

3885

GEOLOGICAL AND GEOCHEMICAL REPORT

Department of
 on the Mines and Petroleum Resources
 ASSESSMENT REPORT

CP GROUP OF CLAIMS **3885** MAP

KAMLOOPS MINING DIVISION

BRITISH COLUMBIA

- for -

PAN OCEAN OIL LTD.

1050 - THREE Calgary Place
 355 - 4th Avenue S.W.
 Calgary 1, Alberta



Covering: CP #1 to CP #72 inclusive

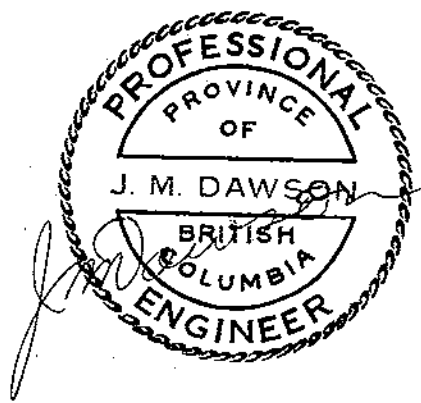
Work Performed: July 11th to October 18th, 1972

Located:

- 1) 51°40'N, 120°15'W
- 2) N.T.S. MAP 92 P 9E&W
- 3) 70 miles north of the City of Kamloops.

Prepared by

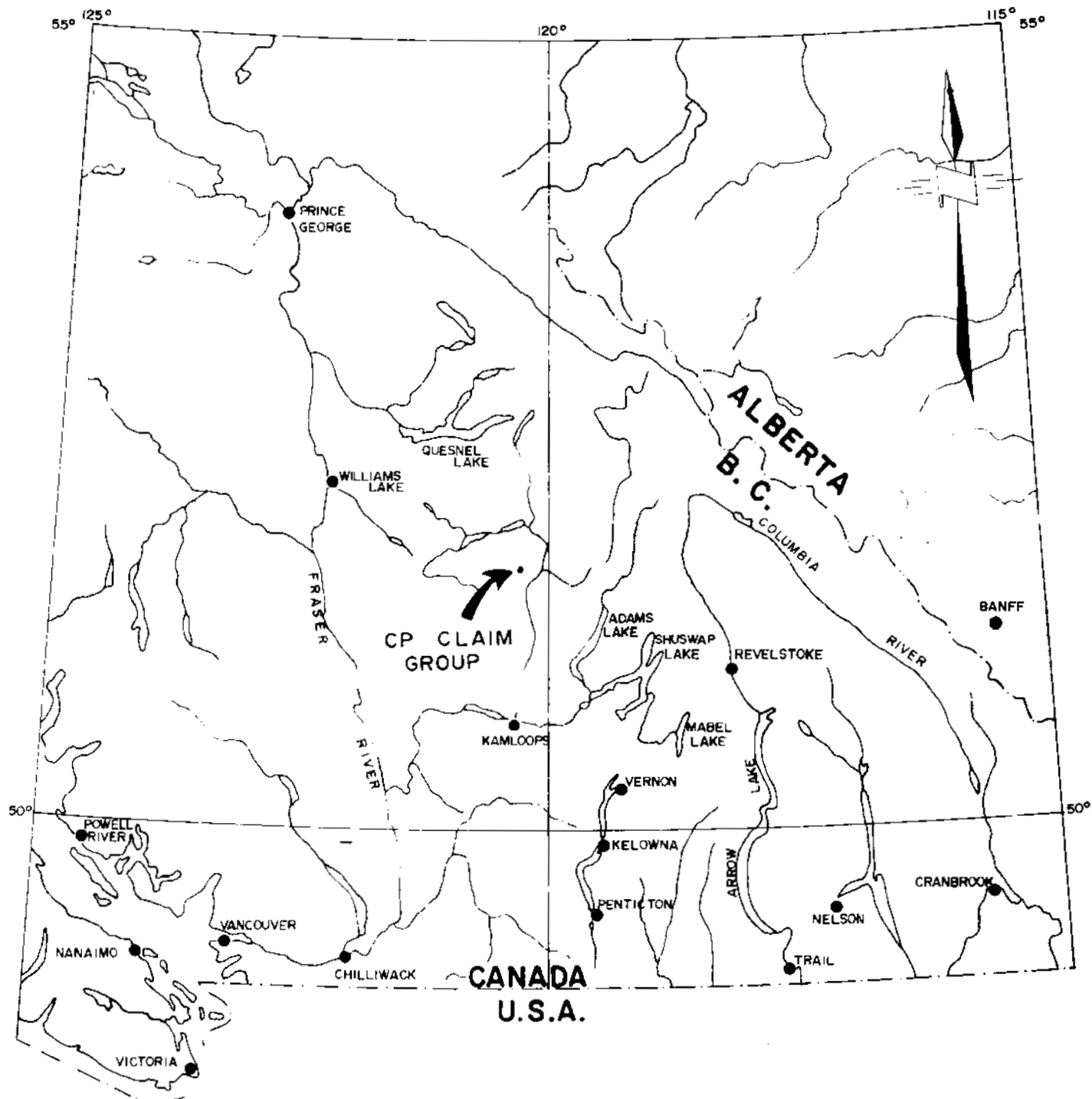
KERR, DAWSON & ASSOCIATES LTD.
 9 - 219 Victoria Street
 Kamloops, B. C.



October 18, 1972

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Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. **3885** MAP **#1**

PAN OCEAN OIL LTD
 LOCATION MAP
 CP CLAIM GROUP
 KAMLOOPS MINING DIVISION
 BRITISH COLUMBIA

Date: 17/10/72	Scale: 1" to 64 miles
Drawn by: T Ravenhill	Drawing no.: 70-1

I N T R O D U C T I O N

The CP group of claims were staked to cover a largely, drift-covered area where reconnaissance geochemical prospecting revealed slightly anomalous values in copper, zinc and molybdenum.

The present report describes the results of a follow-up exploration programme carried out on these claims. The field work was done between September 21 and September 24, 1972 and consisted of geological mapping, prospecting and detailed geochemical soil sampling.

The results of this work were interpreted and are included on a series of maps with this report.

PROPERTY

The property consists of 72 contiguous, full-sized claims as follows:

"A" GROUP

<u>CLAIM NAME</u>	<u>RECORD NO.</u>	<u>TAG NO.</u>	<u>RECORD DATE</u>
CP #5 to CP #10 inc.	100861 to 100866 inc.	284005M to 284010M inc.	November 5, 1971
CP #17 to CP #20 inc.	100873 to 100876 inc.	284017M to 284020M inc.	November 5, 1971
CP #26 to CP #30 inc.	100882 to 100886 inc.	284026M to 284030M inc.	November 5, 1971
CP #31 to CP #32 inc.	121163 to 121164 inc.	376301M to 376302M inc.	August 4, 1972
CP #37 to CP #40 inc.	121169 to 121172 inc.	376307M to 376310M inc.	August 4, 1972
CP #45 to CP #48 inc.	121177 to 121180 inc.	376315M to 376318M inc.	August 4, 1972
CP #55 to CP #62 inc.	121187 to 121194 inc.	376325M to 376332M inc.	August 4, 1972
CP #69 to CP #72 inc.	121201 to 121204 inc.	376339M to 376342M inc.	August 4, 1972

"B" GROUP

<u>CLAIM NAME</u>	<u>RECORD NO.</u>	<u>TAG NO.</u>	<u>RECORD DATE</u>
CP #1 to CP #4 inc.	100857 to 100860 inc.	284001M to 284004M inc.	November 5, 1971
CP #11 to CP #16 inc.	100867 to 100872 inc.	284011M to 284016M inc.	November 5, 1971
CP #21 to CP #25 inc.	100877 to 100881 inc.	284021M to 284025M inc.	November 5, 1971
CP #33 to CP #36 inc.	121165 to 121168 inc.	376303M to 376306M inc.	August 5, 1972
CP #41 to CP #44 inc.	121173 to 121176 inc.	376311M to 376314M inc.	August 5, 1972
CP #49 to CP #54 inc.	121181 to 121186 inc.	376319M to 376324M inc.	August 5, 1972
CP #63 to CP #68 inc.	121195 to 121200 inc.	376333M to 376338M inc.	August 5, 1972

Owner: PAN OCAEN OIL LTD.
1050 - 355 4th Avenue S.W.
Calgary 1, Alberta

F.M.C.: 115159

LOCATION AND ACCESS

The property is located in south-central British Columbia, about 70 miles north of the City of Kamloops and about 8 miles west of the Village of Clearwater. The approximate geographic center of the claims is at $51^{\circ}40'$ north latitude and $120^{\circ}15'$ west longitude.

Access to the property is gained by travelling north on Highway 5 from Kamloops for 76 miles to Clearwater and thence for 12 miles along the Mann Creek logging road to the property. The main logging road traverses the southern and southwestern edge of the property. A jeep road from the Mann Creek logging road to the Microwave tower on Clearwater Peak traverses the central part of the property. Access to outlying parts of the claims is gained by proceeding on foot through the bush.

PHYSIOGRAPHY AND VEGETATION

The property covers part of the southerly and southwesterly slopes of Grizzly Cub Mountain and Clearwater Peak down to the valley containing Mann Creek. The terrain slopes moderately to the south and southwest from elevation of approximately 5700 feet A.S.L. along the north edge of the property to roughly 3200 feet A.S.L. at Mann Creek.

The claim area is completely tree covered with predominantly second growth pine at the lower elevations and mature spruce and fir above the 5000 foot level. Small stands of cedar are located in some of the creek bottoms. Undergrowth is not thick with scattered alder and salal occuring throughout the property.

A mantle of glacial overburden of moderate thickness covers the claim area and outcrops are generally scarce except along creeks which have been deeply incised.

SCOPE OF THE FIELD WORK

The exploration programme was undertaken in an effort to evaluate the mineral potential of the CP group of claims. The property was prospected in detail and mapped at a scale of 400 feet equals one inch.

Soil sampling was carried out by means of contour traverses at elevation intervals of approximately 500 feet.

Prospecting resulted in the discovery of several minor occurrences of copper and lead. However, no widespread occurrences of such mineralization could be found.

G E O L O G Y

The CP claims are underlain primarily by Upper Paleozoic, volcanic rocks which are in fault contact with Mesozoic metasediments in the southwestern corner of the property. A small erosional remnant of Tertiary, vesicular, olivine basalt overlies the sediments along Mann Creek.

At least 90% of the property is underlain by green-gray, fine grained andesite or "greenstone" of the Fennell Formation. These rocks are remarkably uniform and usually consist of scattered, anhedral, chloritized crystals of (?) hornblende in a fine grained, dense, green-gray matrix. Some areas are more silicified and stringers and veins of epidote can be found in rocks where fracturing and faulting is evident. Quartz and quartz-carbonate veins are noted in a few localities.

Pillowed flows were noted among the outcrops encountered along the creek on claims CP #51 and CP #53. These rocks are similar to volcanics seen elsewhere on the property except the material in interstices between pillows is more epidote rich.

One outcrop of bedded, andesitic tuff was noted along the main road on claim CP #36. It consists of thinly bedded, fine grained volcanic debris similar in composition to the flows.

The southwest corner of the claim block is underlain by a sequence of dark gray to black, fine grained slates and phyllites. These rocks are usually very thinly bedded and so fine grained that bedding is difficult to distinguish from cleavage. Many surfaces are shiny and graphitic and there is much evidence of deformation. Folding and crenulation of beds is common and quartz and quartz-carbonate veins are usually found in all exposures.

Near the southwest edge of the property there are several large, cliff-forming outcrops of very young, vesicular, olivine basalt. This rock is usually very massive, red-brown and fresh looking. These rocks are an erosional remnant overlying the phyllites and slates and do not appear to be more than 150 feet thick at the maximum.

The greenstones are so homogeneous that very little structural information can be gained from outcrops. They appear to be upright and to strike in a northwest-southeast direction. Campbell (1971) has interpreted the contact between the greenstones and the phyllite-slates as being a fault, from regional studies. This contact can not be observed anywhere on the property as outcrop is relatively sparse.

The upper reaches of the creek which drains into Mann Creek at the west end of the property is definitely fault controlled and prominent north east-trending scarps can be seen at several places.

Jointing in the volcanics has no regular pattern; however the strongest set appears to strike north-northeast and dip steeply southeast. The phyllite-slate sequence although folded and contorted throughout, appears to strike westerly and dip moderately north.

MINERALIZATION

Minor amounts of pyrite and lesser pyrrhotite are found in many greenstone outcrops. It is usually present as finely disseminated grains, however, some pyrite coatings are found along fractures. Coarser pyrite cubes are found in quartz veins, primarily within the slate-phyllite sequence.

Minor copper mineralization was noted in three places on the property; two in the volcanic rocks and one within the slate-phyllite sequence. All these occurrences consist of scattered chalcopyrite within narrow quartz veins. In all three instances minor chalcopyrite was found in only one narrow quartz vein. A trace of galena was found in a quartz carbonate vein, in the slate-phyllite sequence along the creek at the west end of the property. Dilligent prospecting revealed no other galena along this creek.

G E O C H E M I S T R Y

Soil sampling was conducted along contour traverses at approximately 500 foot elevation intervals, samples being taken every 300 feet along these traverses (see Figures 70-3, 70-4, and 70-5). Sample stations were marked on the ground with orange flagging. B-horizon soils were collected where possible and stored in waterproof, kraft envelopes.

A total of 279 soil samples were collected and analysed for copper, zinc and molybdenum in the Vancouver laboratories of Bondar-Clegg and Company Ltd. The samples were dried, sieved, and an aliquot of the -80 fraction was subjected to hot HCL-HNO₃ extraction. The aliquot was then analysed for copper, zinc and molybdenum by atomic absorption spectrophotometry.

Histograms were plotted for copper and zinc and indicate essentially unimodal distributions. The mean and standard deviation were calculated for these two elements and the data were classified into the following categories:

Negative	0 - Mean
Possibly Anomalous	Mean - (Mean + 1 Std. Dev.)
Probably Anomalous	(Mean + 1 Std. Dev.) - (Mean + 2 Std. Dev.)
Definitely Anomalous	> (Mean + 2 Std. Dev.)

The values were plotted on 400 scale base maps of the property and definitely anomalous, probably anomalous and possibly anomalous areas were outlined (see Figures 70-3, 70-4, and 70-5).

The molybdenum values are almost all uniformly low, 99% being less than 3 parts per million and in 65% of the samples molybdenum was not detected. The mean was calculated as being approximately 5 PPM and there are no values which can be considered as being definitely anomalous. The highest value is 10 PPM — therefore one classification (3-10 PPM) is considered to be probably anomalous.

There are a few copper values which can be considered to be definitely anomalous, however these are very scattered and seem to be consistent with the type of mineralization noted in outcrop at several places on the claims. That is minor chalcopyrite in the occasional narrow quartz vein.

Zinc values show a definite pattern of higher values over the area which is underlain by the slate-phyllite sequence. A trace of galena was found associated with quartz in these rocks so it is reasonable to assume that minor sphalerite probably also occurs in this way. In addition background content of Pb-Zn is normally higher in black argillite and slate than in intermediate volcanics.

In summary no outstanding values nor large areas containing anomalous values in any of the three metals was found to occur on the property.

E C O N O M I C P O T E N T I A L

Copper mineralization as minor scattered chalcopyrite in narrow quartz veins was noted at three scattered localities on the claims. A trace of galena was found also associated with quartz veinings. The geochemical pattern is typical of such a sporadic occurrence of minor mineralization. No significant alteration was found on the claims nor is there any evidence of any intrusive activity.

Therefore, in the writer's opinion there is very little possibility of developing any appreciable areas of mineralization on these claims.

S U M M A R Y A N D C O N C L U S I O N S

1. The CP claim groups consist of 72 full-sized, contiguous claims located about eight miles west of the town of Clearwater in the Kamloops Mining Division.

2. A portion of the property was staked in 1971 when reconnaissance silt sampling indicated higher than background values in copper and zinc. Forty-two additional claims were staked during the summer of 1972. There is no record of any previous work on this ground.

3. The claims are underlain primarily by intermediate volcanic flows of the Fennell Group which are in fault contact with a slate-phyllite sequence near the southwest corner of the property. A small erosional remnant of Tertiary basalt overlies the slate-phyllite at the extreme southwest corner of the property.

4. Three minor occurrences of chalcopyrite and one occurrence of galena in narrow quartz veins were noted on the claims. Diligent prospecting revealed no further mineralization and the geochemical results are consistent with such minor scattered mineralization.

5. In the writer's opinion the nature of the mineralization found, the lack of any appreciable geochemical response as well as alteration, rock preparation and evidence of igneous intrusion precludes finding any appreciable areas of mineralized rock on the property.

RECOMMENDATIONS

No further work is recommended on these claims.

APPENDIX A

PERSONNEL

P E R S O N N E L

FIELD

J.M. Dawson, P. Eng.	Geologist	Sept. 21-24, 1972	4 days
Mauri Hjelt	Prospector	Sept. 21-24, 1972	4 days
J.S. Drever, B. Sc.	Geologist	Sept. 12, 1972	1 day

OFFICE

J.M. Dawson, P. Eng.	Geologist	Oct. 10, 11, 12, 13 Oct. 17, 18, 1972	6 days
J.S. Drever, B. Sc.	Geologist	July 11, 1972	1 day

APPENDIX B

STATEMENT OF EXPENDITURES

APPENDIX C

AFFIDAVIT IN SUPPORT OF STATEMENT

OF EXPENDITURES

CANADA

Province of British Columbia

TO WIT:

IN THE MATTER OF the Statement of Expenditures for Geological and Geochemical Exploration of the C.P. claims in the Kamloops Mining Division.


I, JAMES M. DAWSON, Geologist of 383 Columbia Street West in the City of Kamloops, in the Province of British Columbia,

DO SOLEMNLY DECLARE:

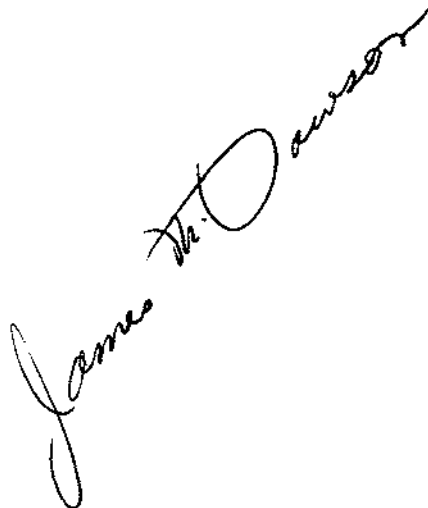
- (1) THAT the geological and geochemical investigation of the CP claims was carried out under my direction.
- (2) THAT the Statement of Expenditures set out in Appendix B of my report entitled "Geological and Geochemical Report on the CP group of claims," dated September 21st., to October 17th., 1972, truly represents the amounts expended on geological and geochemical surveys of the said claims.

AND I make this solemn Declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath, and by virtue of the Canada Evidence Act.

DECLARED before me at the City of Kamloops in the Province of British Columbia this 17th., Day of October, A.D., 1972.



A Commissioner for taking Affidavits for British Columbia.)



APPENDIX D

REFERENCES

REFERENCES

- Campbell, R.B. (1971): Geology of Bonaparte Lake Map-Area,
British Columbia; G.S.C. Memoir 363.
- Cockfield, W.E. (1948): Geology and Mineral Deposits of
Nicola Map Area, British Columbia;
G.S.C. Memoir 249.
- B. C. Minister of Mines: Annual Reports for 1967 to 1970.

APPENDIX E

WRITER'S CERTIFICATE

JAMES M. DAWSON, P. ENG.
GEOLOGIST

9-219 VICTORIA STREET
KAMLOOPS, B.C.

PHONE (604) 374-6427

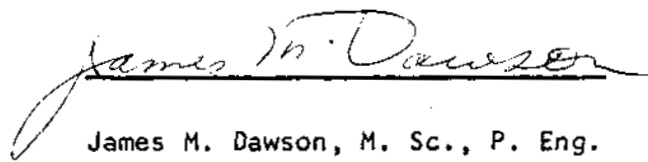
C E R T I F I C A T E

I, JAMES M. DAWSON, of Kamloops, B. C., HEREBY CERTIFY THAT:

- (1) I am a geologist residing at 383 Columbia Street West, Kamloops and employed by Kerr, Dawson and Associates Ltd., of Suite #9, 219 Victoria Street, Kamloops, B. C.
- (2) I am a graduate of the Memorial University of Newfoundland — B. Sc. (1960), M. Sc. (1963), a fellow of the Geological Association of Canada and a member of the Association of Professional Engineers of B. C. I have practiced my profession for nine years.
- (3) I am the author of this report which is based on an exploration programme that included geological mapping and geochemical soil sampling on the CP group of claims.
- (4) I have no beneficial interest in Pan Ocean Oil Ltd. or in the property discussed in this report, nor do I expect to receive any.



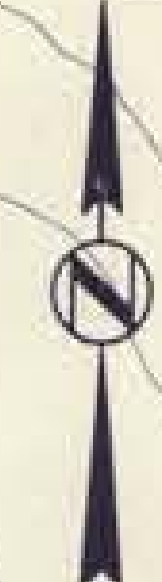
KERR, DAWSON & ASSOCIATES LTD.


James M. Dawson, M. Sc., P. Eng.

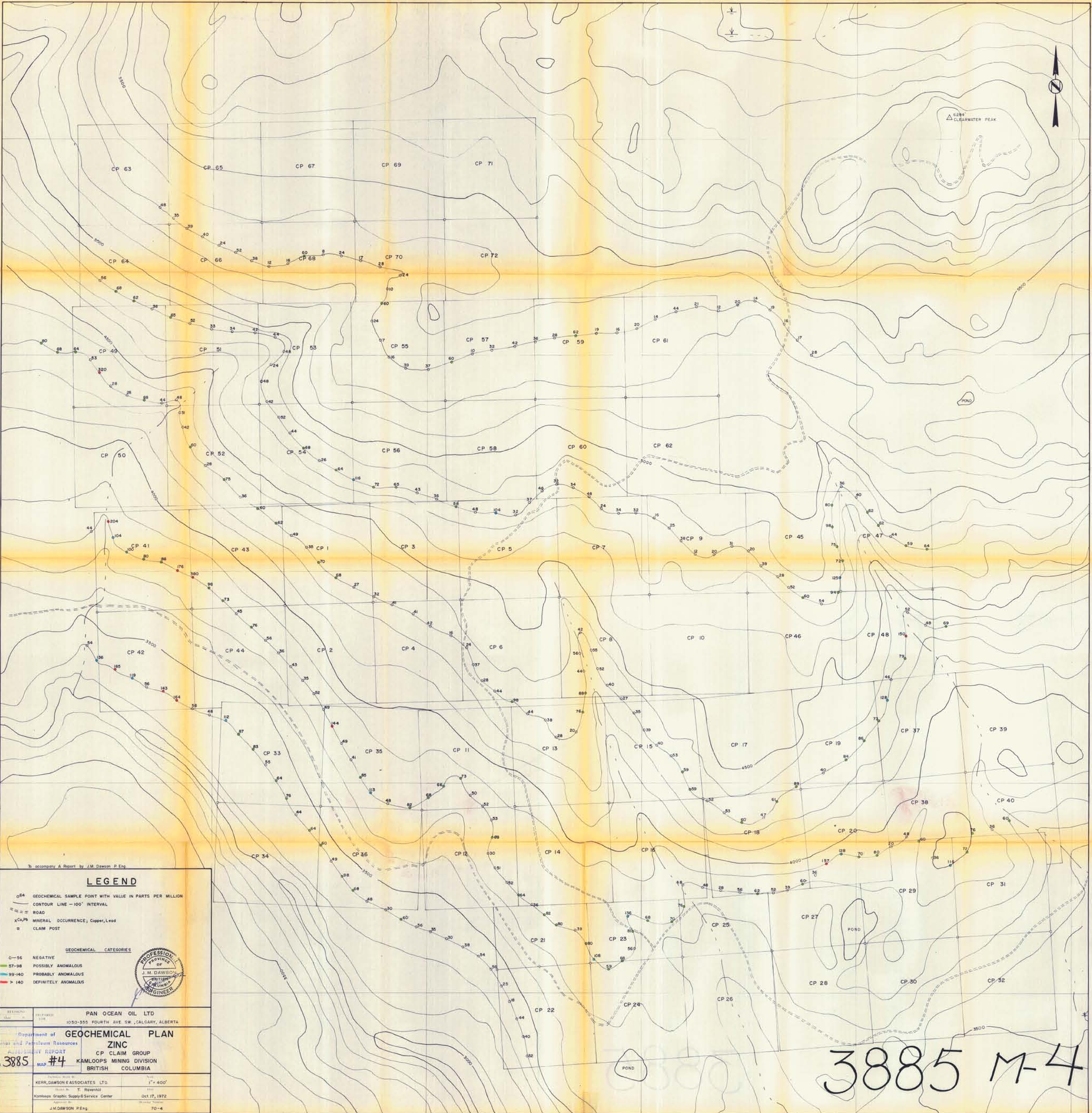
GEOLOGIST

October 17, 1972
Kamloops, B. C.

KERR, DAWSON AND ASSOCIATES LTD.
CONSULTING GEOLOGISTS AND ENGINEERS



6289
CLEARWATER PEAK



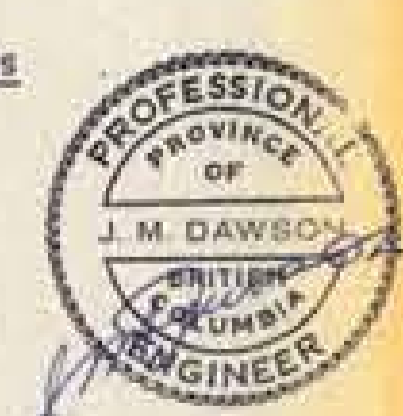
To accompany A Report by J.M. Dawson P.Eng.

LEGEND

- 64 GEOCHEMICAL SAMPLE POINT WITH VALUE IN PARTS PER MILLION
- CONTOUR LINE — 100' INTERVAL
- == ROAD
- x Cu, Pb MINERAL OCCURRENCE; Copper, Lead
- CLAIM POST

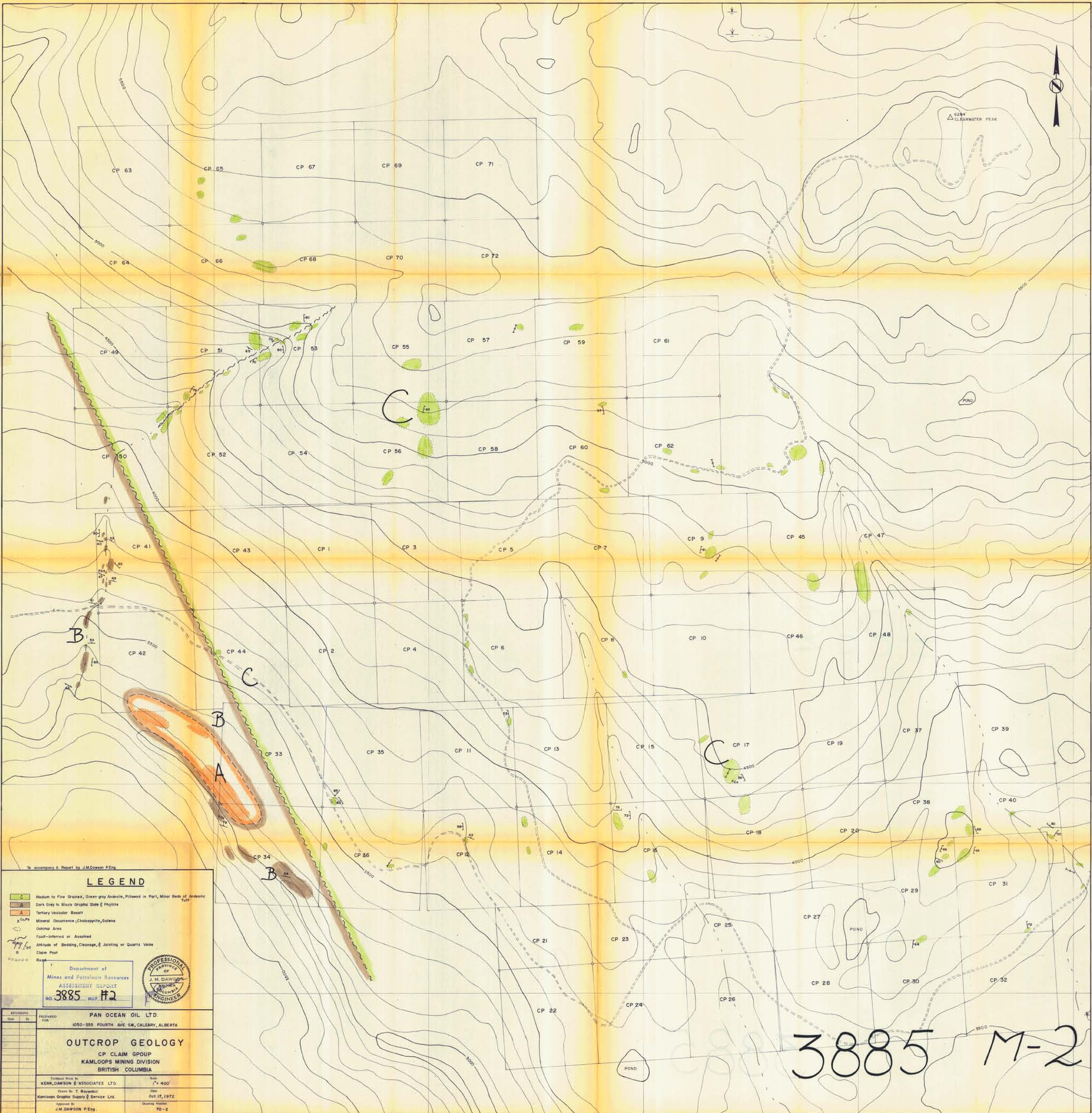
GEOCHEMICAL CATEGORIES

- 0-56 NEGATIVE
- 57-98 POSSIBLY ANOMALOUS
- 99-140 PROBABLY ANOMALOUS
- > 140 DEFINITELY ANOMALOUS



PAN OCEAN OIL LTD 1050-555 FOURTH AVE SW, CALGARY, ALBERTA	
Department of Energy and Petroleum Resources	GEOCHEMICAL PLAN
ASSESSMENT REPORT	ZINC
CP CLAIM GROUP	
KAMLOOPS MINING DIVISION	
BRITISH COLUMBIA	
Map No. 3885	Map #4
KERR, DAWSON & ASSOCIATES LTD. 1700-10th St. W. Vancouver, B.C.	Scale: 1" = 400'
Komloops Graphic Supply & Service Center	Oct 17, 1972
J.M. DAWSON P.Eng.	70-4

3885 M-4



to accompany a Report by J.M. Dawson P.Eng.

LEGEND

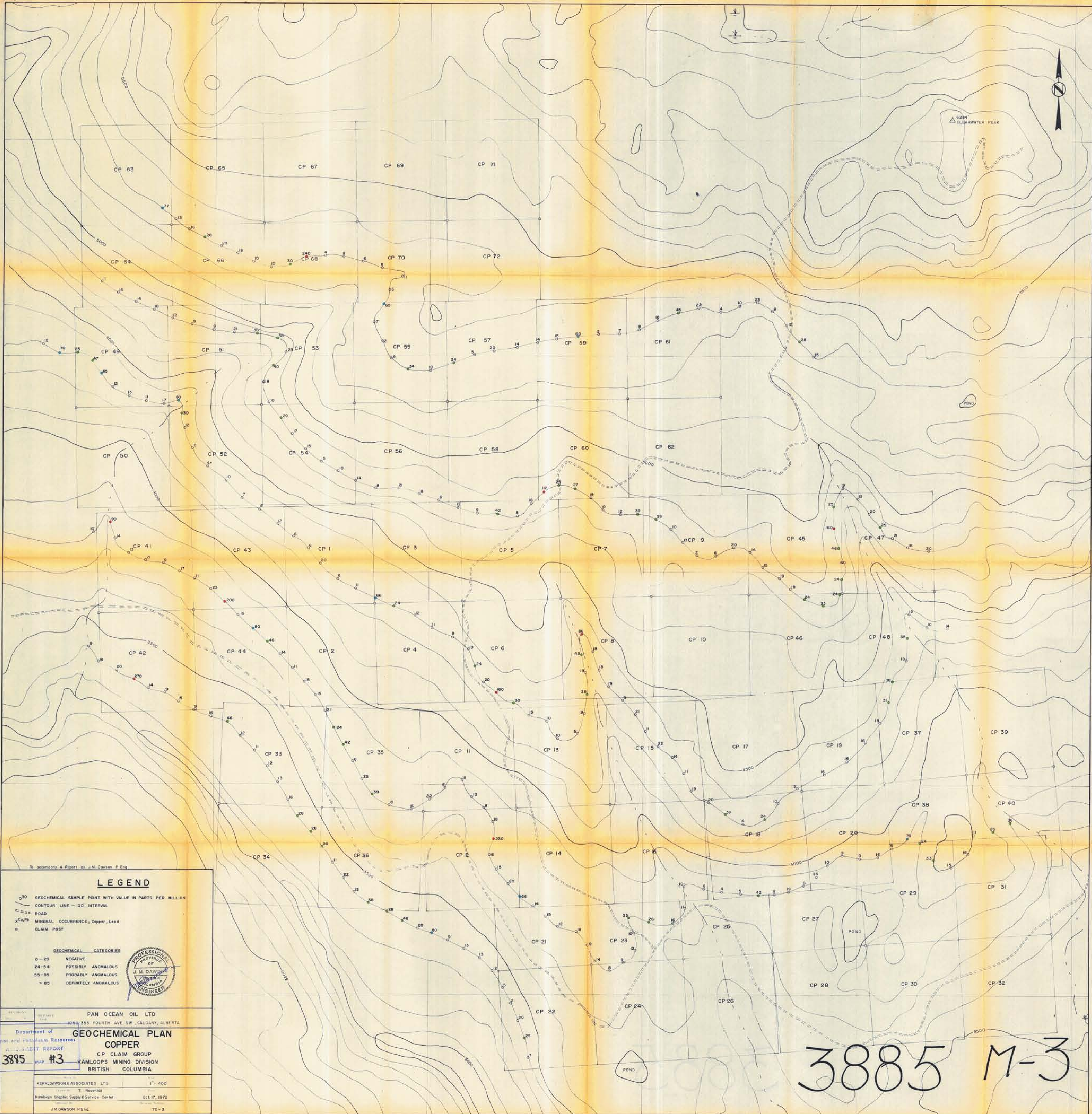
- C Medium to Fine Grained, Green-gray Andesite, Pillowed in Part, Minor Beds of Andesitic Tuff
- B Dark Grey to Black Graphitic Slate & Phyllite
- A Tertiary Vesicular Basalt
- Mineral Occurrence, Chalcocyanite, Galena
- Outcrop Area
- Fault—Inferred or Assumed
- Attitude of Bedding, Cleavage, & Jointing or Quartz Veins
- Claim Post
- Road

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3885 MAP #2

**PROFESSIONAL
ENGINEER
J. M. DAWSON
BRITISH COLUMBIA**

REVISIONS	PREPARED FOR
	PAN OCEAN OIL LTD.
	1050-355 FOURTH AVE. S.W., CALGARY, ALBERTA
OUTCROP GEOLOGY	
CP CLAIM GROUP KAMLOOPS MINING DIVISION BRITISH COLUMBIA	
Technical Work by KERR, DAWSON & ASSOCIATES LTD.	Scale 1" = 400'
Drawn by: T. Roycehill Kamloops Graphic Supply & Service Ltd.	Date: Oct 17, 1972
Approved by: J.M. DAWSON P.Eng.	Drawing Number: 70-2

3885 M-2



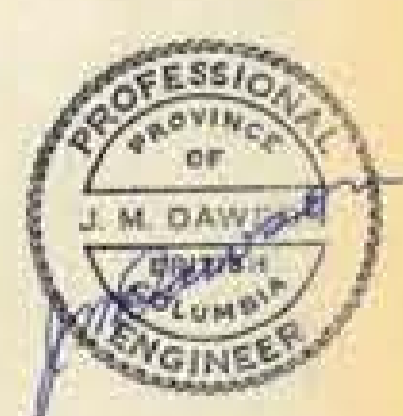
To accompany A Report by J.M. Dawson P. Eng

LEGEND

- 30 GEOCHEMICAL SAMPLE POINT WITH VALUE IN PARTS PER MILLION
- CONTOUR LINE - 100' INTERVAL
- == ROAD
- X_{Cu,Pb} MINERAL OCCURRENCE, Copper, Lead
- CLAIM POST

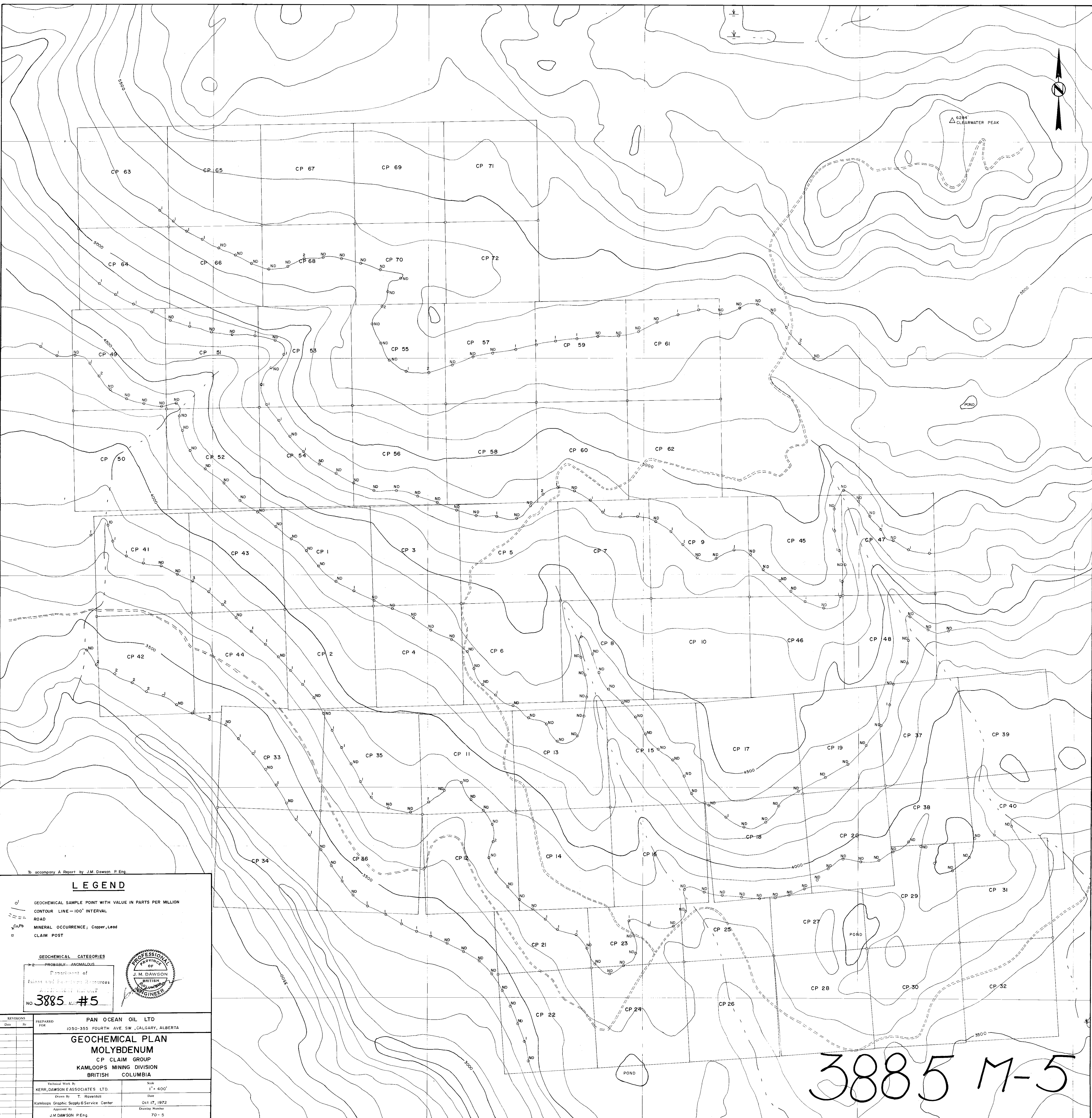
GEOCHEMICAL CATEGORIES

- 0-23 NEGATIVE
- 24-54 POSSIBLY ANOMALOUS
- 55-85 PROBABLY ANOMALOUS
- > 85 DEFINITELY ANOMALOUS



PAN OCEAN OIL LTD 1040-355 FOURTH AVE SW, CALGARY, ALBERTA	
Department of Energy and Petroleum Resources	GEOCHEMICAL PLAN
ASSESSMENT REPORT	COPPER
NO 3885	CP CLAIM GROUP
MAP #13	KAMLOOPS MINING DIVISION
	BRITISH COLUMBIA
KERR, DAWSON & ASSOCIATES LTD. 1700-1000 T. Ravenhill Kamloops Graphic Supply & Service Center	1" = 400' OCT 17, 1972
J.M. DAWSON P. Eng.	70-3

3885 M-3



To accompany A Report by J.M. Dawson P. Eng.

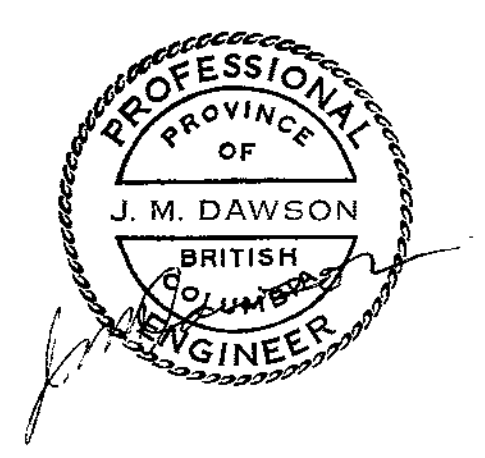
LEGEND

- GEOCHEMICAL SAMPLE POINT WITH VALUE IN PARTS PER MILLION
- CONTOUR LINE - 100' INTERVAL
- ROAD
- MINERAL OCCURRENCE; Copper, Lead
- CLAIM POST

GEOCHEMICAL CATEGORIES

2 - PROBABLY ANOMALOUS

Department of
 Mines and Geology Resources
 and Technical Services
 NO. 3885 #5



REVISIONS	PREPARED FOR	PAN OCEAN OIL LTD 1050-355 FOURTH AVE SW, CALGARY, ALBERTA
	GEOCHEMICAL PLAN	
	MOLYBDENUM	
	CP CLAIM GROUP	
	KAMLOOPS MINING DIVISION	
	BRITISH COLUMBIA	
Technical Work By	KERR, DAWSON & ASSOCIATES LTD.	Scale 1" = 400'
Drawn By	T. Ravenhill	Date Oct 17, 1972
Approved By	J.M. DAWSON P. Eng.	Drawing Number 70-5

3885 M-5