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MINING RECORDER
MAYO, Y.T.
I.A. & N.D.

ASSESSMENT REPORT

ON

GEOCHEMICAL AND GEOLOGICAL

SURVEYS

Office of the Supervising Mining Recorder
NOV 25 1980
WHITEHORSE
Yukon Territory

MAC CLAIMS

130° 45'W, 63° 16'N

MAYO MINING DISTRICT

CLAIM SHEET 105-O-7

By

R. STROSHEIN, OCTOBER, 1980.

090666

This report has been examined by the Geological Evaluation Unit and is recommended to the Commissioner to be considered as representation work in the amount of

$ 17,750.00

Resident Geologist or
Resident Mining Engineer

Considered as representation work under Section 53 (4) Yukon Quartz Mining Act.

B. R. BAXTER
Supervising Mining Recorder

Commissioner of Yukon Territory

NOV 2 3 1980
WHITEHORSE
Yukon Territory

INDIAN and NORTHERN AFFAIRS

TRANSMITTAL FORM

M.R. File No. _____

S.M.R. File No. _____

Date Fwd. 21 Nov 80

FROM: Mining Recorder at Mayo

TO: Supervising Mining Recorder at Whitehorse, Y.T.

Office of the Supervising Mining Recorder
NOV 26 1980
WHITEHORSE
Yukon Territory

FOR ACTION ARE:

☐ NEW APPL'N for PLACER LEASE to PROSPECT: Name:

☐ RENEWAL APPL'N PLACER LEASE to PROSPECT: Name: Lease No. .....

☐ AFFIDAVIT of EXPENDITURE on PLACER LEASE. Name: Lease No. .....

☐ ASSIGNMENT of PLACER LEASE No. .....
From: To:

☐ GROUPING APPL'N UNDER SEC. 52(2) PLACER MINING ACT.
Owner:

☐ DIAMOND DRILL LOGS:
Claims: Claim sheet no.:

QUARTZ ASSESSMENT REPORT:
Claims: "MAC" Claim sheet no. 105-0-7

Type of report: G. GC. Submitted by: Hudson Bay Mining & Exploration Limited

Cls. work performed on: $ Req. for ren. application $177.50 ~~00~~

Rpt Value $ 22472.72

Signature

REPLY ACTION: Date Ret.

Signature

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1. INTRODUCTION

In July 1979 visual and geochemical prospecting in an area lying between two tributaries of the Hess River located several bedded barite occurrences. 122 MAC claims were staked along a ten kilometer belt of favourable geological formations. The claims were located in the 105-O-7 claim map area between July 24-26, inclusive. The claims were recorded in the Mayo Mining District August 14, 1979.

Subsequent to claim staking, reconnaissance geological mapping and visual prospecting located fifteen barite occurrences within the claim group area. In conjunction with the mapping and prospecting, stream sediment sampling of the drainages in the area was completed.

These initial investigations did not reveal any potential economic sulphide deposits. Seven reconnaissance soil sampling grids were then established to further explore the favourable geological belt which is generally overburden covered. The grids were established in the vicinity of the barite occurrences and concentrated along the 10 kilometer belt of C_{3a} unit sediments south of the central east-west ridge of Unit C_{2cpc}.

Grid baselines were established parallel to and commonly coincident with east-west bearing claim lines. Transverse section lines were run at 100 meter intervals along the baselines. Section lines were flagged and marked at 50 meter intervals. All lines were run with compass and topolite chains. Brief notes on outcrop and talus locations were made while the lines were run.

Soil samples were collected along the lines and analysed for Pb/Zn/Ag content. Geochemical analysis was by atomic absorption carried out by Whitehorse Assay Ltd., Whitehorse, Yukon Territory.

Rock samples were collected from each barite showing as exposures permitted. Samples were analysed by Whitehorse Assay Ltd. for Pb/Zn/Ag/$BaSO_4$ content. All values of $BaSO_4$ are reported in percentage while Pb/Zn/Ag values are reported in percentage or parts per million. A total of 1008 soil and 88 rock samples were analysed.

The field work was carried out beween July 27 and August 19, 1979. Check sampling on grids 17 and 18 was carried out during two days in early September.

The results and data of the field season were compiled during the winter of 1979-80. Evaluation of the data and further research was

carried out in the Whitehorse office of Hudson Bay Exploration and Development Company, Limited, by the author.

Further exploration was proposed and carried out on the property between July 4 and August 13, 1980. The work involved hand trenching of several barite showings, detailed geological mapping of the property and detailed soil sampling immediately adjacent most of the barite showings. Further rock sampling of barite showings was completed. A total of 568 soil samples and 46 rock samples were collected and analysed by Barringer Research of Whitehorse, Yukon Territory. Soil samples were analysed for Pb/Zn/Ag/Hg. Rock samples were analysed for Pb/Zn/Ag/Ba. As well, 30 rock samples were analysed for Hg by Chemex Labs of Vancouver, B. C.

All results have been compiled and here in presented.

2. LOCATION AND ACCESS:

See Figure 1 Location Map.

The MAC claim group is located in the Mayo Mining District approximately 170 kilometers north-north-east of Ross River. The area lies between two west draining tributaries of the Hess River on map sheet 105-O-7 centered at $130^{o}45'W$ and $63^{o}16'N$.

Access to the property is by helicopter from the Macmillian Pass airstrip 25 kilometers to the east of the property. The Macmillian Pass airstrip is adjacent the North Canol Road 140 road miles from Ross River. The Macmillian Pass airstrip is also serviced by scheduled flights from Whitehorse during the summer season.

3. PERSONNEL:

The personnel assigned to the project were as follows:

R. Stroshein - Project Supervisor
D. MacFarlane - Field geologist
C. Morgan - Field assistant
R. Francey - Field assistant
R. Johnston - Field assistant (1979)
J. Upham - Field assistant (1979)

HUDSON BAY EXPLORATION & DEVELOPMENT COMPANY LIMITED
WHITEHORSE OFFICE
MAC CLAIMS
LOCATION MAP
DRAWN BY: R.S.
DATE: AUG. 1980
PLATE No.: 1
FIELD WORK BY:
REVISED BY:
SCALE:
MAC CLAIMS
MACMILLIAN PASS
INTERNATIONAL HWY
ROSS RIVER
Whitehorse
Watson Lake
Mayo
Dawson
Keno
Elsa
Tuktoyaktuk
Inuvik
Fort McPherson
Old Crow
Carmacks
Faro
MACKENZIE MOUNTAINS
RICHARDSON MOUNTAINS
OGILVIE MOUNTAINS
WERNECKE MOUNTAINS
SELWYN MOUNTAINS
CASSIAR MOUNTAINS
ARCTIC CIRCLE
ALASKA HIGHWAY
DEMPSTER HIGHWAY
ROBERT CAMPBELL HIGHWAY
CANOL ROAD
NORTHWEST TERRITORIES
YUKON
ALASKA
UNITED STATES
CANADA
YUKON
BRITISH COLUMBIA

4. CLAIM OWNERSHIP:

See Plate No. 2, Claim Location.

Exploration activity was carried out on the following claims:

MAC 1-4	YA 40619 - YA 40622
MAC 9-20	YA 40627 - YA 40638
MAC 23-38	YA 40641 - YA 40656
MAC 59-64	YA 40675 - YA 40680
MAC 67	YA 40683
MAC 69	YA 40685
MAC 71	YA 40687
MAC 73	YA 40689
MAC 75	YA 40691
MAC 77	YA 40693
MAC 79	YA 40695
MAC 82	YA 40698
MAC 84	YA 40700
MAC 86	YA 40702
MAC 88	YA 40704
MAC 90	YA 40706
MAC 92	YA 40708
MAC 95-104	YA 40711 - YA 40720
MAC 112	YA 40728
MAC 114	YA 40730
MAC 116	YA 40732
MAC 118-124	YA 40734 - YA 40740

All claims are wholly owned by Hudson Bay Exploration and Development Company, Limited.

5. GEOLOGY:

See plate No. 3 - Geology - MAC Claims.

The area outlined by the MAC claims is underlain by fine to coarse clastic sedimentary units of Devono-Mississippian age. The units generally trend north-westerly bounded on the north and south by fine clastic sediments of the Ordovician-Silurian Road River Formation.

The Devono-Mississippian sediments are divided into three units which include an upper and lower argillite unit separated by a central chert pebble conglomerate unit. This division is consistent with

mapping in the local Macmillian Pass area. The sequence is locally correlated to the Canol Formation.

The lower Canol units are separated from the Road River Formation in the north by a regional unconformity. The formations are separated in the south by large scale, steep angled, normal faults consistent with the north-westerly regional trend.

The Road River Formation is comprised of fine clastic units. The formation is composed of interbedded carbonaceous chert and argillite units. Chert beds are dull grey weathering, commonly well bedded and rarely band. The argillite beds are commonly well bedded and occasionally exhibit wispy laminations. The argillite beds weather orange brown in colour and are locally rust stained by weathering of finely disseminated pyrite. A distinct grey brown weathering silty shale unit occurs at the top of the formation along the southern boundary. The shale is commonly calcareous and locally graptolitic.

The Lower Canol Formation Unit I is comprised of two members. The lower member (C_{1c}) is composed of blue grey weathering massive chert. The lower contact with the Road River Formation has not been observed in the field but the upper contact with the overlying argillite member appears to be transitional. This led to the conclusion that the chert member be placed in the Canol Formation rather than the Road River Formation as there is a Regional uncomformity between the Road River Formation and the overlying Canol Formation.

Locally, within the C_{1c} member are sections of thin well bedded chert which produce a platey talus, and massive bedded cherty barite deposits. There are four such occurrences and the two best exposed bodies outcrop within a few tens of meters of the upper contact. The complete member is estimated to be 300 meters thick.

The lower Canol Formation Unit 1 upper member (C_{1a}) is composed of a dark rusty brown to black sand-banded argillite sequence. The member is generally thin well bedded with beds of chert, argillite, siltstone and sandstone. Beds are rarely over two feet thick and are commonly termed banded. The unit thickness is estimated at approximately 200 meters.

The Middle Canol Formation Unit 2 (C_{2cpc}) is composed of a regionally widespread chert pebble conglomerate of variable thickness. On the MAC claims bodies of sand-banded argillite occur within the chert pebble comglomerate unit. The interformational argillite bodies are lithologically similar to unit C_{1a} and may represent channel fill deposits.

The chert pebble conglomerate unit is massive bedded and composed of angular to sub-rounded fragments of chert, argillite and shale in a fine siliceous matrix. The unit locally grades to sandstone. The conglomerate matrix and sandstone sections commonly contain disseminated pyrite.

The Upper Canol Formation Unit 3 (C_{3a}) is composed of a highly cleaved carbonaceous argillite which is locally described phyllitic. The unit weathers to a light silvery brown colour and very thin plates. The cleavage is very strong and appears to be acute to bedding dips and roughly conformable to bedding attitude. On weathered surfaces thin shale bands are visible by contrasting weathering.

Within the C_{3a} argillite unit are interformational bodies of chert (C_{3c}), chert pebble conglomerate (C_{3cpc}) and bedded barite. The chert bodies weather light grey and are generally poorly exposed. The chert pebble conglomerate bodies form distinct topographical features which outline their lenticular shape. The bodies are fairly consistent in size 50-100 m thick and several hundred meters long. The lenses of chert pebble conglomerate represent channel fill bodies within the surrounding argillite unit. The barite deposits are thin well bedded and occur within 100 meters of the lower contact with the C_{2cpc} unit.

Regional structural trends are northwest-southeast. The most prominent features are large scale steep angled normal faults. A large boulder of limestone located within a fault zone of one fault has the nearest source 2 km. to the west. No indication of relative movement has been noted.

Southerly across the regional trend on the claim group the units outcrop in sequence to the south; bounding faults are crossed and lower units recur. Within the central package of Canol Formation units the upper argillite unit exhibits the greatest structural deformation in the strong cleavage and visible fold structures. These are most developed due to the lithology of the unit and the proximity to the intense tectonic

activity.

Transverse faults are indicated by unit off sets and distinct topographical features. The result is a system of tectonic blocks which locally can be highly deformed providing a confused setting.

The overall setting is in general, consistent with north westerly linear belts of the regional structures and stratigraphy.

6. BARITE DEPOSITS:

See Plate No. 4-9 inclusive.

Bedded barite deposits have been located at two approximate stratigraphic horizons within the Devono-Mississippian sediments. The lower horizon occurs within the C_{1c} unit a few tens of meters below the upper contact with unit C_{1a}. The second horizon occurs within unit C_{3a}, within 100 meters of the lower contact with unit C_{2cpc}. The lithologies of the host rocks and the barite deposits are distinctly different at the two horizons.

Five deposits have been located on the MAC claims at th lower horizon. These deposits occur on Grid Nos: 17, 18 & 23. These deposits are composed of grey fine crystalline massive bedded barite. The barite commonly is finely banded with chert and reacts to dilute hydrochloric acid. The outcrops are relatively resistant to weathering and talus is generally very angular. The barite of these deposits is relatively pure, assays of $BaSO_4$ commonly are 80-90%.

Ten deposits have been located along the C_{3a} unit horizon indicated on Grid Nos.: 17, 19, 20, 21 & 22. The barite in these deposits is grey medium crystalline and thin well bedded. The barite occurs along bands commonly 10 cm. thick which are separated by carbonaceous argillite partings which are generally much thinner < 1 cm. The barite of these deposits commonly grades laterally and vertically to spotted barite. The barite forms discrete small nodules (.3 mm) along the bedding planes. The deposits commonly weather to flaggy talus and scree slopes commonly are buff tan in colour. Although, the barite bands are relatively pure assays across sections are commonly between 20-50%.

Typically both sets of deposits have stratigraphic thickness of up to 50 m. but lack lateral extent. The largest deposits on Grids 17 & 20 are up to 50 meters thick and extend laterally for 150 meters.

The presence of mercury at the Tom deposit had been noted but never

fully investigated. Thirty samples were selected from the MAC claims to determine if mercury was present in the showings on the MAC claims. The results indicate there is a strong variation in mercury content between adjacent sediments and the barite deposits.

The significance of the mercury geochemical dispersion requires more research to be useful as an exploration technique. The logical focus of such research is the Tom deposit.

7. GEOCHEMICAL SOIL SAMPLING SURVEY:

Results plotted on Plate No. 4-9 Grid 17, 18, 19, 20, 21, 22 & 23.

Soil sample collection grids were generally aligned with regional geological trends in the vicinity of discovered barite occurrences. Grids 17-22 inclusive were situated to best explore the upper Canol unit C_{3a} hosting the bulk of the barite deposits. The grid lines were designed to explore the unit between the underlying chert pebble conglomerate unit and the southern fault which brought the Road River Formation sediments in contact with the C_{3a} unit.

Soil development in the area is poor. The profile upwa d from bedrock includes an extensive section of weathered inplace bedrock overlain by a thin layer of talus fines. Commonly the talus fines are overlain by a 1-2 inch layer of light tan coloured material which is a possible origional volcanic ash. A minor organic layer is then covered with vegetation.

The grid areas are generally well drained. Swamp covered areas are rare in valley bottoms, higher elevations are commonly barren of organic cover.

Initial sampling was directed to the light brown weathering horizon on the assumption that it represented a typical B_1 horizon. When the B_1 was not present samples were collected of the talus fines C_1.

Initial indication suggested that the B_1 horizon was infact a leached layer. Check samples to compare the values were obtained from the two horizons at the same locations. A comparision of the results is presented in Table I. The results clearly indicate that the light brown layer is not a typical B_1 horizon but rather has no relation to underlying bedrock geochemistry.

TABLE I

COMPARISON OF B_1 AND C_1 SAMPLES

Grid No.	B_1 Horizon			C_1 Horizon		
	Pb	Zn	Ag	Pb	Zn	Ag
18	4	Tr	.8	200	48	4.4
	4	8	.6	36	664	2.4
	8	8	.2	56	48	1.4
	4	16	.6	104	88	3.8
	12	8	.4	36	24	1.2
	16	8	.4	84	120	2.4
	8	8	Tr	40	72	1.6
	4	8	1.2	84	24	3.0
17	8	Tr	2.2	20	296	.8
	Tr	Tr	1.0	12	168	.2
	Tr	Tr	.9	36	32	5.2
	4	Tr	2.6	28	40	2.4
	4	Tr	1.6	24	80	2.8
	12	40	2.4	30	80	12.0
	4	Tr	.8	20	376	2.4
	Tr	Tr	.2	12	48	.8
	4	Tr	.2	4	56	.6
22	20	160	5.2	14	148	1.2
	12	56	.9	12	88	1.0
	12	16	1.0	20	80	2.2
	16	48	.8	20	56	1.5
	16	56	.6	16	22	.8
$\bar{x}$	8	23	1.1	41	121	2.5
σ	5.5	35	1.2	44.1	150	2.5

all results are reported in parts per milllion.

A portion of grid 18 is underlain by a fault block of unit C_{1c}. Grid 23 was established along unit C_{1c} - C_{1a} contact immediately adjacent the barite occurrences.

The results of the sampling conducted during 1979 were evaluated by statistical analysis prior to the 1980 field season. The evaluation is presented in Table II. The mean value, standard deviation and population for each element in each grid area is tabulated. The weighted average of the mean values and anomalous threshold values for the elements in all areas is indicated in the final row. Anomalous threshold values are determined as being two standard deviations above the mean value.

Although from 50 to 75% of the samples were of the leached material the statistical evaluation of all data was considered to have some validity. The application of the results to interpretation was based on three premises. Firstly, the presence of the leached horizon was not consitently sampled. Secondly, the type of mineralization envisaged is by nature and economic necessity of a large size with a relatively widespread geochemical dispersion. Thirdly, the evaluation did indicate several areas of anomalous values.

The application of the results included the consideration that the survey was not as complete or consistent as originally intended. Further detailed sampling was recommended for areas which normally would have been rejected.

Exploration in 1980 was directed to the immediate areas of barite showings especially where anomalous values had been recorded. Sampling was in much greater detail commonly at 10 meter intervals along lines at 25 meter spacings. The exploration philosophy being that although economic sulphide deposits did not occur within the located barite deposits there may be a spatial relationship. If economic sulphide concentrations did not occur adjacent to barite deposits possibly they could exist along the same stratigraphic horizon with no other relationship.

TABLE II

STATISTICAL ANALYSIS OF GEOCHEMICAL SOIL SAMPLING

Grid No.	Pb				Zn				Ag			
	n	$\bar{x}$	σ	Anom.	n	$\bar{x}$	σ	Anom	n	$\bar{x}$	σ	Anom.
17	136	14	8	30	136	61	87	235	137	1.4	1.1	3.6
	148	15	9	33	146	69	93	255	147	1.4	1.1	3.6
18 & 19	166	19	10	39	182	90	134	358	183	1.1	1.0	3.1
	183	24	23	70								
19	64	16	9	34	64	62	92	246	64	.9	.7	2.3
20	68	14	9	32	68	46	37	120	68	1.0	.8	2.6
21	246	19	14	47	246	53	63	179	246	1.1	1.1	3.3
22	153	18	8	34	152	6	86	248	153	1.0	.6	2.2
					153	93	227	547				
23	60	18	10	38	60	206	388	982	60	1.8	1.6	5.0
					58	149	179	507	58	1.6	1.3	4.2
	858	19		45	852	74		260	855	1.2		3.1

All results reported in parts per million.

8. DISCUSSION:

8.1 Grid 17 - Plate No.: 4

Grid 17 located at the west end of the claim group covers a low lying area underlain by Canol Formation units. The area, as the center of several tectonic elements, has undergone deformation and is generally disrupted. The geological picture is quite confused.

Barite deposits have been noted at six localities.

The most significant deposit near the 20 NBL between 48W-50W has been explored as indicated on Detail Grid A. The deposit extends for 150 m. along strike and is up to 50 meters thick. Soil and rock sample analyses yielded no economically significant values of Pb/Zn/Ag. Several soil samples are slightly anomalous in Pb/Ag but doubtfully reflect economic concentrations. The deposit grades from massive cherty barite to thin barite-argillite interbeds. Pyrite banding has been observed along the southern flank of the deposit.

At 46W - 22+75N barite/argillite occurs in thin beds on a graphitic cherty argillite talus slope outlined by Detail Grid B. Soil and rock samples yielded no significant Pb/Zn/Ag values. Values of Hg in the soils tend to indicate the presence of barite in the vicinity but not direct location to the barite or suggestion of economic sulphides.

At 50W/23N is located an argillite hosted barite occurrence. The area outlined on Detail Grid C is a low ridge bordered by low swampy ground. The barite outcrop is rusty weathered as visible pyrite occurs disseminated along the bedding planes. No significant values were noted in the rock and soil samples collected.

At 49W/21N a minor occurrence of barite in rubble has been investigated by soil sampling indicated on Detail Grid D. No significant values were noted.

Assays of soil and rock samples of barite and argillite at 52W/28N yield no significant values.

Scattered outcrops near 51 + 50W/21N include massive barite and chert. The barite contains carbonate and suggests the block is of Unit C_{1c} sediments.

The detailed investigation of the numerous barite occurrences in the area has yielded no encouragement or indication of potential economic sulphide deposits.

8.2 Grid 18: Plate No.: 5

Two localities of barite hosted by cherty argillite have been investigated on Grid 18. The host rock appears to be a faulted block of Unit C_{1c} in contact with unit C_{3a} on the north. The fault block includes a sliver of Unit C_{2cpc}.

Massive barite at 50E/20 + 50N occurs as two distinct lenses divided by a graphitic cherty argillite bed. The overall width of the two lenses is 29 meters and appears to have a strike length of approximately 50 m. No significant values of Pb/Zn/Ag were noted in soil or rock samples collected. Hg analysis of soils outlined the outer edges of the barite body.

Investigations in the area around 53E/19N revealed several bodies of bedded barite with very limited strike lengths (up to 8 m.) and erratic widths (up to 7 m.). Analysis of rock samples collected failed to explain the anomalous Pb/Ag values of soil samples collected in the area. The area has been deformed and folding is evident in the trenches that were excavated. See Detail Plate No. 10.

Anomalous Zn values in the southwest area of the grid reflect the underlying brown silty shale unit of the Road River Formation.

8.3 Grid 19: Plate No. 5

The grid covers a generally lowlying area which is overgrown with scrub brush and stunted balsam. Scattered anomalous zinc values occur in marshy areas.

At 20 + 25E along the 40 NBL a 2.5 meter thick bed of barite occurs in an outcrop of phyllitic argillite Unit C_{3a}. The adjacent sediments contain a noticeably increased Hg content. The hanging wall argillite shows slightly higher Zn content.

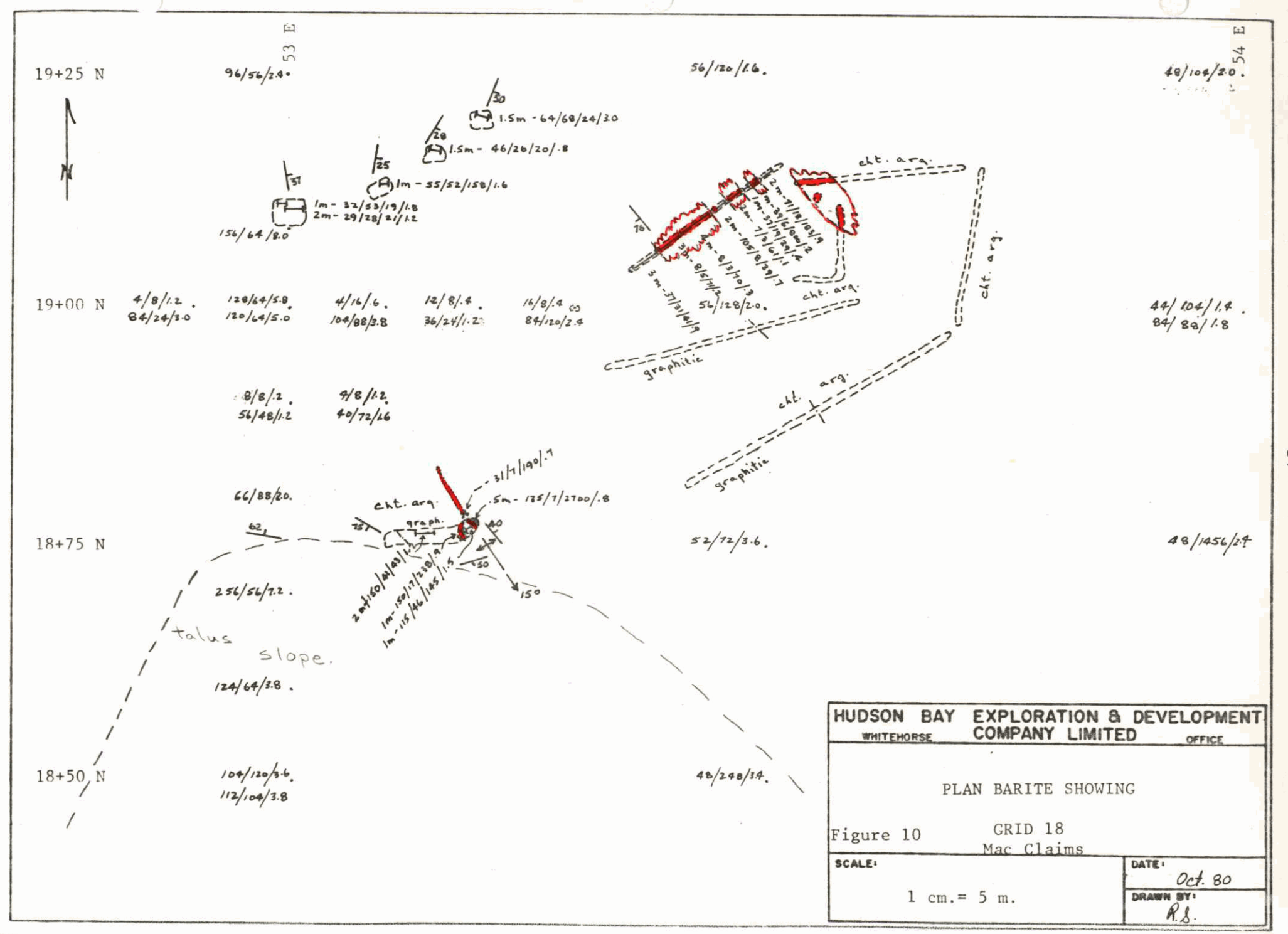
Soil sampling suggests that the Hg horizon extends at least 75 m. along strike.

8.4 Grid 20: Plate No. 5

An interbedded barite and argillite deposit occurs along a ridge between 20E - 21E along the 20 SBL.

Assays of rock samples yielded no significant values in Pb/Zn/Ag.

Soil samples along 19 + 50E north of the 20 SBL were anomalous in Pb (up to 210 ppm). Significant Hg values (up to 2688 ppb) occur downslope of the barite outcrop.



HUDSON BAY EXPLORATION & DEVELOPMENT COMPANY LIMITED	WHITEHORSE OFFICE
PLAN BARITE SHOWING	
Figure 10 GRID 18 Mac Claims	
SCALE: 1 cm.= 5 m.	DATE: Oct. 80
	DRAWN BY: R.S.

8.5 Grid 21: Plate No. 7

Several barite bodies are hosted by phyllitic argillite Unit C_{3a}. Analysis of rock samples indicated insignificant values of Pb/Zn/Ag. Initial soil samples indicated anomalous values in several localities. The detail sampling carried out immediately in the vicinity of the barite deposits and in possibly anomalous areas failed to duplicate the results. The final results do not indicate economic potential. Hg analysis indicate in a general way that barite occurs in the near vicinity.

8.6 Grid 22: Plate No. 8

An argillite hosted barite body outcrops near 23 + 75W/31 + 50N. The deposit has an approximate thickness of 43 m. and a maximum strike length of 35. Suggesting a local limited source over an extensive period of time. See detail Plate 11.

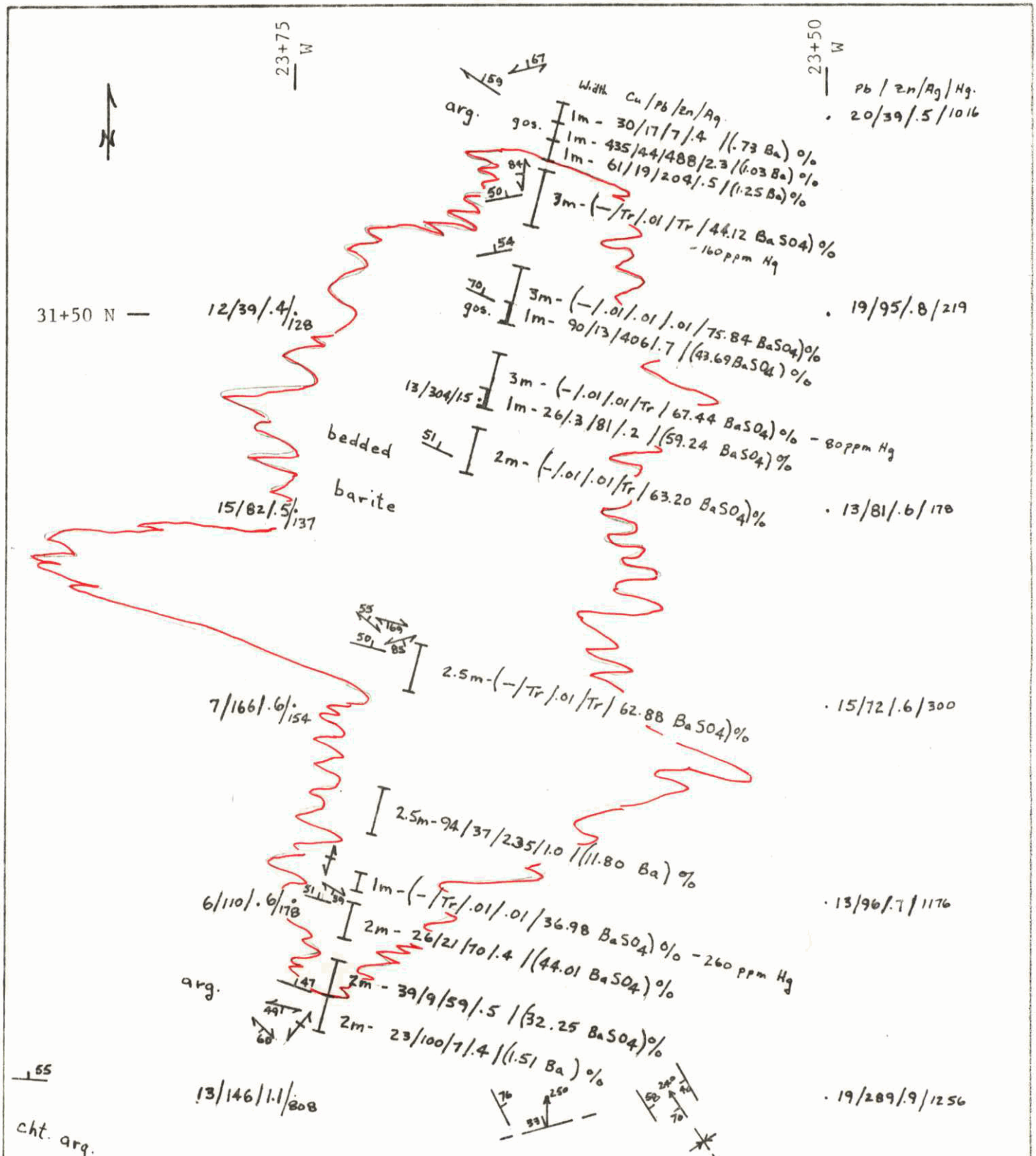
In a creek cut along line 35W silt samples collected from rusty seeps yielded anomalous Zn values (up to 4032 ppm).

Soil and rock samples in the area do not indicate potential economic horizons. Hg analysis of rock and soil samples suggests that there is a Hg enriched horizon which in other localities occurs adjacent or along the footwall of the barite horizon. The phyllitic argillite of Unit C_{3a} which outcrops along the creek represents a section of the unit from the hanging wall of Unit C_{2cpc} to the upper bounding fault.

8.7 Grid 23: Plate No. 9

Massive barite outcrop at 10W/20 + 50S. Massive cherty barite with slight carbonate content. Deposit has overall thickness of 45 meters which is not continuous. Very limited lateral extent. Pb/Zn/Ag assay values are insignificant. Deposit near upper content of C_{1c} with C_{1a}. Erratic anomalous values from soil and silt samples down slope to the west.

A 2 m. thick barite bed adjacent the C_{1c} - C_{1a} contact outcrops near 19W/16S. Rock samples yielded no significant Pb/Zn/Ag values but Hg analysis suggests above normal values expecially along the footwall of the barite horizon. There are several anomalous Pb/Zn/Ag values from soil samples collected down slope.



HUDSON BAY EXPLORATION & DEVELOPMENT COMPANY LIMITED

WHITEHORSE OFFICE

PLAN, BARITE SHOWING

GRID 22

Figure 11 Mac Claims

SCALE: 1 cm.=2.5m.

DATE: Oct. 80

DRAWN BY: R. A.

9. CONCLUSIONS AND RECOMMENDATIONS:

A total of fifteen bedded barite deposits have been located and examined on the MAC claims. The deposits appear to conform to two separate horizons with the Devono-Mississippian sediments of the Canol Formation. Although the deposits do not include base metal sulphides they occur at similar stratagraphic locations to the Ba-Pb-Zn-Ag deposits in the local Macmillian Pass area (i.e. Tom and Jason deposits).

Geological evidence suggests that a favourable tectonic environment was present during deposition. The large scale regional activity which affected the development of the Macmillian Pass sub-basin would have strongly influenced the MAC claims area. A reconstruction of the paleo-geological setting of the area has been severely complicated by later tectonic activity. The area has apparently been much more disrupted than the local Macmillian Pass area where the original basin outline is roughly indicated in the regional geologic picture. Regional geological mapping is necessary to substantiate the presence of a paleo-sub-basin in the MAC claims area.

The suggestion is that the area outlined by the MAC claims was a tectonically active sub-basin margin zone at the time of deposition. The presence of an ideal tectonic setting becomes purely academic if mineral bearing hydrothermal systems are not also active.

The exploration of the MAC claims has not indicated the presence of economic base metal deposits. The results do indicate an interesting geological environment of which a full evaluation will require a significant regional geologic input and exploration techniques to determine the extent of hydrothermal activity.

A potential technique to determine hydrothermal activity may be in the use of geochemical dispersion patterns of indicator elements. The development of this technique will require in depth research to determine the necessary parameters.

Continual research for other potential methods should receive ongoing considerations.

The obvious areas to concentrate the search are the two barite bearing horizons both locally and regionally.

Robert Stevens

APPENDIX I

MAC CLAIMS

REVIEW OF EXPENDITURES

AUGUST 14, 1979 - AUGUST 14, 1980

SALARIES AND WAGES:

R. Stroshein	Project Supervisor	28 days (includes fringe benefits)	$ 2,800.00
D. MacFarlane	Field Geologist	20 days (includes fringe benefits)	1,300.00
C. Morgan	Field Assistant	20 days (includes fringe benefits)	1,000.00
R. Francey	Field Assistant	20 days (includes fringe benefits)	1,000.00
R. Johnston	Field Assistant	5 days (includes fringe benefits)	275.00
J. Upham	Field Assistant	5 days (includes fringe benefits)	250.00
		Total -	$ 6,625.00

CAMP COSTS:

84 man days @ 20$/day	1,680.00

TRANSPORTATION:

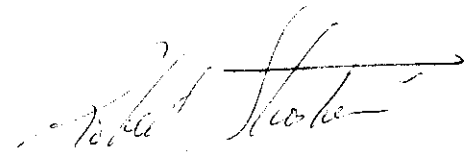
Truck mobilization of camp equipment July 4-5, 1980	471.97
Helicopter 1979: 6.7 hours x 300$/hour	2,010.00
Fuel 22 gal./hr. x 6.7 x 1.75$/gal.	257.95
1980: 19.7 hours x 375$/hour	7,387.50
Fuel 22 gal./hr. x 19.7 x 3.00$/gal.	1,300.20
Total -	11,427.62

ASSAY:

1979:Rock Samples 24 Samples @ $8.00 % $BaSO_4$	192.00
29 Samples @ $2.50 ppm Ag, Zn, Pb	72.50
30 samples @ $3.00 ppm Hg	90.00
Soil Samples 192 samples @ $2.50 ppm Ag, Zn, Pb	380.00
1980:Rock Samples 41 samples @ $4.00 ppm Ag, Zn, Pb, Cu	164.50
Soil Samples 568 samples @$3.00 ppm Ag, Zn, Pb	1,704.00
Total -	2,602.50

MISCELLANEOUS:

Blasting Powder and caps	137.60
Total Expenditures -	$ 22,472.72



APPENDIX II

ROBERT W. STROSHEIN

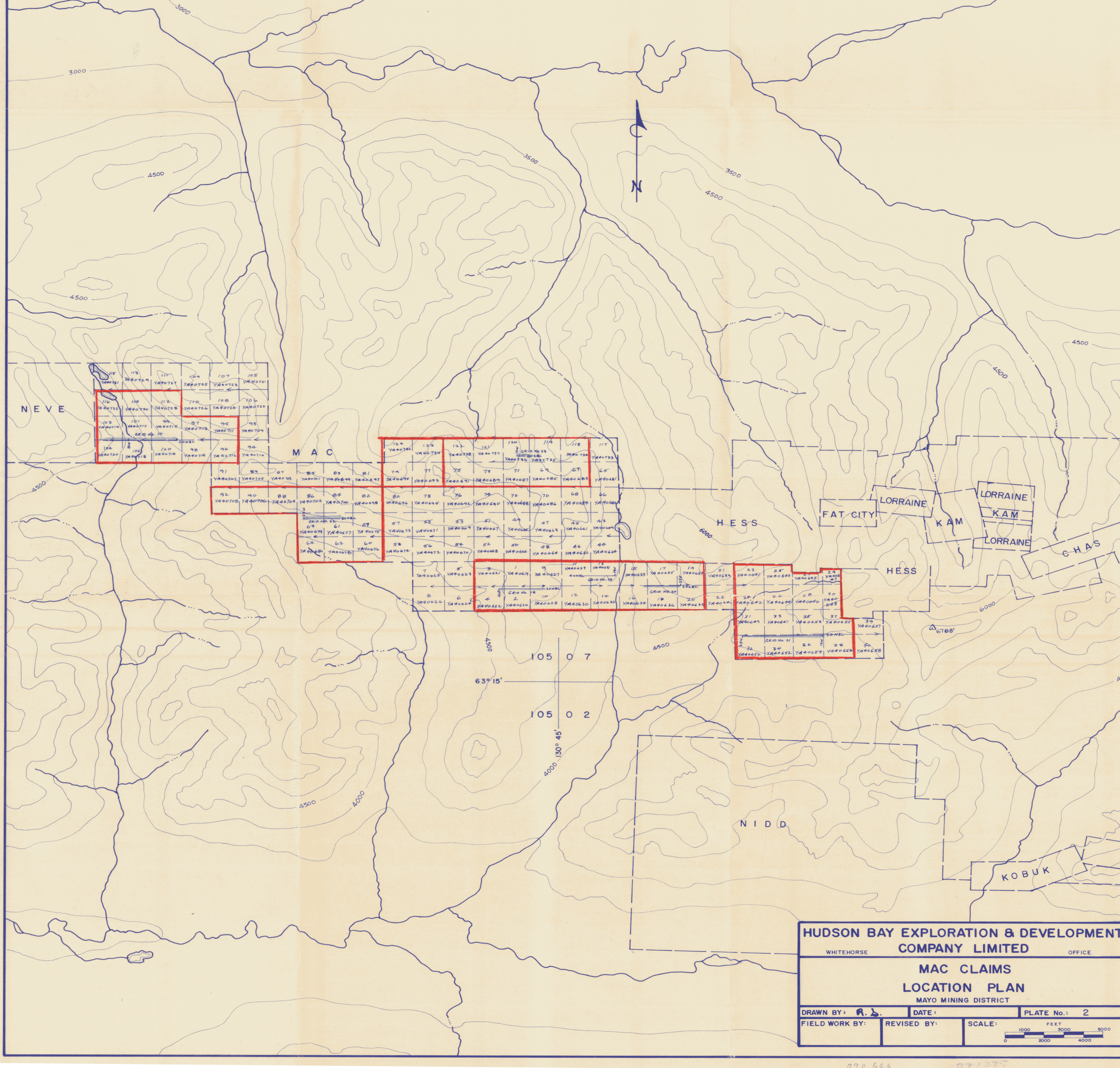
ADDRESS: #303 - 504 Drury Street,
Whitehorse, Yukon Territory.
Y1A 1T4

EDUCATION: B. Sc. (Geological Engineering) from
University of Saskatchewan
Graduated in 1973

EMPLOYMENT: 1973 - 1980 Hudson Bay Exploration & Development Co. Ltd.

Flin Flon Office 1973 - 1975
Drill Geolgist - field supervisor of diamond drill projects Northern Manitoba and Saskatchewan.

Whitehorse Office 1975 - 1980
Project Geolgist - field supervisor of geological mapping, geophysical, geochemical and prospecting programs in the Yukon Territory.
Included report preparation and assessment.



HUDSON BAY EXPLORATION & DEVELOPMENT COMPANY LIMITED

WHITEHORSE OFFICE

MAC CLAIMS
LOCATION PLAN

MAYO MINING DISTRICT

DRAWN BY: R. S.	DATE:	PLATE No.: 2
FIELD WORK BY:	REVISED BY:	SCALE: FEET 1000 3000 5000 / 0 2000 4000

090 666 09127

LEDGEND :

GEOLOGICAL COLUMN

C_3 — CANOL FORMATION: UNIT 3 — [a] — Carbonaceous cleaved argillite. [cg] — Blue-grey weathering chert. [cgc] — Interformational chert pebble conglomerate. [b] — Bedded barite.

C_2 — CANOL FORMATION: UNIT 2 — [pc] — Massive chert pebble conglomerate. [a] — Interformational sand-banded argillite.

C_1 — CANOL FORMATION: UNIT 1 — [cg] — Carbonaceous grey weathering chert. [sa] — Sand-banded argillite. [b] — Bedded barite.

REGIONAL UNCONFORMITY

RR — ROAD RIVER FORMATION : Interbedded fine black clastics with minor carbonate content.

SYMBOLS

- BEDDING - attitude/dip
- UNCONFORMABLE CONTACT
- GEOLOGICAL CONTACT - approximate
- NORMAL FAULT - vertical
- FOLIATION — attitude/dip
- FRACTURE JOINT — attitude/dip
- AXIAL PLANE - anticline/dip/plunge
- BASELINE LOCATION
- INTENSE FOLDING

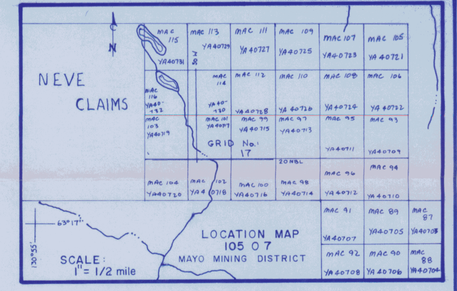
105 07

105 02

63° 15'

130° 45'

HUDSON BAY EXPLORATION & DEVELOPMENT COMPANY LIMITED		
WHITEHORSE OFFICE		
MAC CLAIMS GEOLOGY MAYO MINING DISTRICT		
DRAWN BY: R.S.	DATE:	PLATE No.: 3
FIELD WORK BY: R.S. G.B. W.K.	REVISED BY:	SCALE: 1000 3000 5000 FEET / 0 2000 4000



	−0+00E	−0+25E	−0+50E	−0+75E	−1+00E	−1+25E	
−0+40N					.7/27/4/158		
				.16/11/4/1420	.5/29/4/57		
−0+20N		.	.29/33/4/2360	.14/14/10/6840	.7/30/5/105		
−00 BL	.21/64/10/680	..	.27/48/4/3740	.18/3/12/10520	.9/41/4/242		
	.17/70/5/158	.21/25/7/564	.14/488/7/8880	.23/74/11/4380	.10/33/5/3200	.9/32/116/124	
−0+20S	.14/57/10/1080	.21/143/7/1556	.16/54/8/6660	.25/81/9/876	.10/25/6/3280	.11/449/17/649	
	.18/90/10/492	.18/144/11/700	.23/197/11/608	.22/85/12/311	.16/31/8/786	.12/47/7/47	
−0+40S	.19/134/7/207	.20/141/12/700	.18/241/10/656	.11/71/14/209		.5/47/6/66	
		.14/68/8/166	.11/144/9/131	.5/28/6/76		.9/36/13/109	
−0+60S		.16/123/8/236		.12/32/14/76		.17/88/11/326	
						.14/81/5/94	
−0+80S						.6/73/3/104	
						.19/93/10/85	
−1+00S						.22/229/7/131	
						.21/197/7/209	

. Pb/Zn/Ag / Hg (ppm / ppb)

DETAIL OF GRID "B"

SCALE 1:100

	−0+50W	−0+25W	−0+00W	
−0+40N				
	.12/54/9/213	.13/180/4/1408		
−0+20N	.18/215/5/91	.17/130/8/99	.11/55/6/30	
	.21/170/4/91	.15/75/5/15	.19/43/8/60	
−00BL	.10/39/4/15	.17/43/4/68	.12/40/5/59	
	.14/100/7/30	.11/17/5/8	.13/99/5/68	
−0+20S	.18/34/6/446	.21/250/5/196		
	.25/150/4/1192	.22/129/10/123		
−0+40S	.16/46/7/107	.6/9/4/99		
	.9/22/7/15	.6/8/7/22		
−0+60S	.13/23/8/22	.16/19/4/76		

. Pb/Zn/Ag / Hg (ppm / ppb)

SCALE 1:100

DETAIL OF GRID "D"

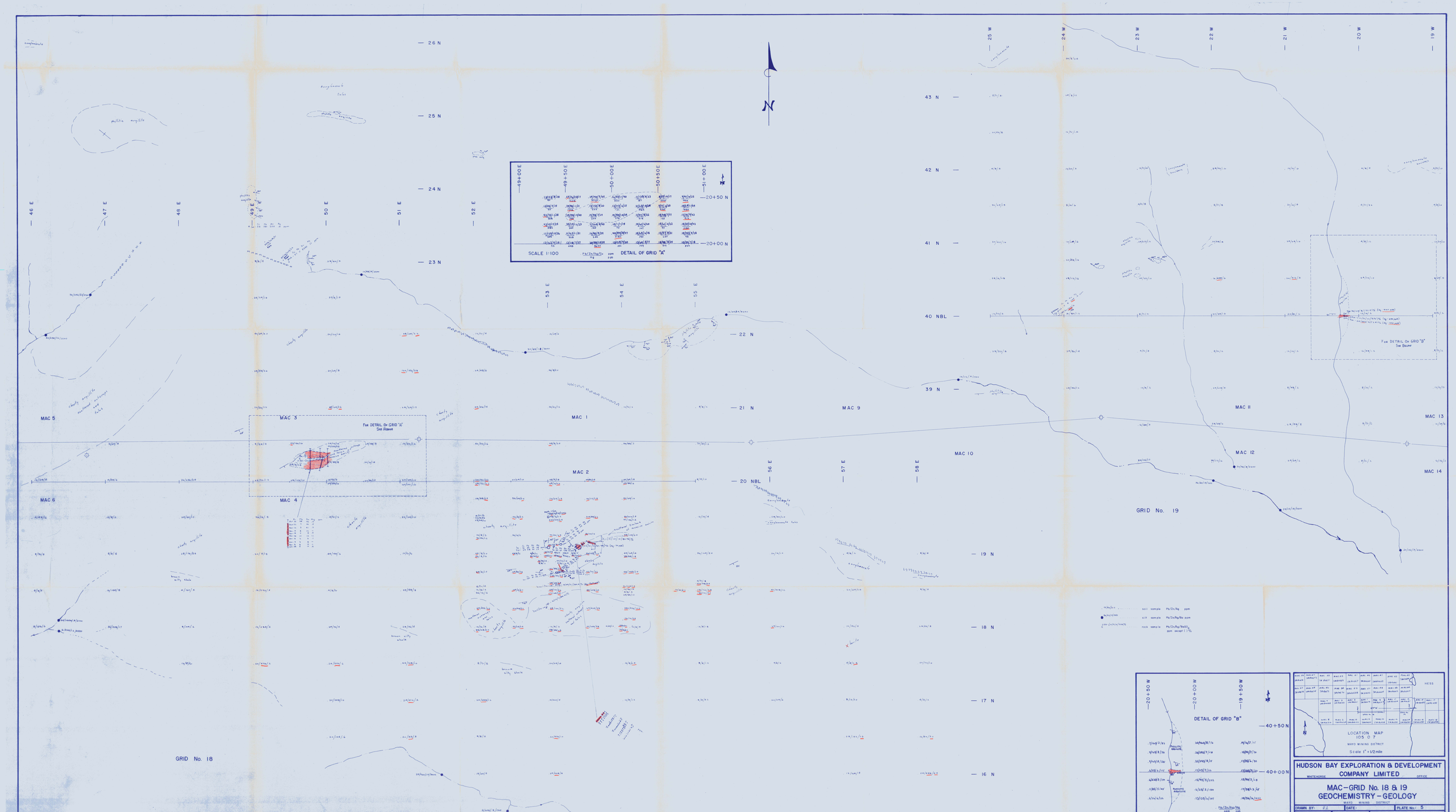
	−0+75W	−0+50W	−0+25W	−0+00W	
−0+40N				.24/38/13/196	
				.27/159/8/455	
−0+20N	.25/65/19/115	.17/225/19/171	.29/150/12/180	.15/38/6/53	
	.19/64/9/83	.20/143/9/30	.21/58/10/68	.15/57/7/83	
−00BL	.20/109/10/53	.8/37/10/22	.14/51/7/22	.12/52/7/60	
	.19/105/12/115	.13/17/7/213	.12/73/9/616	.10/20/4/238	
−0+20S	.20/60/15/163	.9/32/8/74			
	.27/73/8/1024	.7/35/13/45			

. Pb/Zn/Ag / Hg (ppm / ppb)

DETAIL OF GRID "C"

SCALE 1:100

. 9/24/14	soil sample	Pb/Zn/Ag	ppm
● 16/472/18	silt sample	Pb/Zn/Ag	ppm
X 1.5m - 20/40/.4/(82.10)%	rock sample	True With	Pb/Zn/Ag/$BaSO_4$ ppm - unless - ( )%



HUDSON BAY EXPLORATION & DEVELOPMENT COMPANY LIMITED

WHITEHORSE — OFFICE

MAC–GRID No. 18 & 19 GEOCHEMISTRY – GEOLOGY

MAYO MINING DISTRICT

DRAWN BY: FJ | DATE: | PLATE No.: 5

19 E | 20 E | 21 E | 22 E | 23 E | 24 E | 25 E | 26 E

18 S | 19 S | 20 SBL | 21 S | 22 S | 23 S | 24 S | 25 S | 26 S

MAC 13 | MAC 14 | MAC 15 | MAC 16 | MAC 17 | MAC 18 | MAC 19 | MAC 20 | MAC 21 | MAC 22

20/24/32/-/-

20/24/1504/-/-

20/20/12/4500

20/20/6/5100

20/20/8/3000

12/48/8/2850

20/40/16/2450

CHERTY ARGILLITE OUTCROP + TALUS

black platy argillite

phyllitic argillite

PHYLLITIC ARGILLITE OUTCROP

FOR DETAIL OF GRID "A" SEE BELOW

cherty pebble conglomerate and outcrop

DETAIL OF GRID "A"

	19 + 50 E	20 + 00 E	20 + 50 E	21 + 00 E	21 + 50 E	
	.9/125/5/42	.15/113/5/2688	.14/38/5/688	.15/-/7/309	.17/42/7/124	.20/46/10/98
	.18/50/3/205	.15/95/4/17	.4/37/3/22	19+00S		
	.210/70/4/43	.7/69/5/620	.45/295/9/772	.17/49/7/1188	.13/31/6/142	.21/285/5/30
	.15/80/14/63	.4/29/6/22	.13/80/7/230			
	.190/135/4/34	.15/63/4/52	.10/180/6/179	.25/45/6/444	.19/34/6/189	.80/130/4/39
	.18/155/14/60	.8/17/4/41	.14/150/6/60	19+50S		
	.118/40/5/17	.15/84/3/34	.13/140/4/72	.13/49/4/72	.23/38/5/444	.23/55/6/319
	.10/29/8/45	.7/13/5/256	.24/63/13/196			
	.79/53/4/17	.18/38/4/17	.14/55/2/8	.14/54/2/22	.18/65/4/15	.25/115/6/1760
	.14/53/6/22	.12/52/6/30	.12/62/5/42	20+00S		
	.53/49/3/17	.13/40/2/8	.23/64/4/17	.19/55/3/22	.36/58/4/15	.14/59/6/22
	.12/54/5/30	.12/40/3/38	.11/80/6/34			
	.37/55/4/17	.22/85/5/26	.17/50/4/17	.21/59/3/22	.32/51/2/15	.24/48/4/30
	.11/44/3/8	.14/59/5/22	.9/67/9/70	20+50S		
	.13/38/4/17	.10/53/4/17	.17/89/4/30	.37/80/5/22	.35/62/4/22	.29/150/4/39
	.25/100/4/30	.11/54/4/15	.14/130/6/17			
	.9/35/4/17	.11/42/5/17	.19/54/5/30	.24/67/4/59	.21/52/3/22	.18/47/4/15
	.20/90/5/22	.12/48/4/15	.18/215/8/17	21+00S		

CHERT PEBBLE CONGLOMERATE TALUS + OUTCROP

CHERTY ARGILLITE

PHYLLITIC ARGILLITE

BEDDED BARITE

BLACK PLATY ARGILLITE

SCALE 1:100

Pb/Zn/Ag/Hg ppm ppb

black platy argillite

52

black platy argillite interbedded dark grey poorly sorted pyritic sandstone

MAC 47 YA40669	MAC 48 YA40661	MAC 49 YA40659
MAC 45 YA40664	MAC 46 YA40662	MAC 44 YA40660
MAC 9 YA40657	MAC 11 YA40639	MAC 13 YA40631
MAC 10 YA40638	MAC 12 YA40630	MAC 14 YA40632

HESS

MAC 15 YA40633	MAC 17 YA40635	MAC 19 YA40637	MAC 21 YA40639	MAC 23 YA40641	MAC 25 YA40643
GRID No. 20					
MAC 16 YA40636	MAC 18 YA40634	MAC 20 YA40638	MAC 22 YA40640	MAC 24 YA40642	MAC 26 YA40644
				MAC 31 YA40649	MAC 33 YA40651
				MAC 32 YA40650	MAC 34 YA40652

LOCATION MAP
105 O 7
MAYO MINING DISTRICT
Scale: 1" = 1/2 mile

130°45'
63°15'

. 20/48/14 ..... soil sample Pb/Zn/Ag ppm

20/20/6/5300 ..... silt sample Pb/Zn/Ag/Ba ppm

x 15m - 6/80/4/(72.26)% ..... rock sample True width - Pb/Zn/Ag/$BaSO_4$ ppm except ( )%

HUDSON BAY EXPLORATION & DEVELOPMENT COMPANY LIMITED

WHITEHORSE OFFICE

MAC – GRID No. 20
GEOCHEMISTRY – GEOLOGY

MAYO MINING DISTRICT

DRAWN BY: RS	DATE:	PLATE No.: 6
FIELD WORK BY: RS BJ JMG B PG	REVISED BY:	SCALE: METERS 0 25 50 75 100

— 25 W — 20 W — 15 W — 10 W — 25 N — 20 NBL — 16 N — 20 W — 15 W — 10 W — 25 W

MAC 31 MAC 32 MAC 33 MAC 34 MAC 35 MAC 36 MAC 37 MAC 38 MAC 39 MAC 40

CHERT PEBBLE CONGLOMERATE OUTCROP

CHERTY ARGILLITE OUTCROP

PYRITIC CHERTY ARGILLITE OUTCROP + TALUS

SANDSTONE OUTCROP

CHERTY ARGILLITE OUTCROP + TALUS

CHERT PEBBLE CONGLOMERATE OUTCROP

PHYLLITIC ARGILLITE OUTCROP + TALUS

PHYLLITIC ARGILLITE OUTCROP

chert pebble conglomerate and outcrops

LOCATION MAP 105 O 7
MAYO MINING DISTRICT

FAT CITY · LORRAINE · KAM · HESS · GRID No. 21 · 6788' · 63° 15'

Scale : 1" = 1/2 mile

32/40/8 — soil sample Pb/Zn/Ag ppm Hg ppb

2a-56/130/4/(1342)% — rock sample True width — Pb/Zn/Ag/BaSO4 ppm — unless — ( ) %

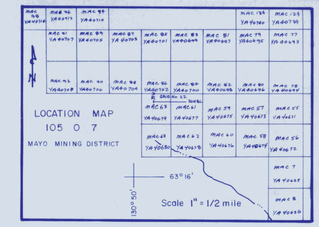
HUDSON BAY EXPLORATION & DEVELOPMENT COMPANY LIMITED

WHITEHORSE OFFICE

MAC — GRID No. 21
GEOCHEMISTRY - GEOLOGY

MAYO MINING DISTRICT

DRAWN BY:	DATE:	PLATE No. : 7
FIELD WORK BY: R.S. B.I. R.G. J.U. W.K. G.B.	REVISED BY:	SCALE: 0 25 50 75 100 METERS



MAC 81
MAC 83
MAC 87
MAC 85
MAC 89
MAC 91
MAC 82
MAC 84
MAC 86
MAC 88
MAC 90
MAC 92
MAC 61
MAC 63
MAC 64
MAC 62

— 47 W — 45 W — 40 W — 37 W — 35 W — 33 W — 30 W — 25 W — 21 W

— 35 N — 34 N — 33 N — 32 N — 31 N — 30 NBL — 29 N — 28 N — 27 N

chert pebble conglomerate talus predominant

For DETRIL Of GRID "A" See Below

For DETRIL Of GRID "B" See Below

chert pebble conglomerate outcrop

phyllitic argillite

orange argillite

lower silty slate

quartz argillite

chert pebble conglomerate predominant

chert pebble conglomerate talus predominant

Pb/Zn/Ag ppm

Cu/Pb/Zn ppm

Cu/Pb/Zn ppm

True width — Pb/Zn/Ag/BaSO4 ppm except ( )%

soil sample

silt sample

seep sample

rock sample

DETAIL OF GRID "A"

—37 + 50 W — —36 + 50 W — —35 + 50 W — —34 + 50 W — —33 + 50 W —

CHERT PEBBLE CONGLOMERATE TALUS

PHYLLITIC ARGILLITE

33 + 50 N

33 + 00 N

32 + 50 N

32 + 00 N

31 + 50 N

31 + 00 N

SCALE 1:200

DETAIL OF GRID "B"

—24 + 25 W — —24 + 00 W — —23 + 75 W — —23 + 50 W —

32 + 00 N

31 + 50 N

31 + 00 N

CHERT PEBBLE CONGLOMERATE TALUS

SCATTERED OUTCROPS AND TRUS OF PHYLLITIC ARGILLITE BEDDED BARITE

SCALE 1:100

HUDSON BAY EXPLORATION & DEVELOPMENT COMPANY LIMITED

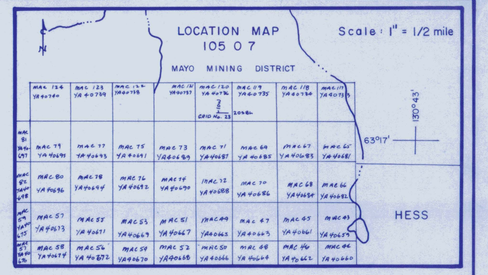
WHITEHORSE OFFICE

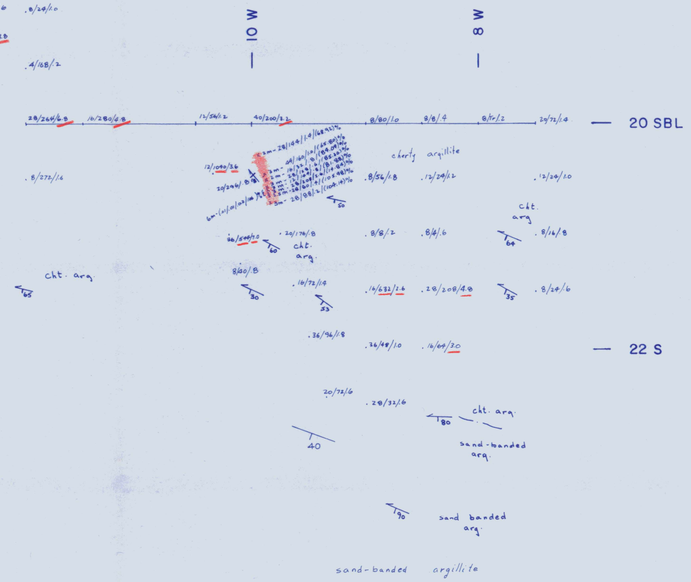
MAC – GRID No. 22
GEOCHEMISTRY – GEOLOGY

MAYO MINING DISTRICT

DRAWN BY: KS | DATE: | PLATE No.: 8

FIELD WORK BY: KS BJ JH MK | REVISED BY: | SCALE: METERS 0 25 50 75 100





16/240/40 ..... soil sample Pb/Zn/Ag ppm

32/432/4.7 ..... silt sample Pb/Zn/Ag ppm

x 3m-44/160/1.0/(68.90)% .... rock sample True width – Pb/Zn/Ag/$BaSO_4$ ppm unless ( )%

HUDSON BAY EXPLORATION & DEVELOPMENT COMPANY LIMITED	
WHITEHORSE OFFICE	
MAC – GRID No. 23 GEOCHEMISTRY – GEOLOGY MAYO MINING DISTRICT	
DRAWN BY: RS	DATE:
PLATE No.: 9	
FIELD WORK BY: RS BJ JH GB WK	REVISED BY:
SCALE: METERS 0 25 50 75 100	