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PROGRESS REPORT, NUINSCO RESOURCES PROPERTY

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Énergie et Ressources naturelles
Québec

PROGRESS REPORT
ON THE PROPERTY OF

NUINSCO RESOURCES LIMITED (ALDERMAC AREA)
AND THE ADJOINING TECK OPTION

June 30, 1982

A.D. Hunter, MSc.
Toronto, Ontario

Ministère de l'Énergie et des Ressources
Gouvernement du Québec
Service de la Géoinformation
13 MAI 1983
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INDEX

	Page #
Summary	1
Introduction	1
Properties and Tenure	1
History	2
Exploration Objectives	2
1982 Drilling - Summary of Holes	3,4,5,6
Updated Geology - Implications for Future Exploration	7
Conclusions	7 & 8
Recommendations	8
References	9

Appendix: Diamond Drill Logs: DDH's T:82:1; W5(W-5A); W-6; N1-A-82; N-2-82; N-3-82; N-4-82; N-5-82

LIST OF FIGURES

Fig 1: Property map - Aldermac area.

Fig.2: Geology of the Aldermac area (after Hunter, 1979)

Fig.3: Composite section - east of Aldermac shaft.

Fig.4: Schematic cross-sections of the volcanic complex at Aldermac, at three stages in its evolution.

Fig.5: Section along 9200E and level plans of Aldermac Mine.

Fig.6: Block diagram - Aldermac mine massive sulphide lenses (after Hunter, 1982).

Fig.7: Plan showing distribution of sulphide orebodies in relation to lower QFP domes at the Millenbach mine after Knuckey, 1975.).

SUMMARY

Diamond drilling completed by Nuinsco Resources in the area of the old Aldermac copper producer during the period 1974-1982 has shed much light on the nature of this poorly understood massive sulphide deposit. The writer believes the Aldermac Cu-Zn-Ag-Au bearing sulphide lenses formed during the growth of a rhyolite dome complex. There is no clear stratigraphic control on the deposit, rather sulphide lenses define a topographically positive feature analogous to the dome-ridge documented for the well known Millenbach deposit. This evident structural control provides a very precise exploration target in light of our current understanding of Aldermac mine geology. A recent deep drill hole has discovered a Cu-Zn enriched zone at a rhyolite-basalt contact, stratigraphically below the thick mine rhyolite pyroclastic formation. This contact must be tested in the future. At least 3, 2500-3000' holes are proposed in order to intersect the steep easterly down-plunge projection defined by massive sulphide lenses, and to test stratigraphy below these. In addition, another 2500' of drilling should be allotted in order to study zinc-rich stratigraphy 400' northwest of the shaft in an area where there was no past production and very little exploration.

All holes should be surveyed by the pulse E.M. method. This exploration tool would make it possible to space the deep holes 400'(or greater) apart on a triangular pattern (in longitudinal section) and thus effectively search a large volume of rock.

INTRODUCTION

This report covers work completed on Nuinsco Resources' property and the adjoining Teck Option (Fig.1) during the period February-June, 1982. The work consisted of a diamond drilling program totalling 6226' with an additional 454' of AQ reaming on an old 'E' size exploration hole. Two holes were surveyed by the pulse E.M. system of Crone Geophysics. A total of 217 geochemical analyses and assays were performed on selected sections of drill core. In addition, a major element geochemical study of existing drill core was initiated.

* 4897' Aldermac Program
* 1329' Teck Option.

PROPERTIES AND TENURE

(a) Owned Outright: Nuinsco Resources Limited now owns 100% of the mining rights about 1,547 acres (Fig.1). Details of property acquisition history can be found in company annual reports and in reports by Archibald (1977) and Hunter (1979).

(b) Optioned Property: An option agreement exists between the Company and Teck Explorations Limited covering the property adjoining to the west. This property, approximately 1000 acres in area, is currently the subject of discussions aimed at either restructuring the original agreement or purchasing the property outright from Teck.

HISTORY

Past exploration activity on the subject properties by Nuinsco and others has been described in reports by Archibald and Sakrison (1974), Archbald (1976) and Hunter (1976,1979).

The original "discovery" surface gossans and stain zones (#1 and #2 zones) and the immediate Aldermac mine area have been subjected to (between 1925-1962) surface diamond drilling totalling an estimated 100,000 feet. Most of the drilling was performed with little emphasis on volcanic stratigraphy, and, of course, without the benefit of volcanogenic concepts subsequently developed in the central Noranda camp. No drill core has been preserved from programs prior to 1974 and, heretofore, it was not possible to construct a cross-section in the area due to both the poor data base and the geologic complexity (see Fig.2, after Hunter, 1979, 1982).

Nuinsco Resources has worked in the area since 1974 conducting geological mapping and lithogeochemical surveys and by 1980 completed approximately 13,500' of diamond drilling (14 holes-AQ). The drill programs to date have examined volcanic stratigraphy in the immediate mine area, e.g. DDH W-4 drilled west of the Aldermac shaft (Fig. 2) is in volcanics for more than 2100'. In addition, drilling planned on the results of detailed geological mapping and lithogeochemistry has discovered (1976) another mineralized zone that does not outcrop about 2000' (.65km) east of the Aldermac mine (X6, Fig.2). It was then believed to be stratigraphically equivalent to the Aldermac massive sulphide lenses.

EXPLORATION OBJECTIVES

Work has continued to date, as outlined below, in an attempt to better understand the geology of the mine area and the nature of the sulphide deposits mined. Also, a hole was collared near the common boundary of the subject properties, west of the shaft (Fig.2) and drilled southward in order to begin to establish a stratigraphic section in this area.

Another important objective of the program was to examine a zinc-rich zone immediately north of the #4 lens. This mineralization had been subjected to about 19,000' of diamond drilling in 1953 (Teare, 1954) with results which indicated an ore-grade zone of Zn-Cu-Ag-Au. Hole N-1A-82 cut this zone above and below the main fault (6th Level) as shown in Fig.3, a composite diamond drill hole section. Other holes, N-2,N-4 and N-5 explored an area northwest of the shaft where in 1937 the Aldermac Copper Corporation reported a surface exploration hole had cut a sulphide intersection grading 7.76% Zn, 0.73% Cu, .02 oz/ton Au and 0.38 oz/ton Ag over 19'.

1982 DRILLING-SUMMARY OF HOLES

Two existing holes were deepened in the latest program; W-5 (W5-A) from 1207' to 2117' (910') and W-6 from 1615' to 2149' (534'). Six other new holes, were drilled, one on the Teck option (T-82-1) and five on the Nuinsco property (W5,W-6,N-1A,N-2,N-3,N-4 and N-5). These holes are summarized below.

T-82-1

This hole was planned to intersect a tuffaceous fragmental unit that hosts both the Chance (X2) and MacKay Lake (X1) mineralized zones (see Fig.2). At a vertical depth of approximately 600' a sulphidic tuff was cut, as were recognizable stratigraphically lower units, substantiating a dip of 50 degrees north in this area. The predominant alteration types noted in this hole were varying degrees of silicification and epidotization. Very little sulphide was noted. Whole-rock geochemistry (see log) revealed a low Na_2O value (1.46%) with associated high Zn (440 ppm). This occurs in proximity to a mineralized tuff horizon which locally carried 500 ppm Cu. Caving near the top of this hole precluded down hole EM surveying.

Initially it was planned to deepen this hole to about 2000' at a later date, in order to intersect the MacKay Lake fault and a basalt-rhyolite contact mapped on surface near this structure. This would enable a geologic cross section to be established in an area where there is no geological-geochemical data.

W-5 (W5-A)

This hole was initially drilled in 1975 to test the first interflow tuff contact south of the Aldermac mine and was collared at a steep angle in order to cut Aldermac mine stratigraphy below the 9th level. Unfortunately, it broke into an old N-S cross-cut on 8th level (1125') and had to be abandoned. A directional wedge was set in this hole at 800' in order to cut east of the existing hole. The hole was taken to a depth of 2117', entirely in volcanic rocks with the exception of about 5% syenite dikes. This hole is plotted on Fig.3 where it is shown relative to the shaft and production massive sulphide lenses.

This hole is almost entirely in massive to weakly amygdaloidal dacite-rhyolite flow rocks to 1238' where it enters a thick rhyolite fragmental section which extends to 2015.8'. These rocks exhibit varying degrees of chloritization and sulphide mineralization (stringer-type) as detailed in the drill log. All geochemical samples are anomalously high in Cu and bedded cherty-tuff exhalite sections are anomalously high in both Cu and Zn.

A well mineralized tuff-sulphide sinter unit occurs on a rhyolite-massive basalt contact between 2015.8'-2021'. This 5.2' section assayed 0.45% Cu and 2.28% Zn. The intersection is 650' vertically below the deepest production level (1242').

From 2021'-2117' the hole is in a massive basalt unit which displays weak to moderate development of quartz-epidote alteration, trace amounts of pyrite mineralization and negligible chlorite. The fragmental section of this hole (on section 9100E) has a true thickness of about 650' (200m).This stratigraphy thickens to almost 1250' (400m) 700' to the west on section 8400E, as recorded in DDH W-4.

Drill hole W-5(W-5A) was surveyed by the Crone pulse EM system. Several broad off-hole anomalies are believed to represent the remnants of 3 massive sulphide lenses that were mined. These occur within 200' of the hole from 500' to 1500' (down the hole). Another broad anomaly occurs between 1500' and 1900' corresponding to well mineralized-stringer sulphide zones throughout 600' of chloritized rhyolite fragmentals. A sharp spike at about 1800' corresponds to semi-massive sulphides in a thick cherty tuff-exhalite unit. An in-hole spike at 1950' (around collar-loop profile) may represent the mineralized basalt-rhyolite contact logged at 2015.8-2021'. Based on the survey data from this one deep hole there are no drill targets. Mr. D. Anderson of Crone Geophysics told the writer this may be explained by the heavy in-hole mineralization which could mask an off-hole anomaly below 1500' in the hole. The proximity of #4 lens which is known to extend to a vertical depth of almost 1400' further complicates geophysical interpretation.

W-6

This hole was deepened to test the Archibald Prospect (X6, Fig.2) sulphide zone at a vertical depth of approximately 1500' as had been previously proposed (Archibald, 1977). The hole stopped in diabase in 1975 and it was anticipated that about 250' of drilling would put the hole through the dike, however, other intrusions were encountered. Before and after the diabase, a poly-lithic breccia containing volcanic (QFP, basalt and silicified basalt) blocks and blocks of diorite-gabbro (metadiabase) was cut. This resembles the Newbec breccia near Lake Dufault and may represent a diatreme. This breccia appears to grade into a mafic phase of the syenite indicating to the author that the diatreme was not consolidated prior to emplacement of syenite. The brecccia is localized on a northwest structure which appears to be synvolcanic and was probably active over much of the period of development of the volcanic terrain. Hole W-6 was stopped in syenite; mineralization encountered in earlier programs above and to the east remains untested below 750 feet.

DDH N-1A-82

This hole was designed to test a zinc-rich zone last explored in 1953 and to provide geological data below the deepest mine workings. It is plotted on Fig.3 where it can be studied relative to W-5(W-5A) and the massive sulphide lenses. The reader should note that from just above the 7th level to below 8th level this drill hole is on the western fringe of (behind)the mined out #4 lens.

Geologically this hole resembles the fragmental section of W-5(W-5A), except that alteration here is manifested in silicification with virtually no chlorite noted until a depth of about 1000'. Heavy chloritic alteration with attendant stringer sulphides occurs near the end of the hole, from 1365'-1401'.

N-5-82

This hole (E-size) was reamed out to 454' and deepened to 701' with the hope that it might represent the original 1937 exploration hole (#25) that cut a zinc-rich zone northwest of the shaft. It was intended to light-log survey this hole and to determine where this sulphide intersection was relative to DDH N-82-2,N-82-4. We discovered this was not the correct hole, but nevertheless it was deepened to undercut N-2-82 and N-4-82 (see Fig.3). Syenite dikes occur at the down dip projection of the mineralized zone recorded in these latter holes. Anomalously high zinc geochemistry (310 ppm) was obtained below the dikes in silicified rhyolite. Below the main fault in this hole, a rhyolite tuff breccia is notably sericitized.

Note on Geochemistry DDH W-4

A major element geochemical program on existing Nuinsco drill core was initiated with the sampling of DDH W-4. In addition, samples were analyzed from DDH's N-2-82, N-4-82, N-5-82, and T-82-1.

A very useful chemical criterion, which can be used in exploring for Noranda-type massive sulphide deposits, involves determining whether or not the potential host rocks are depleted in sodium (Na_2O). Sodium depletion is well documented for hydrothermally altered volcanic rocks associated with ore in Noranda and many other camps. This chemical aspect of the Aldermac deposit itself was never studied and the only data base now available for chemical comparison is dependent on the analytical results of Hunter (1979) and published analyses from the main Noranda camp.

Whole rock analytical results available from the Aldermac reveal that 95% of those rocks analysed have greater than 2 Wt.% Na_2O. Therefore, any values less than this may be of interest in terms of hydrothermal alteration with or without conspicuous development of chlorite and/or sericite.

A sericitized rhyolite fragmental in DDH W-5 stratigraphically below a sulphide zone (intersected in N-2-82 and N-4-82) analysed 1.50% Na_2O.

Diamond drill hole W-4 was drilled due north (at 60 degrees) and collared at a point 600' west and 400' south of the Aldermac shaft. This hole is in volcanic rock for over 2200' and affords an excellent opportunity to do a chemical appraisal of ore-hosting rhyolite stratigraphy on strike with the mine rocks. Ten samples have been analysed to date. Six samples gave Na_2O values of less than 2% and of these, 4 samples contain less than 1% Na_2O. In an area of predominantly silicified rocks with high Na_2O (2.8%-4.7%, after Hunter, 1979) these values reflect significant sodium depletion. Three of the samples with less than 1% Na_2O exhibit serecite alteration, a feature which the writer considers to be uncommon at Aldermac except where known mineralized-alteration zones crop out.

UPDATED GEOLOGY - IMPLICATIONS FOR FUTURE EXPLORATION

The regional geological setting and the geology of the mine area (see Fig.2) have been detailed in a previous company report (Hunter, 1979) and in a paper currently being reviewed for publication by CIMM.

The Aldermac area as shown in Figs. 2 and 4 resembles in many volcanolgic aspects that of the Amulet (personal commun. H.L. Gibson and Gibson, 1979). However at Aldermac there is an added structural complexity that makes it very difficult to resolve the stratigraphic record. Volcanogenic base metal deposits occur throughout the succession and therefore there are a number of potential "breaks" in the stratigraphy where economic sulphide zones may have formed. The best illustration of this concept is the mine area itself (X4, Fig.2). Here, as depicted in Fig. 5, a block diagram showing the 4 production lenses (3 geologic lenses) in relation to geology and Fig. 6, a number of important observations can be made. Massive sulphide bodies have a very limited strike length in comparison to down-dip extension (3 to 5:1 ratio). The ore bodies occur within a 200-300 foot thickness of rhyolite pyroclastics, blocky flow breccias and/or crumble breccias (material shed off a growing endogenous submarine dome structure due to slope instability). Mine level plans indicate no obvious stratigraphic control or "key horizon". One of the most important features is the topography outlined by the lenses which dip from sixty degrees south to vertical and define a steep easterly plunging structure. This is a ridge-like primary volcanic structure which provides a very precise exploration target, on its down-plunge projection.

A very good analogy can be drawn between the Aldermac and Millenbach settings. Most Millenbach lenses lie on and within a rhyolite dome-ridge complex with some orebodies aligned parallel to rhyolite feeder dikes (Fig.7). A primary synvolcanic structural control is evident in both deposits particulary since host rocks have not been penetratively deformed (Hunter, 1979). The concept of following this structure to depth at Aldermac is enhanced by the observed chloritic alteration and stringer sulphides observed in DDH W-5(W-5-A) and extending over hundreds of feet to a vertical depth of 1900'. A 65 foot thick cherty exhalative unit, cut at a vertical depth of approximately 1600', assayed up to 1600ppm Cu and 8100 ppm zinc. This represents an excellent exploration target particularly at its source on a rhyolite dome.

CONCLUSIONS

The Aldermac massive sulphide deposits formed in an active volcanic environment during the growth of a rhyolite dome complex. Furthermore, three lenses aggregating more than 2,000,000 tons of mined ore define a steeply plunging structure which is interpreted to be a primary growth element of a volcanic edifice. This structure, coupled with very intense hydrothermal alteration (chloritized fragmentals) and Cu-rich stringer sulphide zones extending well below the deepest mine levels is very encouraging. A very definite first priority exploration target involving deep drill holes under the old mine workings is apparent as a result of the latest drill program.

Recent drilling has also verified the existence of a zinc-rich zone northwest of the shaft in an area where very little exploration has been done. Further work is warranted to establish the extent of this mineralization, particularly in view of its proximity to the main fault. The sodium depletion evident in DDH W-4 further enhances this proposal.

A zinc fringe is associated with the main #4 lens and it appears that there exists discrete zinc-silver-gold rich lenses in the immediate footwall to, and on strike with, the mined out Cu orebodies.

The Archibald prospect east of the mine remains untested below a vertical depth of 750' and warrants further work as described by Archibald (1977).

RECOMMENDATIONS

1.
The Aldermac mine area has excellent exploration potential which will necessitate drilling several deep holes beneath the old mine workings. These holes could be spaced 600' apart and planned to cut stratigraphy on an equilateral triangle pattern(in longitudinal section). In this arrangement (see Fig. 6), in conjunction with pulse EM surveying, an "area" of about 1000' x 1000' can be effectively searched for massive sulphide lenses of economic dimension. Thus, if the uppermost hole began to cut mine stratigraphy at a vertical depth of 1800', the other holes will ideally be about 500' below at 2300' vertically and 300' east and west of the hole above. These latter 2 holes will cut below a flat fault known at about 2000' and therefore furnish information regarding relative motion across this structure. Nuinsco should be prepared to allot 2500-3000' for each of these holes - with a possible maximum of 9000' of drilling. However the apparent effectiveness of pulse EM surveying could help plan the order of the drilling and enable the Company to search a large volume of volcanic rock in a very promising location.

2.
A zinc zone occuring northwest of the shaft and locally thought to carry ore grade mineralization is still open to exploration, both above and below the main fault. This involves several relatively short holes totalling an estimated 3000'.

3.
Existing deep holes on the property, W-1, W-4 and W-6 should be cleaned out and surveyed by pulse EM during the next program on the property. In addition, surveying of some of the old Cominco holes on the adjoining Teck Option should be attempted.

A. D. Hunter, MSc.,
Toronto, Ontario
June 30th, 1982

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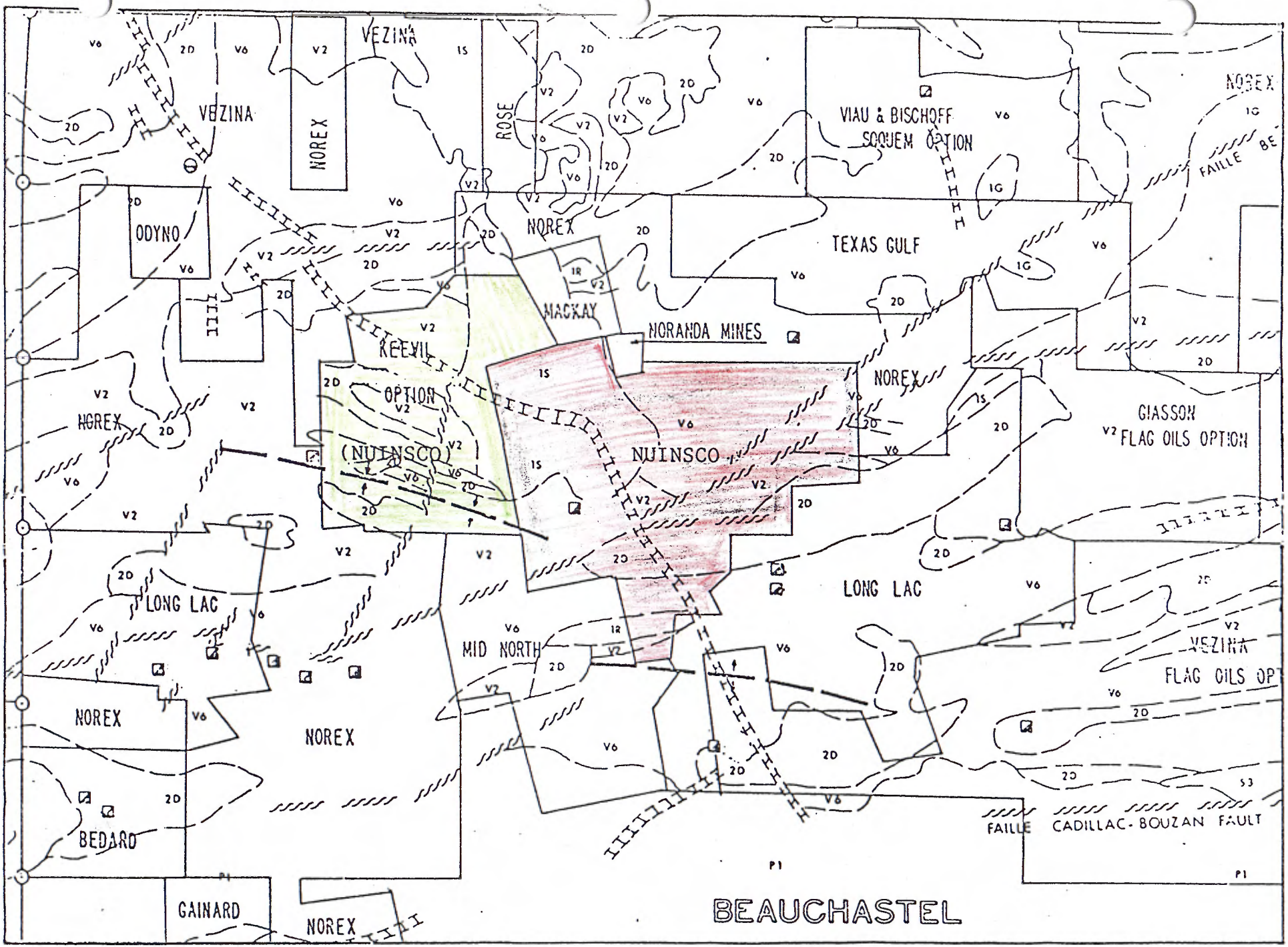


NUINSCO RESOURCES LIMITED

FIG. 1

ALDERMAC AREA

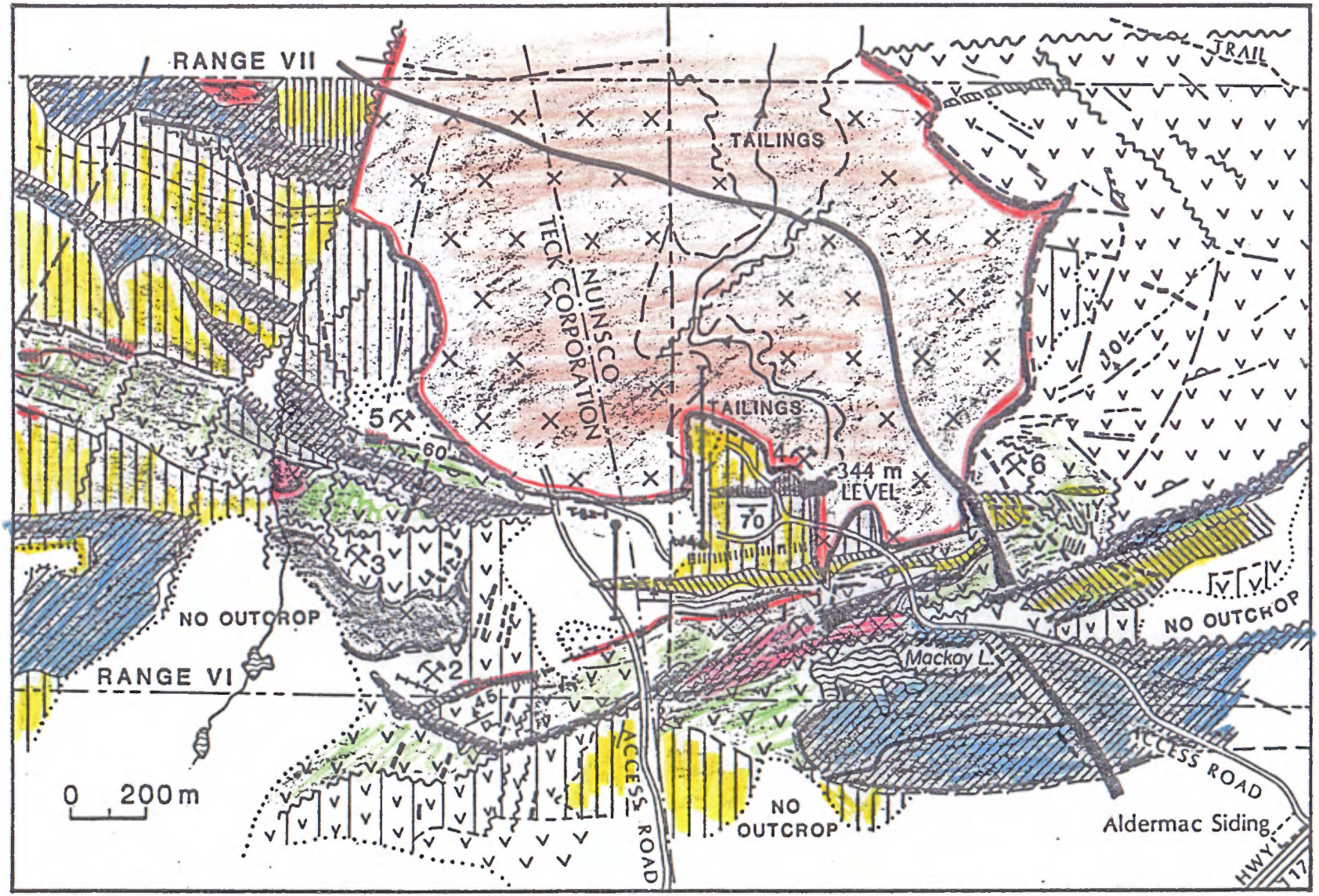

RANGE VII
TRAIL
TAILINGS
NUINSCO
TECK CORPORATION
TAILINGS
344 m
LEVEL
70
60
45
5
4
6
3
2
NO OUTCROP
RANGE VI
NO OUTCROP
Mackay L.
ACCESS ROAD
ACCESS ROAD
NO
OUTCROP
Aldermac Siding
HWY
117
0 200 m

FIG. 2

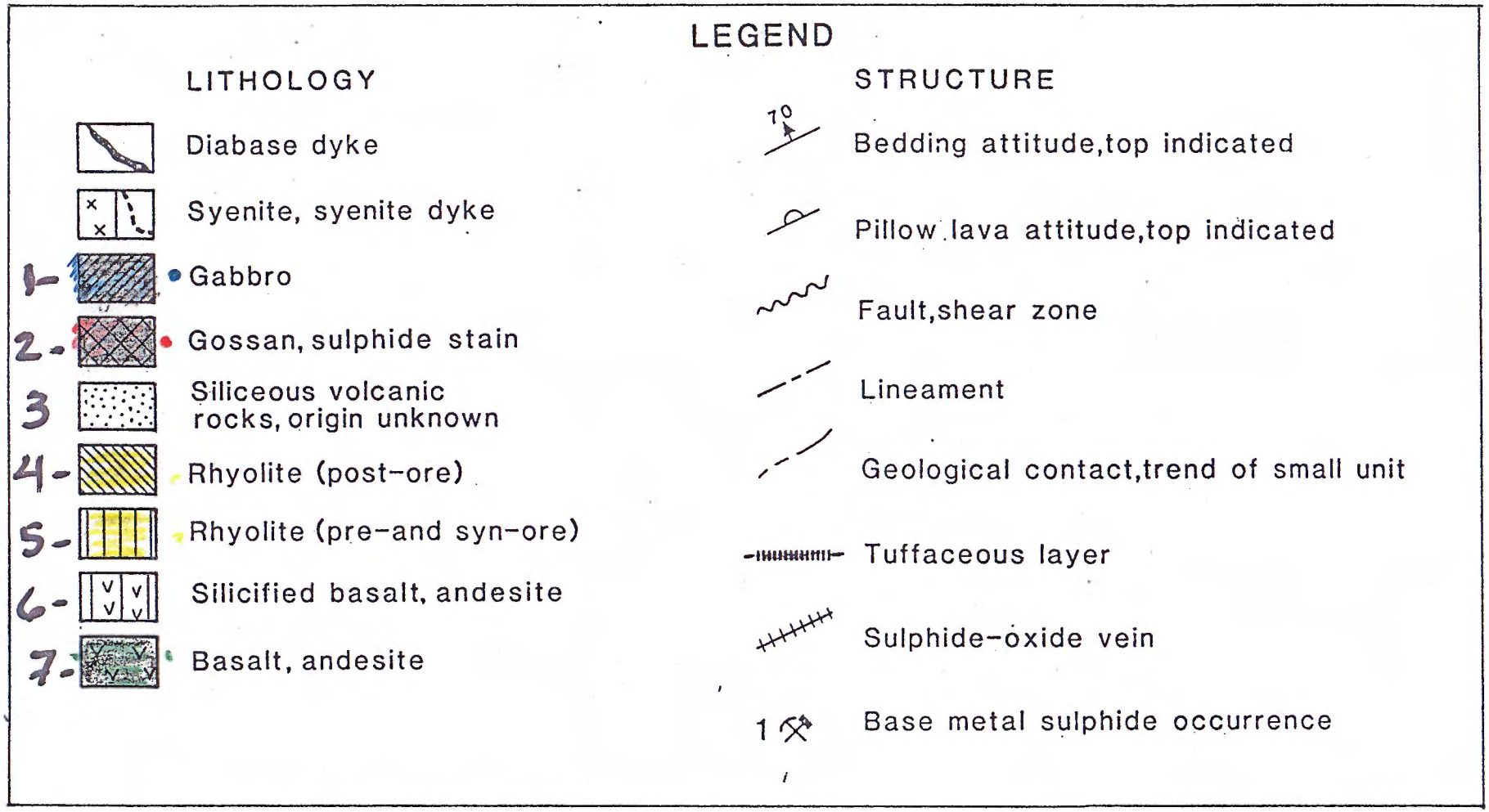

LEGEND
LITHOLOGY
Diabase dyke
Syenite, syenite dyke
1- Gabbro
2- Gossan, sulphide stain
3 Siliceous volcanic rocks, origin unknown
4- Rhyolite (post-ore)
5- Rhyolite (pre-and syn-ore)
6- Silicified basalt, andesite
7- Basalt, andesite
STRUCTURE
70
Bedding attitude,top indicated
Pillow lava attitude,top indicated
Fault,shear zone
Lineament
Geological contact,trend of small unit
Tuffaceous layer
Sulphide-oxide vein
1
Base metal sulphide occurrence

FIG. 2 : LEGEND

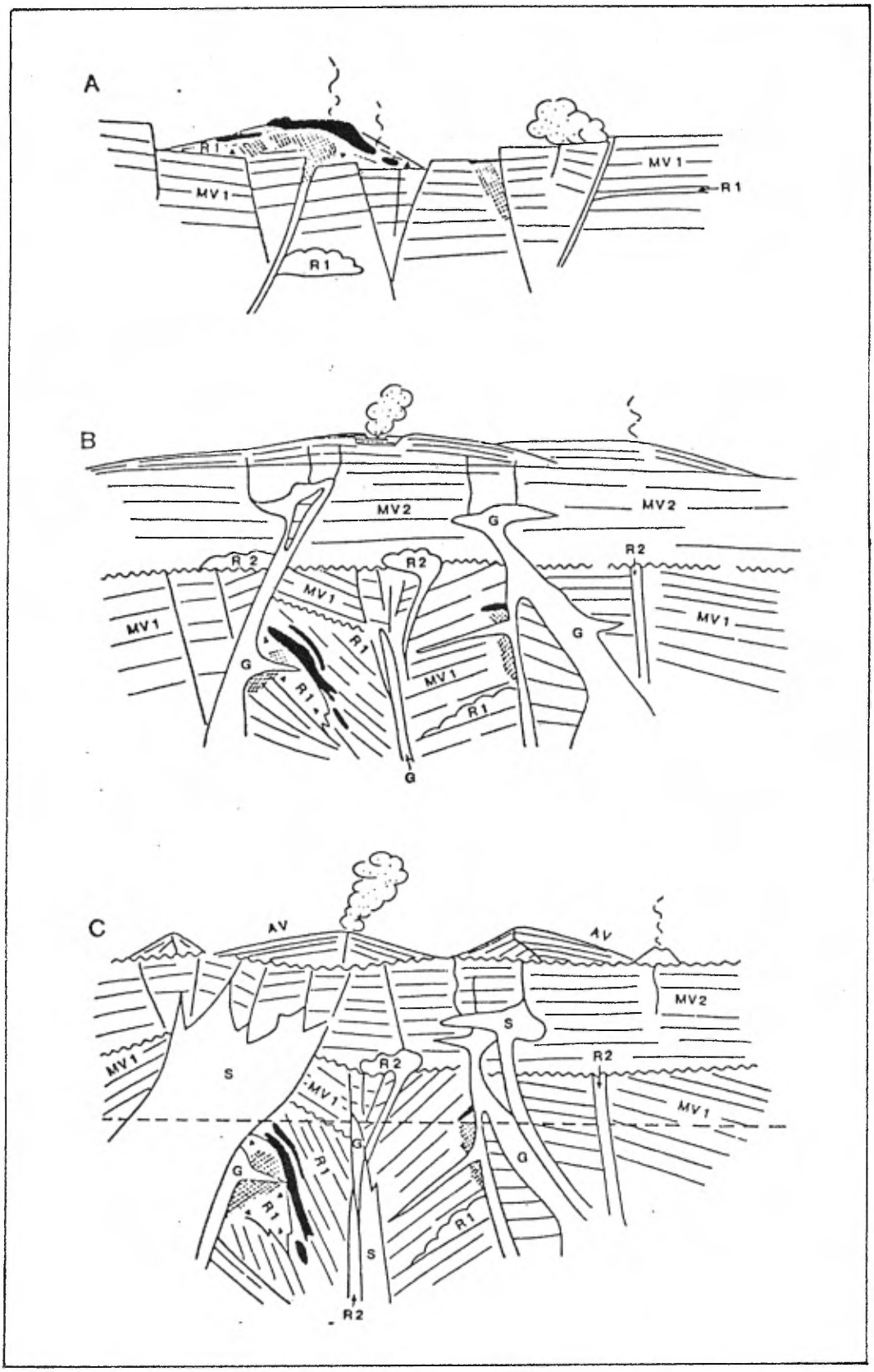

A
MV1
R1
MV1
R1
R1
B
MV2
MV2
G
R2
R2
R2
MV1
MV1
MV1
G
R1
G
R1
MV1
R1
G
C
AV
AV
MV2
S
MV1
S
R2
R2
MV1
MV1
G
G
R1
R1
R1
S
R2

FIG. 4

Fig. 4: Schematic cross-sections of the volcanic complex at Aldermac, at three stages in its evolution:

A: Rhyolite dome with associated sulphide lenses formed within a volcano-tectonic depression on the sea-floor.

B: Post-ore events included rotation and displacement of fault blocks, rhyolite extrusion and inundation of the terrain by basaltic lava.

C: Syenite intrusive complex, the last recorded Archean igneous event, fed lava to build edifices on the eroded basaltic lava shields. Horizontal dashed line indicates the present erosion surface.

MV1, MV2: early, late mafic volcanics

R1, R2: early, late felsic volcanics

AV: Alkalic volcanics

G: Gabbro

S: Syenite.

Massive sulphides indicated by shading, stringer sulphides by cross-hatching.

FIG. 4 : CAPTIONS

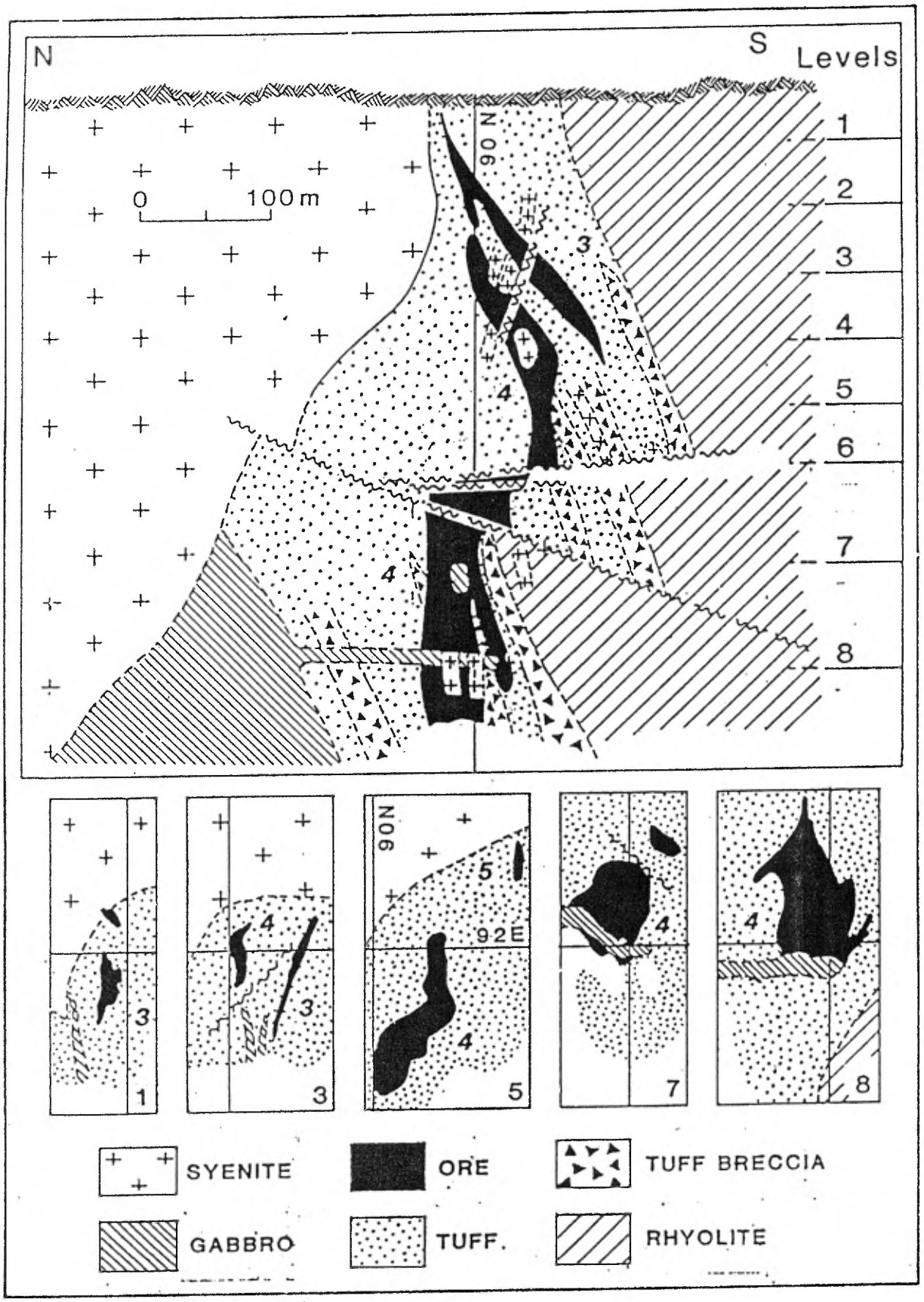
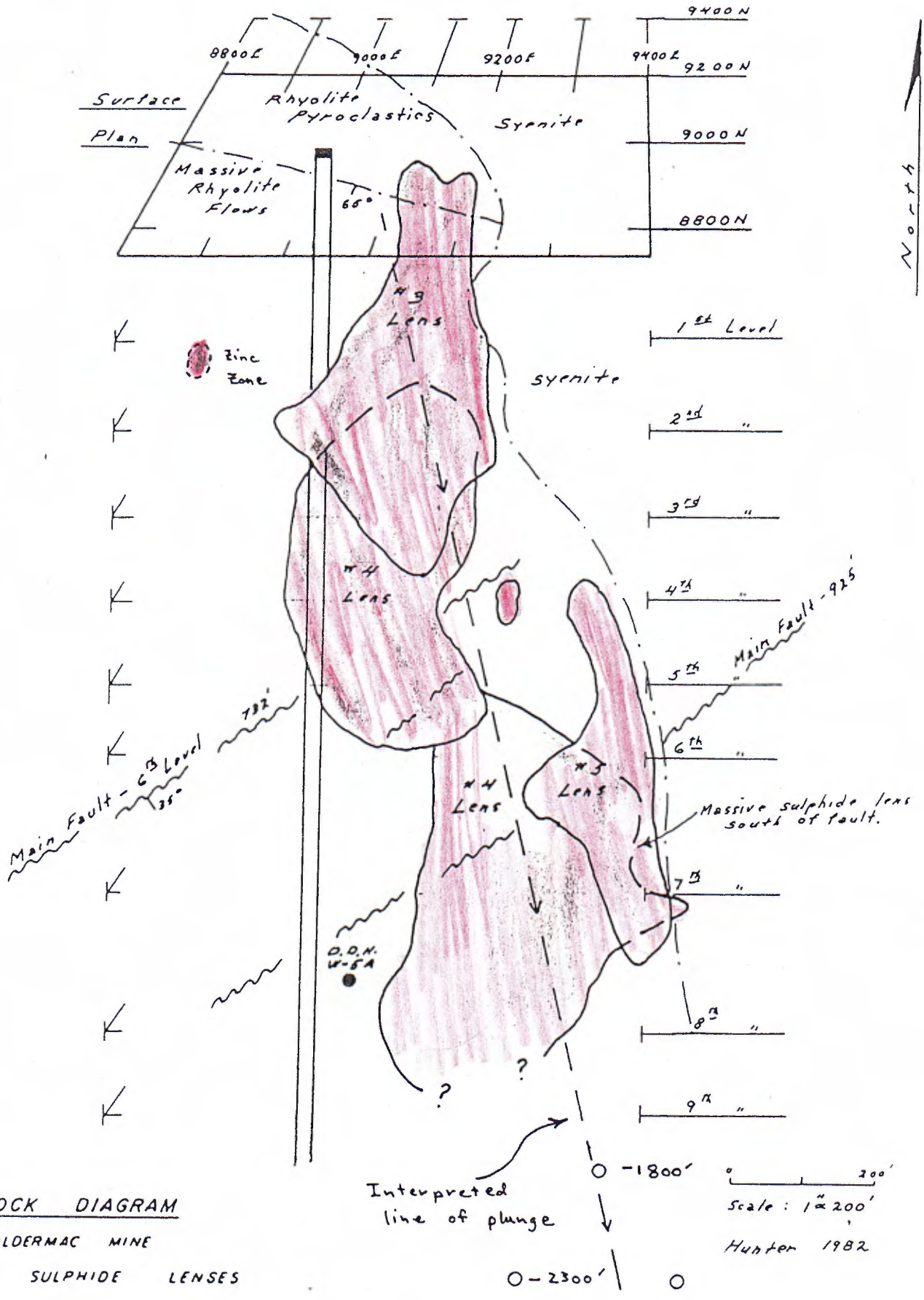

N
S
Levels
1
2
3
4
5
6
7
8
0
100 m
90 N
90N
92E
SYENITE
ORE
TUFF BRECCIA
GABBRO
TUFF.
RHYOLITE

FIG. 5

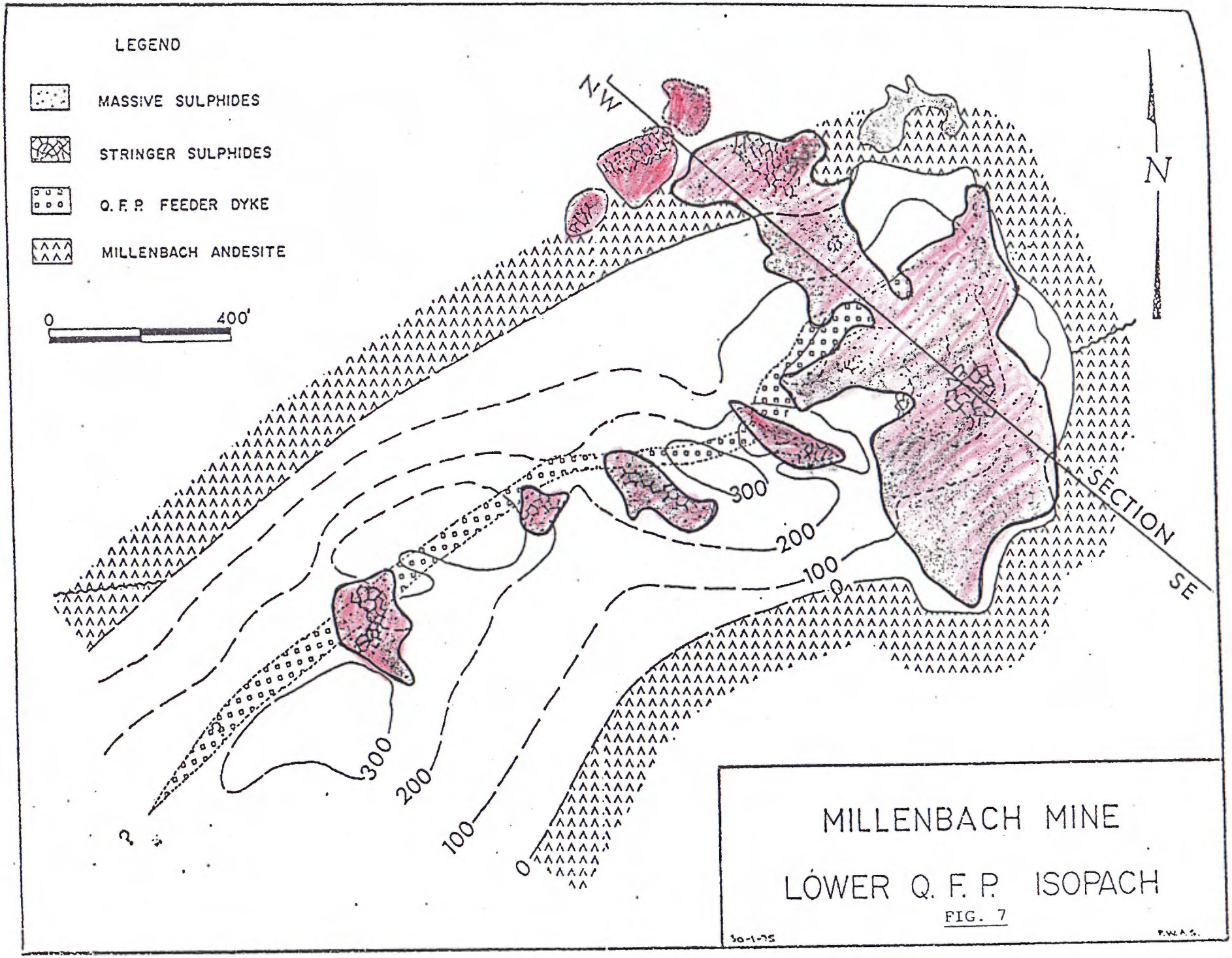
FIGURE 6: PROPOSED DRILL HOLE LOCATIONS; NOT TO SCALE DUE TO SPACE LIMITATIONS.



BLOCK DIAGRAM

ALDERMAC MINE

MASSIVE SULPHIDE LENSES


LEGEND
MASSIVE SULPHIDES
STRINGER SULPHIDES
Q. F. P. FEEDER DYKE
MILLENBACH ANDESITE
0
400'
NW
SE
N
SECTION
300
200
100
0
300
200
100
0
?
MILLENBACH MINE
LOWER Q. F. P. ISOPACH
FIG. 7
30-1-75
P.W.A.G.

Journal de Sondage

NUINSCO RESOURCES LIMITED

EXPLORATION

N.B. DRILL CORE STORED AT COMPANY PROPERTY, LAC DUFAULT, QUEBEC.

Coordonnées (Relative to NE corner of shaft)

Forage no T82-1 Latitude: 0+73' S Départ: 15+75' W Elévation Pendage: - 50° Azimut: 180° Profondeur: 1329

Localisation TECK OPTION Dev't Lic #679-C cl.#13357. (Beachastel Twp. Quebec) Commencé le: MARCH 2/82 Terminé le: MARCH 14/82 Déclinaison 12° W Magnétique Diomètre de la carotte AQ BUT DU TROU: 1329'

Projet	Province	Canton	Lot	Rang	Claim	Grillage	S.N.R.C.
	Quebec	Beauchastel	20	6			

Test à l'acide

Profondeur	Pendage	Profondeur	Pendage
Collar	50°		
100'	50°		
200'	49°		
400'	48°		
600'	47°		
800'	45°		
1000'	43°		
1200'	41°		

Test au Tropari

Profondeur	Pendage	Azm. Astronomique

Ministère de l'Énergie et des Ressources
Gouvernement du Québec
Service de la Géoinformation
DATE 13 MAI 1983
No G.M 39859

Profondeur des coins _____ _____ _____ _____ _____ _____ _____

Journal par: A.D. Hunter

Date: March 16, 1982

ANALYSE des CAROTTES de FORAGE

No. Echant.	de	a	Longueur pi.		Cu	Zn	Ag On/T	Au On/T	Fe %	Mg %	CaO %	Na2O %	K2O %	SiO2 %	TiO2 %	Mn
T-82-1	84.5	94.5	10	0	.004	.004			2.97	0.36	1.76	5.09	2.02	72.90	0.11	
T-82-2	160.0	167.0	7	0	.001	.005		.005								
T-82-3	174.5	180.0	5	5	.012	.012		Tr								
T-82-4	180.0	185.0	5	0	.025	.015		Tr								
T-82-5	187.0	190.0	3	0	.05	.018		Tr								
T-82-6	223.0	226.0	3	0	.005	.009			2.96	0.52	14.0	2.16	3.36	79.22	0.15	0.16
T-82-7	244.0	255.0	11	0	.005	.044			3.60	0.70	6.52	1.46	4.01	68.34	0.05	
T-82-8	369.5	381.0	11	5	.004	.02			3.60	.094	4.89	1.89	3.70	69.83	0.04	0.08
T-82-9	462.5	472.0	9	5	.003	.01			3.87	0.88	4.80	2.37	3.53	69.87	0.045	0.08
T-82-10	581.2	582.0	0	8	.012	.014										
T-82-11	582	585	3	0	.006	.008										
T-82-12	585	587.0	2	0	.016	.01										
T-82-13	587	588.5	1	5	.015	.009										
T-82-14	588.5	589.3	0	8	.007	.008			4.03	0.70	4.14	4.61	2.81	65.04	0.13	
T-82-15	660.0	668.6	2	6	.032	.01										
T-82-16	673.0	674.3	1	3	.022	.011										
T-82-17	684.0	684.8	0	8	.015	.013										
T-82-18	714.4	724.0	10	0	.008	.009			4.07	1.12	9.38	2.59	2.35	64.84	0.07	0.11
T-82-19	737.0	739.0	2	0			.01									
T-82-20	770.0	771.0	0	5	.02	.01										

ANALYSE des CAROTTES de FORAGE

No. Echant.	de	a	Longueur pi.		Cu	Zn	Ag On/T	Au On/T	Fe %	Mg %	CaO %	Na2O %	K2O %	SiO2 %	TiO2 %	Mn
T-82-21	77.1	173.5	2	5	.01	.01										
T-82-22	773.5	774.9	1	4	.006	.01										
T-82-23	805.2	807.0	1	8	.003	.006										
T-82-24	810.5	812.0	1	5	.005	.005										
T-82-25	816.8	817.8	1	0	.005	.003										
T-82-26	892.6	893.3	0	7	.008	.018										
T-82-27	925.3	927	1	7	.012	.008										
T-82-28	1142.8	1144.8	2	0	.01	.006										
T-82-29	1201.5	1203.2	1	7	.008	.003										
T-82-30	1229.8	1231.8	2	0	.006	.013										
T-82-31	1290.3	1295.3	5	0	.017	.001										
T-82-32	1325.8	1328.8	3	0	.012	.003										
		24	3													
		90	8													
		115	1													

Profondeur	Roche	Granulométrie et Couleur	Structure Secondaire	Texture et Structure	Altération	Minéralisation	Remarque
0-48	Casing	in gravel	and sand				
48-101.7	Rhyolite	V.fn.gr.-aphanitic dark grey-green.		Massive overall with local amygdaloidal zones such as at 84-86'. Also weakly feldspar-phyric over short sections.	Silicification veinlet controlled. Very hard flinty rock.	Tr.-1% v.fn.gr. dissem. pyrite.	Magnetic - v.fn.gr. dissem. mag. may explain dark colour.
101.7-122.2	Syenite dike	Fn.gr.-aphanitic g.m. pink-reddish		Porphyritic-flow laminated lam. <c.a. = 60°. Approx. 15-20% equant 1-5mm feldspar phenos.			
122.2-156.8	Rhyolite	Aphenitic grey, mauve-grey		Massive, very weakly feldspar-phyric.	Silicified-as from 48-101.7' but more pronounced.	Hematized with carbonate threads loc.	Brecciated - with carbonate cement at 159'.
156.8-175.5	Rhyolite tuff, tuff-breccia		Fault zone Brecciated pyritic brick,red hematized cemented by calcite.			Approx. 10% fn.gr. dissem.pyrite. Tr.-1% magnetite.	Original nature of rock largely obscured by oxidation. Bedded tuff at 156-8-157.8'. Bedding has been disrupted.
175.5-193.0	Dacite-rhyolite tuff (?)	Fn.gr.		Hints of bedding indicated largely by pyrite and magnetite banding. In the rock itself bedding is indistinct. Bedding<c.a. =~50°.	Silicification pervasive locally either cherty beds or frags. to block size.	Approx. range 5-15% pyrite defining disrupted beds(?) and as fn. and crse gr. disseminations magnetite in beds and crosscutting 'threads'. 15% magnetite between 187-190'.	Probably bedded tuff sect with silicified zones or fragments. Core badly broken with some grinding evident at 176 in a pyritic chlorite rich zone. Indistinct contact with lower unit.
193.0-355.4	Dacite-rhyolite	V.fn.gr.		Feldspar-phyric and amygdaloidal. Approx. 5-15% feldspar laths ranging from pinhead size to 3mm.	Pervasively silicified and epidotized to approx. 226'.	Tr. - 0.5% pyrite.	Amygdaloidal flow/flow breccia unit. Hematized zone with qtz.-

Profondeur	Roche	Granulométrie et Couleur	Structure Secondaire	Texture et Structure	Altération	Minéralisation	Remarque
193.0-355.4 cont'd.					From 226' there is conspicuous amygdule control on alteration not pervasive alteration. Reddish brown garnet is conspicuous throughout although most abundant between 193.0-226'. Other pervasively silicified epidotized sections at 304-311',317-330.2'.		carbonate veins at 222-223'. At 207' chloritic blocky ground section with 30% pyrite-identical to ground zone at 176'. Up to 2' of core may have been lost to grinding here.
355.4-394.5	Rhyloite	Fn.gr. dark grey		Quartz-feldspar phyric ≤ 1mm. phenocrysts, ~ 15%. Locally spherulitic and perhaps flow banded.	Very local silicification perhaps amygdule controlled.	Tr. -1% v.fn.gr. dissem. pyrite.	Syenite dikes at 355.4-356.2',376-377.5', 380.5', 387.7-388.5'
394.5-444.0	Rhyolite	Fn.gr. green-grey		As from 193-355.4	Silicified epidotized Amygdule and fracture controlled. Pinkish - orange hematitic alt. associated with these features also.	Tr. pyrite	Magnetic unlike previous sections but distinctly so as already noted from 193-355.4. Syenite dikes at 398-398.6', 408.6-411',415.7-419.5'. Narrow fingers salient to 429 with orange alteration.
444.0-478.0	Rhyolite	Fn.gr. dk.grey		Feldspar-phyric, 5-10% 1-2mm. phenocrysts. Overall weakly amygdaloidal with a few 2cm. amygdules salient others ill-defined but marked by alteration.	Relatively unaltered compared to previous section. Again amygdule controlled epidotization with garnet and local silicification.	Tr. - 0.5%. V.fn.gr. dissem. pyrite.	Distinctly magnetic.

Profondeur	Roche	Granulométrie et Couleur	Structure Secondaire	Texture et Structure	Altération	Minéralisation	Remarque
478-532 ↑ arbitrary contact ↓	Rhyolite	V.fn.gr. dk.green to black.		Weakly feldspar-phyric well developed amygdaloidal structure.	Pervasively epidotized with garnet. Silicified with intense silicification over 6"-1' intervals throughout. Well developed amygdule control on alteration.		N.B.: This rock is well exposed on surface on the north side of the road immediately north of the 'Sakrison vent'.
532-581.2	Rhyolite			Amygdaloidal locally flow banded, feldspar phyric, 5%-1-2mm.phenos. Amygdules very irregular in shape and size from 2mm. to 1-3cm.	Local silicification and epidotization largely amygdule controlled.	Tr. pyrite.	Relatively unaltered zone no definite contact with above section arbitrary choice to break intensely altered from weakly altered sections.
581.2-582.0	Tuff?	Dk.green		Indistinct bedding(?) at 60° to c.a.		5-10% v.fn.gr. dissem. pyrite.	
582.0-588.5	Rhyolite			As from 569.5-581.7'.	Epidotized, as immed. above.	Approx. 1-3% dissem. pyrite and in amygdules. From 585-587' 10-30% pyrite and magnetite forms reins and fills amygdules.	Narrow fragmental(?) zone with pyrite and magnetite at 288.3-288.5.
588.5-591.6	Andesite ?	Dk.green to black.			Unaltered.		
591.6-593.7	QFP dike						

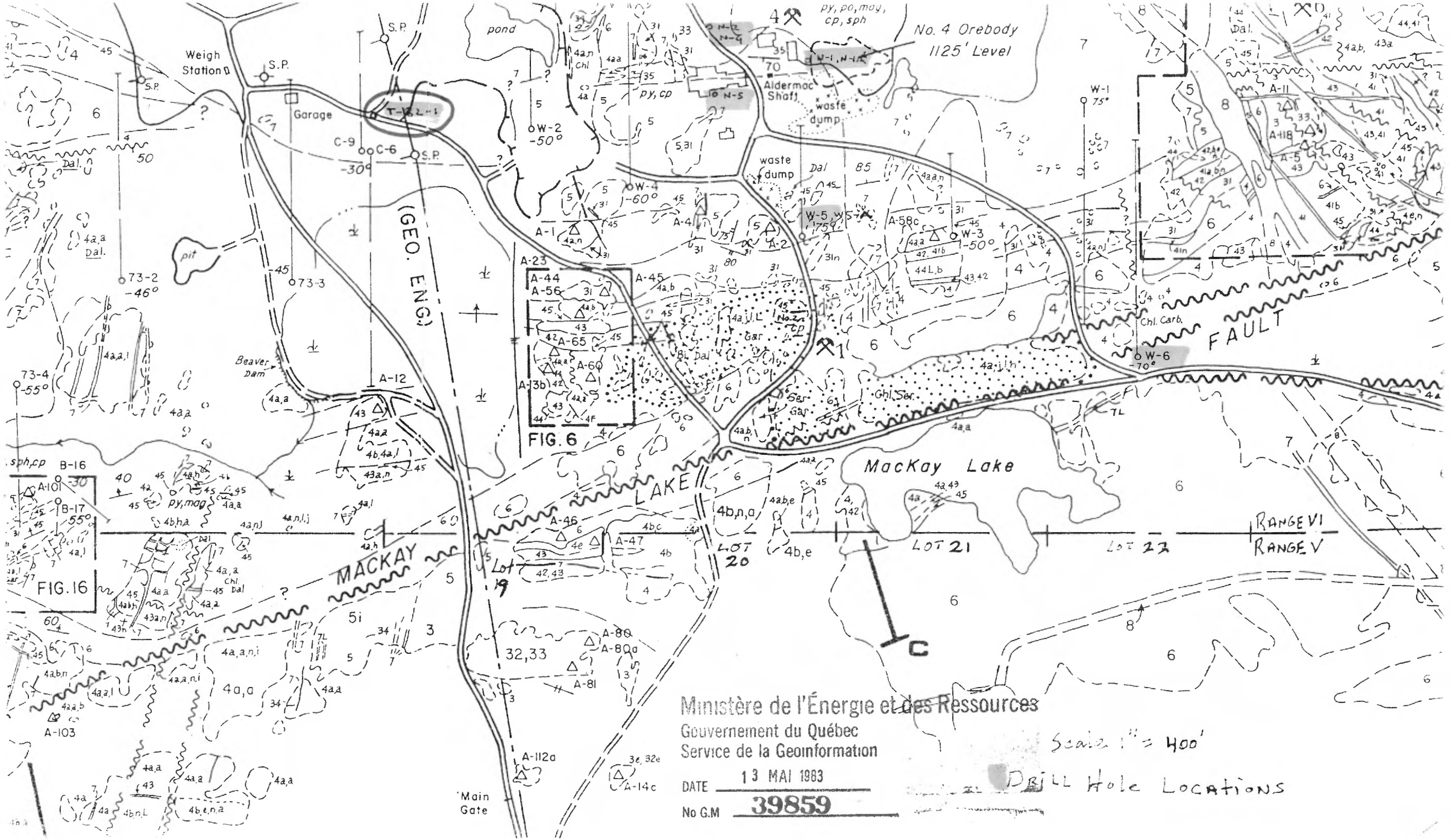
Forage : T-82-1

Profondeur	Roche	Granulométrie et Couleur	Structure Secondaire	Texture et Structure	Altération	Minéralisation	Remarque
593.7-596.7	Lamprophyre dike						
596.7-666.0	QFP (main dike or sill)	Aphanitic groundmass grey,brown mauve.		Massive porphyritic intrusive well exposed and mapped on surface. Approx. 15% combined qtz. and plagioclase(subequal) phenocrysts ranging from < 0.5mm. to 2mm.	Patchy and veinlet epidote throughout, feldspar is in general saussuritized. Pinkish-orange hematitic veinlet alteration throughout.		This body is a dike which appears to dip steeply to the north.
666.0 672.8	Rhyolite as from 582.0-588.5'	Dark grey black.		As described for interval 569.5-581.7'	Epidoized and silicated to 673'.	Pyrite and magnetite stringers and disseminations.	From 673-690' the rock is like that seen at 588.5-591.6' and may be an amygdaloidal andesite flow.
672.8-690	Dk.grey green andesite?			About 5-10% quartz amygdules ranging from 1-2mm.-2cm. Ovoid-round shapes-well defined.	Silicified mauve grey coloured sections,e.g. 689'.	V.fn.gr.dissem.and threads of pyrite as at 684-685'.	
690-770	Andesite	Aphenitic dk.grey-green.	Brecciated qtz.-carb. veins with 5-10% dissem.pyrite between 737-739'.	Very weak development of plagioclase phenocrysts. Tiny amygdules generally 0.2-0.5mm. Over short sections they range up to 1-3cm.	Locally silicified with patchy epidotization and silicification exhibiting amygdule control. From 747-766' the rock is pervasively silicified and epidotized with pinkish-orange hemetitic alteration.	1-2% v.fn.gr.dissem. pyrite largely in assoc. with fracture controlled silicification.	
770-781.5	Mafic tuff, hyaloclastite siliceous cherty tuff.			Bedded at 770' with very fn.gr. sulphide; pyrite defining bedding At 770-770.5' there is about 20% sulphide in the tuff.	Most of this sect.is very dark and softer than the flows due to chlorite derived from original glassy composition.	Brecciated cherty pyritic tuff at 771-773.5' with 1-3% fn. gr.dissem.pyrite.	Sections of bedded pyritic tuff are also magnetic.

Profondeur	Roche	Granulométrie et Couleur	Structure Secondaire	Texture et Structure	Altération	Minéralisation	Remarque
781.5 828	Dk.gr.mafic tuff and epiclastic tuff and tuff breccia.			Very indistinct bedding at approx. 60° to c.a.	Pervasively epidotized and/or silicified amygdaloidal to scoriaceous frags. set in a locally silicified-epidotized ground mass of mafic debris.	Tr. - 1% v.fn.gr. dissem. pyrite.	Coarse breccia-sized mat. predominates from 788-807'. At 818' one lapilli size fragment carries 20% amygdule filling pyrite.
828- 830.8	Andesite	Dk.grey gn.		Amygdaloidal, 10-15% amygdules from 0.1mm.-4cm. qtz. filled.	Amygdule controlled silification.		
830.8- 832.0	Mafic tuff-hyaloclastic.						Block size fragment noted.
832.0- 963.0	Andesite flow minor hyaloclastic tuff.		Brecciated cemented silicified zones at 849.3-850.5', 885.2 885.4', 904.7-907.7'.	As described above from 828-830.8'. Amygdules filled with qtz. epidote, calcite and pyrite and minor garnet. Bedding at 55° to c.a.	Amygdule controlled silicification and epidotization. Very localized intense silicification until approx. 889' where intense alteration occurs over 2' intervals.	Tr. - 1% pyrite. Minor pyrite in tuff and hyaloclastite.	Hyaloclastite and bedded mafic tuff throughout - probably pillow lava. *Bedded mafic tuff 925-927', magnetic with sulphide in beds. Syenite dike at 936.5-938', carries veinlets and fn.gr. disseminations of magnetite.
963.0 - 1122.0	Andesite flow		Highly fractured and cemented with epidote and qtz. Blocky ground esp. after 1012'.	Massive overall with short amygdaloidal sections as described in section above.	Aside from secondary veinlet epidote, there is alteration assoc. with cooling cracks and amygdules.		Lamprophyre dike at 1006.5-1008.3'. Syenite dike 1009-1011.5'.

Profondeur	Roche	Granulométrie et Couleur	Structure Secondaire	Texture et Structure	Altération	Minéralisation	Remarque
963.0-1122.0 cont'd.			Silicified brecciated zone with 5% diss. pyrite at 1008.3-1009'.	From 1067-1103' there is an increase in size and abundance of amygdules. These range from 1mm.-4cm. up to egg size.			Highly fractured and altered zone between 1112-1055' and 1112-1116'. Qtz. porphyritic syenite dike 1103.5-1106'.
1122.0-1168.0	Andesite flow.		Arbitrary contact core now relatively undisturbed(out of highly fractured zone).	Porphyritic, amygdaloidal 5-10% 1-2mm. plagioclase phenocrysts.	Veinlet-cooling cracks and amygdule controlled silicification and epidotization. Narrow 6'-1' zones pervasively silicified and/or epidotized.		
1168.0-1216.9	Porphyritic andesite flow.	Dk.green-black to light green-grey		Plagioclase-phyric; up to 20% 1-5mm. subhedral phenocrysts. Also noted - mafic phenocrysts throughout. Amygdaloidal with up to 20% qtz. epidote-garnet-pyrite filled amygdules from 1192-1217'.	Pervasively epidotized from about 1192' where there is a marked increase in amygdule content. Also the rock has a greyish appearance in general reflecting silicification.	1-2% v.fn.gr.dissem pyrite esp. conspicuous in amygdules.	Very similar to a distinctive flow unit observed on surface at the "Sakrison Vent".
1216.9-1228	Hyaloclastite tuff.	Dk.green-black.				Tr. pyrite	Mixed mafic glass and altered epiclastics locally breccia size.
1228-1229.9	Andesite flow.			Amygdaloidal	Pervasively epidotized		
1229.9	Mafic tuff-hyaloclastite.			Bedding v. indistinct c.a. 45-50°.		2-3% dissem. pyrite	
1229.9-1254.6	Andesite flow			Amygdaloidal	Amygdule controlled epidotization local pervasive epidotiz-		1252.6-1254.6' mafic tuff-hyaloclastite interflow material.

Profondeur	Roche	Granulométrie et Couleur	Structure Secondaire	Texture et Structure	Altération	Minéralisation	Remarque
1229.9-1254.6 cont'd.					ation and silicification.		
1256.6-1329	Mafic tuff hyaloclastite	grey to pale green			Pervasively epidotized and silicified.	1-3% v.fn.gr.dissem. pyrite.	Fragment size increases markedly down hole - with lapilli and block size fragments becoming increasingly more abundant. The altered fragments of lava are highly amygdaloidal to scoriaceous. Syenite dike 1300.4-1305'.
END OF HOLE	1329'.						



Ministère de l'Énergie et des Ressources
Gouvernement du Québec
Service de la Géoinformation

DATE 13 MAI 1983

No G.M 39859

CRONE GEOPHYSICS LTD

BOREHOLE PEM

DH5T821.SA:1

Client:NUINSCO
Date:SEPT. 24 1982
DDH#:T-82-1
Tx Loop:C
Gain:400 Ramp Time:1.5
Attenuator:

Area:ALDERMAC
Location:
Location:
Time base:

Ch.1	Ch.2	Ch.3	Ch.4	Ch.5	Ch.6	Ch.7	Ch.8	PP	Gain
120.0	90.0	68.0	52.0	39.0	30.0	19.0	15.0	1000	30
130.0	96.0	72.0	55.0	40.0	28.0	19.0	15.0	1000	28
140.0	97.0	72.0	55.0	40.0	29.0	19.0	11.0	1000	28
140.0	97.0	73.0	55.0	40.0	28.0	17.0	11.0	1000	28
140.0	90.0	68.0	52.0	37.0	27.0	15.0	11.0	1000	30
130.0	82.0	61.0	46.0	35.0	22.0	15.0	12.0	1000	33
110.0	72.0	53.0	40.0	30.0	19.0	13.0	10.0	1000	38
95.0	60.0	44.0	35.0	26.0	18.0	12.0	7.0	1000	45
84.0	54.0	40.0	30.0	23.0	16.0	9.5	6.5	1000	52
73.0	46.0	33.0	26.0	19.0	14.0	8.0	5.0	1000	60
64.0	40.0	29.0	23.0	17.0	10.5	7.0	3.5	1000	70
56.0	35.0	25.0	19.0	14.0	10.0	7.5	4.0	1000	84
50.0	31.0	22.0	18.0	12.0	8.5	6.5	5.5	1000	95
43.0	27.0	20.0	15.0	10.0	7.0	5.0	3.5	1000	110
41.0	24.0	17.0	14.0	10.0	7.0	4.5	3.5	1000	124
35.0	21.0	16.0	12.0	9.0	6.5	3.5	2.5	1000	144
32.0	19.0	14.0	11.0	7.5	5.5	2.5	2.0	1000	165
28.0	17.0	13.0	9.5	7.0	4.5	2.5	2.0	1000	185
27.0	16.0	13.0	9.0	7.0	5.0	2.5	2.0	1000	206
25.0	15.0	10.0	8.5	5.5	4.0	2.5	2.5	1000	231
24.0	14.0	9.0	7.5	5.0	3.5	1.5	1.5	1000	254
22.0	13.0	8.0	6.5	4.5	3.5	1.5	1.0	1000	290
20.0	11.0	7.0	5.0	3.5	2.5	1.5	1.5	1000	323
20.0	11.0	7.5	6.0	4.0	3.0	2.0	2.0	1000	347
18.0	10.5	6.5	5.0	4.0	3.5	2.5	2.0	1000	382
16.0	9.0	7.0	6.0	4.0	3.5	2.0	1.5	970	400
15.0	9.0	6.5	5.0	4.5	3.0	2.0	0.0	920	400
15.0	8.5	5.5	4.5	3.0	3.0	2.5	0.5	850	400
14.0	9.0	5.0	4.5	3.0	2.0	2.0	1.0	780	400
13.0	8.5	5.0	4.5	3.5	2.0	2.0	1.0	740	400
12.0	7.5	4.5	4.0	2.5	2.0	2.0	1.5	700	400
12.0	7.5	5.0	4.0	2.0	1.5	1.5	1.0	650	400
11.0	6.5	4.0	3.0	2.5	2.0	1.5	1.5	610	400
11.0	6.0	4.0	3.5	2.0	1.5	1.5	2.0	560	400
10.0	6.0	4.0	3.5	2.5	2.0	1.0	1.5	540	400
10.0	5.5	4.0	3.5	2.5	1.5	1.0	1.0	520	400
10.0	6.0	3.5	3.0	3.5	2.0	1.5	1.5	490	400
9.0	5.0	3.5	3.5	2.0	1.5	1.5	1.0	450	400
8.5	5.0	3.5	3.5	2.5	2.0	1.0	1.0	430	400

REPORT FOR: Nuinsco Resources Limited

COVERING: Borehole Pulse EM Survey

OVER THEIR: Aldermac Property, Rouyn Area, P.Q.

SURVEY BY: Crone Geophysics Limited, Mississauga, Ontario

REPORT BY: J. Duncan Crone, Geophysicist

DATED: October 20th, 1982

SURVEY INFORMATION:

Two drill holes W-4 (660m) and T-82-1 (400m) were surveyed with the Crone Borehole Pulse EM equipment. Two transmit loops of 400m x 400m were used, one laid out around the Aldermac shaft area and the other west of the shaft that enclosed the collars of the two holes. Hole W-4 had been blocked but was re-opened to 660m for this survey. An attempt was made to survey the shaft but it was blocked at 15 meters.

Survey period was September 21st to September 24th, 1982. Party chief was Jim MacNeil of 1114, 150 Lakeshore Road West, Mississauga, Ontario with assistants Richard Kurtz of R.R. #6, Mississauga, Ontario and Curtis Webber of 405 Abinson Street, Sudbury, Ontario. Brochures describing the equipment are enclosed.

INTERPRETATION:

In borehole W-4 a weak, OFF-hole anomaly is obtained at a depth of 175 to 200 meters. This is a distant conductor occuring at a distance of 75 meters or more from the hole. It is probably the same conductor picked up by a previous borehole survey down W-5 that obtained a strong OFF-hole conductor (close to the hole) at 240 meters. No other conductors were detected down to 660 meters.

In borehole T-82-1 no conductors were detected.

Ministère de l'Énergie et des Ressources
Gouvernement du Québec
Service de la Géoinformation
13 MAI 1983
DATE
No G.M 39859

Respectfully submitted,

J. Duncan Crone, B.A.,P.Eng.,
Geophysicist.