

CASSIAR ASBESTOS CORPORATION LIMITED

ABEM MAGNETOMETER SURVEY

"E" ZONE, FIRE LAKE AREA

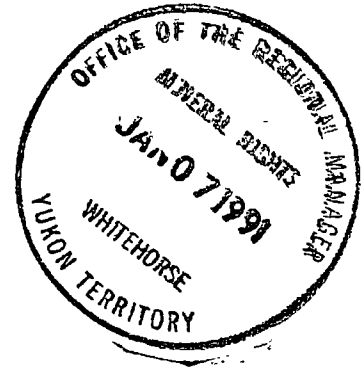
Longitude 130°30'W, Latitude 61°15'N

By S. H. Pilcher and W. N. Plumb, P. Eng.

Period July 13 to 31, 1961

656-1

092901



CASSIAR ASBESTOS CORPORATION LIMITED

ABEM MAGNETOMETER SURVEY

WEST ZONE, FIRE LAKE AREA

Longitude 130°30'W, Latitude 61°15'N

By S. H. Pilcher and W. N. Plumb, P.Eng.

Period July 13 to 31, 1961

092901

Cassiar, B.C.
Oct. 25, 1961.

Mr. F. A. McCall,
Mining Recorder,
Whitehorse, Yukon.

Dear Sir,

The geophysical work illustrated by the enclosed report and map was performed by or under the direction of Mr. Stephen H. Pilcher, M.Sc., a graduate in geology from Oregon State University. Mr. Pilcher has also completed two years of post graduate work, at the University of California and McGill University, respectively.

The work herein submitted was done under the general supervision of the undersigned between July 13 and 31, 1961. The report was written by the undersigned, while the map was prepared by Mr. Pilcher.

Yours very truly,



W. N. Plumb, P.Eng.,
Chief Geologist,
Cassiar Asbestos Corporation Ltd.

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ILLUSTRATIONS

MAP - FIRE LAKE "E" ZONE MAGNETOMETER SURVEY

ABEM MAGNETOMETER SURVEY, "E" ZONE, FIRE LAKE AREA

By S. H. Pileher and W. N. Flumb, P.Eng.

Period July 13 to 31, 1961.

PURPOSE AND SCOPE

This survey covered an area measuring approximately 2900 feet by 1300 feet, covering most of the ground between two small creeks in the upper part of a cirque above Fire Lake, at a mean elevation of 4800 feet. It extended over parts of TOP Nos. 5, 17, 22 and 32 mineral claims.

The survey was undertaken in an attempt to trace the extensions of a main zone of mineralization exposed in the southerly of the two creeks. This zone comprised pyrite, chalcopyrite, sphalerite, pyrrhotite and some magnetite. To the southeast, the zone was covered by chloritic schists, while to the northwest it passed under glacial moraine. A secondary objective was to confirm apparent anomalies discovered by an electromagnetic survey of the same area.

EQUIPMENT AND METHOD

The ABEM MZ-4 Magnetometer is a lightweight, self-orienting, sensitive variometer for measuring the vertical component of the earth's magnetic field. It is ideal for quick readings in mountainous territory, gives readings with an accuracy of 3 gammas over a range of 150,000 gammas, and can be used by one person.

This survey was made in conjunction with a ground electromagnetic survey and the same grid was used for both.

The grid was run by Brunton-tripod and tape, starting from transit control stations near the south creek. Wooden pegs were placed at 100-foot intervals along the base line, numbered consecutively from 0 to 28, on a bearing of N 60 W. Crosslines, also at 100-foot intervals, were numbered +1, +2, etc. to the northeast and -1, -2, etc. to the southwest. Two men completed the grid in 5 days.

The readings were taken by one man in four days. Procedure in taking readings consisted of carrying the instrument, attached to tripod, to each station in turn, levelling, adjusting for zero, recording the drum readings, location and time, and moving to the next station. With practice, each reading can be taken in about one minute. A series of checks were taken during each day at a control point and the diurnal variation in magnetic intensities plotted. This was used to correct each reading. This also served to detect magnetic storms, when readings were discontinued. Readings were taken by Mr. S. H. Pilcher or by Mr. T. Doubt under direction of Mr. Pilcher.

As the instrument is not direct-reading, conversion to gammas required almost as much time as the survey. Actual gammas are plotted on the map, as calculated by Mr. S. H. Pilcher and checked by his assistants. Approximately four days were required to convert the readings, prepare the map and contour the results.

OBSERVATIONS AND CONCLUSIONS

When plotted on the accompanying map, a series of magnetic highs are seen to trend northwesterly from the main "E" zone of mineralization. They all have magnetic intensities of 59,000 gammas or higher and are considered anomalous. They follow the regional northwesterly trend of geological formations in the area and cut obliquely across the direction of ice-flow out of the cirque, thus suggesting that the glacial moraine is rather shallow and that the magnetism is controlled by bedrock beneath the moraine. The anomalous highs may be concentrated in a particular horizon or may be aligned along a northwesterly-trending fault. There are indications of such faults in the cirque walls but so far cannot be ~~fixed~~ correlated with these anomalies.

No. 1 Anomaly coincides with the main "E" zone of mineralization as exposed in the trenches. Drilling indicates this zone to be flat-lying with minor pyrrhotite and magnetite. The low intensity and regular shape

of No. 1 anomaly tends to confirm the drilling results.

No. 2 anomaly is strong and narrow, accompanied by a marked "low" to the northeast. The "high" coincides with an E.M. anomaly and is definitely due to magnetite, which was intersected in four drill holes. The relative positions of the high and low indicate a steep northeast dip. There is no surface expression of this anomaly.

No. 3 anomaly was also indicated by the E.M. survey but was not as definite, due to topographic side effects. Again, the accompanying magnetic low suggests a northerly dip, although it is probably more shallow than No. 2. This anomaly underlies an area of gossanized schist, with some granular pyrite and vuggy quartz, with very little visible magnetite.

Anomaly No. 4 is on a small creek just north of the junction with the southern creek, where an isolated outcrop of chloritic schist contains some magnetite and disseminated chalcopyrite. This may possibly be a continuation of No. 2 anomaly. However, the intervening area is non-magnetic and drift covered, which suggests either that the zone is not continuous or that it may have been removed by erosion. Since both No. 2 and No. 4 anomalies are over creeks and hence near bedrock, the lack of magnetic effects between them may only be due to depth of overburden. If drilling on No. 4 discloses anything of interest, the intermediate area should also be drilled.

Anomaly No. 5 is in the centre of the moraine between the two creeks. Overburden in diamond drill hole A was over 50 feet deep at the southern end of the anomaly. The anomaly, although weaker than the others, is broader and, if it is buried by deep moraine, may represent a stronger zone at depth. It should be realized, however, that the schists are somewhat magnetic and the presence of a weak anomaly does not necessarily imply a concentration of sulphides.

Several test traverses were made to the northeast and southwest of the main grid without encountering more anomalous magnetism. The survey should,

4

however, be continued to the northwest, especially if drilling should intersect interesting mineralization at No. 4 anomaly.

Respectfully submitted,



W. N. Plumb, P.Eng.,
Chief Geologist,
Cassiar Asbestos Corporation Limited.

F1

CASSIAR ASBESTOS CORPORATION LIMITED

PLEASE ADDRESS ALL CORRESPONDENCE
TO THE COMPANY
CASSIAR, B. C.

TELEGRAPHIC ADDRESS
C/O CANADIAN NATIONAL TELEGRAPHS
CASSIAR, B. C.

PHONE
CASSIAR 45

Cassiar, B.C.,
Nov. 14, 1961.

Mr. F. A. McCall,
Mining Recorder,
P.O. Drawer 700,
WHITEHORSE, YUKON.

092901

Dear Mr. McCall,

Your File No. "TOP" # 1 MC

Supplementary to our application for Certificates of Work on 263 claims held by us in the Fire Lake area, we submit herewith the following:

- 1.. Affidavit of Expenditures Incurred for Representation Work, in duplicate.
2. Report, in duplicate, entitled "GEOLOGY AND MINERALIZATION, "E" ZONE, FIRE LAKE AREA" by S. H. Pilcher and W. N. Plumb.
3. Report, in duplicate, entitled " ABEM MAGNETOMETER SURVEY, "E" ZONE, FIRE LAKE AREA," by S. H. Pilcher and W. N. Plumb.
4. Report, in duplicate, entitled "SHERIDAN-KELK ELECTROMAGNETIC SURVEY, "E" ZONE, FIRE LAKE AREA", by W. N. Plumb.

Statements of qualifying experience by the people concerned are enclosed with the appropriate reports.

If there are any further submissions required, please advise.

Yours very truly,

W. N. Plumb

W. N. Plumb,
Chief Geologist.

Geology, Mag + EM Attending 105-8-142
Fire Lake Top claims



① TRENCHING IN SOLID ROCK OR MATTER REQUIRING ROCK DRILLING AND BLASTING:

(On Claims TOP No. 5 and TOP No. 22)

Trench A :	260' x 11' x 7' deep	=	741.5	cubic yards
Trench B :	12' x 5' x 5' deep	=	11.1	" "
Trench C :	24 x 10 x 6 deep	=	53.3	" "
Trench D :	50 x 6 x 3 deep	=	33.3	" "
Trench E :	160 x 9 x 7 deep	=	<u>373.3</u>	" "
			1212.5	cubic yards

Value at 4 cubic yards per \$100 (Part (3) of schedule) \$ 30,313.00

② DIAMOND DRILLING -- PACKSACK DRILL:

(On Claims TOP Nos. 5 & 22)

23 holes totalling 735.5 feet.

Value @ 25 feet per \$100 \$ 2,942.00

③ DIAMOND DRILLING -- LARGE DRILL -- Size "AX" core:

(On Claims TOP Nos. 5, 22 & 32)

12 holes totalling 1909 feet.

Value @ 15 feet per \$100 \$ 12,727.00

④ ELECTROMAGNETIC SURVEY (See enclosed map):

Area covered approx. 3,000,000 square feet.

Estimated Costs:

Plane charter, North to Fire Lakes & return - 1 hour	\$ 84.00
Food, 2 men, 7 days=14 man-days @ \$10.00	140.00
Wages, 14 man-days @ \$20.00	280.00
Supervision & calculations, 14 man-days @ \$30.00	420.00
Miscellaneous expense	<u>76.00</u>

Estimated value at cost \$ 1,000.00

⑤ MAGNETOMETER SURVEY (See enclosed map):

Area covered approx. 3,000,000 square feet.

Grid layout, 2 men, 5 days = 10 man-days

Survey 1 man, 4 days = 4 " "

Calculations 1 man, 4 days = 4 " "

Estimated value at cost = 18 man-days @ \$30.00 \$ 540.00

⑥ TRAIL BUILDING (For access to the "E" zone)

From midpoint of Fire Lake to showings. 12 man-days @ \$30.00 \$ 360.00

⑦ CACHE BUILT AT MIDPOINT OF LAKE (For "E" zone supplies):
 2 men, 4 days = 8 man-days @ \$30.00 \$ 240.00

⑧ TRAILBUILDING (For access to anomalous area, TOP # 53 claim):
 2 men, 4 days = 8 man-days @ \$30.00 \$ 240.00

⑨ PITS DUG AND BLASTED IN BROKEN ROCK, BY HAND:
 (On claim TOP No. 53)

Pit No. 1	35 x 5 x 4' deep	700 cu. ft.	
Pit No. 2	8 x 3 x 5 "	120	
Pit No. 3	17 x 3 x 4 "	204	
Pit No. 4	6 x 3 x 8 "	144	
Pit No. 5	10 x 5 x 12 "	600	
Pit No. 6	6 x 5 x 7 "	210	

1978 cu. ft. = 73.26 cubic yards

Value @ 8 cubic yards per \$100 \$ 916.00

⑩ GEOLOGICAL MAPPING AND RECONNAISSANCE OF ENTIRE CLAIM GROUP:

40-scale map of trenches - 24 ^{man} man-days @ \$30	\$ 720.00
100 scale map of anomalous areas - 36 man-days @ \$30	1080.00
Regional mapping of cirque on air photos, 42 man-days @ 30	1260.00
Supervision - 2 months @ \$550.00	1100.00
Helicopter reconnaissance - 4 man-days @ \$30	120.00
Helicopter charter - 4 hours @ \$108.00	432.00
Detailed prospecting of claims - 30 man-days @ \$30.00	900.00

Estimated value at cost \$ 5, 612.00

TOTAL ASSESSMENT WORK PERFORMED AT FIRE LAKE IN 1961: \$51,888.00

NOTE:
 All the above work was done on or adjacent to claims in the Fire Lake area held by Cassiar Asbestos Corporation Limited, with intent to work the same. This is claimed as "Representation Work" under Section 53 (2) of the Yukon Quartz Mining Act, to be distributed among the claims as follows:

DISTRIBUTION OF REPRESENTATION WORK PERFORMED AT FIRE LAKE DURING SUMMER OF 1961

NOTE: We wish to bring all the claims to a common anniversary date for representation purposes under Section 52 (3) of the Yukon Quartz Mining Act, and to apply the foregoing work to the claims as follows:

Recorded Claims	Number of Claims	Old Date	New Date	Work to 5 Jan 62 per claim	Work to 5 Jan 64 per claim	Total Work to 5 Jan 1964
TOP 1 - 4	4	6 Sept. 61	5 Jan. 1962	\$ 50.00	\$250.00	4 x 250 = \$ 1,000.00
TOP 5 - 70	66	12 Oct 61	"	25.00	225.00	66 x 225 = 14,850.00
TOP 71 - 106	36	20 Dec 61	"	25.00	225.00	36 x 225 = 8,100.00
TOP 109 - 122	14	20 Dec 61	"	25.00	225.00	14 x 225 = 3,150.00
TOP 125 - 132	8	20 Dec 61	"	25.00	225.00	8 x 225 = 1,800.00
TOP 133 - 136	4	27 Dec 61	"	25.00	225.00	4 x 225 = 900.00
TOP 137 - 150	14	⁷⁵⁵⁵³ 5 Jan 62	"	-----	200.00	14 x 200 = 2,800.00
TOP 153 - 154	2	5 Jan 62	"	-----	200.00	2 x 200 = 400.00
TOP 160 - 170	11	21 Aug 62	5 Jan 1963	-----	150.00	11 x 150 = 1,650.00
LAKE 1 - 18	18	9 Dec 61	5 Jan 1962	25.00	225.00	18 x 225 = 4,050.00
NORTH 1 - 32	32	9 Dec 61	"	25.00	225.00	32 x 225 = 7,200.00
EAST 1 - 22	22	9 Dec 61	"	25.00	225.00	22 x 225 = 4,950.00
* SOUTH 1 - 32	32	9 Dec 61	"	25.00	* 125.00	32 x 125 = 4,000.00

(Note: South 1 - 32 representation work to 5 Jan. 1963 only)

TOTAL REPRESENTATION WORK DURING 1961:

\$54,650.00

FEEES FOR BRINGING ALL CLAIMS TO A COMMON DATE AND RECORDING REPRESENTATION WORK. Page 4

<u>Recorded Claims</u>	<u>Number of Claims</u>	<u>Old Date</u>	<u>New Date</u>	<u>Fee to 5 Jan 62 per claim</u>	<u>Fee to 5 Jan 64 per claim</u>	<u>Total Fee to 5 Jan 1964.</u>
TOP 1 - 4	4	6 Sept 61	5 Jan 62	\$2.50	\$12.50	4 x 12.50 = \$ 50.00
TOP 5 - 70	66	12 Oct 61	"	1.25	11.25	66 x 11.25 = 742.50
TOP 71 - 106	25	20 Dec 61	"	1.25	11.25	25 x 11.25 = 281.25
TOP 109 - 122	14	20 Dec 61	"	1.25	11.25	14 x 11.25 = 157.50
TOP 125 - 132	8	20 Dec 61	"	1.25	11.25	8 x 11.25 = 90.00
TOP 133 - 136	4	27 Dec 61	"	1.25	11.25	4 x 11.25 = 45.00
TOP 137 - 150	14	5 Jan 62	"	---	10.00	14 x 10.00 = 140.00
TOP 153 - 154	2	5 Jan 62	"	---	10.00	2 x 10.00 = 20.00
TOP 160 - 170	11	21 Aug 62	5 Jan 63	---	7.50	11 x 7.50 = 82.50
LAKE 1 - 18	18	9 Dec 61	5 Jan 62	1.25	11.25	18 x 11.25 = 202.50
NORTH 1 - 32	32	9 Dec 61	"	1.25	11.25	32 x 11.25 = 360.00
EAST 1 - 22	22	9 Dec 61	"	1.25	11.25	22 x 11.25 = 247.50
* SOUTH 1 - 32	32	9 Dec 61	"	1.25	* 6.25	32 x 6.25 = 200.00 *
TOP 1 - 4	4	Penalty for late filing (Sec 55 (3))				4 x 15.00 = 60.00
TOTAL FEES						\$ 2,678.75

* Note: SOUTH 1 - 32: representation work to Jan 5, 1963 only.

CASSIAR ASEESTOS CORPORATION -- FIRE LAKE PROJECT

RESUMEE OF DIAMOND DRILLING -- July to Sept. 1961.

PACKSACK DIAMOND DRILL: (Small Diameter Holes)

<u>Hole No.</u>	<u>Depth (feet)</u>
1	40
2	24
3 - 1	24
3 - 2	24
4	20
6 - 1	14
6 - 2	37
7	40
8	17
9	31
10	50.5
11	40
12	41
13	24
14	33
15	36
16	46
18	40
19	40
20	31
21	33
22	21
24	29

Total Packsack 735.5 feet

"AX" DIAMOND DRILLING (Large diameter holes):

<u>Hole No.</u>	<u>Depth (feet)</u>
A	51
B	46
C	170
D	203
E - 1	96
E - 2	122
F	169
G	196
H	225
I	200
M	305
O	38
P	88

Total "AX" 1909 feet

LIST OF ENCLOSURES TO ACCOMPANY APPLICATION FOR CERTIFICATE OF WORK

FIRE LAKE CLAIMS - SUMMER 1961

- Map 1 Fire Lake Claim Map, Scale 1 inch to 2640 feet/
- Map 2 Fire Lake "E" Zone Development Map, Scale 1 inch to 100 feet.
- Map 3 Fire Lake Drilling and Trenching, Scale 1 inch to 40 feet.
- Map 4 Fire Lake E.M. Survey Map, Scale 1 inch to 100 feet
- Map 5 Fire Lake Magnetometer Survey Map, Scale 1 inch to 100 feet.
- Map 6 Fire Lake; Pits on Top # 53 M.C., Scale 1 inch to 20 feet.

Dept. of Northern Affairs and National Resources
Northern Administration and Lands Branch
LANDS DIVISION
OCT 13 1961
WHITEHORSE, YT.
MINING RECORDER
Agent of Territorial Lands and Timber

AFFIDAVIT OF EXPENDITURE INCURRED FOR REPRESENTATION WORK

I, Wilfred N. Plumb..... of Cassiar, B.C......

in the District of Liard.....

make oath and say,-

That all expenditures on Geological and/or Geophysical Work were made as represented and that prevailing rates of fees, salaries and wages were paid, as recorded in the books of the Cassiar Asbestos Corporation Limited, which books are open to inspection by authorized personnel at any time.

Sworn and subscribed to at
Cassiar, B.C......

this 14th.....

day of November.....1961...



W. L. Johnson, a Notary Public in and for the Province of British Columbia.

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in the District of Liard.....

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Sworn and subscribed to at
Cassiar, B.C.
.....
this 14th
day of November.....1961

W. N. Plumb

W. L. Johnson

W. L. Johnson, a Notary Public in and for the Province of British Columbia.

N 42,000

N 41,500

N 41,000

N 40,500

N 40,000

N 39,500

092901

FIRE LAKE - 'E' ZONE
MAGNETOMETER SURVEY
JULY, 1961
SCALE: 1" = 100'
CONTOURS IN 500 GAMMA INTERVALS

TOP No 31
TOP No 21

TOP No 32
TOP No 22

TOP No 21
TOP No 23

TOP No 22
TOP No 24

E 26,500

E 27,000

E 27,500

E 28,000

E 28,500

TOP No 17
TOP No 5

TOP No 18
TOP No 6

TOP No 5
TOP No 7



1

FIRE LAKE CLAIM MAP
SHOWING 1961 REPRESENTATION
WORK 1" = 2640'





CASSIAR ASBESTOS CORP. LTD.
 CLAIMS - FIRE LAKE
 SCALE 1 in = 2460 ft (1/2 MILE)
 REFERENCE GRID IN
 1000 FT INTERVALS
 CORRECT TO 21 AUG. 1961

— REPRESENTATION WORK TO JAN 5, 1964
 — REPRESENTATION WORK TO JAN 5, 1963
 WORK AREAS IN RED

CORRECTED
 CLAIM MAP
 AUGUST 1961

FIRE LAKE "E" ZONE
1961 DEVELOPMENT
1" = 100'

(2)



092901

N 42,000
N 41,500
N 41,000
N 40,500
N 40,000
N 39,500

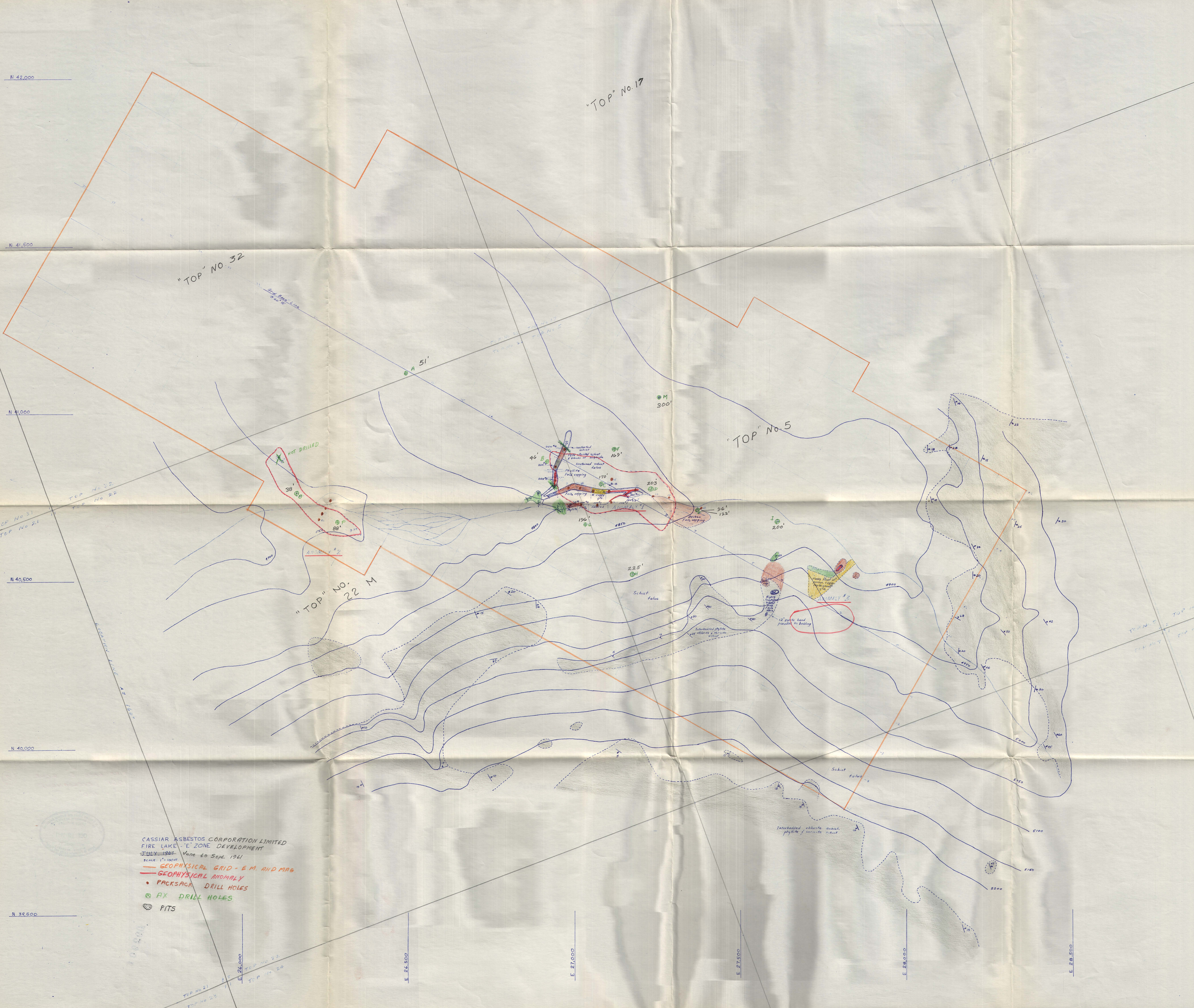
"TOP" No. 17

"TOP" No. 32

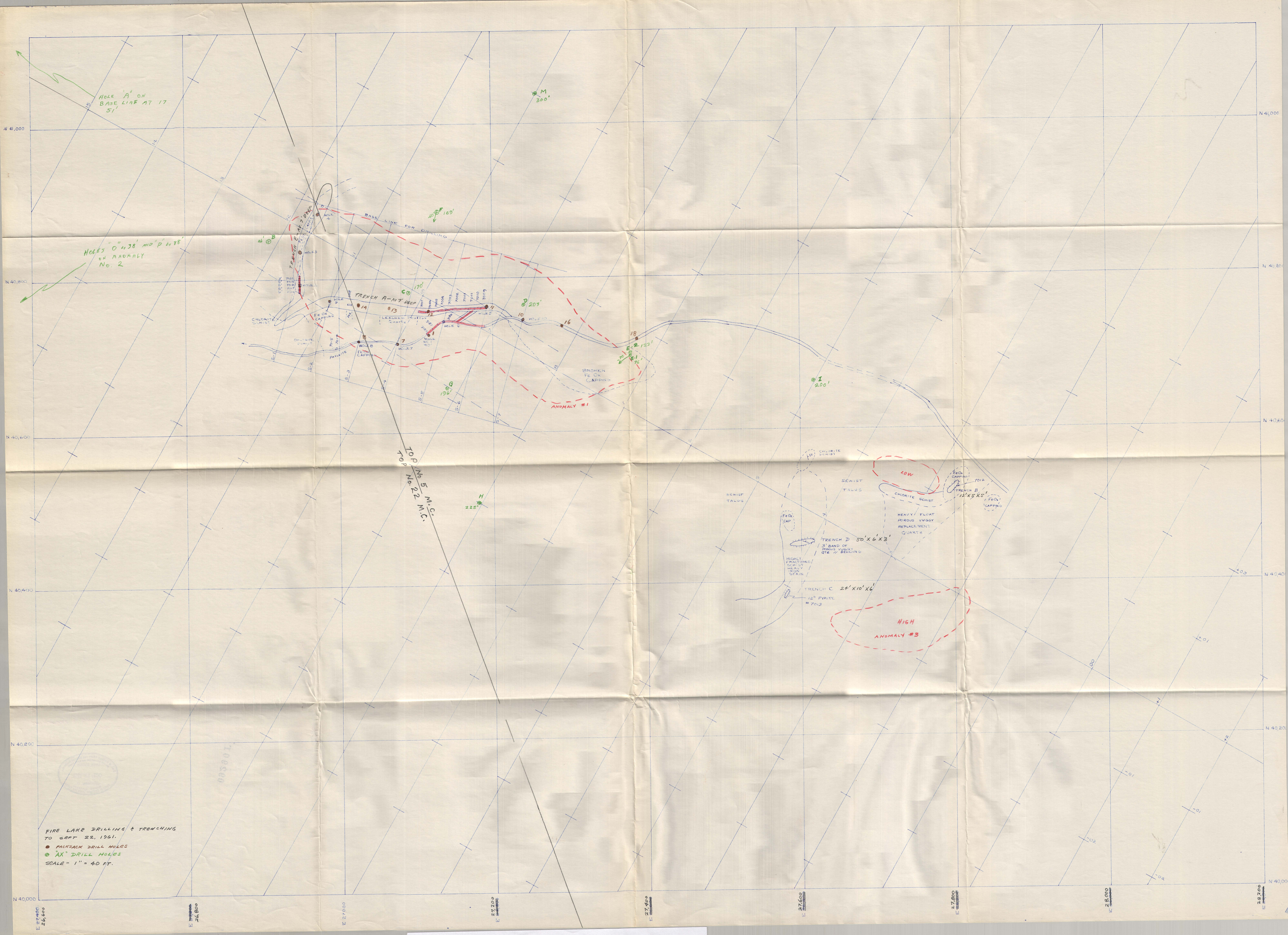
"TOP" No. 5

"TOP" No. 22 M

CASSIAR ASBESTOS CORPORATION LIMITED
FIRE LAKE - E ZONE DEVELOPMENT
JULY 1961 June to Sept. 1961
SCALE 1"=1000'
— GEOPHYSICAL GRID - E.M. AND MAG
— GEOPHYSICAL ANOMALY
• PACKSACK DRILL HOLES
⊗ AX DRILL HOLES
⊙ PITS



TOP No. 21
TOP No. 22
E 26,500
E 27,000
E 27,500
E 28,000
E 28,500



HOLE 'A' ON
BASE LINE AT 17
51'

HOLE'S 'O' 1138' AND 'P' 678'
ON ANOMALY
NO. 2

M
300'

F
180'

G
170'

P
205'

I
200'

H
225'

TOP NO. 5 M.C.
TOP NO. 22 M.C.

LOW

HIGH
ANOMALY #3

TRENCH A - 47' DEEP

TRENCH B 14' x 5' x 6'

TRENCH D 50' x 6' x 3'

TRENCH C 24' x 10' x 6'

FIRE LAKE DRILLING & TRENCHING
TO SEPT 22, 1961.
● PACKSACK DRILL HOLES
⊙ 1X" DRILL HOLES
SCALE - 1" = 40 FT.

005001

E 27,400

E 27,500

E 27,600

E 27,700

E 27,800

E 27,900

E 28,000

E 28,100

E 28,200

N 41,000

N 40,800

N 40,600

N 40,400

N 40,200

N 40,000

N 41,000

N 40,800

N 40,600

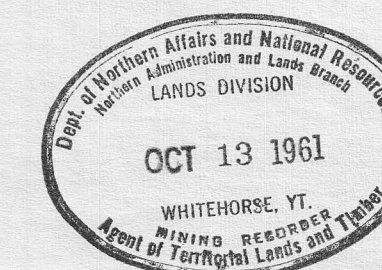
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N 40,200

N 40,000

092901

FIRE LAKE "E.M." SURVEY
1" = 100'



4

N 42,000

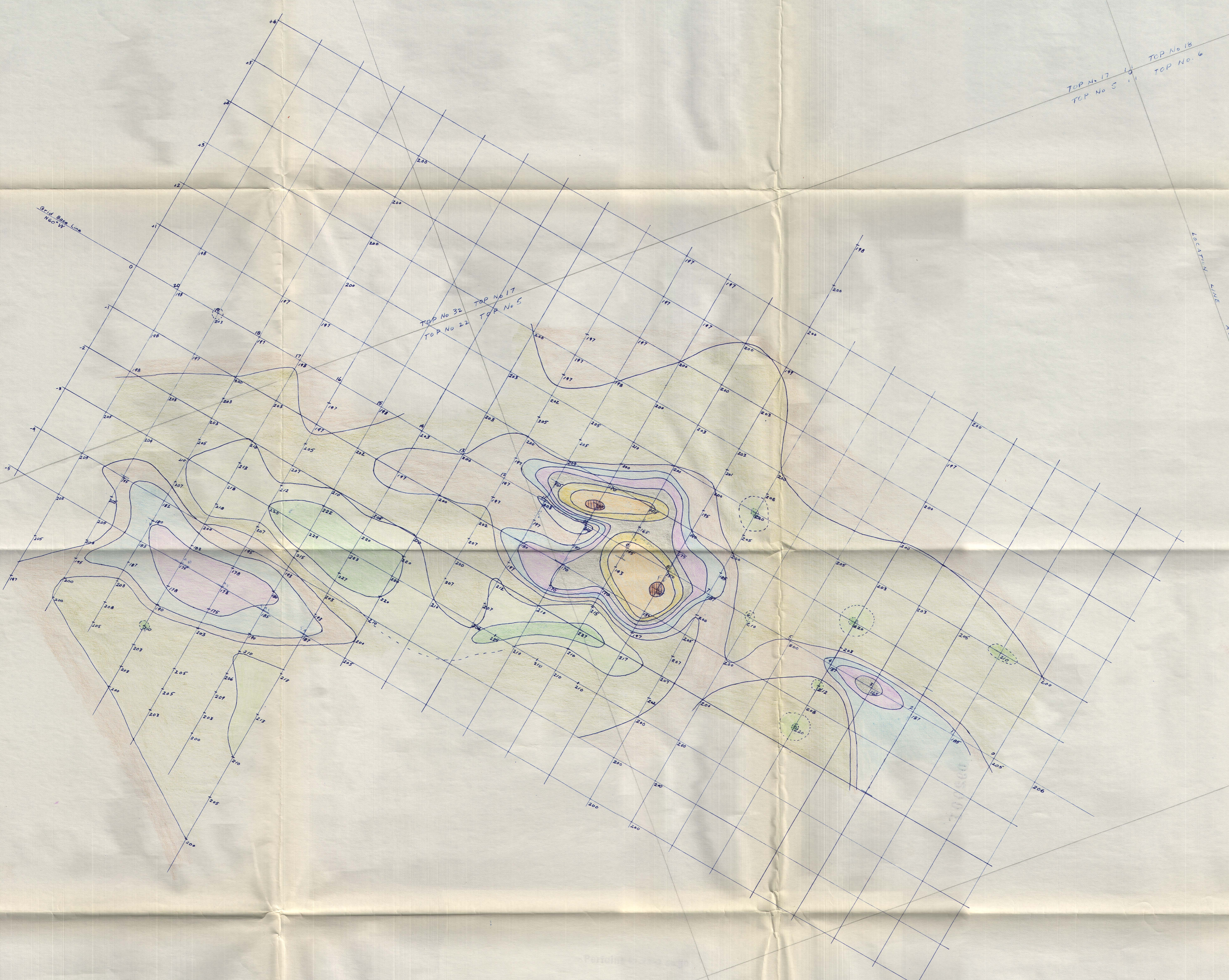
N 41,500

N 41,000

N 40,500

N 40,000

N 39,500



E.M. SURVEY - SHERIDAN KELK MAGNIPHASE
 JULY, 1961
 SCALE: 1" = 100'

TOP No 21
 TOP No 23
 TOP No 22
 TOP No 24

TOP No 17
 TOP No 5
 TOP No 18
 TOP No 6

TOP No 5
 TOP No 7
 TOP No 6
 TOP No 5

E 26,000

E 26,500

E 27,000

E 27,500

E 28,000

E 28,500

E 29,000

5

FIRE LAKE MAGNETOMETER SURVEY
1" = 100'



FIRE LAKE - 'E' ZONE
MAGNETOMETER SURVEY
JULY, 1961
SCALE 1" = 100'
CONTOURS IN 500 GAMMA INTERVALS

N 42,000

N 41,500

N 41,000

N 40,500

N 40,000

N 39,500

E 25,000

TOP No 21
TOP No 22

TOP No 22
TOP No 24

E 26,500

E 27,000

E 27,500

E 28,000

E 28,500

TOP No 17
TOP No 5

TOP No 13
TOP No 6

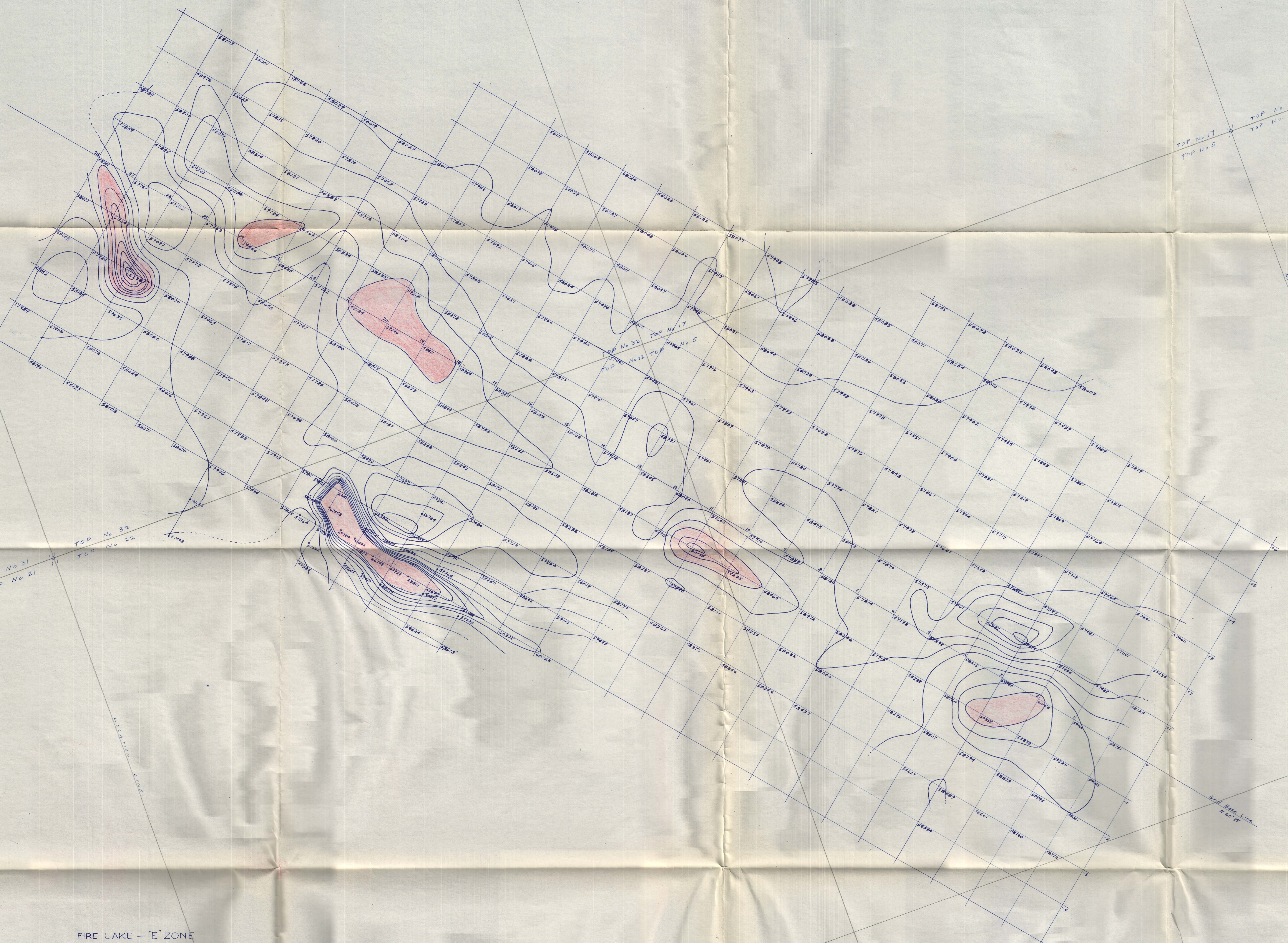
TOP No 5
TOP No 7

100000

TOP No 31
TOP No 21

TOP No 32
TOP No 22

100000



FIRE LAKE (6)
PITS ON TOP #53 M.C.
1" = 20'



092901



PIT #6
6' X 5' X 9' DEEP

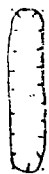


SHAFT #5
10' X 5' X 12' DEEP

DIP NEEDLE ANOMALY



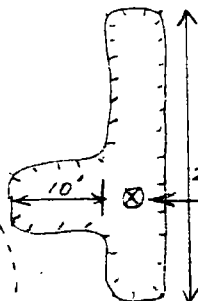
PIT #4
6' X 3' X 8' DEEP



PIT #3
17' X 3' X 4' DEEP



PIT #2
8' X 3' X 5' DEEP



PIT No. 1
AV 4' DEEP

INITIAL DISCOVERY
MINERALIZED BOULDER.

CASSIAR ASBESTOS CORP LTD
TEST PITS ON TOP No. 53 M.C.
Scale 1" = 20' JULY 28, 1961.
ALL PITS IN SEMI-CONSOLIDATED
GLACIAL MORAINE.

TO FIRE LAKE ←

TRAIL CUT OUT

092901

CASSIAR ASBESTOS CORPORATION LIMITED

GEOLOGY AND MINERALIZATION

"E" ZONE, FIRE LAKE AREA

Longitude 130°30'W, Latitude 61°15'N

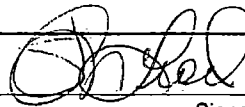
By S. H. Pilcher and W. N. Plumb, P. Eng.

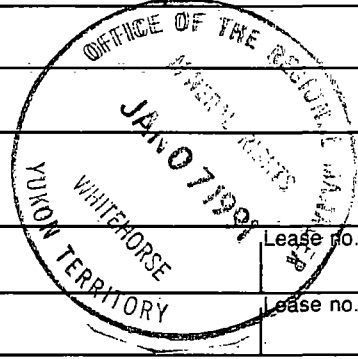
Period June 11 to September 22, 1961



M.R. file no.
R.M.M.R. file no.
Date forwarded

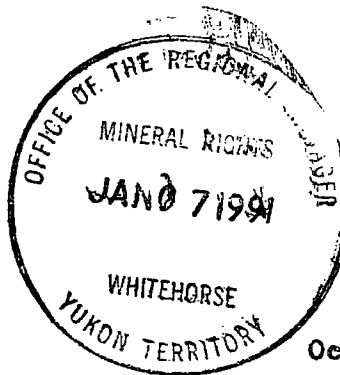
TRANSMITTAL FORM

From Mining Recorder at: <u>Watson Lake</u>	
To Regional Manager, Mineral Rights at Whitehorse, Y.T.	
For action are:	
<input type="checkbox"/> NEW APPLICATION FOR PLACER LEASE TO PROSPECT	Name
<input type="checkbox"/> RENEWAL APPLICATION PLACER LEASE TO PROSPECT	Name
<input type="checkbox"/> AFFIDAVIT OF EXPENDITURE ON PLACER LEASE	Name
<input type="checkbox"/> SECURITY DEPOSIT	
<input type="checkbox"/> FINANCIAL ABILITY	
<input type="checkbox"/> ASSIGNMENT OF PLACER LEASE NO.	From To
<input type="checkbox"/> GROUPING APPLICATION UNDER SEC. 52(2) PLACER MINING ACT.	Owner
<input type="checkbox"/> DIAMOND DRILL LOGS	Claims
<input checked="" type="checkbox"/> QUARTZ ASSESSMENT REPORT	Claims
For Numbering Only Please return this copy	Type of report
	Submitted by
	Cl. work performed on
	Lease no.
	Lease no.
	Claim sheet no.
	Claim sheet no.
	\$ req. for ren. application
 Signature	



REPLY ACTION	Date returned
<div style="text-align: right; font-size: 2em; font-weight: bold; margin-top: 100px;">092901</div>	
Signature	

0923011



Mr. F. A. McCall,
Mining Recorder,
Whitehorse, Yukon.

Oct. 25, 1961.

Dear Sir,

The geological work illustrated by the enclosed report and maps was performed by Mr. Stephen H. Pilcher, M.Sc., a graduate in geology from Oregon State University. Mr. Pilcher has also completed two years of post graduate work, at the University of California and McGill University, respectively. Photostats of his qualifying field experience are enclosed.

The work herein submitted was done under the general supervision of the undersigned between June 11 and Sept. 22, 1961.

Yours very truly,

A handwritten signature in cursive script that reads "W. N. Plumb".

W. N. Plumb, B.A.Sc., P.Eng.,
Chief Geologist,
Cassiar Asbestos Corporation Ltd.

3534 Jeanne Mance St.
Montreal, P.Q. Canada
Jan. 20, 1961

Recd Jan 24/61

Cassiar Asbestos Corporation
Cassiar, B.C.
Canada

Dear Sirs,

I am writing to you in regard to employment possibilities as geologist with your organization. My main interest is in permanent employment, but I will also consider temporary work for this coming field season

I am 28 years of age, single, and a U.S. citizen. I have a Masters Degree in geology, have done one year of graduate work at the University of California, and am now completing a year of work at McGill University. I will be available about the middle of May.

My experience in geology consists of one season with the Oregon State Department of Geology doing underground and surface mapping of gold properties, six months with a small gold mining company doing mining and geologic mapping, and one season as party chief with Bear Creek Mining Company doing mapping in conjunction with a copper exploration project.

Any information you can furnish me concerning employment possibilities will be appreciated.

Sincerely,

Stephen H. Pilcher
Stephen H. Pilcher

<u>DATE</u>	<u>EMPLOYER</u>	<u>TYPE OF WORK</u>	<u>WORKED UNDER</u>
June-Sept. 1960	Bear Creek Mining Co. Spokane, Wn.	Party chief in charge of three-man crew doing <u>detailed geologic mapping</u> in conjunction with a <u>copper exploration project</u> . Work also included <u>geochemical</u> and <u>magnetometer</u> work. Location was in W. Montana.	Mr. C.C. Goddard
July-Sept. 1959	Boaz Mining Co. Sumpter, Oregon	Worked as <u>surveyor</u> and miner in small gold mine.	Mr. J. Jackson
June-Dec. 1958	"	<u>Surveying and claim staking</u> in the Boise Basin, Idaho. Also <u>miner</u> for same company in Oregon.	"
June-Sept. 1957	Oregon Dept. of Geology- <u>Portland, Oregon</u>	<u>Underground and surface geologic mapping</u> of gold-silver properties in northeast Oregon.	Dr. G.S. Koch Dr. G.S. Koch
Nov.-1954 - Sept. 1956	U.S. Army	Party Chief in charge of four-man survey party doing <u>plane-table mapping and triangulation</u> .	--
June-Sept. 1953	U.S. Army Corps. of Engrs. <u>Fairbanks, Alaska</u>	Foundation investigation work in permafrost regions of Alaska.	Resident Engineer

- - - - -
REFERENCES

Mr. C.C. Goddard- Bear Creek Mining Co, W. 508 Cataldo, Spokane, Wn.

Mr. J. Jackson- Buffalo Mine, Sumpter, Oregon

Dr. George Koch- Dept. of Geology, Oregon State University, Corvallis, Oregon

Dr. H. Hawkes- Dept. of Mineral Technology, University of Calif., Berkeley, Calif.

CASSIAR ASBESTOS CORPORATION LIMITED

GEOLOGY AND MINERALIZATION

"E" ZONE, FIRE LAKE AREA

Longitude 130°30'W, Latitude 61°15'N

By S. H. Pilcher and W. N. Plumb, P.Eng.

Period June 11 to September 22, 1961

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STRUCTURE " 2

MINERALIZATION " 3

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MAP "B" "E" ZONE DEVELOPMENT MAP

RESUME OF GEOLOGY AND MINERALIZATION IN THE AREA OF THE "E" ZONE, FIRE LAKE, I.T.

by S.H. Pilcher

October, 1961

CONFIDENTIAL

SCOPE

This represents a brief description of the geology and structure of the cirque containing the "E" zone mineralization and of possible relationships between geology, structure, and the mineralization.

Only a brief period of time was spent doing regional geologic mapping. Complex structure and geology and a lack of distinctive marker horizons tend to make mapping and interpretation difficult. As a result, the structure and geology were not solved and the following resume consists mostly of impressions and ideas gathered throughout the course of the summer's work.

GEOLOGY

The main rocks within the area of the showing have been grouped into a chlorite schist, a series of phyllites and sericite-biotite schists, and a gneiss.

The chlorite schist (Unit 1) is a medium-grained, green, highly schistose rock which occurs at the showing and also makes up the north ridge of the cirque. The schistosity is highly contorted and small, tight folds are common throughout the formation.

The phyllite, sericite-biotite schist series (Unit 2) consists of dark grey to black phyllites and light to dark grey sericite-biotite schists. Brown iron staining is common on weathered surfaces. Small, tight crenulations and folds are also found in this formation. The east and south ridges of the cirque are made up of these rocks.

The gneiss (Unit 3) is a medium to coarse-grained rock consisting mostly of quartz, biotite, and some muscovite. It crops out in the western part of the cirque and appears to be in contact with both the chlorite schist and the phyllite, sericite-biotite schist unit.

The rock unit shown on the map as number 7 appears to conformably overlie unit 2 and is most likely a part of the same series. The lithology is somewhat different however, and the small part examined on the east ridge top consists of quartz-rich schists and argillite.

Unit 8 also appears to overlie unit 2 and may actually be continuous with unit 7. Where examined however, unit 8 was seen to consist of greenstone or a fine-grained, green argillaceous rock with some interbeds of fine-grained schist.

The other rock units mapped in the area are a granite to the north (Unit 5), a pyroxenite to the northeast (Unit 4), a small outcrop of altered schist (Unit 9) in contact with the ultrabasic, and several thin beds of limestone (Unit 6) to the east and north.

The relationships between the various formations are not known. The phyllite, sericite-biotite schist series (Unit 2) seems to overlie the chlorite schist except for a small outcrop of chlorite schist on the ridge top in the southwest part of the cirque. The upper part of Unit 2 as mapped is defined by the limestone band on the east ridge top. Overlying the limestone are the quartz-rich schists and argillites of Unit 7. Unit 8 also appears to overlie Unit 2 but here the limestone band is missing and it is obvious that there is some complexity, possibly caused by faulting, which has not been solved.

The gneiss appears to be in contact with both Unit 1 and Unit 2. The contact relationship, however, is not definite, and in some areas there seems to be somewhat of a gradation, the schists becoming more quartz-rich and coarser grained near the outcrop of gneiss. The gneiss-schist contact as shown on the map is therefore approximate and generalized.

The granite and ultrabasic are most likely the youngest rocks in the area, having intruded the schist.

STRUCTURE

The attitudes as shown on the map are of the schistosity in the schists and of the foliation in the gneiss. It is not known whether or not these planar structures represent original bedding.

On the ridge to the south of the showing the dips are gentle and show no distinct structural trend. To the east, along this ridge, the dips become steeper and have a pronounced easterly to northeasterly trend. On the cliff face to the immediate southeast of the showing this change from gentle to steep dips is sharp and distinctive, whereas at the head of the valley in the southeast part of the cirque this change is more gradual. Whether or not faulting has produced this feature is not known.

On the northern ridge of the cirque the dips are in general moderate and show no distinct trend. To the east along this same ridge the dips become steeper with a definite easterly trend.

Much of the wide variation in attitude of the schistosity as mapped is no doubt due to crenulations and tight, isoclinal folding which probably are present throughout the schists but which are not apparent in most outcrops.

Several flat lying isoclinal folds can be seen in the cliff face immediately south of the main showing. These can best be seen where they contain thin seams of quartz which outline the fold (Figure A). The crenulations in the quartz give evidence for a considerable amount of flowage along flow cleavages parallel to the axial planes, and this flowage may have obliterated the original folds in some instances.

Small, tight folds can be observed in quartz seams in some of the schist (Figure B) and in other cases quartz lenses occur parallel to schistosity (Figure C) and probably represent once continuous bands which have been pulled apart into individual pods during deformation.

Whether or not these crenulations and small folds represent slippages and drag folding along the flanks of larger scale folds, and are therefore structurally related to them is not known. In any case, the schists have been intensely deformed and large scale folding and overturning would not be surprising.

A number of well defined fractures or faults occur in the area and several intersect in the cirque basin near the showing. What movement there has been along these and whether or not these have in any way controlled the mineralization is not known. They can be seen on the aerial photographs and can be recognized on the ground by linear depressions, sometimes accompanied by springs.

MINERALIZATION

Anomaly I

The mineralization at the main showing (Anomaly I) consists of massive sulphide and mineralized schist which occur as a flat-lying body apparently parallel to the schistosity of the surrounding chlorite schists. The upper part of the deposit contains the massive sulphide (pyrite with varying amounts of quartz, chalcopyrite, pyrrhotite, sphalerite). Mineralized schist underlies the massive sulphide and appears to represent a less intense phase of mineralization. In general the mineralized schist does however, contain more quartz and in some cases more chalcopyrite. The richer concentrations of chalcopyrite seem to be associated with the quartz, whether in the schist or in the more massive pyrite. Magnetite occurs in the mineralized schist, both as fine-grained masses and as individual euhedral crystals.

A peculiar vuggy, opaque-white, sugary-textured quartz is sometimes associated with the massive sulphide and may represent a variation in the character of the mineralization. One zone of this material was found in trench A, and it appears that the sulphide (mostly a granular pyrite) has been completely leached or washed out by the washing action of water.

From all appearances the mineralization represents a replacement of the chlorite schist. A somewhat contorted foliation is found in the above mentioned vuggy quartz and appears to be schistosity preserved during replacement of schist. The mineralized schist also gives some evidence for replacement. Thin bands of chlorite schist are found in the more heavily mineralized part. These bands of schist increase in size and quantity with depth until there has been a gradual change to completely mineralized schist.

A very small amount of disseminated pyrite and some chalcopyrite occur throughout the chlorite schist and there is therefore a good possibility that the iron and perhaps the copper were original constituents in the schist.

The mineralized zone on Anomaly I is relatively flat lying for the most part but the northeast part plunges to the northeast, possibly in accordance with the increasing dips in the schists towards the northeast.

To the south only a small section of mineralized schist was found in DDH "C" and nothing was found in DDH "H". The mineralization must therefore either pinch out, plunge steeply, or is faulted off in this direction. It is unlikely that the mineralization plunges to the south because there is no such plunge in the surrounding schists.

A fair amount of mineralization was intersected in DDH "F" but nothing was found in DDH "M". Again there is a possibility of a plunge, a fault, or a pinching out of the mineralization.

No deep holes were drilled to the west of the anomaly but the E.M. survey did not indicate any sulphides in this area. Drag folds and fractures exposed in the nearby creek indicate that there has been some faulting near the western margin of the sulphides and perhaps the sulphides have been faulted off to the west.

Because there is evidence for some flat-lying isoclinal folds in the vicinity, there is a possibility that the sulphides occur along the limb of a similar fold and that they continue across the nose and along the opposite limb. If the sulphides already drilled are on the upper limb of such a fold then more might be expected at depth. One deep hole (500') in the centre of the anomaly is perhaps warranted here to test for a lower mineralized limb.

Anomaly 3

The surface indications of Anomaly 3 are a small amount of quartz and barren pyrite exposed in trenches C and D, heavy iron capping at trench B, and a large quantity of porous, vuggy quartz talus on the hillside above trench B. This quartz is similar to that found in trench A. The iron in the capping has apparently been carried downhill by ground water and has formed several zones of limonite cement and capping over barren schist near the creek.

The E.M. survey indicated a conductor somewhere in the vicinity of station 2 plus 00 and 3 plus 00 and there is a magnetic high running from station 2 plus 00 to station 3 - 01.

A drill hole to test this anomaly should therefore be located somewhere between these two stations. The hillside in this area is somewhat level in spots and a set up should not be too difficult. Overburden may be a problem but the talus here is mostly in large pieces, and on a vertical hole there should be no trouble in getting casing down to at least 60 feet if it should be necessary.

The hole should be a deep one (500'), even though one zone of mineralization is passed through at a relatively shallow depth. This would test for a lower limb of a fold with similar mineralization. More holes may be required, depending on the nature of the sulphides in the first hole.

Anomaly 2

Anomaly 2 gives no surface indications but is sharply defined by both the E.M. and magnetometer surveys.

The two best holes (19 and P) on this anomaly indicate an upper zone of quartz, pyrite, chalcopyrite, pyrrhotite, and sphalerite, passing into magnetite with disseminated pyrite and chalcopyrite at depth. Some bands of mineralized chlorite schist also occur in the drilled section. Fair concentrations of chalcopyrite were obtained at a depth of about 64 feet in DDH "P" and further drilling is warranted.

The attitude of the mineralization is not known; however, if it parallels the schistosity in the area, it dips at 60-70°. The attitude can be determined by drilling three vertical holes (at least 100' deep) across the strike of the anomaly. Then appropriate angle holes can be drilled to determine thickness of mineralization.

The magnetic anomaly at station 26 - 02 shows some phyllite with magnetite and a small amount of disseminated chalcopyrite in an exposure along the creek. This could be a continuation of anomaly 2 which has been faulted off. It is also possible that the blank zone between these two anomalies represents an area which has been gouged or eroded to a greater depth by the glacier so that deeper overburden has obscured the anomaly in the central part.

Depending on the values obtained on the additional drilling on anomaly 2, more holes along the strike, up to and including the anomaly at station 26 - 02 may be necessary.

The drilling program for Five Lake in 1962 should be set up for a minimum of 2000 feet. This amount of drilling should complete anomaly 1, give an indication of the character of mineralization in anomaly 3, and furnish more information as to the thickness and grade of copper in anomaly 2. Depending on these results, more drilling may be warranted.



Figure A



Figure B



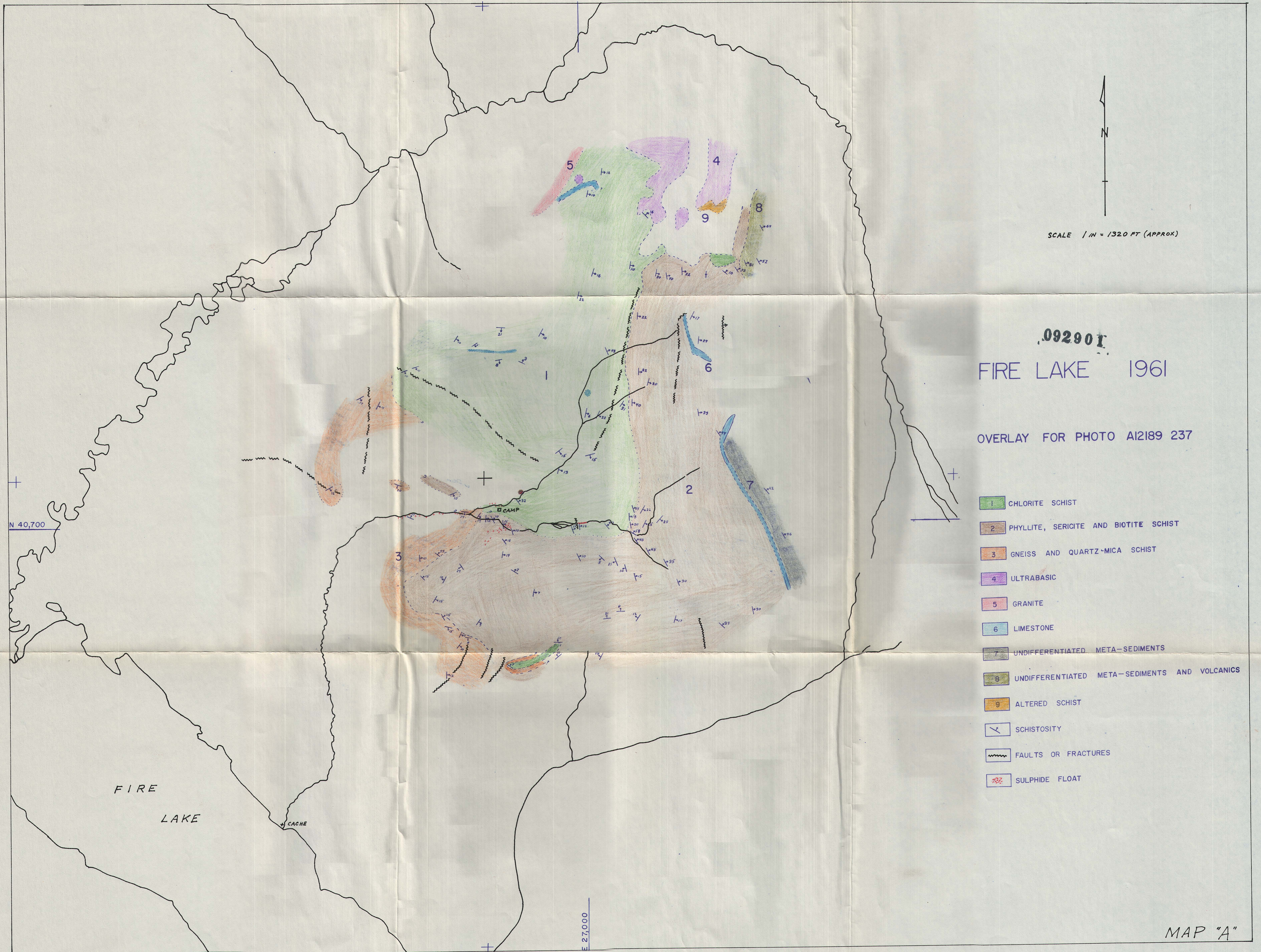
Figure C




DEVELOPMENT MAP
 CASSIAR ASBESTOS
 FIRE LAKE - E ZONE
 JULY, 1961
 SCALE 1"=1000'

MAP "B"


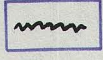

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 SCALE 1 IN = 1320 FT (APPROX)

.092901
 FIRE LAKE 1961

OVERLAY FOR PHOTO AI2189 237

- 1 CHLORITE SCHIST
- 2 PHYLLITE, SERICITE AND BIOTITE SCHIST
- 3 GNEISS AND QUARTZ-MICA SCHIST
- 4 ULTRABASIC
- 5 GRANITE
- 6 LIMESTONE
- 7 UNDIFFERENTIATED META-SEDIMENTS
- 8 UNDIFFERENTIATED META-SEDIMENTS AND VOLCANICS
- 9 ALTERED SCHIST
-  SCHISTOSITY
-  FAULTS OR FRACTURES
-  SULPHIDE FLOAT

002001

CASSIAR ASBESTOS CORPORATION LIMITED
SHERIDAN-KELK ELECTROMAGNETIC SURVEY

"E" ZONE, FIRE LAKE AREA

Longitude 130°30'W, Latitude 61°15'N

by W. N. Plumb, P. Eng.

Period July 12 to 18, 1961



092901

CASSIAR ASBESTOS CORPORATION LIMITED

SHERIDAN-KELK ELECTROMAGNETIC SURVEY

WEST ZONE, FIRE LAKE AREA

Longitude 130°30'W, Latitude 61°15'N

by W. N. Plumb, P.Eng.

Period July 12 to 18, 1961

Cassiar, B.C.,
Oct. 25, 1961.

Mr. F. A. McCall,
Mining Recorder,
Whitehorse, Yukon.

Dear Sir,

The geophysical work illustrated by the enclosed report and map was performed by Mr. Mark Brunelle and his assistant under the direction of Mr. S. H. Pilcher and the general supervision of the writer, July 12 to 18, 1961.

Mr. Brunelle has had at least three years' experience in operating electromagnetic geophysical instruments for Conwest Exploration Co. Ltd.

His experience is approximately as follows:

- Winter 1958/59: Basic course in operating vertical coil E.M. equipment by Electronics Associates, Willowdale, Ontario., followed by three months doing ground geophysics for Conwest in northern Quebec and in Ontario.
- Winter 1959/60: Further courses in the use of the Sheridan-Kalk machine, which was subsequently purchased by Conwest, with Brunelle as operator. Brunelle worked the rest of the winter with the machine in the Thompson area, northern Manitoba.
- Winter 1960/61: Checked the machine thoroughly over the known massive sulphide bodies in the Sudbury area. Worked the rest of the winter using the machine in the Thompson area.

If further information is desired, please contact Conwest Exploration Co. Ltd.

Yours truly,



W. N. Plumb, P.Eng.,
Chief Geologist,
Cassiar Asbestos Corporation Ltd.

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ILLUSTRATIONS

- Fig. 1 DUAL FREQUENCY MAGNIPHASE (Electromagnetic Instrument)
Map FIRE LAKE E.M. SURVEY - SHERIDAN-KELK MAGNIPHASE

SHERIDAN-KELK ELECTROMAGNETIC SURVEY, "E" ZONE, FIRE LAKE AREA

By W. N. Plumb, P.Eng.

Period July 12 to 18, 1961.

PURPOSE AND SCOPE

This survey was made in an attempt to trace the extensions of the main "E" zone of mineralization exposed in a high cirque two miles northeast of Fire Lake, Yukon. The zone contains pyrite, chalcopyrite, sphalerite, pyrrhotite and some magnetite and occurs with quartz as massive replacements in chlorite schists. To the southeast, this zone is overlain by gossanized schists and to the northwest is covered with glacial moraine, varying in depth to 56 feet or more.

The electromagnetic survey covered approximately the same ground as the magnetometer survey and used the same grid but did not extend as far to the northwest. Instead, more readings were taken to the southwest of No. 2 anomaly and to the northeast of No. 1 anomaly. This survey did not cover the areas in which magnetic anomalies Nos. 4 and 5 were later found.

The work was done by Mr. Mark Brunelle, an experienced geophysical operator currently employed by Conwest Exploration Co. Ltd. for prospecting and electromagnetic work. He and his machine were loaned to Cassiar for a period of one week to make this survey. They worked under the direction of Mr. S. H. Pilcher, party chief at Fire Lake, and the author.

Interpretations are chiefly those made by Mr. Brunelle, modified by Mr. Pilcher and the author in the light of drilling results and the later magnetometer survey.

EQUIPMENT AND METHOD

The Sheridan-Kelk Magniphase Electromagnetic geophysical instrument consists of two horizontal coils, with vertical steel cores, mounted on packboards and activated by dry batteries. When in use, the transmitter

is carried by the assistant, who leads, and the receiver by the operator, 200 feet behind him. A 200-foot extension cord connects the transmitter and receiver. The transmitter produces a low-frequency alternating current when activated by the lead man on instructions from the operator. The operator carries the receiving coil on his back, a small control box strapped to his waist in front and wears earphones. He ensures that the lead man goes in the right direction and that the connecting cable does not break. He also advises the lead man when to turn on the transmitter and when to proceed to the next station. The method may be used on a grid system, occupying stations 200 feet apart or may be used in "line ahead" for scouting.

Readings are taken in steps of 50, 100 or 200 feet as desired, always maintaining the 200-foot interval between transmitter and receiver for uniform depth penetration. Readings are always plotted as representing the midpoint between the transmitter and receiver, i.e. at the 100-foot point. The method works best on level ground but corrections can be made for moderate slopes. Steep topography, however, gives indeterminate results.

In taking readings, the transmitter is turned on at a signal from the operator, who is wearing the earphones. One signal is received directly over the wire, the other by induction through the earth. If there is no conductor present, the two A/c currents are in phase and no sound results in the earphones. If a conductor is present, an audible "beat" frequency is created, which causes a whistle in the earphones. The operator tunes this whistle out by means of the control dials until "zero-beat" is obtained, and then records the "units" on the dials. The dials give two readings, for "Amplitude" and "Phase", which are an empirical measure of the relative conductivity of the buried body. The "conductor" may be massive sulphides but may also be graphite, a buried watercourse, etc.

With the instrument used at Fire Lake, a "Phase" reading of 200 units was normal. Differences of 30 units were considered anomalous, while strong near-surface conductors registered phase differences up to 100 units. The lower the dial readings, the stronger the anomaly. E.g., the centre of anomaly No. 1 gave a dial reading of 110 units, compared to the normal of 200.

The survey was made by two men in seven days, including a number of reconnaissance traverses not shown on the map. The relative strength of the conductors was determined by graphing the results in cross-section, using the ratio of Amplitude to Phase readings as a guide. These were then plotted and contoured to outline anomalous areas. Only the "Phase" readings were plotted on the accompanying map. This work required the services of two men for seven days.

OBSERVATIONS AND CONCLUSIONS

With this instrument, conductors are indicated by decreases in both amplitude and phase readings below the normal settings of 200 units. The greater this decrease, the stronger the conductor, as this represents power losses and phase lag due to eddy currents induced into the conductor. A decrease of 100 units represents a phase lag of 25 degrees in the induced current, or a 30% decrease in amplitude.

The width of the anomaly is a measure of the width of the conductor: a narrow body will show anomalous readings over a width of about 200 feet; a wider one correspondingly greater widths. Indications of dip can be obtained from the relative symmetry of the anomalous profiles.

On the accompanying map, the phase readings were plotted and contoured at 10-unit intervals to give the most comprehensive measure of the results, least affected by topography. Amplitude is strongly influenced by topography; phase much less so. Three anomalies were found, as outlined below

No. 1 Anomaly was found to roughly coincide with the mineralized zone that had been trenched and was later drilled. Plotting suggested a wide zone, either flat-lying or with a vertical dip. Subsequent drilling proved it to be almost flat-lying and approximately 400 by 500 feet in area, essentially as outlined by this survey.

No. 2 Anomaly was not suspected until this survey was made. It lies about 700 feet downstream from the main zone, at a point where the stream has formed a small flood plain in the glacial moraine. There are no surface indications whatever. This anomaly was later corroborated by the magnetometer survey and subsequent drilling intersected a zone containing magnetite and massive sulphides. The electromagnetic profile suggests that this zone is essentially vertical.

No. 3 Anomaly underlies an area of gossanized schist about 600 feet southeast and 100 feet higher than the main zone. The shape of this anomaly is somewhat obscured by topographic effects, but its approximate location was confirmed by the later magnetometer survey. Some massive pyrite was found by test pitting nearby. This anomaly has not yet been drilled, but this is recommended for next season.

The results of this work have been highly encouraging and it is suggested that, should more work be done in this area, the electromagnetic survey be extended, especially to the northwest where magnetic anomalies Nos. 4 and 5 were later found.

Respectfully submitted,



W. N. Plumb, - P. Eng.,
Chief Geologist,
Cassiar Asbestos Corporation Limited.



Fig.1 DUAL FREQUENCY MAGNIPHASE, Model 515
Horizontal Coil Operation

N 42,000

N 41,500

N 41,000

N 40,500

N 40,000

N 39,500

TOP No 17
TOP No 5
TOP No 18
TOP No 6

TOP No 5
TOP No 7
TOP No 6
TOP No 8

TOP No 21
TOP No 23
TOP No 22
TOP No 24

Sheridan Range Line
N 40° 17'

Fire Lake Range Line
N 32° 16' 00"

Fire Lake Range Line
N 32° 16' 00"

092901

FIRE LAKE E.M. SURVEY - SHERIDAN KELK MAGNIPHASE
JULY, 1961
SCALE: 1" = 100'

