

1583

GEOPHYSICAL REPORT
ELECTROMAGNETIC AND SELF POTENTIAL
JAC AND JILL GROUPS
FORT STEELE M.D., B.C.

for

FORT STEELE MINES LTD.(NPL)
VANCOUVER, B.C.

by

TOM ROLSTON ELECTRONIC SERVICES
SOUTH BURNABY, B. C.

October 17 - 22, 1967

by C. B. Selmsier, P. Eng.

CERTIFICATE OF QUALIFICATIONS

The formal education of the author consists of undergraduate studies at Union College, Schenectady, N. Y., in engineering and science with a degree conferred as B. Sc. Graduate study was taken at McGill University and at the University of Toronto in mining geology and geophysics with a degree conferred as M. Sc. He is qualified both in engineering geology and geophysics as a professional engineer.

The author has had some twenty years' experience in the fields of geology and geophysics doing exploration work throughout Canada. He has also worked for a short period of time in the Transvaal region of South Africa.

The author has been a member of the Association of Professional Engineers of Ontario, Alberta and British Columbia for the past 14 years. He is at present an active member of the Association of Professional Engineers of British Columbia with certificate number 4683.

His knowledge of the property outlined in this report has been gained from the surveys. Reference has also been made to government reports and pertinent texts.

The author has no interest in the property of this Company or in securities thereof either directly or indirectly and is acting wholly as a consultant to the interested principal, and as such he does not expect to receive any such interest in the future.

C. B. Selmsler
C. B. Selmsler, P. Eng.

TABLE OF CONTENTS

Introduction. -----	Page 1
Work Summary. -----	1
Conditions of the Survey. -----	2
Instumentation. -----	2
General Geology. -----	5
Geophysical Interpretation. -----	5
Recommendation. -----	6

MAPS

- Location Plan #1
- S. P. Plan #2
- S. P. Profiles #3
- E.M. Survey Map #4
- E. M. Contour Map #5

GEOPHYSICAL REPORT
ELECTROMAGNETIC & SELF POTENTIAL-JAC & JILL GRPS.
FORT STEELE M. D., B. C.

INTRODUCTION:

This survey was made over claims JAC 1-6 and JILL 1-4 in the Cranbrook area of British Columbia. The group is on the slope of Old Baldy Peak on the south side of Perry Creek, which flows into the St. Mary River near Wycliffe. The property is reached on an access road, which is 9 miles from the Cranbrook - Kimberley Highway (95). The access route is via Wycliffe, the Perry Creek road to Old Town and at approximately $\frac{1}{2}$ mile past Sawmill Creek, a newly bulldozed road, 3 miles in length crosses the claim group. The Kimberley Mine is 10 miles north of this property.

These surveys were accomplished in order to prove or disprove the existence of an ore body of sulphides at the location of a magnetic anomaly. The magnetic survey was performed sometime earlier than the survey under discussion.

Geophysical Survey; Rome Creek Area, B.C. by H.H. Cohen, P. Eng. May 18, 1967

WORK SUMMARY:

This survey was carried out by two field personnel under the supervision of Mr. Tom Rolston, who has had 8 years' experience in geophysical field work. About 4 days was spent doing the EM survey and 1 more day on the SP follow-up.

Stations were occupied every 100 feet on lines 400 feet apart. Some detail was done over the magnetic anomaly with stations at 50 foot intervals. About 8 miles of EM control and $\frac{1}{2}$ mile of SP follow-up was done in this survey.

The men doing the survey lived at Cranbrook while the survey was in progress. No camp facilities were provided on the claim group.

CONDITIONS OF THE SURVEY:

The survey was performed on a northwesterly dipping slope. The valley of Perry Creek is at an elevation of 4100 feet a.s.l. while the main workings are at an elevation of 5700 feet. The upper slopes are of moderate relief with a shallow layer of overburden. There is abundant growth of Jackpine on the valley side.

The base line parallels the direction of Perry Creek and is normal to the direction of Rome Creek. The survey lines slope downward from east to west.

There was no snow in the area at the time of the survey. The survey was also not severely hampered by any other climatic conditions.

INSTRUMENTATION:

The instrument used in the EM survey was the low frequency radio type of electromagnetic sending and receiving model JEM, manufactured by Crone Geophysical Instruments. These instruments both send and receive from each location to give a midpoint reading. They are also tuned to 2 frequencies 400 Hz and 1800 Hz. These instruments also compensate for extreme changes in elevation between the sending and receiving points.

The readings are recorded in degrees for the orientation of a resultant electromagnetic field. The orientation of this field reads a minimum or null on the vertical axis of the search coils at a zero position, when no metallic or conducting medium is present. The large

angular readings relate to a conductor at the cross-over position. This is the position at which the angle changes from positive to negative in value. The ratio of the reading taken at a frequency of 400 Hz and that taken at 1800 Hz relates to the specific conductivity of the conductors in relation to its host rock.

The instrument used for the self potential survey was a vacuum tube voltmeter type manufactured by Sabre Electronics. This instrument measures natural voltages in the overburden generated by sulphide mineralization in contact with acidic ground waters. The natural ground voltages are produced by a battery-like action, where the upper pole of the body is negative and the far or lower pole is positive.

This battery action is most effective for near surface sulphide occurrences which partly protrude above the permanent water table level. Under these circumstances voltages from as little as 5% disseminated sulphide mineralization can be detected through 50 feet of overburden and rock.

It is not necessary for the conductive mineralization to protrude to the surface of the bedrock and massive ore bodies of conductive mineralization beneath more than 100 feet of bedrock have been surveyed successfully. The readings above such a body will show negative voltage directly above the mineralization. Lines joining points of equally negative voltage will outline the general shape and size of the occurrence. However, large topographic features or contacts between rock of considerably different electrical properties will partially distort the apparent shape.

The order of maximum response for near surface conductive mineralization (depth below surface less than the square root of the produce of length times width) is as follows:

<u>Less than 1600 m.v.</u>	<u>Polarity</u>
50% to 100% graphite including free carbon and soil acids	+
<u>Less than 1200 m.v.</u>	
10% to 20% graphite (includes free carbon)	+
60% to 100% magnetite	-
60% to 100% sulphides (not sphalerite)	-
Serpentized peridotite	-
<u>Less than 600 m.v.</u>	
2% graphite	+
20% sulphides (not sphalerite)	-
50% magnetite (conductive)	-
<u>Less than 200 m.v.</u>	
1% graphite	+
10% sulphides (not sphalerite)	-
20% magnetite (conductive)	-
<u>Less than 20 m.v.</u>	
Decaying vegetation	+
Geological boundaries	+

The electrodes used are non-polarizing porous pots with copper nodes in saturated copper sulphate solution. There is some unavoidable positive voltage associated with these (maximum 100 m.v.) produced between the electrolyte and the moisture in the ground.

Contact

very wet	+	100 m.v.
damp	+	80 m.v.
moist	+	60 m.v.
normal	+	40 m.v.
dry	+	20 m.v.
very dry	+	0 m.v.

The net voltage due to ground moisture will be the difference between the effect of the exploration probe and the effect on the base probe. Where the ground is uniformly moist the effect is negligible.

GENERAL GEOLOGY:

The predominant country rock on these claim groups is the Creston Formation, which consists of argillaceous quartzite and some argillite. Stocks of quartz diorite are found to intrude this formation some 5 miles to the west. The Creston formation is Proterozoic in age, which places it in the late Precambrian, while the intrusive is Post-Triassic in age. The Creston is in the Lower Purcell group which is predominantly sedimentary in origin.

The fault that passes through these claim groups is a thrust fault related to the Perry Creek Fault. This fault joins the St. Mary fault toward the northeast. This fault is concave toward the east and therefore is upthrust from the east.

The quartz veins are confined mostly to the JAC 1-6 group and are parallel to the strike of the faulting. They are mineralized by pyrite, pyrrhotite, pyromorphite, galena and occupy fissures in the fault zone.

GEOPHYSICAL INTERPRETATION:

The EM contour map indicates a series of low grade anomalies with a northeast and southwest trend. This trend is dislocated on

JAC 2 and 3. This condition might be caused by a shear zone striking northwest and southeast. The general trend of the anomalies is no doubt indicative of the bedding direction.

The cross shear is apparently younger than the main regional fault zone and has displaced its southward extension toward the east. This position passes through the position of the magnetic anomaly found in a previous survey.

Geophysical Survey, Rome Creek Area, B.C. by H.H. Cohen, P.Eng. May 18, 1967

The positive S.P. anomaly as shown on the S.P. Plan and Profiles is caused by the fault. The negative anomaly associated with it on Line 14S is indicative of about 5% sulphides.

In general the mineralized quartz veins in this area do not respond to the EM survey. This may be caused by dissemination of the sulphides in quartz which insulates the particles from each other electrically.

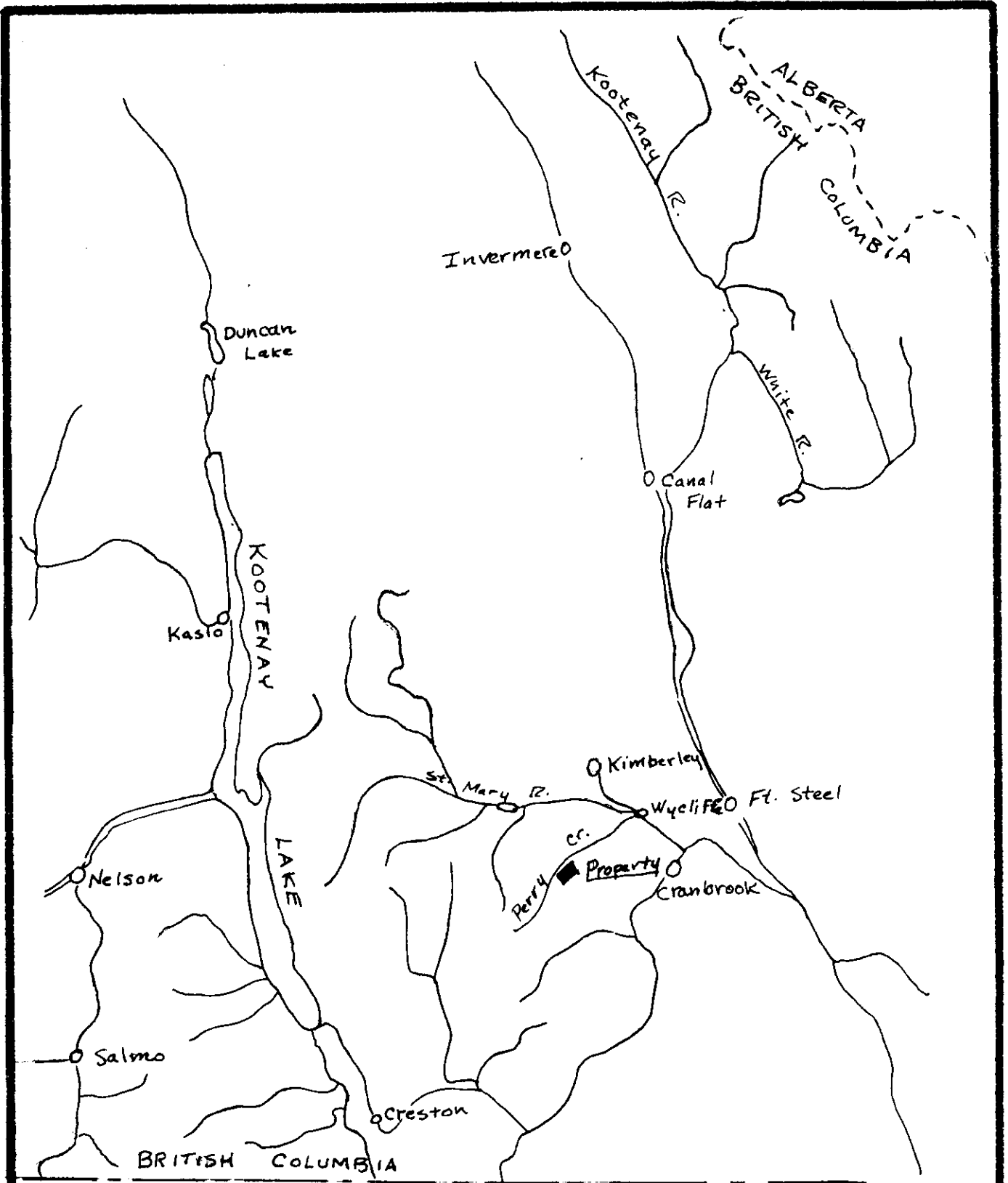
RECOMMENDATION:

Because of the disseminated nature of some of the sulphide mineralization it is recommended that the property be further surveyed with an induced polarization survey. This would outline all disseminated mineralization and give more realistic drill targets.

Pending this survey, drilling may be continued on any promising anomalies. Before this is done it would be impossible to predict how much further drilling is required.

Respectfully submitted,

C. B. Selmser
C. B. Selmser, P. Eng.



BRITISH COLUMBIA
UNITED STATES

LOCATION PLAN

Scale: 1 in. = 15 mi.

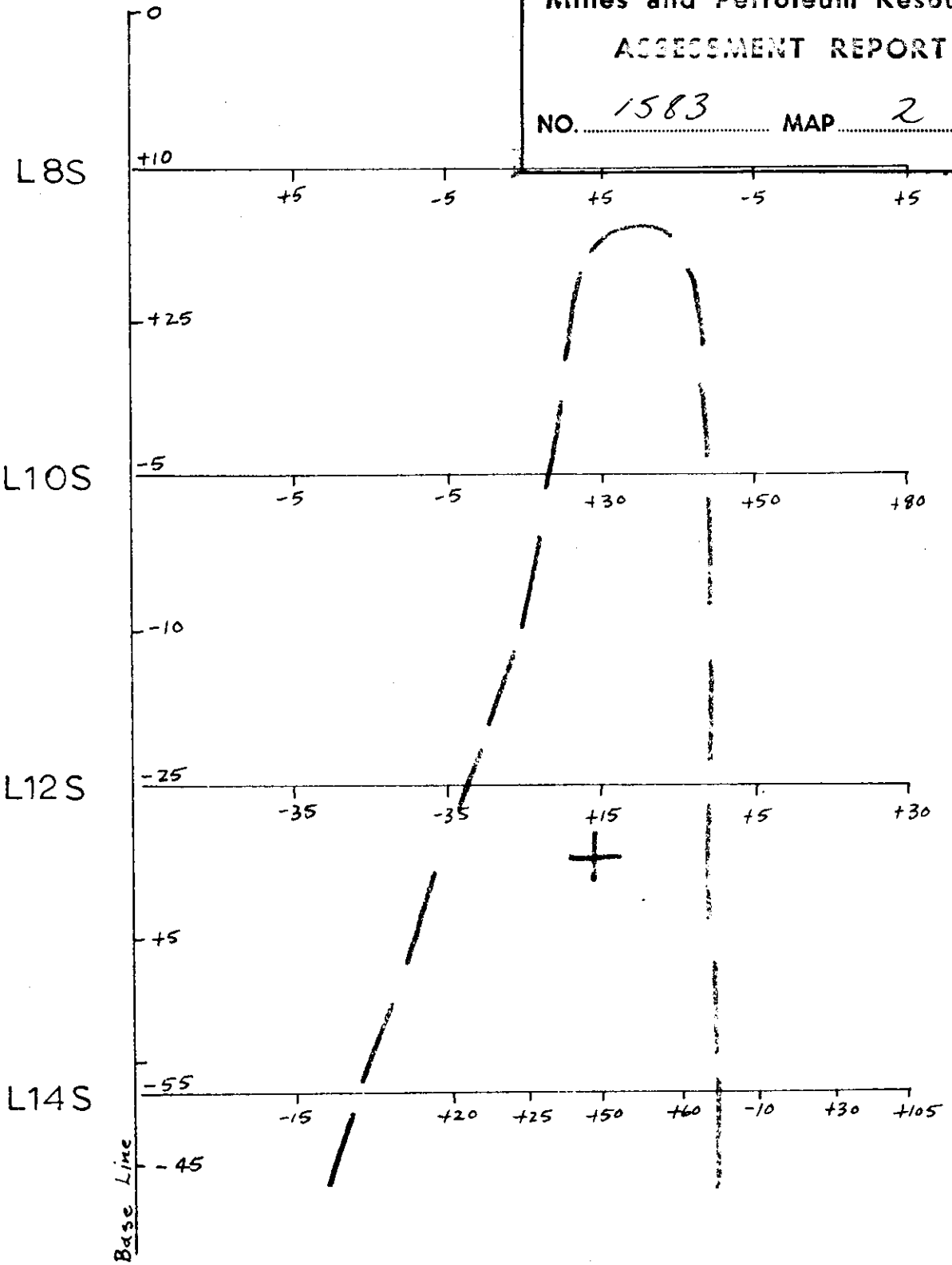
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

C. B. O.

NO. 1563
Amp 1

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 1583 MAP 2



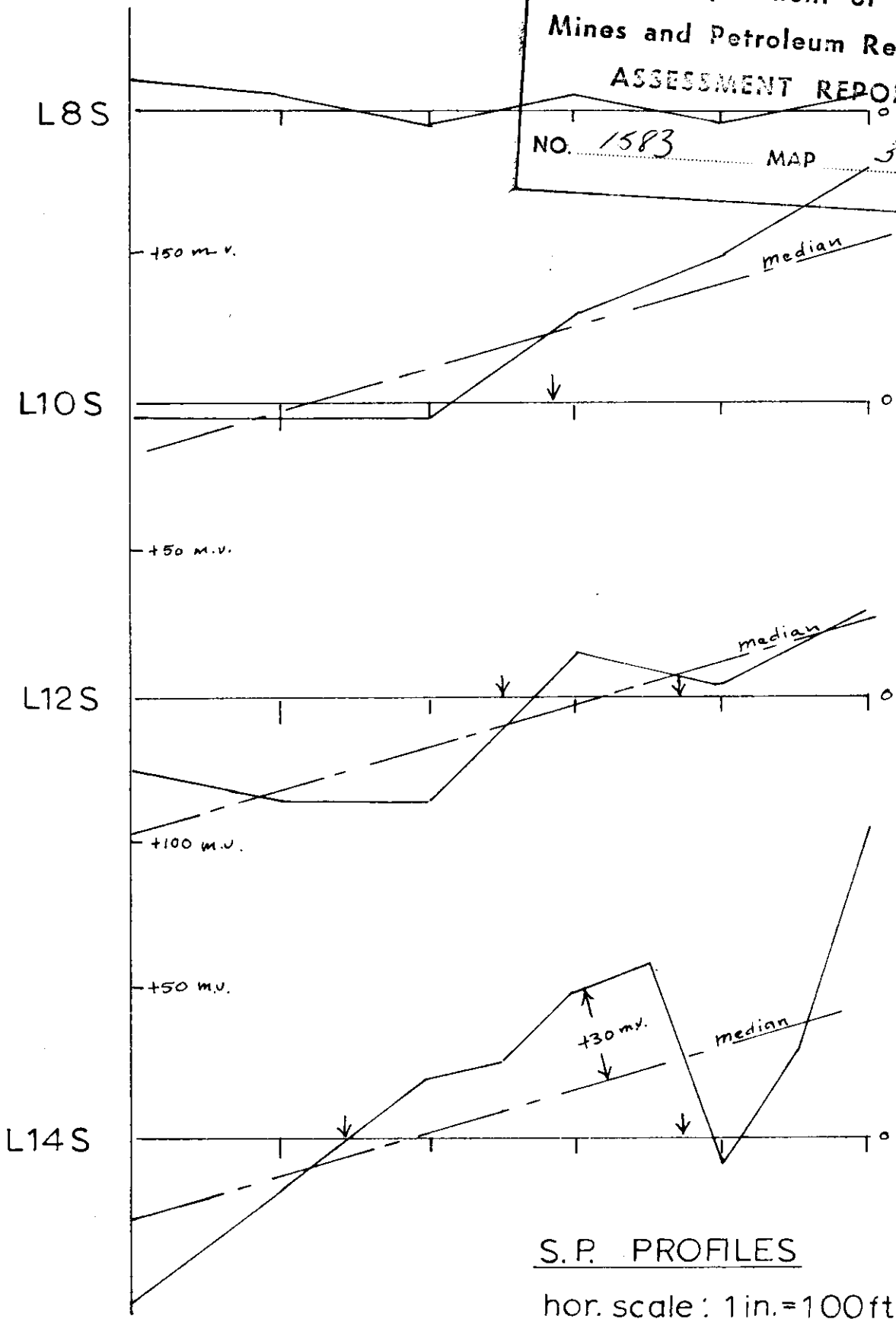
S.P. PLAN

scale: 1in.=100ft.
readings in m.v.

C. B. D.

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 1583 MAP 3



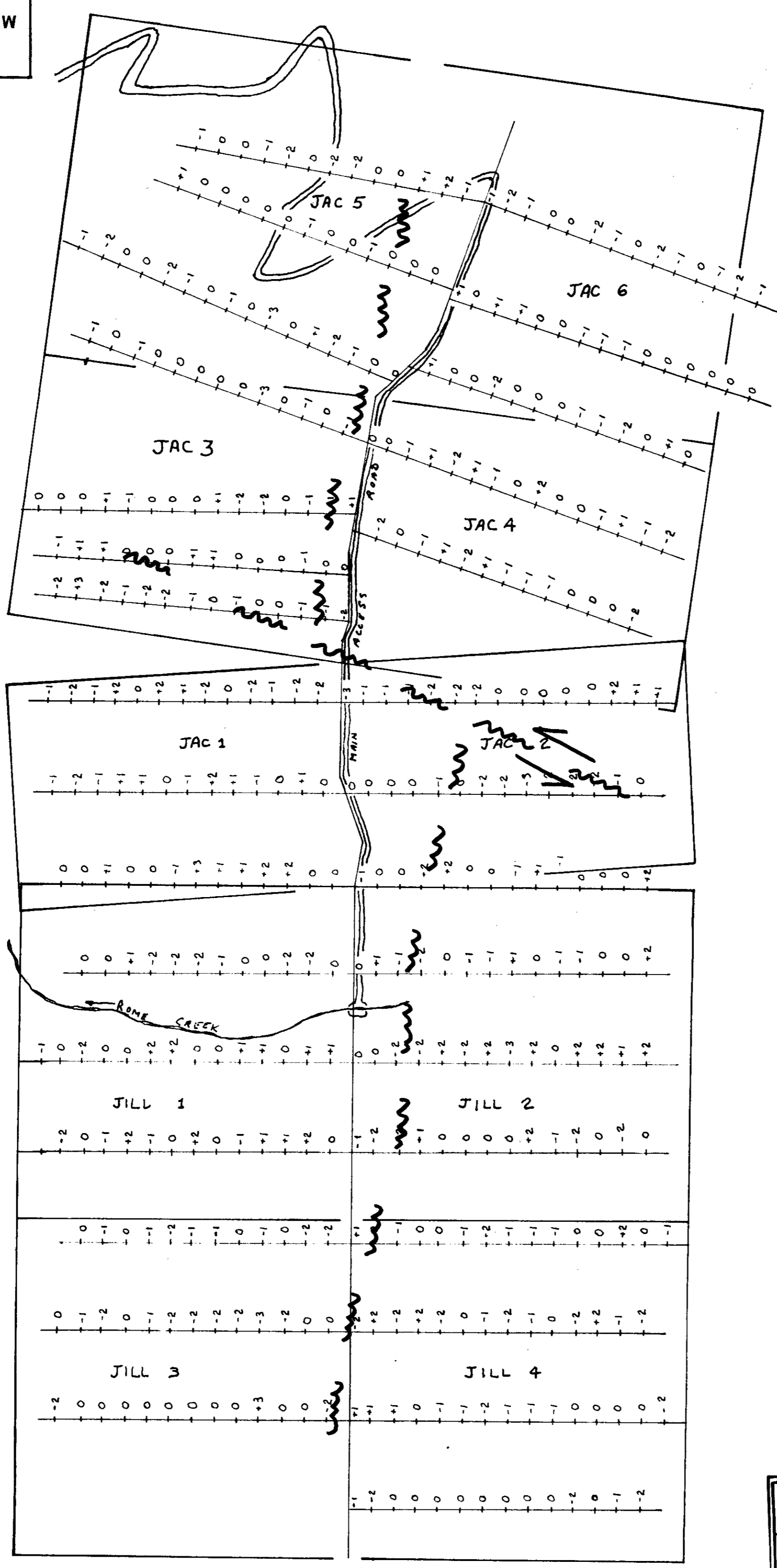
S.P. PROFILES

hor. scale: 1 in. = 100 ft.
vert. scale: 1 in. = 50 m.v.

C. B. D.

Department of
Mines and Petroleum Resources
REPORT
NO 1583
Map 4

36 N
32 N
28 N
24 N
20 N
16 N
12 N
8 N
4 N
0
4 S
8 S
12 S
16 S
20 S
24 S
28 S



15W 10W 5W BL 5E 10E 15E

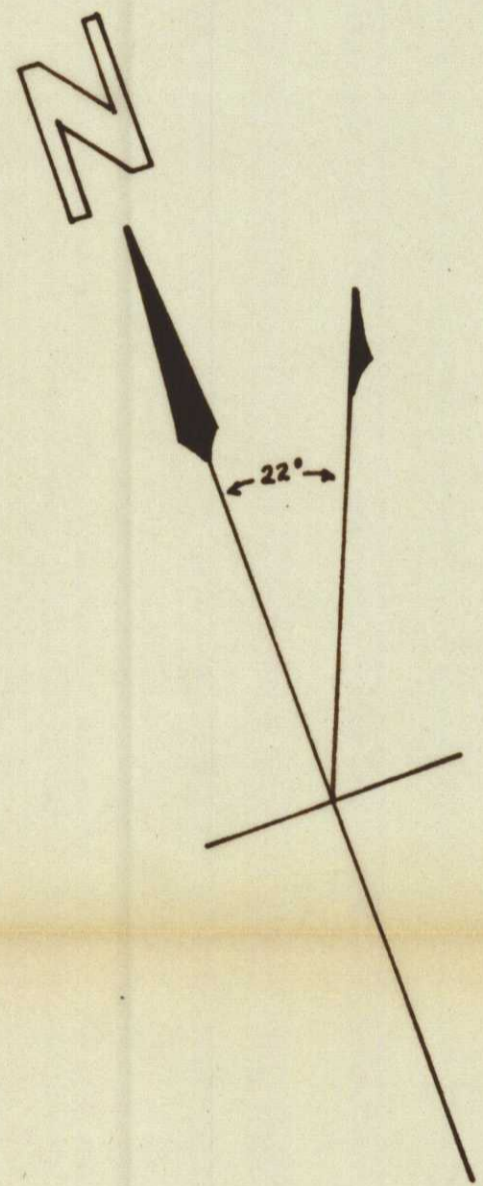
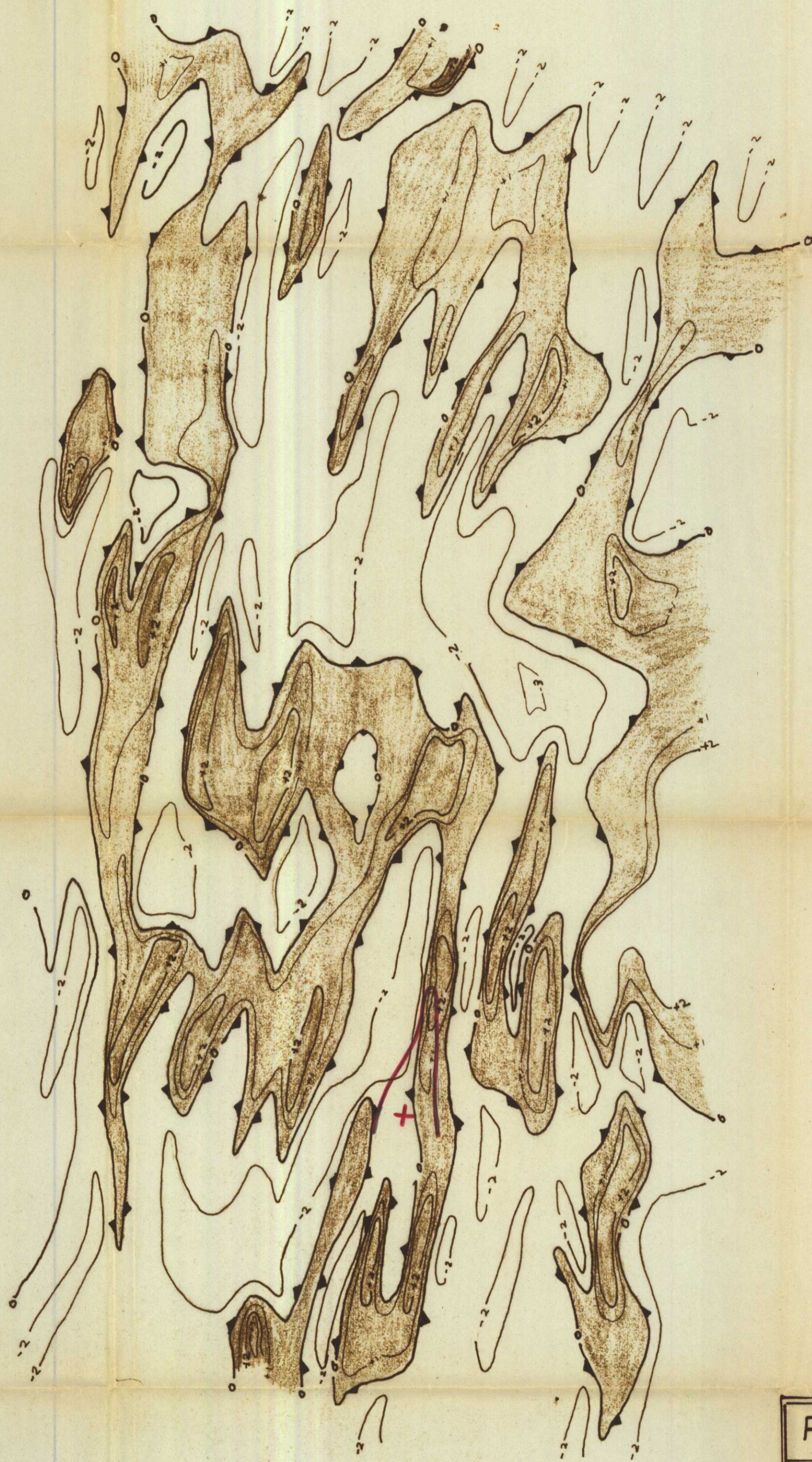
FORT STEELE MINES LTD.
ELECTROMAGNETIC SURVEY
JAC 1-6 & JILL 1-4 M. CLAIMS
FORT STEELE MINING DIVISION B.C.
OCT. 1967 SCALE: 1" = 400'
SURVEY & MAPPING BY:
INSTRUMENTATION: CRONE JE-M. DUAL FREQ.

1583

To Accompany a Geophysical Report on the
JAC and JILL groups, Perry Creek
49° 116' NE by C. B. Selmsier, P. Eng.
October 17 - 22, 1967
C. B. Selmsier

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 1583 MAP 5

36 N
32 N
28 N
24 N
20 N
16 N
12 N
8 N
4 N
0
4 S
8 S
12 S
16 S
20 S
24 S
28 S



15 W 10 W 5 W BL 5 E 10 E 15 E

FORT STEELE MINES LTD.

ELECTROMAGNETIC CONTOUR MAP
HIGH FREQUENCY 1800 HZ

JAC 1-6 & JILL 1-4 M. CLAIMS
FORT STEELE MINING DIVISION B.C.

OCT. 1967

SCALE: 1" = 400'

SURVEY & MAPPING BY TOM ROLSTON
Electronics Services

INSTRUMENTATION: CRONE J.E.M. DUAL FREQ.

CONTOUR INTERVAL: 2°

1583

To accompany a Geophysical Report on the
JAC and JILL groups, Perry Creek
49° 116' NE by C. B. Selmsier, P. Eng.
October 17 - 22, 1967

C. B. Selmsier