ASSESSMENT REPORT
GEOLOGICAL MAPPING AND GEOCHEMICAL SAMPLING
SUN CLAIMS

(SUN 1-139, YA 62957 - YA 63095)

MAYO MINING DISTRICT

NTS 105 O/11

091055

LATITUDE: 63°35'N

LONGITUDE: 131°10'W

JULY 3 - AUGUST 19, 1981

By: T. Garagan

091055

This report has been examined by the Geological Evaluation Unit under Section 53 (4) Yukon Quartz Mining Act and is allowed as representation work in the amount of $ 20,025.

P. Watson

Regional Manager, Exploration and Geological Services for Commissioner of Yukon Territory.

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. INTRODUCTION

1.1 General Statement

This report describes work carried out by AGIP Canada Ltd. on the SUN claims (SUN 1-139, YA 62957-YA 63095) from July 3rd to August 19th, 1981. This work program included geological mapping, prospecting and geochemical sampling. Field work was carried out from a camp at Emerald Lake with a crew of up to 15 people. Only part of this crew was involved in work on the SUN claims at any one time. Costs have been pro-rated accordingly.

A Hughes 500 D helicopter, contracted from Liftair International, Calgary, was based at the camp for much of the program and was used to set out crews. A Northern Mountain Helicopter Bell 206 or a Trans North Turbo Air Hughes 500 D from MacMillan Pass were used when the Liftair machine was not in camp.

1.2 Location, Access and Topography

The SUN claims are situated in the Mayo Mining District (claim sheet 105 O/11, latitude 63°35'N and longitude 131°10'W), approximately 60 kilometers northwest of MacMillan Pass. The location of the claims with respect to local topography is shown in Figure 1 (topography from claim map 105 O/11). The claim group is situated in the central part of the Rogue Range in the Hess Mountains.

Access to the Emerald Lake area is by float-equipped aircraft from Ross River (370 kilometers to the southwest) or by helicopter from the MacMillan Pass airstrip. During the summer months, supplies can be trucked from Whitehorse or Ross River to MacMillan Pass via the North Canol Road and the area is serviced by scheduled aircraft from Whitehorse. A tote road leads from the North Canol Road to the PLATA airstrip, passing within 30 kilometers of Emerald Lake at a point 75 kilometers from the road. The present condition of this tote road is unknown.

Emerald Lake, at an altitude of 1050 meters, is the lowest point within the claim group. Most of the property is extremely rugged with peaks reaching 2400 meters elevation. Sharp ridges with many pinnacles and towers separate a series of cirques with high cliffs and often small alpine glaciers. Valleys are typically broad and U-shaped with steep walls. At lower elevations there are extensive areas of moraine and coarse talus; snowfields are common on north-facing slopes. Vegetation is present only at lower elevations (below approximately 1500 meters) in the central part of the property.

2. GEOLOGY

2.1 Introduction

The SUN claims cover the eastern portion of the Emerald Lake syenite Intrusion and its contact aureole (Figure 2). This Cretaceous pluton has intruded and metamorphosed a strongly folded sequence of Lower Paleozoic clastic rocks of the Selwyn Basin. The aureole is a zone of resistant hornfelsed rocks, several hundred meters wide, with a distinctive rusty colour derived from surficial weathering of minor amounts of fine-grained pyrrhotite and pyrite.

In the SUN claims, minor amounts of copper, molybdenum and tungsten mineralization occurs in veins within the intrusion. Hornfelsed sediments around the margins of the syenite host appreciable amounts of disseminated pyrrhotite and pyrite with local enrichments of chalcopyrite and scheelite and trace to significant amounts of gold. Some lenses and pods of skarn are found where limey bands have been replaced.

2.2 Igneous Rocks

The Emerald Lake intrusion is an elongate, east-west trending body of syenitic composition approximately 12 kilometers long and 1.5 to 2 kilometers wide. The intrusion is presumed to be of mid-Cretaceous age by analogy with other large felsic plutons in the MacMillan Pass area, although the others are predominantly quartz monzonites and granodiorites. The Emerald Lake intrusion shows some differentiation; rock compositions range from syenite to quartz syenite, monzonite and potassic diorite (in order of decreasing abundance). Late-stage differentiates are silica-rich quartz-feldspar porphyry dykes, aplites and vein fillings.

Close to the eastern margin of the intrusion, a small dyke-like body of pyroxene-bearing monzodiorite or diorite intrudes the sedimentary sequence. This body is presumably related to the main syenite intrusion.

The principal phases within the main intrusion are a "trachytic-textured" syenite (flat potassium-feldspar phenocrysts show a strong flow alignment, which dips steeply parallel to the syenite contact, and seems best developed at the margins of the intrusion), and a coarse-grained equigranular to porphyritic syenite. Quartz syenite, monzonite and diorite occur as minor phases towards the center of the main intrusion. Towards the eastern margin of the intrusion are several small, cupola-like, bodies of rusty-weathering megacrystic syenite which carry 1-2% disseminated pyrrhotite.

In the southeastern corner of the SUN claims are some outcrops and loose blocks of hornblende gabbro and pyroxenite. Similar rocks are known in several parts of the Proterozoic to Lower Paleozoic sequence of eastern Yukon; we have not yet seen evidence that mafic rocks in the SUN claims were affected by regional deformation. According to M. Cecile (pers. comm., 1981) these rocks could be of any age, from Proterozoic to Middle Devonian.

2.3 Sedimentary Rocks

Sedimentary rocks around the Emerald Lake intrusion form part of a Lower Paleozoic slope and basin facies sequence of the Eastern Selwyn Basin. Green and maroon shales and siltstones which occur just south of the SUN claims are probably of Upper Proterozoic to Lower Cambrian-age and form part of the initial depositional sequence in the Selwyn Basin (G. Abbott, pers. comm., 1981). Most units within the property appear to be part of the Ordovician to Silurian Road River Formation, although some units may be as young as Devonian; the few graptolite fossils discovered in the area so far seem to confirm these ages. The sedimentary rocks strike close to north-south and apparently young from east to west.

The most common lithologies are cherts, cherty mudstones and siltstones with minor amounts of graptolitic shale and limestone. Gritty sandstones, and a cherty fragmental rock containing abundant sulphide clasts also occur locally. Well-developed Bouma cycles can be distinguished in silty and sandy horizons.

The overall sequence appears extremely thick and monotonous with few good marker horizons and a pronounced alternation of resistant and recessive horizons; this alternation has been enhanced by tight folding, as seen on the long east-west ridges north of Emerald Lake and in the southern part of the SUN claims.

There are two main types of resistant sequences; sandstones and cherts. Sandstone sequences consist of thin to thick-bedded grey to pale brown or red sandstones and siltstones with minor shale interbeds.

Chert sequences are predominantly well-laminated to massive grey-black cherts and dark, well-bedded, cherty mudstones. Interbeds of graptolitic shales and some calcareous shales (with minor pyrite) are locally present.

Graptolite fauna include Monograptids, Monograptus spiralis, Diplograptids and Rastrites, indicating an Upper Ordovician to Silurian age range.

Recessive sequences consist largely of shales and thin-bedded siltstones. Graptolites, pyrite nodules and carbonate pods are common. Limestone interbeds occur in a few areas.

In the southeastern sector of the SUN claims (Figure 2) chert beds are locally interbedded with a siliceous fragmental rock containing up to 5% sulphide as clasts of pyrrhotite with minor pyrite and chalcopyrite. Lithic clasts are angular, fine to coarse-grained and appear silicified. Some shaly clasts are also present. The matrix is very fine-grained and may also be silicified. Sulphide clasts are rather rounded and vary from 1 mm to 1 cm in diameter. These fragmental rocks may be volcaniclastic in origin.

2.4 Structure

The Emerald Lake intrusion is undeformed although minor tilting about an east-west axis may have occurred. Close to the margins of the intrusion, folding in the sedimentary rocks has been distorted by emplacement of the syenite. Farther out (more than 200 meters) the sediments are repeated many times by regional tight, near-isoclinal, folding with axial planes striking 020°-040° and dipping 40°-70° west. Small thrust faults are common in shaly units and along the axial planes of tight folds (Figure 2).

2.5 Metamorphism

Regional metamorphic effects have not been recognized in the Emerald Lake area. Emplacement of mid-Cretaceous intrusions in the MacMillan Pass region caused the development of wide contact aureoles in nearby sedimentary rocks; the aureoles are distinctive resistant zones with a rusty color caused by weathering of sulphides.

The zone of hornfelsing extends several hundred meters out from the intrusion. Variations in width of the aureole may indicate changes in the attitude of the syenite contact.

In sandstone, siltstone and chert units, recrystallization of quartz and the development of fine-grained biotite are the most obvious effects. As a result, most cherty units have white weathering surfaces and are purplish-brown to pink on fresh surfaces.

Carbonaceous shales have many tiny, poorly-formed, porphyroblasts (probably andalusite) in a graphitic matrix. Dark calcareous shales have been metamorphosed to a graphite-tremolite assemblage. Original limey pods and lenses are now actinolite-biotite-muscovite rocks. Some limestone beds are now massive diopside skarns with minor garnet, calcite, quartz, tremolite (and occasional traces of scheelite). Axinite-rich skarns are occasionally found. Occasional sulphide-rich areas close to the syenite contact may represent introduction of igneous material into originally limey sedimentary rocks; these patches have abundant pyrrhotite and minor chalcopyrite with pyroxene, biotite, quartz, and greenish feldspar. Tourmaline is often present as a minor constituent but in a few areas it is the dominant silicate mineral.

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, stream sediment samples were collected in the 2 main creeks draining the central part of the eastern half of the Emerald Lake intrusion. The samples were found to contain anomalous gold and tungsten. The SUN 1-139 claims were staked at the start of the 1981 field season to cover the area of this anomaly.

3.2 Geochemistsry

Geochemical sampling reported here is the initial stage of a program to locate a bedrock source for anomalous gold values in stream sediment samples (1980 field program) collected from the stream flowing west through the east-central part of the SUN claims before turning south to drain into the north end of Emerald Lake, and to test the potential of the rest of the claims.

Samples consisted of stream sediment sampling and heavy mineral concentrate sampling in small tributaries of the major creeks, talus fine sampling (soil sampling) and chip sampling. Sample locations are in Figure 3.

3.2.1 Stream Geochemistry

One tributary flowing into the main east-west draining creek (Horn Peak Creek) contains anomalous gold in panned heavy mineral concentrate samples (1900 ppb Au). This creek is also slightly enriched in tungsten. The source of high gold and tungsten values (to 1400 ppb gold and over 2000 ppm tungsten) in the large tributary joining Horn Peak Creek from the southeast has not yet been located although an area of anomalous gold values has been outlined by sampling talus fines, discussed later.

In the southeast side of the SUN claims, 5 of 6 tributaries to the major east-west draining creek contain gold values from 100 to 700 ppb. These tributaries drain an area of sedimentary rocks of the contact aureole which include some unusual cherty fragmental rocks containing sulphide clasts.

3.2.2 Soil Geochemistry

Sample locations are shown in Figure 3. Four of the soil sample traverses in the SUN claims are discussed here; the others are described later.

The central part of the most southerly line has several samples collected over a 150 meter interval with anomalous molybdenum values of 39-116 ppm; the source appears to be a series of thin quartz-molybdenite veins cutting hornfelsed sedimentary rocks close to the margin of the syenite.

A line to the northeast (across the glacier from the molybdenum anomaly) has anomalous gold values of 100-630 ppb over a distance of 125 meters. The southern part of this anomaly also has high lead values (74-334 ppm). To the north, on the same line, are several other anomalous gold values.

The most easterly line has moderately anomalous tungsten values of 60-160 ppm.

A line at the north side of the SUN claims was sampled parallel to the contact which lies downslope from the line. There are no anomalous soil values here.

3.2.3 Chip Sample and Soil Geochemistry of Zones

3.2.3.1 Hornfelsed Siltstone Anomalies

This zone was discovered by following-up extremely high gold values in heavy mineral concentrate samples collected from a minor tributary to Horn Peak Creek. The concentrate sample collected furthest upstream contained very little gold and a series of chip samples collected across outcrops of hornfelsed sedimentary rock well above the anomalous section of the creek also carried negligible gold. Additional soil and rock chip sampling was therefore carried out closer to the anomalous sample sites. Sample locations are shown in Figure 3.

Soil samples were collected on either side of the stream close to the site with the highest heavy mineral concentrate gold value, and a second set of samples were collected around the valley at a higher elevation than the first series.

A zone of approximately 80 meters on the east side of the creek contains anomalous gold values of 100 to just over 500 ppb. One soil sample from the western part of the upper line contains 300 ppm tungsten; other samples have low tungsten values. One chip sample contains 120 ppb gold over 2 meters. A second chip sample carried 0.42% tungsten over 2 meters of hornfelsed siltstone. All other chip sample results are low.

Considerable additional sampling will be required to determine the extent of this zone.

3.2.3.2 Skarn Zone

During reconnaissance soil sampling in the east part of the SUN claims, outcrops of diopside skarn interbedded with hornfelsed siltstones and lenses of an actinolite-pyrrhotite-chlorite rock were found. Seven chip samples were collected across the skarn and siltstones. Three soil samples were collected below the skarn. Sample locations are shown in Figure 3.

Additional sampling is required to determine the extent of mineralization.

3.2.3.3 Other Chip Samples

A number of other chip samples were collected across veins, altered syenite and hornfelsed sediments in various parts of the SUN claims. Samples locations are shown in Figure 3.

Only two of the results will be discussed here. Two chip samples were collected across part of the outcrops of interbedded chert and the sulphide-bearing fragmental rock discussed in Section 2.3. One of the samples contained 300 ppb gold over a 3 meter sample width; the other sample had a low gold content.

This seems to be the source area for a series of anomalous gold values in silt samples. Thorough chip sampling and mapping is required to determine the extent of mineralization in this area.

4. DISCUSSION

Reconnaissance geochemical sampling of stream sediments and soils has indicated unusually high background levels of gold throughout the syenite intrusion and extending well into the contact auroele. Some enrichment has also been noted for other elements (e.g. tungsten, copper, molybdenum, uranium, and silver) although these tend to be very local.

The reconnaissance scale stream sediment and heavy mineral concentrate sampling program has been completed. Many of the precious metal anomalies outlined by this program have had some follow-up work carried out, but there are a number of significant anomalies which still require evaluation.

Reconnaissance soil sampling (talus fines) was carried out in 1981 to locate mineralized areas (sources of stream sediment anomalies) and as a means of evaluating areas which could not be adequately evaluated by stream sediment sampling. A considerable amount of this work remains to be done. Only a few areas of anomalous soil samples have been investigated by chip sampling; in most cases, soil and chip sampling were carried out simultaneously in areas defined by prospecting. A number of areas of anomalous soil samples have not yet been evaluated and several other zones which have had some initial follow-up sampling will require much more detailed soil and rock chip sampling before their significance is known.

APPENDIX A

SUN	TAG NO.	SUN	TAG NO.
1	YA 62957	37	YA 62993
2	YA 62958	38	YA 62994
3	YA 62959	39	YA 62995
4	YA 62960	40	YA 62996
5	YA 62961	41	YA 62997
6	YA 62962	42	YA 62998
7	YA 62963	43	YA 62999
8	YA 62964	44	YA 63000
9	YA 62965	45	YA 63001
10	YA 62966	46	YA 63002
11	YA 62967	47	YA 63003
12	YA 62968	48	YA 63004
13	YA 62969	49	YA 63005
14	YA 62970	50	YA 63006
15	YA 62971	51	YA 63007
16	YA 62972	52	YA 63008
17	YA 62973	53	YA 63009
18	YA 62974	54	YA 63010
19	YA 62975	55	YA 63011
20	YA 62976	56	YA 63012
21	YA 62977	57	YA 63013
22	YA 62978	58	YA 63014
23	YA 62979	59	YA 63015
24	YA 62980	60	YA 63016
25	YA 62981	61	YA 63017
26	YA 62982	62	YA 63018
27	YA 62983	63	YA 63019
28	YA 62984	64	YA 63020
29	YA 62985	65	YA 63021
30	YA 62986	66	YA 63022
31	YA 62987	67	YA 63023
32	YA 62988	68	YA 63024
33	YA 62989	69	YA 63025
34	YA 62990	70	YA 63026
35	YA 62991	71	YA 63027
36	YA 62992	72	YA 63028

SUN	TAG NO.
73	YA 63029
74	YA 63030
75	YA 63031
76	YA 63032
77	YA 63033
78	YA 63034
79	YA 63035
80	YA 63036
81	YA 63037
82	YA 63038
83	YA 63039
84	YA 63040
85	YA 63041
86	YA 63042
87	YA 63043
88	YA 63044
89	YA 63045
90	YA 63046
91	YA 63047
92	YA 63048
93	YA 63049
94	YA 63050
95	YA 63051
96	YA 63052
97	YA 63053
98	YA 63054
99	YA 63055
100	YA 63056
101	YA 63057
102	YA 63058
103	YA 63059
104	YA 63060
105	YA 63061
106	YA 63062
107	YA 63063
108	YA 63064
109	YA 63065

SUN	TAG NO.
110	YA 63066
111	YA 63067
112	YA 63068
113	YA 63069
114	YA 63070
115	YA 63071
116	YA 63072
117	YA 63073
118	YA 63074
119	YA 63075
120	YA 63076
121	YA 63077
122	YA 63078
123	YA 63079
124	YA 63080
125	YA 63081
126	YA 63082
127	YA 63083
128	YA 63084
129	YA 63085
130	YA 63086
131	YA 63087
132	YA 63088
133	YA 63089
134	YA 63090
135	YA 63091
136	YA 63092
137	YA 63093
138	YA 63094
139	YA 63095

APPENDIX B

ANALYTICAL RESULTS AND METHODS

Analytical Results - (all ppm except Au is ppb;or unless otherwise indicated)

Stream Sediments

	Au	Ag	W	Cu	U	Mo	As
5166A	5	0.3	14	94	12.0	6	15
5167A	40	0.4	<2	92	0.6	9	105
5168	15	0.4	<2	125	1.1	7	58
5169	<5	0.2	4	34	7.0	5	34
5170	5	0.3	<2	104	5.6	10	110
5171	10	0.4	40	180	13.2	36	76
5172	20	0.6	<2	62	2.8	13	29
5173	20	0.3	<2	88	<0.2	2	148

	Au	Ag	W	Cu	U	Pb	As
5201	30	0.4	4	152	-	24	180
5202	5	0.2	<2	84	-	26	188
5203	20	0.4	<2	112	-	28	120
5204	15	0.5	30	122	-	28	136
5205	10	0.2	2	112	-	25	120
5206	15	0.3	<2	116	-	22	90
5207	15	0.5	2	-	2.9	24	-
5208	5	0.4	<2	-	1.5	18	-
5209	20	0.3	<2	-	1.7	14	-
5210	<5	0.2	<2	-	0.6	12	-
5215	40	0.8	220	4	-	54	138
5216	15	0.8	250	4	-	48	130
5217	15	0.6	200	<2	-	36	138
5218	15	0.4	140	<2	-	33	97
5219	10	0.5	142	<2	-	34	230
5220	35	0.5	6	204	-	30	89
5221	105	0.7	6	182	-	34	65
5222	30	0.4	4	132	-	28	42
5223	15	0.5	6	128	-	28	55
5224	20	0.4	4	130	-	22	37

	Au	Ag	W	Cu	U	Pb	As
5225	10	0.4	<2	–	1.5	44	–
5226	500	0.5	6	–	3.5	60	–
5227	480	0.5	<2	–	4.2	64	–
5228	160	0.5	<2	–	3.0	52	–
5229	60	0.5	<2	–	1.3	60	–
5230	20	0.4	<2	–	2.2	56	–
5231	20	0.4	<2	–	1.9	64	–
5232	15	0.6	<2	–	1.5	54	–
5233	80	0.4	<2	–	1.0	40	–
5234	50	0.5	<2	–	1.8	46	–
5235	115	0.6	<2	–	1.7	36	–
5236	15	0.7	<2	–	2.2	36	–
5237	75	0.5	<2	–	0.4	40	–
5238	160	0.5	<2	–	1.0	52	–
5239	105	0.7	<2	–	2.6	40	–
5257	5	0.4	<2	–	2.3	36	–
5258	40	0.4	<2	–	1.8	32	–

Heavy Mineral Concentrate

	Au	Ag	W	Cu	Mo	U	As
5954	10	0.3	<2	72	6	13.	58
5955	65	0.4	16	20	6	16.	220
5963	15	2.4	8	135	26	1.9	65
5964	15	0.7	10	135	12	1.1	160
5965	<5	1.8	50	32	6	7.8	34
5966	60	6.6	140	185	44	26.	195
5968	20	0.4	90	150	8	1.9	290
5969	70	0.6	60	115	12	3.0	230

	Au	Ag	W	Pb	Zn	U
2047	–	0.2	315	16	57	20

	Au	Ag	W
8000	15	0.4	16
8001	30	1.0	90
8002	10	0.1	300
8003	1900	0.1	>2000
8004	20	0.1	50
8005	15	0.1	120

Soils

	Au	Ag	W	As	Cu
5047	5	1.4	<2	17	58
5048	<5	0.3	10	53	32
5049	<5	0.2	2	28	42
5050	<5	0.1	4	32	40
5051	<5	0.2	4	32	63
5052	<5	0.2	4	23	86
5053	10	0.1	70	45	172
5054	15	0.1	12	24	89
5055	30	0.2	<2	30	24
5056	15	0.1	12	28	52
5057	5	0.1	8	20	83
5058	25	0.1	40	68	188
5059	5	<0.1	10	32	126
5060	5	0.2	<2	25	76
5061	10	0.2	4	43	182
5062	5	0.2	2	20	58
5063	<5	0.2	<2	26	67
5064	<5	<0.1	2	32	71
5065	<5	0.1	<2	20	44
5066	10	0.2	<2	21	40

	Au	Ag	W	As	Pb	Cu
6820	100	0.3	4	77	48	180
6821	25	0.2	<2	38	32	135
6822	40	0.6	16	160	100	115
6823	40	0.4	8	136	110	105
6824	55	0.5	20	188	125	165
6825	185	0.4	20	202	105	180
6826	100	0.7	16	53	84	215
6827	40	0.3	<2	105	58	215
6828	205	0.3	50	130	36	300
6829	35	0.3	<2	39	20	160
6830	50	0.4	4	62	28	150
6831	20	0.2	<2	55	14	88
6832	30	0.2	2	48	20	82
6833	55	0.2	<2	132	23	355

	Au	Ag	W	As	Pb	Cu
6834	20	0.2	<2	99	28	160
6835	20	0.3	<2	83	34	135
6836	80	0.2	<2	80	24	185
6837	30	0.4	6	105	29	130
6838	95	0.2	4	95	30	150
6839	35	0.2	4	136	24	125
6840	45	0.4	4	101	47	160
6841	25	0.5	<2	142	48	115
6841A	20	0.4	<2	118	28	110
6842	15	0.6	<2	160	48	100
6843	10	0.1	<2	85	14	48
6844	15	0.3	<2	102	26	120
6845	45	0.2	<2	375	44	175
6846	85	0.2	4	395	67	170
6847	40	0.4	<2	178	38	115
6848	190	0.3	8	295	36	140
6849	30	0.4	12	199	47	135
6850	40	0.2	4	145	54	135
6851	25	0.4	2	325	38	114
6852	10	0.2	<2	38	38	64
6853	20	0.1	<2	150	34	110
6854	30	0.5	4	>1000	22	100
6855	25	0.2	<2	475	18	94
6856	15	0.3	<2	142	32	82
6857	15	0.2	<2	44	8	82
6858	25	0.4	<2	52	10	80
6859	10	0.2	<2	9	8	72
6860	20	0.2	<2	35	4	96
6861	10	0.2	<2	31	8	96
6862	15	0.2	4	49	10	206
6863A	15	0.2	<2	37	22	52
6863B	30	0.2	4	41	12	142
6863C	20	0.2	<2	45	12	176
6865	30	0.8	<2	32	16	230
6866	25	0.2	<2	40	20	172
6867	30	0.3	16	180	20	196
6868	20	0.3	12	61	22	98
6869	15	0.5	30	52	20	100

	Au	Ag	W	As	Pb	Cu
6870	10	0.3	<2	15	10	52
6871	15	0.4	<2	12	12	72
6872	10	0.3	24	33	14	82
6873	5	0.2	30	12	14	112
6874	35	0.2	20	76	36	176
6875	20	0.4	24	-	20	142
6876	40	0.5	24	32	32	220
6877	15	0.6	12	37	24	82
6878	25	0.4	<10	25	16	46
6879	10	0.4	<10	20	12	58
6880	15	0.4	12	35	20	84
6881	15	0.2	<2	39	22	100
6882	15	0.2	<2	14	12	108
6883	10	0.1	<2	19	16	182
6884	10	0.1	8	18	22	136
6885	10	0.2	<10	35	20	108

	Au	Ag	W	Mo	U
6886	5	0.3	16	74	7.6
6887	10	0.2	24	67	10.0
6888	5	0.1	10	50	11.0
6889	<5	0.1	4	39	10.0
6890	20	0.8	40	98	8.4
6891	20	0.6	32	96	6.0
6892	30	0.4	60	116	9.5
6893	10	0.3	50	114	4.8
6894	10	0.3	50	80	3.2
6895	5	0.3	<2	22	32.0
6896	10	0.4	4	25	4.8
6897	<5	0.4	2	21	5.2
6898	5	0.2	12	36	3.4
6899	<5	0.3	2	26	4.4
6900	<5	0.4	<2	8	1.6
6901	10	0.4	30	8	2.0
6902	15	1.5	10	9	4.8
6903	10	0.5	10	11	3.8
6904	20	0.4	24	13	7.6

	Au	Ag	W	Mo	U
6905	20	0.5	30	10	3.8
6906	10	0.4	32	9	3.0
6907	20	0.6	20	11	4.8
6908	25	0.5	24	12	6.0
6909	10	0.6	<2	12	7.8
6910	5	0.7	12	13	5.8
6911	5	0.4	4	13	5.4
6912	20	0.8	6	25	5.6
6913	10	0.6	2	10	10.0
6914	5	0.4	<2	12	10.8
6915	5	0.5	4	12	7.4
6916	10	0.5	10	11	6.0
6917	<5	0.5	20	11	4.8
6918	5	0.5	2	11	5.2
6919	<5	0.4	<2	12	4.2
6920	5	0.5	<2	13	8.8
6921	20	0.3	<2	7	4.4
6922	10	0.3	<2	5	2.6
6923	15	0.3	2	7	2.4
6924	25	0.5	10	9	2.8
6925	30	0.4	6	8	3.6
6926	40	0.7	4	14	5.4
6927	60	1.0	20	15	6.8
6928	60	0.7	2	10	5.8
6929	20	0.5	<2	5	2.4
6930	15	0.6	<2	7	5.8
6931	<5	0.4	2	7	1.8
6932	20	0.6	<2	10	9.4
6933	15	0.6	<2	6	1.6
6934	40	1.0	<2	28	16.0
6935	15	0.4	4	10	9.2
6936	20	1.3	<2	10	5.4
6937	15	0.5	<2	8	2.6
6938	40	0.4	4	12	5.7
6939	40	0.4	4	20	12.4
6940	65	0.5	2	16	7.6
6941	65	0.6	4	19	14.4
6942	40	0.7	2	19	8.8
6943	45	0.6	2	15	7.6
6944	80	0.6	2	13	6.0

	Au	Ag	W	Mo	U
7100	50	<0.1	<2	5	6.0
7101	40	0.4	<2	16	2.0
7102	NR	0.4	<2	5	3.2
7103	NR	0.5	<2	20	3.0
7104	NR	0.6	<2	4	0.4
7105	NR	0.4	<2	11	3.0
7106	NR	0.4	<2	4	0.8
7107	NR	0.4	<2	7	2.4
7108	NR	0.3	<2	6	3.0
7109	NR	0.3	<2	14	4.8
7110	NR	0.2	<2	34	6.8

NR - Not received: lost by geochem labs

	Au	Ag	W	Cu	U
7111	10	0.2	8	68	4.4
7112	20	0.4	10	108	6.9
7113	10	0.4	300	124	9.2
7114	5	0.4	8	116	6.6
7115	30	0.2	10	92	7.8
7116	10	0.4	6	76	5.6
7117	10	0.4	12	96	10.4
7118	5	0.6	<2	124	16.6
7119	5	0.1	<2	104	20.0
7120	5	0.2	<2	8	1.6
7121	170	0.2	4	180	16.6
7122	525	0.3	<2	112	12.4
7123	420	0.4	<2	92	6.0
7124	390	0.2	4	132	8.8
7125	<5	0.2	4	64	23.0
7126	<5	0.4	<2	84	9.5
7127	5	0.2	<2	72	4.4
7128	10	0.4	<2	80	2.2
7129	25	0.8	6	132	30.0
7130	10	0.3	6	84	14.2
7131	15	0.6	40	76	7.2
7132	15	0.4	4	74	11.0
7133	15	0.4	<2	76	15.4

	Au	Ag	W	Cu	U
7134	20	0.3	<2	64	14.0
7135	15	0.2	<2	54	14.6
7136	15	0.3	4	68	14.6
7137	15	0.6	4	72	10.7
7138	15	0.3	<2	84	11.6
7139	25	0.8	<2	62	2.0
7140	30	0.5	8	144	5.6
7141	20	0.3	4	112	6.0
7142	15	0.8	2	108	7.9
7143	10	0.5	<2	60	2.0
7144	10	0.4	<2	52	1.6
7145	20	0.5	<2	100	4.5
7146	15	0.4	<2	56	5.2
7147	30	0.4	<2	68	5.2
7148	35	0.6	4	76	6.8
7149	145	0.2	<2	188	14.8
7150	575	0.3	<2	216	12.8
7151	50	0.2	<2	184	12.8
7152	255	0.4	<2	140	8.2
7153	10	0.4	<2	172	12.8
7154	45	<0.1	<2	56	16.4

	Au	Ag	W	Mo	Cu	U	Pb
7319	20	0.1	<2	33	114	14.0	40
7320	35	<0.1	8	31	124	12.7	98
7321	50	<0.1	<2	33	120	9.5	99
7322	20	<0.1	10	53	120	5.4	30
7323	20	<0.1	<2	32	102	1.8	20
7324	50	0.1	<2	11	154	5.1	36
7325	50	0.2	<2	8	176	5.3	49
7326	30	0.1	50	10	212	3.2	28
7327	50	<0.1	<2	6	304	2.5	42
7328	100	<0.1	2	5	308	1.2	79
7329	125	.4	12	13	298	35.0	132
7330	190	.4	<2	17	408	3.3	334
7331	630	<0.1	10	10	181	10.0	36
7332	170	.2	<2	9	234	5.4	50

	Au	Ag	W	Mo	Cu	U	Pb
7333	80	.2	<2	6	258	1.6	37
7334	55	<0.1	<2	7	289	3.4	37
7335	100	0.1	24	9	296	3.8	44
7336	35	<0.1	<10	7	218	2.0	28
7337	65	<0.1	20	7	286	3.2	58
7338	155	<0.1	<2	7	253	4.8	24
7339	50	0.2	4	10	156	1.8	26
7340	60	<0.1	24	20	247	6.2	64
7341	30	0.2	<2	37	290	14.0	21
7342	30	0.2	<2	11	126	2.2	70
7350	30	<0.1	160	47	128	5.0	44
7351	25	<0.1	160	56	81	3.9	40
7352	35	0.1	60	68	84	2.2	62
7353	50	<0.1	90	60	90	2.1	46
7354	45	0.1	60	46	148	2.8	38
7355	55	0.1	70	63	126	4.4	34
7356	10	<0.1	4	22	74	6.2	20
7357	30	<0.1	10	30	114	11.0	27
7358	30	<0.1	14	38	100	10.3	23
7359	15	<0.1	2	19	206	45.0	40
7360	30	<0.1	2	17	151	20	37
7361	15	0.1	4	27	138	27	46

Rock Chips

	Au	Ag	W	Cu	Mo	As
6061	5	0.4	4	115	4	24
6062	5	0.2	4	59	4	24
6063	10	0.2	6	67	5	15
6064	<5	0.3	2	41	3	10
6065	<5	0.5	<2	49	5	35
6066	<5	0.1	4	55	6	25
6067	<5	0.3	4	120	4	17
6068	<5	0.1	<2	76	5	17
6069	<5	0.2	10	98	4	14

	Au	Ag	W	As
6300	5	0.3	<2	53
6301	5	0.3	<2	22
6302	10	<0.1	<2	16
6303	<5	<0.1	<2	22
6304	10	<0.1	<2	37
6305	15	<0.1	<2	14
6306	-	<0.2	<2	12
6307	25	<0.1	<2	13
6308	10	<0.1	<2	19
6309	<5	<0.1	<2	11
6310	15	0.1	<2	13
6311	10	<0.1	<2	11
6312	10	<0.1	<2	29
6313	25	0.4	<2	50
6314	10	0.4	<2	31
6315	10	0.4	<2	26
6316	15	0.3	<2	20
6317	30	0.6	<2	32
6318	20	0.4	<2	29
6319	120	0.8	<2	30
6320	<5	<0.1	>2000	58

	Au	Ag	Cu	Pb	Zn
6321	270	0.1	68	16	65
6322	300	0.4	48	20	60
6323	35	0.3	33	24	65

	Au	Ag	W	U
6470	-	6.6	14	1.9
6471	70	2.5	<10	2.5
6472	35	1.4	<2	2.0
6473	20	0.8	<2	1.8
6474	10	0.5	<2	1.9
6475	30	0.8	<2	2.5
6476	50	0.6	<2	1.3

Analytical Methods

Soils and stream sediment samples 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, lead and silver analyses: the sample is dissolved in hot aqua regia and analysed by atomic absorption spectrophotometry. Lead and silver analyses require a correction for background.

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.

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

Uranium analyses are by hot nitric acid digestion and fluorometric determination.

APPENDIX C
AGIP PERSONNEL

R.C.R. Robertson	Area Geologist	Program supervision, mapping, report writing.
T. Garagan	Project Geologist	Project supervision, mapping, prospecting, geochemical sampling map and report preparation.
R.A. Doherty	Project Geologist	Mapping, prospecting, geochemical sampling
R. Hulstein	Senior Assistant	Mapping, sampling.
D. Charron	Senior Assistant	Mapping, sampling.
L. Lalonde	Intermediate Assistant	Sampling, prospecting
S. Seto	Intermediate Assistant	Sampling, prospecting
C. Malboeuf	Junior Assistant	Sampling, prospecting
J. Pollock	Junior Assistant	Sampling, prospecting
S. Wood	Cook	

BEMA INDUSTRIES PERSONNEL

D. Lockwood	Climbing Supervisor	Mountaineering, sampling
J. MacCrae	Climber	Mountaineering, sampling

APPENDIX D

SUN CLAIMS - STATEMENT OF COSTS

Analytical Costs

Analyses by Bondar-Clegg and Co. Ltd., Whitehorse

SUN 1-139

8 stream sediment samples @ 18.65	149.20
16 stream sediment samples @ 15.75	252.00
21 stream sediment samples @ 15.00	315.00
Total for stream sediment samples	$ 716.20
8 heavy mineral concentrate samples @ 19.30	154.40
1 heavy mineral concentrate samples @ 11.15	11.15
6 heavy mineral concentrate samples @ 12.00	72.00
Total for heavy mineral concentrate samples	$ 237.55
125 soil samples @ 15.00	1,875.00
68 soil samples @ 15.75	1,071.00
9 soil samples @ 9.75	87.75
36 soil samples @ 16.50	594.00
Total for soil samples	$3,627.75
9 rock samples @ 17.65	158.85
26 rock samples @ 16.15	419.90
3 rock samples @ 11.75	35.25
2 rock samples @ 10.90	21.80
Total rock samples	$ 635.80
Total analytical costs	$5,217.30

Helicopter Costs

1. July 5-17, August 18-19, Bell 206 on casual charter from Northern Mountain Helicopter, MacMillan Pass

7.05 hours at $460/hour	3,243.00
1.2 hours at 23 gal/hour at $1.98 per gal	54.65
5.85 hours at 23 gal/hour at $3.50 per gal	470.95
	3,768.60

2. July 29-31, August 7-13, Hughes 500 D on contract from Liftair International, Calgary

7.4 hours at $379 per hour	2,804.60
7.4 hours at 25 gal/hour at 1.98 per gal	366.30
	3,170.90

3. August 6, Hughes 500 D on casual charter from Trans North Turbo Air, MacMillan Pass

0.5 hours for SUN Claims @ 475 per hour	237.50
0.5 hours at 25 gal/hour at 2.60 per gal	32.50
	270.00

Total helicopter costs for SUN claims	7,209.50

Labour Costs

Ron Robertson 1/2 day @ 140/day	70.00
Tom Garagan 6 days @ 90/day	540.00
Al Doherty 3 days @ 110/day	330.00
Roger Hulstein 11 days @ 80/day	880.00
Sandra Seto 7 days @ 68/day	476.00
Luc Lalonde 3 days @ 68/day	204.00
Jim Pollock 4 days @ 55/day	220.00
Carole Malbouef 3 days @ 55/day	165.00
Denise Charron 2 days @ 80/day	160.00
Jean MacCrae 2 days @ 175/day	350.00
Dean Lockwood 1 day @ 200/day	200.00
Simone Wood 13 days @ 80/day	1040.00
Total Labour costs	4435.00

Camp and Field Costs

1. Food Costs

Estimated at $20 per man day - Cook's salary included in labour costs.

SUN 1-139 - 55.5 man days = $1,110.00

2. Camp and Field Equipment and Supplies

Share of rental equipment (generator, radios, etc) estimated at 50.00 per day for 30 days =	1500.00
Cost of camp and field supplies estimated at $10 per day for 30 days =	300.00
TOTAL	1800.00
Total camp and field costs	2910.00

Drafting and Secretarial Costs (report preparation)

Map preparation, estimated at	700.00
Secretarial costs, estimated at	120.00
	820.00

Total costs of surface work for assessment purposes:	5217.30
	7209.50
	4435.00
	2910.00
	820.00
	20,591.80

STATEMENT OF QUALIFICATIONS

I, THOMAS GARAGAN, 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.

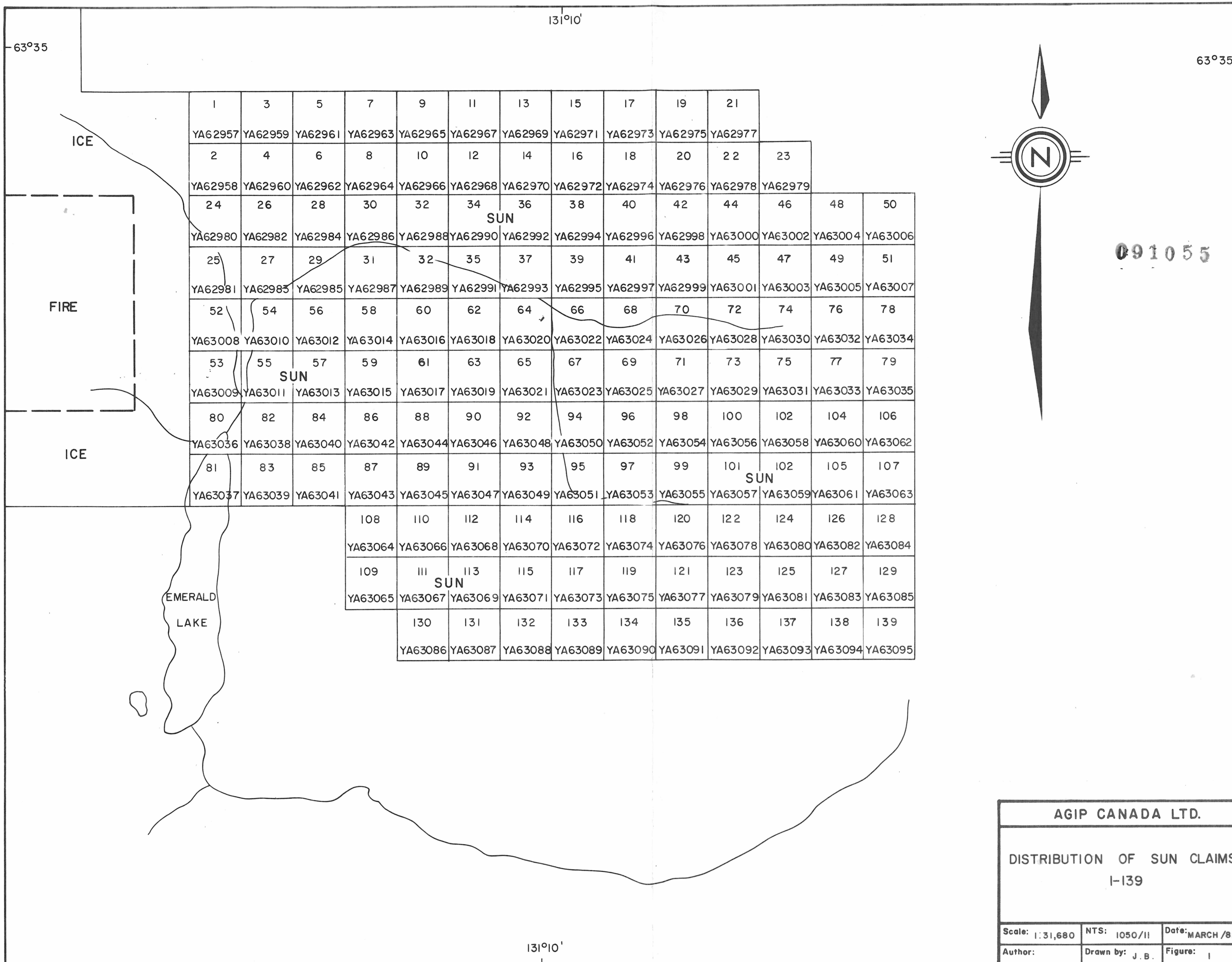
That I obtained a Bachelor of Science degree with Honours in Geology from the University of Ottawa, Ontario in 1980.

That I have been engaged in mineral exploration and geological survey mapping on a full and part-time basis for six years of which three have been on mineral exploration programs in the Yukon Territory.

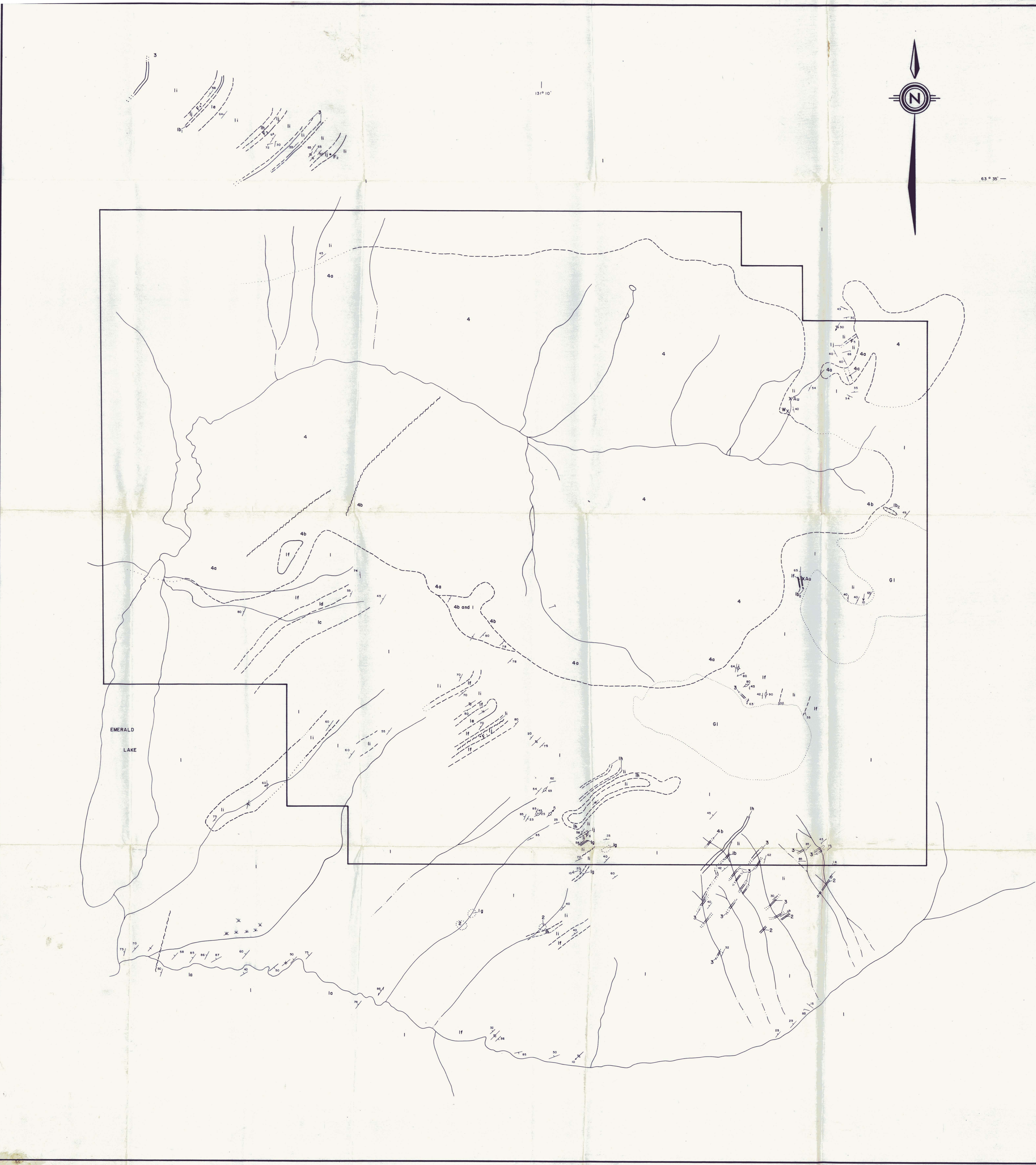
That I am an associate member of the Geological Association of Canada and the Mineralogical Association of Canada.

Signed at Calgary, Alberta, this 25th day of May, A.D., 1982.

THOMAS GARAGAN


131°10'
63°35
63°35'
N
091055
ICE
FIRE
ICE
SUN
SUN
SUN
SUN
EMERALD
LAKE
1 YA62957 | 3 YA62959 | 5 YA62961 | 7 YA62963 | 9 YA62965 | 11 YA62967 | 13 YA62969 | 15 YA62971 | 17 YA62973 | 19 YA62975 | 21 YA62977
2 YA62958 | 4 YA62960 | 6 YA62962 | 8 YA62964 | 10 YA62966 | 12 YA62968 | 14 YA62970 | 16 YA62972 | 18 YA62974 | 20 YA62976 | 22 YA62978 | 23 YA62979
24 YA62980 | 26 YA62982 | 28 YA62984 | 30 YA62986 | 32 YA62988 | 34 YA62990 | 36 YA62992 | 38 YA62994 | 40 YA62996 | 42 YA62998 | 44 YA63000 | 46 YA63002 | 48 YA63004 | 50 YA63006
25 YA62981 | 27 YA62983 | 29 YA62985 | 31 YA62987 | 32 YA62989 | 35 YA62991 | 37 YA62993 | 39 YA62995 | 41 YA62997 | 43 YA62999 | 45 YA63001 | 47 YA63003 | 49 YA63005 | 51 YA63007
52 YA63008 | 54 YA63010 | 56 YA63012 | 58 YA63014 | 60 YA63016 | 62 YA63018 | 64 YA63020 | 66 YA63022 | 68 YA63024 | 70 YA63026 | 72 YA63028 | 74 YA63030 | 76 YA63032 | 78 YA63034
53 YA63009 | 55 YA63011 | 57 YA63013 | 59 YA63015 | 61 YA63017 | 63 YA63019 | 65 YA63021 | 67 YA63023 | 69 YA63025 | 71 YA63027 | 73 YA63029 | 75 YA63031 | 77 YA63033 | 79 YA63035
80 YA63036 | 82 YA63038 | 84 YA63040 | 86 YA63042 | 88 YA63044 | 90 YA63046 | 92 YA63048 | 94 YA63050 | 96 YA63052 | 98 YA63054 | 100 YA63056 | 102 YA63058 | 104 YA63060 | 106 YA63062
81 YA63037 | 83 YA63039 | 85 YA63041 | 87 YA63043 | 89 YA63045 | 91 YA63047 | 93 YA63049 | 95 YA63051 | 97 YA63053 | 99 YA63055 | 101 YA63057 | 102 YA63059 | 105 YA63061 | 107 YA63063
108 YA63064 | 110 YA63066 | 112 YA63068 | 114 YA63070 | 116 YA63072 | 118 YA63074 | 120 YA63076 | 122 YA63078 | 124 YA63080 | 126 YA63082 | 128 YA63084
109 YA63065 | 111 YA63067 | 113 YA63069 | 115 YA63071 | 117 YA63073 | 119 YA63075 | 121 YA63077 | 123 YA63079 | 125 YA63081 | 127 YA63083 | 129 YA63085
130 YA63086 | 131 YA63087 | 132 YA63088 | 133 YA63089 | 134 YA63090 | 135 YA63091 | 136 YA63092 | 137 YA63093 | 138 YA63094 | 139 YA63095
AGIP CANADA LTD.
DISTRIBUTION OF SUN CLAIMS
1-139
Scale: 1:31,680
NTS: 105O/11
Date: MARCH /82
Author:
Drawn by: J.B.
Figure: 1

091055



LEGEND

CRETACEOUS

4 — Emerald Lake Intrusion : undivided
- a, medium to coarse-grained hornblende biotite and hornblende syenite flowbanded locally
- b, fine-grained hornblende syenite border phase and late dykes
- c, monzodiorite, diorite

CRETACEOUS ?

3 — Quartz-feldspar porphyry and very fine-grained intermediate dykes and sills

AGE UNKNOWN (DEVONIAN?)

2 — Hornblende gabbro and pyroxenite

LOWER PALEOZOIC

1 — Undivided sedimentary rocks and contact metamorphosed equivalents (includes all of 1a-1j)
- j, graptolitic shale (contact metamorphosed equivalents not recognized) (Ordovician and Silurian in age)
- i, cherty mudstone with minor chert and siltstone interbeds
- h, chert
- g, cherty fragmental rock with 5% massive sulphide clasts
- f, thin bedded grey, white and brown siltstone
- e, massive to very thick bedded siltstone
- d, thin bedded quartz sandstone
- c massive quartz sandstone
- b_1, limestone and b_2 skarn (some units of b_1 maybe Lower Cambrian carbonates)
- a, maroon and apple green laminated siltstone (possibly L.Cambrian in age)

• F fossil locality

1 Diplograptus

2 Monograptus

3 Monograptus, Rastrites

4 Monograptus, Monograptus spiralis

5 Diplograptus

6 Diplogaptus

X Au Mineral occurrence
Au-Gold, W-Tungsten

SYMBOLS

Swamp

Creeks and lakes

Gl Glacier

Claim boundary

Geological contact (defined, approximate, assumed)

Fault

Bedding (inclined, vertical, overturned)

Schistosity (inclined)

Jointing (inclined, vertical)

Fold plunge

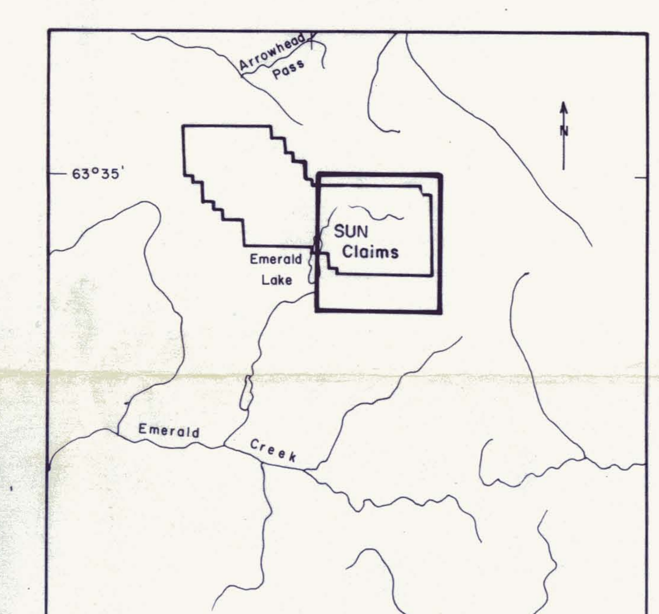
Axial plane (inclined, vertical)

Anticline axial trace

Syncline axial trace

Minor folds

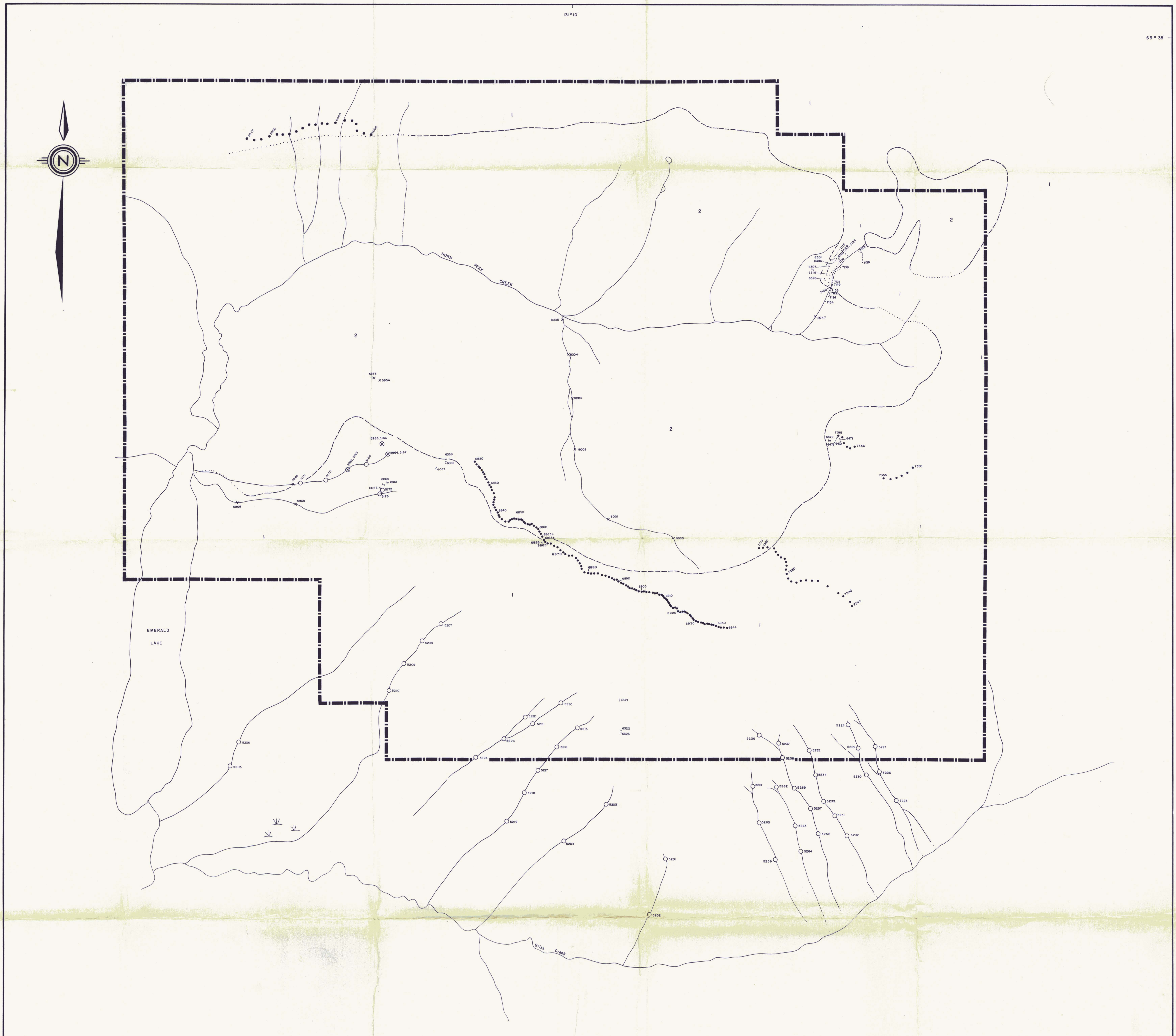
Significant boulders



LOCATION MAP
Scale 1:250,000

0 100 200 300 400 500
METRES

PRELIMINARY GEOLOGY 091055 SCALE: 1:10,000	PROJECT NO. 4003 B
	SURVEYED BY T.G. A.D. R.H.
PROJECT: *EMERALD LAKE PROPERTY* SUN 1-139 YUKON	DRAWN BY J.B.
	DATE NOV. 1981
AGIP CANADA LTD.	APPROVED R.R.
	FIGURE 2



<u>LEGEND</u>

CRETACEOUS

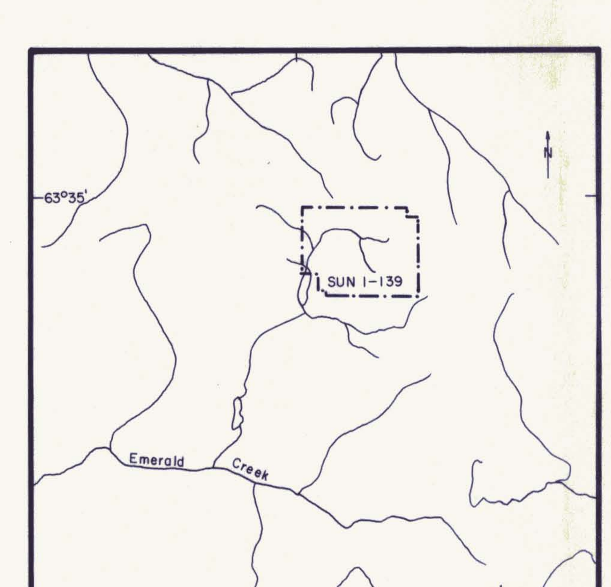
2 — Emerald Lake Intrusion – syenite

LOWER PALEOZOIC

1 — Chert, cherty mudstone, graptolitic shale, siltstone

<u>SYMBOLS</u>

- Geological contact (approximate, assumed)
- Stream sediment sample
- Heavy mineral concentrate
- Stream sediment and heavy mineral concentrate sample
- Soil sample
- Chip sample
- Lake and stream
- Swamp
- Claim boundary



LOCATION MAP
Scale 1:250,000

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KILOMETRES

SAMPLE LOCATION MAP	PROJECT NO.
SCALE: 1:10,000 091055	SURVEYED BY
PROJECT: SUN CLAIMS 1-139 YUKON NTS 1050-11	DRAWN BY J. B.
	DATE MARCH 1982
AGIP CANADA LTD.	APPROVED
	FIGURE 3