

GEOLOGICAL ASSESSMENT REPORT

FIRE CLAIMS

(FIRE 1,3,9-28, YA 42060 - YA 42081)

MAYO MINING DISTRICT

NTS 105 0/11

LATITUDE 63° 34' N

LONGITUDE 131° 16' W

OCTOBER 1980 and JUNE 15 - JULY 6, 1981



by: R.C.R. Robertson  
R. A. Doherty

090857

This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of

\$ 7,000.00

~~Resident Geologist or  
Resident Mining Engineer~~

Considered as representation work under  
~~Section 53 (4) Yukon Quartz Mining Act.~~

*Ruth DeBicki* *Oct 1/61*  
~~for~~ Commissioner of Yukon Territory

TABLE OF CONTENTS

1. INTRODUCTION
  - 1.1 General Statement
  - 1.2 Location and Access
  - 1.3 Physiography
  
2. GEOLOGY
  - 2.1 Lithology
  - 2.2 Structure and Metamorphism
  
3. WORK PROGRAM
  - 3.1 Summary of Previous Work
  - 3.2 Orthophoto map
  - 3.3 Mapping and Prospecting
  - 3.4 Geochemical Sampling

APPENDICES

- |            |                                       |
|------------|---------------------------------------|
| APPENDIX A | List of Claim Names and Grant Numbers |
| APPENDIX B | Analytical Results and Methods        |
| APPENDIX C | Personnel and Man-Day Distribution    |
| APPENDIX D | Statement of Costs                    |
| APPENDIX E | Statement of Qualifications           |

FIGURES

- |          |                              |
|----------|------------------------------|
| FIGURE 1 | Distribution of FIRE claims  |
| FIGURE 2 | Orthophoto Map               |
| FIGURE 3 | Geology and Sample Locations |

## 1. INTRODUCTION

### 1.1 General Statement

This report describes work carried out by AGIP Canada Ltd. on the FIRE claims (FIRE 1, 3, 9-28, YA42060-42081) in October 1980 and between June 15 and July 6, 1981. This work program included preparation of a contoured orthophoto map at 1:10,000 scale, geological mapping, prospecting and geochemical sampling. Field work was carried out from a camp at Emerald Lake with a crew of up to 12 people (only part of this crew was involved in work on the FIRE claims and costs have been prorated accordingly). A Hughes 500-D helicopter was based at the camp and used to set out crews (and often to move crews several times per day, because of the extremely difficult topography). Communications between field crews, camp and helicopter were facilitated by the use of HF and "walkie-talkie" radios.

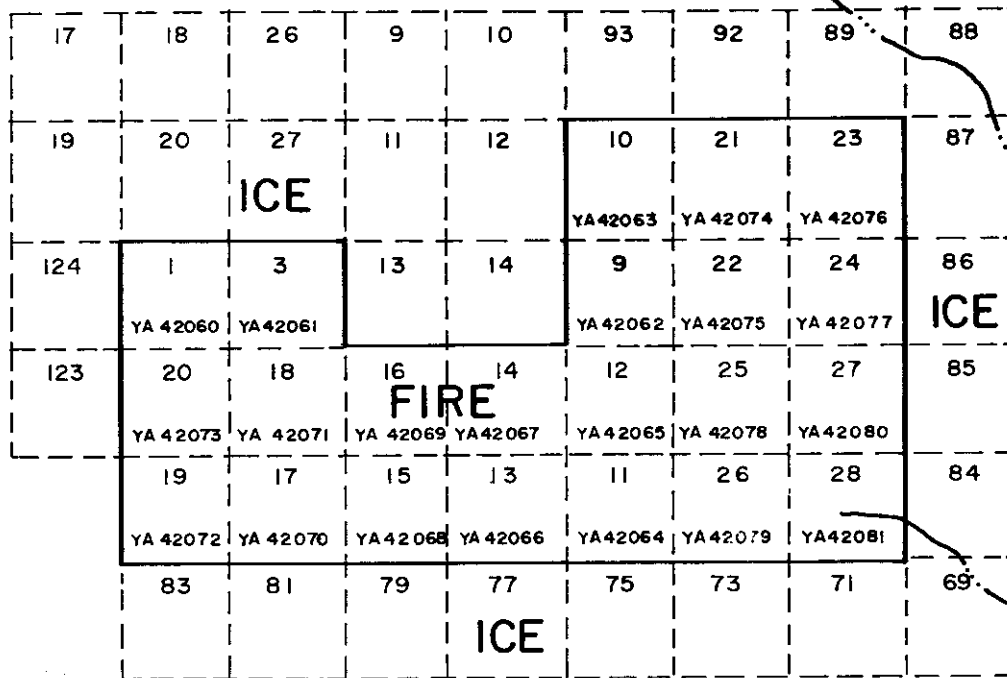
### 1.2 Location and Access

The FIRE claims are located in the Mayo Mining District (sheet 105-0-11), latitude  $63^{\circ}34'N$  and longitude  $131^{\circ}16'W$ . (Figure 1). The location of the claims with respect to local topographic features is shown both in Figure 1 (topography from claim map 105-0-11, scale  $\frac{1}{2}$  mile to 1 inch) and in Figures 2 and 3 (topography from contoured orthophoto map, scale 1:10,000); it should be noted that there are some differences between these two

131° 19'

131° 15'

63° 36'



63° 34'

<b>AGIP CANADA LTD</b>		
<b>YUKON DISTRIBUTION OF FIRE CLAIMS 1,3,9-28</b>		
SCALE: 1:31680	N.T.S.: 105-0-11	DATE: JULY 28,1981
AUTHOR: R.A.D.	DRAWN: SINCLAIR DRAFTING SERVICE 205-100 MAIN ST. WHSE. 667-7205	FIGURE 1

63° 32'

EMERALD LAKE

topographic base maps, in part because of the scale difference. The claim group is situated in the central part of the Rogue Range (Hess Mountains).

Access to the Emerald Lake area is by float-equipped aircraft from Ross River (370 km. to the southwest) or by helicopter from the MacMillan Pass airstrip (65 km southeast). During the summer months, supplies can be trucked from Ross River to the MacMillan Pass area, and regularly scheduled aircraft flights operate a route from Whitehorse to MacMillan Pass via Ross River.

### 1.3 Physiography

Although the Emerald Lake camp is at an altitude of only 1050 m., elevations within the FIRE claim group range from 1250 m to over 2300 m. Sharp ridges separated by steep-walled cirques and U-shaped valleys are characteristic. Several small alpine glaciers are present in northern parts of the claim block, and permanent, or near-permanent, snowfields occur in upper areas of most cirques. Extensive areas of coarse, active talus are present. Vegetation is seen only in lower, sheltered parts of the stream draining from the southeast part of the claims towards Emerald Lake; here, low trees, brush and occasional small grassy meadows are present below about 1500 m.

## 2. GEOLOGY

### 2.1 Lithology

The FIRE claims cover a small part of the southern

contact area of the Emerald Lake intrusion, an elongate, East-West trending, predominantly syenitic, composite, differentiated body approximately 12 km long and 1-2 km in width. The intrusion is presumably of Cretaceous age, as are the other large felsic plutons in this area although the latter are apparently all of quartz-monzonite to granodiorite composition (silica-saturated). Free quartz rarely exceeds 10% in rocks of the Emerald Lake intrusion and rock compositions range from syenite to monzonite or potassic diorite, with minor amounts of more alkaline rock types (e.g. leucite phonolite?) present as dykes.

It should be noted that late stage differentiates (widespread thin aplite dykes and veins, and quartz veins) are silica-rich, unlike the main phases of the intrusion. Cretaceous syenitic plutons seem commoner in parts of the Mayo-Dawson area (Syenite Ranges, Tombstone Mountains) and in some areas of Central Alaska; this suite is characterised by anomalous radio-activity and often extensive lowgrade, polymetallic sulphide mineralisation.

Within the FIRE claims the syenite occurs as either a trachytic-textured phase or a coarse equigranular to porphyritic phase. Trachytic syenite consists of 60-20% potassium feldspar as acicular to prismatic laths, (0.2 x 2.5 cm) with the remaining 30% consisting of hornblende, plagioclase, clinopyroxene with minor biotite

and quartz. Accessory phases include apatite, sphene, Ti and Fe-oxides, zircon. Pyrrhotite and pyrite range up to 2% in some localities.

The coarse equigranular to porphyritic phase contains similar modal mineralogy, but with a higher percentage of hornblende and quartz. Rarely quartz exceeds 10-15%; the rock would best be called a quartz syenite due to the very low plagioclase content.

The trachytic phase generally displays a strong flow alignment of K feldspar phenocrysts, usually steeply dipping and parallel to the margin of the intrusion. Xenoliths of the coarse grained phase occur rarely in the trachytic phase, however the reverse relationship has also been noted.

Aplite dykes are common throughout the intrusion, especially near the margin. Apophyses of more coarse grained K feldspar, quartz, biotite and muscovite within the sediments are also common. Joints are well-developed within the intrusion, often hosting K feldspar, quartz, biotite and muscovite with pyrrhotite, molybdenite, chalcopyrite and scheelite.

Sediments underlying the FIRE claims consist of a Lower Palaeozoic slope facies clastic sequence of the Selwyn Basin. Silurian graptolites have been located in float and outcrop in a cirque just southwest of the FIRE claims. The sediments young from east to west, with typical units of the Proterozoic "Grit" unit occurring in the western part of the SUN claims, suggesting that

within the FIRE claims the sediments are of Lower Palaeozoic age, with an upper age limit indicated by the graptolite-bearing rocks found just outside the FIRE claims. Within the Emerald Lake claim groups, sedimentary units trend close to north-south, except where disturbed by local folding.

Lithologies are red to white sandstone, siltstone, carbonaceous shale and a number of cherty horizons. Cherts and sandstones are resistant, whereas siltstones and shales are recessive; there is an overall pattern of alternating resistant and recessive units. All units contain variable amounts of disseminated pyrrhotite and chalcopyrite; siltstones and carbonaceous shales generally contain much more sulphide than the other rock types.

## 2.1 Structure and Metamorphism

The Emerald Lake intrusion seems undeformed. The sedimentary units have been non-systematically folded near the margins of the intrusion. Away from the intrusion the sediments dip steeply to the west. A broad open fold about a steep, south-west plunging axis is present on the south part of the FIRE claims.

Contact metamorphic effects extend several hundred metres away from the intrusion. Within sandstone, siltstone and chert units, recrystallisation of quartz and widespread development of fine-grained biotite (producing a purplish-brown to pink colour in the rocks) are the most obvious effects. Carbonaceous shales have developed large numbers

of tiny, poorly-formed porphyroblasts (andalusite?) in a highly graphitic matrix. Dark calcareous shales have been metamorphosed to a graphite-"tremolite" assemblage. Originally calcareous lenses or nodules now show an assemblage of actinolite-biotite-muscovite. Minor amounts of a flinty brown rock with abundant tiny white-weathering porphyroblasts (andalusite or cordierite?) are present in the southeast part of the FIRE claims. Occasional sulphide-rich areas close to the intrusive contact may represent introduction of igneous material into the sediments. Felty green amphibole, biotite, quartz and altered greenish feldspar are accompanied by abundant pyrrhotite and minor amounts of chalcopyrite and tourmaline.

### 3. WORK PROGRAM

#### 3.1 Summary of Previous Work

Initial interest in the Emerald Lake intrusion was a result of a regional airborne radiometric survey which indicated moderately anomalous readings relative to other plutons in the area. As a result, the ICE 1-20 claims were staked in 1979. During the 1980 field season, reconnaissance-scale silt sampling in areas adjacent to the ICE 1-20 claim group gave a number of interesting values in copper, molybdenum, tungsten and gold. Brief prospecting in the drainage basins revealed extensive mineralized float and additional staking was carried out, including the FIRE 1, 3, 9-28 group of claims.

#### 3.2 Orthophoto Map

Because of the rugged topography of the Emerald Lake area a suitable topographic base map was needed to assist in logistical planning and to plot and interpret the results of geological and geochemical work.

Initial office preparation by AGIP Canada Ltd. personnel was carried out in October 1980 and a contoured orthophoto map was prepared by Kenting Earth Sciences of Ottawa in early 1981. The map is at a scale of 1:10,000 with contours plotted at 10 m interval, except in steeper areas where a wider interval had to be used. A copy of the map is enclosed with this report (Figure 2).

The map does not cover all of the FIRE, ICE and SUN claims; coverage is as follows: -

all of FIRE 1, 3, 9-28, SUN 1-139, ICE 1-20, 38-51, 53, 55, 57, 59, 61, 63, 68-102, 123-130 and parts of ICE 36, 37, 52, 54, 56, 58, 60, 62, 103, 104, 105, 107, 109, 113, 115 and 131, equivalent to a total of approximately 267 full claims.

### 3.3 Mapping and Prospecting

Although there is considerable exposure on the cliffs and ridges of the FIRE claims, access to these areas is generally difficult without resorting to mountaineering techniques. Mapping was largely confined to the base of cliffs and to the high ridges, using the helicopter to move personnel past obstacles such as steep pinnacles and gaps.

Results of mapping are discussed in section 2 of this report. A number of samples of intrusive rock were slabbed on a rock saw (at camp) and stained to facilitate recognition of distinct phases of the intrusion.

Prospecting formed a major part of the program in an attempt to identify the main types of mineralised rock responsible for the original stream sediment anomalies. Considerable emphasis was placed on tracing material carrying molybdenum, tungsten or gold values. Copper, as chalcopyrite, is widespread but seems of minor importance as it occurs almost entirely in thin veins, with no sign of important amounts of disseminated mineralisation or of characteristic "porphyry-style" alteration. Molybdenite commonly occurs in narrow veins but some float material carrying disseminated molybdenite has been found; attempts to trace this upslope to a source in outcrop ended at cliff-base (later work will be carried out by professional climbers).

All tungsten values seem related to scheelite grains occurring in sparse fashion in veinlets with molybdenite and chalcopyrite; no wolframite has been seen to date. Scheelite identification and estimates of abundance have been by ultra-violet lamp.

Most molybdenite and scheelite mineralisation occurs in veins, related to joint patterns within the syenite, and associated with quartz, tourmaline and muscovite. The commonest vein/joint attitude in the FIRE claims is  $095^{\circ}$  strike, vertical dip. Vein widths are generally only 2-10 cm, but veins of this set locally occur in clusters with a series of veins being present within a 10 m width (vein spacings 0.5-1.0m) and a strike-length of 50-100m. In the same area, a less prominent joint set strikes  $180^{\circ}$ , with vertical dip, but only rarely carries mineralisation. Other common vein assemblages are K feldspar, -biotite - quartz - pyrrhotite - chalcopyrite and K feldspar - biotite - molybdenite; again, these seem restricted to the  $095^{\circ}$  vein system. Aplitic dykes are common (widths from a few centimetres to several tens of centimetres) on  $075^{\circ}$  strike, vertical dip; these are generally unmineralised.

Within the syenite are several extensive areas of patchy, disseminated pyrrhotite and chalcopyrite; these rusty-weathering areas usually contain fine-grained quartz and biotite in addition to hornblende (whereas unmineralised areas of syenite lack biotite and quartz). Other features indicative of late-stage fluids within the intrusion are

the large miarolitic cavities, common in several areas of the ICE 1-20 claims but also present within the FIRE claim block. There is an apparent progression from "incipient vugs" (circular patches, 10-20 cm in diameter, consisting of a central area of radiating tourmaline grains surrounded by a zone of altered, rusty syenite), to much larger, similar, patches and then true miarolitic cavities of up to 1.5 m diameter, containing smoky quartz crystals (to 0.5 m long), tourmaline and minor K-feldspar.

As part of routine prospecting, scintillometer readings were taken using URTEC UG-130 instruments. Waist-level readings over metasedimentary rocks were generally 60-70 counts per second. Small quartz-syenite apophyses gave 140-170 c.p.s. Waist-level readings over syenite were in the range 400-500 c.p.s. No strongly anomalous readings were recorded, but moderately anomalous readings are common close to many veins in syenite (values of 2000-3000 c.p.s.) This effect is caused in part by K-feldspar enrichment within and close to many of the veins. All readings quoted are from the total count setting of the scintillometer.

### 3.4 Geochemical Sampling

Geochemical sampling reported here is the initial stage of a program to locate a bedrock source for anomalous gold values in silt samples (1980 field program) collected from the stream flowing to the southeast through FIRE claims 11, 26 and 28. Based on limited prospecting and

analyses in 1980, it appears that gold is associated with finely disseminated pyrrhotite within the metasedimentary rocks close to the contact of the intrusion. However, pyrrhotite-bearing metasediments are widespread but anomalous gold values seem quite restricted; thus it would be extremely difficult to locate zones of gold mineralisation by prospecting.

A suite of 9 soil samples (essentially the fine fraction of talus) was collected just below the base of cliffs (and a conspicuous rusty zone) near the south edge of the FIRE claims (Figure 3). Samples were collected 20 m. apart, although partial snow cover necessitated a wider sample interval at a few sites. The minus 80 mesh fraction was analysed for Au, W, Ag, As and Cu. The tungsten values are not anomalous. Copper and silver values are moderately high, but may merely reflect a locally high background in these elements. Similarly, the gold and arsenic values are moderately anomalous. We do not yet have enough information on arsenic levels in the Emerald Lake area, but the values up to 100-110 p.p.m. probably indicate local background, whereas the 345 p.p.m. value (sample 5069) is quite anomalous. Gold analyses from soil samples are often unrepresentative because of the commonly particulate nature of gold occurrence in soils; there are no strongly anomalous values in this suite but the results suggest that the area sampled deserves additional evaluation. It may be possible to use the silver and arsenic

analyses as pathfinders for gold mineralisation in this area.

Five heavy mineral concentrate samples were collected from the stream described above. Stream sediments were collected from sites approximately 200 m apart, field-screened through a 10 mesh sieve and the fine fraction panned to give a heavy mineral concentrate weighing approximately 10-15 g (sufficient for analysis). Results for tungsten, silver and copper do not indicate significant upgrading relative to the original stream sediment values and therefore do not warrant follow-up work. Results for gold and arsenic have not yet been received from the laboratory and will be reported when available.

Rock chip samples were collected from three localities; the samples were collected with a sledgehammer and moil as continuous samples over 5 m lengths and widths of a few cm. Six samples were collected from outcropping rusty carbonaceous shales (6005-6010) in a cliff section of the stream. Five samples were collected in hornfelsed shales and siltstones immediately below a sill-like apophysis of the syenite (6011-6015). A single sample was taken from a zone of quartz-tourmaline veining within the syenite (6016).

None of analytical results are anomalous except the 130 p.p.m. Mo value for the final sample; since this is a zone of veining a much higher value would be required for this to be of interest.

Sample locations are shown on Figure 3 and analytical results and methods are listed in Appendix E.

## APPENDIX A

LIST OF CLAIM NAMES AND GRANT NUMBERS

<u>CLAIM NAME</u>	<u>GRANT NUMBER</u>
FIRE 1	YA 42060
FIRE 3	YA 42061
FIRE 9	YA 42062
FIRE 10	YA 42063
FIRE 11	YA 42064
FIRE 12	YA 42065
FIRE 13	YA 42066
FIRE 14	YA 42067
FIRE 15	YA 42068
FIRE 16	YA 42069
FIRE 17	YA 42070
FIRE 18	YA 42071
FIRE 19	YA 42072
FIRE 20	YA 42073
FIRE 21	YA 42074
FIRE 22	YA 42075
FIRE 23	YA 42076
FIRE 24	YA 42077
FIRE 25	YA 42078
FIRE 26	YA 42079
FIRE 27	YA 42080
FIRE 28	YA 42081

## APPENDIX B

ANALYTICAL RESULTS AND METHODSSoil and talus samples

<u>Sample Number</u>	Au	W	Ag	As	Cu
5067	30	6	2.5	150	138
5068	15	4	1.1	110	113
5069	25	10	1.3	395	200
5070	30	8	2.8	150	158
5071	10	L2	1.0	165	119
5072	20	8	0.7	66	158
5073	45	10	2.4	103	209
5074	30	10	2.8	100	204
5075	25	8	0.8	130	118

Heavy mineral concentrate samples

<u>Sample Number</u>	Au	W	Ag	As	Cu
5925		50	0.2		76
5926		140	L0.1		56
2927		16	0.1		72
5928		40	0.2		152
5929		60	0.1		105

Chip samples

<u>Sample Number</u>	<u>Au</u>	<u>W</u>	<u>Ag</u>	<u>Mo</u>	<u>Cu</u>
6005	10	4	0.8	12	28
6006	L5	6	1.2	35	31
6007	L5	2	0.8	10	74
6008	5	10	1.0	18	48
6009	5	L2	1.0	10	30
6010	5	2	1.0	23	41
6011	25	4	0.4	14	48
6012	L5	10	0.4	24	58
6013	5	8	0.4	9	28
6014	10	6	0.5	8	39
6015	5	2	0.3	12	76
6016	5	L20	0.2	130	26

NOTE: All values in p.p.m., except Au in p.p.b.

L = less than

Analytical Methods

Soils and talus fines are dried and sieved to minus 80 mesh. Rock chip and heavy mineral concentrate samples are pulverised and a split of the minus 200 mesh fraction is analysed.

Copper, Molybdenum and Silver analyses: the sample is dissolved in hot aqua regia and analysed by atomic absorption spectrophotometry. Silver analyses require a correction for background.

Tungsten analyses are by basic oxidising fusion followed by a colorimetric determination.

Arsenic analyses are by perchloric-nitric acid digestion and colorimetric determination.

Gold analyses are by fire assay techniques, but after preparation of the bead, the bead is dissolved in acid and the gold content determined by atomic absorption spectrophotometry.

## APPENDIX C

PERSONNEL AND MAN-DAY DISTRIBUTION

<u>NAME</u>	<u>POSITION</u>	<u>DATES</u>	<u>FUNCTION</u>
David G. Bailey, PhD.	Chief Geologist	1 July, 1981	Program supervision Mapping.
Ronald C. R. Robertson	Area Geologist	22 June, 1981 1, 9, 16 July, 1981	Program supervision Mapping, Float tracing, Report Writing.
R. Allan Doherty	Project Geologist	15,22 June,1981 1,6,8,9 July, 1981	Project Supervision Mapping, Prospecting Geochemical sampling, map and report preparation.
Tom Garagan	Project Geologist	October 1980 (1 day) 15 June,1981	Orthophoto preparation Mapping
Roger Hulstein	Senior Assistant	25 June, 1981	Mapping, sampling
James Pollock	Junior Assistant	21,22,25 June, 1981 6 July, 1981	Prospecting, sampling
Carole Malboeuf	Junior Assistant	21,22 June, 1981 6 July, 1981	Prospecting, sampling

## APPENDIX D

STATEMENT OF COSTSPreparation of contoured orthophoto map (1:10,000 scale)

Prepared by Kenting Earth Sciences Ltd. Ottawa.	
Ordered October 1980, invoiced March, 1981.	
Compilation of pencil "mylar" manuscripts	\$4,398.00
Preparation of orthophoto negatives	1,507.00
Assembly, contour overlay, screened chronaflex positive	<u>1,311.00</u>
	<u>\$7,216.00</u>

Area covered is approximately 267 full claims, (see text for listing), including all of the FIRE claims. The proportion of the total cost allocated to the FIRE claims is thus

$$\frac{22}{267} \times 7216 = \$594.58$$

=====

Analytical Costs

All samples analyzed by Bondar-Clegg and Co., Whitehorse.	
Rock chip samples 6005-6016 (12 samples) analysed for Au, W, Cu, Mo, Ag at \$14.75 each	\$177.00
Heavy mineral concentrate samples 5925-5929 (5 samples) analysed for Au, W, Cu, As, Ag at \$15.65 each	78.25
Soil (and talus fines) samples 5067-5075 (9 samples) analysed for Au, W, Cu, Mo, Ag at \$12.85 each	<u>115.65</u>
Total analytical costs.	<u>\$370.90</u>
	=====

Helicopter Costs

1. Hughes 500-D helicopter on contract from Liftair International, Calgary.	
<u>Dates</u> - 15, 21, 22, 25 June and 1st July, 1981	
3.3 hours total at \$379 per hour (dry rate)	\$1,250.70
3.3 hrs. fuel at \$1.98 per gal. and 24 gals per hour.	156.81
2. Bell 206B helicopter, casual charter, from Northern Mountain Helicopters, MacMillan Pass.	
6 July, 1981, 1.2 hrs. at \$480 per hour.	<u>576.00</u>
TOTAL HELICOPTER COSTS	<u>\$1,983.51</u>
	=====

Labour Costs

<u>October 1980.</u>	T. Garagan, preparatory work for orthophoto map (1 day)	\$ 90.00
<u>June 1981</u>	15 June. A Doherty, T. Garagan	200.00
	21 June. J. Pollock, C. Malboeuf	110.00
	22 June. R. Robertson, A. Doherty, J. Pollock, C. Malboeuf	360.00
	25 June. R. Hulstein, J. Pollock	135.00
<u>July 1981</u>	1 July. D. Bailey, R. Robertson, A. Doherty	410.00
	6 July. A Doherty, J. Pollock, C. Malboeuf.	220.00
	Report and map preparation: R. Robertson, A. Doherty, 2 days each.	500.00
		<hr/>
	TOTAL LABOUR COSTS	\$2,025.00 =====

Camp and Field Costs

1. Fuel Cache

Twin Otter, Nahanni Air Services, Ross River, February, 1981.  
 Total cost = \$17,640, of which 50% relates to work within  
 Emerald Lake claim block (\$8,820). 22/304 x 8820 is allocated  
 to FIRE claims. (\$638.29), of which 50% is allocated to the  
 work period covered in this report = \$319.14

2. Camp Mobilisation

From Ross River using Twin Otter and Pilatus Porter aircraft  
 of Nahanni Air Services.  
 Total Cost = \$9,906.80, of which 50% relates to work within  
 Emerald Lake claim block (\$4,953.40). 22/304 x 4953.40 is  
 allocated to FIRE claims, but no reduction is made for the  
 work period and no additions are made for estimated demobilisation  
 costs. \$358.47

3. Food Costs

Estimated at \$20 per man day (and 20 man days)	=	\$400.00
plus share of cook's salary (\$80 per day, 7 days, 50% of costs)	=	<u>280.00</u>
		<u>\$680.00</u>

4. Camp and Field Equipment and Supplies

Share of rental equipment (generator, HF radios, walkie-talkie radios, scintillometers, etc.)		
Estimated at \$50.00 per day, for 6 days.		\$300.00
Cost of camp and field supplies estimated at \$10 per day, for 6 days.		<u>60.00</u>

TOTAL CAMP AND FIELD COSTS \$1,717.61  
=====

Drafting and Secretarial Costs (report preparation)

Map preparation and printing, Sinclair Drafting Service, Whitehorse		\$300.00
Typing of report, Sourdough Secretarial Service, Whitehorse	est.	<u>65.00</u>
		<u>\$365.00</u> =====

Total costs for assessment purposes:	\$594.58 ✓
	370.90 -
	1,983.51 -
	2,025.00 ✓
	1,717.61 ✓
	<u>365.00</u> ✓
	<u>\$7,056.60</u> =====

APPENDIX E

STATEMENT OF QUALIFICATIONS

I, RONALD CHARLES RAMSAY ROBERTSON, of the City of Calgary in the Province of Alberta, hereby certify:

That I am a geologist employed by AGIP CANADA LTD. and that I caused to be performed, and supervised, the work described in this report.

That I obtained a Bachelor of Science degree with First Class Honours in Geology from the University of Aberdeen, Scotland in 1970 and subsequently carried out graduate studies at McMaster University, Hamilton, Ontario, and at Queen's University, Kingston, Ontario.

That I have been engaged in mineral exploration on a full-time and part-time basis for twelve years of which four have been on mineral exploration programs in the Yukon Territory and Alaska.

That I am a member of the Canadian Institute of Mining and Metallurgy, the Society of Mining Engineers of A.I.M.E. and the Prospectors and Developers Association.

Signed at Whitehorse, Yukon Territory, this 10th day of  
August ,A.D. 1981.



RONALD C. R. ROBERTSON

STATEMENT OF QUALIFICATIONS

I, RICHARD ALLAN DOHERTY, of the City of Calgary in the Province of Alberta, hereby certify:

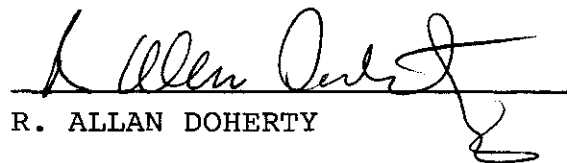
That I am a geologist employed by AGIP CANADA LTD. and that I caused to be performed the work described in this report.

That I obtained a Bachelor of Science degree with Honours in Geology from the University of New Brunswick at Fredericton in 1977 and carried out graduate studies at Memorial University, St. John's, Newfoundland.

That I have been engaged in mineral exploration on a full-time and part-time basis for seven years of which four have been on mineral exploration programs in the Yukon Territory, Northwest Territories and British Columbia.

That I am a member of the Geological Association of Canada and of the Canadian Institute of Mining and Metallurgy.

Signed at Ross River, Yukon Territory this 11 day of August ,  
A.D. 1981.

  
R. ALLAN DOHERTY

131° 20'

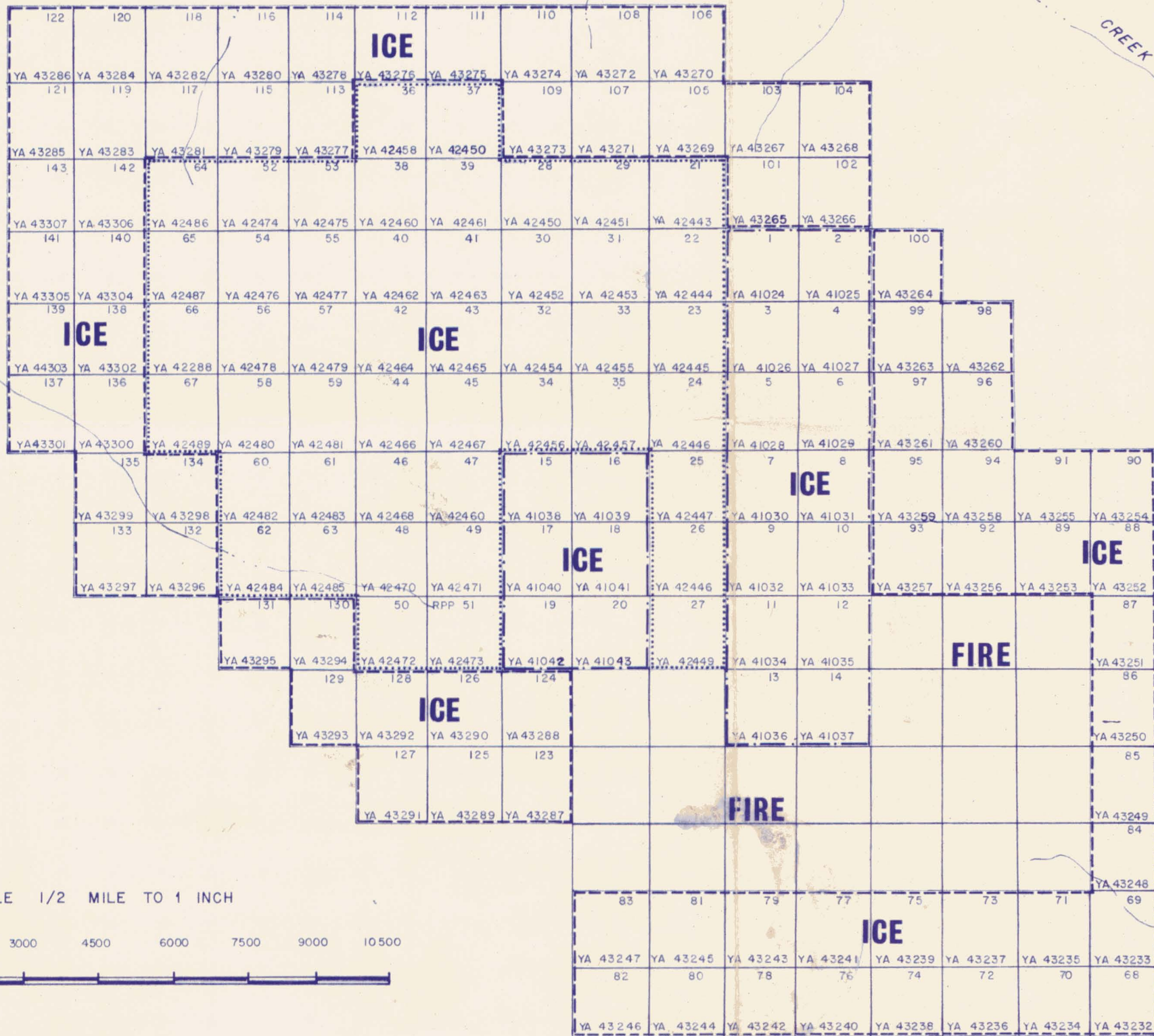
131° 15'



OLD CABIN CREEK

63° 36'

63° 36'



SCALE 1/2 MILE TO 1 INCH

1500 0 1500 3000 4500 6000 7500 9000 10500



131° 20'

131° 15'

EMERALD LAKE



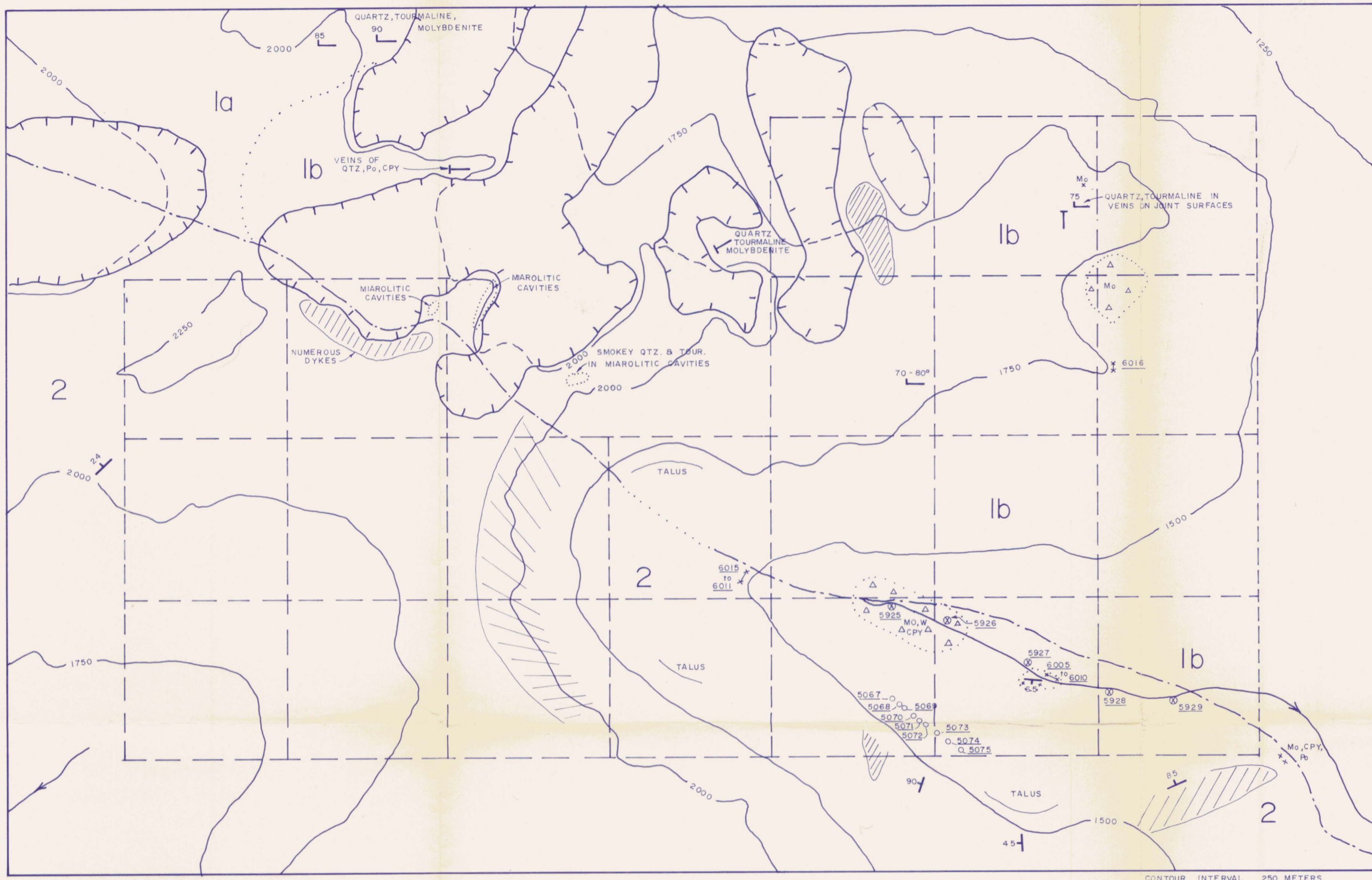
AGIP CANADA LTD.

YUKON

### DISTRIBUTION OF ICE CLAIMS 1-143

Scale: 1:31680	NTS: 105 0/11	Date: JULY, 1981
Author: R.A.D.	Drawn by: Leo	Figure: 1

998060



CONTOUR INTERVAL 250 METERS

**LEGEND**

**CRETACEOUS**

- 1 EMERALD LAKE INTRUSION,
- 1a- TRACHYTIC TEXTURED SYENITE.
- 1b- HORNBLLENDE SYENITE, MED.-COARSE GRAINED.

**SILURIAN-ORDOVICIAN**

- 2 BLACK SHALE, SILTSTONE and RED WEATHERING SANDSTONE.

**SYMBOLS**

	GEOLOGICAL CONTACT (DEFINED APPROXIMATE)
	BEDDING (INCLINED, VERTICAL)
	JOINTING (INCLINED, VERTICAL)
	STREAM SEDIMENT SAMPLE
	HEAVY MINERAL CONCENTRATE
	SOIL SAMPLE (TALUS FINE)
	CHIP SAMPLE
	RUSTY ZONE
	BOULDER FIELD
	ISOLATED OUTCROP
	MINERAL OCCURRENCE
	STREAM
	GLACIER
	CLAIM BOUNDARY

<b>AGIP CANADA LTD.</b>		
<b>FIRE CLAIMS 1, 3 and 9-28</b>		
<b>GEOLOGY and SAMPLE LOCATIONS</b>		
<b>YUKON</b>		
SCALE: 1:10,000	N.T.S. 105-0-11	DATE: JULY 28, 1981
AUTHOR: R. A. DOHERTY	DRAWN BY: SINCLAIR DRAFTING SERVICE 205-100 MAIN ST., WHSE. 667-7205	FIGURE: <b>3</b>

EMERALD LAKE

MAP# 105-0/11  
DOC# 090857 (81)