740

GEOLOGICAL

GEOCHEMICAL and GEOPHYSICAL

REPORT

of

C & E CLAIMS

Mile 87, Haines Road,
Northwestern British Columbia

Lat. 59° 55' N Long. 136° 47' W

by

W.M. Erwin

Claims held by G.J. Curzon and W.M. Erwin

June 14 to August 25, 1965

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I INTRODUCTION

The C & E claims consist of a group of ten claims staked over a highly sheared and altered greenstone which is located along the western edge of the coastal batholith in northwestern British Columbia.

The area was first brought under brief observation in 1957 after it was rumored that radioactive float had been found near the Stanley Creek bridge, during the summer of 1955. After studying the British Columbia Department of Mines geological report on the area, it was decided to do a reconnaissance geochemical survey, during the summer of 1962, for the determination of heavy metal content along the shear zone which was found near the bridge. Although the shear zone extended to the southeast for about five miles, only the northern exposed 6,000 feet contained anomalous concentrations of the heavy metals.

A semi-detailed soil survey was then made in 1965 of this anomalous area and during the process, several veinlets of nickel-copper were found in the altered or carbonate zone, which is exposed in the outcrops along the southern side of Stanley Creek. Assays on selected grab samples ran as high as 4% both on the copper and the nickel.

A geochemical high of up to 900 parts per million was found 4,000 feet southeast of the nickel-copper veinlets.

At first, it was believed that this anomaly was due to the nickel and copper contained in the soil. Afterwards, a second geochemical survey, for the determination of copper, proved the soils contained only small amounts of copper and a semi-quantitative spectrographic analysis showed only the zinc content of the soil to be above normal in this particular area.

A more intensified search found the source of the "high" to be oxidized outcrops containing an average of .2% zinc (2,000 p.p.m.) located approximately 300 feet farther up the hill from the anomaly.

Disseminated sphalerite (zinc sulphide) was found along with weak traces of oxides and carbonates of antimony, strontium and lead.

The area of mineralized exposures consists of a zone 800 feet long by 400 feet wide. A light cover of glacial drift overlies the bedrock between exposures. The geochemical survey indicates the mineralized area may extend 1,600 feet to the north. It is believed that a large deposit of disseminated sulphides could lie under the oxidized outcrops.

Future plans for the summer of 1966 are to diamond drill below the oxidized zones to determine if economic mineralization exists.

II GENERAL

(a) Location

The claims are located in northwestern British Columbia along the northeastern side of Haines Road from Mile 86 to 87.7. The road, known as the Haines "Cut-off", that connects the Alaska Highway with Haines, Alaska is 159 miles long, fairly straight, 30 feet wide, gravel surfaced and, in general, has good grades. Beginning with the winter of 1964, the road will be kept open all year.

(b) Vegetation

Timberline is at approximately 3,400 feet in elevation. Therefore, about one-third of the lower area, or northwestern part, of the claim group is covered by scattered stands of timber, primarily spruce. Above timberline, dense growths of dwarf birch (buck brush) and some willow are found. The higher hills are covered only by grass, bog moss and marsh plants.

III GEOLOGY

The series of rocks or greenstones in which the claims are located is believed to be Lower Mesozoic, probably Jurassic. They are separated from the diorites of coastal batholith intrusions, located approximately four miles to the east, by a series of rocks consisting primarily of black, thinly bedded argillites, believed to be equivalent in age to the greenstones.

Southwest of the claim group is a series of rocks consisting primarily of pillow lava and believed to be Mesozoic. The pillow lava forms an almost isoclinal anticline with a steep northeastern limb and an approximately vertical southwestern limb. This anticline may be directly related to the shear zone in the greenstones, which will be described later.

Northwest of the pillow lava is an intrusion of gabbro that can only be identified in age by its intrusion of probable Mesozoic greenstone. Further northwest is an intrusion of granite and granodiorite, believed to be of Mesozoic age.

The exposures of gabbro, granite and granodiorite, located on the western side of the Tatshenshini River are separated from the claim group, in the greenstones, by an overlying mantle of glacial drift in the valley. It is impossible to say exactly where the contacts are located, but it is believed that one or the other of

these intrustions is responsible for the mineralization found within the claims.

The following paragraph was taken from a British Columbia Department of Mines Geological Report, and was one of the primary reasons why the area was carefully investigated.

* "Much of the greenstone, between Kwatini Creek and Stanley Creek, on the bench lying southwest of the mountains, has been sheared and highly altered. The altered rock is a conspicuous brown - weathering, light gray, fine-grained assemblage of albite quartz and ankeritic carbonate cut by numerous small veinlets of quartz and carbonate. The amount of alteration is greatest at the northwestern end of the belt, where the greenstone has been highly altered".

The westernmost outcrops, which were exposed along the southern side of Stanley Creek, consisted of a strip of uninterrupted carbonates approximately 600 feet wide before a semi-altered greenstone was found to the east. Numerous outcrops of intermingled carbonates and semi-altered greenstones were found southeastward for an additional 1,500 feet or more. Sparsely disseminated sulphides of copper (chalcopyrite) are found in many of the shear planes within the shear zone. Three of the nickel-copper occurrences were found in freshly fallen float from along Stanley Creek's steep banks, which varied from 25 feet to 75 feet in height.

The largest occurrence varied from 6 inches to 4 feet in width and was traced vertically for approximately 30 feet.

* The Squaw Creek - Rainy Hollow Area, Northern B.C., B.C. Dept. of Mines Bulletin 25, p. 22, by K. deP. Watson, 1948.

The vein material, which was normally fine grained and green in color, appeared to be a nickel silicate, probably garnierite mixed with a carbonate, chalcopyrite and a dark nickel sulphide low in arsenic, which was probably pentalide. Assay values on selected grab samples ran as high as 4.58% for nickel and 4% for copper.

Four thousand feet to the southeast of the copper-nickel exposures, a series of carbonate rocks located above a geochemical high was found to contain an average of .2% zinc over a number of different exposures. In a zone 400 feet wide by 800 feet long, traces of antimony, strontium and lead were also associated with the zinc. Grains of disseminated sphalerite, along with evidence of considerable leaching of same, were found in some of the float. The rocks, which had been overlooked several times, were oxidized to a light gray color with a pronounced lack of a limonitic or rusty colored gossan normally associated with pyritic deposits. Upon breaking any of the rocks found on the exposure, one could detect the sulphurous smell of rotten eggs or hydrogen sulphide gas, which is believed to be associated with the sphalerite.

In general, except for the above described rock exposures, most of the area is covered with a mantle of glacial drift that varies in thickness from several feet to well over 100 feet.

IV GEOCHEMICAL SURVEY

A McPhar heavy mineral soil test kit, copper test kit and water test kit were utilized to make the survey. All systems were colorometric and both the water and heavy metal soil test kit used dithizone as a reagent with the p.p.m. (parts per million) expressed as zinc equivalents. The heavy metals which react are Zn, Pb, Ag, Cu, Ni, Co and Sn.

A reconnaissance survey was made at the general locality along the shear zone between Kwatini Creek and Stanley Creek, with both the water kit and the heavy metal soil kit, in the summer of 1962. The water kit was found to be unsuccessful, but the soil kit gave anomalous high readings in the northwestern part of the area.

Up to this point, raw wet samples were taken and evaluated in the field, without the benefit of drying or screening. Best readings were obtained just below the narrow leached layer, which underlies the black humus surface soil layer.

Because of the higher readings found in the northwestern part of the area, it was decided to do a semi-detailed survey of this part of the shear zone during the summer of 1965.

A base line was established along Haines Road and points to be utilized for triangulation stations were surveyed in

along the road. A chain and Brunton compass were used to make the survey.

Samples were taken at various points, which were located by triangulation, and the p.p.m. values were established and mapped after the samples had been dried and screened by an 80 mesh screen.

A geochemical "high" was located along the strike of the carbonates about 4,000 feet south of the nickel-copper occurrences on Stanley Creek. (See enclosed map). At the point of highest readings, two pits, designated on the map as "A" and "B", were then dug about 10 feet deep in an effort to reach bedrock, but were abandoned in a mixture of talus and drift.

As it was suspected that this anomaly was due to the copper and nickel contained in the soil, a decision was reached to do a detail survey for the determination of copper in a soil survey, along with geophysical surveys utilizing the Electromagnetic Units and Magnetometer.

A total of 34,300 feet of line was cut through timber and buck brush to establish the survey grid. A chain and transit were used to make the survey. A tie was made to the northeast corner of the Stanley Creek bridge, and plate angles were used throughout the survey for accurate control.

The results of the soil survey for the determination of copper were negative. (See enclosed map). The only anomaly located was near the station designated as 6,000 south-100 east, in which values up to 60 p.p.m. were found. As a pipeline crosses the claims near this point, it is suspected that contamination, rather than true values, are giving the higher readings.

After the low copper values were obtained, a soil sample of the highest readings was sent to Vancouver for a semi-quantitative spectrographic analysis. The result of the analysis showed the zinc content of the soil to be above normal in the area. Therefore, another search found the source of the geochemical high as previously described.

V GEOPHYSICAL SURVEY

Both the Sharpe SE-300 Electromagnetic Unit and the A-Z Vertical Intensity Magnetometer were used in making the geophysical surveys.

A base line, running southeast-northwest for 6,000 feet along the western side and parallel to the shear zone, was surveyed.

Perpendicular lines, averaging 1,600 feet in length each, were placed every 400 feet along the base line and surveyed out to the east. Stations were located every 100 feet along all lines.

The transmitting coil for the EM survey was always located on the next parallel line to the south, and the receiving coil was located to the north. Due to the rough terrain, the broadside configuration method, as recommended by Sharpe, was used. This method consists of the transmitting coil being held in a vertical position and pointed toward the receiving coil. The receiving coil is held in a horizontal position and is tilted to one side or the other of an imaginary axis between the two coils until a null point is reached and detected by the ear phones. The tilt angle is then read and recorded.

This method has the advantage that it is not affected by rough terrain and is more likely to detect the conductivity of any vertical or near vertical conductors.

The SE-300 Unit had the advantage of being a dual frequency transceiver unit. Two frequencies are very useful in case weak conductors are found, and a confirmation is needed as to their validity.

Most of the tilt angles were under 5^{o} deviation, which is considered to be a very poor conductor, and all dipped to the east. One exception was noted at 5,600 south - zero east, and this high reading was believed to have been caused by the nearby pipeline.

From the results obtained on the survey, the area could be considered negative in regard to strong conductors. (See enclosed map).

Some disseminated magnetite was detected along with the chalcopyrite in the mineral occurrences on Stanley Creek and, therefore, it was thought that the magnetometer might help detect sulphide bodies associated with the magnetite, or in any event, help in the interpretation of the complex geology of the rocks overlain by the glacial drift.

As only one magnetometer was used in the survey, close control was kept by reading around loops or back into known control points about every hour, in order to cut down on the error caused by the diurnal variation. Differences of up to 20 gammas were noted on misties, but were not considered significant considering the order of the survey.

Variations in readings varied from approximately 2,100 to 2,300 gammas. In general, the contours roughly conformed with the strike of the rock formations. Two outstanding features were brought out in the survey. The first was a magnetic high of about 100 gammas located near station 1,200 south - 100 east, and the second feature was a pronounced 100 gamma increase to the east along a line between stations 3,200 south - 1,400 east to 4,400 south - 100 east. This last event could well represent a large fault within the shear zone. (See enclosed map).

In general, the magnetic map did not show any abnormally high magnetic fields which could be associated with sulphide or magnetic mineral deposits.

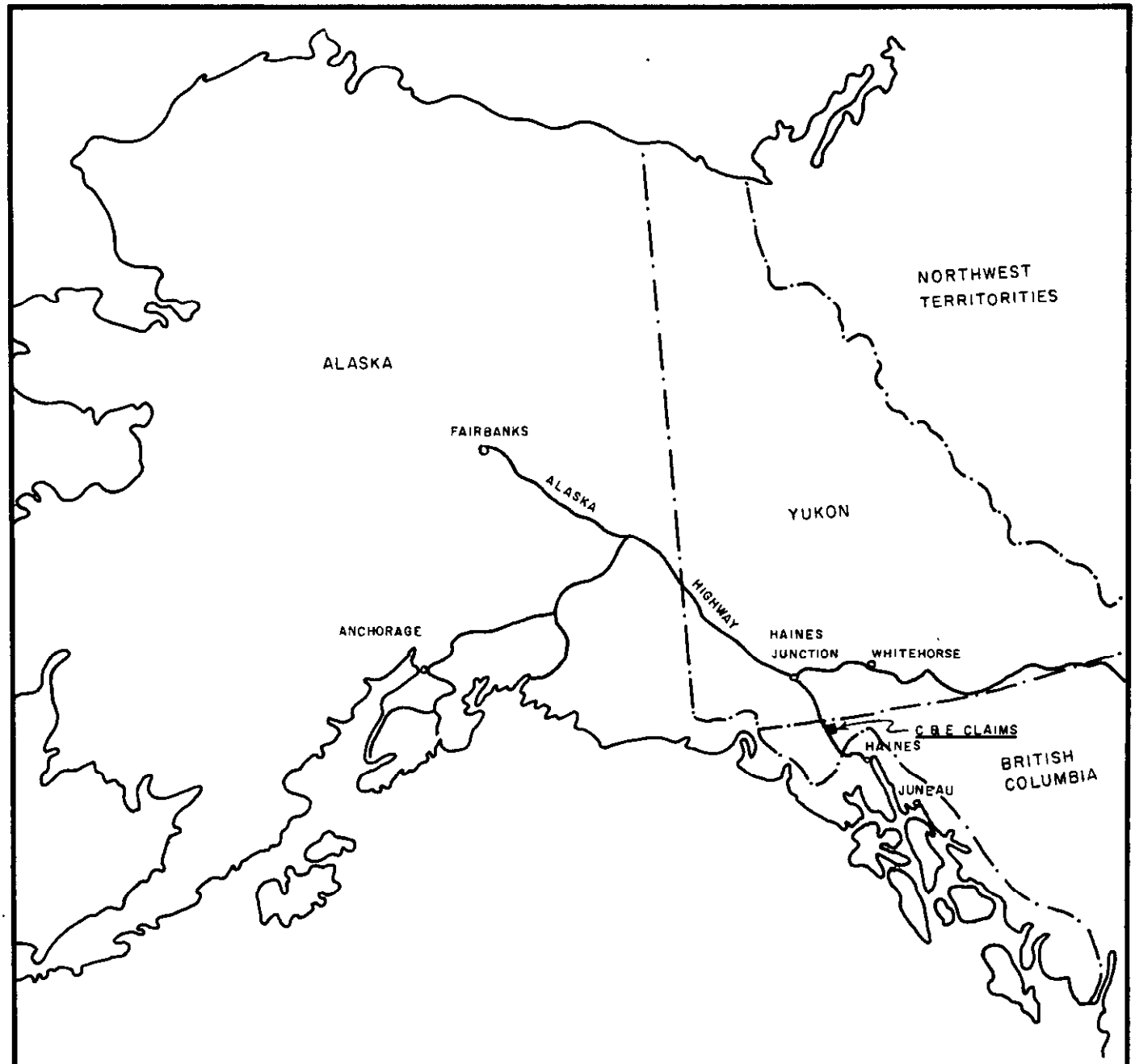
VI LABOR DECLARATION

The work was carried out from June 18th to August 25th, 1965. Fifty-six days were spent in the field during this period by Messrs. Erwin, Curzon and Massicotte, who were all part-owners of the claims and received no salary. Mr. Erwin worked with the geochemical and geological survey; Mr. Massicotte worked with the geophysical survey and Mr. Curzon worked as a helper. All three worked in the capacity of laborers for line cutting, etc., when the need arose.

Respectfully submitted,

W M Erwin

W.M. Erwin



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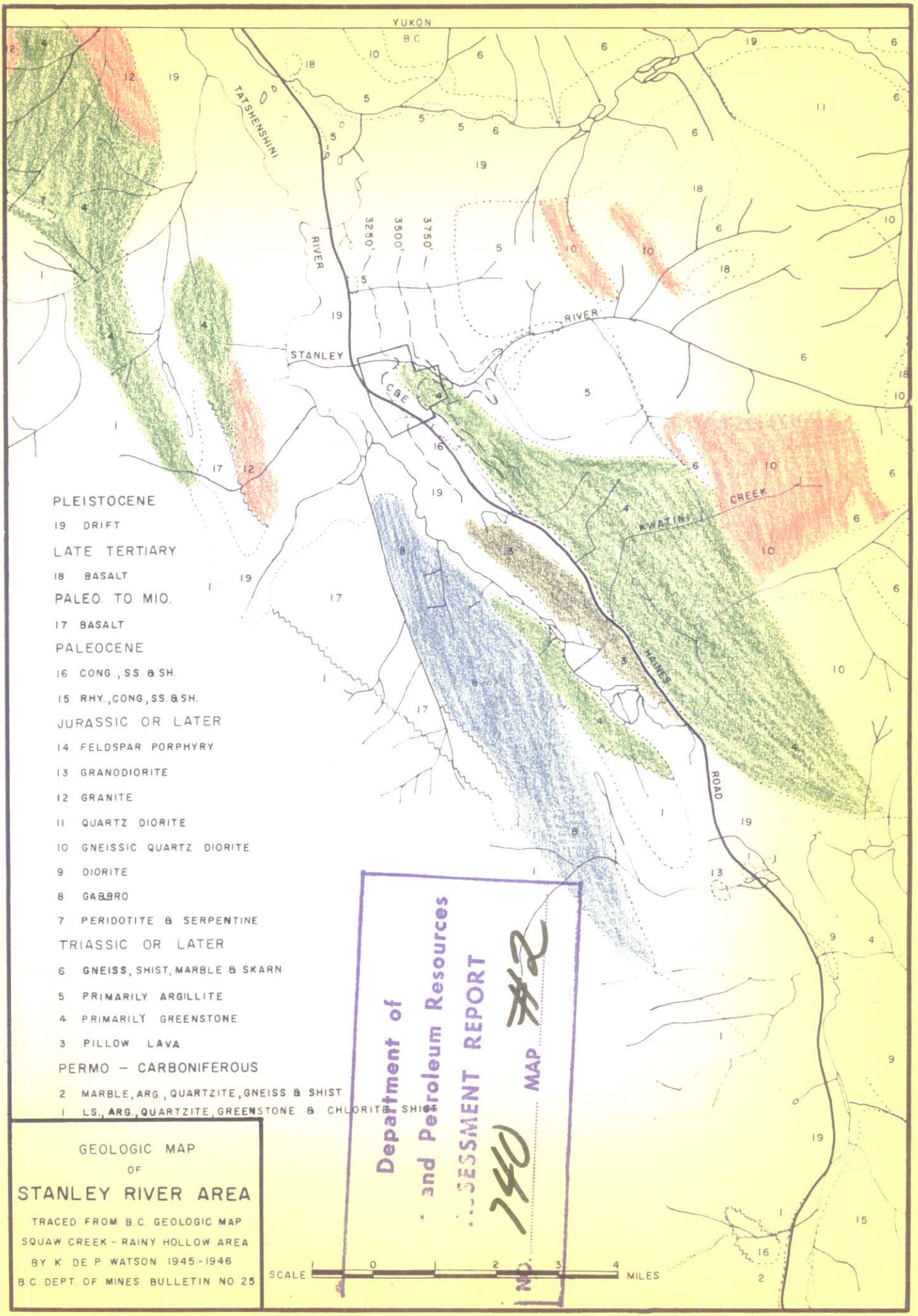
NO. 740 **MAP** #1



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and Petroleum Resources
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140
MAP #2
NO.

To accompany Geophysical Report (Page 10-11-12) by P. Massicotte Eng. & W. M. Erwin Geologist on C&E Claims Dated. Feb. 7, 1966.

W. M. Erwin

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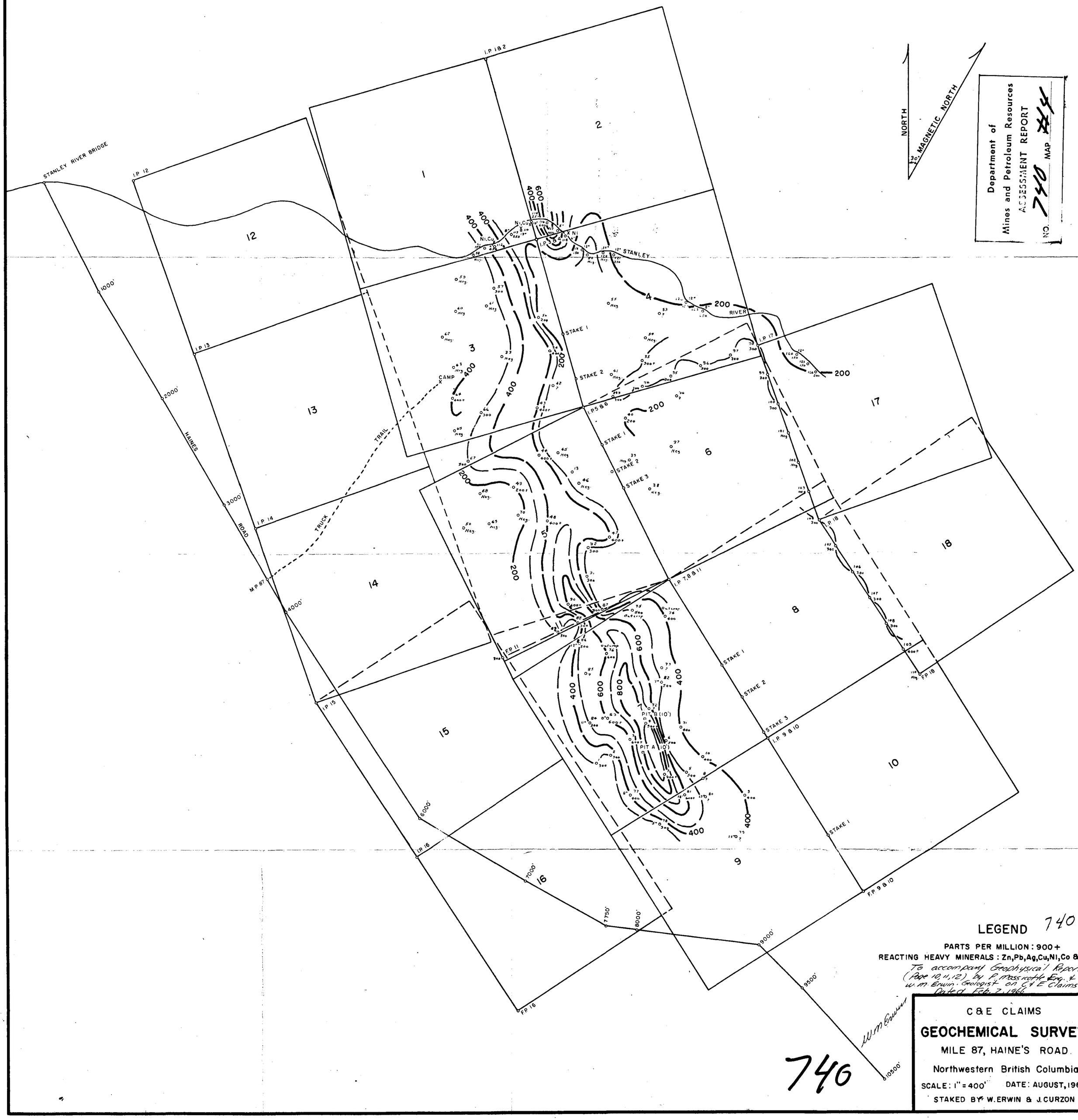
ASSESSMENT REPORT
NO. 740 MAP #3

740 (M2)



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LEGEND 740

PARTS PER MILLION : 900+

REACTING HEAVY MINERALS : Zn,Pb,Ag,Cu,Ni,Co & Sn

To accompany Geophysical Report (Page 10,11,12) by P. Mossicotte Eng. & W.M. Erwin: Geologist on C & E Claims Dated Feb. 7, 1966

C & E CLAIMS

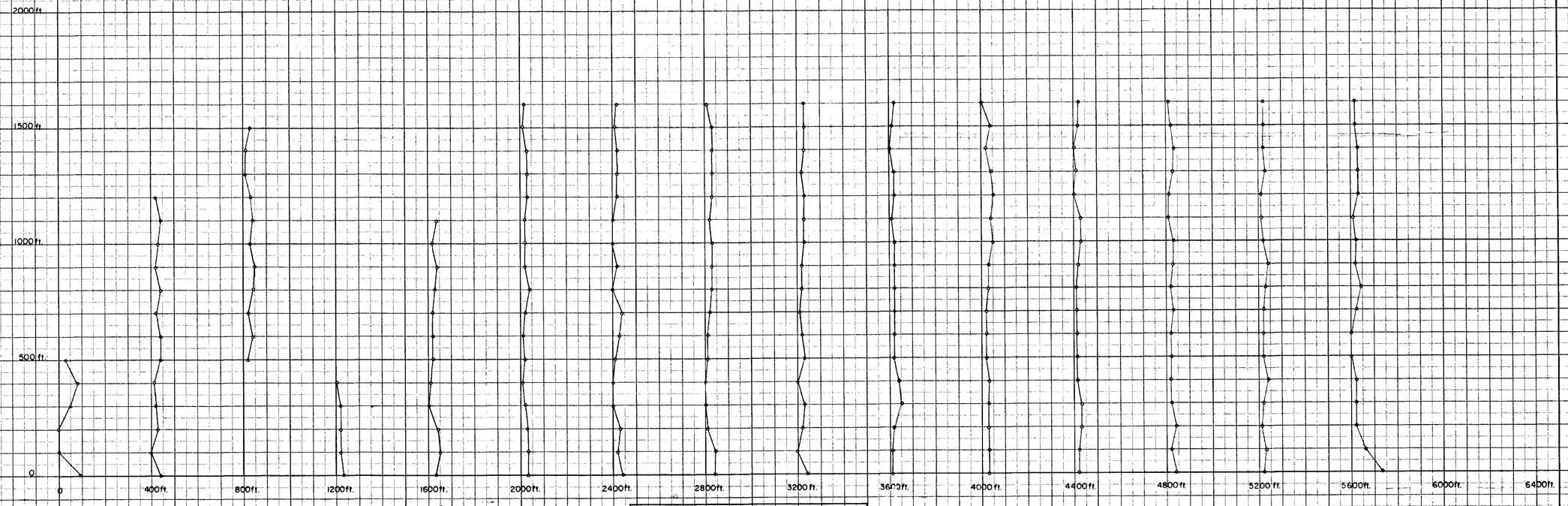
GEOCHEMICAL SURVEY

MILE 87, HAINE'S ROAD

Northwestern British Columbia

SCALE: 1" = 400' DATE: AUGUST, 1965

STAKED BY W. ERWIN & J. CURZON



ELECTROMAGNETIC SURVEY OF C & E CLAIMS
Sharpe SE-300 Instrument

Survey by P. Massicotte & W. Erwin
August 1965

Scale: 1 cm. = 100 feet 1 mm. = 1° W 10° 10° E

To accompany Geophysical report (Pages 10, 11, 12) by P. Massicotte and W.M. Erwin Geologist on C & E Claims Dated ~~Aug~~ Feb 7, 1966

W.M. Erwin

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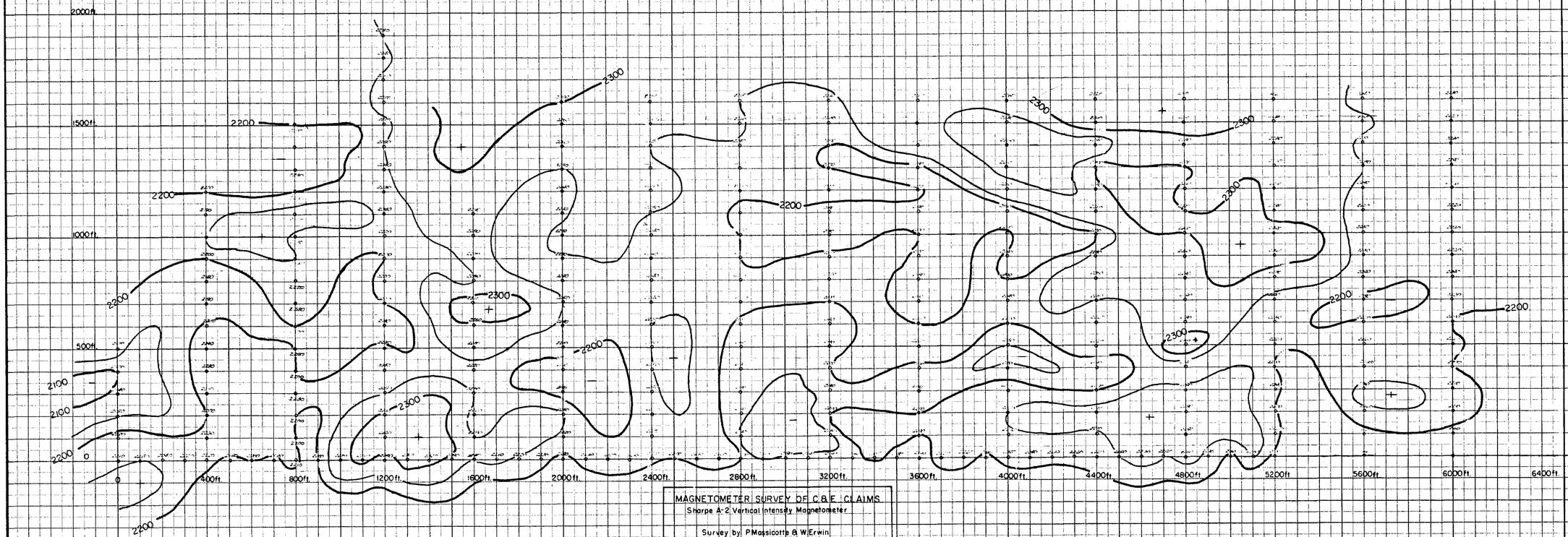
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 740 MAP #5

740 (M3)



MAGNETOMETER SURVEY OF C & E CLAIMS
Sharpe A-2 Vertical Intensity Magnetometer

Survey by: P.Massicotte & W.Erwin
August, 1965

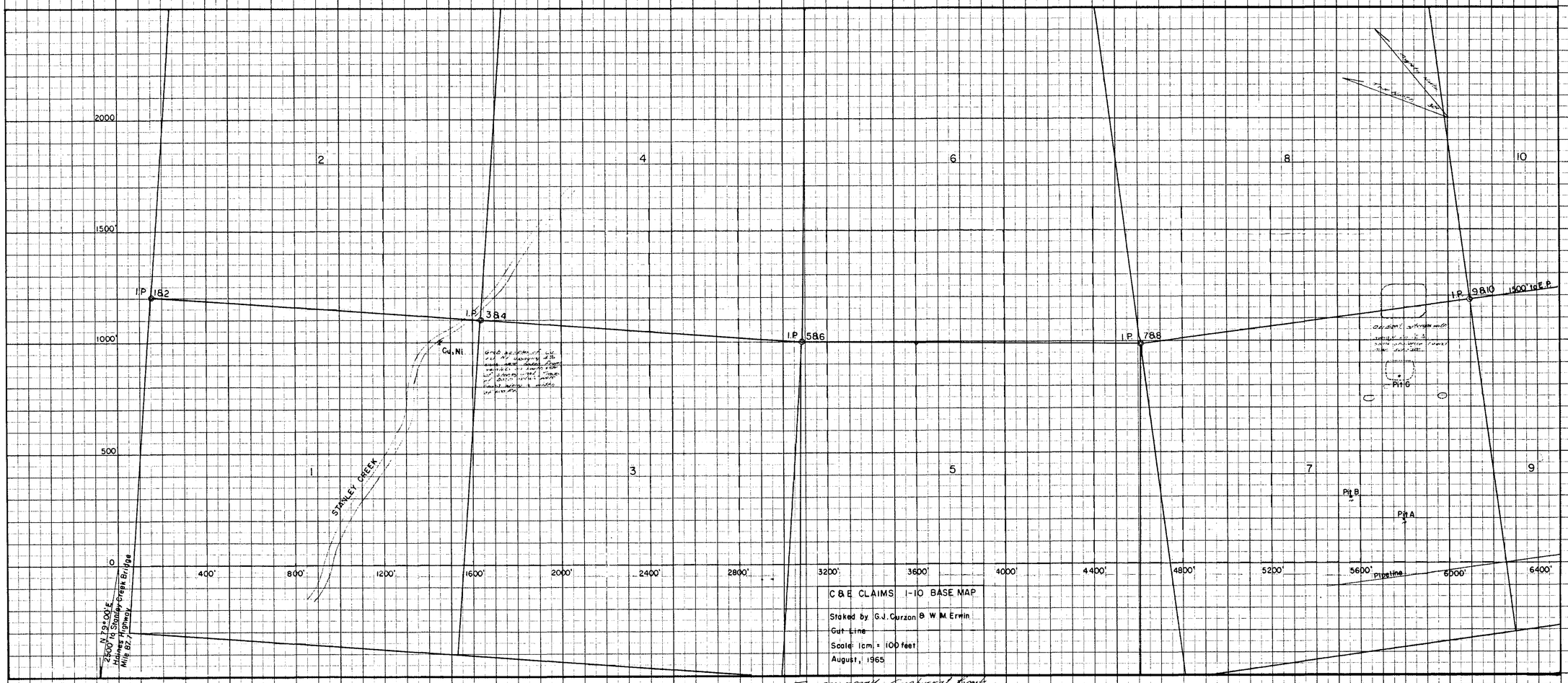
Scale: 1cm. = 100 feet Contour interval: 50 gammas

To accompany geophysical report (Pages 10-11-12) by P. Massicotte, Eng. & Wm. Erwin (Geologist) Dated Feb. 7, 1966

Wm Erwin

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 740 MAP #6

740 (M14)



C & E CLAIMS 1-10 BASE MAP

Staked by G.J. Curzon & W.M. Erwin
Cut Line
Scale: 1cm. = 100 feet
August, 1965

To accompany Geophysical Report (Pages 11 & 12) by C. Massiotte Engr. W.M. Erwin, Geologist on C & E Claims dated Feb. 8/66

W.M. Erwin

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 740 MAP #7

740 (M5)