REPORT ON RADIOMETRIC SURVEY, GEOLOGY
AND ROCK SAMPLING

MST 1-40 MINERAL CLAIMS

Mayo Mining Division, Y.T.
Lat. 65°09' Long. 135°04'
Claim Sheet 106E/3
25 August, 1976

Alan R. Archer Consulting Engineer

090120

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 $ 8900.00

8900

W D Sinclair
acting Resident Geologist or
~~Resident Mining Engineer~~

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

B.R. BAXTER
Supervising Mining Recorder

for Commissioner of Yukon Territory

ARCHER, CATHRO
AND ASSOCIATES LTD.
CONSULTING GEOLOGICAL ENGINEERS

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Figure M10 - Radiometric Survey, MST 1-40 Claims , Scale 1: 2,500

Figure M11 - Geology, MST 1-40 Claims, Scale 1:2,500

INTRODUCTION

The MST claims were staked in June 1974 to cover a lead-zinc occurrence found by the Ogilvie Joint Venture (Chevron Oil Company, Marietta Resources International Ltd., Aquitaine Co. of Canada Ltd., and L & H Clay) managed by Archer, Cathro and Associates Ltd. Exploration consisted of reconnaissance geological mapping and soil sampling in 1974 and detailed geology, grid soil sampling and a radiometric survey in 1975 over the lead-zinc occurrence on the northeast portion of the claims.

The 1976 program, described in this report, consisted of grid radiometric surveys and geological mapping of the southwest portion of the claims. This work was performed by geologist J. Slater assisted by field men J. Dennett and A. Ogilvy under supervision of U. Schmidt , C. Riley and the writer.

PROPERTY, LOCATION AND ACCESS

The MST property consists of 40 contiguous mineral claims recorded in the Mayo Mining District as follows:

Claim	Record Number	Expiry Date
MST 1	Y88865	10 March, 1979
2	Y88866	10 March, 1977
3	Y88867	10 March, 1979
4	Y88868	10 March, 1977
5	Y88869	10 March, 1978
6	Y88870	10 March, 1977
7	Y88871	10 March, 1978
8	Y88872	10 March, 1977
9-12	Y88873-Y88876	10 March, 1979
13-16	Y88877-Y88880	10 March, 1978
17-18	Y97000-Y97001	10 March, 1978
19-40	Y97002-Y97023	13 Sept , 1976

The property is located between the Wind River and Illtyd Creek in NTS claim sheet 106E/3, at Lat. 65°09' North and Long. 135°04' West. Access is by helicopter from Kiwi Lake, 14 miles to the northeast. Kiwi Lake is suitable for float planes based at Mayo, which is 120 airmiles to the south.

GEOLOGY

Stratigraphy

The area is underlain by a sequence of Lower Cambrian to Devonian sediments exposed in the Illtyd Mountains and the mountains bounding Royal Creek to the south.

The Lower Cambrian rocks consist of a thick section of shale, grit, conglomerate, clastic limestone and dolomite unconformably overlying Proterozoic quartzites. The clastics appear to be derived from rapid erosion of a Proterozoic high that existed for a short period of time to the west or northwest. Midway through the Lower Cambrian, rapid erosion ceased and a series of reefal and lagoonal carbonates with minor intercalated shales were deposited through the remainder of the Cambrian and up to the end of the Middle Devonian, when the carbonates graded into a thick pyritic shale sequence. The Middle Cambrian is missing at MST and the Lower Cambrian is separated from the Cambro-Ordovician by a low angle unconformity. In this area, the units strike easterly and dip about 30° south as illustrated on Figure M11.

Geomorphology

The MST claims lie on the northern flank of the Wernecke Mountains at an elevation of approximately 3500 feet above sea level. This part of Yukon escaped Pleistocene continental glaciation and there is no evidence of alpine glaciation as commonly seen in higher areas further south.

Topography is characterized by smooth, overburden covered slopes and V-shaped valleys. Poorly bedded units (reef carbonates or quartz cemented breccia zones) are erosion resistant, forming ridges and castellated outcrops.

Overburden is thin but extensive. Soil development is minimal, usually consisting on one or two inches of poorly decomposed organic material (peat) overlying talus. Only scattered buckbrush is found above timberline, which is around 2200 feet above sea level.

Mineralization

The lead-zinc mineralization explored in 1974 and 1975 occurs as galena and sphalerite cementing coarse sandstone, which forms thin discontinuous horizons near the eastern limit of the Lower Cambrian conglomerates.

The 1976 program was directed toward radioactivity associated with brecciated dolomite overlying the grit sequence. The brecciation is best developed immediately below the Middle Cambrian unconformity. The largest area of brecciation, which forms a linear zone trending north across the lower Cambrian dolomite, appears to be partially caused by karsting. Fragments are cemented by sparry buff dolomite and clear euhedral quartz. Open vugs contain non-radioactive pyrobitumen. Traces of limonite (after marcasite or pyrite?) are found in weak , east trending, vertical shears cutting the breccia. The radioactivity is strongest in the karst controlled breccia and tends to occur as small local concentrations or "hot spots" that are most commonly associated with weak shearing and limonite staining. No radioactive mineral or secondary uranium coloration has been identified under normal or ultraviolet light.

Specimens of rock were collected in grid fashion over a portion of the radioactive area as illustrated on Figure M10 in the pocket. Most specimens consist of chips from several float fragments dug out of the thin overburden. These were assayed geochemically for uranium and molybdenum at Chemex Labs Ltd., North Vancouver, B.C. using a standard fluorometric technique for the uranium and a hot nitric-perchloric extraction for the molybdenum. In addition, a line of chip channel samples was taken across the most radioactive outcrop and specimens were collected from nearby hot spots.

The rock specimens collected in grid fashion over the radioactive zone returned assays ranging from trace to 88 parts per million (ppm) uranium and trace to 47 ppm molybdenum. Those collected where surface scintillometer readings are 100 counts per second (cps) or greater have an arithmetic average of 17 ppm uranium and 13.5 ppm molybdenum. The chip channel samples were taken at 2 metre intervals across a 16 metre wide outcrop that has scintillometer readings from 200 to 1100 cps. Assays range from 18 to 89 ppm uranium with an arithmetic average of 54 ppm. Specimens from five hot spots (up to 1600 cps) range from 110 to 996 ppm uranium.

RADIOMETRIC SURVEY

A 2600 metre baseline was established by chain and compass through the southwestern portion of the claim block. Stations were established at 50 metre intervals with one metre lath pickets. Cross lines were extended 700 metres to either side of the baseline at 100 metre intervals using topofil and compass. Stations were marked at 50 metre intervals on the cross lines with 0.5 metre lath pickets.

The radiometric survey was conducted using Scintrex BGS-1S broadband

scintillometers. Two instruments, Serial No.'s 501303 and 501323, were employed. This model is equipped with a 2.5 cm by 2.5 cm thallium activated sodium iodide crystal detector. Readings were recorded in counts per second (cps) at 10 metre intervals on the grid cross lines and were taken at waist level or about 80 cm above the ground.

A north trending anomalous area some 500 metres long and 200 metres wide was outlined on the northeast side of the baseline. Fill in cross lines were established at 50 metre intervals to better define the anomaly. Most readings in the anomalous area exceed 100 cps over a background ranging between 20 and 40 cps.

CONCLUSIONS AND RECOMMENDATIONS

The radioactivity on the MST claims is coincident with a zone of brecciated dolomite that appears to have been initiated by karsting. Values up to 996 parts per million uranium (2.4 lbs U_3O_8 per ton or 1.1 kg per tonne) can be obtained from local hot spots but the most continuously radioactive outcrop only averaged 54 ppm uranium in chip channel sampling. No radioactive mineral has been identified.

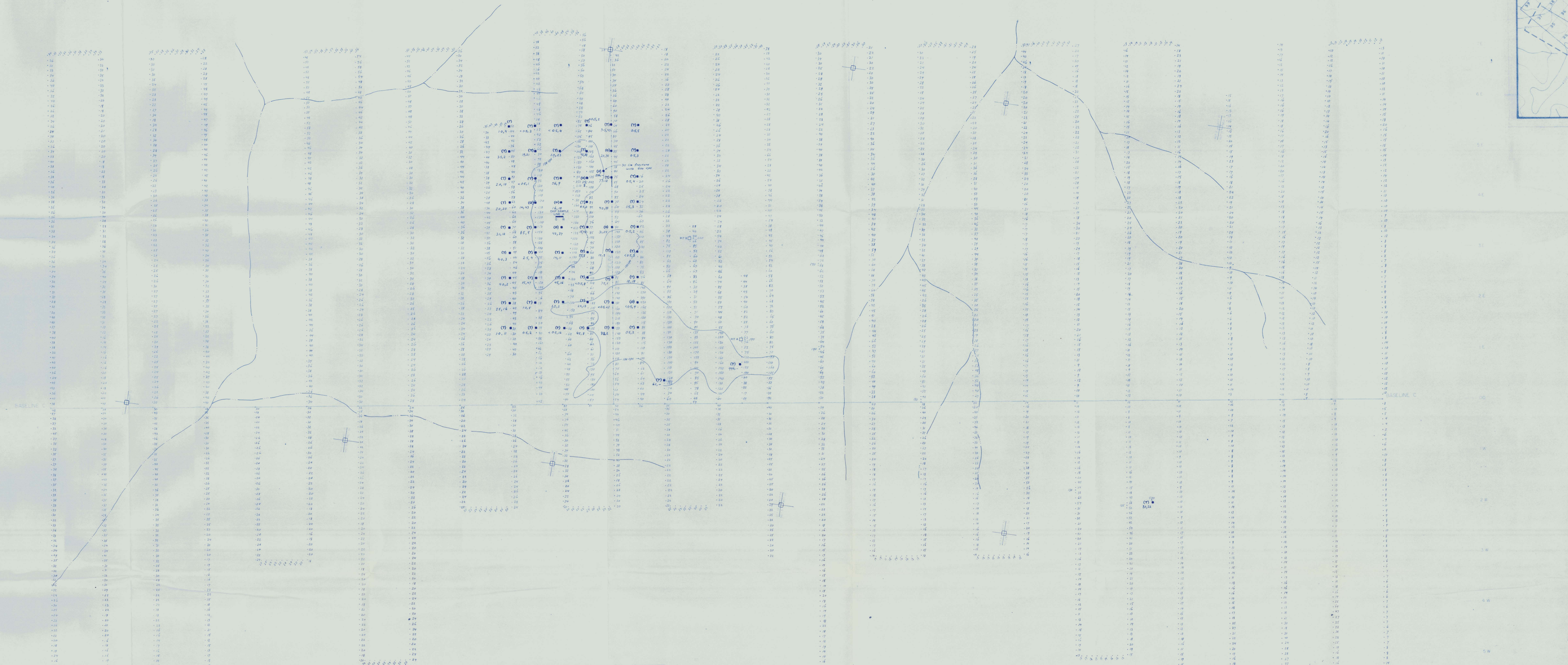
Surface leaching is extensive elsewhere in Yukon in similar unglaciated regions. Unfortunately, the chemistry of uranium in carbonate rocks under sub-arctic weathering conditions is not sufficiently understood to predict whether the total effect has been depletion or accumulation. Further work is justified and should consist of several short drill holes to determine the effect of surface leaching.

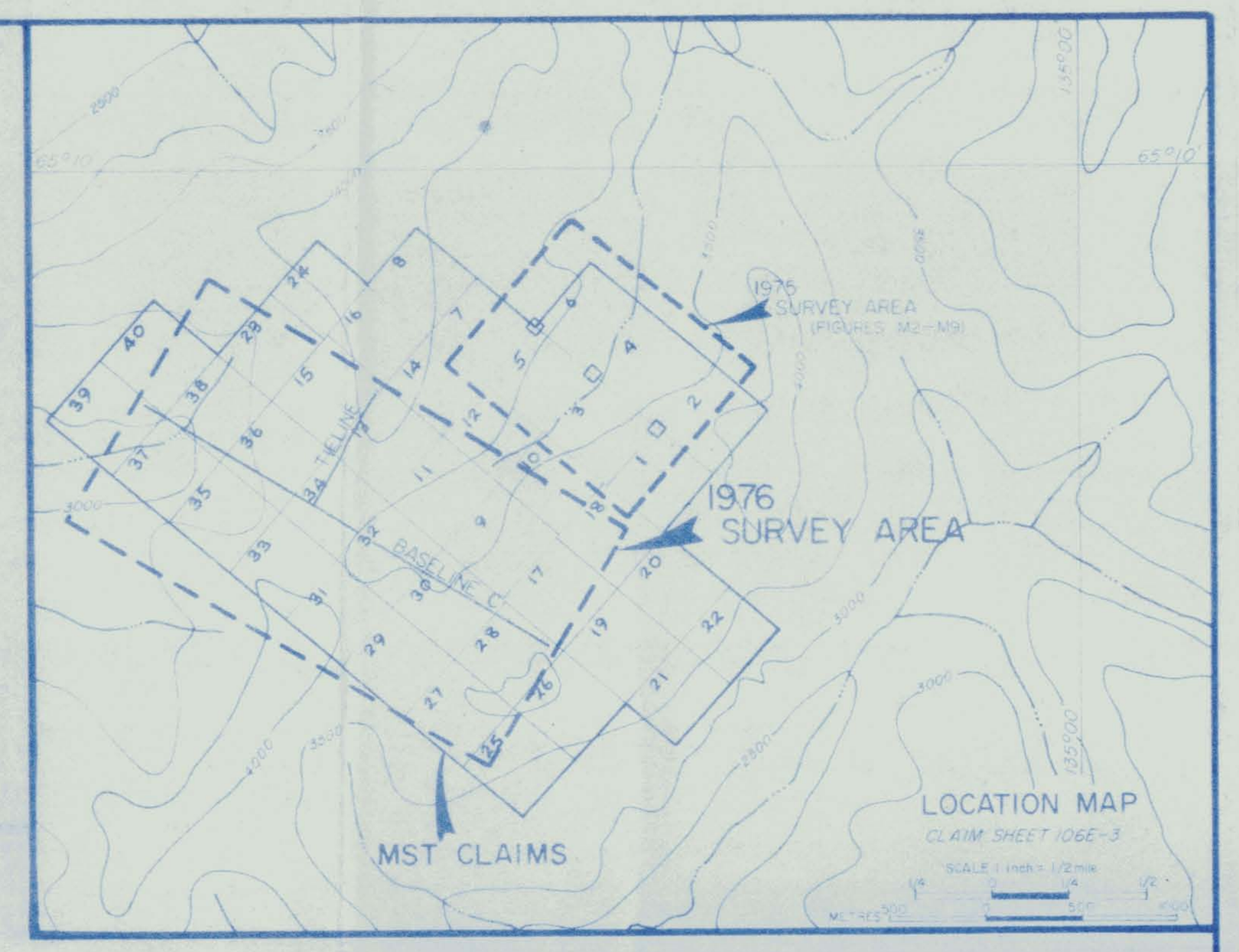
Respectfully submitted,

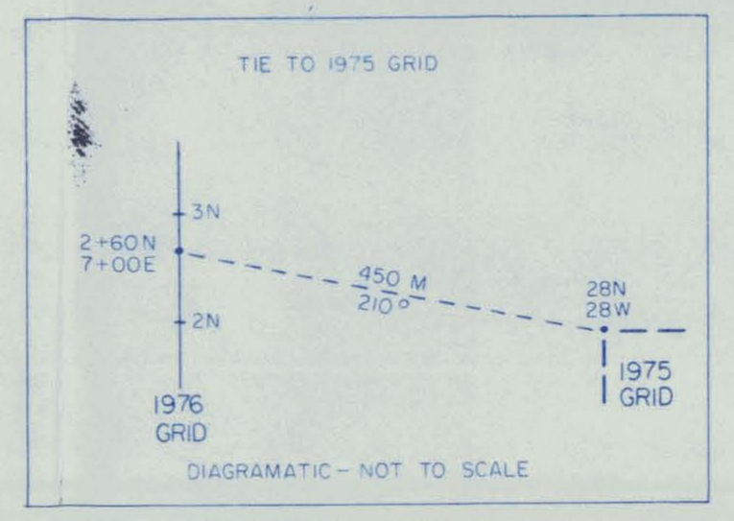
ARCHER, CATHRO & ASSOCIATES LTD.

A.R. Archer, B.A.Sc., P.Eng.

Association of Professional Engineers of the Yukon Territory
R. ARCHER
ENGINEER







•104 Counts per second (cps) with a Scintrex BGS-1S broadband scintillation counter (1" by 1" thallium activated sodium iodide crystal).

(T) ■ 30,5 Rock geochemical assay in Uranium and Molybdenum in parts per million

(T) – sample from talus

(O) – sample from outcrop

CHIP SAMPLE LINE A

SAMPLE INTERVAL (M)	TAG NUMBER	U (ppm)	SCINTILLOMETER RANGE (cps)
0 – 2	A684	18	250 – 650
2 – 4	A685	54	300 – 900
4 – 6	A686	36	300 – 1000
6 – 8	A687	89	550 – 1000
8 – 10	A688	18	200 – 400
10 – 12	A689	80	300 – 500
12 – 14	A690	80	400 – 1200
14 – 16	A691	62	225 – 400
2 samples from local hot spot at 4+25N, 3+60E	A693	>400	1600
	A699	437	1600
Dark breccia hot spot at 4+00N, 3+80E	A698	686	1200

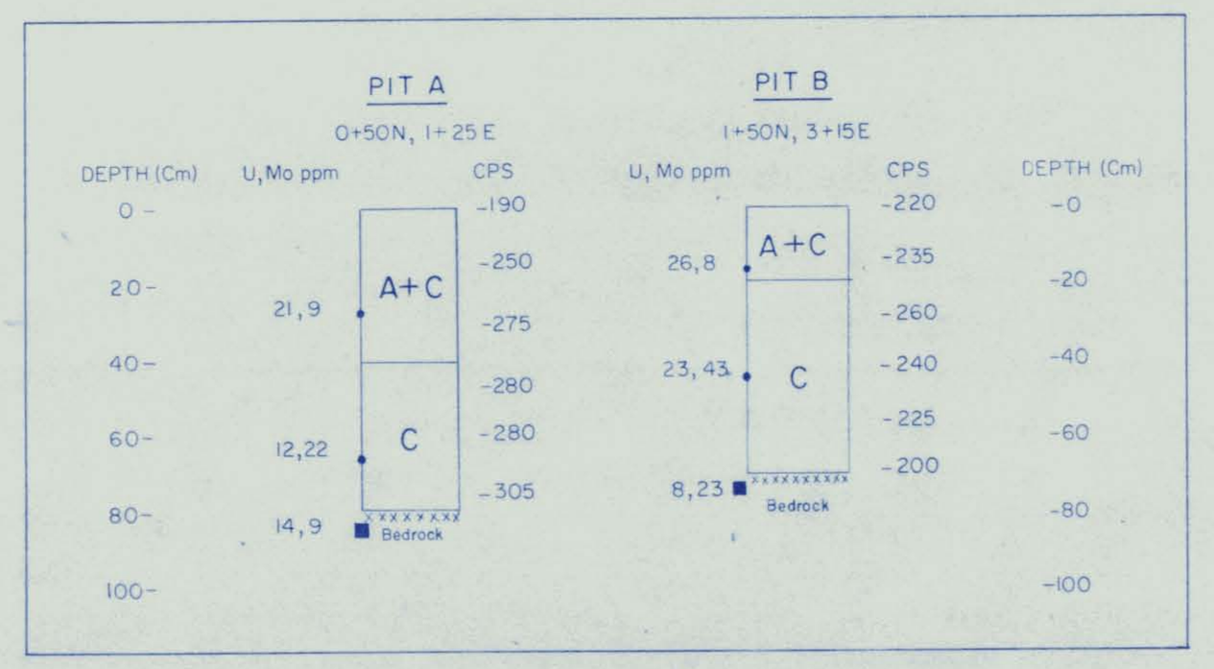


FIG. M10

ARCHER, CATHRO & ASSOCIATES LTD.

RADIOMETRIC SURVEY

MST 1–40 CLAIMS

OGILVIE JOINT VENTURE

SCALE IN METRES

1:2500

To accompany report dated 25 Aug. 1976

Association of Professional Engineers of the Yukon Territory — A. R. ARCHER — GEOLOGICAL ENGINEER


1976 SURVEY AREA
MST CLAIMS
LOCATION MAP
ℓ€d
€Ofm
BASELINE C
MST BASIC GEOLOGY
CAMBRO-ORDOVICIAN (€ O f m)
Cambrian and younger (?) thin-bedded platform carbonates (mapped as Franklin Mountain Formation by Chevron).
LOW ANGLE UNCONFORMITY
LOWER CAMBRIAN DOLOMITE (ℓ€d)
Grey to brownish weathering, vuggy slump brecciated dolomite, quartz and calcite lined vugs common, silicate content from 5-20%, minor radioactivity along fractures, distinctive 1/2 metre thick oncolite zones.
Karst brecciated and/or highly fractured grey dolomite cemented with quartz, some dark chert fragments, contains most of the radioactivity
Interbedded black argillites and grey dolomite, slump breccia common, oncolitic horizons, no radioactivity located.
LOWER CAMBRIAN CLASTICS (ℓ€cℓ)
Dolomitic clastics and conglomerate, host to lead-zinc mineralization described in previous reports.
Bedding attitude
Area exceeding 100 cps with BGS-1S broadband scintillometer.
FIG. MII
ARCHER, CATHRO & ASSOCIATES LTD.
GEOLOGY
MST 1-40 CLAIMS
OGILVIE JOINT VENTURE
SCALE IN METRES
100 0 100 200
1:2500
To accompany report dated 25 Aug, 1976
Association of Professional Engineers of the Yukon Territory
A. R. ARCHER
GEOLOGICAL
ENGINEER