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REPORT OF GEOLOGICAL AND GEOPHYSICAL SURVEY

HAR #1, HAR #7, HAR #24 AND HAR #45 GROUPS

SKEENA MINING DIVISION

By: G. W. H. Norman, P. Eng.

For: Granduc Mines Limited (N.P.L.)

June 3 - October 31, 1960

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Department of
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ASSESSMENT REPORT
NO. 345 MAP.....

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INTRODUCTION

This report presents the results of geological and geophysical work performed for preliminary exploration purposes on the four Har Groups of claims in the Unuk River district of the Skeena Mining Division.

The claims were staked in May and the work commenced on the claims in June, soon after staking, from a base camp near the junction of Unuk and South Unuk Rivers.

The claims lie on the north side of the river from the base camp and, although close to camp, it was found easier to do the work on the claims from fly camps. A cable crossing of the river was available, but was not considered too safe. The magnetometer operator and his assistant operated from the base camp and were flown to work every day by helicopter.

In order to keep map preparation, and the processing of results of work on the claims under control and supervision, the personnel from the fly camps returned to base camp approximately $1\frac{1}{2}$ days each week.

LOCATION

The Har groups of claims lie on both sides of the Unuk River, between the mouth of the south fork on the east and Harrymel Creek on the west. They are about forty miles north-north-west from Stewart at the head of Portland Canal. Figure 1 shows the configuration of the claims in respect to nearby creeks and rivers.

WORK PERFORMED

General Statement: The personnel employed on the work on the Har groups of claims were as follows:

D. R. S. Doal,	Graduate, Haileybury School of Mines, Geophysicist. (Several years field experience Magnetic and E.M. surveys)	
G. C. Gutrath	B. Sc., U. B. C.	Geologist
R. Hrkac	4th year Student, U.B.C.	"
J. H. Montgomery	M. Sc., U. B. C.	"
E. A. Ostensoe	B. Sc., U. B. C.	"
L. E. Iverson		Foreman
R. W. Hunt		Surveyor
J. Brache		Assistant
W. Gauthier		"
D. Genn		"
F. Hasselberg		"
R. Nehass		"
G. Prud'homme		"
B. R. Ward		"
T. Wilkinson		"

under the supervision of G. W. H. Norman, P. Eng.,
Chief Geologist and K. G. Sanders, Assistant Chief Geologist.

The work consisted of line cutting, flagging and picketing, magnetic surveys and geological surveys. The area of the Har claims is mostly below 1,000 feet above sea level and is covered by trees and dense undergrowth, which slowed up the work of putting in lines.

The lines were used for the magnetic survey of the central part of the Har groups of claims, which is recorded on Figure 2, Sheets 1, 2 and 3, on a scale of 200 feet to 1 inch.

The outcrops along the lines were mapped in detail on a scale of 200 feet to the inch. Geological mapping was carried out away from the lines by using enlarged aerial photos for control, or by tape and compass traverses. The geological work is given on Figure 1, which has a scale of 800 feet to 1 inch. This scale keeps the results to one sheet and brings out relative geological features of the groups more clearly. It gives a more easily grasped picture of the geology.

Har #1 Group: Work in the field on this group started June 10th and ended October 31st. During this period twenty-five days line cutting and picketing were completed by the Surveyor, Foreman and Assistants, with two days help from Geologists. Five days each were spent on magnetic surveys by the Geophysicist and Assistant. Thirty-four man-days were spent on geological work by Geologists (17 days) and Assistants (17 days). Four days of supervision by the Chief Geologist and five days of supervision by the Assistant Chief Geologist were taken up by the work.

Har #7 Group: Work in the field on this group started June 8th and was completed August 31st. Twenty-six days line cutting and picketing were completed by the Surveyor, Foreman and Assistants, with two days help from Geologists. The Geophysicist and helper each spent five days on the magnetic survey. Geologists spent seventeen man-days and were given seventeen man-days help by Assistants. The Chief Geologist worked four days on this group and the Assistant Chief Geologist spent three days on supervising the field work.

Har #24 Group: Work commenced on Har #24 Group June 6th and continued until September 10th. During this period twenty-six man-days line cutting, flagging and picketing were completed by Assistants and Foreman, with some help from the Surveyor and Geologists. Magnetic surveys took five days of the Geophysicist's time and four days of his Assistant's time. Geologists and Assistants spent seventeen man-days each on the geological survey. The field work required four days of supervision by the Assistant Chief Geologist and four days work by the Chief Geologist.

Har #45 Group: Work commenced on the Har #45 Group June 3rd and continued until September 7th. Twenty-four man-days were spent cutting, flagging and picketing lines by Assistants, with two two-day periods by the Surveyor and a Geologist. The Geophysicist spent five days and his

Assistant five days on magnetic surveys. Geologists spent eighteen man-days on geological work and Geologist's Assistants spent seventeen days helping with the geological survey work. Four days on supervision and work for the claim group were spent by the Chief Geologist, Supervision of field work by the Assistant Chief Geologist took three days.

GEOLOGICAL SURVEY

General Statement: The outcrop geology of the four Har groups of claims is shown on Figure 1. The network of picketed lines on the north side of Unuk River gave an effective framework for locating outcrops accurately in the central part of the groups. The topography of the claims is quite irregularly composed of small, scattered, heavily wooded hills and valleys. Without properly marked and taped lines for control geological mapping would be very inaccurate. Enlarged photographs were used as base maps for mapping south of the Unuk River, along Harrymel Creek and along the limestone ridge across the north-eastern parts of the Har #7, #24 and #45 groups, where large bare outcrops occur.

Rock Units: Map 9-1957, Stikine River Area, Cassiar District, British Columbia, published by the Geological Survey of Canada, indicates that the area of the Har groups of claims is underlain by quartz monzonite, granodiorite, granite and unconsolidated gravels. The more detailed work carried out by our parties in 1960 has shown that igneous rocks and unconsolidated deposits underlie less than half the claims.

The sequence of surficial rock units underlying the area of the four Har claim groups is believed to be as follows, beginning with the youngest:

1. Black argillite with interbedded greywacke.
2. Pale green, much altered, massive and fragmental greenstone or andesite.
3. Meta sedimentary and some meta volcanic schists characterized by biotite, sericite, chlorite, with some amphibole and epidote in a fine granular base of quartz and feldspar. The schists have one or more interbedded limestone members.

The surficial rocks have been cut by igneous rocks ranging from a basic hornblende rich diorite to a pale silica rich quartz diorite.

Structure: Limestone outcrops of a thick bed can be traced across the east side of the Har #45, #24 and #7 groups in a northwest direction from the Har #66 M. C. to Har #44 M. C. The bed and ~~associated~~ meta sediments dip east except where minor folds occur. A similar limestone bed can be traced west of south from Har #22 M. C. to Har #11 M. C. across Har #7 group. The western bed dips west. The attitude of this limestone bed indicates an anticlinal structure plunging north, with diorite intruded irregularly along the axis of the structure. The western limb of the structure may be more sheared, which could account for the presence of sericitic schist with the western limestone bed

and biotitic schist with the eastern limestone bed.

Mineralization: A rusty zone is exposed along a small gulch on the south side of the river. The rocks of this zone have been heavily carbonatized with iron bearing carbonate and contain sparse specularite.

MAGNETIC SURVEY

Statement: The geophysical survey of the Har #1, #7, #24 and #45 groups consisted of magnetometer surveys of parts of the groups. The purpose of the surveys was to check anomalies obtained by airborne magnetometer work. The pattern of the lines laid out is best seen on Figure 1. The results of the magnetic work is given on Figure 2, Sheets No. 1, No. 2 and No. 3, on a scale of 200 feet to the inch.

A series of seven base lines was run out in westerly and northerly directions and marked at 100 foot intervals. Cross lines were spaced at 1,000 foot intervals along base lines 3, 6 and 7 and were marked at 50-foot intervals. The purpose was to find out areas where further detail work might prove advisable.

After the results had been plotted on Sheets 1, 2 and 3, base line No. 3 across claims Har 52, 51, 30, 29, 31, 10 and 9 was extended west across Harrymel Creek for 2,400 feet. Two parallel lines 1,000 feet to the north and 1,000 feet to the south of base line No. 3 extension were also cut out and marked. These lines were run to check possible southward extensions of the magnetic highs

shown on Sheet 3. The readings along these check lines were uniformly low and indicated uniform non-magnetic bedrock.

The magnetic readings were taken with a Torsion type Askania magnetometer, with a rated sensitivity of 266 gammas per degree. The degrees are divided into 10 divisions and the instrument can be read to 1/100 part of a degree by estimating between divisions.

The readings on the three sheets are given in gammas. They have been derived by multiplying the instrument readings in degrees by 266 (sensitivity of the instrument) and subtracting 2,123, which is the assumed datum level and value assigned to a base station in camp. Readings and checks were made daily or at more frequent intervals at the base station. The figures given are relative figures, without absolute significance.

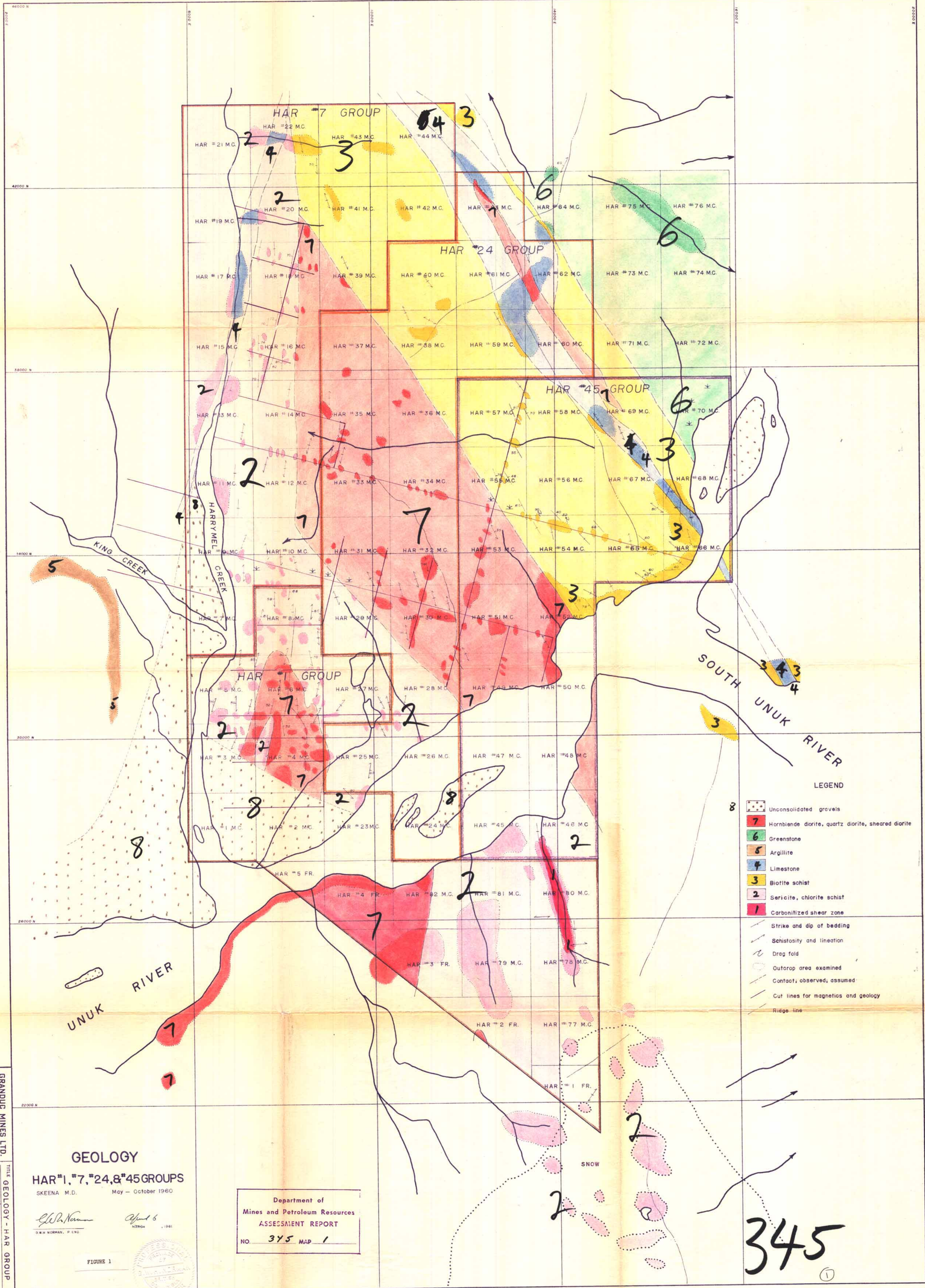
Interpretation: The largest anomalies indicated by the magnetic work lie along the diorite mass that extends northwest from claim Har #49 across the Har #45, #24 and #7 groups to Har #20 M. C. The high readings are partly accentuated by topography because the diorite is more resistant than the schist and forms more prominent hills.

The readings taken along base line No. 7 and base line No. 7 cross lines show some small highs in the north part of the Har #1 claim group. These appear to be tied in with a smaller dioritic intrusive. This intrusive

is highly sheared and may not be accurately mapped on
account of difficulties in identification of rock in the
field.

April 6
March 27, 1961

G. W. H. Norman
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G. W. H. Norman, P. Eng.



GRANDUC MINES LTD.
 SCALE 1 INCH = 800 FEET
 TITLE GEOLOGY - HAR GROUP
 NO.

GEOLOGY
 HAR #1, #7, #24, & #45 GROUPS
 SKEENA M.D. May - October 1960

D.W. Norman
 D.W. NORMAN, P. ENG.

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FIGURE 1

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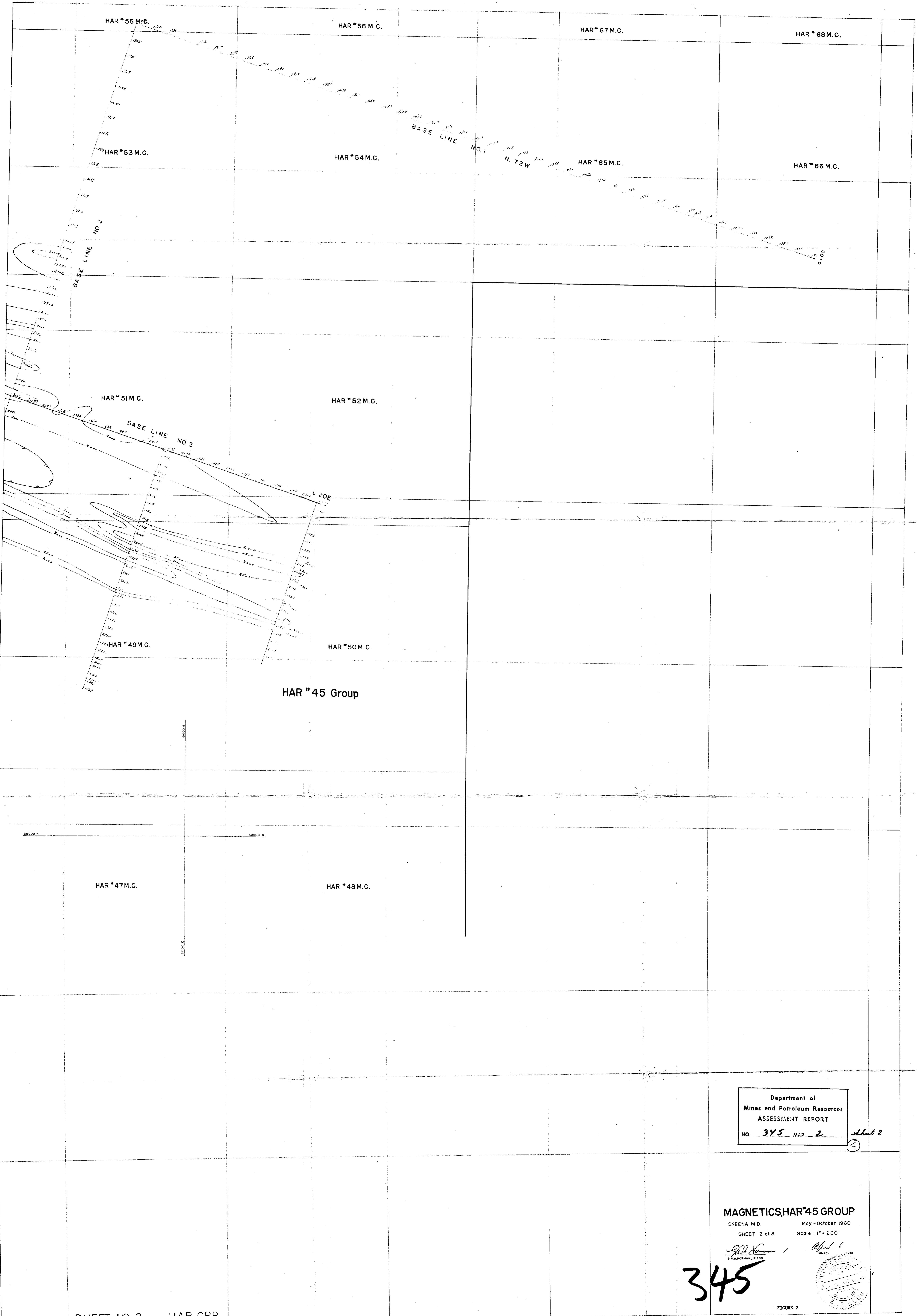
MAGNETICS
 HAR #1, #7, #24, #45 GROUPS
 SKEENA M.D. May - October 1960.
 SHEET 1 of 3

[Signature]
 W. NORMAN, P. ENG.
 MARCH 1961

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 (2)

GRANDUC MINES LTD. TITLE HAR - GROUP SHEET NO. 1
 SCALE 1 INCH = 200 FEET MAGNETOMETER SURVEY
 HAR #82 M.C.



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Sheet 2
④

MAGNETICS, HAR #45 GROUP
SKEENA M.D. May - October 1980
SHEET 2 of 3 Scale: 1" = 200'

Bob Norman
D. S. HORNMAN, P. ENG. MARCH 1981

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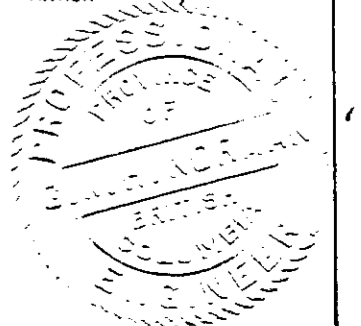


FIGURE 2