REPORT ON GEOCHEMISTRY, GEOLOGY AND RADIOMETRIC SURVEY

MURPHY 1-24 CLAIMS

WHITEHORSE MINING DISTRICT
CLAIM SHEET 105C/13
Lat. 61°00' Long. 133°35'

20 JANUARY 1977

A. R. Archer Consulting Engineer
E. P. Onasick Chief Geologist

090 79

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

$ 2400.00

2400

W D Sinclair

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

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AND ASSOCIATES LTD.
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MOUNT MURPHY PROPERTY

INTRODUCTION

Ukon Joint Venture (Chevron Canada Limited and Kerr-Addison Mines Limited), managed by Archer, Cathro & Associates Limited, outlined the Mt. Murphy anomaly in the spring of 1975 while reanalyzing silt and soil samples collected by Archer, Cathro in 1971; a contractor was hired to stake 24 claims on the target before break-up. Initial attempts to study the property by the UJV crew (geological engineer Eric P. Onasick and prospector W. Doug Eaton, supervised by A. R. Archer) were hampered by snow cover and the area was first examined on the ground on 12 June 1976. Later work by UJV on 7 July 76 and during the period 25 - 27 August 76 included local and regional airborne radiometrics and reconnaissance geochemical sampling and scintillometry. Several new geochemical anomalies were discovered during this latter phase, as well as a mineral occurrence (A - B on Figure U-MM2). The airborne radiometric surveys and geochemistry are depicted in Figures U-MM1 and U-MM2 (in the pocket) respectively. No new claims were added.

PROPERTY, LOCATION AND ACCESS

The Mt. Murphy property consists of 24 contiguous mineral claims recorded in the Whitehorse Mining District as follows:

CLAIM NAME	GRANT NUMBERS	EXPIRY DATE
Murphy 1-24	YA4190 - YA4213	20 April 77

The claims are located at latitude 61°00' north and longitude 133°35' west straddling NTS claim sheets 105C/13 and 105F/4, 53 miles (85 km) northeast of

Whitehorse. No previous work has been done, or claims staked, at this location. Access was by helicopter from Whitehorse and from camps on the South Canol Road near Quiet Lake.

GEOMORPHOLOGY AND GLACIATION

Mount Murphy forms one of many distinct peaks in the Big Salmon Range, a north-northwesterly trending range of subdued to rugged, generally rounded mountains. The peak elevation is 6,500 feet (2000 m), and local relief is about 2,500 feet (750 m), with precipitous cirque walls to the north and gentler slopes to the southwest. The area is drained by the Boswell and Teslin Rivers to the Yukon River. Landforms suggest two erosional cycles, the earlier in late Cretaceous and the later in Tertiary times. Continental glaciation scoured the area with westward flowing ice up to an elevation of about 6,000 feet (2000 m) in the Pleistocene and evidence such as ponds, glacial landforms, striae on outcrop and stream dislocation is abundant. Large valleys in the area are floored by moraine deposits of all kinds. Alpine glaciation has only affected the topography of the upper elevations. Vegetation is sparse since the property lies above treeline and is chiefly grass with minor buckbrush.

Geology and Mineralization

The property straddles the contact between the Big Salmon Complex metamorphosed rocks - schist, gneiss, quartzite, greenstone and limestone - and the Cretaceous Coast and Cassiar intrusions, chiefly granodiorite to granite. Recent glacial, fluvioglacial and alluvial deposits mantle much of the area.

The Big Salmon Complex is a sequence of metamorphosed siltstone and shale that has been correlated by the GSC with the Hadrynian Windermere group. Biotite is the characteristics mafic mineral in the schists and quartzites, accompanied by quartz and chlorite, although dark grey or brown to black argillaceous quartzite, slate and graphite schist also occur in the area. Limestone associated with this unit was not noted within the claim boundary. The intrusive rocks form a batholith extending at least 10 miles (16 km) to the north and west. They are commonly porphyritic, medium to very coarse grained, and are comprised of plagioclase with potassic feldspar and smoky quartz and prominent amounts of ferromagnesians (up to 40 percent), mainly hornblende and biotite. Rusty weathering is common, probably from degradation of the mafics and from pyrite. Local abundant pyrite is found in two strongly gossanous areas (on claims 20 and 2-4-9-11). The intrusive is well-leached (voids after pyrite) in places, and noticeably so in the vicinity of showing A-B (see Figure U-MM2). Alteration to sericite is well developed in places. A prominent system of jointing (mostly striking 025° and

dipping 70° SE to vertical) cuts the granodiorite, the frequency of fractures varying from five to ten per metre. Several dikes from one to four metres wide (diabase?) form recessive features parallel to this structure and are visible on airphotos.

Based on radiometric and geochemical response, mineralization occurs within the intrusion, but is not visible in hand specimens except for minor void-filling by an apple-green secondary radioactive mineral. A radioactive association with the more mafic varieties of the granodiorite is common, suggesting that uranium mineralization may accompany the biotite, but exceptions to this have been noted. Leaching of pyrite may very well have carried the soluble uranium minerals away, or a zone of enrichment deeper in the rock may exist. Pink spots and streaks are often associated with the higher-grade mineralization, and may be attributed to either hematite stain or destruction of feldspar by radioactivity.

GEOCHEMISTRY AND RADIOMETRICS

Airborne radiometrics were flown over and around the Mt. Murphy area on several occasions and from this work it was learned that the northeast slopes of Mt. Murphy were more anomalously radioactive than the initial area of interest. Airborne spectrometry employed a Scintrex Model GAM-1 spectrometer with 1853 cc NaI(Tl) crystal sensor (Scintrex Model GSA-61), coupled to a Hewlett-Packard Model 7155A stripchart recorder. Lines were flown in a helicopter at about 100 km/hr at 50 to 75 m terrain clearance, in the total-count mode with three second time constant. Figure U-MM1 (in pocket) illustrates the airborne radiometric flight paths and anomalous or high-background areas. There is a clear contrast over the geochemical anomaly on claim 20 - 1000 to 2300/400 cps, and high radioactivity

(to 3500 cps) was encountered in the vicinity of claim 13. It is interesting to note that a direct pass over the showing resulted in only a small peak on the chart, whereas the cirque to the south engendered a fairly strong radiometric response. Subsequent prospecting in this cirque however failed to discover any important anomalies or mineralization. Regional flying did not reveal any other promising areas in the vicinity and the 24 Murphy claims cover all of the interesting airborne radiometric anomalies.

On the ground, background scintillometer readings (using Scintrex broad-band scintillometer, Model BGS-1SL with 43 cc NaI(Tl) crystal) generally varied from 80 to 150 cps in the metamorphic rocks and from 250 to 400 cps in the intrusion, whereas anomalous zones were commonly found to count in the 500 to 1000 cps range. The showing A-B lies in a topographic saddle at the base of the northeastern slope of Mt. Murphy. The west end (B) is about 75 metres laterally and 500 metres vertically from the east end (A). Zone A is about 10 x 10 metres in size, with scintillometer readings twice background or higher (800/300 cps), although part of the zone is obscured by talus. Radioactivity is spotty in this area to a maximum of 5000 cps. Radioactivity at Zone B is not quite as strong as at Zone A and scintillometer readings vary in both outcrop and talus from 600 to 1000/300 cps, with maximum 2000 cps. Selected specimens from these zones gave assays of up to 0.149 percent U_3O_8; elsewhere on the property, values as high as 0.264 percent U_3O_8 were obtained in float. The uranium appears to be mainly in the form of secondary yellow and green oxides coating leached cavities.

Samples collected during the 1976 field season were comprised of soils, silts, waters, rock chips and whole rocks. Waters were collected in 250 ml plastic bottles and were filtered and acidified with 8M nitric acid the same day to prevent

uranium adsorption onto the sides of the sample container. Soils were collected by using a geological pick or mattock to dig to the B & C horizons (wherever possible). Soil and silt samples were placed in pre-numbered kraft paper bags, dried and packaged. After radioactivity measurements, whole rocks were split and stores for reference. Samples were shipped by air freight to Chemex Labs Ltd. in North Vancouver where they were analyzed as follows: rocks were crushed beforehand and then treated as silts and soils; subsequently, all samples were dried at 550°C and screened to -80 mesh, split and weighed, dried twice in 4M nitric acid, picked up in acidified water, fused with a standard sodium fluoride-based flux and assayed in ppm with a G. K. Turner fluorometer. Water samples were preconcentrated by evaporation and then analyzed by a similar method. Detection limits were 0.5 ppm for soils and rocks and 0.25 ppb for waters.

No metamorphic rocks returned anomalous geochemical values in uranium; however, several specimens of the intrusion returned very encouraging grades and at least nine specimens were collected from various locations on the property that assayed between 0.05 and 0.264 percent U_3O_8. Although values of up to 332 ppm U were found in the larger pyrite gossan, there does not appear to be a direct relationship between it and uranium mineralization.

As mentioned above, the Murphy area was discovered through reanalysis for uranium of previously-collected silts and soils. Anomalous silts of 106 ppm and 190 ppm U and an anomalous soil of 165 ppm were found to cluster in a small area on the western slope of Mt. Murphy and these values were supported by a few others to form a good contrast pattern. Subsequent field work determined that the northeastern slopes of the mountain were equally anomalous, and indeed showing A-B was found there, abut 2 km from the original anomaly.

No formal grid was established on the property but reconnaissance soil/silt/rock sampling was carried out in conjunction with scintillometer prospecting, Geochemistry is illustrated in Figure U-MM2 (in the pocket). Aside from the association with the intrusion however, there does not appear to be any clear geochemical pattern and rocks with high uranium assays are scattered throughout (and beyond) the claims.

CONCLUSION

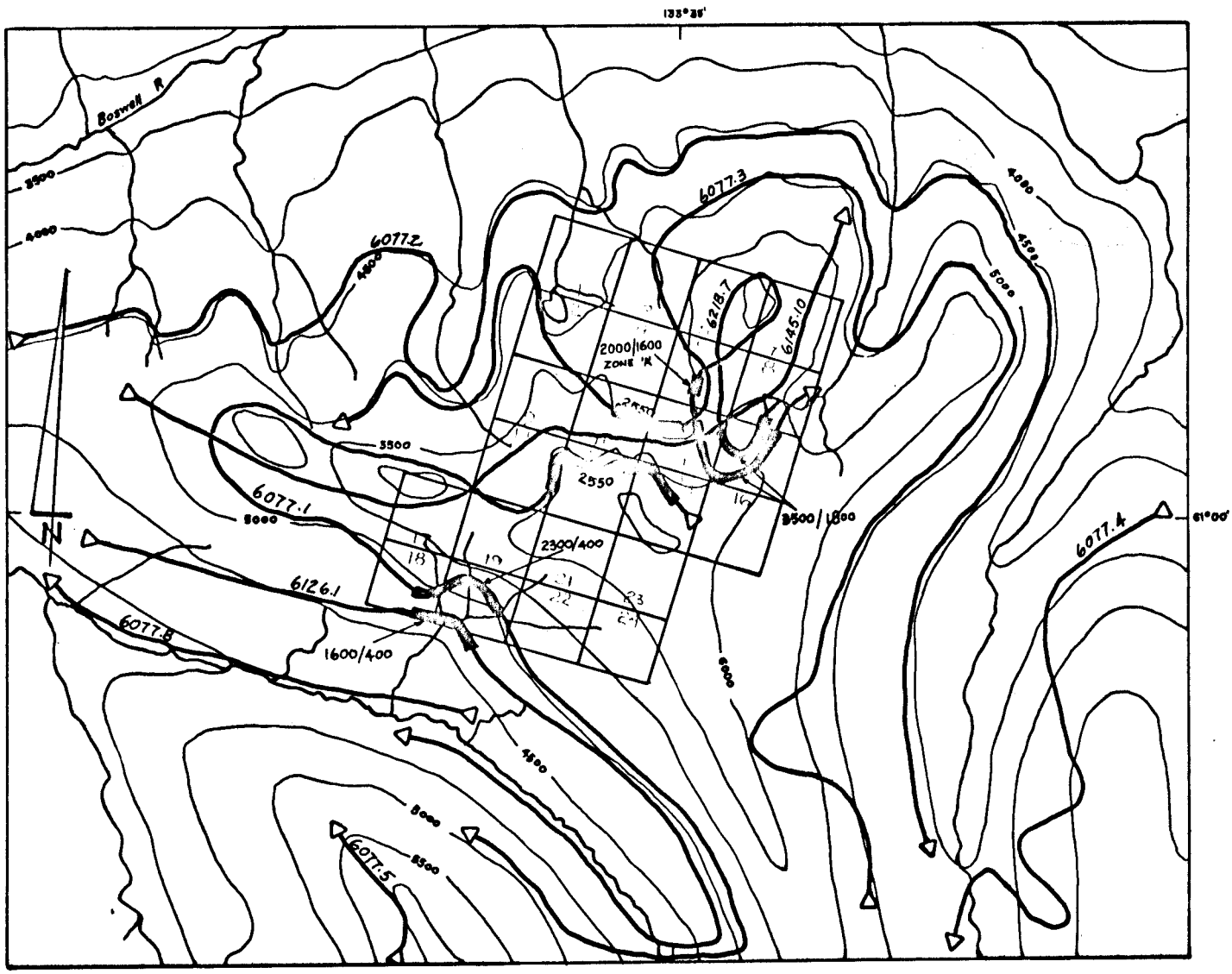
The presence of mineralization in leached granodiorite is encouraging and the possibility of supergene enrichment of remobilized uranium exists. Further work should consist of a sufficiently long drill hole at showing A-B to penetrate the leached zone and resolve the possibility of deep enrichment. Microscopic study of the granodiorite is warranted to determine the mode of occurence and associations of uranium-bearing minerals. The claims should be extended at least one length to the north and east, since some high assays have been obtained from both float and outcrop lying just outside the present claim boundary. Due to some misplacement of claims as originally staked, work should be done to restake, correct or fill in any open ground on this property. There has been a recent revival of interest in uranium prospects in the Teslin map-area NTS 105C, and similar settings have been staked to the southeast of Mt. Murphy. A regional reconnaissance program (foot-traversing) is advisable in this area.

Respectfully submitted,

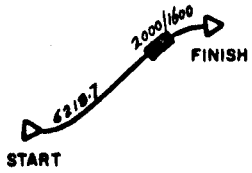
ARCHER, CATHRO & ASSOCIATED LIMITED

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

E. P. Onasick, B.A. Sc., M.Sc.



LEGEND



Flight path and number, showing
anomaly representation: (peak)/background

Fig. U-MMI

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RADIOMETRICS

MOUNT MURPHY

UKON JOINT VENTURE

SCALE 1:25,000

500 0 500 1000 1500 2000

Metres

NTS 105C13
105F4

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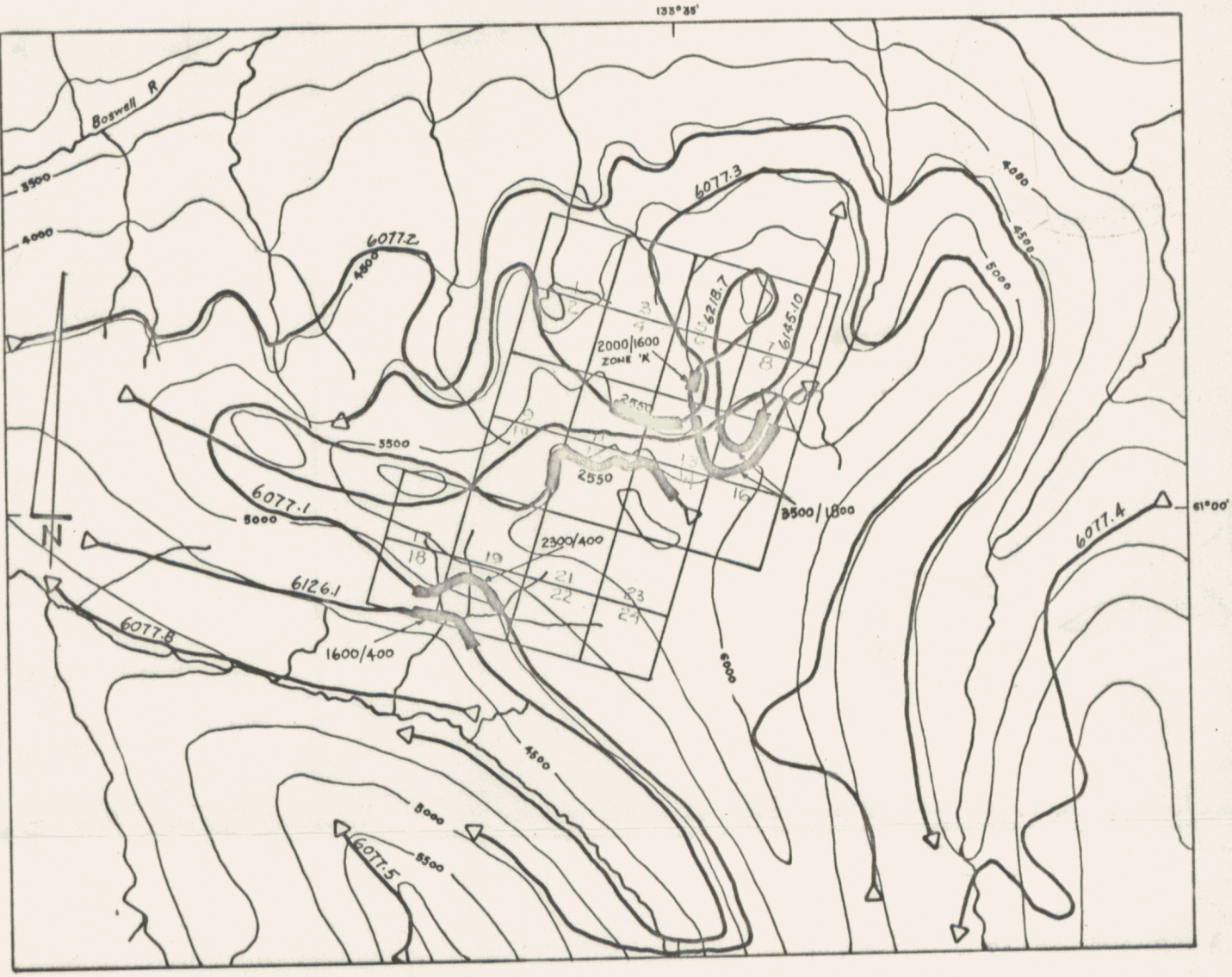

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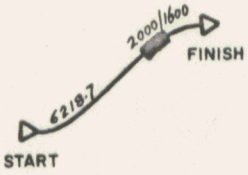

Flight path and number, showing
anomaly representation: (peak) / background

Fig. U-MM1

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RADIOMETRICS

MOUNT MURPHY

UKON JOINT VENTURE

SCALE 1:25,000

500 0 500 1000 1500 2000

Metres

NTS 105C13
105F4

133° 35'

61°00'

Boswell River

3500 4000 4500 5000 5500 6000

water 2.5 ppb

pond

0.264%

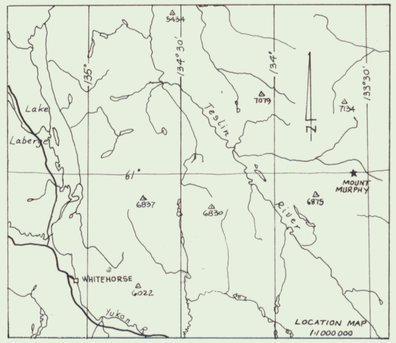
0.109%

0.149%, 0.085% U_3O_8; 360, 82, 14, 6 ppm U

0.127%, 0.105%, 0.068% U_3O_8; 290, 197 ppm U

0.061%

0.055%



LEGEND

SAMPLING

- • Soil ppm U
- x Silt ppm U
- ■ Rock ppm U or % U_3O_8
- T Trace

SAMPLES FROM SHOWINGS ★

A: 0.149 %, 0.085% U_3O_8; 360, 82, 14, 6 ppm U

B: 0.127 %, 0.105%, 0.068 % U_3O_8; 290, 197 ppm U

MURPHY 1–24 claims

GEOLOGY

- Pyrite gossan
- Coast/Cassiar intrusions – granodiorite
- Big Salmon Complex – schist, gneiss, quartzite, greenstone, limestone
- Contact (approximate, assumed)

Fig. U-MM2

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GEOLOGY and GEOCHEMISTRY

MOUNT MURPHY

UKON JOINT VENTURE

Scale 1:12,500

Contour interval 500 ft.

500 0 500 1000

Metres

NTS 105 C13

105 F 4

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

To accompany a report by E. Onasick and A. Archer dated Dec. 1976