

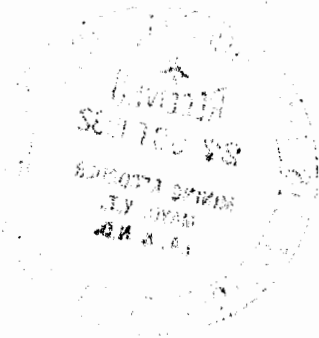
GEOLOGIC REPORT ON THE
MILK UM CLAIMS #2; 3; 6; 7; 10; 11;
14; 15; 40; 41; 44; 45; 48; 49

N.T.S. SHEET 116 A/12
MAYO MINING DISTRICT

BY

Timothy G. O'Neill
FOR WORK DONE BETWEEN
JULY 10 AND JULY 14, 1982

001381



This report has been examined by
the Geological Survey of Canada
under Form 100. The Quartz
Mining License is valued as
reported for the amount
of \$ 1,400 -

P. Watson

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



Department of Indian Affairs and Northern Development

YUKON QUARTZ MINING ACT

FORM "C" - APPLICATION FOR A CERTIFICATE OF WORK

(This form required in duplicate with sketch showing location of work.)



I (Name)	Timothy G. O'Neill	Occupation	Geologist
(Postal Address)	c/o Milchem Canada Limited #102-309 2nd Ave. S.W. Calgary, Alberta T2P 0C5		

MAKE OATH AND SAY, THAT:-

- I am the ~~owner~~ agent of the owner, of the mineral claim(s) to which reference is made herein.
- I have done, or caused to be done, work on the following mineral claim(s):

(Here list claims on which work was actually done by number and name)

MILK UM #2	YA64194	MILK UM #15	YA75807
MILK UM #3	YA64195	MILK UM #40	YA75832
MILK UM #6	YA64198	MILK UM #41	YA75833
MILK UM #7	YA64199	MILK UM #44	YA75836
MILK UM #10	YA75802	MILK UM #45	YA75837
MILK UM #11	YA75803	MILK UM #48	YA75839
MILK UM #14	YA75806	MILK UM #49	YA75840

situated at 64°37'N; 137°45'W Claim Sheet No. 116 A/12

in the Mayo Mining District, to the value of at least \$100/claim

dollars, since the 17 day of July 19 82

to represent the following mineral claims under the authority of Grouping Certificate No. _____

(Here list claims to be renewed in numerical order, by grant number and claim name, showing renewal period requested).

MILK UM #2	YA64194	MILK UM #15	YA75807
MILK UM #3	YA64195	MILK UM #40	YA75832
MILK UM #6	YA64198	MILK UM #41	YA75833
MILK UM #7	YA64199	MILK UM #44	YA75836
MILK UM #10	YA75802	MILK UM #45	YA75837
MILK UM #11	YA75803	MILK UM #48	YA75839
MILK UM #14	YA75806	MILK UM #49	YA75840

- The following is a detailed statement of such work: (Set out full particulars of the work done indicating dates work commenced and ended in the twelve months in which such work is required to be done as shown by Section 53.)

Geological and geochemical work was done on these claims between July 12, 1982 and July 17, 1982. The report is not yet complete as all of the information needed for the report has not arrived. It will be forwarded to you by September 31, 1982.

Sworn before me at Houston, Texas

this 18th day of August 19 82

Lillian A. Wells
Notary Public for the State of Texas

Timothy G. O'Neill
Applicant.



Mineral Operations

POST OFFICE BOX 22111 • HOUSTON, TEXAS 77027
TELEPHONE: (713) 965-8300

AIRMAIL

October 19, 1982



R. G. Ronaghan
Mining Recorder
Mayo Mining District
P. O. Box 10
Mayo, Yukon Territory
YOB 1M0

Dear Mr. Ronaghan:

Enclosed are two copies of the geologic report for the MILK UM Claims promised in the letter of August 18, 1982 that accompanied Form "C" - Application for a Certificate of Work.

If you have any questions or problems with the report, feel free to contact me.

Very truly yours,

MILCHEM INCORPORATED

Timothy G. O'Neill
Senior Geologist

TON/mjy

Enc.

091801

AFFIDAVIT

THE STATE OF TEXAS |
 |
COUNTY OF HARRIS |

Before me, Juanita Ladish, a Notary Public in and for Harris County, Texas, on this day personally appeared Tim O'Neill, who being by me duly sworn, upon oath says:

"My name is Tim O'Neill. I am employed by Milchem Incorporated which wholly owns Milchem Canada Limited. Milchem Incorporated is located in Houston, Harris County, Texas, where I work as a Senior Geologist. I am duly qualified and authorized to make this Affidavit and fully cognizant of the facts herein set out; that Geological work was performed in the name of Milchem Canada Limited on the claims in the Yukon Territory which are shown on attached Exhibit A, incorporated herein for all purposes, and that costs were incurred both within and outside the Yukon Territory for the survey and preparing of the Geologic Report on said claims, and that these costs exceeded \$300 per claim for the year of 1982."

Tim O'Neill
Tim O'Neill
Affiant

Subscribed and sworn to before me, by the said Tim O'Neill, this 14th day of October 1982, to certify which witness my hand and seal of office.

My Commission expires November 30, 1984.

(SEAL)

Juanita Ladish
Notary Public in and for the
State of Texas

001381

EXHIBIT A

<u>TAG NUMBER</u>	<u>CLAIM NAME</u>
YA 64194	MILK UM #2
YA 64195	MILK UM #3
YA 64198	MILK UM #6
YA 64199	MILK UM #7
YA 75802	MILK UM #10
YA 75803	MILK UM #11
YA 75806	MILK UM #14
YA 75807	MILK UM #15
YA 75832	MILK UM #40
YA 75833	MILK UM #41
YA 75836	MILK UM #44
YA 75837	MILK UM #45
YA 75839	MILK UM #48
YA 75840	MILK UM #49

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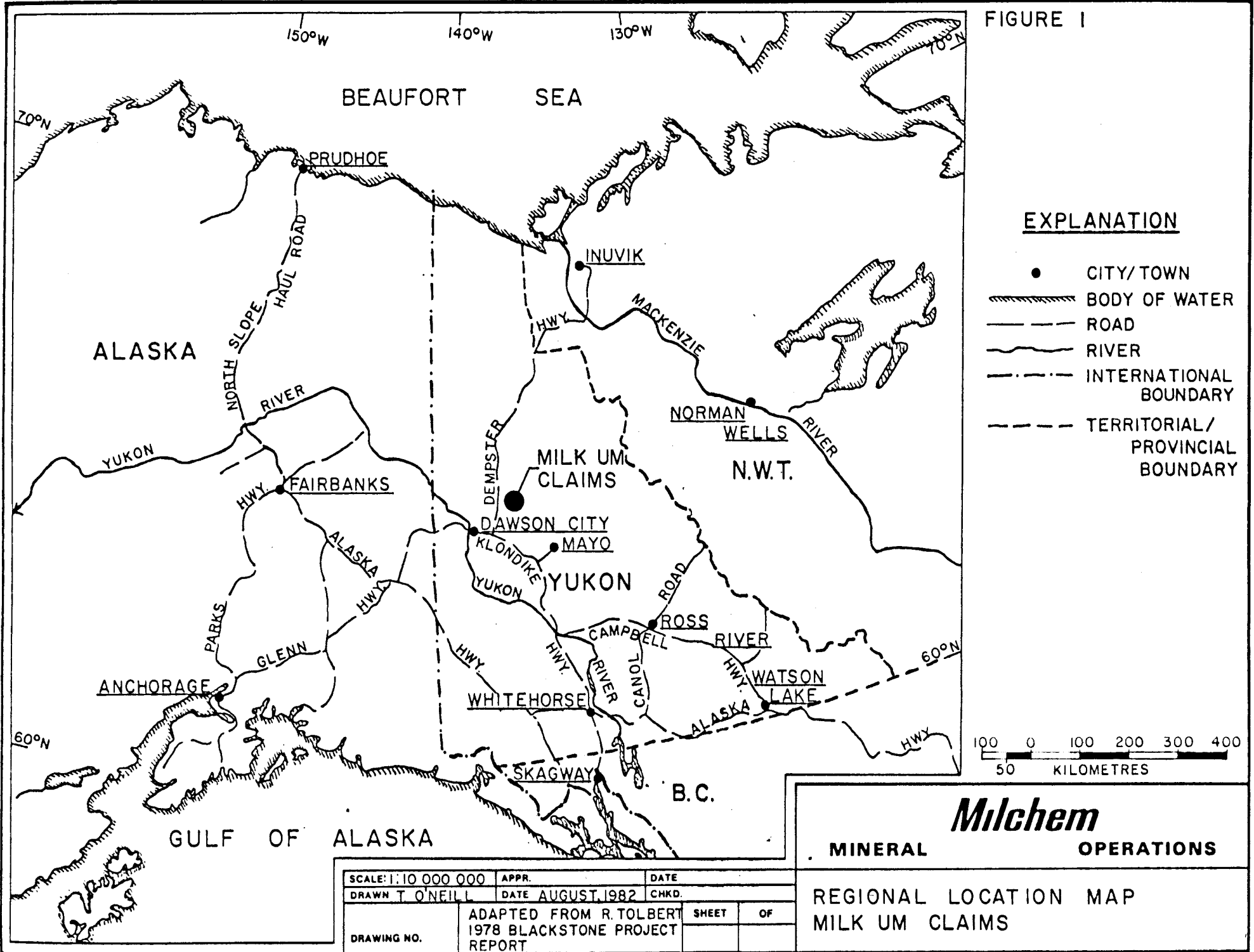
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Plate I: Geologic Map and Cross Section	
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FIGURE 1



Introduction

The MILK UM Claims were staked in August, 1981 to cover part of a 16.5 km long barite trend located by a regional prospecting program. A geological survey was conducted on the claims from July 11 to July 16, 1982.

55 MILK UM Claims were originally staked. 41 of the claims are not being renewed, 14 are being renewed.

This report is the result of the July, 1982 geologic survey. Covered in this report are the 14 claims being renewed and the surrounding area.

Aiding in the geologic survey was Thomas Naughten of Dawson City. Aiding in the preparation of the report was Thomas Boruta of Houston, Texas.

Summary

The MILK UM Claims lie at 64°37'N, 137°45'W. They are 105 km northeast of Dawson City, 30 km east of the Dempster Highway.

The MILK UM Claims cover rocks that lie in the western arm of the Selwyn Basin. Thrust faulting is quite common in the area, extensively rearranging the stratigraphy. Five formations are represented by 13 separate rock units on or near the MILK UM Claims. The formations range in age from late Proterozoic to early Mississippian.

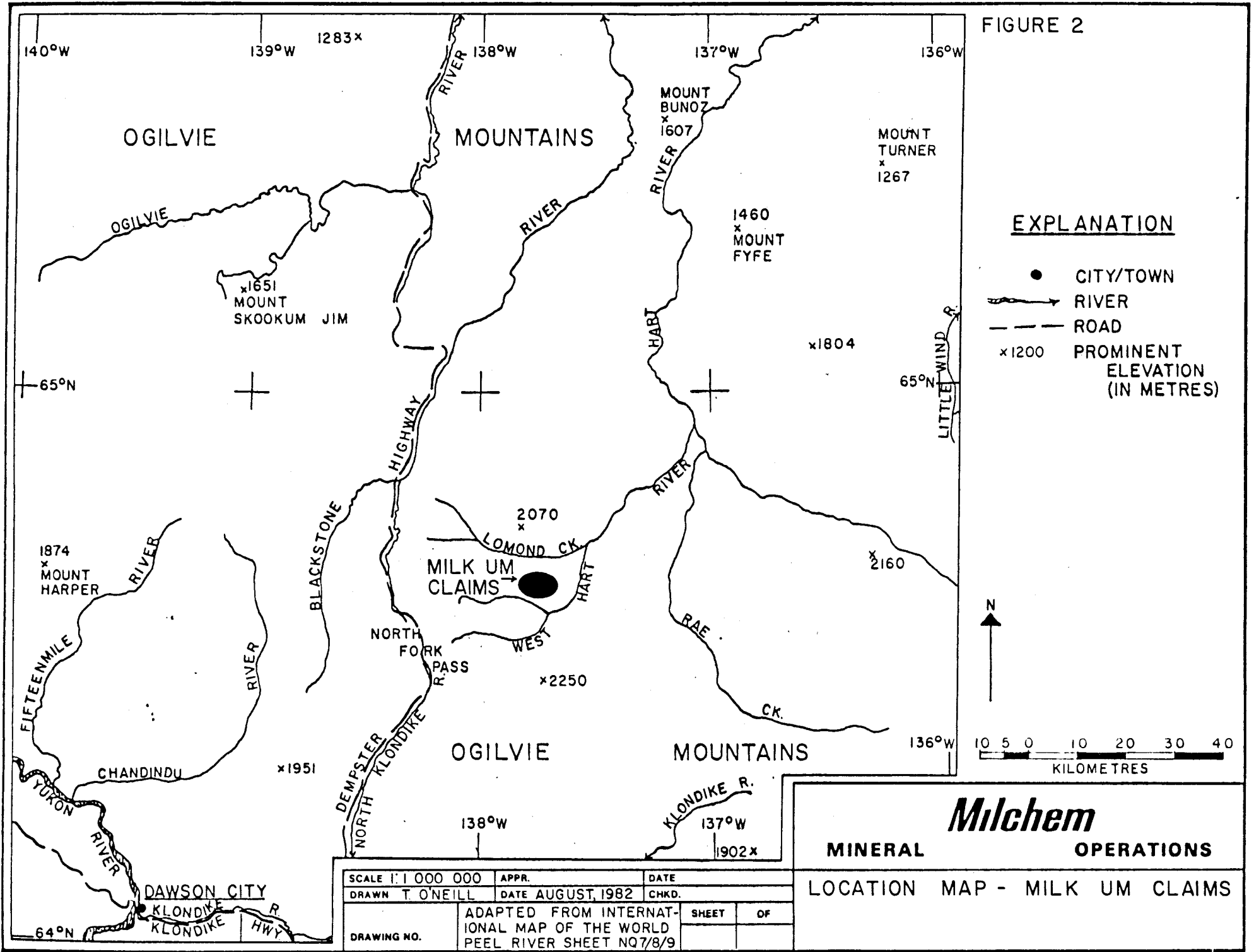
The late Proterozoic rocks consist of green and maroon shales, green and grey chert, black shale. Thrust faulting has put these rocks in a stratigraphically higher position than the younger Paleozoic rocks.

The upper Cambrian to lower Devonian Road River formation occurs to the north and west of the MILK UM Claims. The western occurrence consists of black siliceous shale, black shale, black chert. The northern occurrence consists of black shale and brown to red coarse volcanic flows.

An upper Cambrian to lower Devonian grey dolomite has been thrust faulted into the area. The dolomite is a shelf facies type rock rather than a basinal type rock, as are the other formations around and on the MILK UM Claims. The dolomite lies below the Road River formation to the north of the claims, and above upper Devonian-lower Mississippian rocks on the eastern part of the MILK UM Claims.

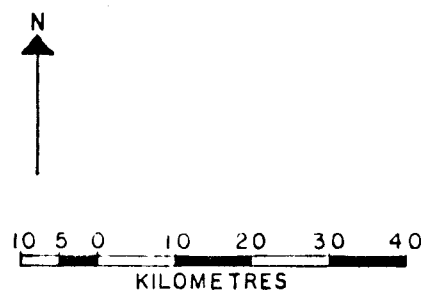
The lower Devonian to upper Devonian Canol formation is represented by 6 members in the MILK UM Claim area. The members are all

FIGURE 2



EXPLANATION

- CITY/TOWN
- RIVER
- ROAD
- x1200 PROMINENT ELEVATION (IN METRES)

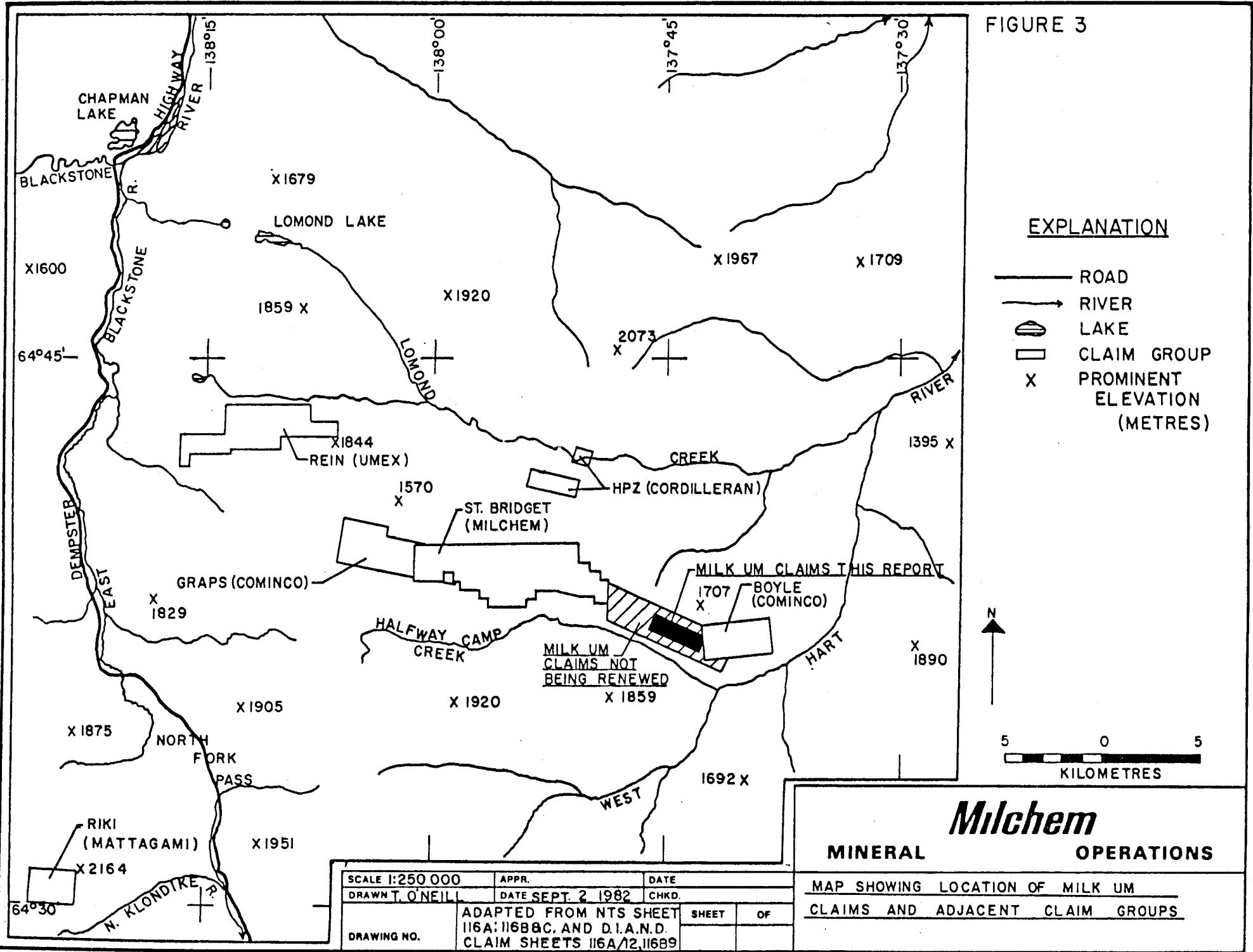


Milchem
MINERAL OPERATIONS

LOCATION MAP - MILK UM CLAIMS

SCALE 1:1 000 000	APPR.	DATE
DRAWN T. O'NEILL	DATE AUGUST, 1982	CHKD.
DRAWING NO.	ADAPTED FROM INTERNATIONAL MAP OF THE WORLD PEEL RIVER SHEET NQ7/8/9	SHEET OF

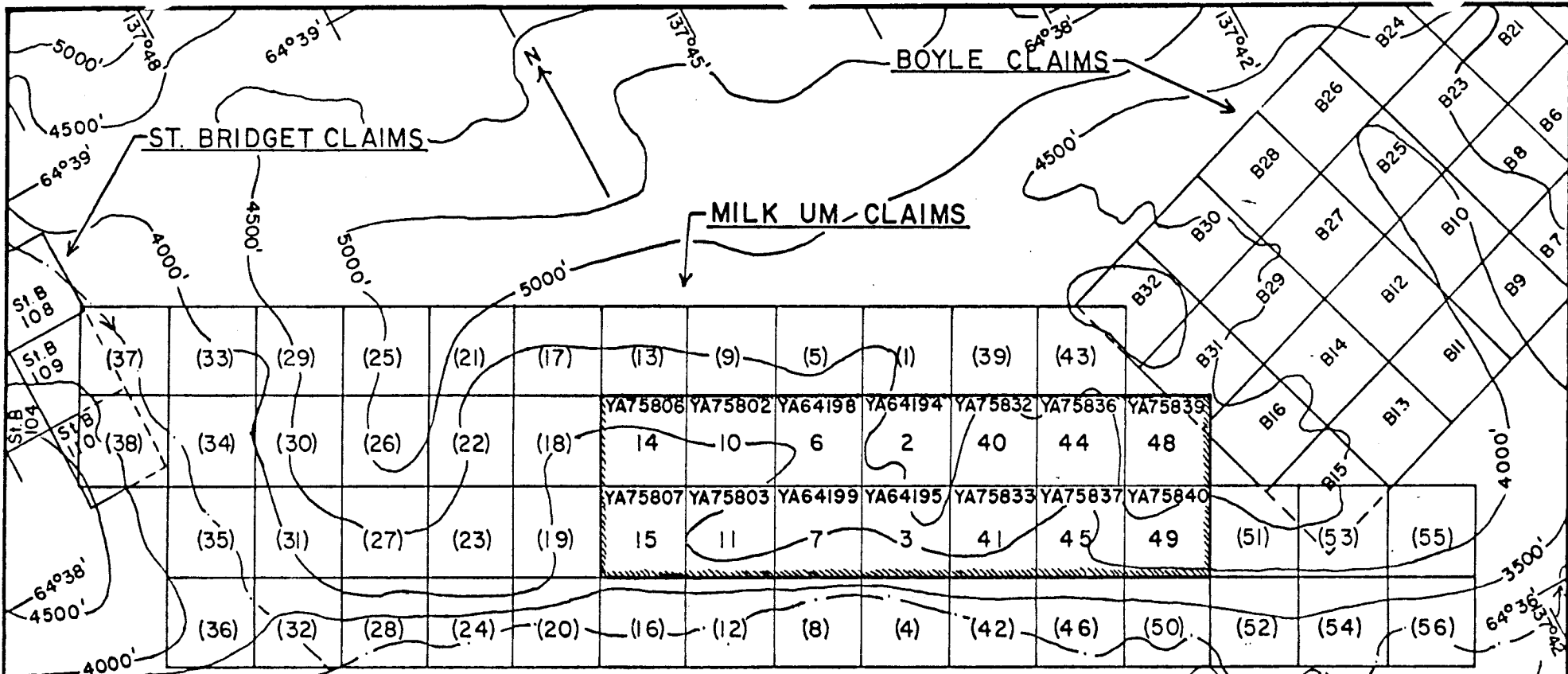
FIGURE 3



LIST OF CLAIMS

<u>NUMBER</u>	<u>NAME</u>
YA 64194	MILK UM #2
YA 64195	MILK UM #3
YA 64198	MILK UM #6
YA 64199	MILK UM #7
YA 75802	MILK UM #10
YA 75803	MILK UM #11
YA 75806	MILK UM #14
YA 75807	MILK UM #15
YA 75832	MILK UM #40
YA 75833	MILK UM #41
YA 75836	MILK UM #44
YA 75837	MILK UM #45
YA 75839	MILK UM #48
YA 75840	MILK UM #49

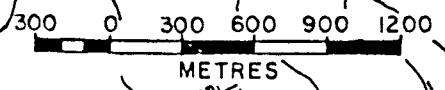
Milchem Canada Limited, No. 102, 309 Second Ave. SW,
Calgary, Alberta, T2P 0C5, is the holder of all the
claims. All work was done on behalf of Milchem
Canada Limited.



EXPLANATION

- CLAIMS COVERED IN THIS REPORT
- CLAIMS NOT BEING RENEWED THIS YEAR
- TOPOGRAPHIC CONTOURS (FEET)
- STREAMS

FIGURE 4



SCALE 1: 31 680	APPR.	DATE
DRAWN T. G. O'NEILL	DATE SEPT. 30, 1982	CHKD.
DRAWING NO.	ADAPTED FROM D.I.A.N.D. CLAIM SHEET 116A/12	SHEET OF

Milchem

MINERAL OPERATIONS

MAP SHOWING CLAIMS COVERED BY 1982 ASSESSMENT WORK INCLUDING TAG NUMBERS, CLAIM NAMES, AND ADJACENT CLAIMS.

composed of either black chert or black siliceous shale with black shale occurring with both the chert and siliceous shale. On the MILK UM Claims barite occurs in black chert of the Canol formation. The barite outcrop measures 3 metres by 1 metre with a specific gravity of 4.0.

The Imperial formation, of upper Devonian to lower Mississippian age, overlies the Canol formation. It consists primarily of fissile black and brown shale, grey argillite, chert grained sandstone. Two subunits occur within the Imperial formation, one composed mainly of chert grained sandstone and one composed of chert conglomerate, volcanic conglomerate, volcanic tuff.

Geochemical sampling on the claims showed little lead or zinc potential for the area. The barite occurrence in the Canol formation is promising, however. If the barite bed can be followed along strike, a large amount of barite could occur with a low stripping ratio.

Recommended further work on the MILK UM Claims is trenching on both ends of the barite outcrop to see if the outcrop extends any distance and if so, what quality and quantity of barite exists.

Property Location

The MILK UM Claims lie at 64°37'N, 137°45'W. They are 30 km east of kilometre 93 on the Dempster Highway, 5 km east of the West Hart River, 7 km south of Lomond Creek. Access to the property is by helicopter from Dawson City, about a 30 minute trip. For our camp the equipment was slung into the claims from a landing area near North Fork Pass on the Dempster Highway. (Figures 1, 2)

Other claim groups in the area are Graps (Cominco), Boyle (Cominco), St. Bridget (Milchem), HPZ (Cordilleran), and Rein (UMEX). (Figure 3)

General Geology

Thirteen separate rock units were identified on or near the MILK UM Claims. The units are composed of rocks belonging to five formations ranging in age from Proterozoic to lower Mississippian. Thrust faulting has rearranged the units from their original stratigraphic order. Normal faults cut the formations in directions perpendicular to the thrust faults. All of the formations examined are warped, folded, and faulted. In general the topography of the area reflects the structure of the rocks.

For this report the thirteen units have been grouped within their respective formations and periods. A geologic map showing the units is in the back pocket of the report.

Proterozoic

Unit A

Unit A lies to the southwest of the MILK UM Claims, on the south side of Halfway Camp Creek. The unit is slightly metamorphosed and consists of green and maroon shales, green and gray chert, black shale.

The unit correlates with rocks identified by Thompson (1982) as Unit IC, a unit of late Proterozoic age. These rocks had previously been identified by Green (1974) as belonging to the Paleozoic Road River formation.

Upper Cambrian to Lower Devonian

Units I; IA: Road River Formation

Unit I lies to the west of the MILK UM Claims. Only Silurian and lower Devonian rocks have been positively identified in the formation.

The unit consists of black shale, black siliceous shale, black chert. A 50 cm bed of black limestone occurs at the top of the unit. The fossil *Monograptus* was found in the upper portion of Unit I.

The siliceous shale beds range from .5 to 7 cm thick. Often interbedded with the siliceous shale is fissile black shale in beds less than 1 cm thick. The black chert is in beds from 2 to 6 cm thick. The chert and siliceous shale range in appearance from argillaceous to highly siliceous. Quartz and calcite veinlets occur in the siliceous shale and chert. Rare pyrite veinlets occur in fissile black siliceous shale near the top of the unit.

Some of the siliceous shale breaks off into shard-like shapes upon weathering. Often weathering surfaces and fracture planes will have a blue hue to them. Lime coatings occur on siliceous shale weathering surfaces. Iron staining occurs on chert and siliceous shale weathering surfaces, some areas being intensely red.

Minor black limestone occurs in 1 to 3 cm thick beds in the unit, as do limestone concretions ranging from 10 x 15 cm to 30 x 60 cm in size.

Unit I is poorly exposed and generally forms low, sloping vegetation covered hills.

Unit IA lies to the north of the MILK UM Claims, on the top and south side of a 1646 metre (5400 foot) mountain.

It consists of a black, fissile, graptolitic shale intermixed with brown and red coarse volcanic flows. The flows range from 2 to 6

metres thick and form bold outcrops, contrasting with the black fissile shale which is only exposed through long, rolling talus slopes. Minor grey dolomite also occurs in the unit.

Unit 1

Unit 1 is a thick bedded grey dolomite formation. It was identified by Green (1974) as Ordovician to Silurian in age and correlates with Norris' (1981) Unit Db of upper Cambrian to lower Devonian in age, an equivalent of the Road River formation.

On the eastern side of the MILK UM Claims Unit 1 is thrust over rocks of the upper Devonian-lower Mississippian Unit IVA. North of the MILK UM Claims the Road River formation (Unit IA) is thrust over Unit 1.

Lower Devonian to Upper Devonian

Units II; IIA; III; IIIA; IIIB; IIIC: The Canol formation.

Six separate manifestations of the Canol formation were observed in the map area.

Unit II is lower to middle Devonian in age, comprising the lower portion of the Canol formation and conformably overlying Unit I. It consists primarily of black siliceous shale in beds 1 to 4 cm thick. Often interbedded with the siliceous shale is fissile black shale in beds less than 1 cm thick. Black chert beds up to 4 cm thick also occur with the siliceous shale. The siliceous shale forms bold sharp outcrops.

Quartz veins and veinlets are common in the siliceous shale and chert with the largest veins up to 4 cm wide. The veinlets rarely exceed 2 mm wide. Rare calcite veins 1 cm thick or less occur in the siliceous shale. In some locations the quartz veins are internally lined with calcite veins.

A greenish-hued volcanic tuff 4.5 metres thick was observed near the base of Unit II west of the map area. Small pyrite crystals are disseminated throughout the tuff and 3 mm wide veins of pyrite and calcite were observed.

A barite horizon lies near the top of Unit II with all known outcrops west of the map area. The outcrops occur sporadically along the horizon, ranging up to 4.6 metres thick. Minor limestone beds less than 2 cm thick and limestone nodules up to 20 cm in diameter also occur in Unit II.

Unit IIA consists of black siliceous shale in beds up to 1.5 cm thick with black shale interbeds 2 mm thick or less. Weathering

surfaces of the black siliceous shale are banded in dark and light bluish-black 1 cm thick bands. Minor quartz veining occurs in the siliceous shale, with veins up to 1 cm wide.

Unit IIA has a small outcrop area, mostly consisting of float measuring 5 x 7 cm in size. The unit is bordered by a thrust fault on the north and is cut on the west by a normal fault perpendicular to the thrust fault. Unit IIA conformably underlies Unit IIIA and is lower to middle Devonian in age.

Unit III

The black siliceous shale of Unit II grades into a massive black chert, Unit III. Unit III is middle to upper Devonian in age. Interbeds of siliceous shale up to 1 metre thick are common near the base of the black chert. The chert occurs in either massive form or in a rudely bedded fashion with beds between 2 and 12 cm thick. Although the chert is a resistant unit, its lack of structure makes for poor outcrops and the unit usually forms large gradual vegetation covered slopes.

The chert ranges in appearance from argillaceous to siliceous. It sometimes weathers with a bluish hue and sometimes has iron staining on weathering surfaces. In some areas the chert is highly fractured, folded, and warped.

Unit IIIA is a massive black chert unit that exhibits no bedding and generally forms a structureless mass. It occurs in two different locations, one on the northwest side of the MILK UM Claims, one conformably overlying Unit IIA on the east side of the MILK UM Claims. Unit IIIA is middle to upper Devonian in age.

The unit is a dense glossy black, and generally has a conchoidal fracture. Float from the unit is somewhat rounded and averages 6 cm in diameter. Quartz and calcite veinlets occur in the chert. Some quartz veins were seen that measured up to 6 cm wide.

Unit IIIB is the main unit of the MILK UM Claims. It consists of structureless black chert, with minor interbeds of limestone conglomerate and minor black argillite. The chert appears argillaceous, having a dull black luster and vague blocky fracture. The chert forms long ridges and outcrops fairly frequently. A barite outcrop occurs in the chert.

Unit IIIB is middle to upper Devonian in age. It is bounded on the north and west by a thrust fault, and on the east by a normal fault that separates Unit IIIB from Unit IIA. Unit IVB conformably overlies Unit IIIB on the south border of the unit.

Unit IIIC is composed of black chert, massive or bedded; black argillite; black siliceous shale.

The black siliceous shale beds range up to 1.5 cm thick. The bedded chert beds are between 2 and 6 cm thick. Some of the black siliceous shale is calcareous in nature, in beds 1 cm thick or less.

Quartz veins up to 6 cm thick occur in the black chert, quartz veinlets up to 2 mm thick occur in the siliceous shale. Calcite veins are often intermixed with the quartz veins.

Unit IIIC is middle to upper Devonian in age. It is bounded by thrust faults on its north and south sides, and is overlain by Unit IV, occupying the same stratigraphic position as Units IIIA and III. Unit IIIC occurs only as a backslope and is covered by dense vegetation, resulting in few actual outcrops of the unit.

Upper Devonian to Lower Mississippian

Units IV; IVA; IVB: Imperial formation.

Unit IV and its two subunits, IVA and IVB, are upper Devonian to lower Mississippian in age. These units can be correlated to the Imperial formation mapped by Norris (1979) in the Richardson Mountains, particularly the chert grained sandstone. Other upper Devonian chert grained sandstones have been observed by the writer near the Yukon-Alaska border.

Unit IV conformably overlies Units III, IIIA, IIIC of the Canol formation. Unit IV generally forms sharp high peaks with near vertical slopes. In the area mapped, every occurrence of Unit IV has at least one peak of 1585 metres (5200 feet).

Unit IV is primarily composed of dense interbedded fissile black and brown shale and grey argillite. Chert grained sandstone also commonly occurs in Unit IV. The shale beds are paper thin and occur in accumulations from a few centimeters to six metres thick. Quartz veins up to 30 cm wide occur in the grey argillite.

Also in Unit IV are minor occurrences of red vesicular tuff in 6 metre beds; thin bedded limestone in beds 1 to 3 cm thick; buff to tan volcanic conglomerate; and quartzite in single beds 1 to 5 cm thick.

Units IVA and IVB are actually subunits of Unit IV.

Unit IVA consists primarily of chert grained sandstone identical to that found in Unit IV.

The chert grained sandstone is pyritiferous, usually weathering red, and ranges from a sometimes banded fine grained material to a coarse conglomeratic type rock. Bedding ranges from 1 to 6 cm thick. Some of the more conglomeratic material has a lime nature, while some of the chert grained sandstone is highly siliceous. West of the map area two occurrences of turbidites occur in Unit IVA. The turbidites consist mainly of limestone and chert fragments in a lime matrix. Red volcanic tuff also occurs sporadically with the chert grained sandstone.

Unit IVB consists of chert conglomerate, volcanic conglomerate, and red to brown vesicular tuff. The chert conglomerate has material ranging in size from a couple millimeters to a couple centimeters in size. Some of the chert grained conglomerate has a lime matrix. The vesicular tuff occurs sporadically in beds 1.5 metres thick.

Units IVA and IVB have no apparent bedding and generally form bold outcrops. Unit IVA conformably overlies Unit IIIA. Unit IVB conformably overlies Unit IIIB. West of the map area Unit IVA occurs entirely within Unit IV.

Barite Occurrence

One barite outcrop occurs on the MILK UM Claims. A light grey bed of barite occurs in the black chert of Unit IIIB. The barite is massive in nature with no laminations or witherite inclusions, contrasting with other barite occurrences in the Lomond Creek area. The outcrop measures 3 metres long by 1 metre thick. Localized warping of the chert in the area of the barite bed gives the barite a near vertical dip and several slight warps along strike. Both ends of the barite disappear below talus and vegetation. A sample from the barite bed had a specific gravity of 4.0.

Geochemical Sampling

Ten stream sediment samples were collected at 200 metre intervals along the main drainage from the MILK UM Claims. Sample locations are shown in Figure 5, sample results in Figure 6.

The ten samples were tested for lead, zinc, and barium by atomic absorption. Lead values ranged from 8 to 20 ppm, averaging 14.1 ppm. Zinc values ranged from 375 to 2140 ppm, averaging 1282.5 ppm. Barium values ranged from 200 to 2350 ppm, averaging 717.5 ppm.

A regional geochemical sampling program in 1981 established threshold and median values for the black siliceous shale and black chert assemblage occurring on the MILK UM Claims. Regional threshold values were 28 ppm for lead, 1480 ppm for zinc, 1200 ppm

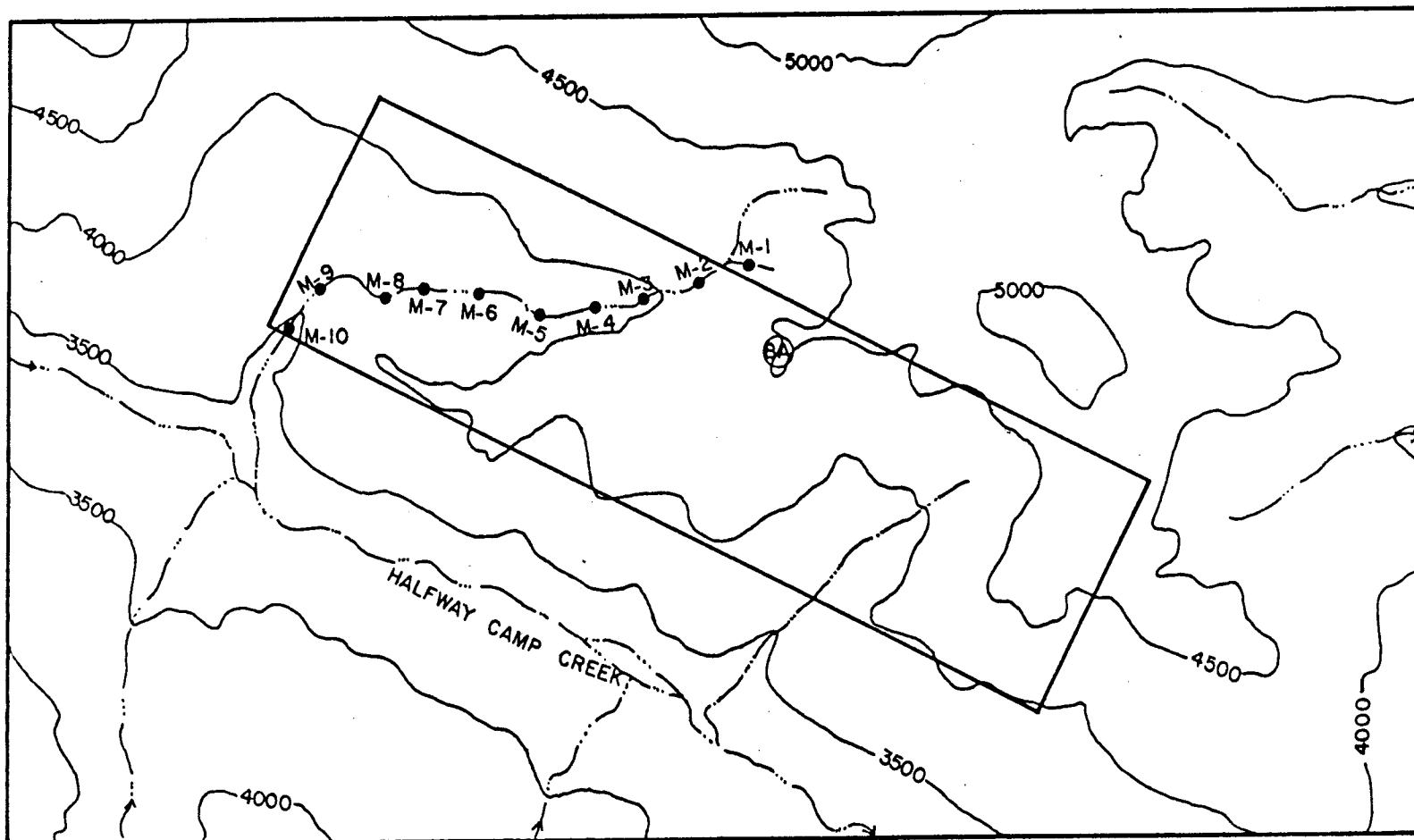







FIGURE 5

Milchem
MINERAL OPERATIONS

1982 GEOCHEM SAMPLE LOCATIONS

EXPLANATION

-  CONTOUR LINE
-  STREAM
-  MILK UM CLAIMS
-  GEOCHEMICAL SAMPLE SITE
-  BARITE LOCATION

N
↑
CONTOUR INTERVAL
500 ft (152.4 M)



SCALE 1:25 000	APPR.	DATE
DRAWN TON & TVB	DATE OCT. 4, 1982	CHKD.
DRAWING NO.	ADAPTED FROM N.T.S. SHEET 116 A/12	SHEET OF

1982 Sample Data

<u>Sample No.</u>	<u>Pb (ppm)</u>	<u>Zn (ppm)</u>	<u>Ba (ppm)</u>	<u>Regional Data</u>		
M1	14	1010	2350	<u>Medians</u>		
M2	20	1450	475	<u>Pb</u>	<u>Zn</u>	<u>Ba</u>
M3	16	900	750	15.44	482.9	554.5
M4	11	1325	650	<u>Thresholds</u>		
M5	10	1375	800	<u>Pb</u>	<u>Zn</u>	<u>Ba</u>
M6	10	1850	475	28	1480	1200
M7	8	975	200			
M8	14	2140	450			
M9	20	1425	750			
<u>M10</u>	<u>18</u>	<u>375</u>	<u>275</u>			
Sample mean	14.1	1282.5	717.5			

FIGURE 6

Milchem	
MINERAL	OPERATIONS
1982 SAMPLE DATA	

SCALE	APPR.	DATE
DRAWN T.V. Boruta	DATE Oct. 5, 1982	CHKD.
DRAWING NO.	SHEET	OF

14

for barium. Median values were 15.4, 482.9, 554.5 ppm for lead, zinc, and barite respectively.

None of the lead values were over the 28 ppm threshold value. Two samples (20%) had zinc values over the regional threshold of 1480 ppm. One (10%) sample had a barium value over the threshold of 1200 ppm.

40% of the samples had values over the regional median of 15.44 ppm. 90% of the samples had zinc values over the median of 482.9 ppm. 50% of the samples had barium values over the regional median of 554.5 ppm.

Costs Incurred

The geologic mapping of the area on and near the MILK UM Claims was carried out from July 11 to July 16, 1982.

The following expenses were incurred within the Yukon Territory in performing the geologic survey and preparing the report:

Wage of Thomas Naughten, Geologic Assistant, 5 days	322.58
Workmen's Compensation fees for Thomas Naughten	27.27
Wage and benefits for Timothy G. O'Neill, Geologist, 5 days	538.99
Food purchased for camp	117.43
Transportation of camp and crew by helicopter	1,700.00
Expediting fees paid to Resources Expediting, 5 days	100.00
Analysis of geochem samples by Bondar Clegg, Whitehorse	<u>64.50</u>
Subtotal	\$2,870.77

The following expenses were incurred outside the Yukon Territory in compiling maps and plans and preparing the report:

Wage of Thomas Boruta, Draftsman, for drafting work	26.40
Wage of Timothy G. O'Neill, Geologist, for drafting work and report preparation	1,278.97
Map reproduction expense	<u>33.00</u>
Subtotal	\$1,338.37

Total expenditures for performing the geologic survey and preparing the report are \$4,209.14. This amount if being applied to the 14 MILK UM Claims covered by this report, amounting to \$300.65 per claim.

Analysis and Conclusions

The MILK UM Claims cover an area that is part of the western arm of the Selwyn Basin. The Imperial formation, Canol formation, Road River formation, and Unit A are all basin type formations. Unit 1 is a platform type deposit and has been thrust into the basin assemblage.

The barite outcrop on the MILK UM Claims shows potential. If the bed continues for a reasonable distance in either direction along strike a large amount of barite could occur. The barite is fairly pure with a specific gravity of 4.0, and the area would have a low stripping ratio.

The results from the stream sediment samples were disappointing. Although two of the ten samples had anomalous zinc values, no identifiable anomalous area can be outlined. The same goes for the lead values, none of which were anomalous. No gossans or areas of intense iron staining were observed on the property. The MILK UM Claims appear to have little chance of a lead-zinc occurrence.

Recommendations

The barite occurrence on the property should be examined more thoroughly. Trenching should be done along the strike of the barite bed to determine what quantity and quality of barite occurs below the talus and vegetation cover. Trenches of at least 300 metres in either direction from the outcrop are recommended.

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STATEMENT OF QUALIFICATION

I, Timothy G. O'Neill state that I am a practicing geologist duly qualified to perform geologic investigations of the type contained in this report.

I have worked in a professional capacity as a geologist since 1978. I am currently employed as Senior Geologist with Milchem Incorporated, 3920 Essex Lane, Houston, Texas, 77027. I received a Bachelor of Science in Geology and Geophysics from the University of Missouri at Rolla, Rolla, Missouri, in 1976. Additional schooling in geological engineering was received at the University of Arizona, Tucson, Arizona in 1977-78.

Relevant experience has included Mine Geologist at the Rossi barite mine, Battle Mountain, Nevada; Regional and local geologic mapping in Yukon and British Columbia, Canada, Nevada, Wyoming, Montana, North Dakota, Idaho, Texas, United States; Geochemical sampling programs in Yukon.

I am currently a member of the Society of Mining Engineers of A.I.M.E.

EXPLANATION

- TOPOGRAPHIC CONTOUR
- STREAM/RIVER
- STRIKE & DIP
- MILK UM CLAIM BOUNDARY
- ROCK UNIT CONTACT
- FAULT
- THRUST FAULT
- BARITE OUTCROP
- CROSS SECTION LINE
- LIMIT OF GEOLOGIC MAPPING

UPPER PROTEROZOIC

UNIT D: GREEN AND MAROON SHALES;
GREEN AND GREY CHERT, BLACK SHALE.

UPPER CAMBRIAN TO LOWER DEVONIAN

ROAD RIVER FM.

UNIT I: BLACK SILICEOUS SHALE;
BLACK CHERT; BLACK SHALE;
MINOR BLACK LIMESTONE;
LIMESTONE NODULES.

UNIT I A: BLACK SHALE; RED AND BROWN
VOLCANIC FLOWS

UNIT 1: GREY DOLOMITE

GEOLOGIC UNITS

LOWER DEVONIAN TO UPPER DEVONIAN

CANOL FM.

UNIT II: QUARTZ VEINED BLACK SILICEOUS
SHALE, MINOR BLACK SHALE;
BARITE; MINOR BLACK CHERT;
MINOR VOLCANIC TUFF.

UNIT II A: BLACK SILICEOUS SHALE,
WEATHERS IN BANDED FASHION.

UNIT II B: BLACK SILICEOUS SHALE;
BLACK SHALE.

UNIT II C: BLACK STRUCTURELESS CHERT
SILICEOUS SHALE; BLACK SHALE.

UNIT III A: BLACK STRUCTURELESS CHERT

UNIT III B: DULL BLACK CHERT, CONTAINS BARITE

UNIT III C: BLACK CHERT, MASSIVE OR BEDDED,
BLACK ARGILLITE; BLACK SILICEOUS
SHALE.

UPPER DEVONIAN TO LOWER MISSISSIPPIAN

IMPERIAL FM.

UNIT IV: FISSILE BLACK AND
BROWN SHALE, CHERT
GRAINED SANDSTONE;
MINOR RED TUFF, LIMESTONE,
VOLCANIC CONG.,
QUARTZITE.

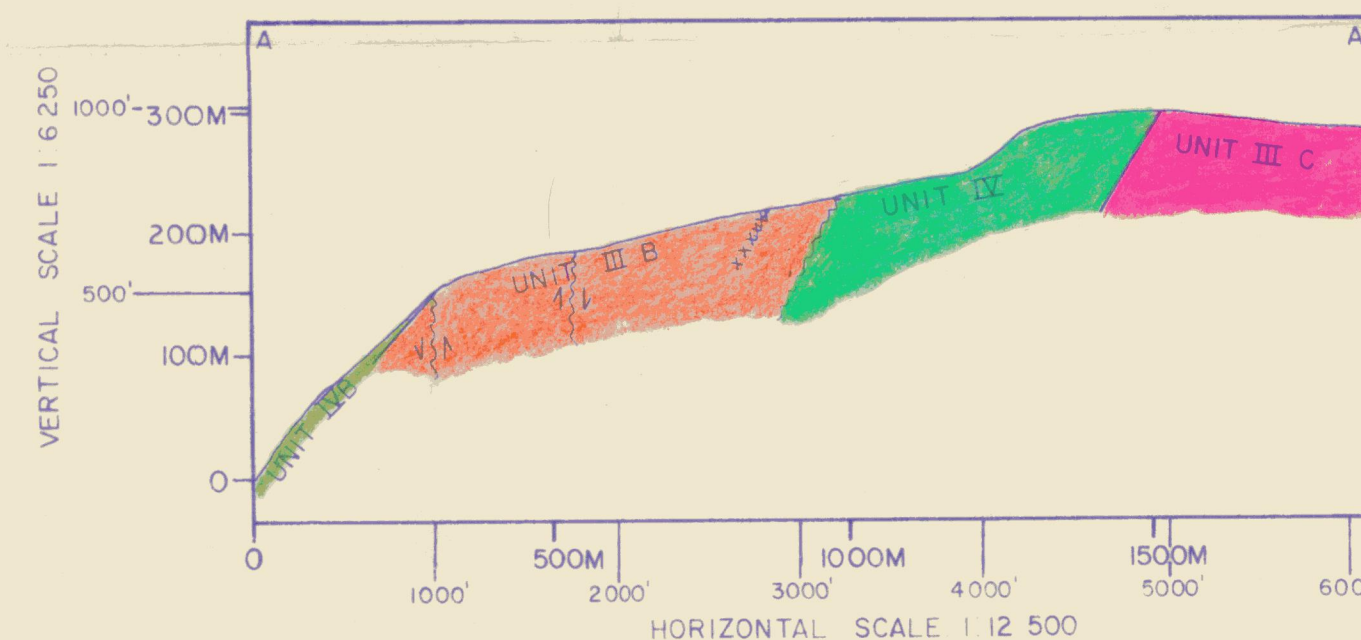
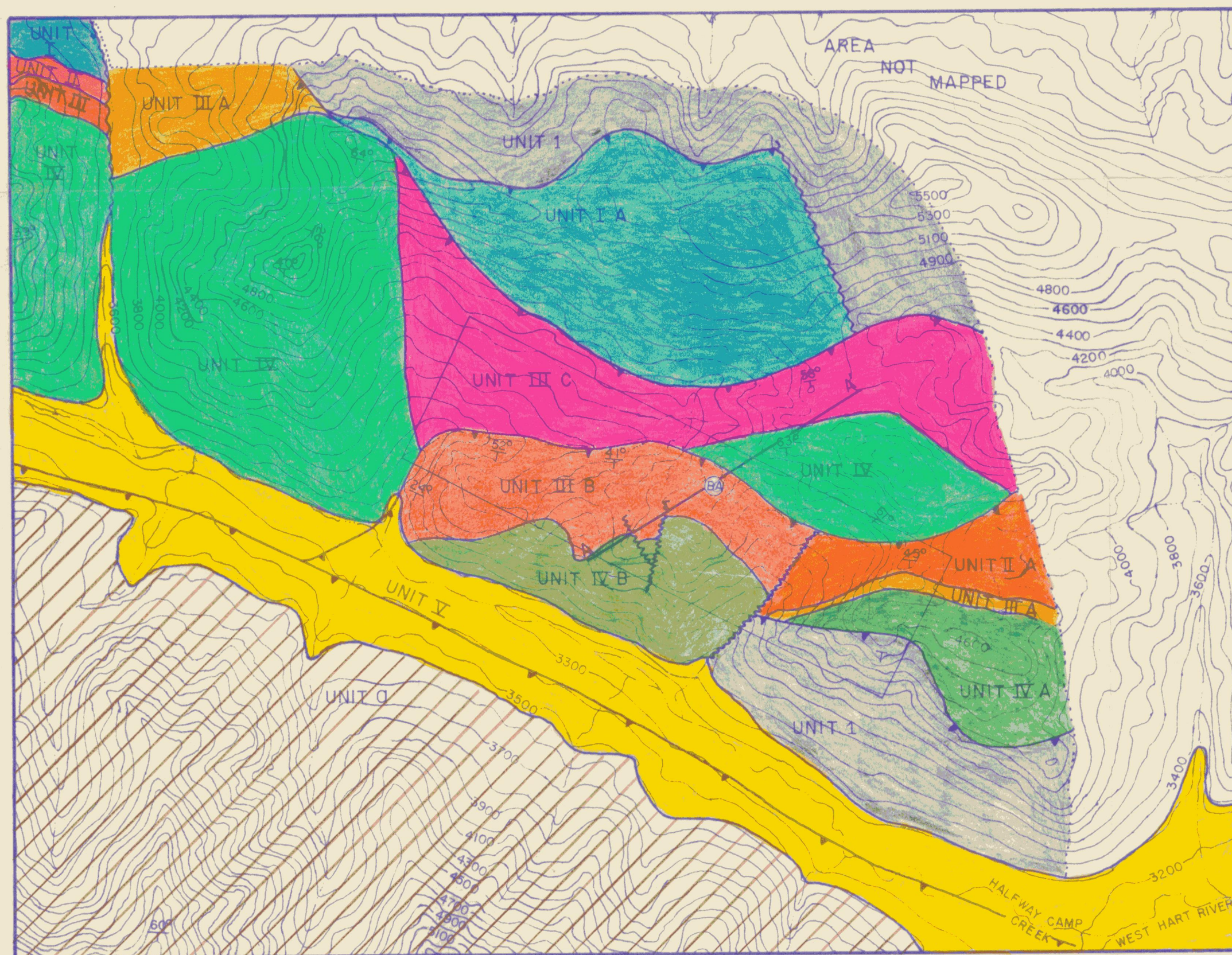
UNIT IV A: CHERT GRAINED SANDSTONE;
MINOR RED TUFF, TURBIDITES.

UNIT IV B: CHERT CONG. VOLCANIC CONG.,
RED TO BROWN TUFF.

QUATERNARY

UNIT V: ALLUVIUM

GEOLOGIC MAP, MILK UM CLAIMS



CROSS SECTION A-A'

EXPLANATION

- BARITE
- FAULT
- ROCK UNIT CONTACT



CONTOUR INTERVAL 100 FT (30.48M)

SCALE: 1:25 000



Milchem 091381		
MINERAL	OPERATIONS	
GEOLOGIC MAP AND CROSS SECTION MILK UM CLAIMS, YUKON TERRITORY		
SCALE	APPR	DATE
DRAWN T. G. O'NEILL	DATE OCT. 14, 1982	CHKD
DRAWING NO	PLATE ONE	SHEET OF