 arms that strike about N 30 E. As is zone A, this zone also is probably caused by 3 fault zones. The zone correlates with the east part of the Sweet Home vein which is to the immediate north of the anomaly but does not correlate with the west part since it strikes in the wrong direction, being perpendicular to the VLF-EM transmitter station.

Zone E is mentioned since it correlates very well with an east-west stream and therefore very possibly is reflecting a water-filled fault. It correlates with low magnetics and therefore is less likely to reflect a sulphide-filled fault (though the direction is favourable).

Three small VLF-EM anomalies are found around the prominent magnetic anomaly on the south end of lines 12 and 14E and therefore no doubt reflect the pyroxenite contact with the surrounding rock-type.

The rest ofthe VLF-EM anomalies are felt not worth further discussion since they are small, of lower intensity and/or

have no correlation with magnetic anomalies.

Respectfully submitted,

GEOTRONICS SURVEYS LTD.

David G. Mark,
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September 25, 1972

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RESUME OF TECHNICAL AND FIELD EXPERIENCE

of

K. McCULLOCH

---

1. Presently Field Supervisor and Crew Chief for Trans-Arctic Explorations Ltd./ Geotronics Surveys Ltd.,

2. Two years of applied field experience in various aspects of mining exploration, geophysical and geochemical surveys.

3. Instrument Operator on various geophysical instrumentation methods, i.e., magnetometer, electromagnetic, self potential, resistivity, induced polarization and transit & level surveying.

4. The above mentioned experience applied in Western Canada and the U.S.A.

GEOPHYSICIST'S CERTIFICATE

I, DAVID G. MARK, of the City of Vancouver, in the Province of British Columbia, do hereby certify:

That I am a Consulting Geophysicist of GEOTRONICS SURVEYS LTD., with offices at 514-602 West Hastings Street, Vancouver 2, B.C.

I further certify that:

1. I am a graduate of the University of British Columbia (1968) and hold a B.Sc. degree in Geophysics.

2. I have been practising in my profession for the past four years and have been active in the mining industry for the past seven years.

3. I am an associate member of the Society of Exploration Geophysicists and a member of the European Association of Exploration Geophysicists.

4. This report is compiled from data obtained from a combined magnetic and VLF-EM survey carried out by Kel McCulloch and supervised by myself during June and July 1972 on the Windpass property, and from pertinent data, published maps and reports as listed under Selected Bibliography.

5. I have no direct or indirect interest in the properties or securities of Gold River Mines Ltd., or Dalton Resources Ltd., Burnaby, B.C. nor do I expect to receive any interest therein.

David G. Mark
Geophysicist

September 25, 1972

ENGINEER'S CERTIFICATE

I, Thomas R. Tough, of the City of Vancouver, in the Province of British Columbia, do hereby certify:

That I am a Consulting Geologist and an associate of T.R. Tough & Associates Ltd., with offices at 519-602 West Hastings Street, Vancouver 2, B.C.

I further certify that:

1. I am a graduate of the University of British Columbia (1965) and hold a B.Sc. degree in Geology.

2. I have been practising in my profession for the past seven years and have been active in the mining industry for the past fourteen years.

3. I am registered with the Association of Professional Engineers of British Columbia.

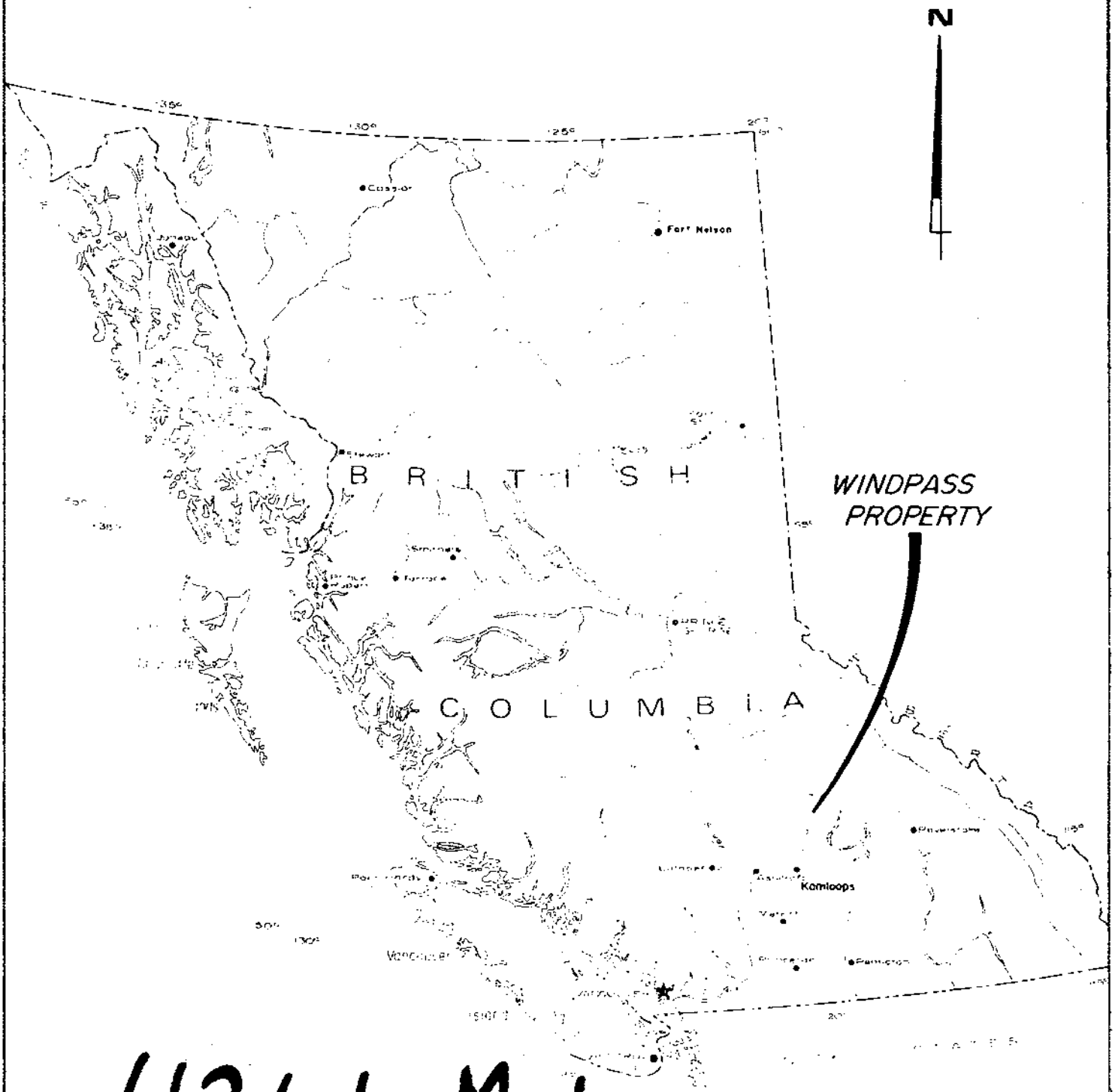
4. I have studied the accompanying report dated September 20, 1972 on a magnetometer and a VLF-EM survey submitted to Geotronics Surveys Ltd., written by David G. Mark, Geophysicist, and concur with findings therein.

5. I have no direct or indirect interest whatsoever in the property described herein, nor in the securities of Gold River Mines Ltd and Dalton Resources Ltd., and do not expect to receive any interest therein.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
T. R. TOUGH

Thomas R. Tough, B.Eng.,
Consulting Geologist

September 25, 1972



4261 M-1

FIG. 1

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
T. R. TOUGH

GEOTRONICS SURVEYS LTD.

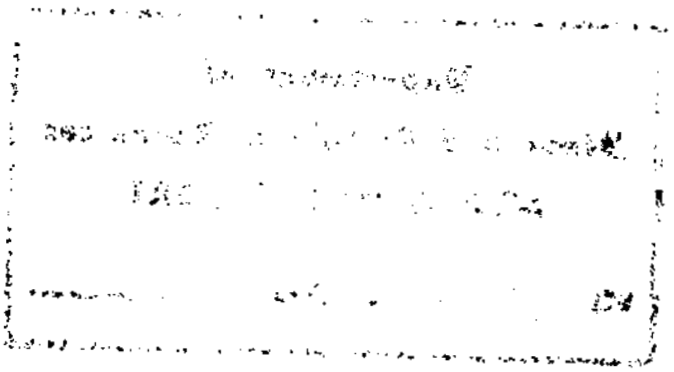
GOLD RIVER MINES LTD. (N.P.L.)
DALTON RESOURCES LTD. (N.P.L.)
WINDPASS PROPERTY
LITTLE FORT AREA, KAMLOOPS M.D.

LOCATION MAP

SCALE 1" = 134 mi

DRAWN	CHECKED	DATE
PDT		AUGUST '72

PDT

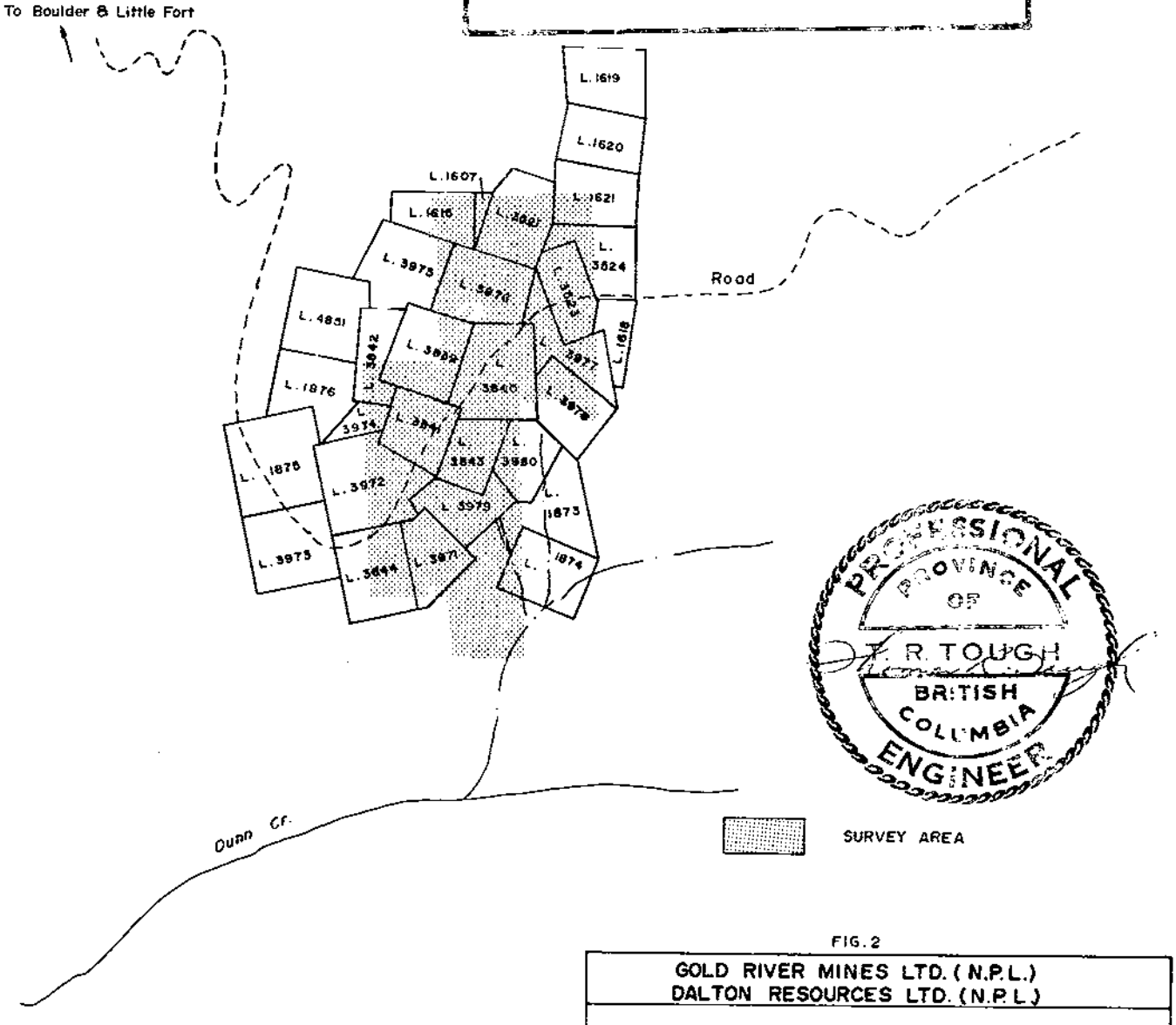


1-M 1952

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4261 MAP #1

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4261 MAP #2

N



PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
D. F. R. TOUGH

FIG. 2

GOLD RIVER MINES LTD. (N.P.L.)
DALTON RESOURCES LTD. (N.P.L.)

WINDPASS PROPERTY
Little Fort Area, B.C.
Kamloops M.D.
CLAIM LOCATION

GEOTRONICS SURVEYS LTD. PDT DRAFTING SERVICES	SCALE 1" = 1600' approx.	DATE AUGUST '72

LEGEND

Coarse - grained
Fine - grained
Medium - grained
} Diorite - pyroxenite sill

Chert

Limestone

N

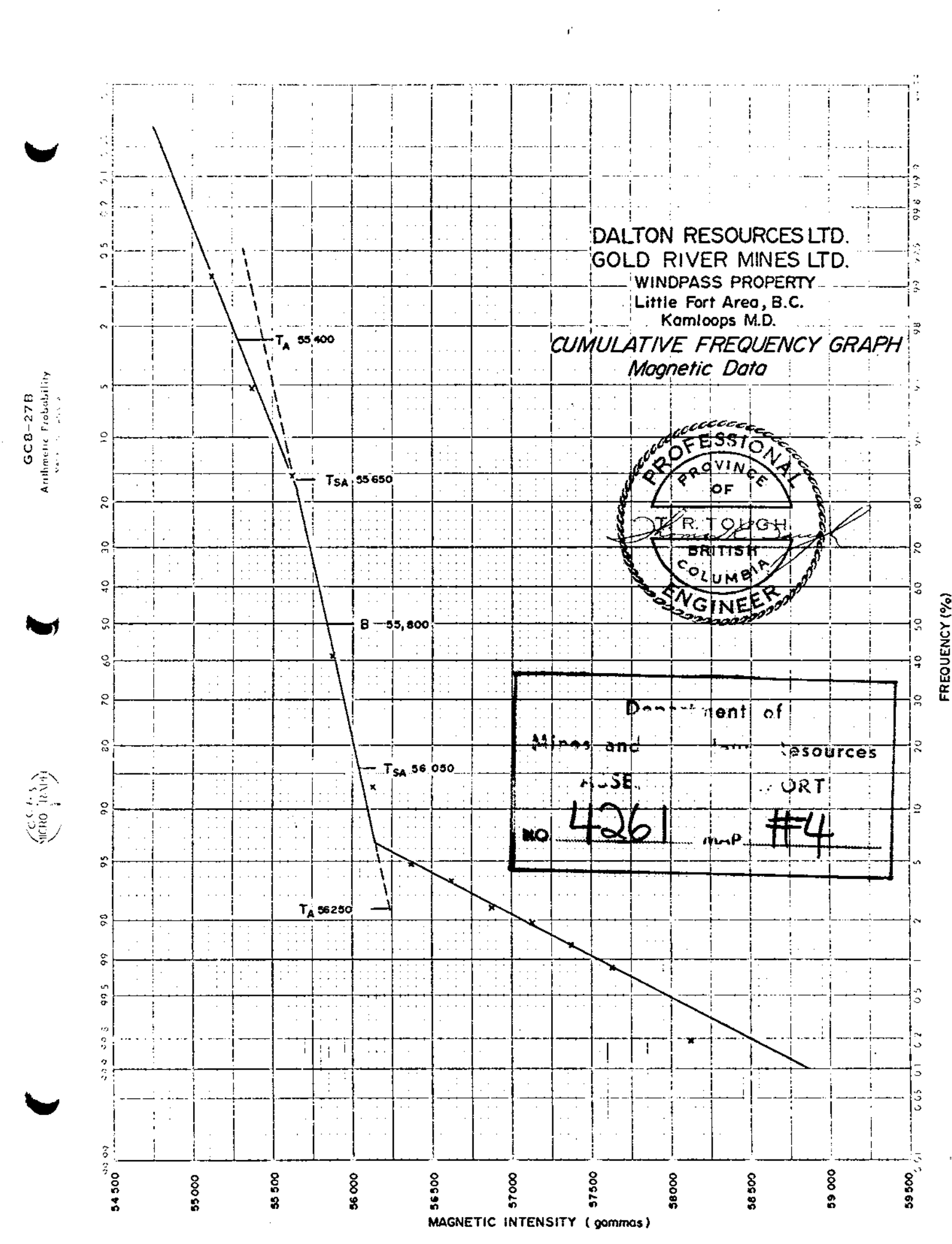
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4961 MAP #3

FIG. 8

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
T. R. TOUGH

GEOLOGY

GEOTRONICS SURVEYS LTD. FOR DRAFTING SERVICES	SCALE	DATE


DALTON RESOURCES LTD.
GOLD RIVER MINES LTD.
WINDPASS PROPERTY
Little Fort Area, B.C.
Kamloops M.D.
CUMULATIVE FREQUENCY GRAPH
Magnetic Data
T_A 55400
T_{SA} 55650
B 55,800
T_{SA} 56050
T_A 56250
PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
T. R. TOUGH
Department of Mines and Petroleum Resources
REPORT
NO. 4261
MAP #4
GC8-27B
Arithmetic Probability
FREQUENCY (%)
MAGNETIC INTENSITY (gammas)
54 500
55 000
55 500
56 000
56 500
57 000
57 500
58 000
58 500
59 000
59 500

COST BREAKDOWN

CONTRACT NO. 72-84

MAGNETIC AND ELECTROMAGNETIC SURVEYS

WINDPASS PROPERTY

LITTLE FORT AREA, KAMLOOPS M.D., B.C.

Wages	
K. McCulloch, supervisor - 18 days @ 75.00	$ 1,350.00
T. Miller, Inst. operator - 12 days @ 50.00	600.00
R. McDonald " " - 12 days @ 50.00	600.00
D. Mark, geophysicist - 4 days @ 125	500.00
	3,050.00
Instrument rental	
2 flux. magnetometer @ 300.00 ea./mth.	600.00
1 VLF-EM magnetometer @ 300.00/mth.	300.00
4-wheel drive rental - 1 month	425.00
Survey supplies	275.00
Mapping	250.00
Geophysical report	500.00
Engineering fees	300.00
TOTAL	$ 5,700.00

Declared before me at the City of Vancouver, in the Province of British Columbia, this 26 day of March 1973., A.D.

Jill Turner

A Commissioner for taking Affidavits within British Columbia or A Notary Public in and for the Province of British Columbia.

Sub-mining Recorder

Geotronics Surveys Ltd.

L-10W
L-8W
L-6W
L-4W
L-2W
L-0W
L-2E
L-4E
L-6E
L-8E
L-10E
L-12E
L-14E
L-16E
L-18E
L-20E
L-22E
L-24E
L-26E

37 S
30 S
15 S
BL-00 N
15 N
25 N

SWEET HOME
ELISE
ERIN
GOTTEN
DOLLY VARDEN
JUPITER
WIND PASS No. 3
WIND PASS No. 2
DONEGAL
NORTH DOWN
BELFAST
SIGNE
BRENDA
FRACTION
MAPLE LEAF

Large oblong mounds

LEGEND

- SURVEY LINE
- CLAIM POST
- CLAIM LINE
- ROAD
- CREEK/STREAM
- TRENCH / TEST PIT
- SHAFT
- OUTCROP
- SLOPE
- SWAMP
- CLIFF
- GULLY / RAVINE
- R.s. ROCK SLIDE

MAGNETIC 23°E

NOTE

Readings are in gammas.

50,000 gamma has been subtracted from field values and zero taken off each reading.

CONTOURS

Contour interval is 200 gammas

——— CONTOUR ABOVE 56,600

– – – – – – CONTOUR BELOW 55,600

55,800 Contour is not drawn in.

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Department of Mines and Petroleum Resources

ASSESSMENT REPORT NO. 4261 MAP #5

GEOPHYSICAL REPORT BY D.S. MARK, GEOPHYSICIST

GOLD RIVER MINES LTD. (N.P.L.)
DALTON RESOURCES LTD. (N.P.L.)

WINDPASS PROPERTY
LITTLE FORT AREA, KAMLOOPS M.D.
British Columbia

MAGNETOMETER SURVEY
DATA & CONTOURS

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
J. R. TOUGH

GEOTRONICS SURVEYS LTD. POT DRAFTING SERVICES	SCALE 1 = 200'	DATE AUGUST 1972	JOB No. 72-64	SHEET No. 1

L-10W
L-8W
L-6W
L-4W
L-2W
L-0W
L-2E
L-4E
L-6E
L-8E
L-10E
L-12E
L-14E
L-16E
L-18E
L-20E
L-22E
L-24E
L-26E

37S
30S
15S
BL-00N
15N
25N

SWEET HOME
JUPITER
DONEGAL
ELISE
ERIN
WIND PASS No. 3
NORTH W. DUNN
WIND PASS No. 2
WIND PASS No. 1
GOTTEN
DOLLY VARDEN
MAPLE LEAF
BEAST
SIGNE
BRENDA FRACTION
L 3523
Gordon Jump
Large oblong mounds
Seattle transmitter station
51 6° W

LEGEND

- SURVEY LINE
- CLAIM POST
- CLAIM LINE
- ROAD
- CREEK / STREAM
- TRENCH / TEST PIT
- SHAFT
- OUTCROP
- SLOPE
- SWAMP
- CLIFF
- GULLY / RAVINE
- ROCK SLIDE

N
Magnetic 33°E

NOTE Readings are in degrees.
Contour interval is 10°.

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 4261 MAP #6

TO ACCOMPANY GEOPHYSICAL REPORT BY D.G. MARK, GEOPHYSICIST

GOLD RIVER MINES LTD.(N.P.L.)
DALTON RESOURCES LTD.(N.P.L.)

WINDPASS PROPERTY
LITTLE FORT AREA, KAMLOOPS M.D.
British Columbia

VLF-EM, FRASER FILTER
DATA & CONTOURS

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
R. TOUGH

GEOTRONICS SURVEYS LTD. PDF DRAFTING SERVICES	SCALE 1 = 200'	DATE AUGUST 1972	JOB No. 72-64	SHEET No. 2