Office of the Regional Manager Mineral Rights
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WHITEHORSE
Yukon Territory

Geological & geochemical report

THE HYLAND PLUTON TUNGSTEN PROSPECT

TUNA CLAIM GROUP

1981 ASSESSMENT REPORT

RECEIVED
13 APR 1982
MINING RECORDER
WATSON LAKE, Y.T.
I.A. & N.D.

105 H 16
61°50'N
128°15'W
TUNA 1-180
YA 66229-YA 66405

D. Archibald
D. James
J. Toohey

Compiled by:
P. J. Doyle
February 1982

Union Carbide Exploration Corporation
Vancouver, B. C.

Aug 3-18, 1981

091014

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SUMMARY

The Hyland Pluton which is located in the northeast corner of the Frances Lake map sheet (N.T.S. 105H-16) was investigated in early June 1981 by Union Carbide Exploration in an attempt to determine the source of anomalous tungsten, molybdenum, copper and silver values obtained from previous years sampling of the Hyland drainages. Staking of the Tuna claim group was initiated by Union Carbide Exploration in late June. In August, a ten day fly camp was established near the claim group on the Tungsten Highway. A geological program consisting of prospecting, geological mapping as well as rock soil and silt geochemistry was conducted. Five tungsten-copper-molybdenum showings were discovered. In addition, thirteen mineralized occurrences in talus were detected. Eight types of mineralization were noted with seven of the eight being directly related to vein systems, breccia zones or dykes within the Hyland intrusive. The eighth type of mineralization developed in a root pendant located in the southern portion of the claim block. Sericitic, potassic and argillic alteration were identified at Hyland with sericitic alteration being the most predominant type. Several samples were collected from the pluton by D. Archibald of Queens University who conducted a petrographic study of the samples and two potassium-argon age dates of the intrusive. His results indicate a multistage intrusive history for the Hyland pluton. This in addition to the alteration and mineralization outlined during the field program enhance the possibly of the presence of economically significant tungsten-molybdenum mineralization on the Tuna claims.

Conclusions

1. Followup of anomalous stream sediment geochemistry resulted in the discovery of tungsten-molybdenum mineralization within the Hyland intrusive.
2. The eight types of mineralization and the three alteration types identified at Hyland are indicative of porphyry-type deposits.

Recommendations

1. A detailed evaluation of the Hyland Pluton be conducted as soon as budgetary constraints allow.
2. Further geological mapping and reconnaissance sampling of the Boundary Pluton and the area north of the Tuna claims to better assess their economic potential.

ACKNOWLEDGEMENTS

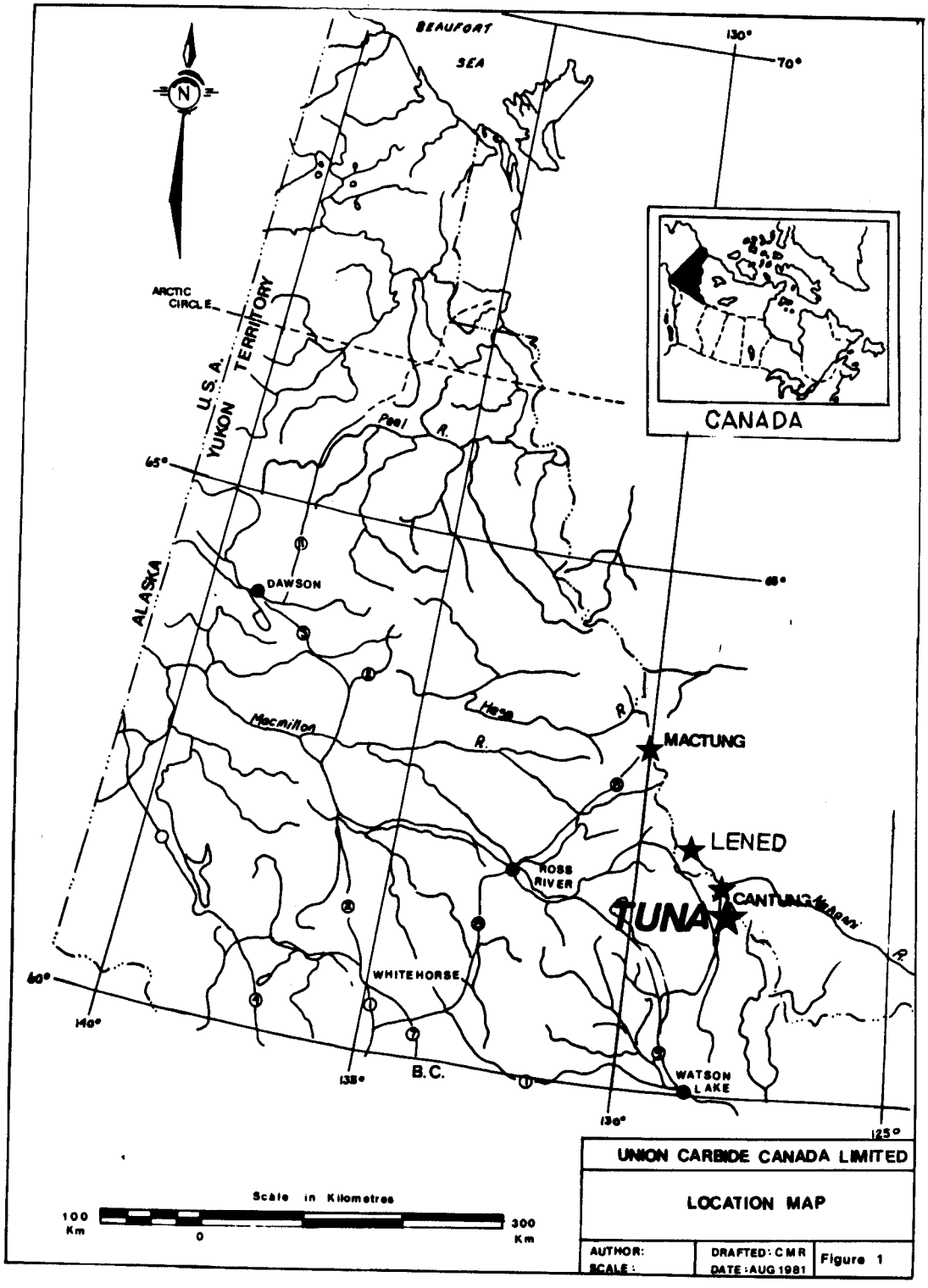
This report is a final compilation of the data collected during the 1981 field season. The field crew consisted of D. Archibald, J. Bronson, C. Copping, C. Forster, A. Guichon, K. Harrap, D. James, R. Penner, C. Riest, V. Tompkins and J. Toohey. Their efforts in both collection and recording of data was appreciated. The contributions of J. K. Glover, J. Hornby, P. Sarjeant, G. Sheppard and S. Savage during the claim staking was greatly appreciated. Many thanks to C. N. Forster, K. Gibson and J. Wilkinson for their technical assistance in completing this report. In addition, D. Archibald must be acknowledged for his post field season contributions which included K-Ar age dating, petrographic studies, and drafting of geological map and summary report.

Introduction

Prior to the 1981 field season a compilation of all available geological, geophysical and geochemical data on the Frances Lake area of the southeast Yukon Territory was carried out by Union Carbide personnel in order to evaluate the areas potential for porphyry type molybdenite-scheelite occurrences. The Hyland Pluton located near Cantung, in the northeast corner of the Frances Lake map sheet (N.T.S. 105H-16) was one of the target areas outlined by the study. Several of the Hyland drainages were anomalous in molybdenum, copper, tungsten and silver. This fact coupled with J. Boniwell's interpreted outline of a possible porphyry situation from government aeromagnetics led to groundchecking by Union Carbide personnel in early June. Staking of the Tuna claim group commenced in late June followed by further geological work in August, 1981. This geological work included geological mapping, prospecting as well as soil, silt and rock sampling.

Location

The Tuna Claims (Latitude $61^{o}50'$ Longitude $128^{o}15'$) are located within the Watson Lake Mining District of the Yukon Territory adjacent to the border with the North West Territories. The claim group is elongated in a northwest-southeast orientation that parallels the Nahanni Range Road which is located approximately one mile west of the western claim boundary. (See Figure 1)


BEAUFORT SEA
130°
70°
N
ARCTIC CIRCLE
U.S.A.
YUKON TERRITORY
Peel R.
CANADA
65°
ALASKA
DAWSON
68°
Macmillon R.
Hess R.
MACTUNG
LENED
ROSS RIVER
CANTUNG
TUNA
Nahanni R.
60°
WHITEHORSE
140°
138°
B.C.
WATSON LAKE
136°
125°
Scale in Kilometres
100 Km
0
300 Km
UNION CARBIDE CANADA LIMITED
LOCATION MAP
AUTHOR:
SCALE:
DRAFTED: C M R
DATE: AUG 1981
Figure 1

Topography

The Hyland Pluton is part of chain of mountains which separate the Hyland Valley from the Flat River valley within which the Tungsten townsite is situated. This chain of mountains is part of the Logan Mountains which are locally characterized by spectacular relief. Topographic relief on the property varies from 1350 metres to 2300 metres. (See Plates 1 and 2) The central portion of the claim block is dominated by a series of high peaks with the claim block margins consisting of a series of east-west trending cirques. Several small lakes are located within the cirques on the eastern side of the claim block. (See Plate 3 and 4). The cirque walls are relatively steep, talus covered slopes while the cirque floors consist of scattered rubble piles and boulder fields. The majority of the property is situated well above the tree line with the only exception being the southwest corner of the claim block.

Climate

The combination of steep terrain and elevation results in a majority of the property being snow covered from early September until late June. During the summer months daily weather conditions can be extremely variable, ranging from cool, wet conditions with occassional snowfalls to warm, dry conditions. Winter snowfall normally exceeds three metres and annual temperatures vary from a low near minus forty degrees celsius(in July).

Access

The property is accessible by hiking in from the Nahanni Range Road which at its closest point lies approximately one mile from the western claim boundary. The steep, rugged terrain does not make movement on foot from the



Plate 1: Hyland Pluton - View from the southwest with Hyland River Valley and Tungsten Highway in foreground. (Late June 1981)

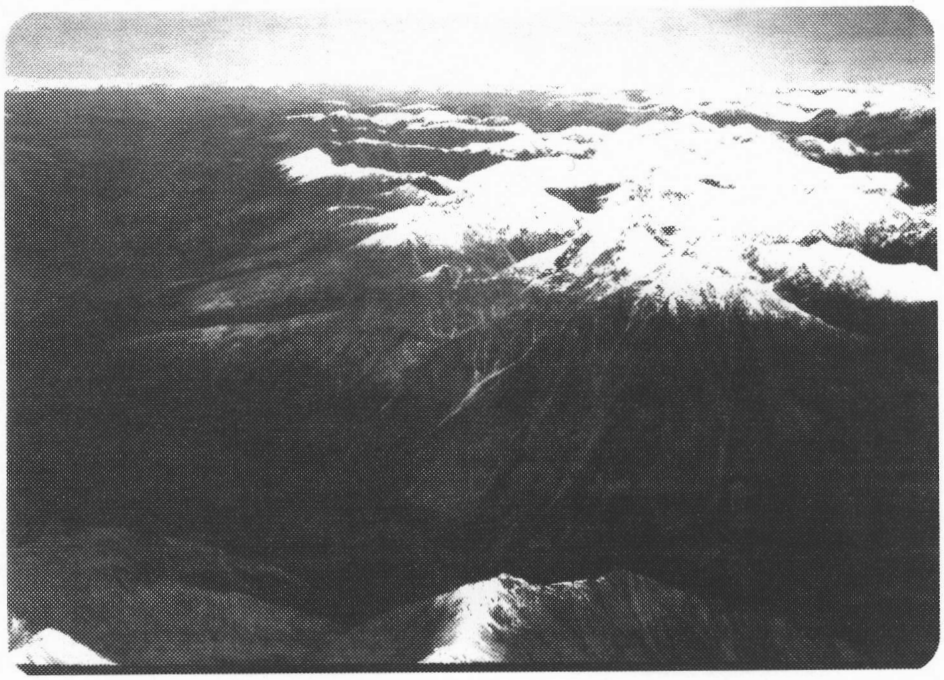


Plate 2: Hyland Pluton - View from the south with the Tungsten Highway on the left. (Mid September 1981)

road a practical method of access for most of the claim block. Helicopter support is required to conduct exploration work on the property.

Logistics

All logistical support for both the claim staking and geological evaluation of the Hyland Pluton originated from Union Carbide's Lened Camp located sixty-five kilometers northwest of the Tuna claims. (See Figure 1) A fly camp was established on the Nahanni Range Road near the claim block from August 8th until August 18th, 1981. The fly camp crew size varied from four to eight persons dependant upon personnel requirements on the Lened project. All of the work done on the property required several daily ferry trips by the Lened based helicopter to the Hyland fly camp for crew setouts and pickups.

Claims

The Tuna claim block (Tuna 1-Tuna 180) was staked by Union Carbide personnel in late June and early July, 1981 to claim molybdenite-scheelite mineralization discovered within the intrusive rocks of the Hyland Pluton. (See Figure 2A for claim block outline.)

The claim registration numbers are as follows:

Tuna 1 - YA66229 through to

Tuna 180 - YA66408 with an Expiry date of July 27, 1982.

(See Appendix 3 for complete index to the claim registration numbers and claim status).

Early in 1982 grouping certificates and certificates of work were applied to one hundred and forty-four of the one hundred and eighty claims staked.



Plate 3: Hyland Pluton - View from the southeast. (Mid September 1981)

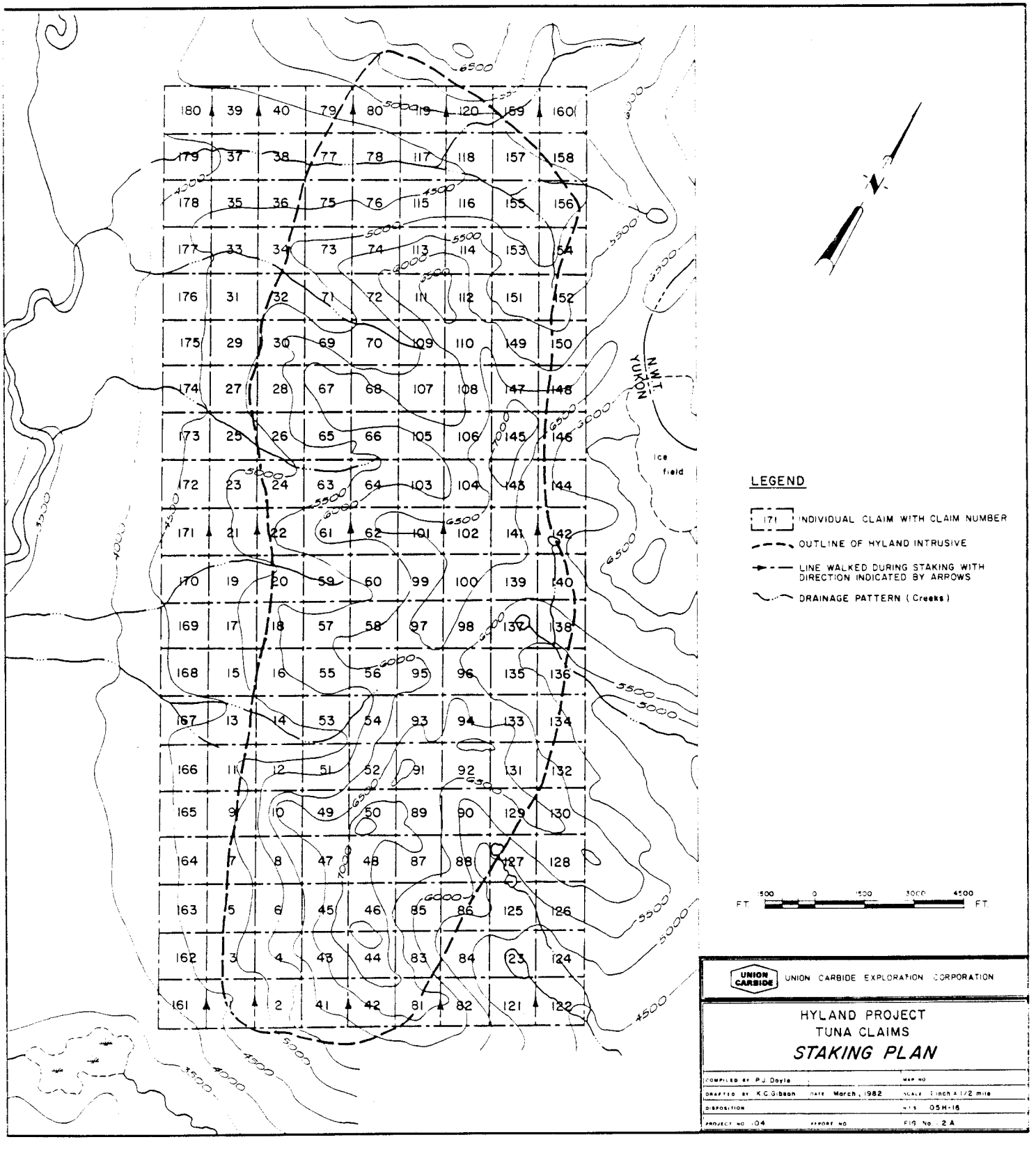


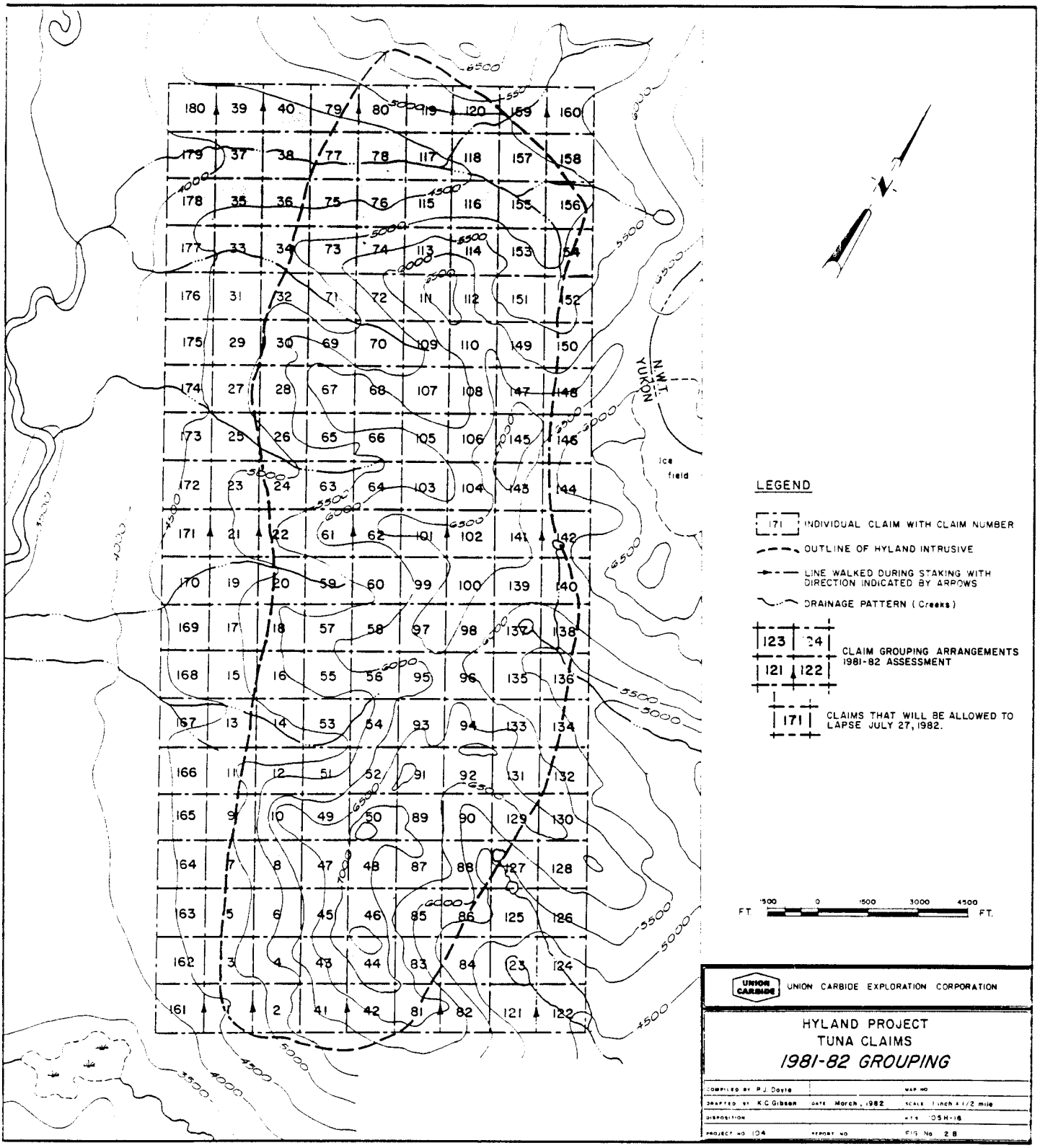
Plate 4: Hyland Pluton - View of east side of the Tuna Claim Group. Central portion of the photograph includes the Two Lake Cirgue in which showings are located.

(See Figure 2B and Appendix 3 for a complete summary of individual claim status). The assessment applied will keep all of the grouped claims in good standing for the period July 27th, 1981 to July 27th, 1982. Further work will have to be applied prior to July 27th, 1983. One of the nine groups (Tuna 81-Tuna 112 inclusive) has sufficient assessment applied to remain in good standing from July 27, 1981 to July 27, 1983. Further work on this group will have to be filed prior to July 27, 1984. (See Appendix 2 for a Statement of Costs applied as assessment).

History

The Hyland Pluton was investigated by Union Carbide personnel as part of several Selwyn Basin reconnaissance programs during the years 1971 to 1976. Mineralization was discovered within quartz-tourmaline veins near the intrusive - phyllite contact and within several small localized skarns developed in lime rich beds of the phyllite unit. These earlier reconnaissance programs were focused around skarn-type mineralization and the discovery of a "Cantung type" tungsten skarn orebody. The lack of sufficient surface exposure of a suitable limestone host rock along the Hyland pluton perimeter limited the apparent potential for skarn related mineralization at Hyland. M. J. Burson in his Yukon Tungsten Compilation (1978) noted the presence anomalous tungsten geochemistry associated with the Hyland Pluton and Boundary Pluton drainages. Prior to the 1981 field season a re-evaluation of all available geological data and a re-analysis of stream sediment sample coverage was undertaken to outline potential tungsten - molybdenite porphyry targets on the Frances Lake map sheet. J. Boniwell conducted a detailed

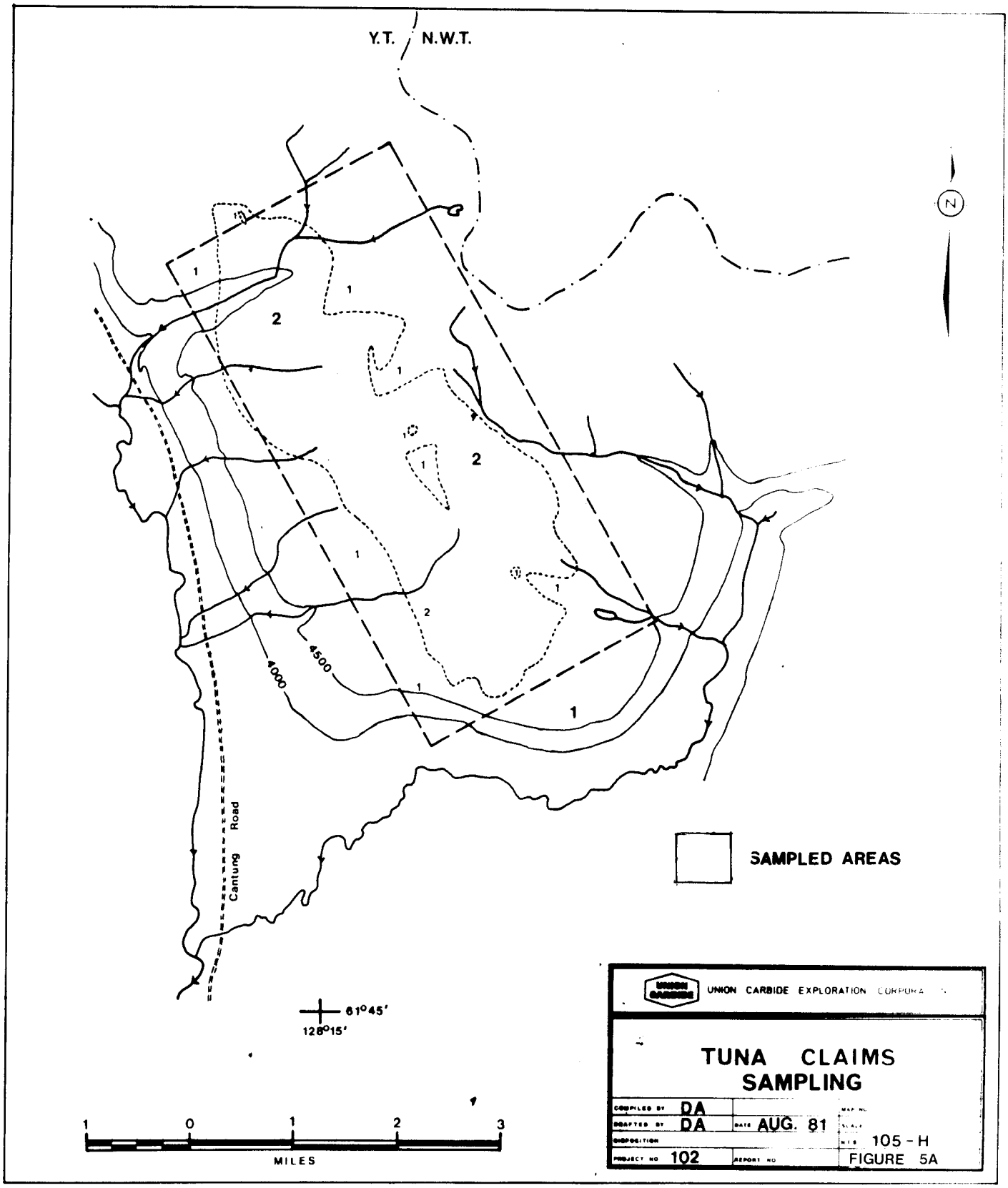

180 39 40 79 80 119 120 159 160
179 37 38 77 78 117 118 157 158
178 35 36 75 76 115 116 155 156
177 33 34 73 74 113 114 153 154
176 31 32 71 72 111 112 151 152
175 29 30 69 70 109 110 149 150
174 27 28 67 68 107 108 147 148
173 25 26 65 66 105 106 145 146
172 23 24 63 64 103 104 143 144
171 21 22 61 62 101 102 141 142
170 19 20 59 60 99 100 139 140
169 17 18 57 58 97 98 137 138
168 15 16 55 56 95 96 135 136
167 13 14 53 54 93 94 133 134
166 11 12 51 52 91 92 131 132
165 9 10 49 50 89 90 129 130
164 7 8 47 48 87 88 127 128
163 5 6 45 46 85 86 125 126
162 3 4 43 44 83 84 23 124
161 1 2 41 42 81 82 121 122
6500
5000
4500
5500
6000
N.W.T.
YUKON
Ice
field
N
LEGEND
171 INDIVIDUAL CLAIM WITH CLAIM NUMBER
OUTLINE OF HYLAND INTRUSIVE
LINE WALKED DURING STAKING WITH DIRECTION INDICATED BY ARROWS
DRAINAGE PATTERN (Creeks)
500 0 1500 3000 4500
FT. FT.
UNION CARBIDE
UNION CARBIDE EXPLORATION CORPORATION
HYLAND PROJECT
TUNA CLAIMS
STAKING PLAN
COMPILED BY P.J. Doyle
MAP NO.
DRAFTED BY K.C. Gibson
DATE March, 1982
SCALE 1 inch = 1/2 mile
DISPOSITION
NTS 05H-16
PROJECT NO. 104
REPORT NO.
FIG. No. 2A

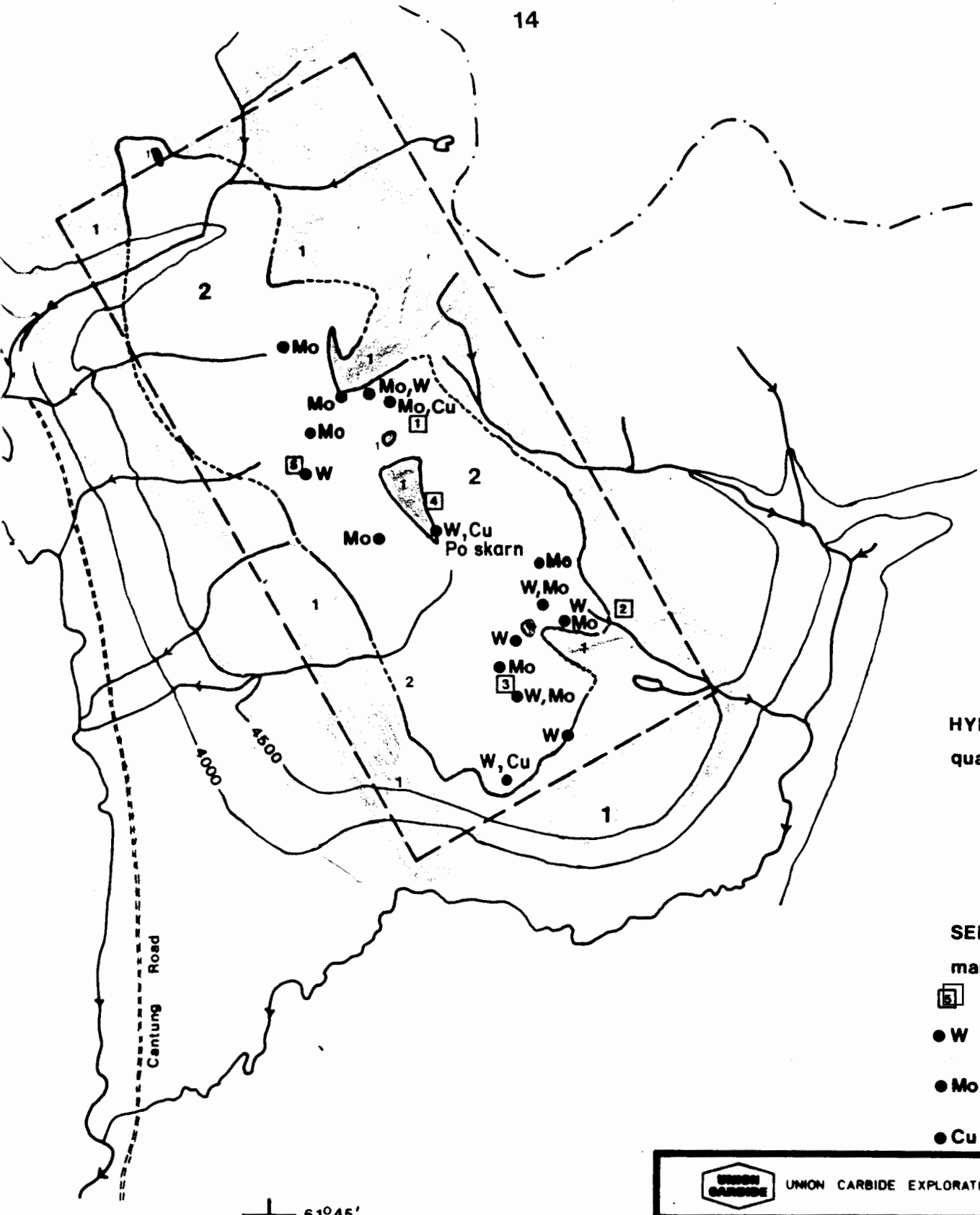

LEGEND
171 INDIVIDUAL CLAIM WITH CLAIM NUMBER
OUTLINE OF HYLAND INTRUSIVE
LINE WALKED DURING STAKING WITH DIRECTION INDICATED BY ARROWS
DRAINAGE PATTERN (Creeks)
123 124 121 122 CLAIM GROUPING ARRANGEMENTS 1981-82 ASSESSMENT
171 CLAIMS THAT WILL BE ALLOWED TO LAPSE JULY 27, 1982.
N
N.W.T. YUKON
Ice field
1500 0 1500 3000 4500 FT. FT.
UNION CARBIDE EXPLORATION CORPORATION
HYLAND PROJECT
TUNA CLAIMS
1981-82 GROUPING
COMPILED BY P.J. Doyle
DRAFTED BY K.C. Gibson
DATE March, 1982
SCALE 1 inch = 1/2 mile
DISPOSITION
KMS 105H-16
PROJECT NO 104
REPORT NO
FIG. No 2.8

study of available government aeromagnetic coverage. The Hyland Pluton was situated at the centre of a magnetic expression which Boniwell believed could be attributable to porphyry-type mineralization. The Hyland drainages were anomalous in copper, silver, molybdenum and tungsten with several samples producing scheelite grain counts in excess of five hundred grains from a panned concentrate. (See Figure 3 for Regional Stream Silt Geochemistry)

Work Done 1981

In early June 1981, several sampling and prospecting traverses were carried out along the lower portions of the creeks draining the Hyland Pluton in an attempt to find the source of the stream sediment anomaly. Although poor weather conditions and extensive snow cover severly restricted activities preliminary soil and silt sample results were very encouraging. Staking was initiated in late June with the arrival in the area of Riocanex's tungsten reconnaissance crew. Riocanex established a base camp on the Tungsten Highway directly across the road from the Hyland Pluton, from which they hoped to fly an airborne reconnaissance of the surrounding area for tungsten using a newly developed laser mounted scheelite detector. A limited number of mapping and sampling traverses were carried out by D. H. James and D. Archibald (consultant) while the staking program was being completed. Further geological work was carried out in August when a ten day fly camp was established at mile 101 on the Tungsten Highway. The geological program conducted by the fly camp crew consisted of geological mapping, soil, silt and rock sampling and prospecting. (See Figre 4A and 4B). Crew size varied with personnel requirements at the Lened Camp. Geological mapping was controlled


Y.T.
N.W.T.
N
4500
4000
Cantung Road
SAMPLED AREAS
61°45'
128°15'
1 0 1 2 3
MILES
UNION CARBIDE EXPLORATION CORPORATION
TUNA CLAIMS
SAMPLING
COMPILED BY DA
DRAFTED BY DA
DATE AUG. 81
DISPOSITION
PROJECT NO 102
REPORT NO
105 - H
FIGURE 5A



2

HYLAND PLUTON

quartz monzonite

1

SEDIMENTS

mainly phyllite

5 - occurrence

● W - scheelite

● Mo - molybdenite

● Cu - chalcopyrite

UNION CARBIDE EXPLORATION CORPORATION

HYLAND PROJECT

TUNA CLAIMS GEOLOGY

COMPILED BY: P.J.D			MAP NO.
DRAFTED BY: DA	DATE: AUG. 81		SCALE: 1 inch = 1 mile
DISPOSITION:			N.T.S. 105 - H
PROJECT NO. 104	REPORT NO.		FIG. No. : 4B

and plotted on a one inch equals one quarter mile scaled map with a five hundred foot contour interval which was produced by photographically enlarging existing government map coverage. All sample sites were plotted on this base map using altimeter readings and horizontal topolite measurements. Coloured airphotography of the Hyland Pluton was flow in August by McElhaney Surveying and Engineering Ltd. of Vancouver. This photography will provide a sufficient data base to allow the production of a reasonably accurate 1:10,000 scale base map for further work on the property. One hundred and eighty-eight silt, soil and rock samples were collected on the Tuna claims and analysed by Bondar Clegg Laboratories in Vancouver. (See Figure 7, and 8 and Appendix 3 Geochemistry Results.) Ten pan concentrates were collected and the scheelite grain counts recorded. Two potassium-argon age dates of the Hyland intrusive were done by D. Archibald at Queens University in Kingston, Ontario. In addition numerous thin sections and polished sections were examined. The crew members who participated in the property evaluation were:

C. N. Forster	District Geologist
D. H. James	Senior Geologist
P. J. Doyle	Project Geologist
D. A. Archibald	Consultant
J. Toohey	Senior Assistant
C. Riest	Student
K. L. Harrap	"
J. Bronson	"
V. Tompkins	"
C. Copping	"
A. Guichon	"
R. Penner	"

GEOLOGY

Regional Geology

The Frances Lake map sheet (N.T.S. 105H) is underlain by a succession of Late Proterozoic to Devono-Mississippian aged miogeosynclinal sediments. Intrusive into the country rocks are a number of mid-Cretaceous stocks and plutons which form a northwest-southeast trending belt known locally as the "Tungsten Belt". This belt is situated on the eastern margin of the Selywn fold Belt which is also known as the Selywn Basin. The Hyland Pluton is a mid-Cretaceous quartz monzonite intrusive similar to those at Cantung, Lened and Rudi. (See Figure 4.)

The country rocks into which the Hyland Pluton has intruded are primarily of Late Proterozoic to Early Cambrian age and consist of slates, phyllites, siltstones and fine grained quartzites. The slates in the area tend to be thick bedded or massive, grey to brown coloured and rusty weathering. The phyllites and phyllitic slates are commonly lighter grey in colour and are often interbedded with silt rich layers. In places, these silty layers are enriched in lime and as is the case within the roof pendant of the Hyland Pluton, small, localized, pod-like, pyroxene skarns are developed. The quartzites are very fine grained and medium to dark grey in colour. The quartzites tend to be the more predominant rock type in the Flat River valley while the argillaceous units are most abundant in the vicinity of the Hyland Pluton.

The granitic rocks in the region display a relatively uniform lithology which consists of a non-foliated, medium grained texture and a biotite-quartz monzonite composition. Dykes, sills and minor greenstones are found sparingly throughout the region usually in association with the Lower Cambrian or Late Proterozoic units. Surface exposures of these units are very rare and

quite small. The rocks of the Hyland Pluton display a stronger lithologic resemblance to the intrusives of the Tungsten belt than the rocks of the Mount Billings Batholith which are situated several miles to the southeast. The Mount Billing Intrusive units are similiar in age to those at Hyland but display a greater range in composition (granodiorite to quartz monzonite) and are often more strongly foliated than the intrusive units at Hyland.

Property Geology

The Hyland Pluton is a two phase quartz monzonite intrusive which is elongated along a northwest-southeast axis. The pluton consists of an equigranular marginal phase and a megacrystic quartz monzonite core. Two samples were collected for potassium-argon dating. The first sample was collected from an alteration zone cut by K-spar-quartz-sericite-tourmaline veins near the apical zone of the intrusive while the seond sample was collected from the megacrystic core zone. Age dating results were as follows:

1. Biotite from the quartz monzonite core: 92.4 +/- 1.6 Ma.
2. Muscouite from the alteration zone: 94.3 +/- 1.6 Ma.

The marginal zone which at several localities displays an apparent thickness of one hundred metres is a coarse to very coarse grained quartz monzonite that is commonly weakly foliated but in several structurally complex localities can display a strongly foliated texture similiar to an augen gneiss.

The megacrystic quartz monzonite core of the Hyland Pluton contains feldspar phenocrysts up to eight centimeters in length and is lithologically similiar to the Lened and Rudi stocks. Multiple intrusive pulses of similiar

magma have produced well defined contacts between the various phases of megacrystic quartz monzonite within the central portion of the Hyland intrusive.

Aplites and quartz-feldspar porphyries occur near the margins of the pluton. The aplites contain equigranular albite, perthite and quartz with biotite, sericite, tourmaline and garnet as accessory phases. The quartz-feldspar porphyries consist of rounded quartz phenocrysts, perthite, and zoned plagioclase with biotite, zircon, apatite and tourmaline as accessory phases.

Three types of alteration, all of which are characteristic of porphyry-type mineralization have been identified on the Tuna claims. The three alteration types - sericitic, potassic and argillic are developed along vein margins or associated with breccia units. Sericitic alteration can occur as selvages along veins or dykes but in several locations an intense, pervasive, sericitic alteration is present. Potassic alteration and argillic alteration occur only as selvages adjacent to veins or breccia zones. (See Appendix 1 for a Detailed Description of the Property Geology and See Figure 6.)

Economic Geology

Mapping and prospecting during August 1981 located five mineralized showings as well as outlining thirteen additional occurrences of mineralized talus. In light of the fact that only ten days were spent on the property prospecting and mapping, the results are quite significant. Further work will better delinate the nature and number of mineral occurrences on the Tuna claims. Eight types of mineralization have been identified. Of the eight mineralization types observed seven were molybdenite-scheelite occurrences related to dykes, veins or breccia zones developed within the intrusive. Skarn

mineralization developed within the phyllite sequence adjacent to the Hyland intrusive was the eighth type of mineralization noted at Hyland. (See Table 1, Appendix 1 For A Complete Summary of Mineralization)

From the limited amount of information available at this stage D. Archibald proposes that a crude vertical zonation of mineralization be developed within the Hyland Pluton. In general, the central and deeper parts of the intrusion appear to be more enriched in molybdenite-bearing veins while quartz-scheelite veins are the dominant mineralization type near the intrusive contact and along ridge crests. Molybdenite mineralization appears to develop in two situations. The first being as disseminated molybdenite flakes associated with bismuthinite within an intensely altered and veined megacrystic quartz monzonite, and secondly as fine grained disseminations associated with bismuthinite in aplites, quartz-feldspar porphyries, tourmaline breccias and tourmaline stockworks. (See Plates 5 and 6) Scheelite occurs as large subhedral grains or as fine disseminations within veins. Tungsten mineralization is also found in quartz-tourmaline breccia pods and within the sericitic selvages developed along quartz veins. Scheelite-pyrrhotite-chalcopyrite skarn mineralization occurs within the large central roof pendant.

A large scale ultraviolet prospecting program in conjunction with a detailed mapping and sampling program will better outline the mineralization types present, their extent and grade. (See Appendix 6 for program outline)

The Boundary, North Hyland and Kay stocks all outcrop within several kilometers of the Hyland Pluton. Limited stream geochemistry in the vicinity of these intrusives is similiar in magnetitude to the Hyland drainage geochemistry. Brief examiniations of two of three stocks (i.e. Boundary and North Hyland) indicate that both texturally and mineralogically these plutons are identical to the Hyland Pluton. Further work at Hyland should include a close

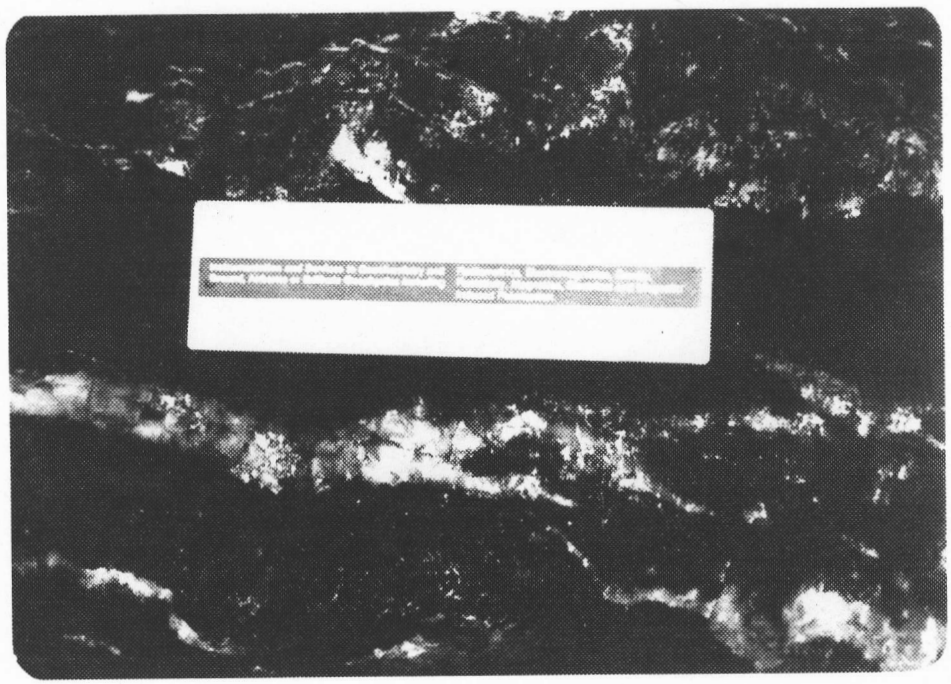


Plate 5: Tuna Claims - Sample of Quartz-tourmaline-pyrite ± scheelite from the head of the Two Lakes Cirque. (Showing Reference Number 2 on Geology Map)

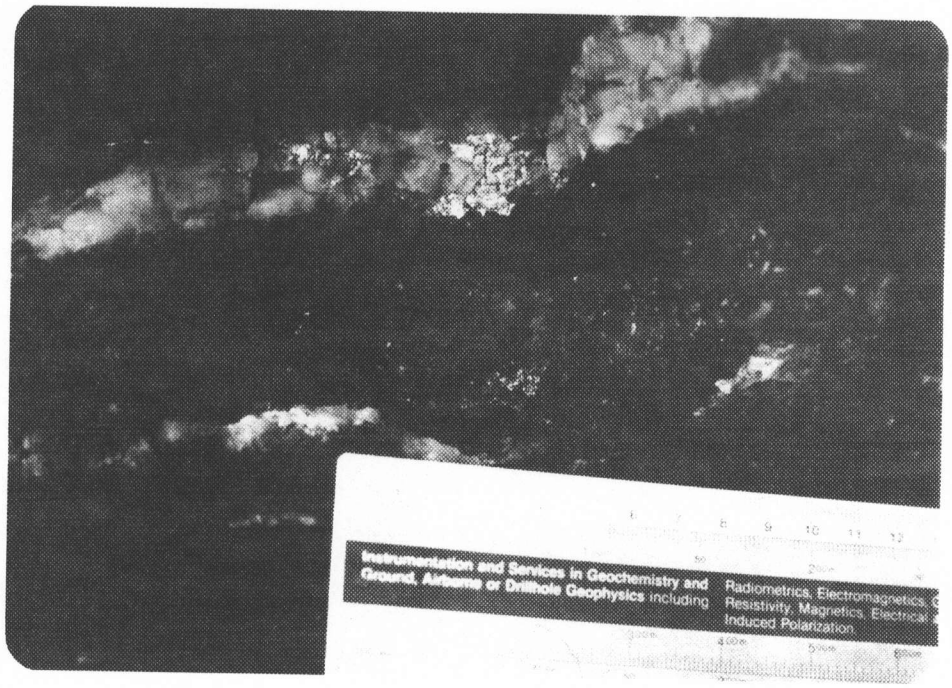


Plate 6: Tuna Claims - Sample of Quartz-tourmaline-pyrite ± scheelite collected from the talus on the south slope of Two Lakes Cirque. (Showing Reference Number 3 on Geology Map)

examination of these neighbouring plutons, to better evaluate their economic potential.

Geochemistry

Forty-four rock samples and one hundred and forty-four silt and soil samples were collected at Hyland during 1981. All samples were analysed for copper, molybdenum and tungsten. In addition, one hundred and twenty-one of the samples were analysed for silver and forty-nine were analysed for tin. All of the analysis was done by Bondar-Clegg Laboratories in Vancouver using standard geochemical techniques. (See Appendix 5 for Analytical Paramters) Ten panned concentrates were collected from the Hyland drainages as check samples on scheelite grain counts from panned concentrates recorded from the sampling done between 1971 and 1976.

All samples were plotted on a line contour map at a scale of (1 inch - 1/4 mile) with the aid of altimeter readings and topolite measurements. (See Figures 6, 7 and 8) A random sampling pattern was employed due to the short length of the program and the rugged terrain which limited access to all parts of the claim block. Most of the sample traverse routes coincided with the various creek paths draining the Hyland Pluton. Geochemical analytical techniques were employed rather than assay techniques in an attempt to reduce costs but still obtain a relatively accurate appraisal of the area samples. (See Appendix 4 For A Completed Tabulated Summary of Geochemistry)

Discussion of Results

Silt and Soil Geochemistry

Tungsten

Tungsten results ranged from 2ppm to greater than 2000ppm. Seventy-five percent of the results were less than or equal to 10ppm. Of the remaining twenty-five percent, eight percent were in excess of 35ppm.

Two extremely high samples 81-H-T0010 (980ppm WO_3) and 81-H-W3006 (2000ppm WO_3) can be explained by the nearby presence of mineralized outcrop upslope from the sample sites. In the case of sample T0010 a tungsten rich quartz vein was found upslope from the sample site. Sample W3006 is one of three high tungsten and copper values collected at the base of a talus slope which is directly downhill from significant chalcopyrite-scheelite mineralization. Slightly anomalous tungsten values in the creeks draining the southwestern corner of the claim blocks are attributable to the tungsten skarn mineralization within the phyllite roof pendant located above the headwaters of these drainages. In addition, several mineralized tourmaline-quartz breccia zones are located within the intrusive adjacent to the central roof pendant which could be a second source of these anomalies.

Weakly anomalous tungsten values were detected in both soils and silts collected in the Two Lakes Cirque which is located on the eastern side of the pluton. These anomalous tungsten values coincide with high copper and anomalous molybdenum results. Mineralized talus and a tungsten-molybdenite showing were discovered near the head of the cirque.

A tungsten value of 50ppm was collected near the head of the south flowing creek on the Boundary Pluton. Scheelite grain counts in excess of 200 grains were recorded during previous years sampling for the area upslope of this anomalous result. No source in outcrop has been found to date.

Molybdenum

One hundred and eleven of the one hundred and forty-four samples analyzed for molybdenum produced results less than or equal to 5ppm. Twenty-five of the results considered weakly anomalous ranged from greater than 5ppm to 15ppm. The remaining eight samples produced results in excess of 15ppm with the highest recorded value being 54ppm.

Using the regional silt sampling done on the entire Frances Lake Map sheet as a basis for comparison, background for molybdenum was two parts per million thus almost half of the total number of samples analysed at Hyland were anomalous. High molybdenum result occur usually adjacent to high copper and tungsten values and most of the very high molybdenum result can be related to nearby showings.

Copper

Copper silt and soil geochemistry produced the consistently highest analytical values which are indicative of the high copper content of the region. For this reason values of 50ppm or less were considered to represent background concentrations. Results ranging from greater than 50ppm to less than 150ppm were considered to be theshold to weakly anomalous concentrations. Analytical results in excess of 150ppm represented anomalous concentrations. Copper anomalies coincided with molybdenum and tungsten concentration especally in the vicinity of the central roof pendant and the chalcopyrite-scheelite-pyrrhotite skarn developed with the pendant.

Silver, Tin

Seventy-nine samples were analysed for silver with only one result in excess of one part per million. This high silver concentration 1.5ppm coincided with anomalous copper, molybdenum and tungsten values in samples collected near the skarn zone in the central roof pendant.

Regional sampling over the entire Frances Lake area indicated a silver background value of 0.2ppm and all values in excess of 0.6pp. were considered to be anomalous.

The results at Hyland parallel the regional pattern with the majority of the values being background and with only isolated high values scattered over the pluton. Forty-nine samples were analysed for tin with the highest value obtained being 18ppm.

Further sampling of the Tuna claims for both silver and tin will help determine the significance of the present results.

Rock Sampling Results

Forty-four rock samples were collected and analysed for copper, molybdenum, tungsten and silver. Three of the forty-four samples were analysed using an assay analytical technique while the remainder of the samples were analyzed using a geochemical technique. (See Appendix 4 For Tabulated Results - Lithogeochemistry) (See Appendix 5 For A Summary of Results)

All geochemical analysis for tungsten which resulted in values in excess of 2000ppm were subsequently checked using a colourmetric assay technique.

Seven samples were analyzed for gold with the highest result being 160ppb.

All of the rock sampling done on the Tuna claims is displayed in Figure 8. A grab sampling technique was employed to collect rock samples for analysis.

A majority of the rock sample results are anomalous. This is due to the fact that rock sampling was confined to areas of knwon mineralization either in outcrop or talus. Lithogeochemical sampling was conducted as a check of the ralative concentration of the various types of mineralization detected at Hyland.

TABLE OF ABBREVIATIONS

ppm	Parts per Million
Ext.	Extraction
N.T.S.	National Topographic System
W or WO_3	Tungsten
Cu	Copper
Ag	Silver
Mo	Molybdenum
HCL	Hydrochloric Acid
HNO_3	Nitric Acid
K-Ar	Potassium - Argon dating
Ma	Millions of years
Au	Gold
Bi	Bismuth
As	Arsenic
Sn	Tin
>	Greater Than
<	Less Than
ppb	Parts per billion
Pb	Lead
Zn	Zinc

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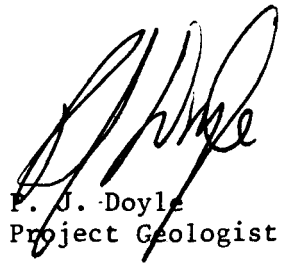
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STATEMENT OF QUALIFICATIONS

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Experience

1980 to Present	Project geologist with Union Carbide Exploration. Activities include diamond drill supervision, stratigraphic correlation, geological mapping, and supervision of geochemical sampling programs.
1979 (Summer)	Geologist Riocanex - Vulcan Project Lead-Zinc Prospect N.T.S. 105I - South Nahanni River area N.W.T. - Geological mapping, supervision of geochemical sampling program, and diamond drill supervision.
1978 (Summer)	Geological Assistant - Hornby Bay. Union Carbide - B.P. Minerals Uranium Joint venture Program - N.W.T. north of Great Bear Lake. Activities including geochemical sampling, prospecting geophysics and some regional mapping.
1977 - 1975 (Summers)	International Nickel Company of Canada, Copper Cliff Mill and Smelter Complex, Copper Cliff, Ontario.



March 15, 1982

P. J. Doyle
Project Geologist

Appendix I

Geology of the Tuna Claim Group

By D. Archibald
D. H. James

December 1981

GEOLOGY OF THE TUNA CLAIM GROUP (HYLAND PLUTON)

WATSON LAKE MINING DIVISION

YUKON TERRITORY

NTS 105H/16

by

D. Archibald, Kingston, Ontario

D. H. James, Vancouver, B. C.

December, 1981

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1. INTRODUCTION

1.1 General

The area under investigation included the TUNA claim group (180 claims) staked as part of UCEX project 102 (1981) to cover the Hyland pluton (NTS 105H/16). This report is based on field work between July 1 and July 9, and August 10 and 17, 1981. In addition, a representative suite of samples was stained for K-feldspar and examined in thin section.

The property is a few kilometres from the Nahanni Range (Cantung) Road in rugged mountainous terrain including several glaciers.

1.2 Geological Summary

The Hyland quartz monzonite is an elongate pluton in the northeast part of the Frances Lake map area (105-H; Blusson, 1966, 1968). The long axis of the intrusion has a NW-SE orientation and the dimensions of the pluton are approximately 2.5 km by 9 km. Five showings have been located and an additional 13 mineral occurrences have been noted.

The geological history can be summarized as follows:

1) Emplacement of the Hyland Pluton into Precambrian phyllites accompanied by the development of an essentially equigranular marginal phase and a megacrystic core of quartz monzonite.
11) Subsequent intrusion of megacrystic quartz monzonite similar to the above and possible development of a marginal foliation. The number of such events is unknown.

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11) Subsequent intrusion of megacrystic quartz monzonite similar to the above and possible development of a marginal foliation. The number of such events is unknown.

111) Late stage emplacement of aplitic and porphyritic leucocratic dykes in the margin of the pluton. These dykes are especially abundant in the vicinity of the central zone of roof pendants defining the apical zone of the pluton.

lVa) Late stage quartz, and quartz-tourmaline veins, breccia and stockwork zones are also abundant in the apical zone of the pluton and cross-cut earlier dykes. Many of these contain pyrite, and minor amounts of molybdenite, scheelite, chalcopyrite, chalcocite, arsenopyrite, pyrrhotite and bismuthinite. Preliminary assay results indicate significant gold and silver values.

lVb) Potassic and sericitic alteration often accompanied by quartz flooding are prominently developed along vein margins. This alteration is pervasive in several areas of intense veining. These areas contain the best mineralization.

lVc) Metasomatic fluids formed pyrrhotite-scheelite-chalcopyrite skarn in the central roof pendant of sedimentary rocks. The extent and depth of the skarn is unknown.

V) The last intrusive event within the pluton appears to have been the intrusion of small lamprophyre dykes.

2. THE HYLAND PLUTON

2.1 Marginal Equigranular Quartz Monzonite (eqm)

The margin of the pluton comprises a coarse- to very coarse-grained equigranular quartz monzonite that is commonly weakly foliated

but may have the appearance of an augen gneiss if strongly foliated. The unfoliated variety is mineralogically and texturally similar to the equigranular quartz monzonite of the main Lened stock (Archibald, 1980).

In thin section, quartz is strained and has sutured grain boundaries. K-feldspar is typically a patch perthite but microcline is usually present. Plagioclase is zoned and typically altered to sericite, calcite and epidote. Red-brown biotite is commonly rimmed by chlorite and sericite. Myrmekitic intergrowths and microveins are well developed. Accessory minerals include apatite, zircon, allanite, tourmaline, opaques and rare sphene.

This unit is typically less than 3 m thick, however, at several localities an apparent thickness of more than 100 m is indicated. This thickness is in part due to the shallow to moderate dip of the contact (e.g., along the southeast side the contact dips at 30° to 45°).

2.2 Megacrystic Quartz Monzonite (mqm)

The interior of the Hyland Pluton is underlain by coarse- to very coarse-grained megacrystic quartz monzonite similar in all respects to the Lened equivalent. The typical sample contains K-feldspar megacrysts with dimensions of 2 x 2 x 6 cm. Some large megacrysts up to 8 cm in length have been seen (i.e., similar to those in the megacrystic quartz monzonite of the Rudi Stock). Biotite is the only mafic mineral and appears to be more abundant in the northern part of the pluton. In the southeast part of the pluton (map reference 2) an intrusive

contact between two bodies of this unit was seen. Multiple intrusion of similar magma may have resulted from the introduction or concentration of boron in the subjacent magma chamber. Boron is known to lower the solidus and liquidus of granitic melts (Chorlton and Martin, 1978).

In thin section, quartz appears granulated and strained. K-feldspar is typically perthitic microcline. Plagioclase is commonly strongly zoned and dusted with sericite. In some samples, secondary albite is present. Biotite is partly altered to chlorite and sericite. Myrmekite and microveins of quartz, tourmaline and more rarely, calcite and sericite, are common. Accessory minerals are zircon, apatite, opaques, epidote and tourmaline.

2.3 Aplites, Quartz-Feldspar Porphyries and Leucocratic Quartz Monzonite

Aplites and quartz-feldspar porphyries are abundant near the margins of the pluton. Along the south-central ridge a prominent swarm of these dykes trends approximately 015°. The dykes in the marginal zone are usually found to be nearly perpendicular or sub-parallel to the contact and rarely exceed 2 m in width.

The dykes are leucocratic and composed of quartz and K-feldspar in about equal proportions with some plagioclase. Biotite, tourmaline and secondary muscovite are common accessories. Rarely, pegmatites of similar composition are associated with this suite. Porphyries are defined by apparent phenocrysts of quartz and feldspar. These porphyries may be comparable to the late stage "hydrothermal dykes" described at

Lened. Leucocratic quartz monzonites are medium-grained equivalents of the aplites with an equigranular texture and appear to be intrusive. Some of these dykes are foliated along with the host rock and are an early intrusive phase.

In thin section, aplites comprise equigranular quartz, perthite and albite. In some samples, quartz and feldspars occur as larger rounded grains. Sericite, biotite, tourmaline and garnet are prominent accessory minerals.

Most porphyries contain rounded quartz phenocrysts and subhedral grains of perthite and zoned plagioclase. The matrix is sucrosic quartz, microcline and albite. Biotite, zircon, apatite, tourmaline and opaque minerals are accessory.

Leucocratic quartz monzonite is similar to the marginal equigranular quartz monzonite. However, plagioclase is more albitic, and allanite, tourmaline and sericite rosettes are more common. Poikiloblastic garnet is present in some samples.

2.4 Mafic Dykes

Small east to northeast trending lamprophyre dykes cut equigranular and megacrystic quartz monzonite. None were mapped in the surrounding country rock. No other dykes or veins cut these dykes, thus a very late time of emplacement is probable.

These dykes are mafic and fine-grained and have an ophitic texture. Pyrite and pyrrhotite are common accessory sulphides. In

thin section, the rock consists of euhedra of amphibole and biotite in a matrix of subhedral, zoned plagioclase and quartz. Plagioclase cores have been altered to epidote and calcite. Hornblende is altered, in part, to fibrous uralite and sphene.

3. VEINS, MINERALIZATION AND ALTERATION

3.1 Veins

Veins are abundant in the apical zone of the pluton; rusty weathering quartz ± tourmaline ± pyrite veins are the most common. Typically quartz is white and porcelaneous. Tourmaline occurs as a fine aggregate and commonly in the same vein in acicular habit growing perpendicular to the vein margins. Pyrite occurs as euhedral to subhedral cubes and as a coarse aggregate apparently in-filling patches of quartz. Quartz-tourmaline boundaries are often cuspate indicating a second generation of quartz. The complexity of these tourmaline veins suggests episodic pulses of boron metasomatism. This is well displayed in tourmaline breccias and stockworks containing several sets of tourmaline veins. K-feldspar-tourmaline ± quartz appears to be an important vein association and commonly occurs with the quartz-tourmaline-pyrite veins. Other vein types include quartz, quartz-sulphides, and very fine-grained tourmaline. Quartz veins are abundant in the contact aureole of the pluton but are mostly barren except in the south where quartz-scheelite veins have been found .

Thin section examination confirms the simple vein mineralogy. Quartz is typically strained and in some cases is mylonitic. K-feldspar is a patch perthite that occurs as embayed grains and displays symplectic intergrowths with other minerals, especially sericite. Although more common in the vein selvage, sericite occurs as rosettes and as part of the vein matrix with tourmaline and calcite. Tourmaline may occur as large poikiloblastic grains, large strongly zoned euhedra and as very fine needles in the same vein. In a few thin sections, albite replaces plagioclase that was probably derived from the host.

3.2 Alteration

Potassic, sericitic and argillic alteration assemblages have been identified. Potassic alteration is prominent in the contact zone of some tourmaline and tourmaline-K-feldspar veins, but no pervasive potassic zone was found. Sericitic alteration along most veins and dykes is characterized by coarse sericite, commonly in a rosette habit, in rusty weathering pyritic rock with green tinted plagioclase. In two areas on the east side of the pluton (map references 1 and 2) intense pervasive sericitic alteration is present. In these areas, potassic alteration in vein selvages is also common. Argillic alteration is rare but where present it is usually associated with late tourmaline breccias. Albitization of feldspars has been identified in several samples from the apical zone of the pluton (map reference 2).

A few centimeters from a vein, quartz monzonite is characterized

by chloritized biotite, dusty plagioclase (sericite+calcite-opaques) and microcline. Closer to the vein margin this alteration is more pervasive and sericite is coarser and often in a rosette habit. Along the vein margin plagioclase may be replaced by albite. Tourmaline and large euhedral apatite appear to have been introduced along numerous quartz microveins (quartz flooding).

In thin section, potassic alteration is characterized by the pervasive replacement of plagioclase, biotite and quartz by a patch perthite. In narrow vein selvages and in most massive, coarse-grained selvages, the original igneous texture is preserved. Tourmaline and sericite are the most common accessory minerals in this suite. Albitized quartz monzonite is similar in appearance but the prominent feldspar is albite which is intergrown with and replaces K-feldspar.

3.3 Mineralization

The widely distributed and varied, mineralization and alteration types are summarized in Table 1. As may be seen in this table the most important mineralization is molybdenite and scheelite often occurring together. Copper, gold and silver may prove to be significant considering the association with arsenopyrite and bismuthinite.

It is possible that there is a crude vertical zonation of the mineralization in the Hyland pluton. Generally, molybdenite-bearing veins appear to be more abundant in the central and deeper part of the intrusion than scheelite-bearing veins. Quartz-scheelite veins are more

common near the contact and along ridge crests. Such vertical zonation of molybdenum and tungsten mineralization has been reported from other deposits (e.g., Pouliot et al., 1978 and Strong, 1981).

It appears that the most significant molybdenum mineralization occurred in the tourmaline part of tourmaline-K-feldspar ± quartz veins (map reference 1). In this area molybdenum flakes associated with bismuthinite are disseminated in intensely veined and altered megacrystic quartz monzonite. This zone is about 50 m in diameter. Vertically above this zone and elsewhere on the property, coarse molybdenite occurs along the margins of quartz veins. In the southern part of the apical zone (map reference 3) fine-grained, scaly molybdenite and bismuthinite occur in a tourmaline breccia and stockwork (confirmed by XRD) and as disseminations in aplites and quartz-feldspar porphyries.

Scheelite commonly occurs as large subhedral grains and as fine disseminated grains in quartz-tourmaline ± pyrite veins, and in quartz veins. On the west side of the pluton (map reference 5) scheelite also occurs in a quartz-tourmaline breccia pod. Significant scheelite mineralization occurs in a pyrrhotite-chalcopyrite skarn in the large central roof pendant (map reference 4). Other roof pendants have not been prospected. Lesser amounts of scheelite are also present in the quartz part of tourmaline-K-feldspar-quartz-molybdenite veins (map reference 1) and in the sericitic alteration zones bordering some quartz veins (map reference 3). In addition, it is perhaps significant that one sample of quartz-tourmaline vein vertically above the molybdenite "pipe"

did not lamp scheelite or powellite but did assay greater than 2000 ppm tungsten (81-H-A-32-5; map reference 1).

Chalcopyrite occurs with scheelite in pyrrhotite skarn, in quartz-sulphide veins with chalcocite, and in sericitic margins of tourmaline-K-feldspar-quartz-molybdenite veins accompanied by pyrite and pyrrhotite. In the latter vein type the copper and iron sulphides fill tension gashes in the tourmaline (map references 1 and 2).

The association of arsenopyrite and bismuthinite (<1% Bi) in some quartz-sulphide veins (map reference 2) may have precious metal (Au, Ag) significance. Although no gold, or silver minerals were identified in polished section, the precious metals may be in solid-solution with sulphide minerals (e.g., pyrite). Preliminary assay results and whole-rock geochemical analyses indicate that many sulphide-rich samples are anomalous in silver as well as gold.

4. STRUCTURE (HYLAND PLUTON)

In the contact zone and in the apical zone of the Hyland Pluton, the quartz monzonite commonly has a well defined foliation. The foliation generally trends 120°, roughly parallel to the long axis of the

stock, and is steeply dipping. However, in the southeast part of the stock (map reference 2), the foliation has a more easterly trend. The foliation may be related to the emplacement of younger batches of magma into the apical zone of the pluton.

Joints are numerous and well developed in the Hyland pluton and are varied in their spacing and attitude. Typically, prominent joint sets are nearly parallel or perpendicular to the contact. Locally, joints have controlled the emplacement of late vein systems. However, earlier veins and dykes may be cut by later joints, generally at a shallow angle. In a few places, late fractures have been the locus of narrow zones of cataclasis and brecciation. On the west side of the pluton, several such systems have coalesced upwards to form pod-like, tourmaline breccia zones containing scheelite and molybdenite (map reference 5). Within these zones tourmaline and more rarely quartz, define a lineation with a consistent trend and shallow plunge.

5. AGE OF THE HYLAND PLUTON

Biotite from quartz monzonite and muscovite from an alteration zone, yielded dates of 92.4 +/- 1.6 and 94.3 +/- 1.6 Ma (2σ) respectively. The biotite is from a megacrystic quartz monzonite vertically above an occurrence of disseminated molybdenite in tourmaline veins (map reference 1). The muscovite is from a coarse-grained K-spar-sericite-tourmaline vein and alteration system in the apical zone of the pluton above Three Lake Cirque (map reference 2). Several flakes of molybdenite were recovered

from this sample during mineral separation. Analytical techniques are described in Archibald (1980, 1981) and the data are presented in Table 2.

The biotite date is comparable to those from the Atlar, Glacier and Flat Lake stocks. The muscovite date is identical to the oldest dates from Lened and Cantung (Archibald, 1980, 1981). This suggests a similar age of emplacement for these stocks. Although the Hyland stock is a composite pluton, emplacement, mineralization and alteration occurred in a relatively brief period of time. There is no evidence for mineralization being related to a significantly younger intrusive event. Other plutons in the area might also host vein-related mineralization.

6. SUMMARY AND CONCLUSIONS

The Hyland pluton comprising a marginal equigranular phase, a megacrystic quartz monzonite core and a suite of aplites, quartz-feldspar porphyries and veins, is in many respects similar to other plutons in the Selwyn Mountains (Archibald, 1981; Anderson, 1982). In contrast to most other plutons, a complex intrusive and late stage history is indicated for this stock. In addition, the apical zone and several roof pendants have been preserved. Within the apical zone of the intrusion, scheelite, molybdenite and chalcopyrite are associated with quartz-tourmaline $\pm$ K-feldspar $\pm$ pyrite veins and related alteration. Quartz-pyrite-bismuthinite-arsenopyrite veins may host significant gold and silver mineralization. The large number of showings and occurrences in this stock make the Hyland pluton a worthy target for further exploration and more detailed investigation.

Table 1. Summary of Mineralization.

Host Type	Mineralization	Associated Wallrock Alteration	Map Reference
Quartz	Molybdenite, scheelite	Weak sericitic	3 and 5
Quartz-sulphide	Pyrite, arsenopyrite, bismuthinite, molybdenite, chalcopyrite, chalcocite, pyrrhotite, gold (?), silver (?)	Sericitic	2 and 3
Quartz-tourmaline ± pyrite	Pyrite, molybdenite, scheelite	Sericitic, albitic	2 and 3
Tourmaline	Molybdenite, pyrite (later) bismuthinite	Sericitic, potassic	1
Tourmaline-K-feldspar ± quartz	Scheelite in quartz part; Molybdenite in tourmaline; pyrite, pyrrhotite, chalcopyrite in altered wall rock	Intense sericitic, potassic	1 and 2
Tourmaline breccia	Molybdenite, pyrite bismuthinite	Sericitic	3
Skarn	Pyrrhotite, scheelite, chalcopyrite	Metasomatic association	4
Aplites and quartz-feldspar porphyries	Molybdenite	Sericitic	3

Table 2. Potassium-Argon Dates, Hyland Pluton.

Sample	Material Analyzed	% K	^{40}Ar (rad) cm^3 NTP/g	% Ar Atmos.	Apparent age[1] and 2σ error (Ma)
81-H-A-32-1	Biotite	7.155	2.636×10^{-5}	7.0	92.4 ± 1.6
81-H-T-3-1	Muscovite	9.103	3.423×10^{-5}	9.5	94.3 ± 1.6

[1]Constants used: $\lambda_\varepsilon = 0.581 \times 10^{-10}\ a^{-1}$, $\lambda_\beta = 4.962 \times 10^{-10}\ a^{-1}$,

$^{40}K = 1.167 \times 10^{-4}$ g/gK.

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Appendix 2

Statement of Expenditures

Tuna Claims 1981

Statement of Expenditures

Tuna Claims 1981

Tuna Claims 1 to 32, 41 to 72, 81 to 112, 121 to 152 and 161 to 176.

Watson Lake Mining Division - N.T.S. 105H-16

Salaries:	Geologist at $135/manday x 3 mandays	$ 405.00	
	1 Junior Geologist at $80/manday x 5 mandays	400.00	
	Students at $55/manday x 36 mandays	1,980.00	$2,785.00
Consultants:	D. Archibald at $125/day x 10 days	1,250.00	
	(Expenses as per Invoice)	295.62	
	- Age Dates, Thin Sections Lab Work on Tuna Samples(as per Invoice)	1,809.00	$3,354.62
Room and Board:			
	$30/manday x 54 mandays		$1,620.00
Airphotography:			
	McElhanney Engineering-Colour Airphotos (As per invoice)		$1,761.25
Geochemistry-Bondar Clegg Laboratories-Vancouver:			
	Report A21-1534	9.00	
	A21-1535	9.00	
	A21-2717	71.50	
	A21-1444	36.00	
	121-2716	560.90	
	121-2720	213.00	
	121-2929	77.85	
	A21-1652	9.00	
	421-2929	33.75	$1,020.00

Helicopter Costs:

Date	Invoice	Hours	Rate/Hour
August 8/81	5335	1.5	$325.00/hr.
August 9/81	5368	1.2	" "
August 9/81	5336	1.9	" "
August 10/81	5337	1.6	" "
August 11/81	5338	2.4	" "
August 12/81	5339	2.8	" "
August 14/81	5340	1.2	" "
August 17/81	5346	2.4	" "
August 18/81	5347	0.9	" "
Sept. 14/81	4949	0.7	" "

Total 16.6 hours x $325/hour $5,395.00

Helicopter Fuel: $50/hour x 16.6 hours	$ 830.00
Total Expenditures	$16,765.87

P. J. Doyle
Project Geologist

McElhanney Surveying & Engineering Ltd.
No. 200 – 1200 W. Pender St.,
Vancouver, B.C. V6E 2T3

ACCOUNT No(s)	AMOUNT
400-091-403-101	420.38
400-091-403-102	1484.88
400-091-403-104	1161.25
Date to be Paid by	Date goods Received
	Oct 14/81
FIRST APPROVAL	

McElhanney

Please remit to:
200 - 1166 Alberni St.
Vancouver, B.C. V6E 1A5

In account with: Union Carbide Exploration Corporation
Suite 930 - 800 W. Pender St.
Vancouver, B.C.
V6C 2V6

Invoice No. 9023006

Date 13 Oct./81

Your Order No.

Attention: Mr. Charlie N. Forster

Our Job. No. 06877-1

FOR PROFESSIONAL SERVICES IN RESPECT TO:

For the provision of supplying new aerial photography including 1 set of colour contact prints and flight index of your area of interest as per our letter dated 24 July, 1981.

Final Billing

1) Area 1	Tuna 104	$1,625.00	
FST 2.25%		36.56	
		$1,661.56	
PST 6%		99.69	
			$1,761.25
2) Area 2	Pena 102	$1,370.00	
FST 2.25%		30.83	
		$1,400.83	
PST 6%		84.05	
			$1,484.88
3) Area 3	Kalgan 101	$3,880.00	
FST 2.25%		87.30	
		$3,967.30	
PST 6%		238.04	
			$4,205.34
TOTAL			$7,451.47

OCT 14 1981

JCG:leo

2%

Terms Net 30 days Interest at 1.XX% per month will be charged on overdue accounts

October 26, 1981

Union Carbide Exploration Co.

Suite 930 - 800 W. Pender St.

Vancouver, B. C.

Attn: P. J. Doyle

I N V O I C E

- two K-Ar dates @ $300./date	$600.
- 49 thin sections @ $6.00/section	294.
- 7 days work @ $125./day, includes	875.
- slabbing rock samples	
- thin section examination	
- three geological reports	
- typing and xeroxing	40.
TOTAL	$1809.00

Please make cheque payable to:

D. A. Archibald and mail to,

51 Patrick St., Apt. B

Kingston, Ontario K7K 3N9.

ACCOUNT No(s)	AMOUNTS
404-091-366-102	1809.00
Date to be Paid by	Date goods Received
FIRST APPROVAL	
SECOND APPROVAL	
AUDITED BY	

INVOICE

To: P. J. Doyle, Project 102
Union Carbide Expl., Vancouver B. C.
Sept. 9, 1931.

Re: Travel expenses for D. Archibald
Kingston-Watson Lake-Kingston
June and Sept. 1931

- plane ticket	$759.50
- gas	27.65
- limousine	35.00
- hotel	47.50
- meals	17.20
Total	$886.85

Please make cheque payable to:
D. A. Archibald and mail to,
51 Patrick St., Apt. B,
Kingston, Ontario.
K7K 3N9

BONDAR-CLEGG & COMPANY LTD.

764 BELFAST ROAD, OTTAWA, ONTARIO, K1G 0Z5 PHONE: 237-3110 TELEX: 053-4455

PROJECT COPY

INVOICE: G 02791

DATE: September 23, 1981

REPORT NO: A21 - 1444

PROJECT: 102

W.O. No. E 7791

Union Carbide Exploration Corporation
930 - 800 West Pender Street
Vancouver, B.C. V6C 2V6

4	WO_3	Assays	@ $ 9.00	$ 36.00

ACCOUNT #	AMOUNTS
400-091-328-102	36.00
Date to be Paid by	Date Goods Received
	Sept 30/81
TECHNICAL APPROVAL	
FINANCIAL APPROVAL	
APPROVED BY	

mer

THIS IS A PROFESSIONAL SERVICE
ACCOUNTS DUE WHEN RENDERED

BONDAR-CLEGG & COMPANY LTD.
764 BELFAST ROAD, OTTAWA, ONTARIO, K1G 0Z5 PHONE: 237-3110 TELEX: 053-4455

INVOICE: G 03071

DATE: October 5, 1981

REPORT NO: A21 - 1535

PROJECT: #102

W. O. No. E 7878

Union Carbide Corp
930 - 800 West Pender Street
VANCOUVER, B.C.
V6C 2V6

1	WO_3	Assay	@ $ 9.00 $ 9.00

ACCOUNT No(s)	AMOUNTS
100-091-347-107	9 00
Date to be Paid By	Date goods Received
	Oct 6/81
PERSONAL	
P.O. No.	

ljm

THIS IS A PROFESSIONAL SERVICE
ACCOUNTS DUE WHEN RENDERED

BUNDY-CLEGG & COMPANY LTD.

764 BELFAST ROAD, OTTAWA, ONTARIO, K1G 0Z5 PHONE: 237-3110 TELEX: 053-4455

INVOICE: G 13070

DATE: October 5, 1981

REPORT NO: A21 - 1534

PROJECT: #102

W. O. No. E 7877

Union Carbide Corp
930 - 800 West Pender Street
VANCOUVER, .B.C.
V6C 2V6

1	WO_3	Assay @ $ 9.00	$ 9.00

ACCOUNT No(s)	AMOUNTS
400-091-3,8-10	9 00
Date to be Pa...	...ipts Received
	Oct 6/81
FIRST APPROVAL	
...NE APPROVAL	

ljm

THIS IS A PROFESSIONAL SERVICE
ACCOUNTS DUE WHEN RENDERED

BONDAR-CLEGG & COMPANY LTD.

764 BELFAST ROAD, OTTAWA, ONTARIO, K1G 0Z5 PHONE: 237-3110 TELEX: 053-4455

INVOICE: G 13046

DATE: October 5, 1981

REPORT NO: 421 - 2717

PROJECT: 102 Doyle

Mr. J.J. Royall
Union Carbide Exploration
930 - 800 West Pender Street
Vancouver, B.C.
V6C 2V6

5	Copper,Molybdenum,Silver	Analyses	@ $ 3.25	$ 16.25
5	Tungsten	Analyses	@ $ 3.75	18.75
				$ 35.00
			Less 10% Discount	(3.50)
				$ 31.50
5	Gold	Analyses	@ $ 5.25	$ 26.25
5	Sample Preparations		@ $ 2.50	12.50
5	Retention & Handling of rejects		@ $ 0.25	1.25
				$ 71.50

ddm

ACCOUNT No(s)	AMOUNTS
400-091-358-102	71.50
Date to be	Goods Received
	Oct 6/81
...T APPROVED	
...AP.	

THIS IS A PROFESSIONAL SERVICE
ACCOUNTS DUE WHEN RENDERED

BONDAR-CLEGG & COMPANY LTD.
764 BELFAST ROAD, OTTAWA, ONTARIO, K1G 0Z5 PHONE: 237-3110 TELEX: 053-4455

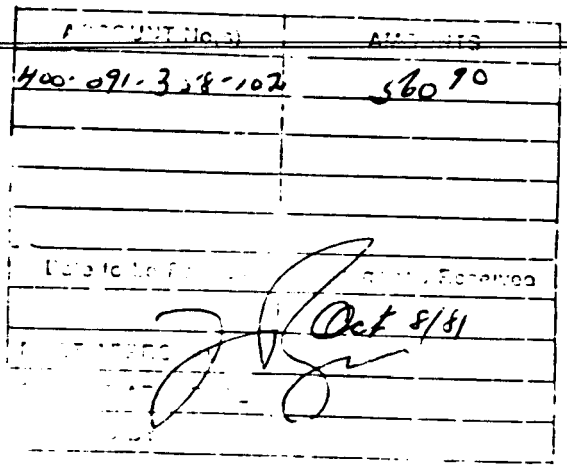
INVOICE: G 13157

DATE: October 7, 1981

REPORT NO: 121 - 2716

PROJECT: 102

Mr. J. J. Royall
Union Carbide Exploration Corporation
930 - 800 West Pender Street
Vancouver, B.C. V6C 2V6



79	Copper, Molybdenum, Silver	Analyses	@ $ 3.25	$ 256.75
79	Tungsten	Analyses	@ $ 3.75	296.25
				$ 553.00
		Less 10% Discount		(55.30)
			Sub-total	$ 497.70
79	Sample Preparations		@ $ 0.60	$ 47.40
79	Retention & Handling of Rejects		@ $ 0.20	15.80
			TOTAL	$ 560.90

RECEIVED
OCT - 7 1981

mer

THIS IS A PROFESSIONAL SERVICE
ACCOUNTS DUE WHEN RENDERED

BONDAR-CLEGG & COMPANY LTD.

764 BELFAST ROAD, OTTAWA, ONTARIO, K1G 0Z5 PHONE: 237-3110 TELEX: 053-4455

INVOICE: G 13158

DATE: October 7, 1981

REPORT NO: 121 - 2720

PROJECT: 102

Mr. J. J. Royall
Union Carbide Exploration Corporation
930 - 800 West Pender Street
Vancouver, B.C. V6C 2V6

Balance

400-091-3-8-102	213 00
Date to be Billed	Goods Received
	Oct 8/81
APPROVAL	

30	Copper, Molybdenum, Silver	Analyses	@ $ 3.25	$ 97.50
30	Tungsten	Analyses	@ $ 3.75	112.50
				$ 210.00
		Less 10% Discount		(21.00)
			Sub-total	$ 189.00
30	Sample Preparations		@ $ 0.60	$ 18.00
30	Retention & Handling of Rejects		@ $ 0.20	6.00
			TOTAL	$ 213.00

RECEIVED OCT - 7 1981

mer

THIS IS A PROFESSIONAL SERVICE
ACCOUNTS DUE WHEN RENDERED

BONDAR-CLEGG & COMPANY LTD.

764 BELFAST ROAD, OTTAWA, ONTARIO, K1G 0Z5 PHONE: 237-3110 TELEX: 053-4455

INVOICE: G 03298

DATE: October 10, 1981

REPORT NO: 421-2929

PROJECT: 102

Mr. J. J. Royall
Union Carbide Corp
930 = 800 West Pender Street
VANCOUVER, B. .C
V6C 2V6

10	Tungsten	Analyses @ $ 3.75	$ 37.50
		Less 10% Discount	(3.75)
			$ 33.75

	ACCOUNTS
100-091-338-102	33 75
Date to be Paid by	Date goods Received
	Oct 14/81
FIRST APPROVAL	
SECOND APPROVAL	
INITIATED BY	

apq

THIS IS A PROFESSIONAL SERVICE
ACCOUNTS DUE WHEN RENDERED

BONDAR-CLEGG & COMPANY LTD.
764 BELFAST ROAD, OTTAWA, ONTARIO, K1G 0Z5 PHONE: 237-3110 TELEX: 053-4455

INVOICE: G 03362

DATE: October 12, 1981

REPORT NO: 121-2929

PROJECT: 102

Union Carbide Exporation Corporation
930 - 800 West Pender Street
VANCOUVER, B.C.
V6C 2V6

Amount

10	Copper,Molybdenum,Silver	Analyses	@ $ 3.25	$ 32.50
10	Arsenic	Analyses	@ $ 2.90	29.00
10	Bismuth	Analyses	@ $ 2.50	25.00
				$ 86.50
			Less 10% Discount	(8.65)
			Sub Total	$ 77.85
10	Gold	Analyses	@ $ 5.25	$ 52.50
10	Sample Preparations		@ $ 0.60	6.00
10	Retention & handling of rejects		@ $ 0.20	2.00
			TOTAL	$ 138.35

ACCOUNT No(s)	AMOUNTS
4600-094 3-4-102	138.35
Date to be Paid by	Goods Received
FIRST APPROVAL	
SECOND APPROVAL	

ljm

THIS IS A PROFESSIONAL SERVICE
ACCOUNTS DUE WHEN RENDERED

764 BELFAST ROAD, OTTAWA, ONTARIO, K1G 0Z5 PHONE: 237-3110 TELEX: 053-4455

INVOICE: G 04989

DATE: October 16, 1981

REPORT NO: A21 - 1652

PROJECT: 102

W.O. No. E 7972

Mr. J. J. Royall
Union Carbide Exploration Corporation
930 - 800 West Pender Street
Vancouver, B.C. V6C 2V6

1	WO_3	Assay	@ $ 9.00	$ 9.00

ACCOUNT No(s)	AMOUNTS
400-091-358-102	9 00
Date to be Paid by	Date goods Received
	Oct 20/81
FIRST APPROVAL	
SECOND APPROVAL	
TO PAY	

mer

THIS IS A PROFESSIONAL SERVICE
ACCOUNTS DUE WHEN RENDERED

FLIGHT TICKET / INVOICE

TRANSWEST HELICOPTERS (1985) LTD.

P.O. BOX 16, PITT MEADOWS, B.C. V0M 1P0
(604) 465-5151 TELEX 04-507500

No. 5331

CHARTERER: UNION CARBIDE EXPLORATION

ADDRESS:

DATE AUG 3/2

A/C TEX

TYPE 206B

BASE LOUD

CHEQUE | CASH | CHARGE

P.O.

REMARKS	PASS	CARGO	TIME
HYLAND STAKING CHECK (102)			1.0
HYLAND-REMA FLY MOVE (102)			5.1
DRILL MOVE (074)			0.9
LOCAL SET-OUTS (074)			1.5
DRILL CHANGE (074)			0.3
TRENCHERS (074)			0.3
			.
			.
			.
			.
TERMS: NET 10 DAYS	TOTALS		10.0
FUEL COST $ NIL.	TOTAL	$	.
FLYING 10.0 HRS. AT $. = $.			

AUTHORIZED BY PRINT PJ DOYLE SIGNATURE

CONTRACT HRS.

DAY .

MONTH .

YEAR .

BASES
BELLA COOLA
(604) 982-2243

FUEL SUPPLIED BY: CUST. ☒ T.W. ☐

TRANSWEST FUEL

GALS. FROM AT PER GAL

GALS. FROM AT PER GAL

GALS. FROM AT PER GAL

GALS. FROM AT PER GAL

PILOTS NAME

SIGNATURE

FLIGHT TICKET NO. No 5334

427.9

FLIGHT TICKET / INVOICE

TRANSWEST HELICOPTERS (1975) LTD.

P.O. BOX 16, PITT MEADOWS, B.C. V0M 1P0
(604) 465-5151 TELEX 04-507500

No. 5368

CHARTERER: Union Carbide Exploration

ADDRESS: 930-800 W. Pender St.
Vancouver, B.C. V6C 2V6

DATE: [illegible]
A/C: C-TES
TYPE: Bell 206B
BASE:
CHEQUE | CASH | CHARGE
P.O.

REMARKS	PASS	CARGO	TIME
Flat Lk – Leved 24 DrumJet B			.
Flat lk – Cantung – Flat lk 3 trips			.
Leved – Flat lk (Hyland Crew to Pick up.) Food Order + Gear (07H/102)			8.4
			.
			.
			.
			.
			.
			.
TERMS: NET 10 DAYS	TOTALS		.
FUEL COST $.	TOTAL	$	.
FLYING HRS. AT $. = $.			

AUTHORIZED BY PRINT: P.T. DOYLE SIGNATURE: [signature]

CONTRACT HRS.
DAY .
MONTH .
YEAR .

BASES
BELLA COOLA
(604) 982-2243

FUEL SUPPLIED BY: CUST. ☐ T.W. ☐

TRANSWEST FUEL

GALS. FROM AT PER GAL
GALS. FROM AT PER GAL
GALS. FROM AT PER GAL
GALS. FROM AT PER GAL

PILOTS NAME: W.H. Truthwey
SIGNATURE: Will T.

FLIGHT TICKET NO. No. 5368

(604) 402-2121 TELEX 04-507900 NO

CHARTERER

ADDRESS

DATE

A/C

TYPE 206 R

BASE BELLA COOLA

CHEQUE | CASH | CHARGE

P.O.

REMARKS	PASS	CARGO	TIME
TRENCHERS (074)			0.5
2 TRIPS CAN TURBO + PUMP + SLING LOAD (074/102)			1.5
CESSNA DRILL LK. (102/074)			0.3
HILL-SIDE CLEAN-UP (074)			2.8
DRILL MOVE (074)			0.4
LOCAL SET-OUTS (074)			0.4
DRILL CHANGE (074)			1.5
NEW DRILL SLING (074)			1.2
			.
			.
TOTALS			8.6

TERMS: NET 10 DAYS

FUEL COST $ NIL.

FLYING 8.6 HRS. AT $. = $.

TOTAL $.

AUTHORIZED BY

PRINT P.J. DOYLE SIGNATURE

CONTRACT HRS.

DAY .

MONTH .

YEAR .

BASES

BELLA COOLA
(604) 982-2243

FUEL SUPPLIED BY: CUST. ☒ T.W. ☐

TRANSWEST FUEL

GALS. FROM AT PER GAL

GALS. FROM AT PER GAL

GALS. FROM AT PER GAL

GALS. FROM AT PER GAL

PILOTS NAME

SIGNATURE

FLIGHT TICKET NO. Nº 5335

3436 5

FLIGHT TICKET / INVOICE

TRANSWEST HELICOPTERS (1985) LTD.

P.O. BOX 16, PITT MEADOWS, B.C. V0M 1P0
(604) 465-5151 TELEX 04-507500 No. 5336

CHARTERER: UNION CARBIDE EXPLORATION
ADDRESS:

DATE: AUG 10
A/C: TEK
TYPE: 206B
BASE: LENAC
CHEQUE | CASH | CHARGE
P.O.

REMARKS	PASS	CARGO	TIME
DRILL MOVE (074)			0.8
2 TRIPS CONTINUE (DRILLERS) (074)			1.0
RIG-CALL (112/074)			0.6
HI-LAND SET-OUTS (112)			1.9
AIRBAG TAGGING (112)			2.5
OTTER + PRAYER DRILL IK (112/074)			0.4
BUCKET SLING (112/074)			2.8
LOCAL SET-OUTS TO WORKERS (074)			0.4
DRILL CHANGE (074)			0.2
FLAT 1K TRUCK PICK-UP (074)			0.5
TERMS: NET 10 DAYS	TOTALS		12.3

FUEL COST $ NIL.
FLYING 12.3 HRS. AT $ ____ = $ ____

TOTAL $ ____

AUTHORIZED BY PRINT: PJ DOYLE SIGNATURE: [signature]

CONTRACT HRS.
DAY ____
MONTH ____
YEAR ____

BASES
BELLA COOLA
(604) 982-2243

FUEL SUPPLIED BY: CUST. ☒ T.W. ☐
TRANSWEST FUEL
____ GALS. FROM ____ AT ____ PER GAL.
____ GALS. FROM ____ AT ____ PER GAL.
____ GALS. FROM ____ AT ____ PER GAL.
____ GALS. FROM ____ AT ____ PER GAL.

PILOTS NAME
SIGNATURE [signature]

461.2

FLIGHT TICKET NO. No 5336

FLIGHT TICKET / INVOICE

TRANSWEST HELICOPTERS (1975) LTD.

P.O. BOX 16, PITT MEADOWS, B.C. V0M 1P0
(604) 465-5151 TELEX 04-507500 No. 5337

CHARTERER: UNION CARBIDE EXPLORATION
ADDRESS:

DATE AUG. 11/8
A/C TEK
TYPE 206B
BASE LANED
CHEQUE | CASH | CHARGE
P.O.

REMARKS	PASS	CARGO	TIME
HYLAND SET-OUTS (102)			1.6
CAN-TUNG (PHONE CALL)			0.8
TRENCHERS (074)			0.5
OTTER AT DRILL (074/102)			0.2
LOCAL SET-OUTS (074)			0.3
DRILL CHANGE (074)			0.9
DRILL MOBE (074)			7.5
			.
			.
			.
TERMS: NET 10 DAYS	TOTALS		11.8

FUEL COST $ NIL .
FLYING 11.8 HRS. AT $ ___ . ___ = $ ___ .

TOTAL $.

AUTHORIZED BY
PRINT SIGNATURE

CONTRACT HRS.
DAY ___ .
MONTH ___ .
YEAR ___ .

BASES
BELLA COOLA
(604) 982-2243

FUEL SUPPLIED BY: CUST. ☒ T.W. ☐

TRANSWEST FUEL

___ GALS. FROM ___ AT ___ PER GAL.
___ GALS. FROM ___ AT ___ PER GAL.
___ GALS. FROM ___ AT ___ PER GAL.
___ GALS. FROM ___ AT ___ PER GAL.

PILOTS NAME
SIGNATURE

473

FLIGHT TICKET NO. No. 5337

FLIGHT TICKET / INVOICE

TRANSWEST HELICOPTERS (1985) LTD.

P.O. BOX 16, PITT MEADOWS, B.C. V0M 1P0
(604) 465-5151 TELEX 04-507500

No. 5338

CHARTERER: Wynn Carbide Exploration

ADDRESS:

DATE: Aug. 1/85
A/C: TEX
TYPE: 206L
BASE: Smithers
CHEQUE | CASH | CHARGE
P.O.

REMARKS	PASS	CARGO	TIME
TRENCHERS (074)			0.2
LOCAL (074)			0.5
DRILL MOVE (074)			1.3
ENGINEER PICK-UP [illegible] (102)			0.5
DRILL CORE AT FLAT LK (074)			2.
HAND CUTOUTS (102)			2.
DRILL CHANGE (074)			1.
			.
			.
			.
TOTALS			9.2

TERMS: NET 10 DAYS

FUEL COST $ NIL.

FLYING 9.3 HRS. AT $. = $.

TOTAL $.

AUTHORIZED BY
PRINT PJ DOYLE SIGNATURE [signature]

CONTRACT HRS.
DAY .
MONTH .
YEAR .

BASES
BELLA COOLA
(604) 982-2243

FUEL SUPPLIED BY: CUST. ☒ T.W. ☐

TRANSWEST FUEL

GALS. FROM AT PER GAL
GALS. FROM AT PER GAL
GALS. FROM AT PER GAL
GALS. FROM AT PER GAL

PILOTS NAME
SIGNATURE [signature]

FLIGHT TICKET NO. No 5338

482 3

FLIGHT TICKET / INVOICE

TRANSWEST HELICOPTERS (1975) LTD.

P.O. BOX 16, PITT MEADOWS, B.C. V0M 1P0
(604) 465-5151 TELEX 04-507500

No. 5339

CHARTERER: UNION CARBIDE EXPLORATION
ADDRESS:

DATE: AUG 13/82
A/C: TEK
TYPE: 206B
BASE: LANGLEY
CHEQUE | CASH | CHARGE
P.O.

REMARKS	PASS	CARGO	TIME
HYLAND TELEPHONE (102)			0.3
HYLAND SET-OUTS (102)			2.5
LOCAL SET-OUTS (074)			0.7
ENGINEER SET-OUT (102/074)			0.2
SURVEY POST LOOKIE (074)			0.5
DRILL CHANGE (074)			2.5
DRILL MOVE (074)			1.1
TRENCH TOUR + SET-OUTS (074)			0.9
			.
			.
TERMS: NET 10 DAYS — TOTALS			9.3

FUEL COST $ NIL.
FLYING 9.3 HRS. AT $. = $.

TOTAL $.

AUTHORIZED BY PRINT: P.J DOYLE SIGNATURE: P.J Doyle

CONTRACT HRS.
DAY .
MONTH .
YEAR .

FUEL SUPPLIED BY: CUST. ☒ T.W. ☐

TRANSWEST FUEL

GALS. FROM AT PER GAL.
GALS. FROM AT PER GAL.
GALS. FROM AT PER GAL.
GALS. FROM AT PER GAL.

BASES
BELLA COOLA
(604) 982-2243

PILOTS NAME
SIGNATURE

491.6

FLIGHT TICKET NO. № 5339

FLIGHT TICKET / INVOICE

TRANSWEST HELICOPTERS (1975) LTD.

P.O. BOX 16, PITT MEADOWS, B.C. V0M 1P0
(604) 465-5151 TELEX 04-507500 No. 5310

CHARTERER: UNION CARBIDE EXPLORATION
ADDRESS:

DATE: Aug 1/84
A/C: T-K
TYPE: 206B
BASE: Hyland
CHEQUE | CASH | CHARGE
P.O.

REMARKS	PASS	CARGO	TIME
TRENCHERS (074)			0.8
FLAT LK OTTER (132/074)			1.9
DRILL CHANGE (074)			2.0
CAN-TUNG W DRILLERS (074)			0.4
LOCAL SET-OUTS (074)			1.0
HYLAND SET-OUTS (102)			1.2
GEORGE'S PHONE-CALL (074)			0.2
			.
			.
			.
TERMS: NET 10 DAYS — TOTALS			7.7

FUEL COST $ NIL.
FLYING 7.9 HRS. AT $. = $.

TOTAL $.

AUTHORIZED BY PRINT PJ DOYLE SIGNATURE

CONTRACT HRS.
DAY .
MONTH .
YEAR .

BASES
BELLA COOLA
(604) 982-2243

FUEL SUPPLIED BY: CUST. ☒ T.W. ☐
TRANSWEST FUEL
GALS. FROM AT PER GAL.
GALS. FROM AT PER GAL.
GALS. FROM AT PER GAL.
GALS. FROM AT PER GAL.

PILOTS NAME
SIGNATURE

499.5

FLIGHT TICKET NO. No 5340

FLIGHT TICKET / INVOICE

TRANSWEST HELICOPTERS (1975) LTD.

P.O. BOX 16, PITT MEADOWS, B.C. V0M 1P0
(604) 465-5151 TELEX 04-507500

N° NO. 5346

CHARTERER: UNION CARBIDE EXPLORATION
ADDRESS:

DATE: AUG 17/87
A/C: TEK
TYPE: 206B
BASE: LEVEL
CHEQUE | CASH | CHARGE
P.O.

REMARKS	PASS	CARGO	TIME
HYLAND SAT-OUTS (102)			2.4
FLAT LK OTHER (2 crews) (172/174)			1.8
FLAT LK CREW P.U.-UP (074)			0.5
TRENCHERS (074)			0.5
DRILL MOVE (074)			1.6
LOCAL SAT-OUTS (074)			1.3
DRILL CHANGE (074)			1.6
			.
			.
			.
TERMS: NET 10 DAYS — TOTALS			9.7

FUEL COST $ NIL .
FLYING 9.7 HRS. AT $. = $.

TOTAL $.

AUTHORIZED BY PRINT
SIGNATURE

CONTRACT HRS.
DAY .
MONTH .
YEAR .

FUEL SUPPLIED BY: CUST. [X] T.W. [ ]

TRANSWEST FUEL

GALS. FROM AT PER GAL.
GALS. FROM AT PER GAL.
GALS. FROM AT PER GAL.
GALS. FROM AT PER GAL.

BASES
BELLA COOLA
(604) 982-2243

PILOTS NAME
SIGNATURE

511

FLIGHT TICKET NO. N° 5346

FLIGHT TICKET / INVOICE

TRANSWEST HELICOPTERS (1983) LTD.

P.O. BOX 16, PITT MEADOWS, B.C. V0M 1P0
(604) 465-5151 TELEX 04-507500

NO. 5347

CHARTERER: UNION CARBIDE EXPLORATION

ADDRESS:

DATE: AUG 18 83
A/C: TEE
TYPE: 206B
BASE: LEARD
CHEQUE | CASH | CHARGE
P.O.

REMARKS		PASS	CARGO	TIME
TRENCHERS	(074)			0.6
DRILL CHANGE	(074)			1.0
BEAVER at Dr. 11	(074)			0.3
DRILL MOVE	(074)			1.0
Local Set-outs	(074)			0.9
CAN. Tung w JACK	(071)			0.2
FLY Camp PICK-UP	(102)			0.9
EXPEDCON	(074)			3.5
				.
				.
TERMS: NET 10 DAYS	TOTALS			8.3

FUEL COST $ NIL.

FLYING 8.3 HRS. AT $. = $.

TOTAL $.

AUTHORIZED BY PRINT: PJ DOYLE SIGNATURE:

CONTRACT HRS.
DAY .
MONTH .
YEAR .

BASES
BELLA COOLA
(604) 982-2243

FUEL SUPPLIED BY: CUST. ☒ T.W. ☐

TRANSWEST FUEL

GALS. FROM AT PER GAL.
GALS. FROM AT PER GAL.
GALS. FROM AT PER GAL.
GALS. FROM AT PER GAL.

PILOTS NAME
SIGNATURE

FLIGHT TICKET NO. Nº 5347

59.5

FLIGHT TICKET / INVOICE

TRANSWEST HELICOPTERS (1961) LTD.

P.O. BOX 16, PITT MEADOWS, B.C. V0M 1P0
(604) 465-5151 TELEX 04-507500

No. 4949

CHARTERER: UNION CARBIDE EXPLORATION

ADDRESS:

DATE: SEPT 14/83
A/C: TEK
TYPE: 206B
BASE: Lened
CHEQUE | CASH | CHARGE
P.O.

REMARKS	PASS	CARGO	TIME
CAN-TUNG FOR DRILCOR (074)			1.0
DRILL HILL CLEAN-UP (074)			1.7
FUEL + DRILL HAUL (074)			4.9
AURORA, RENA, HYLAND PICTURES (132)			2.1
DRILL CHANGE (074)			0.7
			.
			.
			.
			.
			.
TERMS: NET 10 DAYS	TOTALS		10.4

FUEL COST $ NIL .

FLYING 10.4 HRS. AT $. = $.

TOTAL $.

AUTHORIZED BY
PRINT PJ DOYLE SIGNATURE PJ Doyle

CONTRACT HRS.
DAY
MONTH
YEAR

BASES
BELLA COOLA
(604) 982-2243

FUEL SUPPLIED BY: CUST. ☒ T.W. ☐
TRANSWEST FUEL

GALS. FROM AT PER GAL.
GALS. FROM AT PER GAL.
GALS. FROM AT PER GAL.
GALS. FROM AT PER GAL.

PILOTS NAME
SIGNATURE

FLIGHT TICKET NO. No 4949

681.8

Appendix 3

Summary of Claim Data

Claim Registration Number Index

YUKON - UCCL PROPERTIES

Property	Group	Claim	Units	Record #	Date Registered	Expiry Date	NTS	Acres
Hyland		Tuna 1-180	180	YA66229-YA66408	July 27, 1981 Watson Lake Mining District	July 27,1982	105H-16	9297.0

Hyland:

Note 1) As of July 27, 1982 Assessment for 1981-1982 will be paid on Tuna 1 to 32, Tuna 41 to 72, Tuna 81 to Tuna 112, Tuna 121 to 152 and Tuna 161 to 176 inclusive.

2) Claims Tuna 177,178,179,180
Tuna 33,to Tuna 40 (inclusive)
Tuna 73 to Tuna 80 (inclusive)
Tuna 113 to Tuna 120 (inclusive)
Tuna 153 to Tuna 160 (inclusive)

will be allowed to lapse as of July 27th, 1982.

3) Additional assessment has been applied for 1982-1983 on Group Tuna 81 to Tuna 112 inclusive.

4) With the exception of (Group 81-112 inclusive) assessment will have to be applied before July 27th, 1983 to maintain the claims in good standing.

TUNA CLAIMS

Claim Number	Registration Number	Claim Number	Registration Number
1	YA66229	44	YA66272
2	230	45	273
3	231	46	274
4	232	47	275
5	233	48	276
6	234	49	277
7	235	50	278
8	236	51	279
9	237	52	280
10	238	53	281
11	239	54	282
12	240	55	283
13	241	56	284
14	242	57	285
15	243	58	286
16	244	59	287
17	245	60	288
18	246	61	289
19	247	62	290
20	248	63	291
21	249	64	292
22	250	65	293
23	251	66	294
24	252	67	295
25	253	68	296
26	254	69	297
27	255	70	298
28	256	71	299
29	257	72	300
30	258	73	301
31	259	74	302
32	260	75	303
33	261	76	304
34	262	77	305
35	263	78	306
36	264	79	307
37	265	80	308
38	266	81	309
39	267	82	310
40	268	83	311
41	269	84	312
42	270	85	313
43	271	86	314

Claim Number	Registration Number
87	YA66315
88	316
89	317
90	318
91	319
92	320
93	321
94	322
95	323
96	324
97	325
98	326
99	327
100	328
101	329
102	330
103	331
104	332
105	333
106	334
107	335
108	336
109	337
110	338
111	339
112	340
113	341
114	342
115	343
116	344
117	345
118	346
119	347
120	348
121	349
122	350
123	351
124	352
125	353
126	354
127	355
128	356
129	357
130	358
131	359
132	360
133	361
134	362
135	363
136	364
137	365
138	366

Claim Number	Registration Number
139	YA66367
140	368
141	369
142	370
143	371
144	372
145	373
146	374
147	375
148	376
149	377
150	378
151	379
152	380
153	381
154	382
155	383
156	384
157	385
158	386
159	387
160	388
161	389
162	390
163	391
164	392
165	393
166	394
167	395
168	396
169	397
170	398
171	399
172	400
173	401
174	402
175	403
176	404
177	405
178	406
179	407
180	408

Appendix 4

Tabulated Results

Soil and Silt Geochemistry

Lithogeochemistry

Assay Results

Tabulated Results

1981 Soil and Silt Geochemistry

Hyland Pluton - Tuna Claims

All analysis expressed in parts per million.

NOTE: N.D. No Determination by geochemical analysis-Concentration below Analytical Detection Li

Sample Number	Copper (Cu)	Molybdenum (Mo)	Tungsten (WO_3)	Silver (Ag)	Tin (Sn)	Pan Con. (Scheelite) (grain count)
81D0001	18	2	50	- -	7	- -
2	92	19	50	- -	14	- -
3	79	4	38	- -	N.D.	- -
4	50	4	18	- -	13	- -
81F0001	5	N.D.	2	- -	N.D.	- -
2	6	N.D.	2	- -	N.D.	- -
3	20	N.D.	11	- -	5	- -
4	18	N.D.	15	- -	N.D.	- -
5	9	N.D.	2	- -	N.D.	- -
6	2	N.D.	8	- -	9	- -
7	12	N.D.	10	- -	6	- -
8	18	1	8	- -	N.D.	- -
9	37	N.D.	15	- -	N.D.	- -
10	58	39	10	- -	8	- -
11	32	12	15	- -	N.D.	- -
12	10	2	8	- -	N.D.	- -
13	9	4	6	- -	N.D.	- -
14	10	2	8	- -	N.D.	- -
15	5	1	2	- -	12	- -
16	11	N.D.	2	- -	N.D.	- -
17	6	N.D.	2	- -	N.D.	- -
18	5	N.D.	5	- -	N.D.	- -
19	8	1	4	- -	6	- -
20	9	2	4	- -	8	- -

Tabulated Results

1981 Soil and Silt Geochemistry

Hyland Pluton - Tuna Claims

Sample Number	Copper (Cu)	Molybdenum (Mo)	Tungsten (WO_3)	Silver (Ag)	Tin (Sn)	Pan Con. (Scheelite) (grain count)
81F0021	8	3	10	- -	6	- -
22	20	2	26	- -	N.D.	- -
23	8	N.D.	4	- -	N.D.	- -
24	126	10	35	- -	7	- -
25	58	14	13	- -	N.D.	- -
26	60	6	10	- -	5	- -
27	49	1	12	- -	N.D.	- -
28	72	6	11	- -	11	- -
29	60	2	25	- -	N.D.	- -
30	84	22	3	- -	N.D.	- -
31	198	25	60	- -	12	- -
81T0001	98	N.D.	2	- -	16	- -
2	34	1	2	- -	9	- -
3	80	2	2	- -	17	- -
4	220	3	2	- -	18	- -
5	56	1	2	- -	5	- -
6	5	2	5	- -	N.D.	- -
7	17	3	2	- -	N.D.	- -
8	5	5	2	- -	N.D.	- -
9	5	3	3	- -	N.D.	- -
10	85	7	980	- -	N.D.	- -
11	156	7	60	- -	N.D.	- -
12	120	3	22	- -	N.D.	- -
13	116	2	2	- -	N.D.	- -

Tabulated Results

1981 Soil and Silt Geochemistry

Hyland Pluton - Tuna Claims

Sample Number	Copper (Cu)	Molybdenum (Mo)	Tungsten (WO_3)	Silver (Ag)	Tin (Sn)	Pan. Con. (Scheelite) (grain count)
23	- -	- -	- -	- -	- -	50
24	- -	- -	- -	- -	- -	250
81W0025	15	5	9	0.2	- -	- -
26	23	5	9	0.2	- -	- -
27	44	1	3	0.2	- -	- -
28	23	1	2	0.2	- -	- -
29	17	1	2	0.2	- -	- -
30	19	1	2	0.8	- -	- -
31	- -	- -	- -	- -	- -	30
32	35	3	40	0.4	- -	- -
33	59	3	16	0.2	- -	- -
34	6	N.D.	2	0.3	- -	- -
35	6	N.D.	2	0.5	- -	- -
36	25	N.D.	2	0.3	- -	- -
37	14	2	2	0.2	- -	- -
38	10	2	3	0.2	- -	- -
39	16	2	3	0.2	- -	- -
40	14	1	2	0.2	- -	- -
41	15	3	2	0.2	- -	- -
81W2000	133	9	11	0.3	- -	- -
1	300	19	135	1.5	- -	- -
2	240	12	20	0.3	- -	- -
3	73	10	8	0.2	- -	- -

Tabulated Results

1981 Soil and Silt Geochemistry

Hyland Pluton - Tuna Claims

Sample Number	Copper (Cu)	Molybdenum (Mo)	Tungsten (WO_3)	Silver (Ag)	Tin (Sn)	Pan. Con. (Scheelite) (grain count)
81W2500	85	4	33	0.3	- -	- -
1	116	9	4	0.4	- -	- -
2	2	N.D.	2	0.2	- -	- -
3	12	1	2	0.2	- -	- -
4	14	N.D.	9	0.2	- -	- -
5	2	N.D.	2	0.2	- -	- -
6	14	4	30	0.2	- -	- -
7	4	N.D.	3	0.2	- -	- -
8	102	2	3	0.2	- -	- -
9	23	4	2	0.2	- -	- -
10	133	N.D.	4	0.4	- -	- -
11	16	1	2	0.2	- -	- -
12	7	N.D.	3	0.3	- -	- -
13	10	4	2	0.2	- -	- -
14	5	3	2	0.2	- -	- -
15	13	2	3	0.3	- -	- -
81W3000	19	7	7	0.2	- -	- -
1	24	6	3	0.2	- -	- -
2	17	3	3	0.2	- -	- -
3	32	4	17	0.2	- -	- -
4	14	1	2	0.7	- -	- -
5	300	54	360	0.6	- -	- -
6	240	15	2000	0.2	Note Wo_3 Assay = 0.81%	

Tabulated Results

1981 Soil and Silt Geochemistry

Hyland Pluton - Tuna Claims

Sample Number	Copper (Cu)	Molybdenum (Mo)	Tungsten (WO_3)	Silver (Ag)	Tin (Sn)	Pan. Con. (Scheelite) (grain count)
81W3007	- -	- -	- -	- -	- -	200
8	38	N.D.	15	0.2	- -	- -
9	132	1	4	0.2	- -	- -
10	28	9	3	0.2	- -	- -
11	30	7	3	0.2	- -	- -
81W3500	50	N.D.	3	0.2	- -	- -
1	92	N.D.	3	0.2	- -	- -
2	71	N.D.	3	0.2	- -	- -
3	25	N.D.	4	0.2	- -	- -
4	- -	- -	- -	- -	- -	2
5	35	N.D.	3	0.2	- -	- -
6	103	1	4	0.2	- -	- -
7	78	N.D.	4	0.2	- -	- -
8	29	1	3	0.2	- -	- -
9	- -	- -	- -	- -	- -	5
10	85	1	2	0.2	- -	- -
11	87	1	2	0.2	- -	- -
12	46	N.D.	2	0.2	- -	- -
13	34	3	3	0.2	- -	- -
14	- -	- -	- -	- -	- -	75

Tabulated Results

1981 Soil and Silt Geochemistry

Hyland Pluton - Tuna Claims

Sample Number	Copper (Cu)	Molybdenum (Mo)	Tungsten (WO_3)	Silver (Ag)	Tin (Sn)	Pan. Con. (Scheelite) (grain count)
81D0005	75	2	2			
0006	84	4	2			
0007	15	5	2			
0008	30	3	13			
0009	60	1	2			
0010	40	4	2			
0011	35	N.D.	2			
0012	55	2	2			
0013	42	2	2			
0014	40	2	2			
0015	30	3	2			
0016	118	8	20			
0017	89	8	5			
0018	45	N.D.	2			
0019	70	3	15			
0020	100	11	30			
0021	Note: Sample collected but not analyzed.					

Tabulated Results

1981 Lithogeochemical Sampling

Hyland Pluton - Tuna Claim Block

Note: N.D. No Determination-Concentration Below Analytical Detection Limit.
All analysis in ppm-parts per million except gold (Au) which is recorded in ppb-parts per billion.

Sample Number	Copper (Cu)	Molybdenum (Mo)	Tungsten (WO_3)	Silver (Ag)	Tin (Sn)	Gold (Au) ppb
81-H-A-1-1	105	11	2	1.1	- -	160
A-3-1	66	12	14	1.5	N.D.	5
*A-6-3T	- -	- -	- -	2.8	- -	95
A-10-3	6	5	4	0.2	- -	N.D.
A-20-4	12	685	6	0.2	- -	N.D.
A-22-1T	27	132	40	0.2	- -	N.D.
A-22-3T	N.D.	8	2	0.2	- -	N.D.
A-24-1	4	2	2	0.7	- -	- -
A-24-2	26	244	2	0.2	- -	- -
A-24-3	70	2	3	0.2	- -	- -
A-24-4	174	11	3	3.9	- -	- -
A-26-2	15	2	35	0.2	- -	- -
A-26-3	3	2	2	0.2	- -	- -
A-27-3T	2	2	4	1.5	- -	- -
A-28-3T	9	6	3	0.4	- -	- -
A-28-4T	3	1	5	0.2	- -	- -
A-30-2T	155	292	3	0.2	- -	- -
A-30-3T	600	22	160	0.5	- -	- -
A-30-4T	240	26	3	0.2	- -	- -
A-30-8T	230	168	4	2.0	- -	- -
A-31-1T	176	19	3	3.7	- -	- -
A-31-2T	36	580	4	0.2	- -	- -
A-32-5	158	52	2000	3.9	Note: WO_3 Assay = 0.31%	
A-36-4	92	4	360	0.2	- -	- -

Tabulated Results

1981 Lithogeochemical Sampling

Hyland Pluton - Tuna Claim Block

Note: N.D. No Determination-Concentration Below Analytical Detection Limit.
All analysis in ppm-parts per million except gold (Au) which is recorded in ppb-parts per billion.

Sample Number	Copper (Cu)	Molybdenum (Mo)	Tungsten (WO_3)	Silver (Ag)	Tin (Sn)	Gold (Au) ppb
81-H-A-36-5	1140	4	2000	1.0	Note: WO_3 assay = 0.87%	
A-36-5T	4700	4	2000	4.0	Note: WO_3 assay = 0.61%	
A-37-5	36	8	60	0.2	- -	- -
A-37-6	46	1	2000	0.2	Note: WO_3 assay = 0.47%	
A-38-4	9	5	21	0.2	- -	- -
A-41-1T	85	1040	5	0.2	- -	- -
A-41-4T	8	12	4	0.2	- -	- -
A-41-8T	290	6	16	0.3	- -	- -
A-41-9T	5	33	3	0.3	- -	- -
A-42-1	6	9	4	0.2	- -	- -
A-42-2	4	7	3	0.2	- -	- -
81-H-B-20-1T	172	2	4	0.2	- -	- -
B-21-7	6	2	3	0.2	- -	- -
81-H-T-10-4	56	8	24	2.5	- -	- -
T-11-3	16	15	1530	0.5	- -	- -
T-14-1	4	10	2	0.2	- -	- -
T-14-2	34	2	2000	0.2	Note: WO_3assay = 1.64%	
T-15-3	540	381	45	1.1		

*Complete Analysis detailed on Assay Sheet enclosed.

Hyland Pluton

Tabulated Assay Results

Sample Number	Assay Tag Number	Results (in percent)				
		Copper (Cu)	Molybdenum (Mo)	Tungsten (WO_3)	Lead (Pb)	Zinc (Zn)
81-H-JRT-1	41126	0.01	0.002	0.01	- -	- -
81-H-JRT-2	41127	0.01	0.002	0.01	- -	- -
81-A-6-3T*	41128	0.02	0.002	0.04	0.02	0.01

* Gold and Silver Analysis run using geochemical technique see lithogeochemistry tabulation sheet.

Note: < indicates less than

> greater than

Appendix 5

Statistical Summary of Geochemistry

Statistical Summary of Soil and Silt Geochemistry

Element — Range

Copper (Cu)

Total Number of samples	Oppm–50pm		> 50ppm – ≤150ppm		> 150	
	No.	% of total	No.	% of total	No.	% of total
144	84	58.3%	51	35.4%	9	6.3%

Molybdenum (Mo)

Total Number of samples	Oppm–5ppm		>5ppm – ≤15ppm		> 15ppm	
	No.	% of total	No.	% of total	No.	% of total
144	111	77.1%	25	17.4%	8	5.6%

Tungsten (WO_3)

Total Number of samples	Oppm–10ppm		>10ppm– ≤ 35ppm		>35ppm	
	No.	%of total	No.	% of total	No.	% of total
144	108	75%	25	17.4%	11	7.6%

Silver (Ag)

- 79 samples were analysed
- All Results except one were less than 1.0ppm
- Highest Value = 1.5pm
- Background appears to be 0.2ppm

Tin (Sn) - 49 Samples were analysed

- Highest Value = 18ppm (Sn)
- Background appears to be less than 4ppm (Sn)

Summary of Geochemistry

Lithogeochemistry

Element	Range					
Copper (Cu)						
Total Number of samples	0-50ppm		>50ppm - ≤500ppm		>500ppm	
	No.	% total	No.	% of total	No.	% of total
41	23	56.1%	14	34.1%	4	9.8%
Molybdenum (Mo)						
Total Number of samples	0ppm-20ppm		>20ppm- ≤500ppm		>500ppm	
	No.	% of total	No	% of total	No.	% of total
41	29	70.7%	9	22.0%	3	7.3%
Tungsten (WO_3)						
Total Number of samples	0ppm-20ppm		>20ppm - ≤400ppm		>400ppm	
	No.	% of total	No	% of total	No.	% of total
41	27	65.9%	8	19.5%	6	14.6%
Silver						
Total Number of samples	0ppm-0.2ppm		> 0.2ppm -≤ 1.5ppm		> 1.5ppm	
	No.	% of total	No.	% of total	No.	% of total
42	23	54.8%	12	28.6%	7	16.6%

Statistical Summary of Geochemistry

General Notes

1. All Tungsten values > 2000ppm were included in this calculation and considered to be anomalous (for rock samples).
2. All subdivisions (i.e. Ranges) were based on a visual scan of the data.
3. See the List of Abbreviations for definition of terms and symbols.
4. All analysis preformed by Bondar Clegg Laboratories - Vancouver, using a geochemical analytical technique rather than an assay technique.
5. Gold values were not included in the calculation due to a limited number of samples. (i.e. less than 10)
6. See the enclosed sheets for analytical parameters.

BONDAR-CLEGG & COMPANY LTD.
130 PEMBERTON AVE., NORTH VANCOUVER, B.C. V7P 2R5 PHONE: (604) 985-0681 TELEX: 04-352667

Geochemical Lab Report

[illegible]
[illegible] UNION CARBIDE CORP. SUBMITTED BY: C COPPING

DATE: 08-JUL-81 PROJECT: 102

ELEMENT	LOWER DETECTION LIMIT	EXTRACTION	METHOD	SIZE FRACTION	SAMPLE TYPE	SAMPLE PREPARATIONS
Cu	1 PPM	HNO3-HCL HOT EXTR	Atomic Absorption	-80	SOILS	SEIVE -80
Mo	1 PPM	HNO3-HCL HOT EXTR	Atomic Absorption	-80		
W	3 PPM	CARBONATE SINTER	Colourimetric	-80		
Sn	5 PPM		X-RAY Fluorescence	-80		

REPORT COPIES TO: J. J. ROYALL
P. J. DOYLE
C. FORSTER

INVOICE TO: J. J. ROYALL

BONDAR-CLEGG & COMPANY LTD.
130 PEMBERTON AVE., NORTH VANCOUVER, B.C. V7P 2R5 PHONE: (604) 985-0681 TELEX: 04-352667

Geochemical Lab Report

FROM: [illegible] CARBIDE CORP. SUBMITTED BY: P. J. DOYLE

DATE: 04-AUG-81 PROJECT: 102

ELEMENT	LOWER DETECTION LIMIT	EXTRACTION	METHOD	SIZE FRACTION	SAMPLE TYPE	SAMPLE PREPARATIONS
Cu	1 PPM	HNO3-HCL HOT EXTR	Atomic Absorption	-100	ROCKS	CRUSH,PULVERIZE -100
Mo	1 PPM	HNO3-HCL HOT EXTR	Atomic Absorption	-100		RETENTION OF REJECTS
As	.1 PPM	HNO3-HCL HOT EXTR	Atomic Absorption	-100		
W	2 PPM	CARBONATE SINTER	Colourimetric	-100		
Au	5 PPB	AQUA REGIA	Fire Assay AA	-100		
Sn	5 PPM		X-RAY Fluorescence	-100		

REPORT COPIES TO: J. J. ROYALL
P. J. DOYLE

INVOICE TO: J. J. ROYALL

DETECTION LIMITS FOR GOLD
20 gram sample: 5 ppb.
10 gram sample: 10 ppb.
1 gram sample: 100 ppb.

Sample Wt. 20 g. unless otherwise stated.

NOTE:
Check concentration/sample weight ratio
for effective detection level.

Appendix 6

Program Outline (for further work)

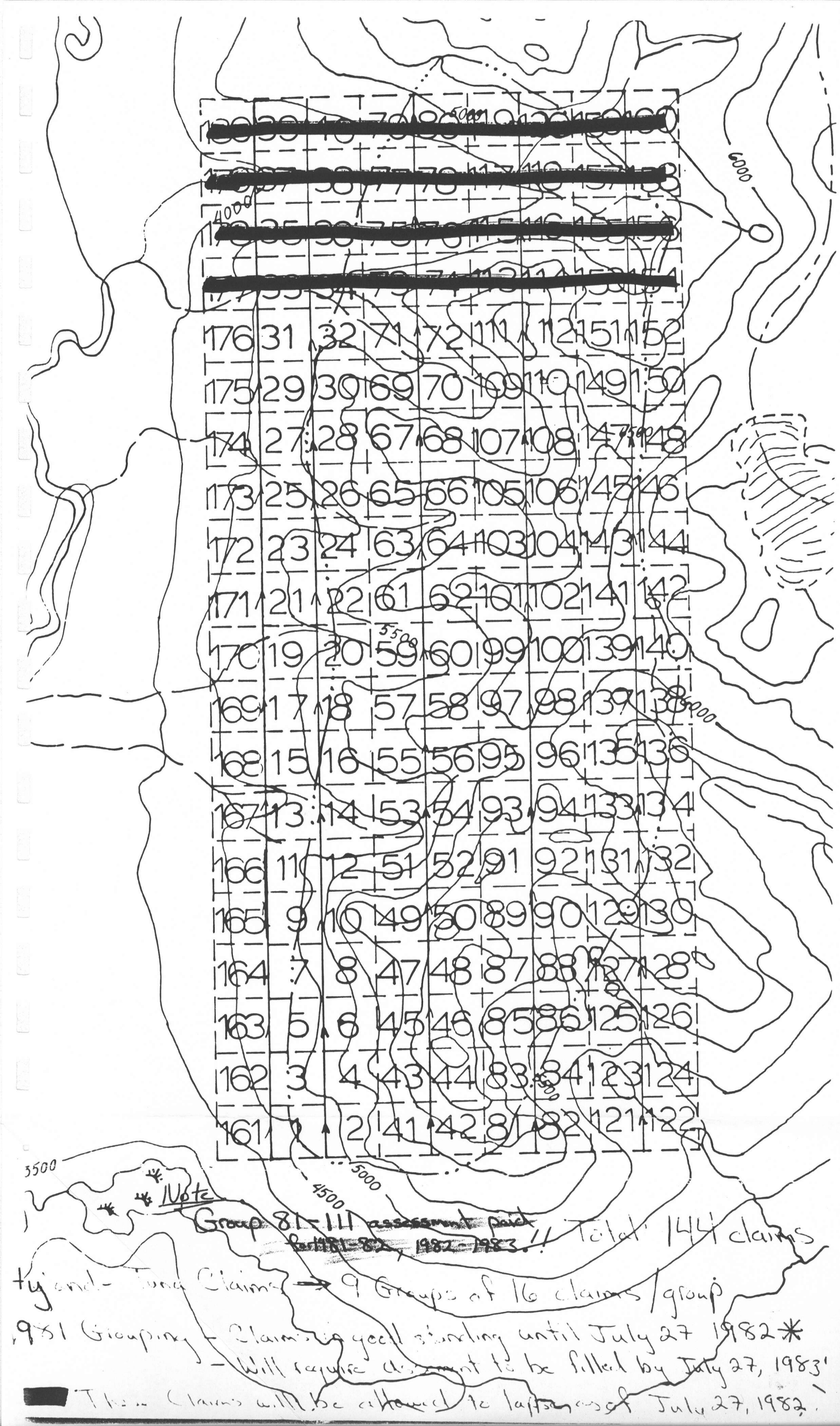
Program Outline

Any further work on the Tuna Claims should include:

1. Detailed Mapping on a proper 1:10,000 contour line map.
2. Followup, detailed prospecting and geochemistry over the claim block.
3. Trenching and chip sampling of all showings (where feasible).
4. Ground VLF and Magnetics over the yet unexplained magnetic response over the swampy area adjacent to the southern claim boundary.
5. Possible, further work on the Hyland intrusive by a intrusive expert i.e. D. Archibald.
6. Groundchecking of the anomalous drainages on the Boundary Pluton which is located adjacent to the northeast corner of the Tuna claims. This should include prospecting, geochemical sampling and reconnaissance mapping.
7. The area due north of the Tuna claim block in the vicinity of the Kay showing should be investigated and evaluated in a manner similiar to that employed for the Boundary Pluton.

Optional Items

8. Lithogeochemical sampling program to better define zonation in the Hyland Intrusive.
9. Airborne magnetics and VLF over the Hyland, Boundary and Kay areas.
10. Ground testing of VLF and Magnetic response in several of the mineralized areas where terrain will allow for property grid layout.



Note

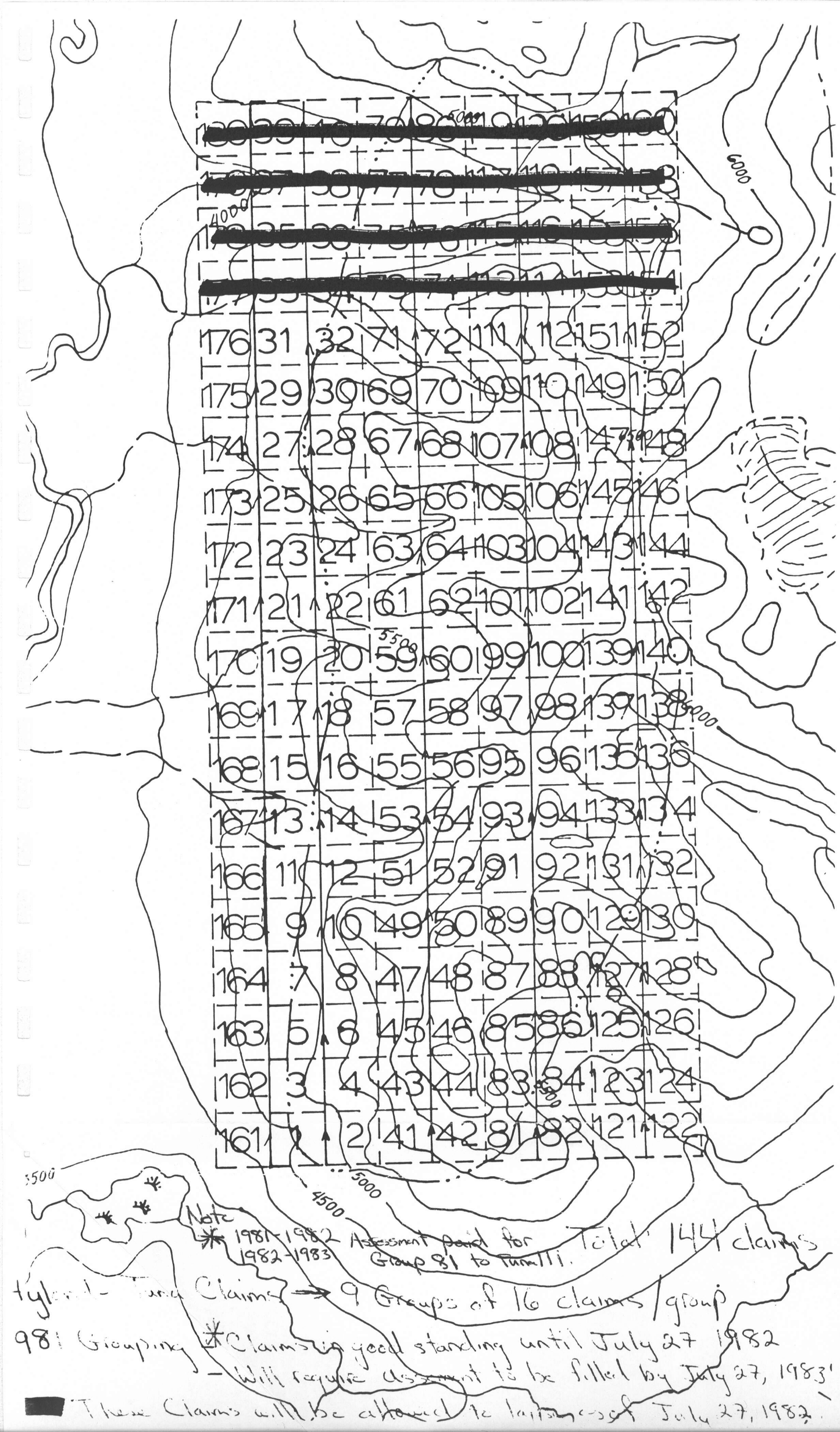
Group 81-111 assessment paid for 1981-82, 1982-1983. // Total 144 claims

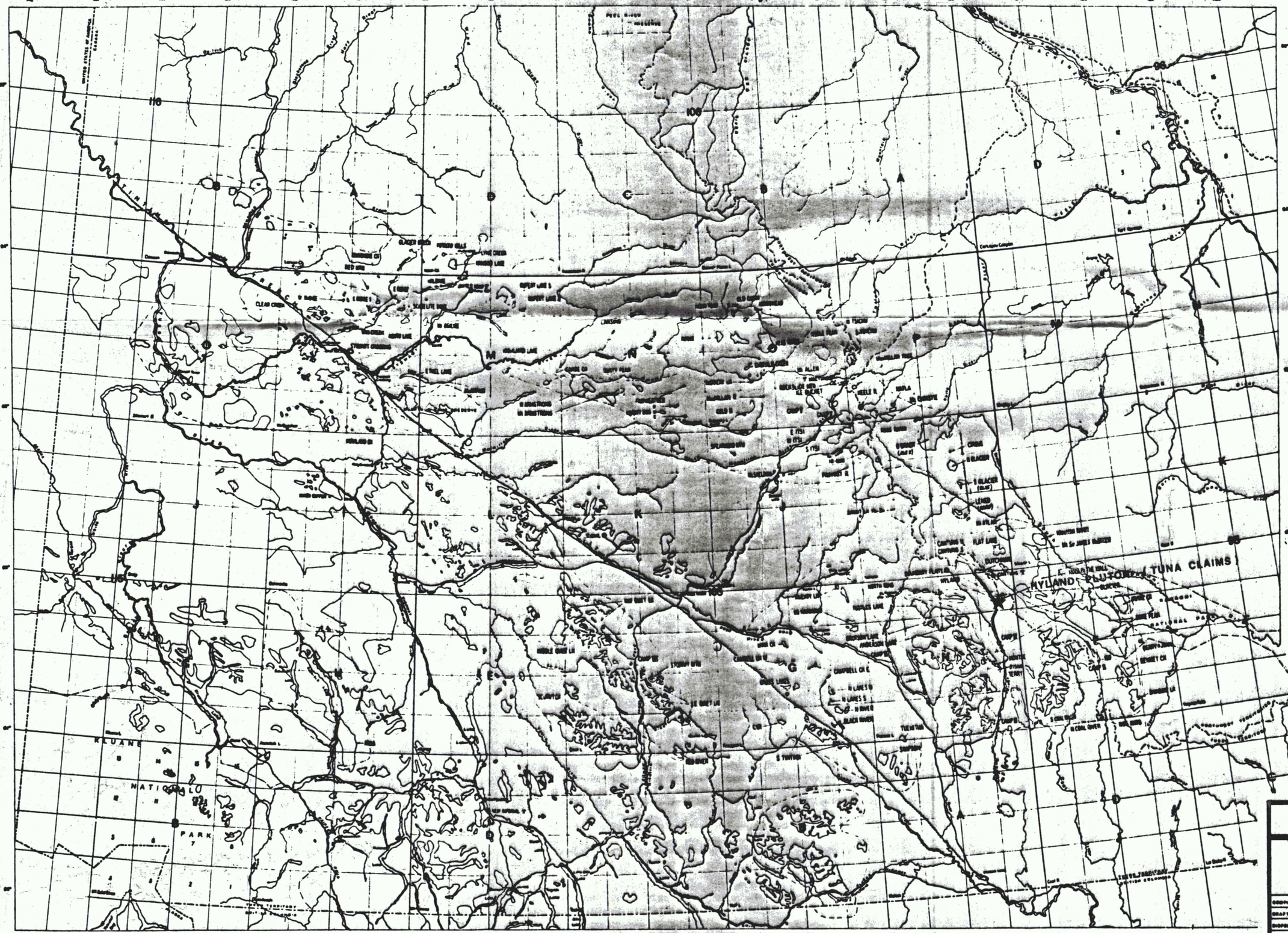
ty and - Total Claims → 9 Groups of 16 claims/group

981 Grouping - Claims in good standing until July 27 1982*

- Will require assessment to be filled by July 27, 1983'

[redacted] These Claims will be allowed to lapse as of July 27, 1982.


176 31 32 71 72 111 112 151 152
175 29 30 69 70 109 110 149 150
174 27 28 67 68 107 108 147 148
173 25 26 65 66 105 106 145 146
172 23 24 63 64 103 104 143 144
171 21 22 61 62 101 102 141 142
170 19 20 59 60 99 100 139 140
169 17 18 57 58 97 98 137 138
168 15 16 55 56 95 96 135 136
167 13 14 53 54 93 94 133 134
166 11 12 51 52 91 92 131 132
165 9 10 49 50 89 90 129 130
164 7 8 47 48 87 88 127 128
163 5 6 45 46 85 86 125 126
162 3 4 43 44 83 84 123 124
161 1 2 41 42 81 82 121 122
6000
5000
4000
3500
4500
Note
* 1981-1982 Assessment paid for
1982-1983 Group 81 to Turn 11.
Total 144 claims
9 Groups of 16 claims/group
* Claims in good standing until July 27 1982
Will require assessment to be filed by July 27, 1983
These Claims will be allowed to lapse as of July 27, 1982.



SCALE

091014

UNION CARBIDE EXPLORATION CORPORATION

LOCATION MAP
REGIONAL GEOLOGY
HYLAND PLUTON
TUNA CLAIMS

COMPILED BY: PJD		MAP NO:
DRAFTED BY:	DATE: March / 82	SCALE:
DISPOSITION:		BY:
PROJECT NO: 104	REPORT NO:	FIG No 3

Upper Hyland River

NORTHWEST TERRITORIES
YUKON TERRITORY

Claim boundary (approximate)

HYLAND PLUTON

BOUNDARY PLUTON

mqm

eqm

Ice covered

Claim boundary (approximate)

LEGEND - HYLAND GEOLOGY

2 — INTRUSIVE ROCKS:
mqm ↓ megascintic biotite quartz monzonite
eqm ↓ equigranular biotite quartz monzonite

1 — SEDIMENTARY ROCKS:
mainly phyllite, some quartzite, minor limy interbeds

- GEOLOGICAL CONTACT (defined, assumed)
- BEDDING
- FOLIATION (inclined, vertical)
- FOLIATION IN NARROW SHEAR ZONE
- LINEATION
- MINERAL OCCURRENCE / AREA OF INTEREST
- DYKES AND VEINS (inclined, vertical)

A	APLITE
QM	QUARTZ MONZONITE
QP	QUARTZ PORPHYRY
D	DIORITE
Bx	BRECCIA
SW	STOCKWORK
Q	QUARTZ
Tm	TOURMALINE
Kfsp	K-FELDSPAR
Chl	CHLORITE
Py	PYRITE
Po	PYRRHOTITE
Mt	MAGNETITE
Mn	MANGANESE OXIDE STAINING
Cp	CHALCOPYRITE
WO_3	SCHEELITE
MoS_2	MOLYBDENITE
(MoS_2)	MOLYBDENITE IN TALUS

NOTE: THIS IS AN APPROXIMATE OUTLINE OF 1981 HYLAND CLAIM BLOCK EXTRAPOLATED FROM 1" = 1/4 MILE CLAIM SHEET No. 105H-16

⊠—— CLAIM POST AND CLAIM LINE

091014

UNION CARBIDE EXPLORATION CORPORATION

HYLAND PROJECT
TUNA CLAIMS
GEOLOGY
YUKON TERRITORY

COMPILED BY: P.J. Doyle			MAP NO:
DRAFTED BY: D.A.	DATE: August, 1981		SCALE: 1 inch = 1/4 mile
DISPOSITION:			N.T.S. 105 H/16
PROJECT NO: 104	REPORT NO:		FIG. No.: 5A

NORTHWEST TERRITORIES
YUKON TERRITORY

Claim boundary (approximate)

Upper Hyland River

Ice covered

LEGEND

XW-3514(750) — PAN-COUNT / GRAINS SCHEELITE
LOCATION — NUMBER — SERIES — NUMBER
XW-3502 — ZI-NO-S-O-R
Ag-p.p.m.
W-p.p.m.
Mo-p.p.m. (NO DETERMINATION)
Cu-p.p.m

SAMPLE SEQUENCE	ELEMENTS ANALYZED
D-0005 to 20 INCL.	Cu, Mo, W
T-0001 to 14 INCL. D-0001 to 4 INCL. F-0001 to 31 INCL.	Cu, Mo, W, Sn
W-0000 to 41 INCL. W-2500 to 15 INCL. W-2000 to 3 INCL. W-3000 to 11 INCL. W-3500 to 13 INCL.	Cu, Mo, W, Ag

⊠——— CLAIM POST AND CLAIM LINE

NOTE: This is an approximate outline of 1981 Hyland Claim Block extrapolated from 1" = 1/4 mile claim sheet no. 105H-16

Analysis done by standard Geotechnical analytical techniques by Bondar-Clegg, Vancouver.

091014

UNION CARBIDE — UNION CARBIDE EXPLORATION CORPORATION

HYLAND PROJECT
TUNA CLAIMS
GEOCHEMISTRY SILTS & SOILS
YUKON TERRITORY

COMPILED BY: P.J. Doyle		MAP NO:
DRAFTED BY: K.G.	DATE: August, 1981	SCALE: 1 inch = 1/4 mile
DISPOSITION:		NTS: 105 H/8
PROJECT NO: 104	REPORT NO:	FIG. No. 6



LEGEND

- ○ Rock Sample Site — No Analysis
- ● Rock Sample Site — Analysis Performed

ILLUSTRATION

A-26-2T : W, Mo, Cu, Ag, Au, Mn, Sb, Bi — W, Mo, Cu, Ag, Mn, Sb, Bi values in ppm ; Au values in ppb

- SAMPLE TYPE : T = talus; No Letter = outcrop
- STATION NUMBER
- SAMPLER'S CODE : A D. ARCHIBALD; B J. BRONSON; T J. TOOHEY; JRT J. TOOHEY; H K. HARRAP; PJD P. DOYLE; R C. RIEST

ND Not Detected
NA Not Analyzed

Note: ALL SAMPLES ARE PREFIXED BY 81-H- ; 81, YEAR 1981 ; H, HIGHLAND PROJECT

THIS IS AN APPROXIMATE OUTLINE OF 1981 HYLAND CLAIM BLOCK EXTRAPOLATED FROM 1" = 1/4 MILE CLAIM SHEET No. 105H-16

10 — — CLAIM POST AND CLAIM LINE

091014

UNION CARBIDE — UNION CARBIDE EXPLORATION CORPORATION

HYLAND PROJECT
TUNA CLAIMS
ROCK SAMPLE LOCATIONS & RESULTS
YUKON TERRITORY

COMPILED BY: P.J. Doyle			MAP NO:
DRAFTED BY: R. Plummer	DATE: August, 1981		SCALE: 1 inch = 1/4 mile
DISPOSITION:			NTS: 105 H16
PROJECT NO: 104	REPORT NO:		FIG. No. 7

NORTHWEST TERRITORIES
YUKON TERRITORY

Upper Hyland River

Claim boundary (approximate)

Ice covered

4000 5000 6000 6500 7000

LEGEND

- CLAIM POST AND CLAIM LINE
- TRAVERSE ROUTE
- AB-1 TRAVERSE IDENTIFICATION
  - 1 TRAVERSE NUMBER
  - AB SAMPLER

SAMPLERS

- AB- GUICHON
- B - BRONSON
- CR- REIST
- PJD- DOYLE
- DA - ARCHIBALD
- F - FORSTER
- JRT- TOOHEY
- KH - HARRAP

NOTE : This is an approximate outline of 1981 Hyland Claim Block extrapolated from 1" = 1/4 mile Claim sheet no. 105H-16

091014

UNION CARBIDE EXPLORATION CORPORATION

HYLAND PROJECT
TUNA CLAIMS
TRAVERSE MAP
YUKON TERRITORY

COMPILED BY: P.J. Doyle		MAP NO.
DRAFTED BY: K.B.	DATE: August, 1981	SCALE: 1 inch = 1/4 mile
DISPOSITION:		N.T.S.: 105 H/8
PROJECT NO: 106	REPORT NO.	Fld. No. 81