3728

Department of and Petroleum Resources
ASSESSMENT REPORT
128 MAP

GEOPHYSICAL REPORT

on

MAGNETIC, ELECTROMAGNETIC SURVEYS

ALAMO CLAIM GROUP

HIGHLAND VALLEY AREA, KAMLOOPS M. D., B. C.

April 1972

92I/6E,7W

ALAMO CLAIM GROUP: 19.5 miles N30W of the town of Merritt, B.C.

50° 121° SW

N.T.S. 92I/6E, 7W

Written for: SAN JACINTO EXPLORATIONS LTD
3513 West 31st Avenue,
Vancouver 8, B.C.

by: David G. Mark
Geophysicist
GEOTRONICS SURVEYS LTD
514-602 W Hastings Street,
Vancouver 2, B.C.

May 12 1972

Geotronics Surveys Ltd.
Vancouver, Canada
Geophysical Services — Mining & Engineering

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SUMMARY

A combined magnetic and VLF-EM survey was completed over a portion of the Alamo claims in the Highland Valley area, B.C. during April, 1972. The purpose of the surveys was to delineate any structural zones that could possibly be traps for any sulphide mineralization and to map the northern extension of some of the zones located on the San Jose claims.

The claims are located about 19 miles N30W of Merritt. Access is by the Skuhun Creek road and the Cris-Lornex road from Highway 8 northwards. The terrain is quite gentle except for a few 100-foot deep gorges on the San José claims and the trees are fairly open throughout most of the area.

The property is found within the Guichon Creek Batholith. According to Morton, the main rock-type is a quartz diorite with some dacite porphyries and aplite diking. The faults strike mainly in a north to northwest direction and sets of fractures found throughout the property strike in various directions. Mineralization is limited to traces of copper and molybdenum minerals.

The data from the magnetic survey is much quieter than that of the adjacent survey area (San Jose claims) to the south. Two anomalous highs correlate directly with two VLF-EM conductive zones, A & B. These two zones are a continuation from the VLF-EM zones A & B on the San Jose survey. A new zone, named F, was revealed. The VLF-EM zones are likely caused by shears and/or faults.

CONCLUSIONS AND RECOMMENDATIONS

The VLF-EM survey has revealed six conductive zones over both the Alamo claim group and the San Jose claim group that the writer feels is caused by shear and/or fault zones. Three of these strike northerly and the other three strike about N30W. This does not preclude the possibility of any faults or shear zones striking in other directions since the greater the angle between the direction of the structure and the direction to the Seattle transmitter, the more difficult it is to outline the structure by the VLF-EM.

On the San Jose claims, magnetic lows correlated with VLF-EM conductive zones and therefore confirms more strongly that these zones are caused by shear zones. However, on the Alamo claims, the only correlation between magnetics and VLF-EM is that two magnetic highs correlate directly with parts of two VLF-EM

conductive zones. This could be caused by a small amount of magnetic mineralization being introduced along the shear zones.

The geology of the property is considered favourable to sulphide mineralization and sulphides could be associated with the shear and/or fault zones.

Therefore it has been recommended on the San Jose claims, that the survey area should be surveyed by the induced polarization method in search of disseminated or fracture-filling sulphide mineralization. Survey parameters should be chosen so that a depth of about 300 feet is reached.

Respectfully submitted,
GEOTRONICS SURVEYS LTD.

David G. Mark
Geophysicist

May 12, 1972

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
J. R. TOUGH

GEOPHYSICAL REPORT

on

MAGNETIC, ELECTROMAGNETIC SURVEYS

ALAMO CLAIM GROUP

HIGHLAND VALLEY AREA, KAMLOOPS M. D., B.C.

INTRODUCTION AND GENERAL REMARKS:

This report discusses the procedure, compilation, and interpretation of a combined fluxgate magnetometer and a very low frequency electromagnetic (VLF-EM) survey carried out on the Alamo Claim Group during April, 1972.

The field work was carried out by the writer and one assistant. The number of line miles completed was 8.6 and the area covered by the survey is as shown on Figure 2.

The object of both surveys was to outline structure, principally faults and shear zones. In July of 1971, these two survey methods were carried out over the San Jose claim group, adjacent

to and south of the Alamo claim group. North-trending anomalies were produced which were felt were caused by faults and/or shear zones. Therefore, the southwestern part of the Alamo group was surveyed in order to map the extension of the San Jose anomalies.

In addition, a secondary object of the VLF-EM was to delineate any mineralized zones. Though in the Highland Valley area, this is usually best done by the induced polarization method, the VLF-EM will sometimes pick up the same mineralized zones that the IP method will, as well as other zones the IP method cannot.

PROPERTY AND OWNERSHIP:

The property consists of two claim groups; the Alamo group of 24 claims and the San Jose group of 33 claims. They are as follows and as shown in Figure 2.

ALAMO GROUP: (24)

Name	Record No.	Expiry Date
Alamo 1-8	42363-70	April 24, 1972
Alamo 9, 11	55848, 49	May 9, 1972
Alamo 10	42372	April 24, 1972
Alamo 18	42380	April 24, 1972
Alamo 20	42382	April 24, 1972
Alamo 22	42384	April 24, 1972
Alamo 24	42386	April 24, 1972
Alamo 26	42388	April 24, 1972
Alamo 28	42390	April 24, 1972
Alamo 36	42396	April 24, 1972
Alamo 38	42398	April 24, 1972
Alamo 40	42400	April 24, 1972
Alamo 42	42402	April 24, 1972
1 Fr. - 3 Fr.	45878-80	April 24, 1972

SAN JOSE GROUP: (33)

Name	Record No.	Expiry Date
San Jose 1-30	58933-62	July 28, 1973
San Jose 31 Fr.-33Fr.	58963-65	July 28, 1973

All claims are wholly owned by San Jacinto Explorations Ltd. of Vancouver, B.C.

LOCATION AND ACCESS:

The property is found within the Highland Valley Mining Camp of the Kamloops Mining Division and is located about 19 miles N30W of the town of Merritt in a straight line and about 5 miles S25W of the Chattaway and Dot Lakes.

The geographical coordinates are approximately 50° 22' N latitude and 121° 00' W longitude.

Access to the property is by first taking the Skuhun Creek road which leaves Highway No. 8 about 13 miles from Spences Bridge and about 27 miles from Merritt. One travels this road for about nine miles past Skuhost Creek and then turns northwards onto what is known as the Chris-Lornex road. About three or four miles up this road is an Alamo claim post (fp.7.8, ; ip 9, 10) on the north side of the road. A dirt road from this point follows the Alamo-San Jose claim line southwards as far as San Jose claim post for claims 3-6.

PHYSIOGRAPHY

The property is found in the physiographic division known as the Thompson Plateau, most southern part of the Interior Plateau. It has a gently rolling upland of low relief, elevation varying largely between 4, 000 and 5, 000 feet. The property itself is at approximately 5, 000 feet elevation except the southern part which starts dropping towards Skuhun Creek. The Alamo claims range in elevation from about 5000 feet to 5700 feet. Parts of the property, mainly the San Jose claims, are cut by north-south trending gorges that are up to 2000 feet long and 100 feet deep. There are also a number of small swamps throughout the area frequently less than 200 feet in diameter and small intermittent streams that drain into and out of these swamps.

The prevalent tree type is jackpine, which ranges up to 10 inches in diameter, and some balsam and spruce. The tree density is less than moderate with some dense tracts of small trees over previously burned areas. Most of the undergrowth is grass.

Pleistocene ice occupied the Thompson Plateau and thus much of the claims area is probably covered by glacial drift which could become quite deep over the flatter areas.

HISTORY OF PREVIOUS WORK

Over both the Alamo Claim Group and the San Jose Claim Group, an aeromagnetic survey was flown, and a geological survey was undertaken. Over the Alamo claims, random soil sampling has been done as well as an induced polarization survey and a ground magnetic survey. On the San Jose claims, a limited amount of soil sampling was undertaken over a grid as well as the combined VLF-EM and magnetic survey carried out by the writer during July, 1971. The writer also noticed some trenches on the property and one or two places that appeared to be diamond drill sites.

Only the geological map, the soil sample map for the San Jose claims and the VLF-EM, magnetic survey report were available to the writer.

GEOLOGY

The property is found within the Guichon Creek Batholith, host of porphyry copper orebodies, such as that of Bethlehem, Lornex and Highmont, and a massive type copper orebody owned by Alwin. The batholith, according to Northcote (see ref.), was emplaced between Upper Triassic to Middle Jurassic Time and is composed of several different phases varying in rock-type from quartz monzonite to quartz diorite.

The San Jose claims are located, as per Northcote's geology map, within the Bethsaida phase which he says is a quartz monzonite-granodiorite. Mr. Ian Morton did a geological survey over the claims and he has labelled the prevailing rock-type a quartz diorite. Other rock-types Morton noted were aplite dikes and dacite porphyries. He has also shown faults striking in a north to northwest direction and sets of fractures and cross-fractures striking in various directions throughout the property. Mineralization has been limited to traces of copper and molybdenum minerals in a few locations.

INSTRUMENTATION AND THEORY

1) Magnetometer

The magnetic survey was carried out using a portable vertical component, Model G-110 fluxgate magnetometer manufactured by Geotronics Instruments 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 18.6KHz, 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 in which lines were cut out at 400-foot intervals, well-blazed, and picketed at 200-foot intervals. The cut-out survey lines run

in an east-west direction and the baseline, also cut-out, blazed and picketed runs in a north-south direction.

The road that follows the claim line for Alamo 1-8 claims was used as a baseline for this survey. Magnetic sub-stations were set up on each survey line at a station close to the road. As the survey was carried out, these stations were read at about one hour intervals in order to monitor the magnetic diurnal change.

COMPILATION OF DATA

1) Magnetic:

A histogram was drawn up of all the magnetic values after they were diurnally corrected, and from this a mean background value was taken to be about 54, 450 gammas. The data was then plotted on sheet 1 at a scale of 1" = 400 feet and contoured at a 100-gamma interval. The 54, 400 and the 54, 500 gamma contours were left out since this was close to background and would, therefore, only hinder the interpretability of the magnetic data. 54, 000 gammas was subtracted from each value for plotting.

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^{o}. The 0^{o} contour was put in where it helped show the continuity of the anomalous zones.

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 magnetic data, as can be seen on sheet 1, is much quieter than that on the San Jose claims to the south. That is, the range on the Alamo claims is about 900 gammas while that of the San Jose claims is about 1700 gammas. This means also the rate of change in the magnetic data per 100 feet on the Alamo claims is much less than that of the San Jose claims. It can be seen that the data on L-60S, which is adjacent to the 1971 survey area, becomes noisier. This correlates with the topography since the terrain on the San Jose ground as well as L-60S on the Alamo ground is much hillier than that of the rest of the Alamo ground.

Anomalous high 1 and the east part of anomalous high 2 correlate directly with parts of VLF-EM conductive zones A and B. The two anomalies do not seem to outline any particular rock type when correlated directly with Ian Morton's geological map. However, it is felt conductive zones A and B are caused by faults or shear zones and, therefore, perhaps the magnetic anomalies are caused by a small amount of magnetic mineralization injected along the fault and/or shear zones.

There are no significant anomalies over the rest of the survey area. Three magnetic lows seem to form a lineation that is labelled by the writer 3-3' on sheet 1 and therefore could be due to a fault or shear zone. Anomalous areas 4, 5 and 6 are possibly either caused by shear zones or small alteration zones. Some of the higher values on L-60S correlate with the hilltops and the lower values with the gullies.

2) VLF-EM Survey

There are three main conductive zones as shown on sheet 2. They do not seem to reach the intensity of the ones on the adjacent survey area, although this could be due to a lower moisture content within the bedrock. As was mentioned by the writer, in the 1971 report, the causative source of these anomalies is most likely a fault and/or shear zone. Sulphide mineralization could be associated with these zones.

The two zones labelled A and B are a continuation of zones A and B on the San Jose claim group. They both continue on a strike of approximately north and are open on the north end of the survey area, as well as the south end. The more intense part of Zone A

($\geq 10^{o}$) has an additional length on the Alamo claims of about 2600 feet and runs through an area of trenching. A reaches an intensity of 28^{o}. North of L-36S, the anomaly is very little above background though the writer feels that this is more indicative of less moisture within the shear or fault. Zone B along its length contains sporadic zones greater than 10^{o} and reaches an intensity of 17^{o}.

The main part of Zone F strikes in a general direction of N25E, has a length of about 2600 feet, and reaches an intensity of 23^{o}. Its strike is almost the same as that of zones D and E on the San Jose claims. There is a small change in strike between L-40S and L-44S which could possibly be caused by a fault striking in about a N45E direction.

The correlation between the VLF-EM and the magnetics is discussed under 1) magnetic survey.

Respectfully submitted,
GEOTRONICS SURVEYS LTD.

May 12, 1972

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
T. R. TOUGH

David G. Mark
Geophysicist

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Northcote, K.E., Geology and Geochronology of the Guichon Creek Batholith, B.C.D.M. Bul. 56, 1969.

Mark, David G. Geophysical Report on Magnetic-Electromagnetic Surveys for San Jacinto Explorations Ltd. San Jose Claim Group, Highland Valley Area, Kamloops M.D., B.C., Geotronics Surveys Ltd., August, 1971.

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 W 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 myself in April 1972 on the Alamo Claim Group, and pertinent data from published maps and reports as listed under Selected Bibliography.

5. I have no direct or indirect interest in the properties or securities of San Jacinto Explorations Ltd, Vancouver, B.C. nor do I expect to receive any interest therein.

David G. Mark
Geophysicist

May 12 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 with T.R. Tough & Associates Ltd., with offices at 519-602 W 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 six years and have been active in the mining industry for the past thirteen years.

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

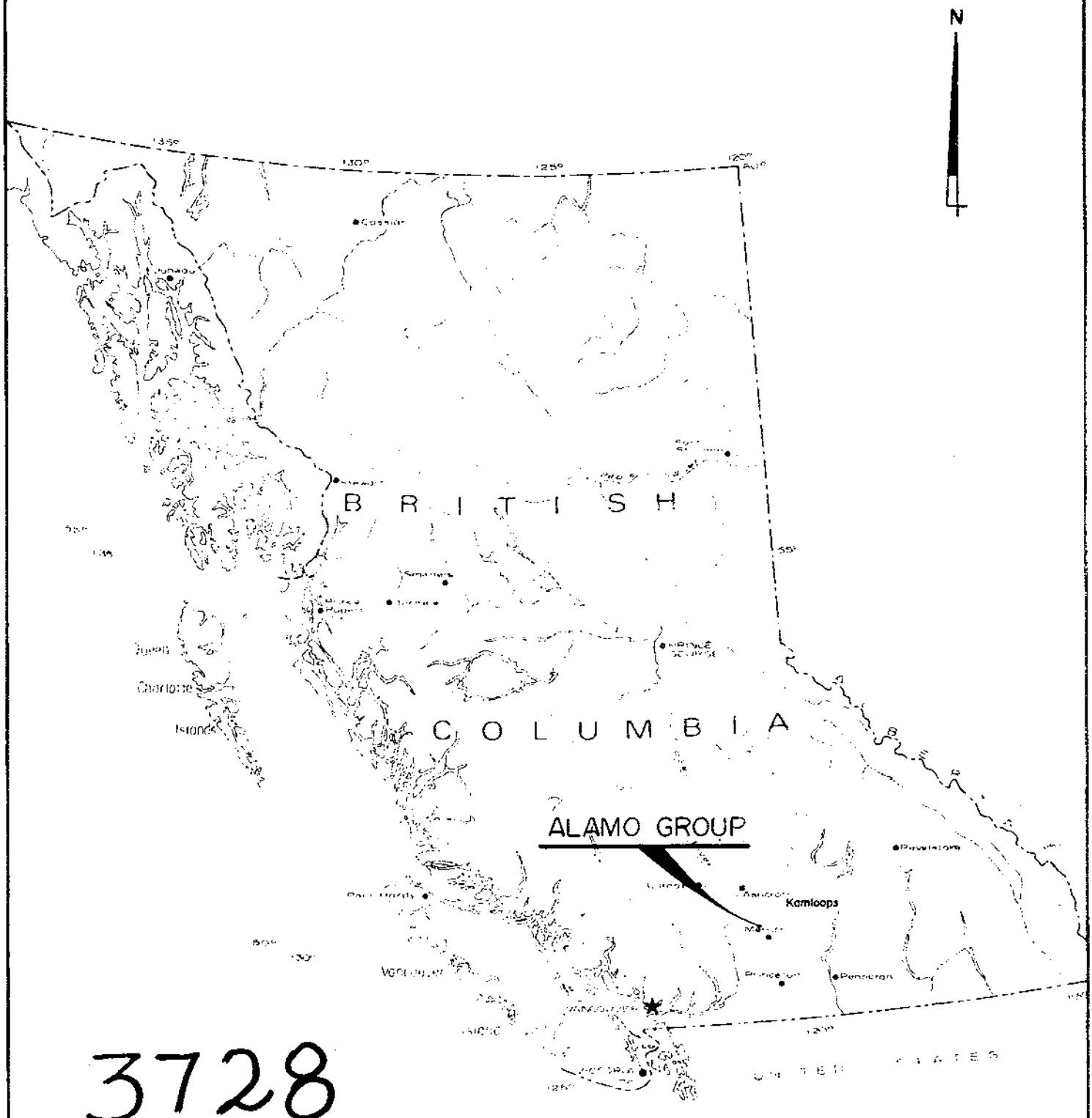
4. I have studied the accompanying report dated March, 1972, on a magnetometer and a VLF-EM survey submitted to Geotronics Surveys Ltd., written by David G. Mark, Geophysicist, and concur with findings therein.

5. I have no direct or indirect interest whatsoever in the property described herein, nor in the securities of San Jacinto Explorations Ltd., and do not expect to receive any interest therein.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
T. R. TOUGH

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

May 12 1972



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M-1

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
T. R. TOUGH

PDT

• GEOTRONICS SURVEYS LTD

SAN JACINTO EXPLORATIONS LTD.

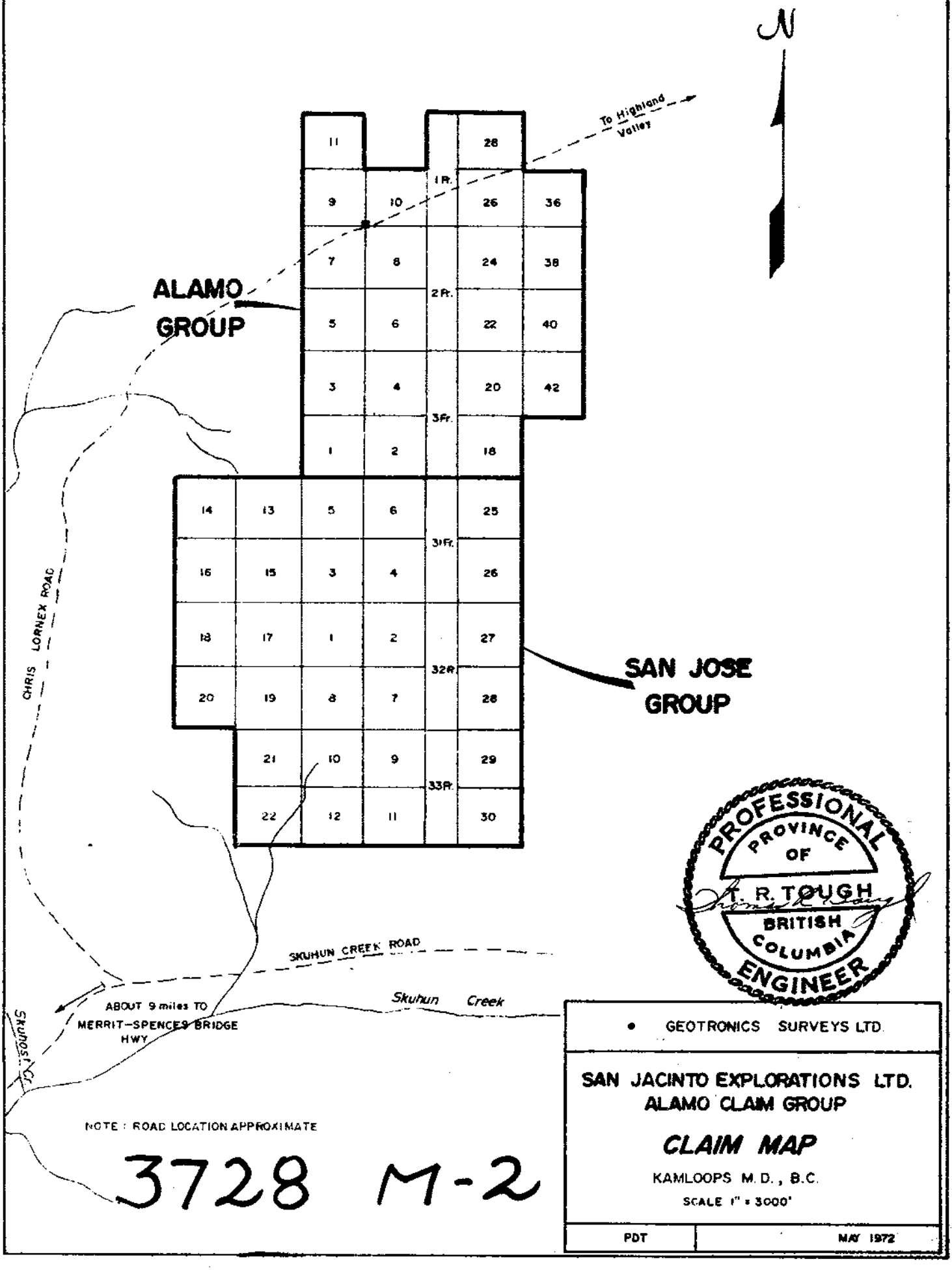
ALAMO CLAIM GROUP

Kamloops M.D., B.C.

LOCATION MAP

SCALE 1" = 134 mi.

DRAWN: PDT	CHECKED:	DATE: MAY '72



3728 M-2

• GEOTRONICS SURVEYS LTD.

SAN JACINTO EXPLORATIONS LTD.
ALAMO CLAIM GROUP

CLAIM MAP

KAMLOOPS M.D., B.C.

SCALE 1" = 3000'

PDT	MAY 1972

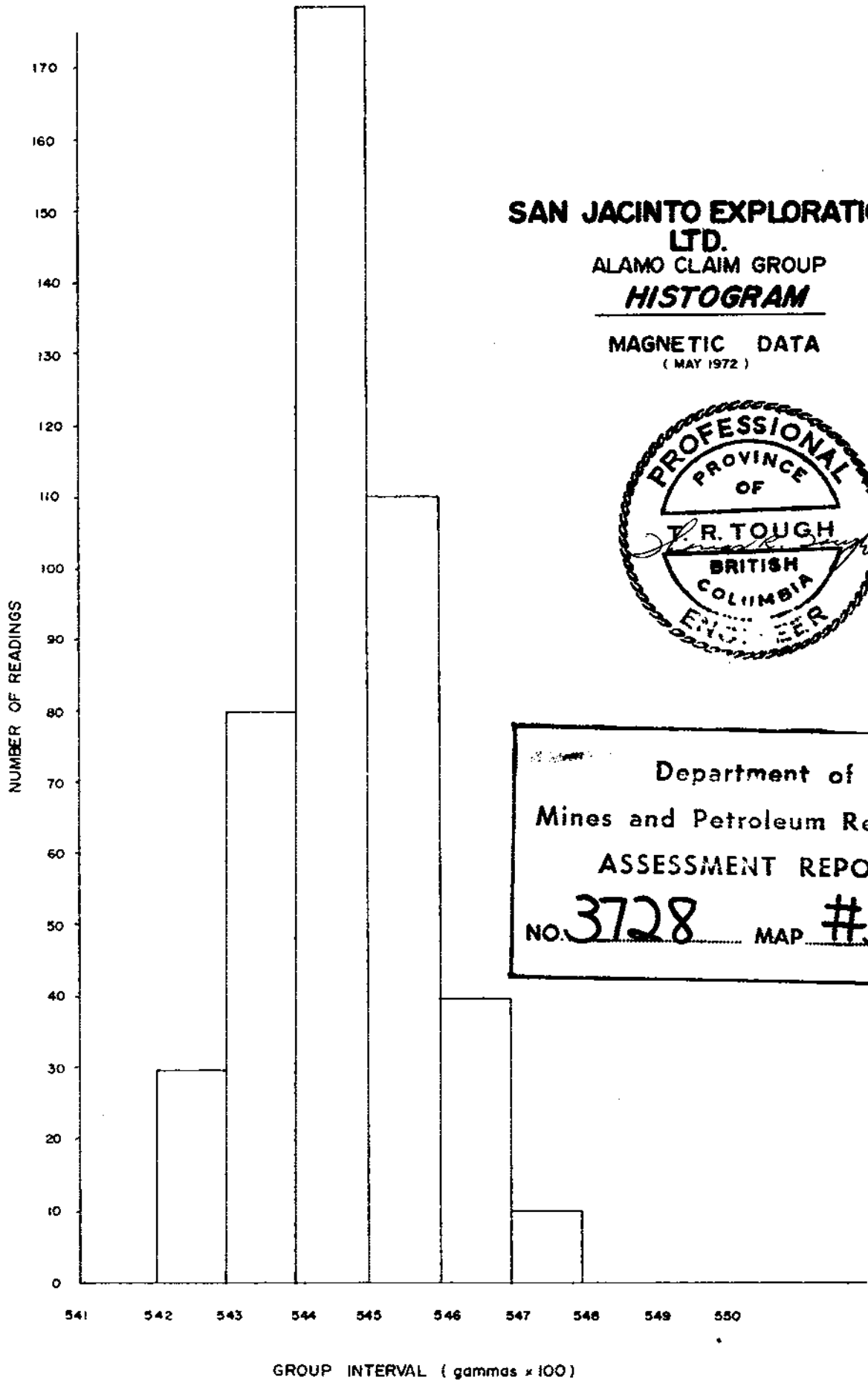
SAN JACINTO EXPLORATIONS LTD.

ALAMO CLAIM GROUP

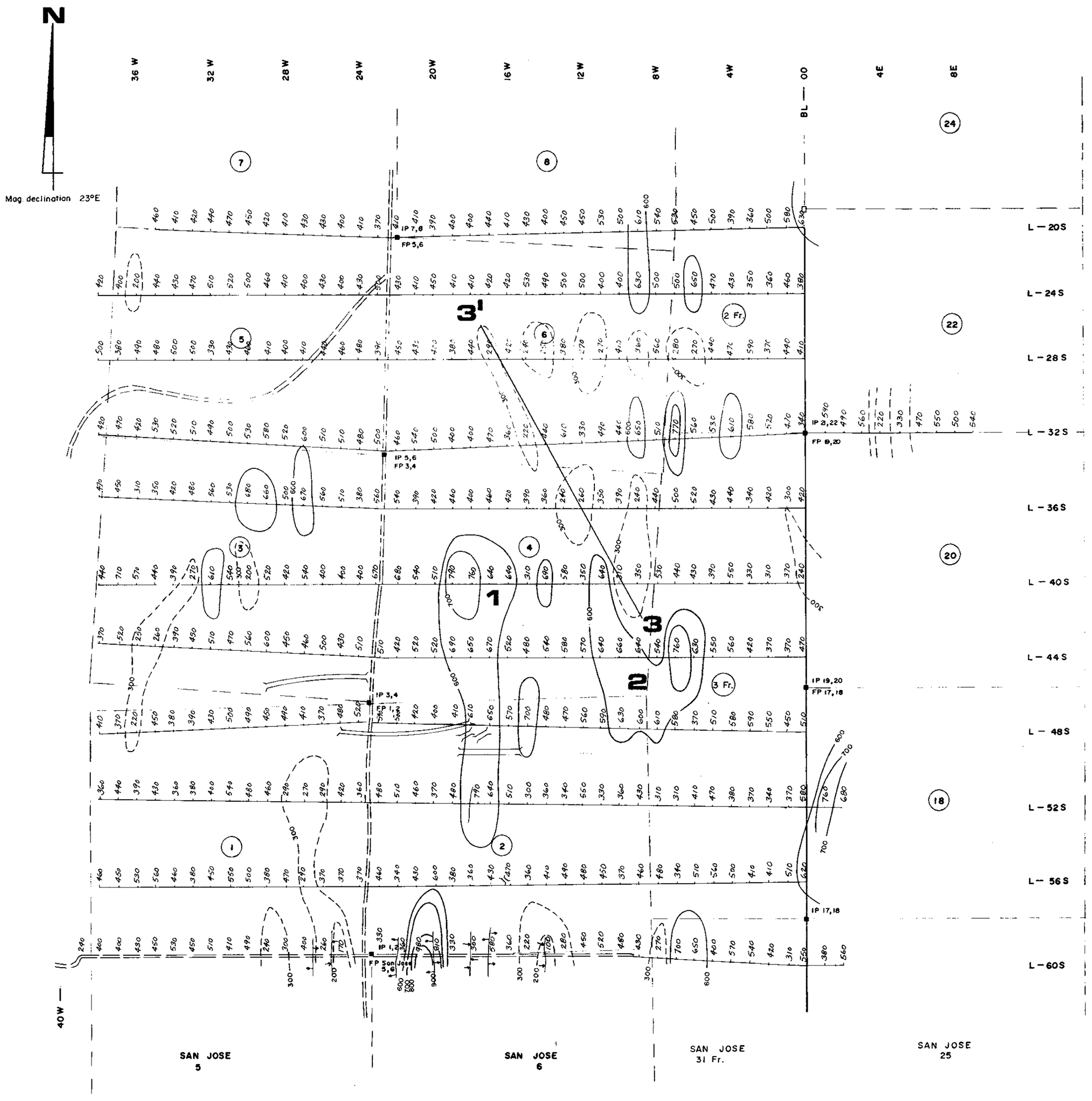
HISTOGRAM

MAGNETIC DATA

(MAY 1972)



D. MARK



LEGEND

- Survey line
- Dirt road
- Cat trench
- Hill top, gulley (arrow points downslope)
- Claim post (located, assumed)
- Claim boundary
- (2) Alamo claim No.
- Contours above 54,450 gammas
- Contours below 54,450 gammas

NOTES

Contour interval — 100 gammas
Contours 54,400 and 54,500 gammas are not drawn in.

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3728 MAP #4

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
T. R. TOUGH

GEOTRONICS SURVEYS LTD.

SAN JACINTO EXPLORATIONS LTD.
ALAMO CLAIM GROUP
Highland Valley area, Kamloops M.D., B.C.

MAGNETOMETER SURVEY DATA & CONTOURS

SCALE	DATE	JOB No.	SHEET	DRAWN BY
1" = 400'	MAY 1972	72 – 47	1	PDT DRAFTING SERVICES

3728 M-4

N

Mag. declination 23°E

36 W | 32 W | 28 W | 24 W | 20 W | 16 W | 12 W | 8W | 4W | BL — 00 | 4E | 8E

L — 20S
L — 24S
L — 28S
L — 32S
L — 36S
L — 40S
L — 44S
L — 48S
L — 52S
L — 56S
L — 60S

40W —

IP 7,8
FP 5,6

IP 5,6
FP 3,4

IP 3,4
FP 1,2

IP San Jose
FP San Jose 5,6

IP 3,22
FP 19,20

IP 19,20
FP 17,18

IP 17,18

A
B
F

SAN JOSE 5

SAN JOSE 6

Seattle transmitter 18.6 KHz
S 23°W

NOTE: Contour interval is 10 degrees

LEGEND

- Survey line
- Dirt road
- Cat trench
- Hill top, gulley (arrow points downslope)
- Claim post (located, assumed)
- Claim boundary
- (2) Alamo claim No.

Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3728 MAP #5

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — J. R. TOUGH

GEOTRONICS SURVEYS LTD.

SAN JACINTO EXPLORATIONS LTD.
ALAMO CLAIM GROUP
Highland Valley area, Kamloops M.D., B.C.

VLF—EM FRASER FILTER
Data & Contours

SCALE	DATE	JOB No.	SHEET	DRAWN BY
1" = 400'	MAY 1972	72 — 47	2	PDT DRAFTING SERVICES