

GEOPHYSICAL REPORT
AIRBORNE MAGNETOMETER SURVEY
OF JOE, B AND N MINERAL CLAIMS
OF KUTCHO CREEK ASBESTOS COMPANY LIMITED
CRY LAKE AREA - MAPS 1041/7E and W (M)
58 DEGREES 128 DEGREES SE
IN LIARD MINING DIVISION
BRITISH COLUMBIA

BY *104 I/7E*
PAUL S. WHITE
FOR
CASSIAR ASBESTOS CORPORATION LIMITED

DATES OF SURVEY:
JUNE 10 to 14, INCLUSIVE, 1967
REPORT DATE: 12 SEPTEMBER 1967

1076

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Map Folder contents

- Map 1 ~~#.1~~.....Sheet 1 - Magnetic Contour Kutcho Creek Area.
Map 2 ~~#.2~~.....Sheet 2 - Magnetic Contour Kutcho Creek Area.
Map 3 ~~#.3~~..... Topographic and Location Map -Cry Lake Sheet 104I

APPENDIX

APPENDIX IAPPLICATION FOR GEOPHYSICAL ASSESSMENT WORK

REPORT ON KUTCHO CREEK MAGNETIC SURVEYINTRODUCTION:

In March 1967 the Cassiar Asbestos Corporation requested that Paul S. White P.Eng., (Mining) carry out a reconnaissance survey using airborne magnetometer equipment of the JOE, B and N Mineral claims and 28 Crown-granted Mineral Claims held by Kutcho Creek Asbestos Company Limited in the Cry Lake Area - Maps 1041/7E and W (M) 58 degrees 128 degrees SE in Liard Mining Division, British Columbia, which claims are listed as follows:

JOE 1 - 56	Record Nbr.	21975-22030
JOE 58 - 144	Record Nbr.	22031 - 22117
JOE 145-236	Record Nbr.	24806-24897
N 1 - 28	Record Nbr.	19482 - 19509
N 30- 41	Record Nbr.	19510 - 19521
B 5 - 20	Record Nbr.	19466 - 19481

28 CROWN GRANTS AS FOLLOWS:

<u>NAME</u>	<u>LOT NUMBER</u>	<u>NAME</u>	<u>LOT NUMBER</u>
A - 1	6426	RIDGE 7	6421
A - 2	6427	RIDGE 8	6422
A - 3	6428	RIDGE 9	6423
A - 4	6515	RIDGE 10	6424
A - 5	6516	RIDGE 11	6425
A - FR	6697	BOB 1	6517
RIB - 1	6413	BOB 2	6518
RIB - 2	6414	BOB 3	6519
RIB - 3	6415	BOB 4	6693
RIB - 4	6416	BOB 5	6694
RIB - 5	6417	BOB FR	6695
RIB - 6	6418	REX FR	6696
RIB - 1 FR	6419	TENT FR	6698
RIB - 2 FR	6420	TON FR	6699

Mr. White was commissioned to act as consultant and prime contractor in the performance of the survey. Mr. White

selected the method of survey as a helicopter borne Varian magnetometer survey for the purpose of outlining target areas for follow-up ground investigation during the 1967 summer field season, and engaged the following companies to participate in the performance of the survey:

- a) Coast Range Airways Limited.
- b) Chapman, Wood & Griswold Ltd.
- c) Exploration Geophysics (Yukon) Ltd.
- d) White, Hosford & Impey Ltd.

The duties of the various companies are described in the later section of this report titled "PERSONNEL".

The survey was scheduled for early June and in fact took place between the dates June 11th and June 14th 1967.

LOCATION OF SURVEY AND MINERAL CLAIMS

The magnetic survey covered the JOE, B and N mineral claims and 28 Crown-granted mineral claims which are located in a topographically high area lying approximately 4 miles N.E. of King Mountain at approximately Latitude 58 degrees 20 minutes North and Longitude 128 degrees 45 minutes West on the Cry Lake sheet 104 I in the Liard Mining Division of British Columbia. The mineral claims surveyed are shown in relation to the survey on Maps 1 & 2 in the appendix accompanying this report. A copy of the Cry Lake map sheet No. 104 I is also included in the Appendix as Map 3.

GEOLOGY OF PROSPECT AREA

The area shown, as shown in Maps 1 & 2, is underlain by argillites, chert arenites, limestones and greenstones of the Sylvester formation of Upper Devonian to Lower Mississippian age intruded by serpentized peridotites and diorites of possibly Lower Jurassic age.

The sedimentary and volcanic rocks form a conformable assemblage, striking northwesterly and dipping moderately to the northeast. In general the southwestern part of the area shown is occupied by sedimentary rocks and the northeasterly portion by volcanics of andesitic composition.

An irregular zone of serpentine, roughly 7 miles long by 2 miles wide, intrudes the country rocks approximately along the contact between sediments and volcanics. This body is essentially sill-like, striking northwesterly and dipping about 45 degrees to the northeast. Irregular apophyses extend to the southwest and to the southeast from the main body. An isolated small stock of serpentine is emplaced beside a cirque lake about one mile north of the main body. Associated small stocks of fine-grained diorite cut the serpentine or are marginal to it. Isolated roof-pendants of country rocks have been converted to gneisses, schists or marbles within the serpentine.

The serpentine is well jointed, in regular patterns and compound cross-fibre veinlets of chrysotile asbestos locally occupy the joints, some in potentially commercial concentrations. Compositional differences and varying magnetite content within the serpentine result in differential weathering patterns, the color

GEOLOGY OF PROSPECT AREA (cont)

changing from light yellow through to brown. Some of the banding is transverse to the trend of the serpentine. This probably also accounts for variations in the aeromagnetic patterns.

The serpentine and the volcanic rocks occupy the high central portion of the area flown, while the slopes are increasingly covered by talus and glacial drift peripherally. Some of this debris contains large accumulations of serpentine boulders, which have resulted in small aeromagnetic anomalies, especially in the vicinity of Wolverine Lake.

NOTE: Geology described supplied by W. Plumb, Chief Geologist, Cassiar Asbestos Corporation.

EQUIPMENT USED FOR SURVEY

A Bell 47G-3B1 helicopter (CF-UFC) with pilot and engineer was supplied by Coast Range Airways Ltd. of Atlin B.C. after the helicopter's power supply was adapted to receive the electrical connections of the Varian magnetometer used.

The magnetometer was supplied, with operator-navigator, by Chapman, Wood and Griswold Ltd, Consulting Geologists and Engineers of Vancouver B.C. The instrument used was a Varian Associates of Palo Alto, California, Model V 4937 Proton magnetometer of airborne configuration. This magnetometer utilizes proton free precession to measure and record absolute total intensity of Earth's magnetic field. A phase lock circuitry multiplies precession frequency for direct gamma readout using an analog strip chart recorder. The instrument's range is one hundred thousand gammas with sensitivity of plus or minus one gamma.

Navigation of the flight lines was visual and was recorded in flight by the navigator - operator on aerial photo mosaics.

REPORT ON KUTCHO CREEK MAGNETIC SURVEY (cont)

5.

PERSONNEL

<u>COMPANY NAME</u>	<u>FUNCTION</u>	<u>NAME</u>
Chapman, Wood & Griswold Ltd	Engineer Navigator Operator	P.H. Blanchet P. Eng.
Coast Range Airways Ltd.	Pilot Engineer	C. Ford
Exploration Geophysics (Yukon) Ltd.	Data Reduction Final plotting	J.S. Brock, B.Sc Geophysicist
White, Hosford & Impey Ltd.	Initial plotting Expediter	D. Gamble
	Consultant and Prime Contractor	P.S. White P. Eng
Cassiar Asbestos Corporation	Client and Consulting Geologist	W. Plumb P. Eng.

SURVEY PERFORMANCE

The survey was scheduled for early June performance and all personnel met in Whitehorse on June 10, 1967. Liaison was completed and all personnel left for the D. of T. camp at Dease Lake where a supply of gas had been established. The magnetometer was installed in the helicopter on June 11th and the reconnaissance flight of the area made that day. The actual survey work was performed on June 11th, 12th, 13th and 14th. The total helicopter hours exclusive of ferry time from Atlin to Dease Lake and return were 15.6 hrs. The total mileage flown obtaining usable magnetic readings was 288.0.

The location of the flight lines are shown on Maps 1 & 2. flight lines were parallel for the most part and spaced from 1000 feet to 1320 feet apart, running in a northeasterly and southwesterly pattern. The results were plotted on Maps 1 & 2

REPORT ON KUTCHO CREEK MAGNETIC SURVEY (cont)

6.

SURVEY PERFORMANCE (cont)

at a scale of 1000' = 1 inch, and contoured at intervals of 200 gammas to give the magnetic contours shown on Maps 1 & 2

The reduction of field data was performed once by P.H. Blanchet and D.Gamble in the field to give a preliminary work map for area exploration analysis, and the results of the first reduction were plotted in Whitehorse between June 15th and June 21st. These work maps were sent with the strip charts of magnetic readings to Mr. J.S.Brock, a graduate of the University of British Columbia in Geophysics, who with Mr. White made a final data reduction and finished map of the survey. Mr. Brock is a director and consultant to a geophysical contracting company of Whitehorse Yukon = Exploration Geophysics (Yukon) Ltd.

RESULTS OF SURVEY

The survey results are shown in Contour Form on Maps 1 & 2. Values are shown in 200 gamma intervals and represent total intensity of the Earth's magnetic field. The following areas of High Magnetic intensity were delineated:

<u>FIDUCIAL POINT</u>	<u>FLIGHT LINE</u>	<u>PEAK READING</u>
1017 - 1018	40	5000+
1027 +	38	4800+
414	29	6400+
277	25	6200+
242 - 243	22	6000+
187 +	18	4600+
130	16	6000+
106	12	6200+
105	12	6000+
76-77	10	6000+
63-64	9	9000+
47	7	6000+
46	7	7200+
12	3	7000+
18 +	4	5000+

RESULTS OF SURVEY (cont)

Magnetic highs indicate existence of what is believed to be highly serpentized areas worthy of further prospecting.

SUMMARY AND CONCLUSIONS

The magnetic survey of the JOE, B and N, and 28 Crown-granted mineral claims was under-taken by Paul S. White (White, Hosford and Impey Ltd.) on behalf of Cassiar Asbestos Corporation and performed between June 11th and June 14th 1967. The survey covered the area shown on Maps 1 and 2, and was accomplished by obtaining usable results from 288.0 line miles of helicopter borne magnetometer readings. The expenditures as shown by affidavit accompanying this report were in total the amount of \$ 8843.20 which expenditures covered all charter helicopter charges, consulting fees to Chapman, Wood and Griswold Ltd. (including magnetometer rental), all field expenses for travel and subsistence for personnel, data reduction and interpretation by Exploration Geophysics (Yukon) Ltd, and White, Hosford and Impey Ltd.

The mapped magnetic results showed areas of high magnetic response which will be evaluated for further exploration by the client.

Respectfully submitted this 12th day
of SEPTEMBER A.D. 1967.



Paul S. White P.Eng. (Mining)
(Yukon and Alta.)

AFFIDAVIT OF EXPENDITURES


I, PAUL S. WHITE, ENGINEER OF THE CITY OF WHITEHORSE IN THE YUKON TERRITORY, MAKE OATH AND SAY:

THAT I HAVE CAUSED TO BE PERFORMED AN AIRBORNE MAGNETOMETER GEOPHYSICAL SURVEY OF THE JOE, B AND N, AND 28 CROWN-GRANTED MINERAL CLAIMS BETWEEN THE DATES OF JUNE 11th AND JUNE 14th, A.D. 1967, AND THAT I HAVE RECEIVED MONIES IN THE SUM OF \$ 8843.20 (EIGHT THOUSAND EIGHT HUNDRED AND FORTY THREE DOLLARS AND TWENTY CENTS) FROM THE CASSIAR ASBESTOS CORPORATION OF CASSIAR B.C. TO COVER THE COSTS OF SAID SURVEY, WHICH MONIES I HAVE FULLY EXPENDED TO COVER THE HELICOPTER CHARGES, GEOPHYSICAL EQUIPMENT RENTAL CHARGES, SUBSISTENCE CHARGES, CONSULTING FEES AND HELICOPTER FUEL COSTS DIRECTLY ASSOCIATED WITH THE SAID SURVEY.


P.S. WHITE

SWORN BEFORE ME AT THE CITY OF WHITEHORSE

IN THE YUKON TERRITORY THIS 11th DAY OF SEPTEMBER A.D. 1967


NOTARY PUBLIC FOR THE YUKON TERRITORY

STATEMENT OF QUALIFICATIONS

I, PAUL S. WHITE, ENGINEER, OF THE CITY OF WHITEHORSE IN THE YUKON TERRITORY, HEREBY DECLARE MY QUALIFICATIONS AND RESPONSIBILITIES IN THE MATTER OF THE AIRBOENE GEOPHYSICAL SURVEY DESCRIBED IN THE ACCOMPANYING REPORT:

- 1) I AM A GRADUATE IN APPLIED SCIENCE IN MINING ENGINEERING WITH GEOPHYSICS OPTION HAVING OBTAINED THE DEGREE OF BACHELOR OF APPLIED SCIENCE IN MINING ENGINEERING (B.A.Sc.Mining) FROM THE UNIVERSITY OF BRITISH COLUMBIA IN 1956.
- 2) I RESIDE AT BOX 1188, CITY OF WHITEHORSE IN THE YUKON TERRITORY, AND AM A PROFESSIONAL ENGINEER(Mining), DULY REGISTERED IN THE ASSOCIATION OF PROFESSIONAL ENGINEERS OF THE PROVINCE OF ALBERTA AND THE ASSOCIATION OF PROFESSIONAL ENGINEERS OF THE YUKON TERRITORY.
- 3) I AM MANAGING DIRECTOR OF WHITE, HOSFORD & IMPEY LTD., THE PRIME CONTRACTORS FOR THE PERFORMANCE FOR THE SURVEY REFERRED TO BY THIS REPORT, AND THE MANAGING DIRECTOR OF EXPLORATION GEOPHYSICS (YUKON) LTD. WHO PERFORMED THE FINAL MAGNETIC DATA REDUCTION FOR THE SAID SURVEY.
- 4) I HAVE BEEN ENGAGED IN THE PERFORMANCE OF GEOPHYSICAL SURVEYS SINCE DECEMBER 1957.

Signed this th 11 day of SEPTEMBER
A.D. 1967 at Whitehorse, Yukon


Paul S. White P. Eng

APPLICATION OF GEOPHYSICAL ASSESSMENT WORKGROUP VI - 21 CLAIMS

<u>NAMES</u>	<u>NO. OF CLAIMS</u>	<u>RECORD NUMBERS</u>
JOE 161, 163	2	24822, 24824
JOE 184 TO 189	6	24845 TO 24850
JOE 191	1	24852
JOE 220 TO 222	<u>3</u>	24881 TO 24883
	12	

APPLY 3 YEARS EACH = $12 \times 3 = 36$ CLAIM YEARS

JOE 162, 164	2	24823, 24825
JOE 190	1	24851
JOE 192 TO 194	3	24853 TO 24855
JOE 217 TO 219	<u>3</u>	24878 TO 24880
	9	

APPLY 2 YEARS EACH = $9 \times 2 = 18$ CLAIM YEARS

GROUP VIII - 25 CLAIMS (SEE GEOLOGICAL REPORT ALSO)

<u>NAMES</u>	<u>NO. OF CLAIMS</u>	<u>RECORD NUMBERS</u>
N-2,4,6,8,10,12	6	19483, 19485, 19487, 19489, 19491, 19493
B-5 TO 8	<u>4</u>	19466 TO 19469
	10	

APPLY 2 YEARS EACH = $10 \times 2 = 20$ CLAIM YEARS

GROUP IX - 34 CLAIMS (SEE GEOLOGICAL REPORT ALSO)

<u>NAMES</u>	<u>NO. OF CLAIMS</u>	<u>RECORD NUMBERS</u>
N-13	1	19494
B 11,12,13,15,17,19	6	19472, 19473, 19474, 19476, 19478, 19480
	<u>7</u>	

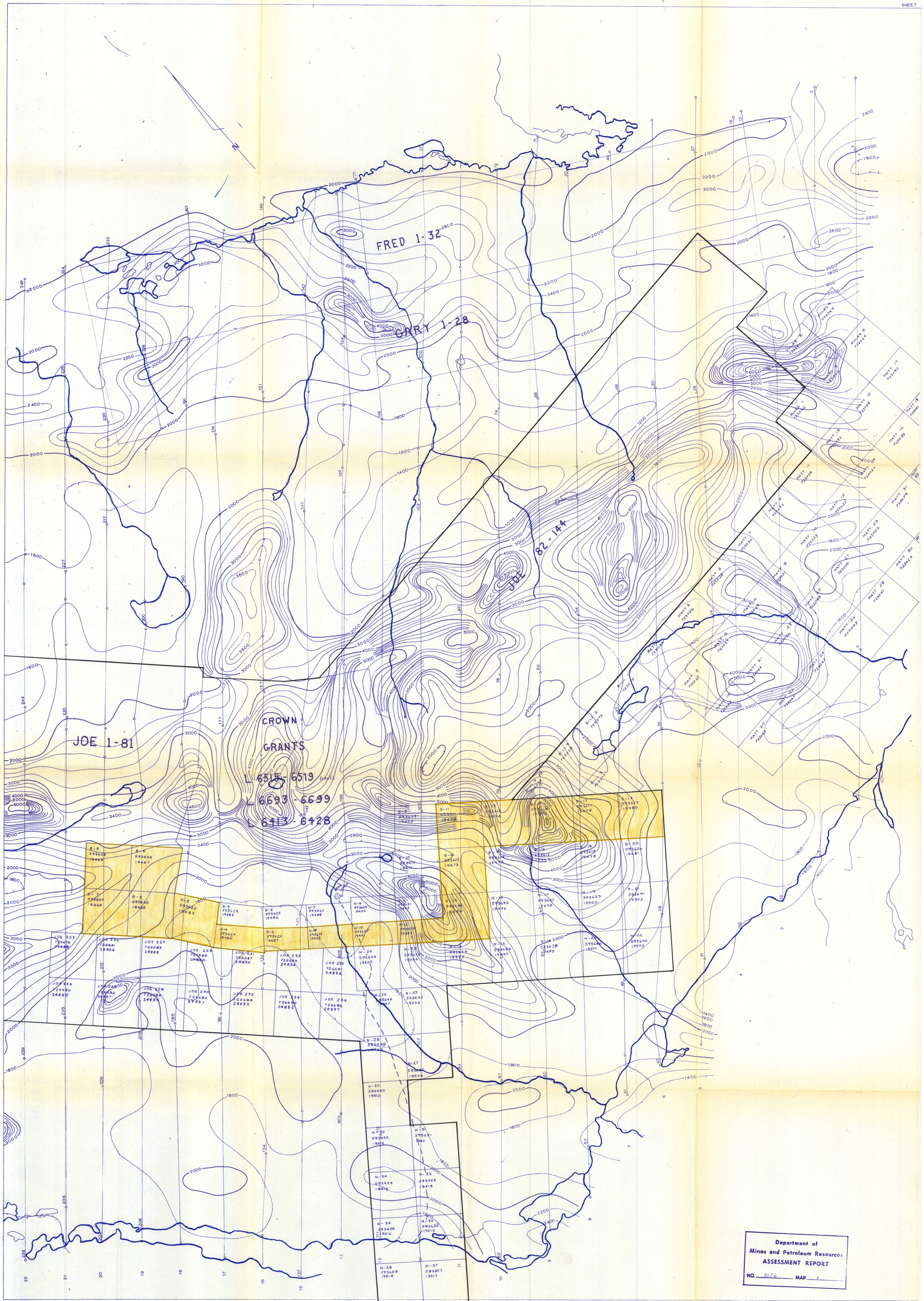
APPLY 2 YEARS EACH = $7 \times 2 = 14$ CLAIM YEARS

SUMMARY - KUTCHO CREEK ASSESSMENT WORK - SEPT. 22, 1967

<u>WORK DONE</u>	<u>VALUE</u>	<u>ASSESS YEARS</u>
GEOPHYSICAL (AEROMAGNETIC) ^{SURVEY} STUDY	\$ 8,800	88
GEOLOGICAL	<u>24,800</u>	<u>248</u>
	\$ 33,600	336

WORK TO BE APPLIED

<u>GROUP</u>	<u>No. OF CLAIMS</u>	<u>ASSESSMENT YEARS</u>		
		<u>GEOPHYSICAL</u>	<u>GEOLOGIC</u>	<u>TOTAL</u>
V	29		29 x 2 = 58	58
VI	21	12 x 3 = 36 9 x 2 = <u>18</u> 54		54
VII	37		22 x 3 = 66 15 x 2 = <u>30</u> 96	96
VIII	25	10 x 2 = 20	5 x 3 = 15 10 x 2 = <u>20</u> 35	55
IX	34	7 x 2 = 14	5 x 3 = 15 22 x 2 = <u>44</u> 59	73
<u>TOTALS</u>	<u>146</u>	<u>88</u>	<u>248</u>	<u>336</u>



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 1076 MAP 1

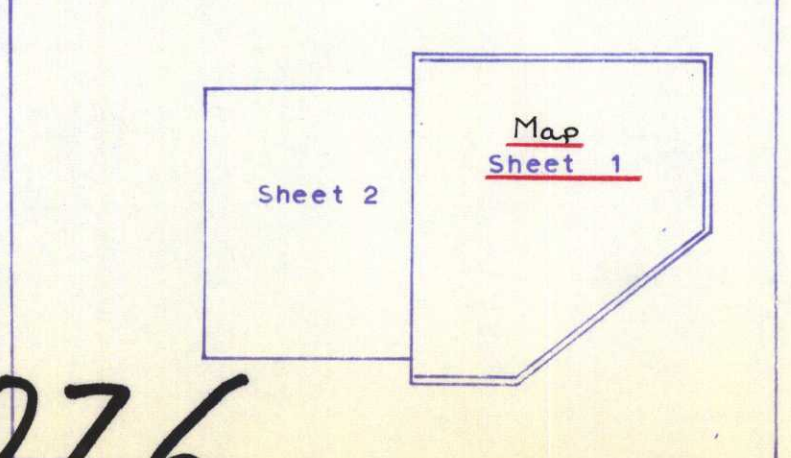
CONTOUR INTERVAL
MEAN FLIGHT LINE SPACING
MEAN TERRAIN CLEARANCE
1000 GAMMA CONTOUR
200 GAMMA CONTOUR
MAGNETIC LOW
FIDUCIAL POINTS
FLIGHT LINES

APPLY ASSESSMENT WORK
2 YEARS
3 YEARS

KUTCHO CREEK AREA
BRITISH COLUMBIA

1000 0 1000 2000 3000 4000
FEET AEROMAGNETIC MAP FEET

Flown by: CHAPMAN, WOOD and GRISWOLD, Ltd.
Vancouver, B.C.
Compiled by: EXPLORATION GEOPHYSICS (Yukon) Ltd.
Whitehorse, Y.T.
To accompany report by Paul S. White
dated 12 September 1967.



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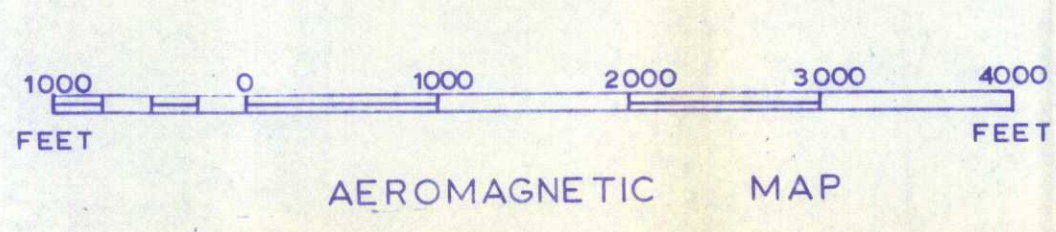


TO BE RETURNED TO THE
 AIRBORNE GEOPHYSICAL SURVEY UNIT
 CANADIAN GEOPHYSICAL SERVICE

JOHN 1-19
 ED 1-16

CONTOUR INTERVAL 200 GAMMA
 MEAN FLIGHT LINE SPACING 1000 FEET
 MEAN TERRAIN CLEARANCE 400 FEET
 1000 GAMMA CONTOUR
 200 GAMMA CONTOUR
 MAGNETIC LOW
 FIDUCIAL POINTS
 FLIGHT LINES

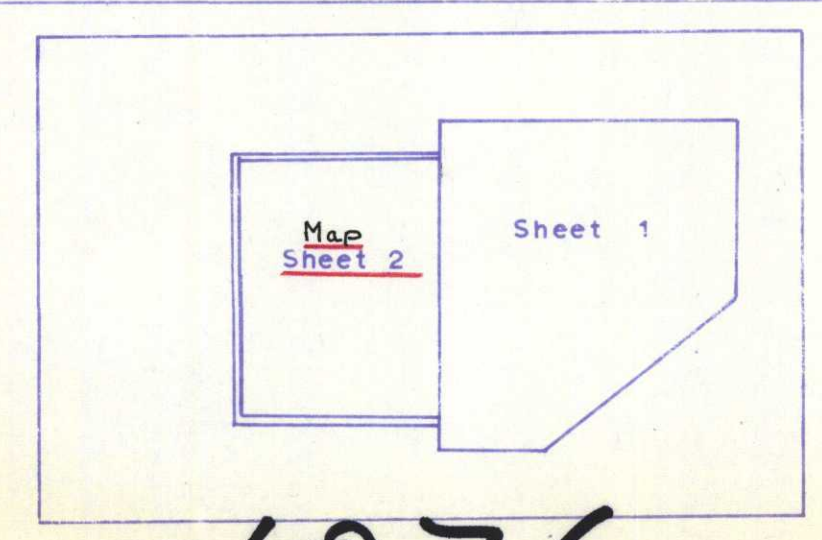
KUTCHO CREEK AREA
 BRITISH COLUMBIA



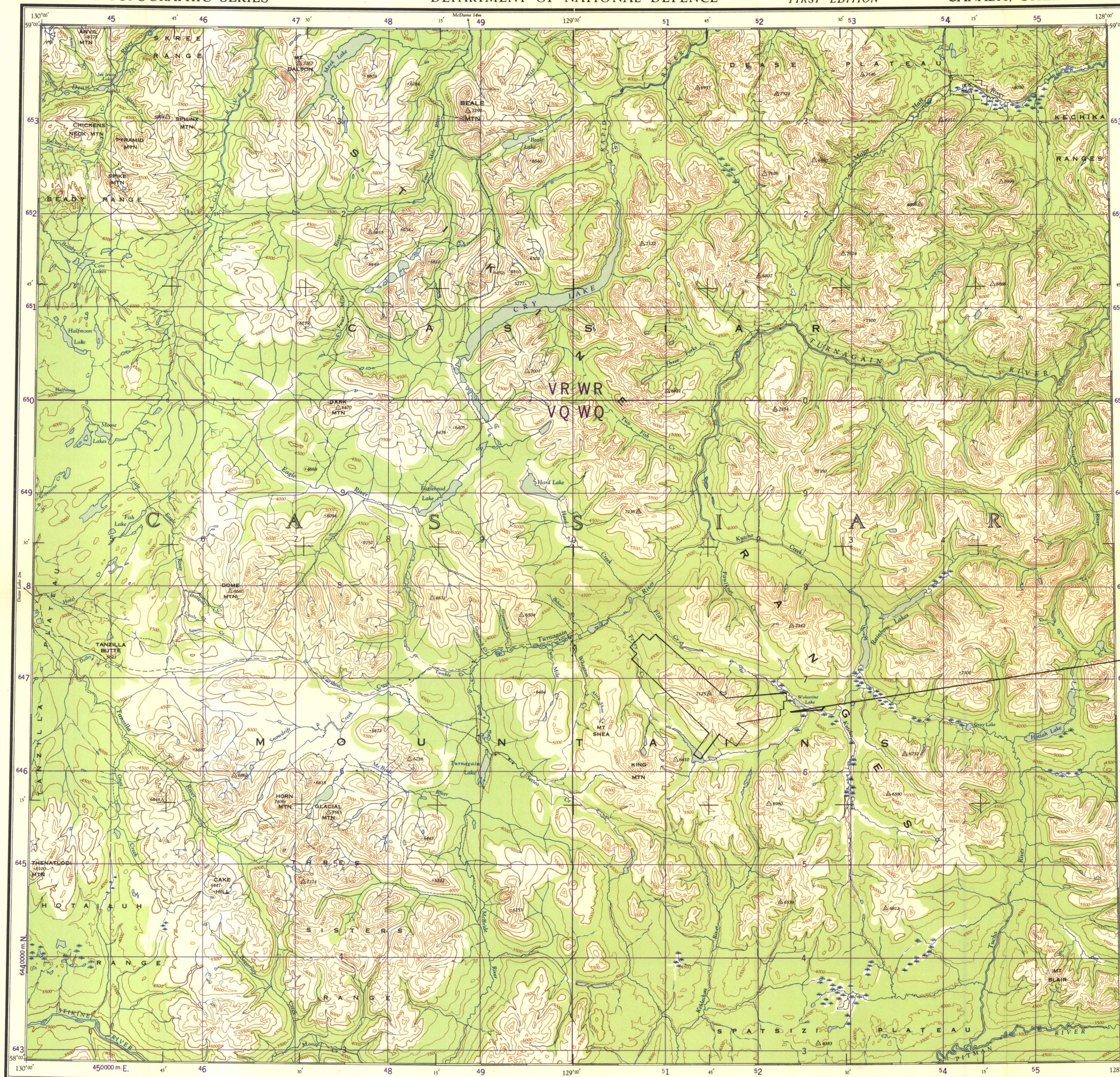
Flown by: CHAPMAN, WOOD and GRISWOLD, Ltd.
 Vancouver, B.C.
 Compiled by EXPLORATION GEOPHYSICS (Yukon) Ltd.
 Whitehorse, Y.T.

Paul White, P. Eng.

To accompany report by Paul S. White
 dated 12 September 1967.



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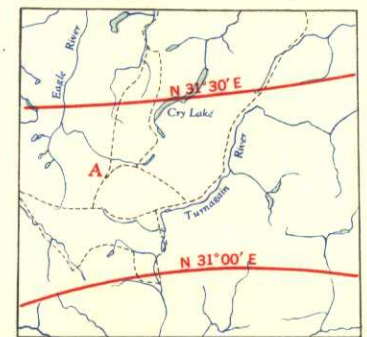


LOCATION OF
KUTCHO CREEK ASBESTOS
COMPANY LIMITED
GEOPHYSICAL PROSPECT AREA
JOE, B, N, AND 28 CROWN
GRANTED M.C.'s.
JUNE 1967

GRID ZONE DESIGNATION	TO ONE A STANDARD REFERENCE ON THIS SHEET TO NEAREST 1000 METRES
59	TRIANGULATION STA
VR WR	WQ
VQ WQ	07
50	88
	WQ0788
	99WQ0788

TEN THOUSAND METRE
UNIVERSAL TRANSVERSE MERCATOR GRID
ZONE 9

THE DECLINATION OF THE COMPASS NEEDLE, 1952

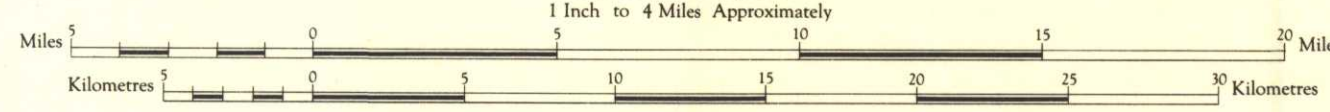


The declination of the compass needle at any place along a red line is the declination given on that red line. At other places the declination is between those given on the neighbouring red lines; thus at the place marked A, the declination is between N. 31°00' E. and N. 31°30' E. The equally declinations of the compass needle are decreasing 5 minutes annually.

Surveyed, compiled, drawn and printed by the ARMY SURVEY ESTABLISHMENT R.C.E., 1949-52.
Aerial photography by the R.C.A.F., 1949.
Universal Transverse Mercator Projection.

Scale 1 : 250,000
1 Inch to 4 Miles Approximately

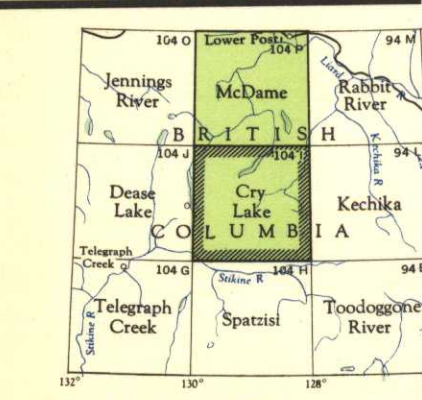
REFERENCE	
Road, Lane Surface, All Weather	Less than 2 Lanes
Less Surface, Less than 2 Lanes	2 Lanes
All Weather	Dry Weather
Cart Track	
Trail	
Railway, Multiple Track	
Single Track	
Boundary, International	
Province or State	
County or District	
Reservations, Indian, Military, Park, etc.	



Contour Interval 500 Feet.
All Elevations in Feet above Mean Sea Level.

REFERENCE

Triangulation Station	Spot Elevation, in feet	257
Contour, Elevation	Wooded Area	
Depression	Sump or Marsh	
Approximate		
Stream, Intermittent	Ferry	W.L. 241
Falls	Navigation Light	
Abandonment, on Land	Navigation Light	
Main Electric Power Line		



NOTE: On the above index the sheets published are shown in red.

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