84-#91 - 12102

#### REPORT ON

GEOLOGICAL SURVEY AND SAMPLING

OF

THE PETE #1, IRON MIKE, IRON JOE CLAIMS

NANAIMO MINING DIVISION
SAYWARD AREA, VANCOUVER ISLAND
BRITISH COLUMBIA

LONGITUDE 125° 58'

LATITUDE 50° 18'

NTS 92K/5

FOR

OPERATOR AND OWNER
DICKENSON MINES LIMITED
TORONTO - ONTARIO

CLAIMS

PETE #1 RECORD NO. 1293(1)
IRON MIKE RECORD NO. 14619(3)
IRON JOE RECORD NO. 14618(3)

GEOLOGICAL BRANCH ASSESSMENT REPORT るのだい

BY

PETER G. ATHERTON B.Sc.

H. E. NEAL & ASSOCIATES LTD.

TORONTO -

CANADA

DECEMBER 29, 1983



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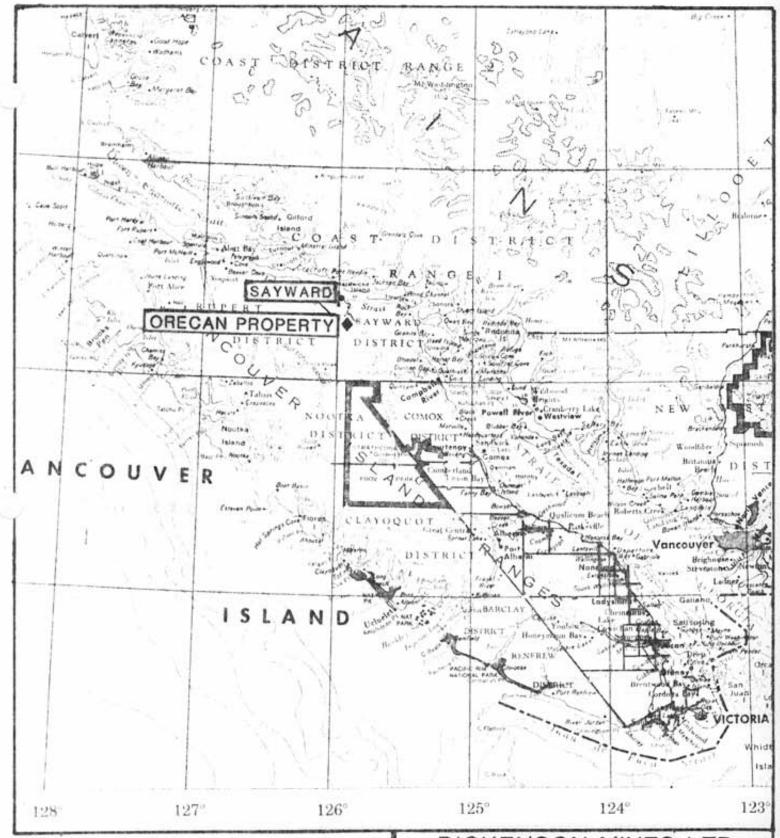
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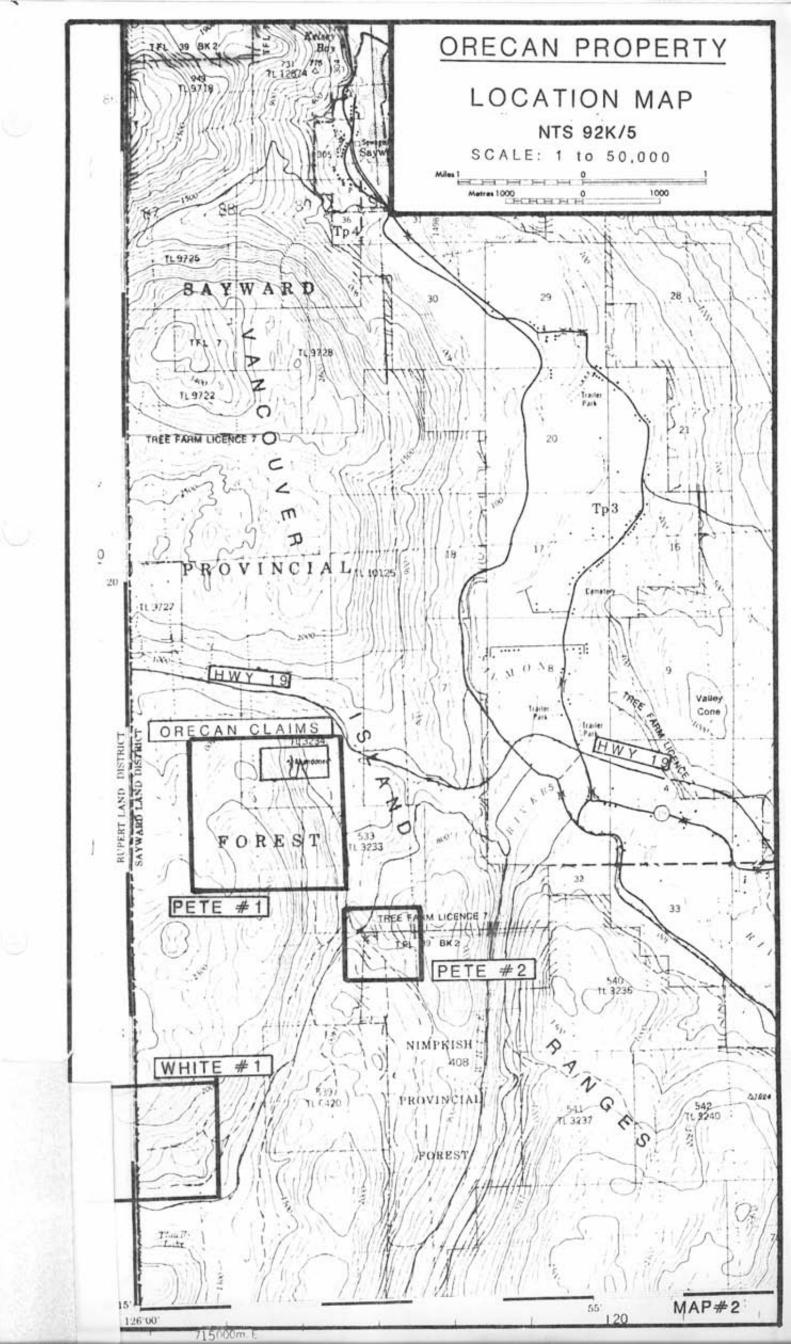
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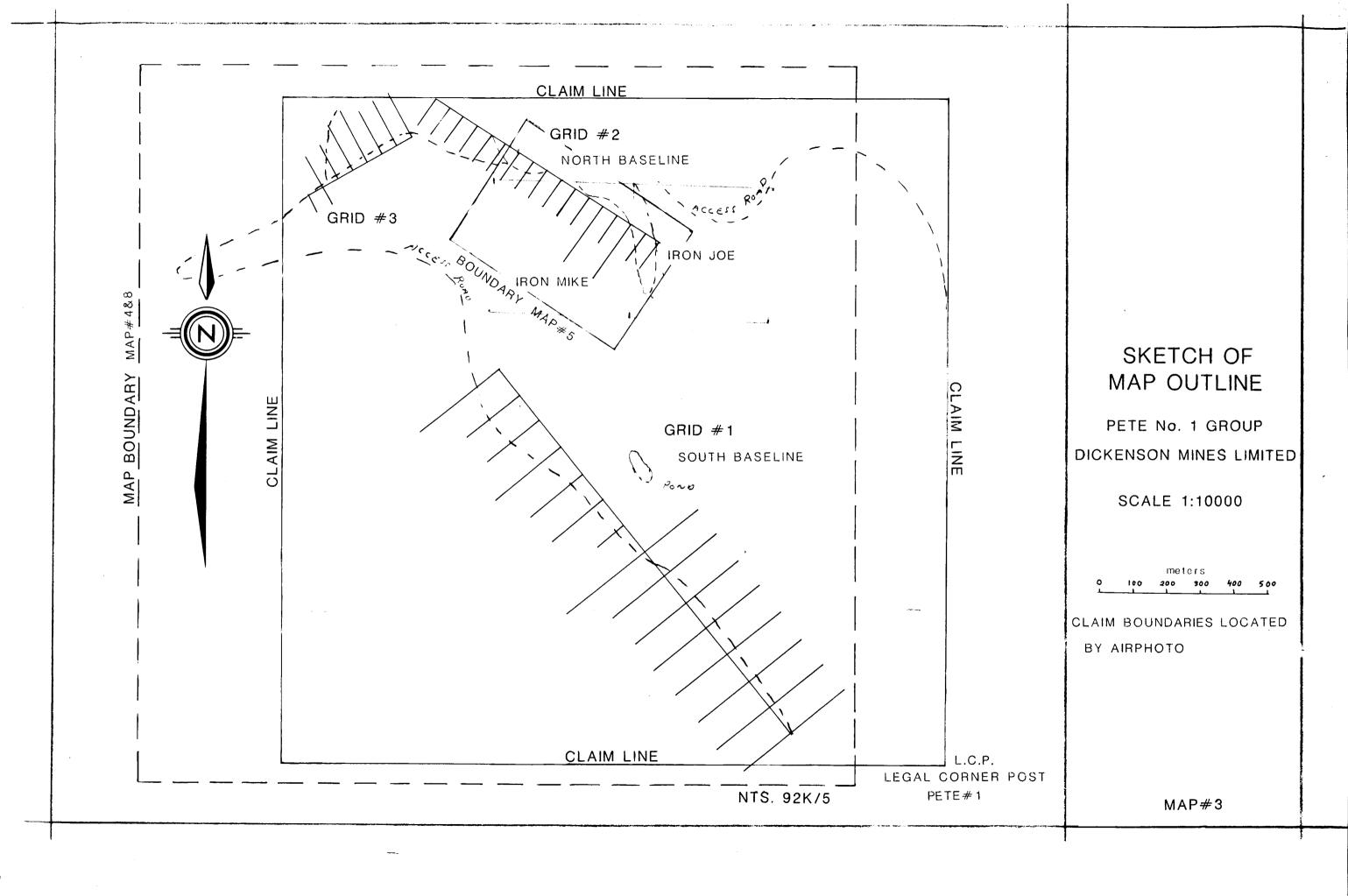
## KEY MAP

SCALE: 1:2,000,000

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MAP#1





#### 1.0 INTRODUCTION:

The Pete #1 Record No. 1293(1) claim group is located 8 Km south of Sayward, B.C. in the Nanaimo Mining Division. The claims are accessible by all-weather logging roads to within 2.5 Km of the property and by seasonal road to within the claim block.

The claim group was staked in January 1983. The Pete #1 claim group is owned by Dickenson Mines Limited. The claim group also encompasses the Iron Joe, Record No. 14618(3) and Iron Mike, Record No. 14619(3) claims which have been optioned to Dickenson Mines Limited.

The Pete #1 claim group extends 4 units north of the Legal Claim post and 4 units west of the Legal Claim post for a total of 16 units. The terrain is steep to moderately rugged.

## 1.1 History of the Property (Iron Mike)

- 1959 Iron ore discovered by R. Hartt.
- 1960 Property optioned to Marwell Construction from R. Hartt.
  - 19 drill holes for 1924 feet (Ex diameter).
  - 13 were drilled on Iron Mike Claim.
  - Dip needle survey over Iron Mike (Main Zone) deposit and Iron Mac, Iron Dick and West Zone deposits (all on Pete #1 claims).
- 1961 Hartt & Associates diamond drilling (Ex diameter).

  24 drill holes 2100 feet and prospecting of claims.

- 1963 Inter-Can Development Ltd. optioned the property on a ten year renewable lease royalty agreement.
  - Stripping and diamond drilling began, claims assigned to Orecan Mine Ltd.
- 1964 5000 feet diamond drilling by Orecan stripping in preparation for open pit mining.
  - Reserves 700,000 tons to 1.15 million tons at 62% Fe.
- 1965-66 Most of magnetite in Main and West Pit zones that was available to open pit mining methods was removed. Mine closed, mill sold.

1966-83 - No known work on claims.

Enough high grade magnetite remains in the Main Pit and West Pit Zones as well as the untouched Iron Dick, Iron Mac and Iron Herb I and II magnetite deposits to be a source of high grade concentrate.

#### 1.2 Geological Survey

The area covered by the geological mapping is shown on geological Map # 4 at a scale of 1:2500. More detailed mapping of the Main and West Pit areas is shown on geological Map # 5 at a scale of 1:500.

The mapping was done using grids cut by linecutters as shown on Maps # 4 and 5 . All of the grids were cut using standard

linecutting practices. Grid #2 was located during a survey by Charles O. Smythie and Associates. The survey was done to aid in assessing how much magnetite was taken out of the Main and West Pit zones and the pit location in relation to Grid #2. The elevations shown on the map are relative to the O+OO on the baseline which we assumed to be 400 M in elevation. They are not tied into any geodetic station.

Grade #1 was cut with line at 100 M while Grids #2 and #3 were cut with lines at 50 M intervals. The total amount cut was:

Grid	#1	6.25	Km
Grid	#2	2.7	Km
Grid	#3	1.4	Κm

Rock samples were taken from vertical sections at 5M intervals in the Main Pit and at 10 M intervals in the West Pit. Total number of samples from the Pit was 62 samples.

Due to poor exposure of the other four magnetite occurrences, one grab sample was taken from each of the Iron Mac and Iron Herb II occurrences. Two grab samples were taken from the Iron Dick occurrence and none from the Iron Herb I occurrence.

#### 1.3 Claims

Pete	#1	1293(1)
Iron	Mike	14618(3)
Iron	Joe	14619(3)

## 2.0 GEOLOGY:

#### 2.1 General Geology

The rocks underlying the claim group are part of the eastern limb of regional synclinal structure. The oldest rocks in the area are Late Triassic, pillowed and porphyritic basalt of the Karmutsen Formation. This formation is estimated to be greater than 3000 M thick.

The Quatsino Formation conformibly overlies the Karmutsen Formation.

The formation consists of limestone up to 900 M thick. Granitic intrusives are common within the formation and the limestone has been converted to marble and skarn.

The early Jurassic Bonanza Formation conformibly overlies the Quatsino limestone. The lower part of the formation is composed of carbonaceous shale, calcareous shale and greywacke, occasional tuff units are present. The upper half of the formation is composed of dacitic to andesitic layas with tuffs and breccias.

The Adams River intrusive intrudes all of the above rock types. In the Adams River areas the intrusive is mainly granodiorite in composition with some diorite along the lower contacts. The intrusive is early Jurassic in age. The contact with the lower Quatsino Formation is concordant in most places.

## 2.2 Geology of the Claim Group

### 2.2.1 Pit Area Grid #2

The area around the Main and West Pit areas is underlain by Karmutsen Formation basalt and an intravolcanic band of limestone which is thought to be part of the Karmutsen Formation rather than the Quatsino Formation. The magnetite occurs on the same horizon as the limestone band and within the basalt.

The volcanics that underlie the limestone and magnetite are pillowed to massive, fine-grained to porphyritic basalts. The pillows indicate tops to be to the west. The volcanics are slightly magnetic to non-magnetic and are generally fine grained. The rocks strike north-south and dip about 25° west. The volcanics are light grey to buff on the weathered surface to dark grey on the fresh surface. The porphyritic rocks contain hornblende phenocryst up to 1 cm long. Slickensides are present along some of the joint planes indicating some movement.

The upper basalt is similar to the lower basalt with more massive porphyritic lava than the pillowed variety. The rock is basically unaltered except in the area of magnetite concentrations. There is a 1 to 2 M band of highly sheared basalt above the magnetite in the Main Pit. The volcanics in the magnetite zone in the West Pit show amphibolite and garnet facies metamorphism. Epidote is common throughout the rock unit.

There is an exposure of limestone exposed along the access road below the Main Pit. The rock is crystalline, granular weathered and pitted. The unit strikes  $160^{\circ}$  and dips  $40^{\circ}$  west. Earlier drilling by Orecan indicates the limestone is not continuous. (Maps # 4 and 5 ).

The magnetite in the Main Pit is a dark black crystalline nearly pure magnetite. The magnetite occurs as mainly massive to occasional thin bedded layers. In the West Pit area the magnetite occurs as irregular bands and lenses in a highly altered volcanic. The ratio of magnetite and altered volcanics is variable from section to section. The distribution of magnetite in the pit is shown on the sample sections accompanying this report. (Sheets # 6 & 7).

## 2.2.2 Grid #1 Area

The rocks underlying the grid #1 area appear to be higher in section than those in the Main Pit Area. It is not known if the limestone that occurs on this grid is a second horizon above the Main Pit Area or whether the section is repeated by faulting. The geology is shown on Map # 5.

The volcanics below the limestone and magnetite are massive porphyritic to fine grained basalts. All of the outcrops are weakly magnetic. The rocks strike north and dip  $20^\circ$  to  $40^\circ$  west.

The limestone occurs as a thin band in the volcanics. The rock has a granular texture with some mica. The limestone occurs south of the baseline and is continuous for the length of the grid.

The magnetite occurs in two lensitic bodies. The outline of the occurrences has been outlined by the ground magnetic survey and is described in the magnetometer report. The magnetite is poorly exposed. The Iron Mac occurrence is located between lines 7W and 8W. It is fine grained, massive nearly pure magnetite. One grab sample taken from the outcrop assayed 58% magnetic Fe. The Iron Dick occurrence is exposed in magnetite outcrops located between lines 11W and 12W. Grab samples taken from these outcrops assayed 58.1% Mag. Fe and 66.6% Mag. Fe.

The magnetite in the Iron Dick and Iron Mac occurrences is very similar to the magnetite in the Main Pit Zone indicated by the massive texture and lack of volcanic lenses in the magnetite.

Tuff is present above the limestone. It consists of silicified tuff bands separated by limestone or other carbonate rich bands. The tuff is exposed on line 62W 1S and L O 1+25S. Abundant pyrite was seen in these two outcrops.

The upper basalts are fine grained and massive. They are mainly nonmagnetic but some outcrops were faintly magnetic. This disseminated
magnetite and the disseminated magnetite in the porphyritic basalt
below the limestone is likely the cause of the airborne magnetic high
in the south-east part of the grid.

#### 2.2.3 Grid #3 Area

The geology of the Grid #3 area is similar to the other two grids and will not be discussed further. The geology is shown on Map # 4.

The magnetite outcrop of the Iron Herb II deposit is much different than in the other occurrences.

The Iron Herb II occurrence is located between lines 0 and 1 E. The occurrence has one outcrop of lower grade magnetite and skarn that gave the following assay:

	Sol Fe	Mag Fe (Sat)
1758	26%	20.9%

The outcrop is not in the area of the highest magnetic anomaly and might not be representative of the whole occurrence. The magnetite occurs as lumpy concentration up to 1" in diameter in a greenish brown skarn. This showing is on a bench that extends north from the steep hill to the south of the grid. The position of the occurrence in relation to the Iron Herb I occurrence indicates faulting has occurred since the two occurrences have about 50 feet difference in elevation.

The Iron Herb I occurrence is not exposed in outcrop. Several large boulders occur north of the baseline that show the same lumpy appearance as the Iron Herb II shows.

## 3.0 SAMPLING:

The former open pit mines in the Main and West Pit areas were mapped and sampled. The purpose of this sampling was to determine the amount of magnetite ore remaining after the open pit operations ceased and to determine the nature of each occurrence.

## 3.1 Main Pit

The Main Pit area supplied most of the magnetite ore when the mine and mill were operating. The bulk of the magnetite ore that was amenable to open pit mining was removed during this operation. The recent survey by H.E. Neal & Associates Ltd. included chip sampling of the open pit. All samples were sent to Lakefield Research Ltd., Lakefield, Ontario. The sampling was done on vertical sections with the following results:

Section	Sample *Interval Number Relative Height in Metres		Thickness in Metres	Mag. Fe Satmagan %	Grade Sol Fe %
2	1701	437.1 - 437.5	0.6	53.6	58.5
East Wall	1702	437.5 - 438.3	0.8	15.8	17.3
	1703	438.3 - 439.2	0.9	41.6	45.8
	1704	439.2 - 441.1	1.9	16.3	26.5
	1705	441.1 - 442.2	0.9	25.9	29.8
3 East Wall	1706	437.1 - 441.7	4.6	49.0	52.0
4	1707	437.3 - 439.0	1.7	37.7	42.7
East Wall	1708	444.6 - 447.5	2.9	55.6	58.7
5	1709	437.0 - 439.0	2.0	48.6	53.5
South Wall	1710	440.1 - 442.2	2.1	44.6	49.2
6	1711	436.6 - 439.2	2.6	53.3	57.4
South Wall	1712	439.2 - 441.8	2.6	57.2	. 60.0

<sup>\*</sup> refers to elevation shown on Map #5 only.

Section	Sample Number	*Interval Relative Height in Metres	Thickness in Metres	Mag Fe Satmagan %	Grade Sol Fe %
7 South Wall	1713	437.7 - 440.2	2.5	53.4	·57.3
	1714	440.2 - 442.7	2.5	53.4	56.7
8	1715	439.0 - 442.0	3.0	45.5	49.1
South Wall	1716	442.0 - 445.0	3.0	48.4	52.7
	1717	446.9 - 448.5	1.6	56.6	60.3
9	1718	439.7 - 443.2	2.5	57.6	61.9
South Wall	1719	443.2 - 446.8	3.6	31.2	36.4
10	1720	437.1 - 441.1	4.0	39.9	43.3
South Wall	1721	441.1 - 445.5	4.4	50.9	56.4
12 West Wall	1722	438.5 - 439.5	1.0	62.0	65.6
13 West Wall	1723	438.5 - 440.8	2.3	34.9	38.1
14	1724	437.9 - 439.9	2.0	45.1	49.1
West Wall	1725	439.9 - 441.9	2.0	53.2	56.1
15	1726	438.6 - 440.6	2.0	45.2	49.5
West Wall	1727	440.6 - 442.9	2.3	59.3	62.5
16 West Wall	1728	439.2 - 442.8	3.6	53.8	57.4
17 West Wall	1729	438.8 - 441.9	2.1	50.0	53.1
18 West Wall	1730	439.2 - 441.5	2.3	51.9	. 55.6
19	1731	437.9 - 439.9	2.0	48.5	52.1
West Wall	1732	439.9 - 441.9	2.0	44.8	58.6
20 West Wall	1733	438.2 - 441.3	3.1	48.7	54.1
21 West Wall	1734	439.9 - 441.9	2.0	28.1	37.0

<sup>\*</sup> refers to elevation shown on Map #5 only.

The sample sections were located at 5 M intervals. The geological description of each section is shown on Sheet # 6.

## 3.2 West Pit

Sections were chip sampled at 10 M intervals in the West Pit. The sections and sample locations are shown on Sheet #7.

The results are as follows:

Section	Sample Number	*Interval Relative Height in Metres	Thickness in Metres	% Mag Fe. Satmagan %	Grade Sol Fe. %
22	1736	475.7 - 478.0	2.3	56.6	·59 <b>.</b> 0
South Wall	1737	478.0 - 479.7	1.7	33.9	36.1
	1738	479.7 - 480.9	1.2	54.6	57.0
23	1739	474.7 - 475.8	1.1	43.5	46.7
South Wall	1740	475.8 - 477.4	1.6	21.1	23.7
	1741	477.4 - 479.8	2.4	51.4	54.5
24	1742	474.8 - 477.3	2.5	54.6	57.4
South Wall	1743	477.3 - 479.3	2.0	26.6	29.1
25	1744	475.4 - 477.4	2.0	21.4	23.9
South Wall	1745	477.4 - 479.4	2.0	37.3	39.3
26	1746	475.1 - 478.1	3.0	24.8	27.7
South Wall	1747	478.1 - 481.1	3.0	31.6	34.5
	1748	481.1 - 483.1	2.0	30.8	33.3
27	1749	476.4 - 478.9	2.5	31.5	33.4
South Wall	1750	478.9 - 481.4	2.5	47.5	50.2
28	1751	477.5 - 480.0	2.5	18.0	20.1
South Wall	1752	480.0 - 482.5	2.5	14.7	16.7
29	1753	478.2 - 480.5	2.3	20.5	22.5
West Wall	1754	480.5 - 482.5	2.0	33.3	35.4
30	1755	478.2 - 480.5	2.3	14.5	18.0
West Wall	1756	480.5 - 482.8	2.3	24.5	26.9

<sup>\*</sup> refers to elevation shown on Map # 5 only.

## 3.3 Other Sampling

Grab samples collected from the Iron Herb II and Iron Mac occurrences during May and the Iron Dick occurrence in September gave the following result.

	Sample #	% Mag Fe Satmagan	% Sol Fe	Description
Iron Mac	1735	58.1	63.1	Massive Magnetite
Iron Herb II	1758	20.9	26.0	Distinct Magnetic Bench in skarn
Iron Dick	1761	58.1	59.0	Massive Magnetite
Iron Dick	1762	66.6	69.3	Magnetite and skarn.

## 4.0 DISCUSSION OF RESULTS:

## 4.1 Geological Survey

The geological survey located four other relatively flat lying magnetite occurrences in addition to the Main Pit and West Pit occurrences.

The magnetite occurs as small irregular concentrations in the same horizon as the limestone. The Iron Dick, Iron Mac and Iron Herb I and II occurrences occur as benches on the side of steep hills which would allow for easy access for stripping and/or diamond drilling.

The magnetite in the Iron Dick and Iron Mac occurrences is similar in appearance and distribution to the magnetite in the Main Pit area. The Iron Herb II occurrence is similar to the West Pit Zone where the magnetite incorporates a great deal of waste material such as skarn and volcanics.

## 4.2 Sampling

The sampling showed the magnetite in the Main Pit area to have a higher grade than the West Pit areas. The magnetite is also more massive and has fewer lenses of volcanic and other waste rock. The magnetite is coarse grained in both pits and easily removed from the waste. This is important during crushing and concentration.

The Iron Mac and Iron Dick occurrences have grades equivalent and better

than the Main Pit. Due to the poor exposure it is impossible to make any direct comparison of either occurrence with the Main Pit regarding tonnage and overall grade.

The Iron Herb II shows grade and distribution similar to the West Pit area.

### 5.0 CONCLUSIONS AND RECOMMENDATIONS:

The sampling and mapping of the former open pit areas showed that very little of the original magnetite that was amenable to open pit mining methods remained after the mine and mill ceased operation. The geological survey and sampling located four deposits that show similar grades and characteristics. There is no reason to believe that the quality of these occurrences is less than the two Pit areas for producing high grade magnetite concentrations.

Work that should be done in the future should include bulk sampling of the untouched occurrences to give a more reliable grade estimate. This will necessitate stripping and blasting. Diamond drilling is recommended for outlining the extent of the occurrences.

The significant widths were encountered on the open pit areas. When these are combined with the Iron Dick, Mac, Herb I & II occurrences a large amount of magnetite ore still remains for producing a high grade magnetite concentrate.

Peter G. Atherton B.Sc.

H.E. Neal & Associates Ltd.

HWel P. Eng:

## STATEMENT OF EXPENDITURES

## PETE No. 1 CLAIMS

For

## Dickenson Mines Ltd.

GEOLOGY, LINECUTTING & SAMPLING		
Field Labour: 18 days at \$300/day (May 19 - June 2/83; Aug. 31 - Sept 2/83)	\$ 5400.00	
Travel in B.C.	20.00	
Accommodation 19 days at \$23.35/day - dates as above.	443.74	
Food 19 days - dates as above.	319.70	
Truck Rental & Gas 18 days at \$44.91/day - dates as above.	808.46	
Line-cutting 10.35km at \$430/km (Portion on Pete #1 only)	4450 50	
Sample Analyses & Shipping Costs - 60 samples-preparation (Lakefield Research) Sol. Fe & Mag. Fe @ \$40.58 Shipping charges \$312.93	2447.93	
Report Preparation - drafting, compilation, writing, typing, and printing.		
Misc. Hardware & field supplies.	64.19	

\$19,211.52

H.E. NEAL & ASSOCIATES LTD.

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## 7.0 BIBLIOGRAPHY:

- Carson, D.J.T., 1973 The Plutonic Rocks Of Vancouver Island,
  British Columbia: Their Petrography,
  Chemistry, Age and Emplacement, Geol,
  Surv. Canada, Paper 72-44, Dept. Energy.
  Mines and Resources.
- Hill, H. et al 1963 Report on the Hartt Iron Property for Inter-Can Development Ltd. Private report.
- McKechnie, N.D. 1960 Iron Mike, Mines and Petroleum Resources Report 1960, pp. 105, 106.

### 8.0 CERTIFICATION:

I, Peter G. Atherton of the City of Burlington, Province of Ontario, hereby certify as follows:

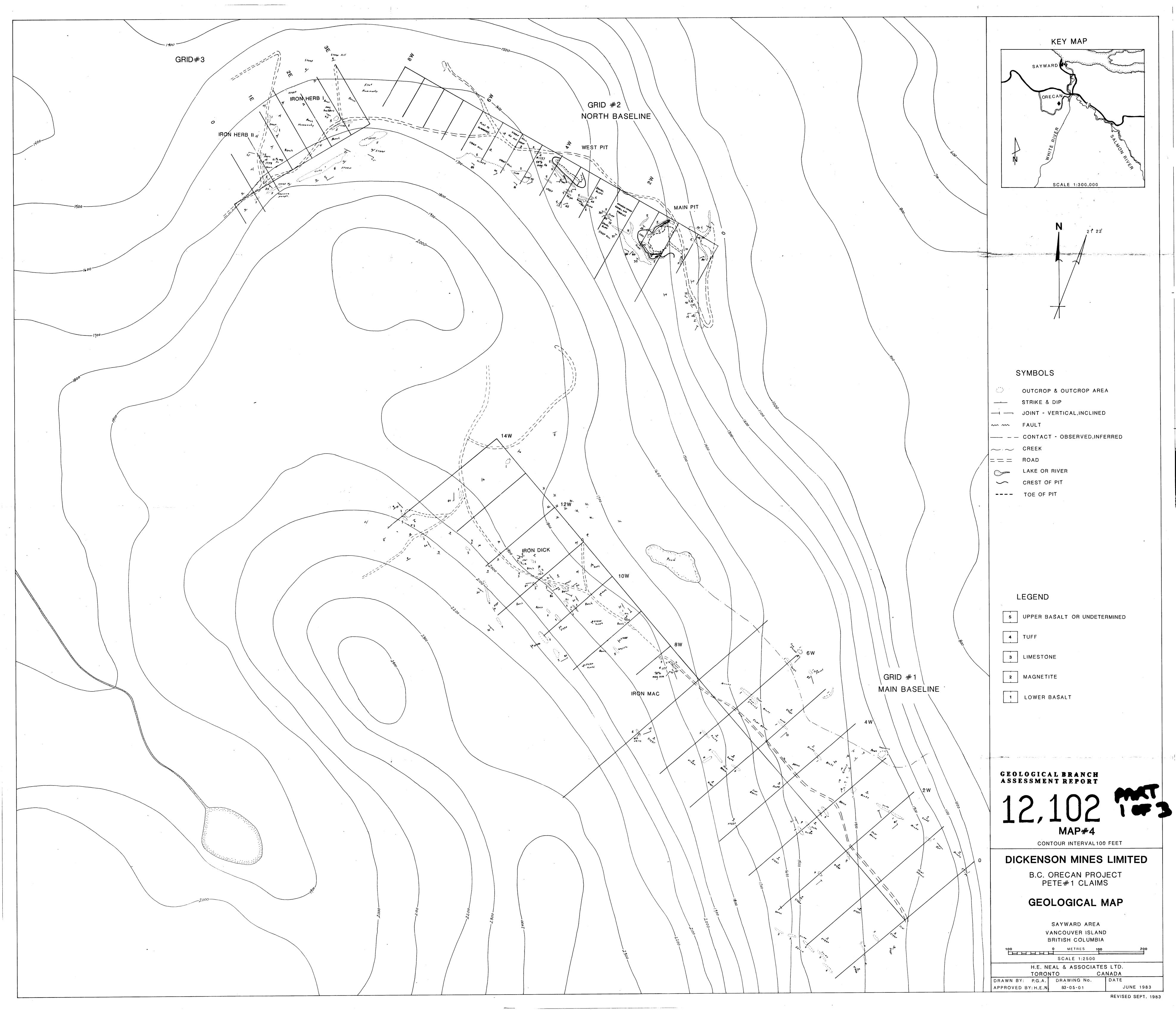
- I am Senior Geologist for H.E. Neal & Associates Ltd., a company incorporated under the laws of the Province of Ontario.
- 2. The Toronto office of H.E. Neal & Associates Ltd. is located at Suite 606, 55 Queen Street East, Toronto, Ontario.
- I received my Honours B.Sc. in Geology from Brock University,
   St. Catharines, Ontario in May 1975.
- 4. I have practiced my profession since that date.
- 5. I personally conducted the geological survey and sampling and supervised all other work connected with the above.
- 6. I have no interest, direct or indirect with any client of
  H.E. Neal & Associates Ltd.
- 7. I am a Fellow in good standing of the Geological Association of Canada.

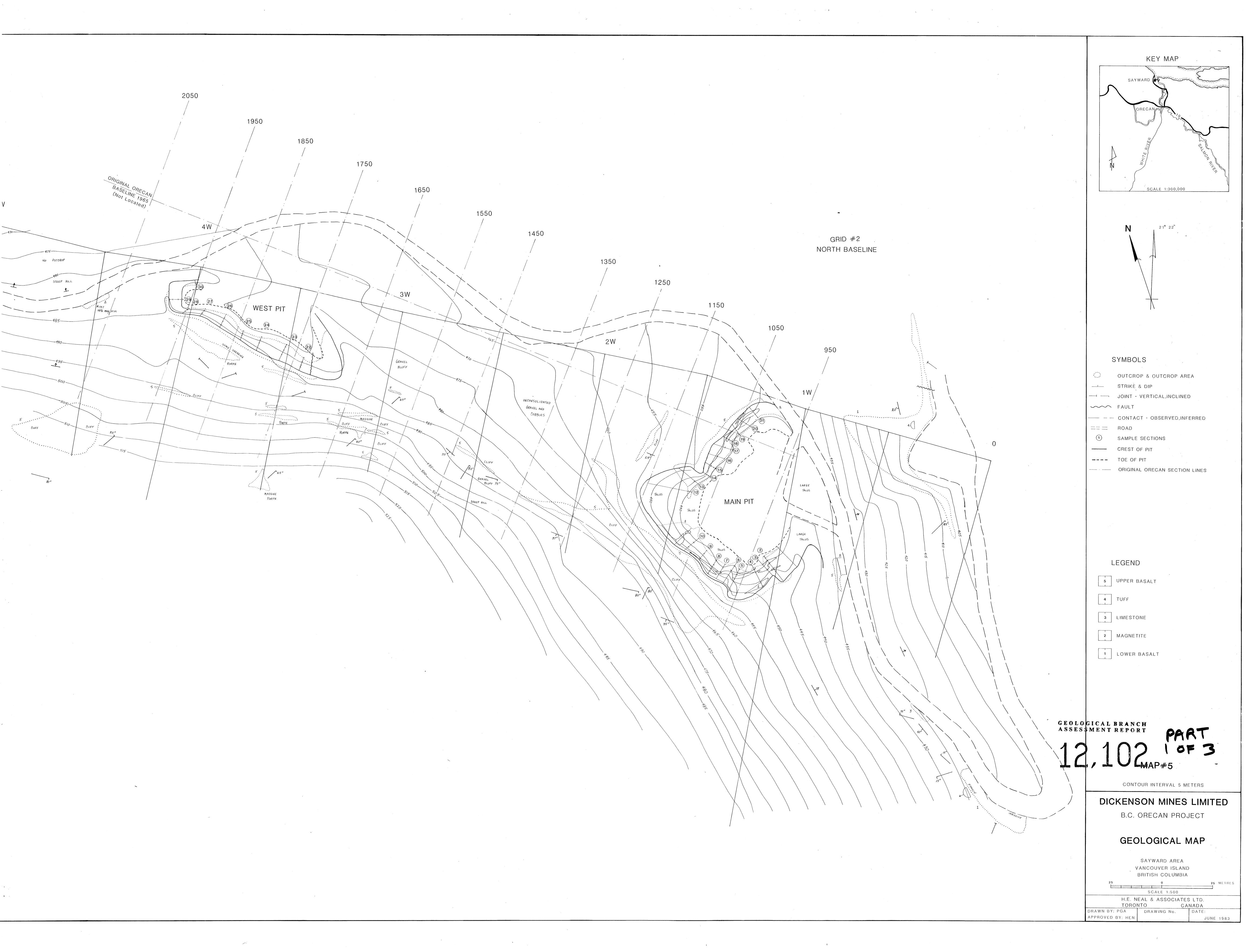
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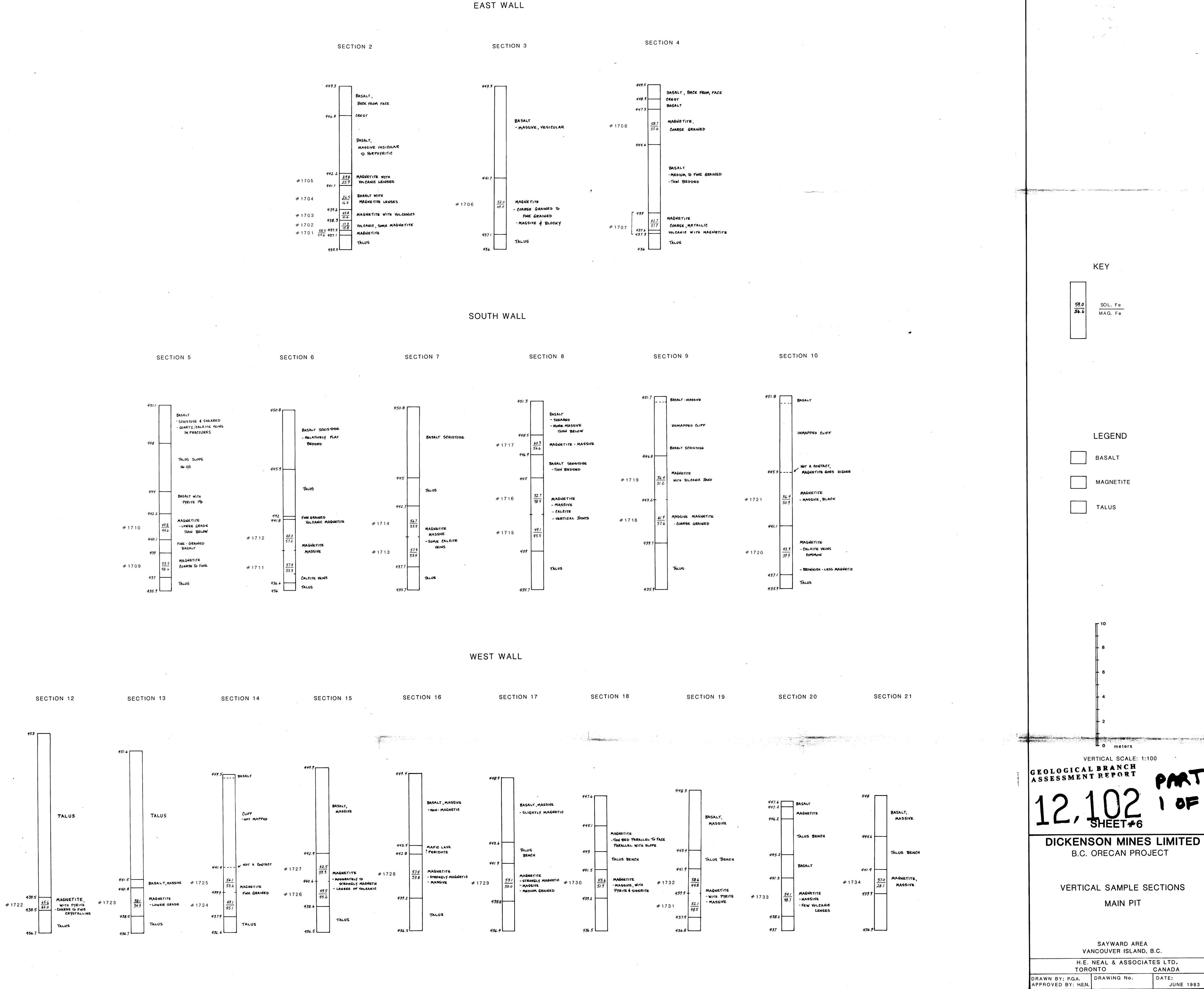
Peter G. Atherton B.Sc.

December 29, 1983

H.E. Neal & Associates Ltd.



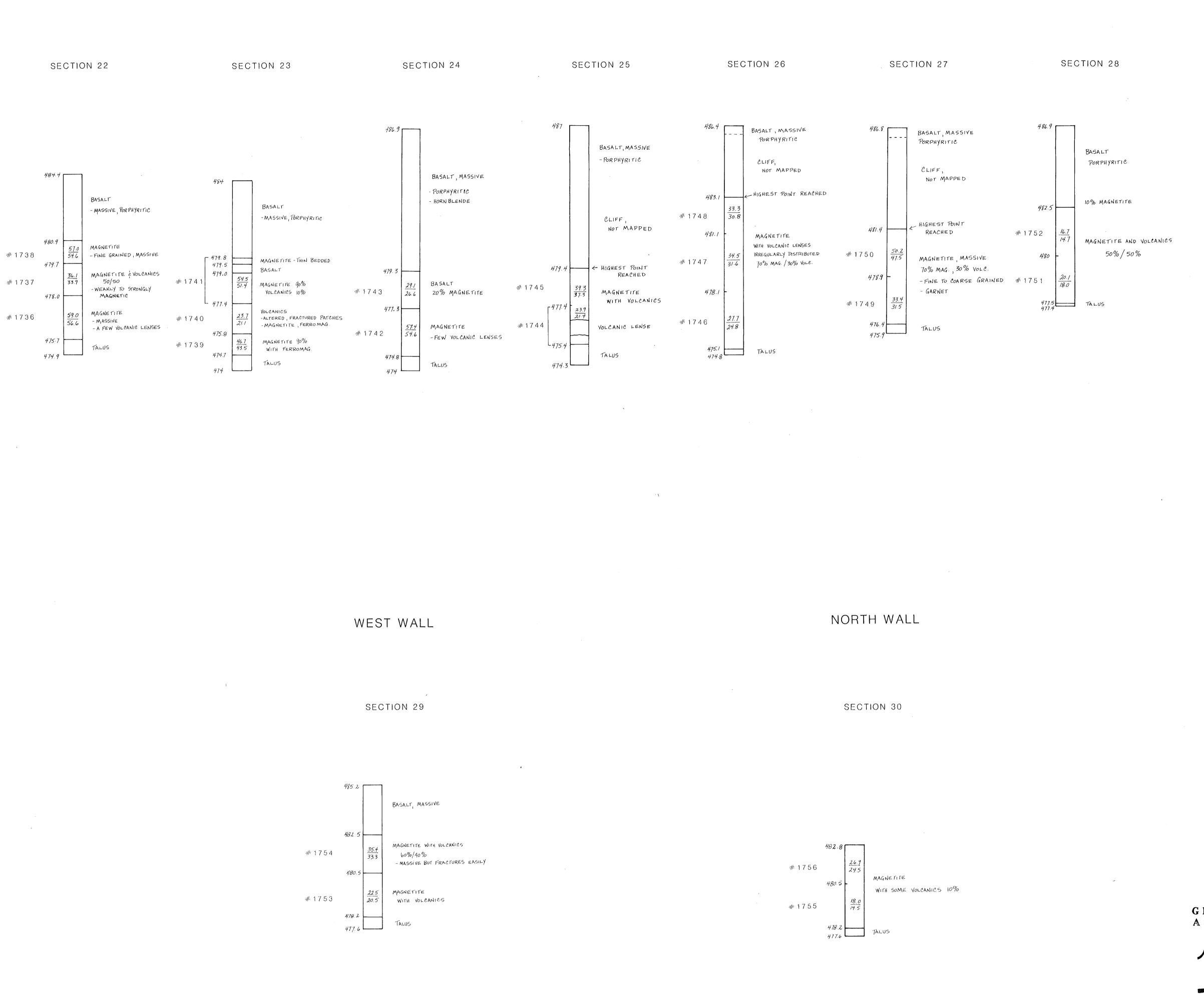




OF 3

JUNE 1983

# SOUTH WALL



KEY SOL. Fe MAG. Fe LEGEND BASALT MAGNETITE TALUS **⊥Lo** meters VERTICAL SCALE 1:100 SHEET#7

DICKENSON MINES LTD.

GEOLOGICAL BRANG. Q. ORECAN PROJECT ASSESSMENT REPORT

12, 102 L2, 102 L2, 102 PART 1 OF 3

L SAMPLE SECTIONS
WEST PIT

SAYWARD AREA VANCOUVER ISLAND, B.C.

H.E. NEAL & ASSOCIATES LTD.
TORONTO CANADA

DRAWN BY: P.G.A. DRAWING NO. DATE:
APPROVED BY: H.E.N. JUNE 1983