REPORT

ON

THE OCCURRENCE OF JADE (NEPHRITE)

ON

JADEX, B.S.,ALPHA, BETA AND CRY
MINERAL CLAIMS

Kutcho Creek Area
Liard Mining Division

FOR

MOHAWK OIL CO. LTD.

BY

N.C. CARTER, PH.D. P.ENG.
July 15,1989

N.C. CARTER, Ph.D., P.Eng.
CONSULTING GEOLOGIST

TABLE OF CONTENTS

List of Figures

SUMMARY

Mohawk Oil Co. Ltd. owns 12 mineral claims and one fractional claim in the Liard Mining Division of northwestern British Columbia.

Deposits of jade (nephrite) on these claims have been exploited since 1976. Nephrite occurs on the claims as in situ or lode deposits and as relatively large colluvial blocks in talus which have been derived from the in situ deposits.

In the writer's opinion, no alluvial or placer jade occurs within the boundaries of the subject mineral claims. The nature and style of nephrite occurrences on Mohawk Oil's claims correspond with the definition of "mineral" as contained in the Mineral Tenure Act of British Columbia.

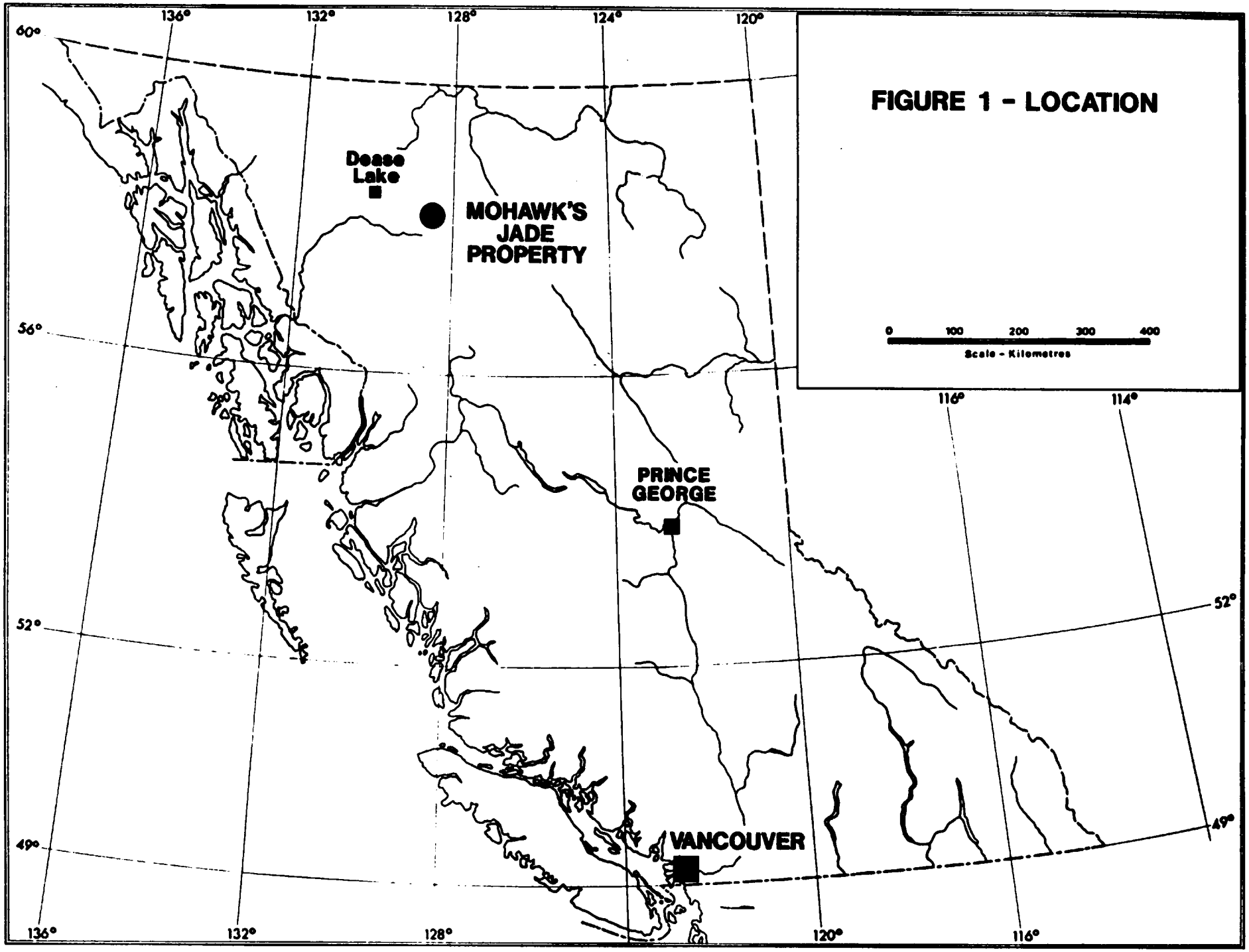


FIGURE 1 - LOCATION
Dease Lake
MOHAWK'S JADE PROPERTY
PRINCE GEORGE
VANCOUVER
0 100 200 300 400
Scale - Kilometres
60°
56°
52°
49°
136°
132°
128°
124°
120°
116°
114°

INTRODUCTION

This report on the nature and style of jade (nephrite) deposits in the Kutcho Creek area of northwestern British Columbia has been prepared at the request of Mr. Matthew W. Waldner of Mohawk Oil Co. Ltd.

The purpose of the report is to express an opinion as to whether jade (Nephrite) on mineral claims held by Mohawk Oil is considered "mineral" or "placer mineral" pursuant to the Mineral Tenure Act of British Columbia.

The writer has practised his profession for more than 25 years, most of which time has been spent in the examination and study of economic mineral deposits in British Columbia.

PROPERTY LOCATION AND ACCESS

Mineral claims exploited for jade and owned by Mohawk Oil Co. Ltd. are situated in northwestern British Columbia 90 km southeast of the community of Dease Lake (Figure 1). The various mineral claims are between latitudes 58°14' and 58°17' North and longitudes 128°33' and 128°41' West in NTS map-areas 104I/2E and 7E.

Access is by air to Mohawk's camp at an airstrip in the Kutcho Creek valley 5 km east of the properties (Figure 2). Roads from the airstrip lead to most areas of the property.

Tote roads from Dease Lake to the Turnagain River area and Letain Lake asbestos deposit have been used by large all terrain vehicles to provide access into the general area.

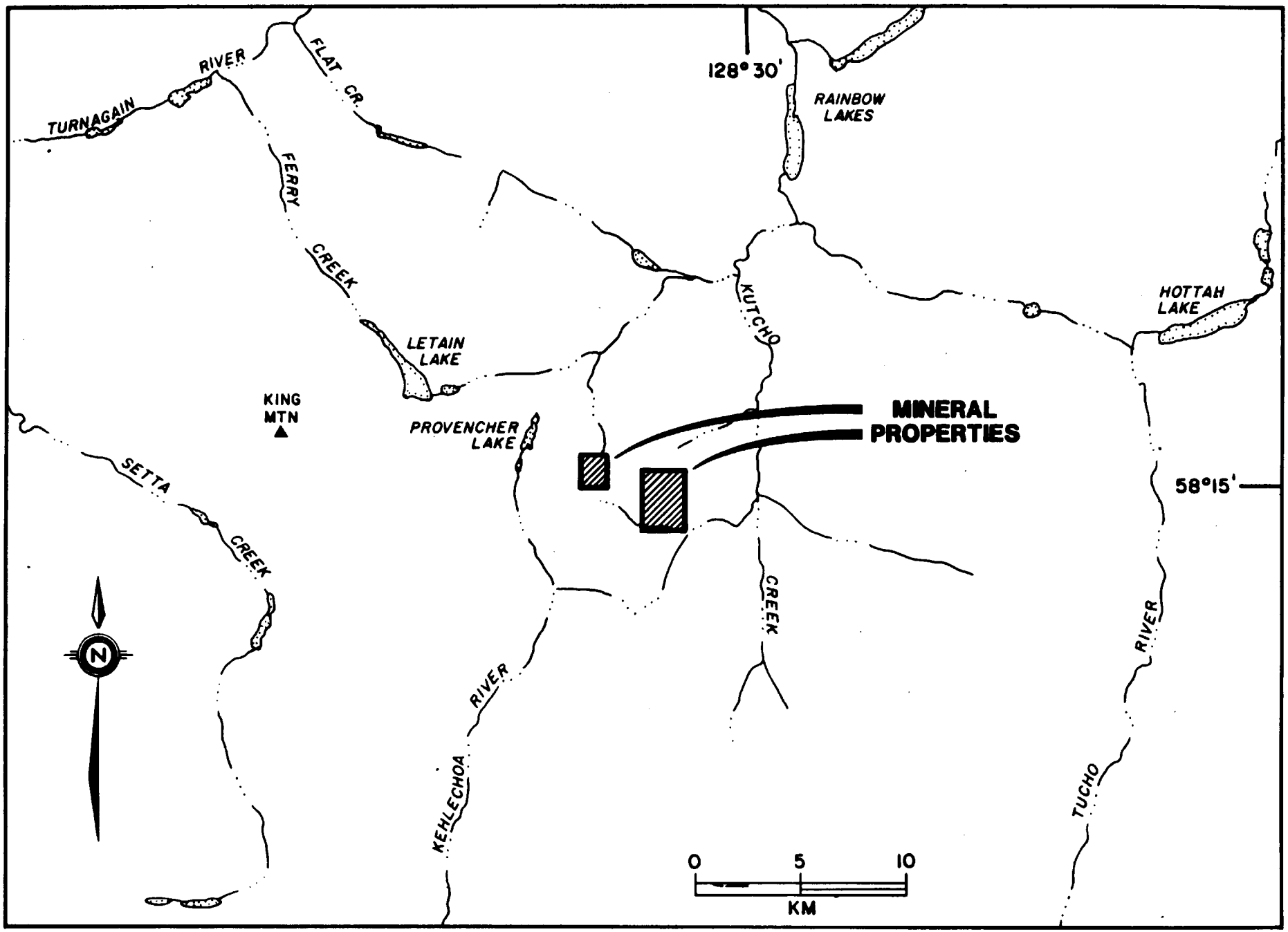


FIGURE 2 - MOHAWK OIL CO. LTD.
MINERAL PROPERTIES

PHYSICAL SETTING

The Kutcho Creek area is situated in the Stikine Ranges which make up the southeast part of the Cassiar Mountains. Major drainages in the area, Kutcho Creek, Flat Creek and Turnagain River (Figure 2), occupy wide drift filled valleys at about 1200 metres above sea level which are separated by a number of ranges in which elevations commonly exceed 1800 metres.

Elevations in the area of Mohawk Oil's properties range from 1400 metres in the southeast claims area to more than 1900 metres in the central and western claims (Figure 3). Steep cirque walls are well developed on north-facing slopes; southern slopes feature somewhat gentler topography.

This part of northwestern British Columbia receives about 75 cm of annual precipitation. Wide annual temperature variations are the norm, ranging from -50°C during the winter months to as much as +25°C in summer. Snow cover melts rapidly during late spring. Rapidly changing climatic conditions are a feature of the area during the summer months.

HISTORY OF JADE MINING

Jade was first recognized in 1938 at Wheaton Creek, 25 km northwest of the Mohawk Oil properties (Holland,1962). Limited exploitation of jade took place in the Wheaton Creek - Provencher Lake area until the mid 1970's. Since that time, a number of companies and individuals have undertaken mining operations in the area between the Provencher Lake valley and Kutcho Creek.

Cry Lake Jade Mines Limited and the successor company, Mohawk Oil, mined some 1000 tonnes of jade between 1976 and 1981 from the subject claims area. Limited production has been undertaken in more recent years.

MINERAL PROPERTY

Mohawk Oil Co. Ltd. owns 12 mineral claims and one fractional claim located between Provencher Lake and Kutcho Creek in the Liard Mining Division. These claims are shown on Figure 3 and details are as follows:

Claim Name	Record Number
B.S. 1	12*
Jadex 1	279*
Jadex 2	461*
Jadex 3	462*
Jadex 5 Fr.	509*
Jadex 6	580
Cry	678*
B.S. 2	679*
Alpha	680*
Beta	681*
Jadex 7	682
Jadex 8	924
Jadex 9	3211

* Surveyed Mineral Claims

Also shown on Figure 3 are a number of placer leases and claims overlying and adjacent to the mineral claims. Ownership of these leases and claims is held by a number of individuals as follows:

Claim or Lease Number	Recorded Owner
P.L. 12251	Andrew Jensen
P.L. 20178 - 20186	Steve Simonovic
P.L. 20205	Gunther Paul
P.C. 16 - 19,21	" "

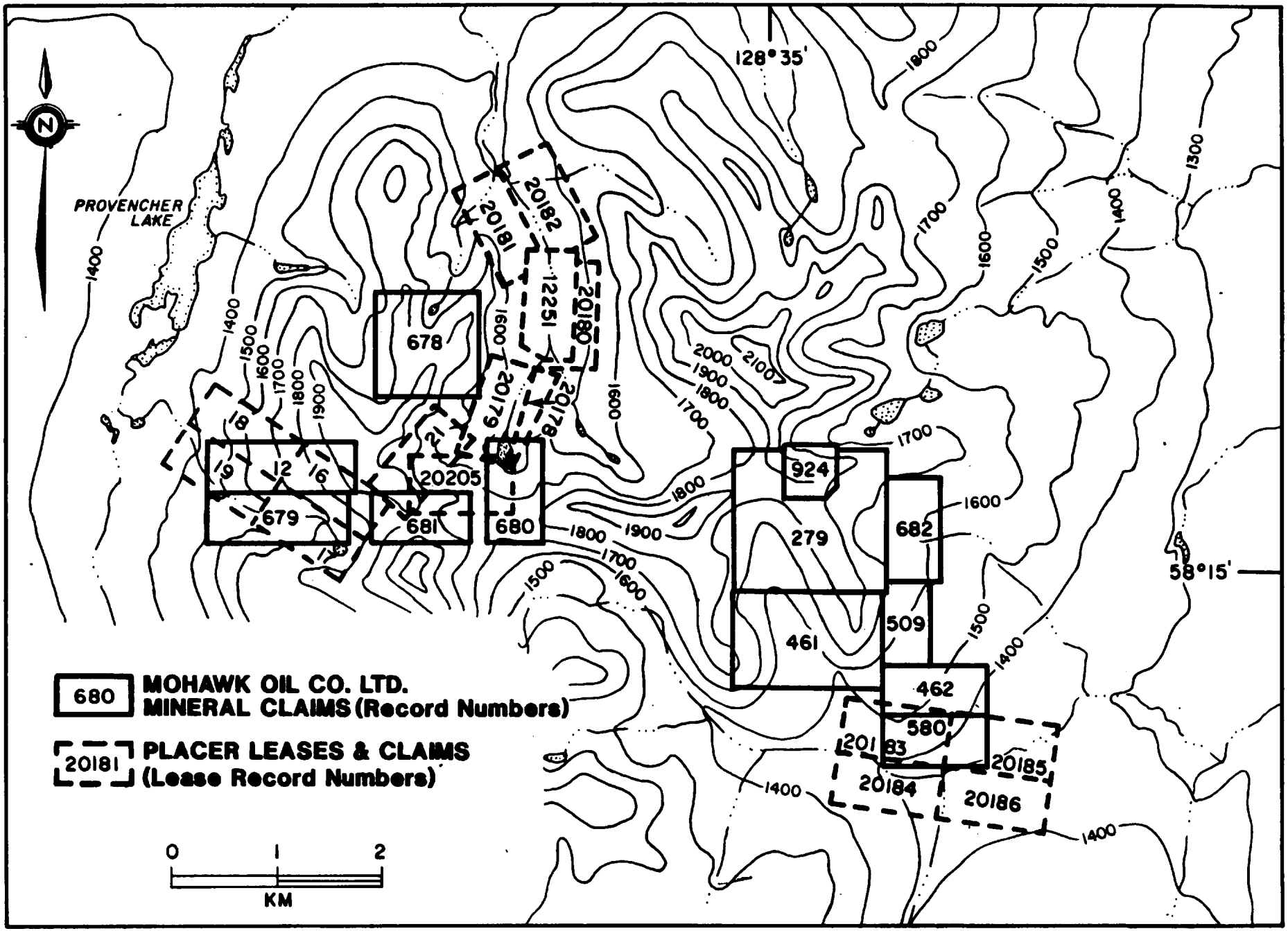


FIGURE 3 - MINERAL TENURE

JADE OCCURRENCES IN BRITISH COLUMBIA

Jade in British Columbia occurs as an amphibole mineral, specifically nephrite which is a fine grained variety of tremolite, a calcium magnesium silicate mineral. Nephrite is distinguished from tremolite by a characteristic "nephritic" texture in which fine grained fibrous tremilite occurs as randomly oriented and twisted fibres. This texture imparts a "toughness" to nephrite making it difficult to break.

Nephrite occurs in varying shades of green depending on iron content and the presence of impurities such as chromite and magnetite. Specific gravity is about 3.0 and it is slightly harder than steel.

Numerous occurrences of nephrite are known throughout the interior of British Columbia extending from near Hope in the south to the Yukon border. Invariably, nephrite occurrences and deposits are within or in close proximity to fault-bounded, serpentinized ultramafic intrusions which cut late Paleozoic sedimentary sequences.

Nephrite is the product of metasomatic processes along contacts between serpentinites and country rocks, usually sediments. Processes for the formation of nephrite involve high pressures and temperatures in areas of significant tectonic activity as evidenced by ubiquitous fault contacts between serpentinite intrusions and country rocks.

In situ nephrite lodes are relatively small, fault-bounded bodies which generally do not exceed 4500 tonnes (Leaming,1978).

Because of the resistant nature of nephrite and its occurrence within much less competent and sheared serpentinites, weathering processes, usually involving frost heaving in alpine terrains, liberate several tonne blocks which are common in talus slopes below lode or in situ deposits. These are referred to as colluvial deposits.

Alluvial or placer deposits are those in which nephrite occurs as rounded boulders of variable size within water courses a considerable distance from their source area. Such occurrences are known in southern British Columbia along the Fraser, Coquihalla and Bridge Rivers and in the northern part of the Province in the Cassiar and Cry Lake areas.

JADE DEPOSITS ON MOHAWK OIL MINERAL CLAIMS

Mineral claims owned by Mohawk Oil Co. Ltd. are underlain by a late Paleozoic assemblage of intensely deformed sedimentary and lesser volcanic rocks which are intruded by diorites, gabbros and ultramafic serpentinite bodies (Gabrielse,1978).

Occurrences of jade)nephrite) are associated with fault-bounded serpentinite intrusions which extend from the Kutcho Creek - Provencher Lake area in a northwesterly direction for more than 50 km.

Nephrite deposits on the claims were observed in two localities during an examination of the property by the writer June 19,1989. In situ or lode deposits were seen on the Beta and Jadex 1 claims (Figure 3). In both localities nephrite

lenses were seen to be devloped along the western, faulted contacts between serpentinized ultramafic intrusions and argillaceous sedimentary rocks of the late Paleozoic Cache Creek Group.

Host serpentinite features a strong west-northwest schistosity, parallel to the regional south-directed thrust faults which bracket Cache Creek terrane.

The in situ nephrite lodes occur in steep cirque headwalls and weathering processes, including frost heaving, have liberated more resistant, large angular nephrite blocks from the enclosing schistose serpentinites. Many of these blocks lie below the in situ deposits and are part of extensive talus slopes which are characteristic of this alpine area (see photographs - Appendix I).

Some large (several tonnes) nephrite blocks were observed on both the Alpha and Jadex 2 claims a fair distance from their source. In both instances, these blocks had been moved by mechanical means.

ALLUVIAL (PLACER) AND COLLUVIAL AND LODE NEPHRITE

As noted previously, a number of placer leases and claims have been located in recent years over and adjacent to mineral claims owned by Mohawk Oil Co. Ltd.(Figure 3).

Most of Mohawk Oil's mineral claims are in alpine terrain and cover areas of known in situ or lode nephrite deposits. Nephrite blocks not in situ are good examples of gravity transfer

of material involving the downslope movement or creep of individual rock blocks in talus or scree slopes. Lithologic and structural factors - ie. - more resistant nephrite within schistose enclosing serpentinites, coupled with climatic factors - large diurnal and annual temperature ranges for xample, have resulted in the liberation of large nephrite blocks from their bedrock source. Movement of these and other rocks' downslope has been aided by solifluction which involves saturation of masses of rock with water not confined necessarily to definite channels. Such blocks of nephrite in talus are properly called "colluvial" deposits.

These colluvial deposits are attractive from a mining point of view because of relative ease of access and handling for subsequent cutting with a diamond saw. By contrast, lode deposits because of the hardness of the nephrite, must be exploited by the use of explosives which often adversely affects the quality of the material.

Several nephrite blocks were observed on ridge tops at about 1800 metres elevation, apparently far from their source area. this is probably due to the fact that colluvial nephrite blocks are often moved by mechanical means to other sites prior to determining their quality.

Placer or alluvial deposits are terms used in reference to a valuable mineral which is relatively heavy and resistant to weathering and abrasion and which is released from its parent rock and concentrated, usually by water transport, into workable

deposits. Likely sites for deposition and concentration of high density and/or resistant minerals along water courses would be along the inside curves of meandering streams and at sites which feature an abrupt decrease in stream gradient.

Of interest is the fact that the term "placer" is of Spanish derivation and was used by early Spanish miners in North and South America as a name for gold deposits found in sands and gravels of streams (Boyle,1979). Notwithstanding this, placer deposits of other heavy and resistant minerals, ie,- platinum group metals, diamonds, tin etc. have been exploited for many years in various parts of the world.

Placer or alluvial nephrite is also known in varous parts of British Columbia, particularly in the lower Fraser River and its tributaries. Varying sizes of nephrite boulders in this area are apparently a considerable distance from their source.

Alluvial or placer nephrite has also been reported from Wheaton Creek, 25 km northwest of the Mohawk Oil mineral claims.

Significantly, the greatest concentration of alluvial nephrite boulders is coincident with the most intensive gold mining operations. This is 2.5 km south of the confluence of Wheaton Creek with Turnagain River in an area of the creek where there is a decrease in stream gradient as compared with sections upstream and downstream.(Holland,1940). There is no significant concentration of alluvial jade or nephrite upstream from this locality which is 10 km north of the creek headwaters.

Applying the Wheaton Creek example to the area between Provencher Lake and Kutcho Creek, only a few areas could be considered prospective for the occurrence of alluvial jade. These might include the valley around Provencher Lake (Figure 3), the section of unnamed creek several hundred metres east of the Cry mineral claim and in the area of P.L. 12251 and possibly a section of creek flowing easterly adjacent to the Jadex 6 mineral claim. Note that all three areas are at or below 1400 metres elevation and include those sections of the drainages in which stream gradients are significantly reduced.

CONCLUSIONS

In the writer's opinion, occurrences of nephrite on the mineral claims owned by Mohawk Oil Co. Ltd. are either lode (in situ) or colluvial deposits. While the possibility exists for the occurrence of alluvial or placer nephrite in sections of drainages a fair distance away from the subject claims, there is no potential for alluvial jade occurrences within alpine areas covered by Mohawk Oil's mineral claims.

As noted previously, colluvial blocks of nephrite occur in talus below in situ or lode deposits. Part 1, Section 1(a) of the Mineral Tenure Act defines "mineral" as including a natural substance that can be mined and that is either in place or in talus rock adjacent to the place it was formed, In this context, nephrite deposits on the Mohawk Oil properties are adequately secured by mineral claims.

N.C. CARTER, Ph.D., P.Eng.
CONSULTING GEOLOGIST

REFERENCES

Boyle,R.W.(1979): The Geochemistry of Gold and its Deposits, Geological Survey of Canada Bulletin 280

Gabrielse,H.(1978): Operation Dease,Current Research Part A Geological Survey of Canada Paper 78-1A

Holland,Stuart S.(1962): Jade in British Columbia, in Minister of Mines and Petroleum Resources Annual Report 1961,pp.119-126

_____ (1940): Wheaton Creek Area - B.C. Dept. of Mines Bulletin No. 2

Leaming,S.F.(1978): Jade in Canada, Geological Survey of Canada Paper 78-19

CERTIFICATE

I, NICHOLAS C. CARTER, of Victoria, British Columbia, do certify that:

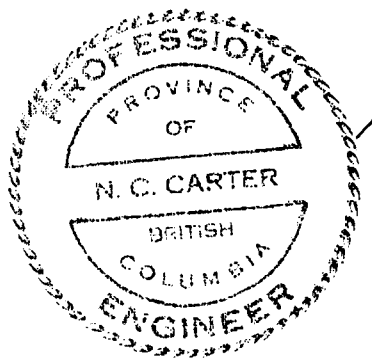
1. I am a Consulting Geologist registered with the Association of Professional Engineers of British Columbia since 1966.

2. I am a graduate of the University of New Brunswick with B.Sc. (1960), Michigan Technological University with M.S.(1962), and the University of British Columbia with Ph.D.(1974).

3. I have practised my profession in eastern and western Canada and in parts of the United States for more than 25 years.

4. The preceding report was prepared on behalf of Mohawk Oil Co, Ltd. and is based on a personal examination of parts of the property June 19,1989 and on published and unpublished reports dealing with the geological setting of the area and on the occurrence of nephrite in British Columbia.

5. I hold no interest, direct or indirect, in Mohawk Oil co. Ltd. or in any mineral claims that are the subject of this report.



N.C. Carter, Ph.D. P.Eng.

Victoria,B.C.
July 15,1989

From ridge crest (1800 m elevation) on Alpha claim looking west to road cuts on Beta claim. In situ nephrite lode (white) on lower road.

Closer view of previous - note white blocks of nephrite in talus below road - movement due to gravity and /or mining activity

N.C. CARTER, Ph.D., P.Eng.
CONSULTING GEOLOGIST

Angual jade block on ridge crest, Alpha claim - mechanically moved to this location

Looking north to tarn lake in northern part of Alpha claim - recent "placer" mining activity to left of lake is partly on Alpha claim. Only area with potential for alluvial jade is lower valley in right of photo.

N.C. CARTER, Ph.D., P.Eng.
CONSULTING GEOLOGIST

Closer view of previous - note talus slopes in area of surface disturbance.

Final post - Placer Claim 21 immediately west of tarn lake - claim extends into background - note angular talus.

N.C. CARTER, Ph.D., P.Eng.
CONSULTING GEOLOGIST

Unnamed valley north of tarn lake on Alpha claim - note disturbance in vicinity of creek.

Same area as previous - disturbance in creek.

Cirque wall in north part of Jadex 1 claim. Nephrite lode in cut near ridge crest at 1900 m. elevation - note nephrite in talus below cut.

In situ nephrite lode - Jadex 1 claim.

N.C. CARTER, Ph.D., P.Eng.
CONSULTING GEOLOGIST

From previous looking south down valley - Jadex 1 claim - note talus in foreground - loading area left centre of photo.

As previous - loading area below - road cuts in distance on Jadex 9 claim.

N.C. CARTER, Ph.D., P.Eng.
CONSULTING GEOLOGIST

Looking north up valley to cirque headwall on Jadex 1 claim in distance - Note large nephrite block (white) in right of photo

Close up of large nephrite block from previous - moved to present position by mechanical means.

N.C. CARTER, Ph.D., P.Eng.
CONSULTING GEOLOGIST