

684

GEOPHYSICAL - GEOLOGICAL REPORT
ON THE

HEP 1 - 8 CLAIMS

located

One Mile Southwest of Nahwitti Lake

50° 128° N.W.

Nanaimo Mining Division

by

G.A. NOEL (P. Eng.), Geologist
Utah Construction & Mining Co.

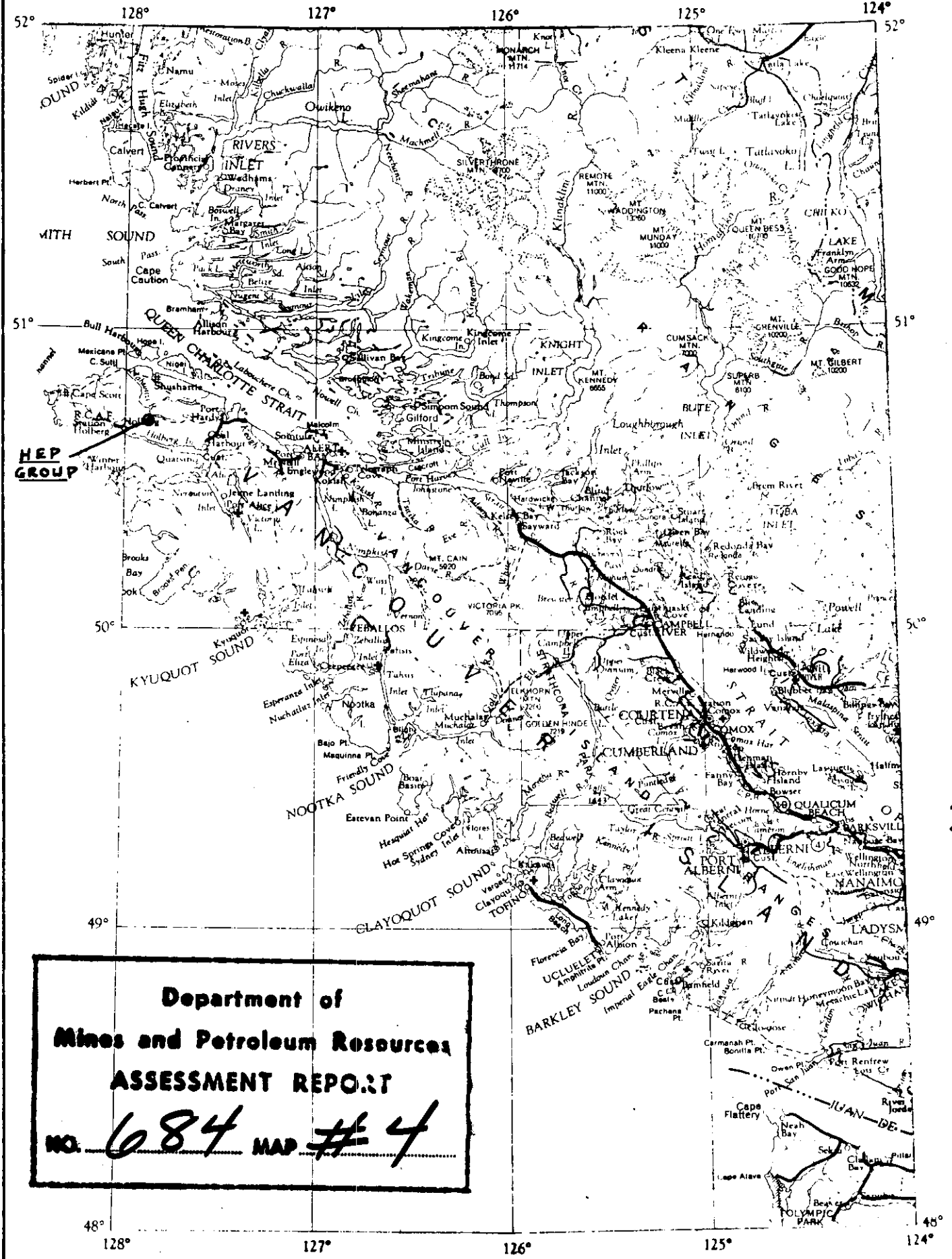
July 29 - August 10, 1965

TABLE OF CONTENTS

	<u>Page</u>
Summary	2
Introduction	3
Fieldwork	3
General Geology	4
Detailed Geology	4
Geophysical Results	5
Conclusions	5
Appendix	6
Statement of Qualifications	7
Statement of Costs	8

ILLUSTRATIONS

			<u>Page</u>
#4 Plate 1	Index Map	1" = 30 miles	1 a
#5 Plate 2	Claim Map	1:50,000	1 b
#1 Plate 3	Topography & Geology	1 in. = 100 ft.	Rear Pocket
#2 Plate 4	Detailed Geology along Spit Creek	1 in. = 20 ft.	" "
#3 Plate 5	Magnetic Contour Map	1 in = 100 ft.	" "



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
 NO. **684** MAP # **4**

SCALE: 1 INCH = 30 MILES



INDEX MAP

HEP GROUP
NAHWITTI LAKE, V. I.

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Mines and Petroleum Resources
ASSESSMENT REPORT

NO.

684

MAP

#5

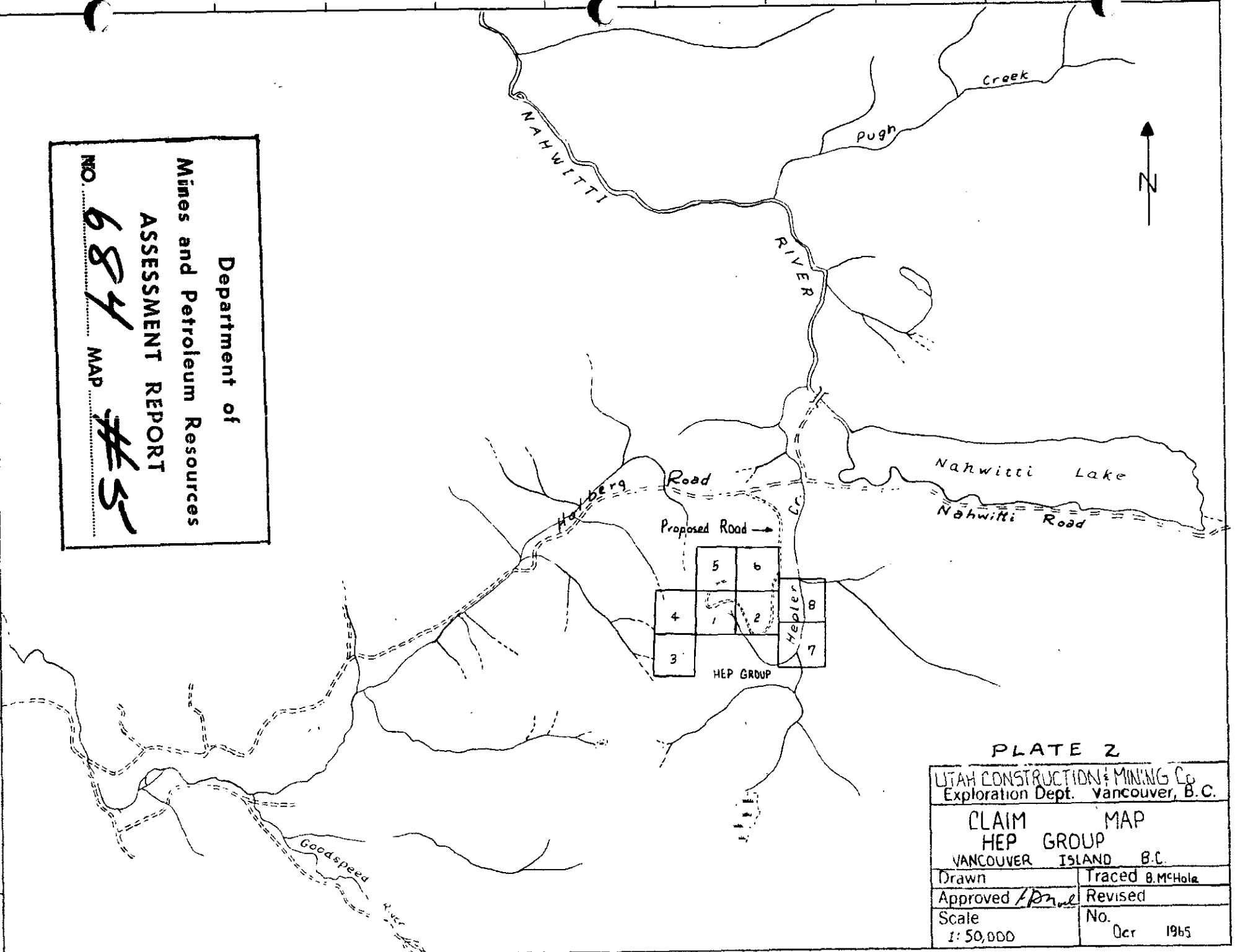


PLATE 2

UTAH CONSTRUCTION & MINING Co. Exploration Dept. Vancouver, B.C.	
CLAIM MAP HEP GROUP VANCOUVER ISLAND B.C.	
Drawn	Traced B. McHole
Approved <i>AP</i>	Revised
Scale 1:50,000	No. Oct 1965

SUMMARY

The eight claim Hep group was staked for Utah Construction & Mining Co. in October 1962 and October 1963 to cover copper mineralization in tuffs and volcanics of the Bonanza group exposed along the headwaters of a west fork of Hepler Creek. In 1964 a foot-trail was cut to the showings from the Port Hardy-Holberg road, and nine surface trenches were dug along Spit Creek. A ground magnetic survey and geological mapping were conducted on the property from July 29-August 12, 1965. The copper mineralization is apparently restricted to favorable horizons in the tuffs and volcanics. These favorable horizons apparently lie along the southwestern edge of a northwest-trending zone of magnetic anomalies which are believed to be underlain by granodiorite. Surface trenching is recommended.

INTRODUCTION

The Hep 1-8 claims are located about one mile southwest of the west end of Nahwitti Lake near the head of a west fork of Hepler Creek. The claims lie along the southeast side of a northeast trending ridge and extend from the 1000-foot to the 2000-foot elevation. This area is reached by following the B.C. Forest Service's Nahwitti Forest Development road, westerly for 21 miles to its junction with Rayonier Canada (B.C.) Limited's Holberg road. This latter road is followed westerly across Hepler Creek for about 1000 feet to a well marked trail which takes off to the south. This trail extends about 1½ miles southerly and westerly to the main showings on Spar and Spit Creeks which are tributaries of the west fork of Hepler Creek.

Hep 1 and 2 claims were staked October 12, 1962 by Gordon Milbourne while prospecting under an agreement with Utah Construction & Mining Co. Hep No's. 3 to 8 inclusive were located by Gordon Milbourne, adjoining Hep 1 and 2, on October 12 and 13, 1963. These claims were transferred to Utah Construction & Mining Co. on November 8, 1963 under a Bill of Sale which was recorded at Vancouver on November 20, 1963.

The property was initially examined by G.A. Noel for Utah Construction & Mining Co. in October 1962. During August and September 1964, a foot-trail was cut to the Hep group from the Holberg road. In addition, nine trenches were hand-dug along Spit and Spar Creeks in the vicinity of the main showings. Geological mapping and a ground magnetic survey of the Hep group were undertaken by G. Noel, T. Samoil and C. Banninger from July 29-August 12, 1965. A geochemical soil survey and an induced polarization survey were also completed on these claims during August, 1965.

FIELDWORK

The 1965 fieldwork on the Hep group consisted of geological mapping, a ground magnetometer survey, an induced polarization survey, and a geochemical survey. The grid for these surveys consisted of N 05° E traverse lines laid out with compass and tape with successive lines tied at each end. These lines were laid out at 250-foot spacing with 100-foot stations and covered an area 3000 feet north-south by 2000 feet east-west. A total of 23,500 feet of line was laid out and traversed. Altimeter readings were taken at each station with the base station (10,000 N, 10,000 E), on the adit dump, assigned an elevation of 1470 feet.

The surface geological mapping was done at a scale of one inch to 100 feet and "most" of the outcrop is concentrated along the upper reaches of the west fork of Hepler Creek; that is, Spar and Spit Creeks. The 92-foot adit (cross-cut) on Spar Creek and the surface workings on Spar and Spit Creeks were mapped on a scale of one inch to 20 feet, using compass and tape control.

The ground magnetic survey was done using a Jalander magnetometer, serial number 5779. This instrument is a direct-reading vertical field fluxgate magnetometer manufactured in Finland. The instrument has a range of 0 to 250,000 gammas in five scales. The maximum sensitivity (scale 1) is 10 gammas, but practical repeatability is probably limited to 50 gammas.

An induced polarization survey was conducted on the same grid using the pulse type reconnaissance equipment and a dipole spacing of 300 feet.

In the geochemical survey, soil samples were taken at the 100-foot magnetometer stations and analysed for copper by the cold extraction method of H.E. Hawkes as modified from the Bloom and Holman procedures.

GENERAL GEOLOGY

The Nahwitti lake region is underlain by upper Triassic sedimentary and volcanic rocks intruded by several small plutons of probably Jurassic age. The upper Triassic rocks include three main units, which are, from top to bottom, Bonanza group, Quatsino formation, and Karmutsen group. The Bonanza group consists of sedimentary and volcanic rocks; the Quatsino, largely limestone; and the Karmutsen, largely basic volcanics.

The Bonanza group is exposed south of Nahwitti lake and consists of pyroclastics and thin bedded flows. The bedding generally strikes N 60° W and dips fairly steeply to the northeast. Just south of Nahwitti Lake, the Bonanza is underlain by thin lenticular beds of limestone of the Quatsino formation which shows considerable contortion along strike. This limestone is underlain by thick flows of vesicular andesite and basalt, well exposed along the south edge of Nahwitti Lake. ^{of the Karmutsen group,} *1/2 m*

Intrusive rock is exposed at the southwest end of Nahwitti Lake, along Hepler Creek and southeast of the east end of Nahwitti Lake. Southwest of Nahwitti Lake, this intrusive rock is a coarse grained pink granodiorite with considerable potash feldspar alteration. It is seen in contact with the Karmutsen volcanics along the southwest edge of Nahwitti Lake, but is not seen in contact with the Bonanza rocks southwest of the lake.

DETAILED GEOLOGY

The Hep group is underlain by pyroclastics and flows of the Bonanza group, which are intruded by granodiorite west of Hepler Creek and along the northern part of the claims.

This Bonanza section includes well bedded felsite, rhyolite and andesite tuffs and thin bedded andesitic flows. Despite considerable variation in color, texture and composition of these tuffs and flows, lithologic correlation is difficult due to the sparsity of outcrop and the thin-bedded character of these rocks. The bedding attitudes are generally N 60°-70° W with steep dips northeast or southwest.

Northwest and northeast-trending faults and fractures cut the tuffs and flows exposed along Spit Creek and in the cross-cut on Spar Creek.

Pyrite occurs through all rock types along thin fractures and as a widespread fine dissemination. Chalcopyrite, bornite and to a lesser extent molybdenite occur in certain beds along Spit Creek and in float along Spar Creek. The chalcopyrite and bornite occur as a fine dissemination accompanying

pyrite in andesite, andesitic tuff and felsitic tuff. The molybdenite generally occurs along fractures in andesitic tuff.

Mineralized exposures are pretty well limited to the trenches along Spit Creek, with considerable cemented boulder clay masking bedrock along Spar Creek and along the upper part of Spit Creek. This boulder clay is up to 15 feet thick and contains stream worn boulders up to four inches in diameter. Some of these boulders, perhaps 5%, contain copper mineralization. In addition mineralized float occurs throughout Spar Creek from the mouth of the adit to the head of the creek.

GEOPHYSICAL RESULTS

The magnetometer map (Plate 5) has been contoured at a 500-gamma interval. Background over the area covered is 1000 - 1500 gammas and this appears to represent the area underlain by the flows and pyroclastics. From hand-magnet testing most of the Bonanza group rocks in this area are non-magnetic. However several andesite and andesitic tuff beds are weakly to moderately magnetic. These magnetic beds are considered too small to produce any notable change in the magnetic field.

A belt of magnetic highs extends northwesterly across the area covered from 10,100 N; 10,500 E to 11,700 N; 9,000 E. These magnetic anomalies show a maximum reading of 5370 gammas and an amplitude of 4000 to 5000 gammas.

This belt of magnetic highs is believed to represent a tongue or sill of granodiorite up to 500 feet wide and over 2000 feet long as defined on the magnetic contour map. The mineralized tuffs and flows lie along the southwest edge of this belt of magnetic highs.

Conclusions

The copper mineralization on the Hep group favors certain beds in the Bonanza section underlying this area. The ground magnetometer survey has outlined a magnetically high zone along the northeast edge of the Hep mineralized zone. This is believed to represent a tongue or sill of granodiorite which is exposed some distance to the north and south of the claims.

Surface trenching in the area just southwest of the magnetically anomalous zone is recommended, pending the results of the induced polarization and geochemical surveys.

G.A. Noel

G.A. Noel

GAN/do

VANCOUVER, B.C.

OCTOBER 27, 1965.

STATEMENT OF QUALIFICATIONS

The field work for this report was done by G.A. Noel, T.S. Samoil and C.J. Banninger whose qualifications are outlined below:

1. G.A. Noel, P. Eng., geologist for Utah Construction & Mining Co., Vancouver, B.C.; completed B.A. Sc. (Geology) at University of B.C. in 1950 and M.A. Sc. (Geology) at University of Toronto in 1951; employed by Kennco Explorations (Canada) Limited from May 1951 through March 1956 as a field geologist in B.C. and Yukon Territory under the supervision of J.S. Scott; employed by Utah Construction & Mining Co. from March 1956 to the present in B.C. and Alaska mineral exploration as a project geologist, acting district geologist and senior project geologist under L.C. Clark, W. Bourret, H.G. Peacock and E.S. Rugg.

2. T.S. Samoil, survey-draftsman for Utah Construction & Mining Co., Vancouver, B.C.; completed two years of university (University of Alberta and U.B.C.); 1951-1952, employed as instrumentman on road surveys by Alberta Dept. of Highways; 1952-1953 employed as instrumentman on highway construction by Hislop Construction Co. Ltd.; 1953-1954 employed as instrumentman on quantity surveys at Kitimat by N.W. Hullah Construction Co. Ltd; 1956-present employed by Utah Construction & Mining Co. as a field-technician-draftsman on exploration projects in B.C. and Alaska. This latter work has included responsibility for all forms of topographic surveys, geochemical surveys, and such geophysical surveys as magnetometer, resistivity and induced polarization surveys.

3. C.J. Banninger, student assistant employed during 1965 field season by Utah Construction & Mining Co., Vancouver, B.C.; completed three years of University in honors geology at U.B.C.; 1963 field season, employed as student assistant by Southwest Potash Co.; 1964 field season, employed by Croydon Mines Ltd.

STATEMENT OF COSTS

Salaries and Expenses

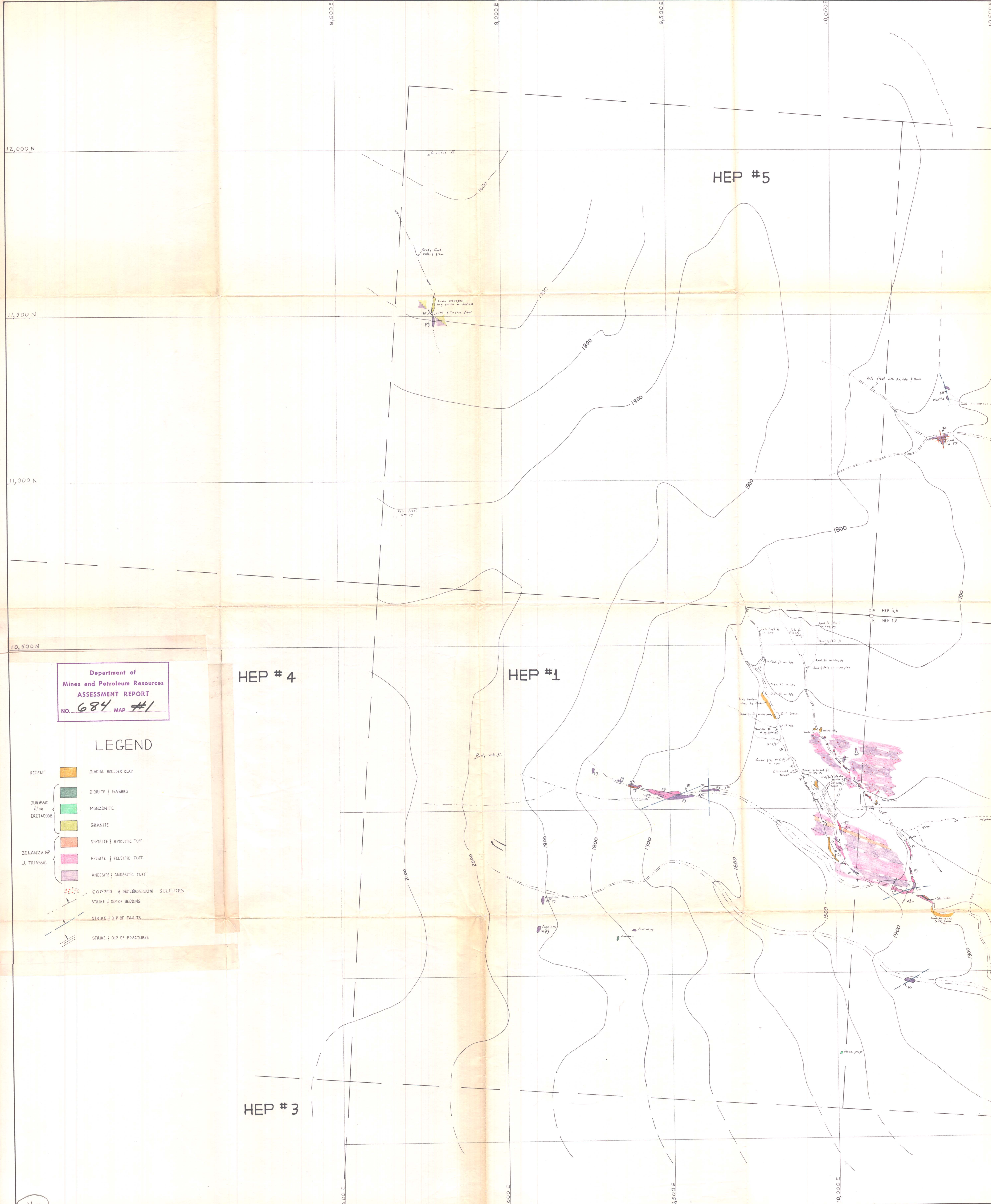
(Expenses @ \$10/ man-day)

G.A. Noel	16 days @ \$1160/month (13 days in field July 29-Aug.10) (3 days in office Oct. 5, 6, 14)	\$ 748.00
T.S. Samoil	13 days @ \$555/month (10 days in field July 29- (Aug. 7) (3 days in office Sept. 29, 30 (& Oct. 1)	\$ 340.00
C.J. Banninger	11 days @ \$425/month (8 days in field July 29-Aug. 7) (3 days in office Sept. 13, 14 & (15)	\$ 235.00
Miscellaneous	(transportation, maps, (secretarial)	<u>\$ 100.00</u>
	Total	<u><u>\$ 1,423.00</u></u>

G.A. Noel

G.A. Noel, P. Eng.

A P P E N D I X



Department of
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ASSESSMENT REPORT
NO. 684 MAP #1

LEGEND

- RECENT
 - GLACIAL BOULDER CLAY
- JURASSIC &/OR CRETACEOUS
 - DIORITE & GABBRO
 - MONZONITE
 - GRANITE
- BONANZA GP
LI. TRIASSIC
 - RHYOLITE & RHYOLITIC TUFF
 - FELSITE & FELSITIC TUFF
 - ANDESITE & ANDESITIC TUFF
- COPPER & MOLYBDENUM SULFIDES
- STRIKE & DIP OF BEDDING
- STRIKE & DIP OF FAULTS
- STRIKE & DIP OF FRACTURES

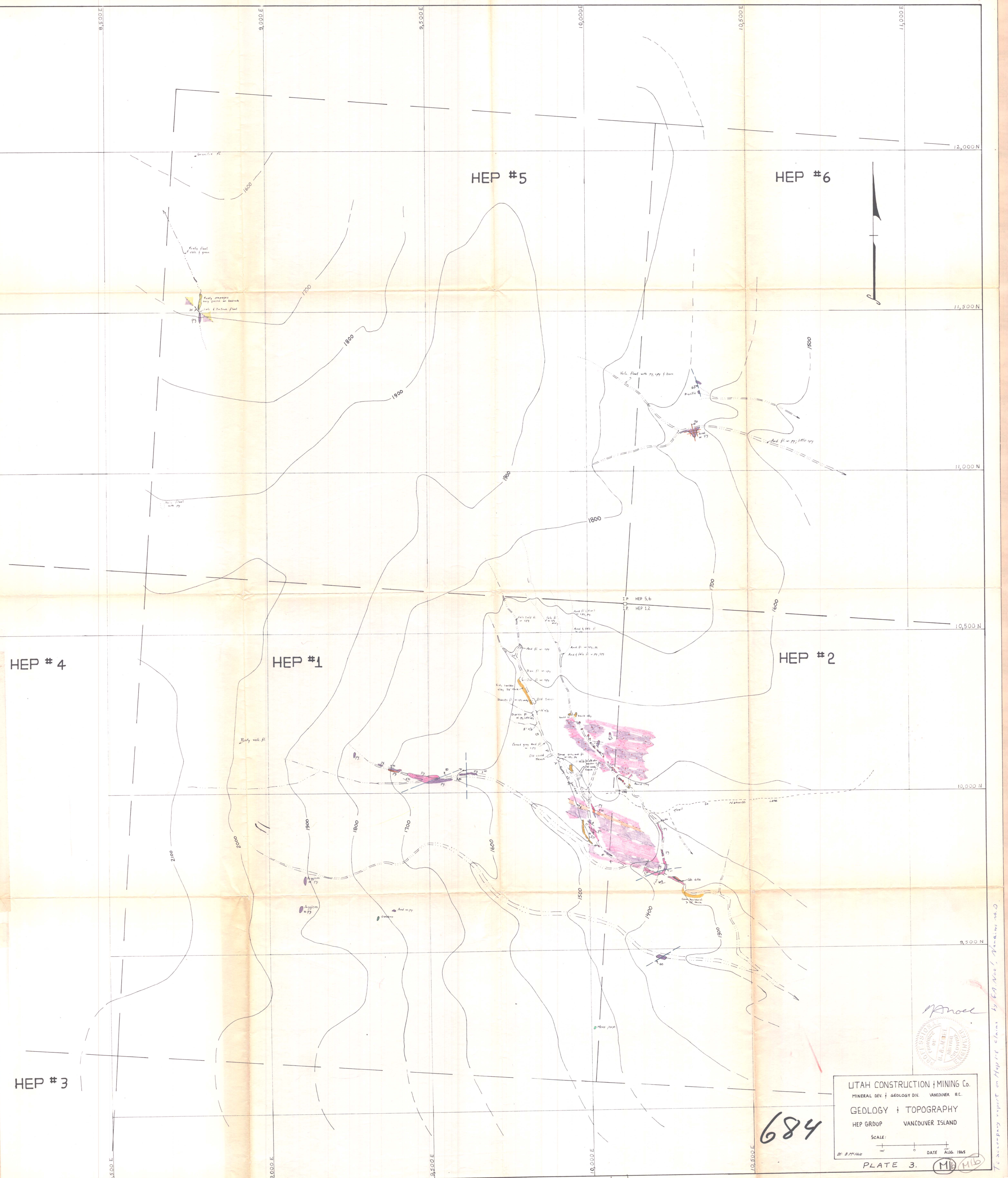
HEP # 4

HEP #1

HEP #5

HEP # 3

M1a



HEP # 4

HEP # 1

HEP # 2

HEP # 5

HEP # 6

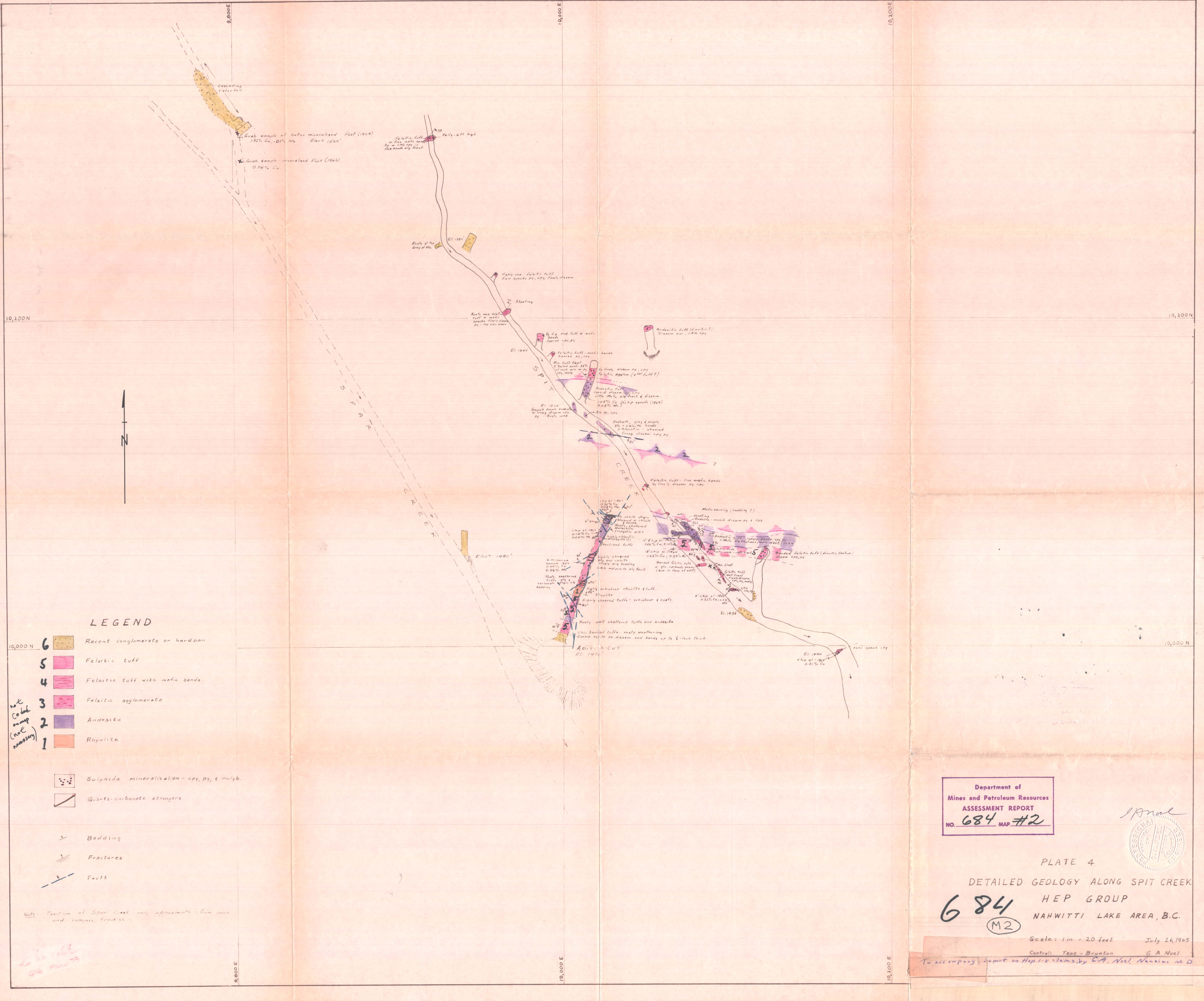
HEP # 3

UTAH CONSTRUCTION & MINING Co.
 MINERAL DEV. & GEOLOGY DIV. VANCOUVER B.C.
 GEOLOGY & TOPOGRAPHY
 HEP GROUP VANCOUVER ISLAND
 SCALE: 1" = 1000'
 DATE AUG. 1965
 PLATE 3.

684



To accompany report on HEP #1 claims by C.A. Noel, Vancouver, B.C.



LEGEND

- 6 Recent conglomerate or hardpan
- 5 Felsitic tuff
- 4 Felsitic tuff with mafic bands
- 3 Felsitic agglomerate
- 2 Andesite
- 1 Rhyolite
- Sulphide mineralization - cpy, py, & molyb.
- Quartz-carbonate stringers
- Bedding
- Fractures
- Fault

Note: Position of Spit Creek only approximate - from pace and compass traverse.

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ASSESSMENT REPORT
NO. 684 MAP #2

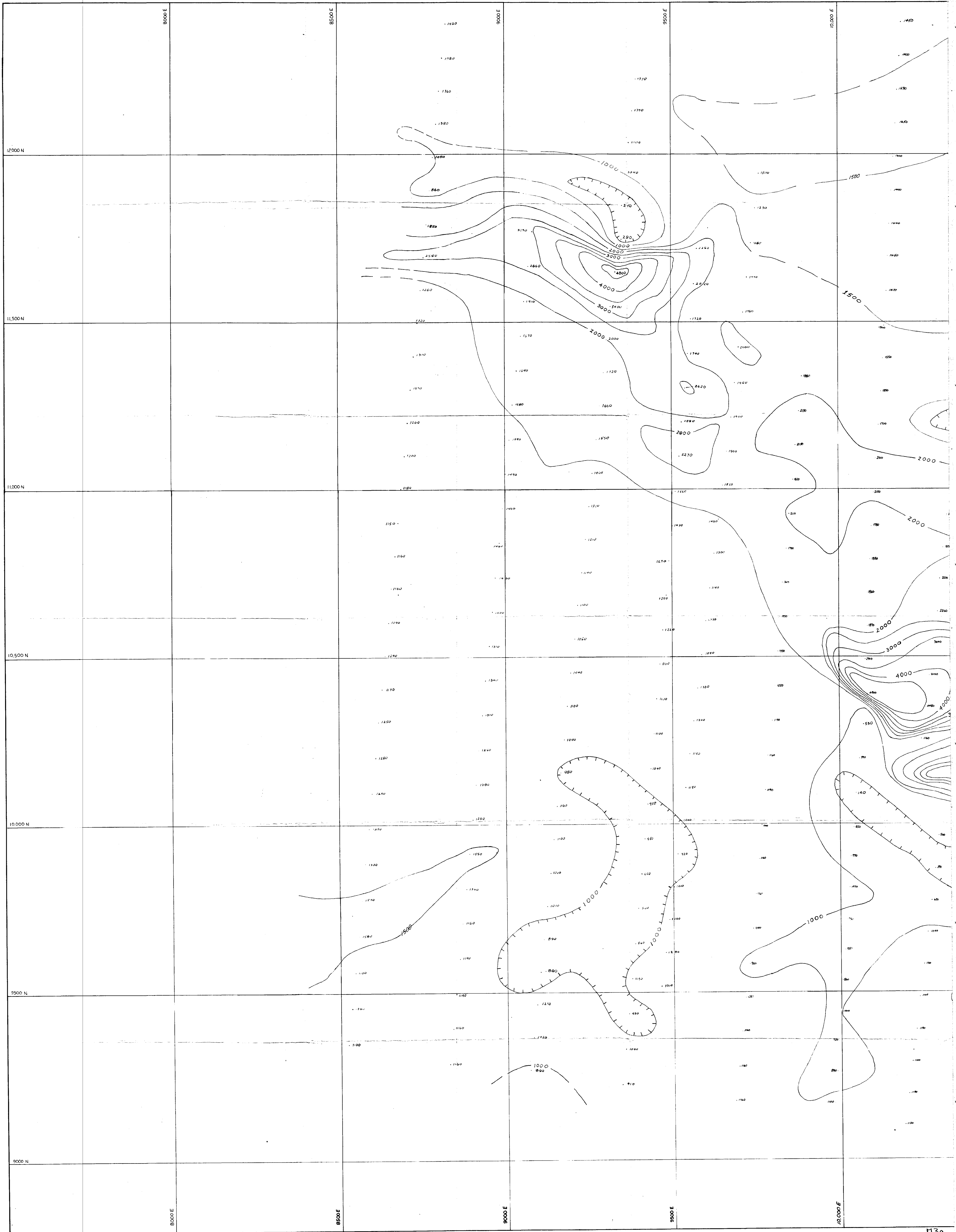


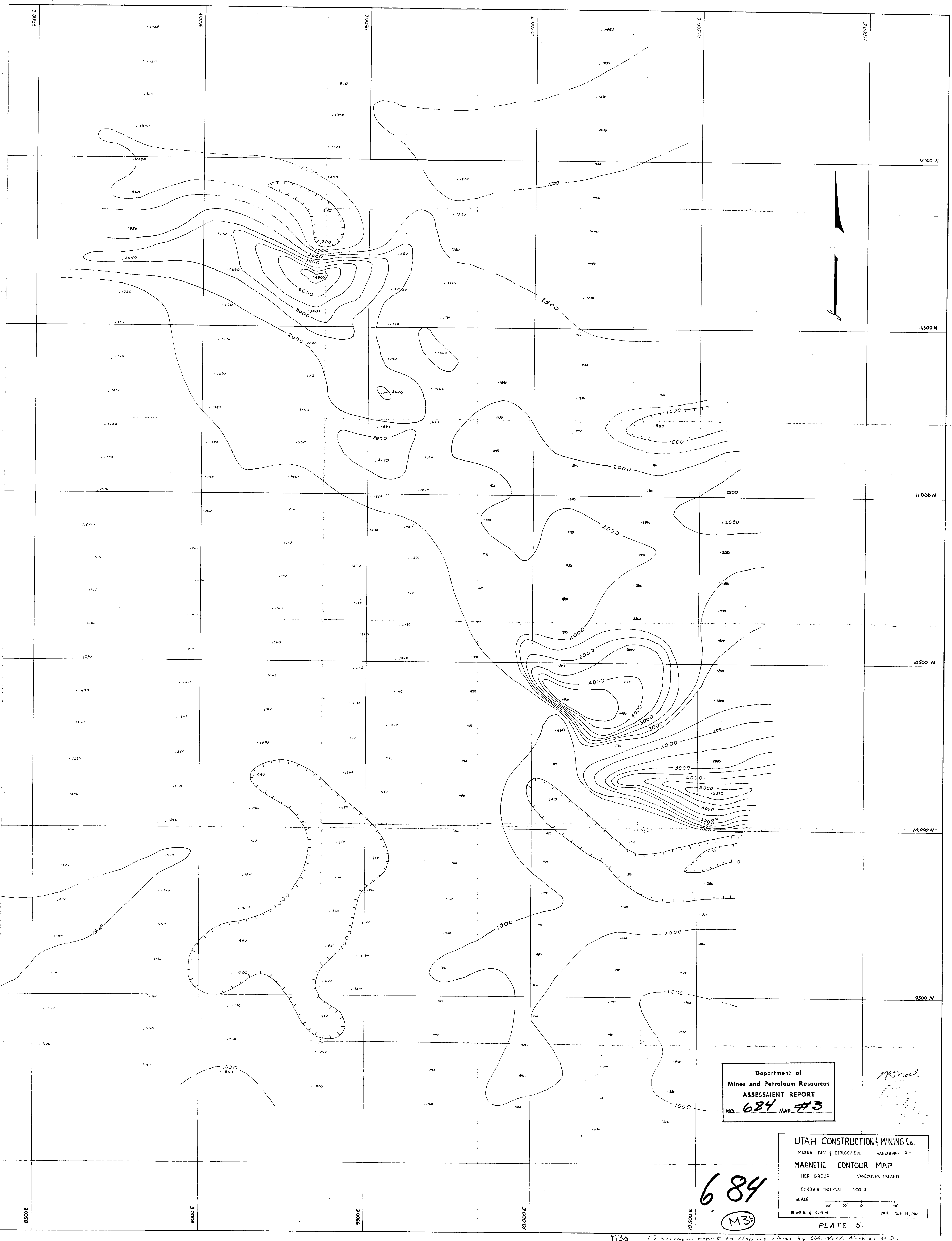
PLATE 4
DETAILED GEOLOGY ALONG SPIT CREEK
HEP GROUP
NAHWITTI LAKE AREA, B.C.
684 (M2)

Scale: 1 in = 20 feet July 26, 1965
Control: Tape - Brunton G.A. Noel
To accompany report on HEP claims by G.A. Noel, Nanaimo, B.C.

to be left on maps

PLATE 25





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 ASSESSMENT REPORT
 NO. **684** MAP #3

W. Noel
 VANCOUVER ISLAND
 1965

UTAH CONSTRUCTION & MINING Co.
 MINERAL DEV. & GEOLOGY DIV. VANCOUVER B.C.
 MAGNETIC CONTOUR MAP
 HEP GROUP VANCOUVER ISLAND
 CONTOUR INTERVAL 500 ft
 SCALE 1" = 100' 50' 0' 100'
 B.M.H. & G.A.N. DATE: Oct. 15, 1965
 PLATE 5.

684
 (M3)