CANADIAN OCCIDENTAL PETROLEUM LTD.

MINERALS DIVISION

INVESTIGATION OF THE SKARN POTENTIAL

OF THE

GIL CLAIM GROUP

BRITISH COLUMBIA

CLAIM SHEET NO. 82E/4W

LAT.: 49°07'W
LONG.: 119°55'N

CLAIMS:

LG-1, 2, 3	Record Nos. 1, 2, 3
EL 3, 4	Record Nos. 1476, 1477
LIG 1, 2	Record Nos. 3103, 31104
GIL 11, 12,]	
19, 21, 23,]	Record Nos. 31131, 31132
25]	31139, 31141, 31143, 31145

OSOYOOS MINING DIVISION

BY: R.M. KUEHNBAUM, M.Sc., F.G.A.C.

WORK COMPLETED JULY 20-26, 1983

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF FIGURES

LIST OF TABLES

PLANS (Back Pocket)

1. SUMMARY AND RECOMMENDATIONS

Mapping and rock geochemistry during 1983 show that skarn bodies over the GIL group other than the "PA showing" are not of economic potential. The grades of mineralization are weak (generally <500 ppm W), the bodies are of small lateral dimensions and they are apparently subvertically oriented and transgressive. They were probably formed by the interaction of argillite and calcium-bearing hydrothermal fluids mobilized during the intrusive event which produced the thermal aureole underlying much of the property.

Stream sediment and heavy mineral geochemistry strongly suggest that the major source of tungsten in drainages on the GIL group is located in the area of the "PA showing" near the headwaters of Gillanders Creek. Much of the copper and molybdenum may be derived from the area of the large soil anomaly detected by CanadianOxy in 1975. There are local weak gold anomalies in the drainages, but these do not warrant further follow-up.

The copper-molybdenum-tungsten soil anomaly and the "PA showing" areas are the only targets of potential interest. The soil anomaly has been relatively well tested by diamond drilling, although no hole reached a depth sufficient for the intersection of a hypothesized granite and its presumed peripheral stockwork zone. The "PA showing" has been well drilled with short holes by Union Carbide, and although local high-grade zones exist (0.65% WO_3 over 4.95 m), the potential size of the skarns is very limited.

With the present state of knowledge, the property thus has little potential. The area of the "PA showing", however, should be remapped with attention paid to the structure and characteristics of mineralization in order to trace the skarn zone under areas of overburden. This would entail the cutting of a very close-spaced grid (30 m lines), a detailed magnetic survey, and remapping of the skarn zone and surrounding rock. This work could probably be done in 24 man days.

2. INTRODUCTION

2.1 General Background

The GIL group of claims has been held by CanadianOxy since 1974. During the period 1974 to 1975, geological and geochemical programs were carried out to examine the source areas of stream sediment anomalies. This work was followed up by diamond drilling in 1975, 1977 and 1978 on both molybdenum-copper-tungsten porphyry, and tungsten-skarn targets. The property had not been worked since 1978, because of generally poor results which may be principally due to hostile drilling conditions and the failure of many holes to reach their target depths.

For the purposes of the present survey, it was felt that there was insufficient knowledge of the skarn mineralization since the major target of previous interest had lain in the inferred "porphyry" style of mineralization underlying a large soil anomaly; little attention had been paid to the skarn bodies outside of the original "PA" showing discovered by Union Carbide in 1972. Some had been mapped, but were virtually unsampled, and there had been no systematic lamping of outcrop areas. It was the purpose of the present survey, therefore, to thoroughly re-investigate those skarn exposures and to carry out additional sediment and initiate heavy mineral sampling of drainages to test the potential of skarns outside of the "PA" showing area.

This report describes the results of those efforts.

2.2 Location and Access

The GIL group of claims (82E-4W) is situated in the

Osoyoos Mining Division. The property is located about 11 km (7 miles) southwest of Keremeos and adjoins the western boundary of Indian Reserve No. 13 (Figures 1, 2). Access was gained during the present program by helicopter, although an access road through I.R. #13 was constructed for the diamond drilling programs of 1975, 1977 and 1978; dead fall and wash-outs, however, have made portions of the road inaccessible to vehicular traffic.

2.3 Physiography and Vegetation

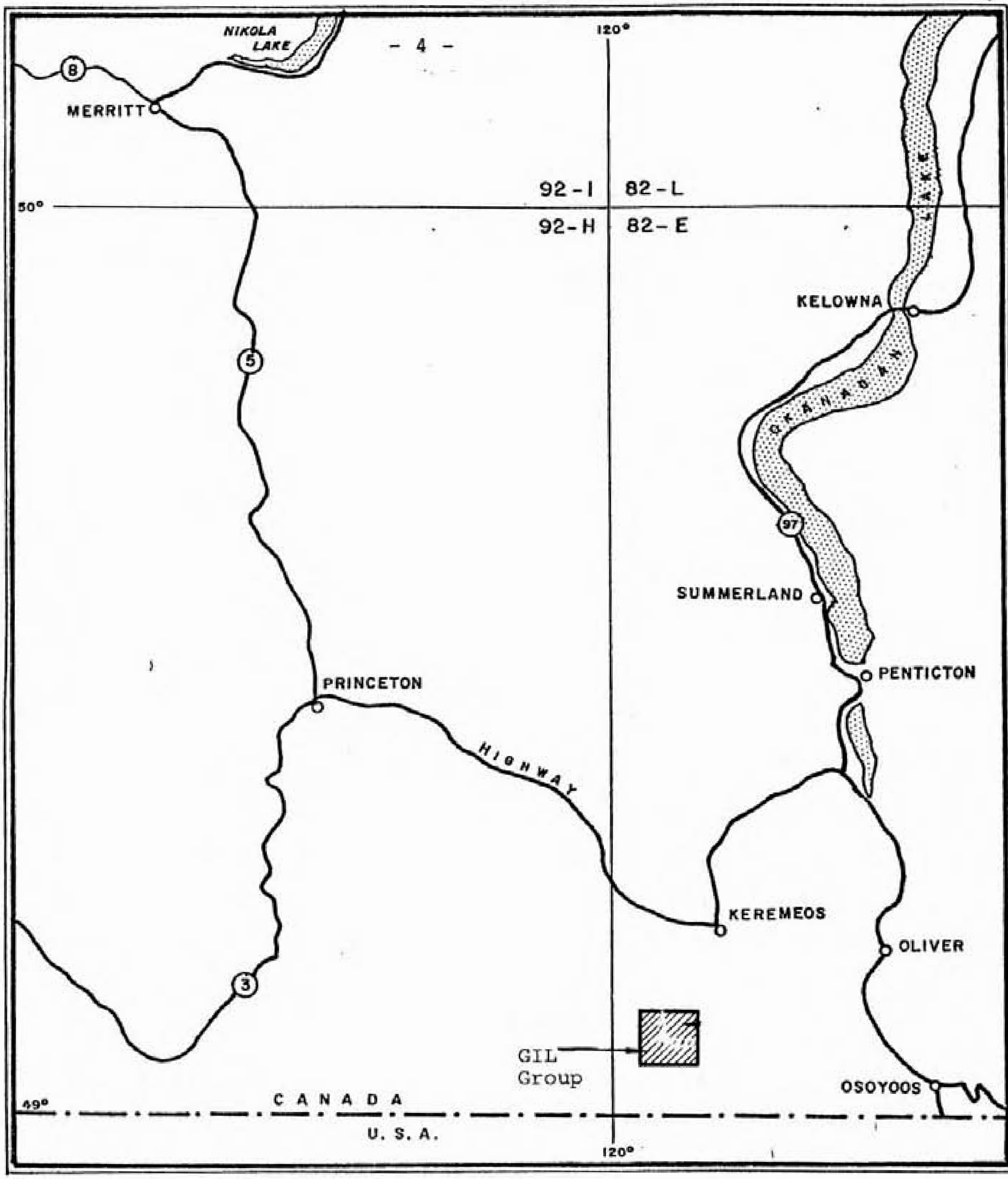
The GIL claims are located in the Okanagan Range of the Cascade Mountains. Relief on the property is about 3,000 ft, from a maximum of about 7,400 ft (2257 m) on the northern area of the claims, to about 4,400 ft (1342 m) at the junction of the two main branches of Gillanders Creek (1975 camp-site). All major creeks on the property terminate in cirque valleys. South-facing slopes typically have cliff-forming outcrops at higher elevations, with less outcrop and more talus on lower slopes. North-facing slopes are well forested. Slopes of 40° are not uncommon.

The property is largely below tree line (7,000 ft or 2,135 m), above which is typical alpine vegetation. Pines predominate at higher treed elevations, and valley bottoms are covered in mature, open fir forest. Aspen and willows grow locally on talus slopes.

2.4 Previous Work

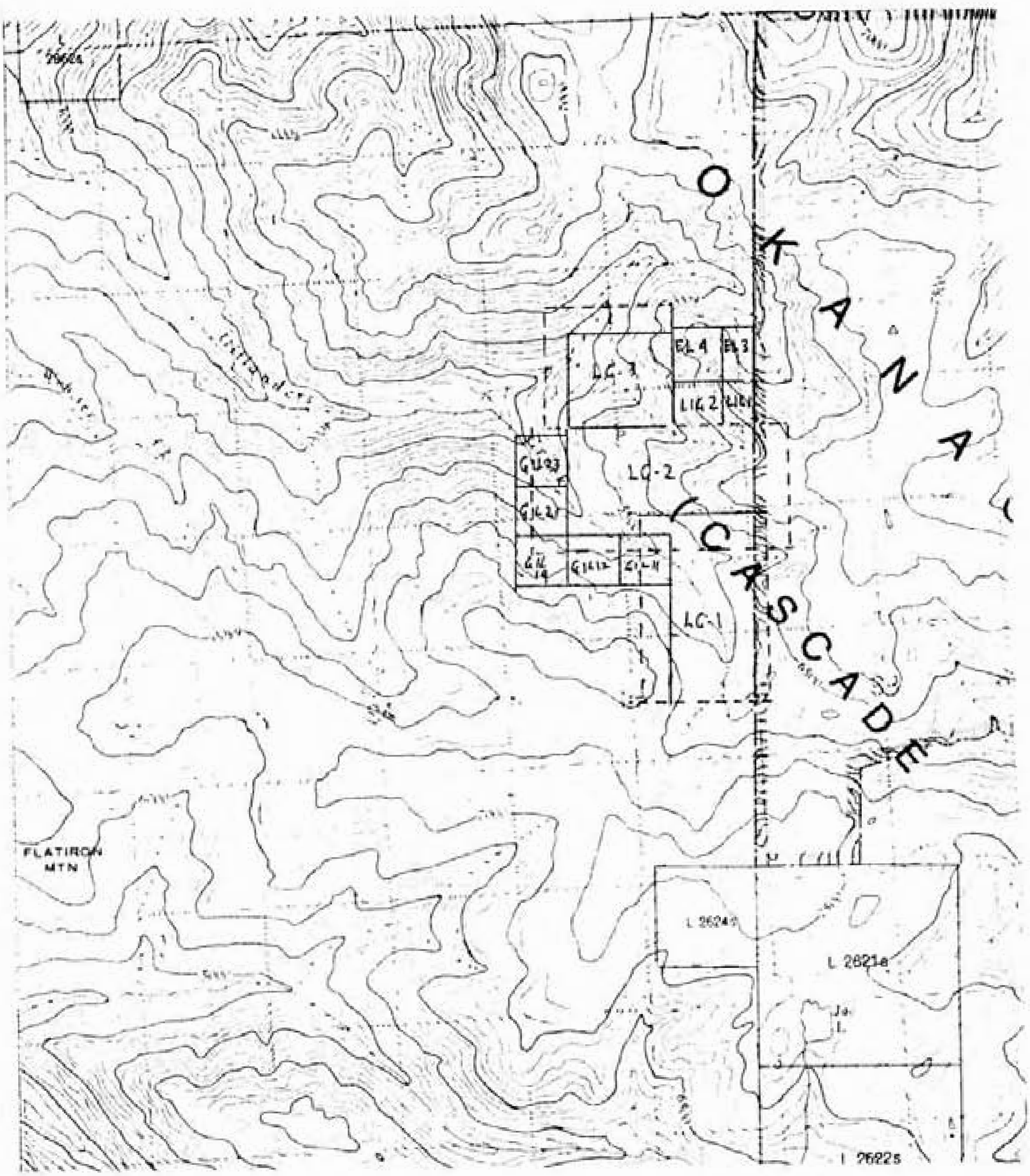
The first known exploration activity in the Gillanders Creek area was by Kennco (Western) Exploration in 1960, who staked claims; no assessment records have been located.

Union Carbide Exploration Corp. (UCEX) staked the PA 1-18 claims, covering the headwaters of Gillanders Creek, in 1972, probably as the result of a regional scheelite panning survey. In 1973, they carried out regional mapping (1:9,600) and detailed



CANADIAN OCCIDENTAL PETROLEUM LTD
MINERALS DIVISION

FIGURE 1 Location of GIL Group



1:50,000

Figure 2

Location of the Gil Group

mapping (1:600 on PA 1-6), drilled 12 Cobra holes and 13 diamond drill holes totalling 251 m (839 ft).

The GIL 1-26 claims were staked in November, 1973, by CanadianOxy to investigate the source area of a copper-molybdenum anomaly detected during the 1973 Project Princeton regional stream sediment program. The claims were abandoned and restaked in August, 1974. The LIG 1-18 claims were staked at the same time, and LI 1-20 staked later in the year (October, 1974). The latter claims were staked to cover extensions of a soil anomaly and a tungsten-bearing skarn found during 1974 geological, geochemical and magnetometer surveys of the GIL Claims (Schindler, 1974).

On March 13, 1975, UCEX's PA claims were forfeited due to non-payment of rent, and CanadianOxy then staked the LG-1, -2 and -3 modified grid claims to cover the open ground.

Geological and geochemical surveys on the northern two-thirds of the GIL-LIG-LI-LG claims were carried out on a 400-ft (122-m) cut grid in August, 1975. A major copper-molybdenum-tungsten soil anomaly was outlined (Macdonald, 1975a). This work was followed up by the construction of a bulldozer road from the east and the drilling of five diamond drill holes, totalling 840 ft (254 m) of recovered core; only the last three holes reached bedrock (Macdonald, 1975b).

In 1976, the area of the old "PA showing" was resampled (Macdonald, 1976), and one 617 ft (188 m) diamond drill hole (6-77) was put down south of Gillanders Creek a year later (Macdonald, 1977). Results were negative, and in the summer of 1978 an additional 162-meter (531 ft) hole (7-78) was put down to attempt to intersect an inferred skarn at depth, north of Gillanders Creek (Saracoglu and Macdonald, 1978).

The property lay dormant from 1978 until the present program. The EL 1-4 Claims, subsequently reduced to EL 3, 4 were staked in October, 1981, to cover a potential skarn area that had been exposed when portions of the LIG claims expired.

2.5 Claim Status

The GIL Group of claims is presently composed of the following:

Claim	No. Units/Claims	Recording Date	Expiry Date
LG 1, 2	14	March 17/75	March 17/85
LG 3	4	March 17/75	March 17/84
LIG 1, 2	2	September 5/74	September 5/83
EL 3, 4	2	October 29/81	October 29/83
GIL 11, 12, 19, 21, 23, 25	6	September 5/74	September 5/83
	28		

3. WORK COMPLETED

3.1 Rock Geochemistry and Mapping

Only skarn occurrences and their host rocks were investigated during the present study. This consisted of attempting to locate previously mapped exposures, an often difficult task due to the generally poor condition of the 1975 grid, especially at higher elevations. These, and new skarn exposures found, were examined for geological relationships and were thoroughly lamped with an ultraviolet lamp. Although no chip sampling was carried out on outcrop exposures, representative samples, composite grab samples and "high-grade" samples were taken, the last to determine if ore-grade tungsten exists even locally. Thirty-three (33) rock samples were taken and sent to Chemex Labs, North Vancouver, for analysis of copper, molybdenum, zinc, tungsten and gold. Results and analytical procedures are given in Appendices II and IV, respectively.

3.2 Stream Sediment and Heavy Mineral Geochemistry

Because of the erratic, mechanical-dispersive nature of tungsten in streams, heavy mineral concentrates were taken at all stream junctions and at other intervals along tributaries of Gillanders Creek, the objective being to obtain a more direct comparison of tungsten (scheelite) content of drainages compared with the drainage from the "PA showing". Stream sediments were taken at all heavy mineral sites and at other localities where previous sampling density was considered insufficient. In total, 20 stream sediment and 12 heavy mineral concentrates were taken and sent for analysis; the former to Chemex Labs, North Vancouver, for analysis of copper, molybdenum, zinc, tungsten and gold; the latter to Bondar-Clegg Labs, Ottawa, for analysis of copper, molybdenum, lead, zinc, silver, gold and tungsten.

Field and analytical procedures are given in Appendix V and analytical results in Appendicies III and IV.

3.3 Table of Work Performed

Type of Work	Man Days	No. of Samples	Analyses Cu	Mo	Pb	Zn	Ag	Au	W	Total
Geological mapping and sampling	12									
Geochemistry										
i) Rock		33	33	33		33		33	33	165
ii) Heavy Mineral		12	12	12	12	12	12	12	12	84
iii) Sediment		20	20	20		20		20	20	100
Total	12	65	65	65	12	65	12	65	65	349

Helicopter: 7.3 hrs (Bell 206-B Jet Ranger)

3.4 Names and Addresses of Personnel

R.M. Kuehnbaum	Project Supervisor	Canadian Occidental Petroleum Ltd. Minerals Division 180 Attwell Drive 4th Floor Rexdale, Ontario M9W 6A9
		July 20-26, 1983
A.W. Murdy	Project Geologist	address as above
		July 20-26, 1983

4. GEOLOGY

4.1 General Geology

Because it was not the intent of the present survey to systematically remap the property, the discussion of general geology is synthesized from previous reports by CanadianOxy (e.g. Macdonald, 1975a) and Union Carbide.

The area was originally mapped by Bostock of the G.S.C. The property is shown to be underlain by Triassic or older rocks of the Old Tom and Shoemaker Formations. The Old Tom is described as being composed of greenstone, basalt flows, sills, bosses and some diorite, while the Shoemaker is described as chert, some tuff and greenstone. The two formations were not divided by Macdonald (1975a) because of complexities of transitions and structure.

Four basic stratigraphic subdivisions are present on the property. These include:

1. a generally hornfelsed, massive, fine-grained, variably coloured chert.
2. Argillite (2a) interlaminated with chert, generally hornfelsed, locally containing some pyrite or pyrrhotite. Includes some sandstone (2b) and conglomerate (2c).
3. Mafic metavolcanic flow (3a) and pyroclastic (3b) rocks.

4. Calcareous metasedimentary rocks including, recrystallized limestone, impure limestone (4b) and skarn (4a). The skarn was interpreted by Macdonald (1975a) to be the result of metasomatism of the limestone.

A breccia (5) composed of fragments of chert and felsic intrusive rocks in an argillite matrix. This was interpreted to have a tectonic origin, although little evidence exists.

A series of acidic intermediate dykes (6), both pre- and post-tectonic, occur over the property. These are presumably related to a deeper-seated intrusion underlying the GIL Claims.

The structural geology of the property is somewhat difficult to interpret. Macdonald (1975a) has argued that the original compositional layering of the meta-sediments has been re-aligned parallel to the predominant foliation. During the present study, however, grain size banding in quartzites and chert, certainly a primary sedimentary feature, was observed in two localities to be parallel to the principal cleavage. The parallel dominant fold patterns previously interpreted were based partly on the tracing of calcareous horizons (i.e. skarn units), but since it is now felt (see below) that the skarns are at least in part transgressive in nature, their distribution is of little concern in a structural interpretation.

The pervasive metamorphism on the property is upper greenschist - lower ampibolite facies. Superimposed upon this is a later thermal aureole, with a minimum vertical thickness of 790 m (2,600 ft). The hornfels is not readily discernable in the field, but petrographic studies have confirmed its presence (Macdonald, 1975a).

Mineralization on the property consists of two economically interesting types: skarn and quartz veins. The skarns are discussed below. Diamond drilling was done to test the cause of the large copper-molybdenum-tungsten soil anomaly north of Gillanders Creek and to trace skarn units. Quartz-pyrite veins and poorly mineralized skarn lenses contain very little scheelite, and molybdenite occurs on dry fractures (see Macdonald, 1975 a, b, 1977; Saracoglu and Macdonald, 1978). There is local evidence of a "porphyry stockwork" of quartz veinlets. The quartz veins are of at least two ages: a deformed and brecciated pre-"tectonic breccia" set and a more widely occurring post-"tectonic breccia" set. Molybdenite also occurs in felsic dykes.

Table 1

Table of Formations
(modified after Macdonald, 1975a)

Intrusive Rocks

6f	microdiorite
6e	felsite
6c	feldspar porphyry
6b	quartz-feldspar porphyry - stage I and II
6a	quartz porphyry

Breccia

5	tectonic breccia

Metasomatic Rocks

4a	calc-silicate skarn

Metavolcanic Rocks

3b	greenstone pyroclastic rocks
3a	greenstone flow rocks

Metasedimentary Rocks

4b	limestone and impure calcareous rocks
2c	conglomerate
2b	sandstone
2a	argillite
1	chert

4.2 Skarn Mineralization and Geochemistry

The major interest of the present study was skarn mineralization other than the area of the "PA showing". An attempt was made to locate all skarn occurrences shown by Macdonald (1975a); several could not be found, while several new exposures were located. The following is a description of each locale.

L36E/20N-22N

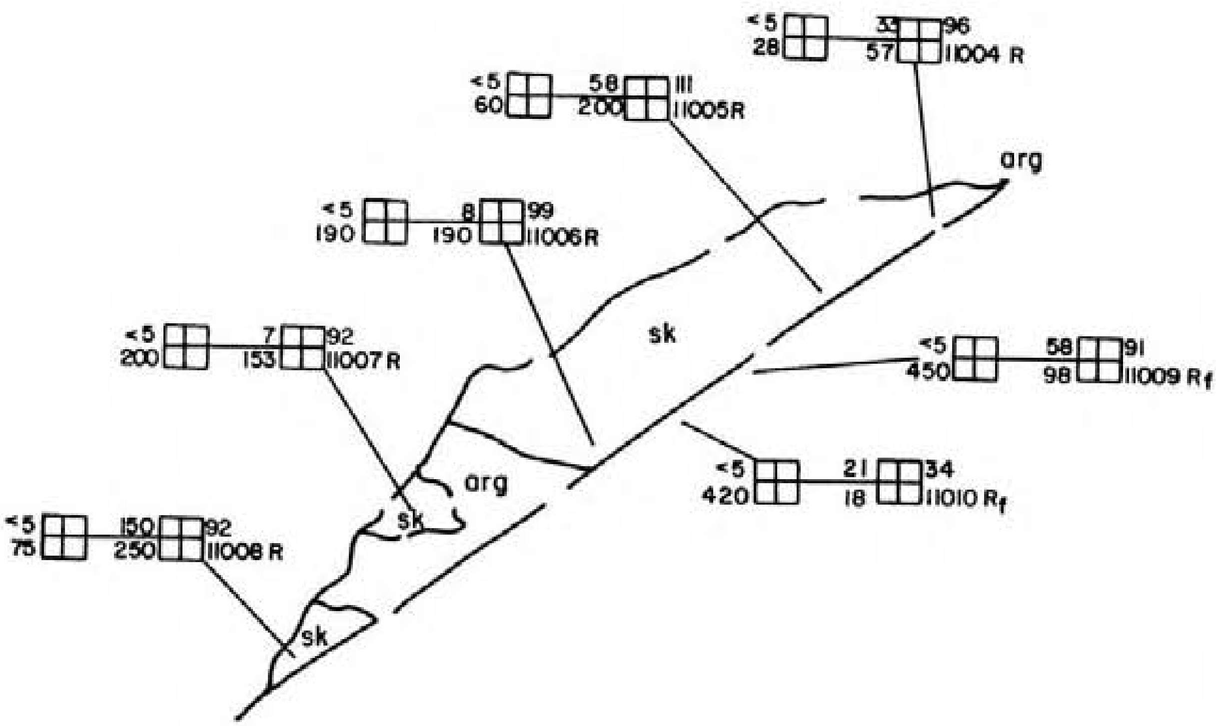
This large exposure of skarn occurs on the walls of a talus chute. A west-facing view of the geological relationships and geochemistry are shown on Figure 3.

At this locale, the major contacts dip gently northward into the slope. The skarn is actually a nodular mixture of garnet-quartz-epidote-(calcite) skarn and black argillite. The skarn in in irregular lenses, varying between 20 and 80% of the rock (average, 60%). The calc-silicate minerals are somewhat zoned around the meta-argillite margins. The exposed skarn is at least 13 metres (43 feet) thick in two bodies separated by about 4 metres (13 feet) of meta-argillite.

Abundant outcrop and talus material was examined with an ultraviolet lamp. Visual estimates are generally trace to <0.1% WO_3 as fine- to medium-grained disseminated blue to yellowish-white fluorescing scheelite. These results are confirmed by analytical data (20-420 ppm W). One float fragment (11,010R_f) was estimated to contain 0.9% WO_3; its tungsten content of 420 ppm W is excessively low and there may be another fluorescent mineral (diopside?) occurring locally.

200 ft (60 m) W of L36E/20S

This zone of mixed skarn (45%) and argillite (55%) is about 4.5 - 6 metres (15-20 ft) thick (across bedding/cleavage),



Legend

sk - skarn + argillite mixture
arg - meta-argillite

Au W Mo Cu Zn 83-GL-##

f - talus fragment
values in ppm, Au in ppb

CANADIAN OCCIDENTAL PETROLEUM LTD.
minerals division

PROJECT GIL
BRITISH COLUMBIA 82-E-4/W

Sketch of Skarn Mineralization
L36E / 20N

0 5 10m
Scale : horizontal = vertical

R.M.K. / Sept. 83 Figure 3

bounded above and below by argillite with epidote veinlets. The skarn is composed of epidote, garnet, quartz and local calcite, with local traces of scheelite. Sample 11,036R is a composite grab/chip sample, and contains 60 ppm W.

TL32+00N/41E

This skarn exposure is in a small outcrop of argillite. The zone (50% argillite, 50% epidote-garnet-calcite-quartz skarn), is apparently about 1.8 metres (6 ft) thick. It is not traceable laterally. The skarn contains trace disseminated pyrite, scheelite and powellite. Sample 11,012R, a typical specimen, contains 95 ppm W. Sample 11,013R, a composite chip sample, contains 8 ppm W. Contents of molybdenum, copper, zinc and gold are all very low.

Sample 11,011R, a grab from an outcrop about 18 metres (60 feet) to the south, is of a garnetiferous, calc-silicate hornfels with trace disseminated pyrite. It contains 210 ppm W.

L36E/15N

This exposure is an excellent indication that at least some skarn bodies are not the result of the metasomatism of carbonate horizons. The skarn, an epidote-garnet-quartz-calcite rock with "ghost" remnants of meta-argillite, occurs in a steeply dipping, 1.8 metre (6 foot) body on the edge of an outcrop of meta-argillite and chert. The bedding of the argillite appears to dip gently into the slope (east). The contact between the skarn zone and the argillite is sharp, but epidotic fractures occur within the argillite. This alteration zone can be traced for at least 60 metres (200 feet) to the northwest, where a small subvertical 1.8 m x 1.2 m (6 ft x 4 ft) skarn zone is exposed. Other skarn bodies probably subcrop in the area since talus fragments occur in clusters. In one talus area (11,033R_f) blocks clearly show the progressive alteration of meta-argillite through an epidote-quartz rock with relict banding to a more massive skarn.

Traces of scheelite are present in virtually all rock fragments lamped. Sample 11,034R is a composite grab of the main skarn outcrop, it contains 420 ppm W. A sample of the 1.8 m x 1.2 m skarn zone contains 150 ppm W (11,035R), and a fragment of talus float (11,033R_f) contains 420 ppm W. The samples contain 38-168 ppm Cu, 17-97 ppm Mo, 64-105 ppm Zn and 5-10 ppb Au.

L40E/9N

A small zone of talus fragments indicates subcropping skarn. The material is garnet-epidote-quartz-(calcite) skarn with overall traces to <0.1% scheelite. A grab sample (11,032R_f) contains 19 ppm Cu, 57 ppm Mo, 52 ppm Zn, 525 ppm W and 5 ppb Au.

L48E/8N

This is a 6 m (20 ft) x 1.5 m (5 ft) outcrop of generally calcareous cherty argillite hornfels containing epidote, minor epidote+diopside, and lenses and bands of epidote-diopside(?)-quartz-garnet material. The lenses are mostly 2.5 cm x 5-8 cm, and bands 2-3 mm in thickness. Epidote also occurrs as fracture coatings in the hornfels. The rocks contain trace (overall) fine- to medium-grained scheelite and trace chalcopyrite.

Samples taken from this zone (11029R to 11031R) contain 27-190 ppm Cu, 4-11 ppm Mo, 80-119 ppm Zn, 140-375 ppm W, and 5-10 ppb Au.

L16E/23S

The skarn zone shown by Macdonald (1975a) at this locality appears to be merely an incipient metasomatism of argillite. The argillite bears calc-silicate minerals (epidote + garnet + quartz) in fractures. A sample of this material

(11,020R) contains 22 ppm Cu, 23 ppm Mo, 100 ppm Zn, 9 ppm W and <5 ppb Au.

L16E/8-9S

This large outcrop is principally composed of slightly calcareous chert or calc-silicate hornfels and argillite with very minor epidote on fracture surfaces. Locally, patches of fine-grained, limonite-stained garnet occur. The argillite appears to have been metasomatized to the calc-silicate bearing rock. Two skarn zones are present. One is approximately 30 cm (1 ft) thick and is composed of epidote, garnet and quartz; it contains <0.1% disseminated scheelite and <1% disseminated pyrite. The other skarn zone is a 30-45 cm thick vertical body of massive diopside-garnet-epidote-calcite-quartz skarn with minor (<1%) disseminated pyrite and trace (<0.1%) scheelite.

Grab and composite grab samples contain 14-78 ppm Cu, 12-150 ppm Mo, 54-180 ppm Zn, 15-210 ppm W and a maximum of 5 ppb Au.

The "PA" Showing

A few samples were collected in the area of the "PA showing" drilled by CanadianOxy and Union Carbide. The style of skarn mineralization appears to be similar to that elsewhere on the property.

On the drill pad at site 6-77, an outcrop of black chloritic meta-argillite contains local transgressive epidotic veinlets and stringers, and local garnet pods. Scheelite (maximum <0.1%) is rare in hand specimen. A sample (11,055R) contains 820 ppm Cu, 10 ppm Mo, 99 ppm Zn, 40 ppm W and 5 ppb Au.

Below 6-77, in the area drilled by Union Carbide, chert with minor epidote pods and massive garnet-actinolite skarn in chert with epidote veins were sampled (11,056 and 11,057R). These grab specimens contain 700 and 35 ppm Cu, 8 and 22 ppm Mo, 84 and 98 ppm Zn, and 28 ppm W and <5 ppb Au. In gross form, the lithologies and characteristics of these rocks are similar to other occurrences described above. It is interesting that Union Carbide felt these skarns to be "pipe-like" (i.e. transgressive?) in nature.

A 0.6 metre rotted granitic dyke containing about 1% molybdenite cuts a limey chert/calc-silicate hornfels. A grab sample (11,058R) contains >1000 ppm Mo. This dyke belongs to the set of dykes described by Macdonald (1975a).

Other Occurrences

The following locations of skarn occurrences mapped by Macdonald (1975a) were not visited during the present program; their status is thus uncertain:

L8E/41N
TL32N/30E
L32E/29N

Skarn locations previously mapped at L56E/13N and west of L48E/22N were investigated, but no skarn found. It is suspected that other rocks, especially rusty-weathering cherts, were erroneously mapped as skarn.

5. GEOCHEMISTRY

5.1 Stream Sediment Geochemistry

For the 20 stream sediment samples taken during the present survey, the following range of values was obtained (Plans 1 and 2).

Cu	49-115	ppm
Mo	2- 42	ppm
Zn	83-186	ppm
W	1-100	ppm
Au	<5- 80	ppb

From the present and previous surveys, the maximum values are:

Cu	333 ppm	
Mo	161 ppm	
Zn	186 ppm	(present survey only)
W	>500 ppm	
Au	80 ppb	(present survey only)

In general, the highest contents of copper, molybdenum and tungsten are from the main (southern) branch of Gillanders Creek (up to 330 ppm Cu, 161 ppm Mo and >500 ppm W). The mineralization of the "PA showing" appears to be the primary source of metals (see Heavy Mineral Geochemistry, below). Significant contents are present, however, in the small branch, tributary, crossing the LG-3 Claim, of the northern branch of Gillanders Creek (up to 333 ppm Cu, 45 ppm Mo and 70 ppm W). These are partially explained by the copper-molybdenum-tungsten soil anomaly north of that tributary (on EL-1), but no significant mineralization has been found in this area.

High gold contents (>20 ppb Au) occur in three samples from the northern branch of Gillanders Creek (25, 25 and 50 ppb Au). These are unexplained and do not correspond to other metals.

There is little variation in zinc contents of stream sediments on the property.

5.2 Heavy Mineral Geochemistry

For the 12 heavy mineral concentrates taken, the following range of values was returned.

Cu	62- 261 ppm
Pb	5- 30 ppm
Zn	56- 240 ppm
Mo	5- 121 ppm
Au	<5- 165 ppb
W	85-1300 ppm

These results indicate that the primary mode of dispersion of copper and zinc is hydromorphic, but that of molybdenum and tungsten is mechanical. At least a part of the molybdenum in the heavy mineral fraction is probably contained in the scheelite, since both molybdoscheelite and powellite occur in skarns. Abundant scheelite was noted in several panned concentrates.

The three samples taken below the "PA showing" in Gillanders Creek contain 500-1300 ppm W, 0.7 to 1.1 ppm Ag and up to 100 ppb Au. Immediately above the "PA showing", the contents are much less (85 ppm W, 45 ppb Au and 0.4 ppm Ag). The tungsten contents decrease downstream, suggesting that the "PA" mineralization is the major source of metals.

Other significant tungsten contents occur only in the north branch of Gillanders Creek (11,027 HM) just above the main junction. This may be due to tungsten enrichment in tills in the stream bed due to glacial movement down Gillanders Creek.

Gold is also enriched in two samples on the north branch of Gillanders Creek (120 and 165 ppb Au; 11017 HM and 11038 HM). Although the contents are low (i.e. <1,000 ppb Au) it is interesting that these values are situated downstream from the principal gold-in-sediment values on the property. No explanation is offered.

The heavy mineral sampling agrees with the conclusion that the "PA mineralization" is the principle tungsten mineralization on the GIL property.

6. CONCLUSIONS

The skarns on the GIL Group appear to be at least in part transgressive in nature and are not likely the product of metasomatic alteration of carbonate-rich horizons (limestones, dolomites). Moreover, they are probably in large part, pipe-like or lensoidal and of limited lateral dimensions, except possibly in the area of the "PA showing" where values of up to 0.65% WO_3 over 16.5 ft (4.95 m) were intersected by Union Carbide in 1973. The greatest surface dimensions of the lense and skarn at PA are approximately 7.5 m x 45 m. It has been suggested by Union Carbide, however, that the skarn bodies are compressed and occur within the hinges of tight folds which may significantly increase the dimensions of the bodies. The results of the present survey indicate that they are indeed pipe-like but not related to structure. A careful remapping of the "PA showing" area would be needed to confirm this hypothesis. If true, inclined rather than vertical drilling would be necessary to intersect skarn at depth. Many of the Union Carbide drill profiles, however, show that the skarns roughly correspond to moderately inclined bedding.

The stream sediment and heavy mineral geochemistry strongly suggest that the skarn mineralization of the "PA showing" is the best on the property, and any further efforts should be directed towards that area and possibly the area of the "stockwork"/soil anomaly north of the showing.

Respectfully submitted,

R.M. Kuehnbaum, M.Sc., F.G.A.C.

Toronto, Ontario

September, 1983

REFERENCES

Schindler, J.N., 1974: Geology, Geochemistry and Ground Magnetometer Survey of the GIL Claim Group, 82E-4W. Report for Canadian Occidental Petroleum Ltd., Minerals Divison, 91 pp.

Macdonald, C.C., 1975a: Geology and Geochemistry of the GIL-LIG-LI-LG Claim Group, 82E/4W. Report for Canadian Occidental Petroleum Ltd., Minerals Division, 89 pp.

Macdonald, C.C., 1975b: Diamond Drilling and Follow-up Geochemistry on the GIL-LIG-LI-LG Claim Group, 82E-4W. Report for Canadian Occidental Petroleum Ltd., Minerals Division, 45 pp.

Macdonald, C.C., 1976: Rock Geochemistry of the LG-1 Claim, 82E/4W. Report for Canadian Occidental Petroleum Ltd., Minerals Division, 12 pp.

Macdonald, C.C., 1977: Report on Diamond Drilling on the GIL-LIG-LI-LG Claim Group. Report for Canadian Occidental Petroleum Ltd., Minerals Division, 21 pp.

Saracoglu, N. and Macdonald, C.C., 1978: Diamond Drilling of the GIL-LIG-LI-LG Claim Group. Report for Canadian Occidental Petroleum Ltd., Minerals Divison, 34 pp.

AUTHOR'S QUALIFICATIONS

R.M. KUEHNBAUM

R.M. Kuehnbaum graduated from the University of Toronto, Toronto, Ontario with a Bachelor of Science in geology in 1971 and obtained a Master of Science degree from the University of Toronto in 1973.

Since graduation he has worked as a mineral exploration geologist for Union Carbide Exploration Corporation until February 1980, carrying out assignments in Brazil, Portugal and Canada, and for Canadian Occidental Petroleum Ltd. (February '80 to present).

While employed with Canadian Occidental he has carried out and supervised mineral exploration projects in the Yukon and British Columbia.

He is currently a member of the Canadian Institute of Mining and Metallurgy and the Geological Association of Canada.

Statement of Expenditures

GIL Claims, 1983 Field Work

Salaries and benefits - R.M. Kuehnbaum			
5 days office + 6 days @ $172.80+16 1/2%		$2,215.58	
A. Murdy			
6 days field @ $144.67+16 1/2%		$1,011.24	$3,226.82
Geochemistry:			
20 sediments for Cu,Mo,Zn,W,Au	@ $13.60=	$ 273.60	
33 rocks for " " " " "	@ $14.58=	481.14	
12 heavies for Cu,Mo,Pb,Zn,Ag,Au, W	@ $29.70=	356.40	$ 837.54
Accommodation and Meals, Penticton			800.49
Air Fare			946.00
Car Rental, Penticton			163.07
Helicopter, Jet Range 206-B			
7.4 hrs @ $430.00		$3,182.00	
Fuel and oil		398.00	$3,580.00
TOTAL			$9,553.92

APPENDIX I

ROCK DESCRIPTIONS

ROCK DESCRIPTIONS
GIL - 1983

83-GL-11,000R_f — Talus sample of "grit" or microconglomerate. 1% disseminated, fine-grained pyrrhotite, <0.1% fine-grained, disseminated, blue-fluorescing scheelite.

Cu	Mo	Zn	W (ppm)	Au (ppb)
205	8	46	4	<5

83-GL-11,001R — 8 cm limonite-stained quartz vein in chert, fetid odour but no visible sulphides.

Cu	Mo	Zn	W (ppm)	Au (ppb)
21	2	13	2	<5

83-GL-11,002R_f — Talus sample of garnet-quartz-epidote-(calcite) skarn; vague "boudins" on lenses of skarn in black meta-argillite? Very patchy, irregular, small zones of material with up to 0.2% WO as blue-white to yellow-white fluorescing scheelite, but overall <0.1% WO_3.

Cu	Mo	Zn	W (ppm)	Au (ppb)
370	61	143	20	<5

83-GL-11,003R_f — As above.

Cu	Mo	Zn	W (ppm)	Au (ppb)
215	23	111	48	5

Samples 11,004R to 11,010R from large outcrop of skarn and argillaceous metasedimentary rocks, near L36E, 20N.

83-GL-11,004R — Grab. From zone of mixed garnet-quartz-epidote skarn (60%, varies 20-80%) and argillite as nodules. Trace fine- to medium-grained, irregularly disseminated, blue- to white-fluorescing scheelite.

Cu	Mo	Zn	W (ppm)	Au (ppb)
57	33	96	28	<5

83-GL-11,005R — As 11,004R.

Cu	Mo	Zn	W (ppm)	Au (ppb)
200	58	111	60	<5

83-GL-11,006R — As 11,004R.

Cu	Mo	Zn	W (ppm)	Au (ppb)
190	8	99	190	<5

83-GL-11,007R As 11,004R.

Cu	Mo	Zn	W (ppm)	Au (ppb)
153	7	92	200	5

83-GL-11,008R As 11,004R.

Cu	Mo	Zn	W (ppm)	Au (ppb)
250	150	92	75	<5

83-GL-11,009R$_f$ Composite grab sample of "high-grade" zone in talus fragments adjacent to outcrop (11,004-11,008) skarn. <0.1% WO_3 as scheelite.

Cu	Mo	Zn	W (ppm)	Au (ppb)
98	58	91	450	<5

83-GL-11,010R$_f$ Grab sample, as above.

Cu	Mo	Zn	W (ppm)	Au (ppb)
18	21	34	420	<5

83-GL-11,011R Grab. Limey chert/calc-silicate hornfels. Highly friable, minor pale garnet. Trace disseminated pyrite (rare). Pitted weathering surface.

Cu	Mo	Zn	W (ppm)	Au (ppb)
92	14	48	210	<5

83-GL-11,012R Grab. Outcrop of 2 metre thick zone of mixed epidote-garnet-calcite-quartz skarn (50%) and argillite (50%). Trace disseminated pyrite, trace WO_3 as blue-fluorescing, disseminated scheelite and yellow-fluorescing powellite.

Cu	Mo	Zn	W (ppm)	Au (ppb)
51	3	34	95	15

83-GL-11,013R Composite chip. Outcrop of skarn. Rare blue-fluorescing scheelite. Below zone is argillite; above, >100 ft thickness of argillite, argillaceous chert and chert. Schistosity/cleavage at 170°/25°NE. Compositional layering parallel to cleavage(?).

Cu	Mo	Zn	W (ppm)	Au (ppb)
175	6	68	8	10

83-GL-11,020R Grab. Outcrop of argillite, upper part of outcrop contains fractures bordered by calc-silicate bearing- (epidote-quartz-garnet) zones.

Cu	Mo	Zn	W (ppm)	Au (ppb)
22	23	100	9	<5

83-GL-11,021R Grab. Outcrop of slightly calcareous, lightly limonite stained chert. Patches of reddish-weathering, fine-grained quartz and/or garnet. Minor epidote along fracture surfaces. Remnant bands and zones of argillite. Rare, medium-grained, disseminated, blue-fluorescing scheelite. Sample is of relatively scheelite-rich zone.

Cu	Mo	Zn	W (ppm)	Au (ppb)
14	12	56	16	5

83-GL-11,022R Composite grab of same zone as above.

Cu	Mo	Zn	W (ppm)	Au (ppb)
39	150	54	13	5

83-GL-11,023R Narrow (maximum 30 cm) epidote-garnet-quartz skarn zone with <1% disseminated pyrite. Bounded on either side by epidote-bearing calcareous chert and argillite with epidote on fracture surfaces. <0.1% WO_3, as blue-fluorescing scheelite.

Cu	Mo	Zn	W (ppm)	Au (ppb)
75	29	70	145	<5

83-GL-11,024R Composite grab of 30-45 cm massive diopside-garnet-epidote-calcite-quartz skarn. At base of same outcrop as 11,023R. Orientation is approximately east-west striking/vertical. Trace to <0.1% WO_3 as blue to whitish-yellow fluorescing scheelite.

Cu	Mo	Zn	W (ppm)	Au (ppb)
57	28	134	175	5

83-GL-11,025R Grab. Typical skarn in zone 11,024R. 1-2% disseminated pyrite, <0.1% scheelite.

Cu	Mo	Zn	W (ppm)	Au (ppb)
78	30	180	210	<5

83-GL-11,026R

Grab. Large outcrop 13-14+20S, west of L8E. 2-5 cm interbedded argillite and chert. Minor limonitic stain and local greenish colouration (due to epidote?) in chert laminae.

Cu	Mo	Zn	W (ppm)	Au (ppb)
63	19	64	9	10

83-GL-11,029R

Grab. Greenish (chloritic) cherty argillite with streaks of epidote. <0.1% scheelite on epidotic fracture surface. Typical sample from outcrop (L48E/8N) of calcareous cherty argillite hornfels with epidote, minor diopside-garnet patches, lenses and bands of epidote-diopside quartz. Lenses are normally 2.5 cm x 5-8 cm. Scheelite is overall rare.

Cu	Mo	Zn	W (ppm)	Au (ppb)
27	11	119	375	10

83-GL-11,030R

Composite chip. From above outcrop.

Cu	Mo	Zn	W (ppm)	Au (ppb)
190	6	80	145	5

83-GL-11,031R

Grab. Same as 11,029R, with rare, disseminated pyrite, trace scheelite. 2-3 mm calcite veinlets cross-cut laminations, with rare chalcopyrite.

Cu	Mo	Zn	W (ppm)	Au (ppb)
155	4	81	140	5

83-GL-11,032R$_f$

Talus fragment of massive, garnet-epidote-quartz(-calcite) skarn. <0.1% WO_3 as medium- to coarse-grained, disseminated blue to yellow-white fluorescing scheelite. From cluster of skarn fragments in talus, probably reflecting underlying bedrock(?).

Cu	Mo	Zn	W (ppm)	Au (ppb)
19	57	52	525	5

83-GL-11,033R

Grab. Talus fragment of zone of mixed argillite and skarn in rubble. Argillite nearly altered to epidote-quartz rock with ghost bedding features (banded). More massive skarn includes garnet-epidote-quartz-calcite variety in chloritic argillite (e.g. this sample). Scheelite present in all samples lamped (trace to <0.1% WO_3). Sample has maximum observed; medium-grained, blue- to yellowish-white fluorescing, disseminated, and locally concentrated on cleavage planes.

Cu	Mo	Zn	W (ppm)	Au (ppb)
168	97	96	420	5

83-GL-11,034R

Composite grab of 2-metre thick, subvertical skarn zone. At this locale, skarn appears to be a replacement of argillite. Most typical lithology is of epidote-garnet-quartz-calcite skarn with remnant argillite whisps. Overall <0.1% WO_3 as blue-fluorescing, medium-grained scheelite.

Cu	Mo	Zn	W (ppm)	Au (ppb)
38	17	64	150	10

83-GL-11,035R

Grab. 2 m x 1.3 m, subvertically oriented skarn zone in otucrop of chloritic argillite and chert.

Cu	Mo	Zn	W (ppm)	Au (ppb)
75	19	105	37	5

83-GL-11,036R

Composite grab. 4.5 - 6 metre wide zone of mixed argillite (55%) and epidote-garnet-quartz (-calcite) skarn (45%). Skarn contains rare disseminated pyrite, trace disseminated, medium-grained blue-fluorescing scheelite.

Cu	Mo	Zn	W (ppm)	Au (ppb)
58	250	98	60	<5

83-GL-11,055R

Grab. Epidote-rich skarn in argillite. <0.1% WO_3 as scheelite. 1-2% pyrite concentrated on fractures. In black (chloritic) argillite with transgressive epidote veinlets and stringers and local garnet pods. At drill site 6-77.

Cu	Mo	Zn	W (ppm)	Au (ppb)
820	10	99	40	5

83-GL-11,056R

Grab. "Skarny" chert with minor epidote pods. Barren. Skarn looks typical vis-a-vis rest of property (i.e. transgressive).

Cu	Mo	Zn	W (ppm)	Au (ppb)
700	8	84	22	<5

83-GL-11,057R

Grab. Massive garnet-actinolite skarn pods (60 cm x 120 cm) in chert with transgressive epidote veinlets and pods. In pit blown for UCEX drill pad.

Cu	Mo	Zn	W (ppm)	Au (ppb)
35	22	98	28	<5

83-GL-11,058R

Grab. 60 cm granitic dyke in limey chert. Pervasively limonite-stained, highly altered. $\pm$1% molybdenite.

Mo	Cu	Zn	W (ppm)	Au (ppb)
>1000	82	41	4	5

APPENDIX II

ANALYTICAL DATA

ROCKS

CHEMEX LABS LTD.

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: (604) 984-0221
TELEX: 043-52597

• ANALYTICAL CHEMISTS • GEOCHEMISTS • REGISTERED ASSAYERS

CERTIFICATE OF ANALYSIS

TO : CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION,
180 ATTWELL DRIVE, 4TH FLR.,
REXDALE, ONT.
M9W 6A9

CERT. # : A8313150-001-A
INVOICE # : I8313150
DATE : 8-AUG-83
P.O. # : NONE
GIL - ROCKS

ATTN: R. KUEHNBAUM

Sample description	Prep code	Cu ppm	Mo ppm	Zn ppm	W ppm	Au ppb FA+AA	
83-GL-11000 R	205	205	8	46	4	<5	--
83-GL-11001 R	205	21	2	13	2	<5	--
83-GL-11002 R	205	370	61	143	20	<5	--
83-GL-11003 R	205	215	23	111	48	5	--
83-GL-11004 R	205	57	33	96	28	<5	--
83-GL-11005 R	205	200	58	111	60	<5	--
83-GL-11006 R	205	190	8	99	190	<5	--
83-GL-11007 R	205	153	7	92	200	5	--
83-GL-11008 R	205	250	150	92	75	<5	--
83-GL-11009 R	205	98	58	91	450	<5	--
83-GL-11010 R	205	18	21	34	420	<5	--
83-GL-11011 R	205	92	14	48	210	<5	--
83-GL-11012 R	205	51	3	34	95	15	--
83-GL-11013 R	205	175	6	68	8	10	--
83-GL-11020 R	205	22	23	100	9	<5	--
83-GL-11021 R	205	14	12	56	16	5	--
83-GL-11022 R	205	39	150	54	15	5	--
83-GL-11023 R	205	75	29	70	145	<5	--
83-GL-11024 R	205	57	28	134	175	5	--
83-GL-11025 R	205	78	30	180	210	<5	--
83-GL-11026 R	205	63	19	64	9	10	--
83-GL-11029 R	205	27	11	119	375	10	--
83-GL-11030 R	205	190	6	80	145	5	--
83-GL-11031 R	205	155	4	81	140	5	--
83-GL-11032 R	205	19	57	52	525	5	--
83-GL-11033 R	205	168	97	96	420	5	--
83-GL-11034 R	205	38	17	64	150	10	--
83-GL-11035 R	205	75	19	105	37	5	--
83-GL-11036 R	205	58	250	98	60	<5	--
83-GL-11055 R	205	820	10	99	40	5	--
83-GL-11056 R	205	700	8	84	22	<5	--
83-GL-11057 R	205	35	22	98	28	<5	--
83-GL-11058 R	205	82	>1000	41	4	5	--

Certified by ....Hart Bichler....

APPENDIX III

ANALYTICAL DATA

STREAM SEDIMENTS

CHEMEX LABS LTD.

212 BROOKSBANK AVE.
NORTH VANCOUVER, B.C.
CANADA V7J 2C1
TELEPHONE: (604) 984-0221
TELEX: 043-52597

• ANALYTICAL CHEMISTS • GEOCHEMISTS • REGISTERED ASSAYERS

CERTIFICATE OF ANALYSIS

TO : CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION,
180 ATTWELL DRIVE, 4TH FLR.,
REXDALE, ONT.
M9W 6A9

CERT. # : A8313149-001-A
INVOICE # : I8313149
DATE : 8-AUG-83
P.O. # : NONE
GIL - SEDIMENTS

ATTN: R. KUEHNBAUM

Sample description	Prep code	Cu ppm	Mo ppm	Zn ppm	W ppm	Au ppb FA+AA	
83-GL-11014 S	202	50	7	91	5	5	--
83-GL-11015 S	203	57	3	120	7	10	--
83-GL-11016 S	203	63	4	124	8	25	--
83-GL-11017 S	202	72	4	113	3	15	--
83-GL-11018 S	203	110	8	114	100	15	--
83-GL-11019 S	202	110	16	137	35	25	--
83-GL-11027 S	203	73	10	98	12	30	--
83-GL-11028 S	202	115	32	104	70	5	--
83-GL-11037 S	203	84	42	83	55	5	--
83-GL-11038 S	203	58	5	106	2	10	--
83-GL-11039 S	203	61	16	91	21	<5	--
83-GL-11040 S	203	95	5	143	10	5	--
83-GL-11041 S	202	57	2	134	2	<5	--
83-GL-11042 S	202	67	3	186	5	80	--
83-GL-11043 S	202	60	3	141	4	5	--
83-GL-11044 S	202	54	3	136	2	<5	--
83-GL-11045 S	202	49	3	148	2	10	--
83-GL-11046 S	203	53	3	109	1	<5	--
83-GL-11047 S	202	70	2	121	2	25	--
83-GL-11048 S	203	59	3	114	2	10	--

Certified by ....HartBichler....

APPENDIX IV

ANALYTICAL DATA

HEAVY MINERAL CONCENTRATES

Bondar-Clegg & Company Ltd.
764 Belfast Road
Ottawa, Ontario
Canada K1G 0Z5
Phone: (613) 237-3110
Telex: 053-4455

BONDAR-CLEGG

Geochemical Lab Report

REPORT: 013-1858

FROM: CANADIAN OCCIDENTAL PETROLEUM LIMITED
DATE: 02-SEP-83 PROJECT: GIL

SUBMITTED BY: R. KUEHNBAUM

ORDER	ELEMENT	LOWER DETECTION LIMIT	EXTRACTION	METHOD	SIZE FRACTION	SAMPLE TYPE	SAMPLE PREPARATIONS
01	Cu	1 PPM	HNO3-HCL HOT EXTR	Atomic Absorption	-200	HEAVY MINERAL CONC.	PULVERIZE -200
02	Pb	2 PPM	HNO3-HCL HOT EXTR	Atomic Absorption	-200		OTHER SAMPLE PREP 1
03	Zn	1 PPM	HNO3-HCL HOT EXTR	Atomic Absorption	-200		
04	Mo	1 PPM	HNO3-HCL HOT EXTR	Atomic Absorption	-200		
05	As	.1 PPM	HNO3-HCL HOT EXTR	Atomic Absorption	-200		
06	Au	5 PPB	AQUA REGIA	Fire Assay AA	-200		
08	W	2 PPM	CARBONATE SINTER	Colourimetric	-200		

REPORT COPIES TO: R. KUEHNBAUM

INVOICE TO: R. KUEHNBAUM

REMARKS: < MEANS LESS THAN
83-CL-11047 ONT RECEIVED
83-GL-11017 RECEIVED BUT NOT LISTED

OTHER PREP REFERS TO HEAVY MINERAL SEPARATION
2.95 S.G.

DETECTION LIMITS FOR GOLD
10 gram sample: 5 ppb.
5 gram sample: 10 ppb.
1 gram sample: 50 ppb.

Sample Wt. 10 g. unless otherwise stated.

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

av

Bondar-Clegg & Company Ltd.
764 Belfast Road
Ottawa, Ontario
Canada K1G 0Z5
Phone: (613) 237-3110
Telex: 053-4455

BONDAR-CLEGG

Geochemical Lab Report

REPORT: 013-1858

PROJECT: GIL

PAGE 1

SAMPLE NUMBER	ELEMENT UNITS	Cu PPM	Pb PPM	Zn PPM	Mo PPM	Ag PPM	Au PPB	wt/Au gm	W PPM	NOTES
83-GL-11014-HM		107	13	130	19	0.2	30		250	
83-GL-11015-HM		171	29	230	9	0.2	55		260	
83-GL-11017-HM		160	23	192	9	0.2	165		110	
83-GL-11018-HM		261	30	176	26	1.1	100		1300	
83-GL-11019-HM		196	21	156	23	0.8	20		600	
83-GL-11027-HM		160	20	160	22	0.3	55		700	
83-GL-11028-HM		194	18	100	121	0.7	10		500	
83-GL-11037-HM		105	10	72	59	0.2	5		300	
83-GL-11038-HM		168	28	184	11	0.4	120		260	
83-GL-11039-HM		62	5	56	9	<0.1	<5		95	
83-GL-11040-HM		201	24	240	11	0.4	45		85	
83-GL-11043-HM		68	13	120	5	0.4	20		260	

Appendix v - Sampling and Laboratory Procedures

I. SAMPLING PROCEDURES

A) Heavy Minerals

1. A sample site is selcted which exhibits maximum sorting of stream bed material. Active (below water) or previously active (dry now but previously below water) sites may be chosen. Leading edges or sides of gravel bars with large boulders are most attractive. In practice, the ideal case is rare and one chooses the best possible site.

2. Gravel and cobble material is shoveled into a large (18" to 24") gold pan into which 1/4" holes have been drilled. The material is vigourously shaken in still water so that - 1/4 in. material passes the screen into a second, matching pan. Enough -1/4 in. material is collected to fill an 18" x 24" poly bag (usually one large pan or two smaller ones). The -1/4" material is returned to camp.

3. The - 1/4 in. material is panned to achieve a concentrate of heavy minerals and aggregates containing heavy minerals. Approximately 80% of the original material (20 - 25 lbs) is discarded while a 1 - 2 lb. concentrate is obtained. The concentrate is sealed in a plastic or cloth bag (cloth is preferred as it allows

the sample to dry, thus reducing shipping weight) and then sent to the laboratory for geochemical analysis.

B) Stream Sediment

1. A presently or previously active stream site is selected which exhibits minimum sorting ie. quiet water, and accumulation of fine sandy and silty material. If the stream is too active, material can be obtained from bank-moss which acts as a trap, or by digging out the lee of large boulders.

2. Three to four handfuls of material is collected and after squeezing to remove excess water is placed in high wet-strength, heavy duty, prenumbered kraft envelopes. The samples are dried in the field and then sent to the laboratory for geochemical analysis.

C) Sample Site Information Card

1. At each soil or stream sample site, an 80 column field data card is completed. The sampler records such information as sample number, location and type, depth of stream, sample composition, vegetation, drainage, etc. Separate cards are used for stream and soil samples in order to record pertinent information.

II. Laboratory Procedures

A. Sample Preparation

i) Heavy Minerals

1. Samples dried and weighed.

2. Screen - 10 mesh material from sample and weigh; weigh and retain +10 mesh material left on screen.

3. Use -10 mesh fraction for heavy liquid separation.

4. Transfer -10 mesh (fine) fraction into a 1000 ml. separatory funnel containing 200 mls. of tetrabromoethane (S.G. 2.96).

5. Shake sample gently in heavy liquid. Particles of fines adhering to sides of the separatory funnel can be washed into the heavy liquid by slowly rotating the funnel at an oblique angle. The "heavies" (S.G. >2.96) will slowly settle to the bottom of the heavy liquid.

6. Drain the "heavies" into a small filter funnel. Drain excess heavy liquid and light materials into a separate filter funnel. Collect all heavy liquid into a waste receiving bottle.

7. Save light minerals (S.G. <2.96). Wash "heavies" fraction with methanol to remove residual tetrabromoethane. Use the same procedure on light minerals fraction. Dry both fractions and weigh. Retain the "lights" in a suitable sealed container. Save 0.5 gm of "heavies" in a plastic vial for visual examination.

8. Pulverize the remaining "heavies" in an agate mortar and pestle and homogenize before weighing for analyses.

9. Analyse the "heavies" powder for appropriate elements. The number of elements analysed for is determined by the amount of "heavy" material obtained in separation.

ii) Stream Sediments

1. Samples are sorted and dried at 50°c for 12 to 16 hours.

2. Dried material is then screened to obtain the -80 mesh (177 micron) fraction. The rest of the material is discarded.

3. -80 mesh fraction material is weighed and analysed for appropriate elements.

iii) Rocks

1. Entire sample is crushed.

2. If necessary (>250 gms.). The sample is split on a Jones splitter, the reject is retained for a short period.

3. The split fraction is pulverized in a ring grinder such that 90% passes a 200 mesh (74 micron) sieve.

4. The -200 mesh material is weighed and analysed for the appropriate elements.

B. Elemental Analyses

i) ppm Copper, Lead, Zinc, Silver, Molybdenum (Atomic Absorption)

1. A 1.0 gm portion of -80 mesh soil or stream sediment or -200 mesh rock flour or pulverized "heavies" is digested in concentrated, hot, perchloric - nitric acid ($HClO_4$-HNO_3) for 2 hours.

2. Digested sample is cooled and made up to 25 mls. with distilled water.

3. Solution is mixed and solids allowed to settle.

4. Cu, Pb, Zn Ag and Mo are determined by atomic absorption, using background correction for Pb and Ag analyses.

Element	Bkgd. Corr.	Flame Type	Wave Length nm	Detection Limit	Chemex Standard	± 1 Std. Deviation
Cu	No	A	324.7	1 ppm	71 ppm	± 3
Pb	Yes	A	217.0	1 ppm	59 ppm	± 1
Zn	No	A	213.8	1 ppm	52 ppm	± 3
Ag	Yes	A	328.1	0.2 ppm	8.5 ppm	± 0.5
Mo	No	N	313.3	1 ppm	25 ppm	± 1

A = Air acetylene flame.

N = Nitrous oxide - acetylene flame.

ii) <u>ppm Tungsten (W) (Colourimetric)</u>

1. 0.5 gm of -80 mesh soil or stream sediment, -200 mesh rock flour or pulverized "heavies" is fused with potassium bisulfate and leached with HCl.

2. The reduced form of W is complexed with toluene 3, 4 dithiol and extracted into an organic phase.

3. The resulting colour is visually compared to similarly prepared standards. (Colourimetric method)

4. Detection limit: 2 ppm W

iii) ppb Gold (Au) (Atomic Absorption)

1. A 5 gm sample of -200 mesh rock flour or pulverized "heavies" is ashed at 800^{o}c for 1 hour.

2. Ashed material is digested with aqua regia twice to dryness.

3. Digested material is taken up in 25% HCl.

4. Au is extracted as the bromide into MIBK and analysed via atomic absorption.

5. Detection limit: ___ ppb Au

T.L. 90+00 N
T.L. 32+00 N
B.L. 00+00
T.L. 32+00 S
GIL 25
GIL 23
GIL 21
GIL 19
GIL 12
GIL 11
LG-3
LG-2
LG-1
LIG-2
LIG-1
EL-4
EL-3
"PA" Showing
INDIAN RESERVE No. 13
LEGEND
Geochemistry Samples
Au W Mo Cu Zn sample no. Stream Sediments
W Au Zn Pb Mo Cu Ag sample no. Heavy Mineral Concentrates
Au W Mo Cu Zn sample no Rocks
All values are in ppm except Au (ppb)
'f' indicates float (talus) sample
Geology
1 — Chert with some argillite interbeds
2a — Argillite with some chert interbeds
2b — Sandstone
4a — Calc-silicate skarn with argillite interbeds
outcrop investigated 1983
claim post
drill road
drill hole (Union Carbide)
75-2 drill hole (CdnOxy)
RMK/jm/Sept. 83
GEOLOGICAL BRANCH
ASSESSMENT REPORT
11,891
CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION
GIL-LIG-LI-LG CLAIMS
OSOYOOS MINING DIVISION, BRITISH COLUMBIA —— 82-E-4/W
1983 SURVEY
GEOLOGY & GEOCHEMISTRY
400 0 400 800
SCALE IN FEET
Plan 1


LEGEND
Geochemistry (High Values)
All values in ppm exept Au (ppb)
Stream Sediments
>70 Cu, >15 Au, >20 W, >4 Mo
Heavy Mineral Concentrates
> 50 Mo, >1·0 Ag, >100 Au, > 400 W
Rocks
> 90 Cu, >20 Mo, >30 W
Soil Geochemistry Contours
160 W
64 Mo
400 Cu
Geology
Geological Boundary
1 — Chert, with some argillite interbeds
2a – Argillite, with some chert interbeds
2b – Sandstone
2c – Conglomerate
3a – Greenstone flows
3b – Greenstone pyroclastics
4a – Calc-silicate skarn with argillite interbeds
4b – Limestone
5 – Tectonic breccia
6a – Quartz porphyry
6b – Quartz-feldspar porphyry
6c – Feldspar porphyry
6e – Felsite
6f – Microdiorite
claim post
drill hole (Union Carbide)
75-2 drill hole (CdnOxy)
drill road
Data derived largely from Macdonald (1975)
INDIAN RESERVE No. 13
1975 CAMP
GEOLOGICAL BRANCH
ASSESSMENT REPORT
11,891
CANADIAN OCCIDENTAL PETROLEUM LTD.
MINERALS DIVISION
GIL-LIG-LI-LG CLAIMS
OSOYOOS MINING DIVISION, BRITISH COLUMBIA —— 82-E-4/W
GEOLOGY & GEOCHEMISTRY
COMPILATION
1975-1983
400 0 400 800
SCALE IN FEET
RMK/jm / Sept. 83
Plan 2