REPORT ON GEOCHEMISTRY, GEOLOGY AND RADIOMETRIC SURVEY

BUN 1-24 CLAIMS 090180

WHITEHORSE MINING DISTRICT
CLAIM SHEET 115H/8
Lat. 61°20' Long. 136°28'
20 JANUARY 1977

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

090180

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 $ 4000.00

4100

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

ARCHER, CATHRO
AND ASSOCIATES LTD.
CONSULTING GEOLOGICAL ENGINEERS

BOX 4127, WHITEHORSE, Y.T. Y1A 3S9 667-4415 STANDARD BUILDING, VANCOUVER, B.C. 688-2568

1016 STANDARD BUILDING
510 WEST HASTINGS STREET
VANCOUVER, B.C.
V6B 1L8

REPORT ON GEOCHEMISTRY, GEOLOGY AND RADIOMETRIC SURVEY

BUN 1-24 CLAIMS

WHITEHORSE MINING DISTRICT

CLAIM SHEET 115H/8

Latitude 61°20' Longitude 136°28'

20 January 1977

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

TABLE OF CONTENTS

BUN PROPERTY

INTRODUCTION

The Bun occurrence was discovered by Ukon Joint Venture (Chevron Canada Limited and Kerr-Addison Mines Limited, managed by Archer, Cathro & Associates Limited), on 5 May 1976 while conducting regional airborne radiometric surveys. After examination of the anomaly and local radiometric surveying, eight claims were staked to cover a radioactive soil showing and a slightly radioactive gossan about 1800 m south. On 10 June 76 sixteen additional claims were added for protection. Work by the UJV crew (geological engineer Eric P. Onasick and prospectors W. Doug Eaton and Arjan Gelling) included a grid controlled soil sampling and scintillometer survey, along with minor regional prospecting and regional airborne radiometrics. See Figures U-BN1 and U-BN2 in the pocket.

PROPERTY, LOCATION AND ACCESS

The Bun Property consists of 24 contiguous mineral claims recorded in the Whitehorse Mining District as follows:

CLAIM NAME	GRANT NUMBERS	EXPIRY DATE
Bun 1-8	YA4518-4525	27 May 77
Bun 9-24	YA4584-YA4599	11 June 77

The claims are located at latitude 61°20' north and longitude 136°28' west within NTS claim sheet 115H/8, 65 miles (104 km) northwest of Whitehorse. Access was by helicopter from Whitehorse or Haines Junction, although a small lake on the property is suitable for turbine aircraft on floats. It is feasible to walk a bulldozer to the property from the Aishihik Lake Road.

GEOMORPHOLOGY AND GLACIATION

The region is characterized by gently to moderately rolling hills and wide glacial outwash valleys. Ice movement was from the south and three to six metres of till cover most of the property. Locally, side streams have incised the overburden and bedrock to form valleys as deep as fifty metres, sometimes flanked by cliffs. One of these gulleys has exposed the volcanic/ quartz monzonite contact in the vicinity of the Bun showing. The area is drained by Kirkland Creek and the Nordenskiold River to the Yukon River. Vegetation is sparse, consisting of shrubs with minor spruce and fir growth.

GEOLOGY AND MINERALIZATION

A large Triassic quartz monzonite stock ($\overline{T}$ qm) underlies the property and surrounding district. The quartz monzonite is typically medium to coarse grained, buff to white, occasionally porphyritic, quartz -veined and altered to sericite. Pyrite is common and molybdenum may be present; hematite stain was occasionally seen. Leaching is significant in some parts with up to about two percent voids (after pyrite). An old soil layer which developed on the intrusion was apparently capped and protected by Eocene or younger volcanic flows (Tvr) comprised of 30 to 70 metres of dark green, fine grained andesite at the base overlain by fractured and brecciated, occasionally pyritic, white to pale green acidic flows (rhyolite) and tuffs at least 300 metres thick. Large, rounded intrusive boulders weighing up to 25 tons occur near the base of the andesite. This volcanic unit has been eroded away to the south of the Bun anomaly, but to the north it continues for several miles, although the contact is overburden covered.

The showing itself occurs within a few metres of this contact, which has been exposed in the vicinity of the creek canyon. The radioactivity is strongest over a small gulley (3 x 6 metres), where a black soil assays as high as 0.5 percent U_3O_8, although a sample of clay below this layer assayed only 113 ppm U (see Geochemistry below). Local weakly radioactive zones occur in the quartz monzonite nearby, suggesting it as a possible source of uranium that has been remobilized through the regolith and precipitated at this location, possibly enriched by adsorption to organics. No specific mineral fragments were located although a yellow coating (possibly secondary uranium minerals) was seen on some grains of the pan-concentrated soil when examined under a microscope. Night prospecting with an ultraviolet lamp revealed that up to five percent of the soil particles fluoresced brilliantly (green), and a sample of these grains and fragments was anomalously radioactive (210/75 cps). Trace to minor amounts of unidentified apple-green mineral have been noted in the quartz monzonite at the intrusive/volcanic contact near the showing. Pyrite was found at the gossan in the quartz monzonite on the southern part of the claims.

GEOCHEMISTRY AND RADIOMETRICS

Scintillometer readings were carried out using a Scintrex Model BGS-1SL broadband scintillometer with a 43 cc NaI(Tl) crystal sensor, carried at waist height. Radiometric backgrounds varied with the different units: 40 to 60 cps was common in the andesite, whereas the acidic tuffs and flows were typically 150 to 180 cps. The quartz monzonite usually counted in the 60 to 80 cps range, although as high as 600 cps was encountered at the gossan.

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 horizon (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 stored 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^{o}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. Geochemistry of rock samples indicated up to 55 ppm U in an acid tuff sample near the showing, although trace was typical. The quartz monzonite varied between 5 and 20 ppm U.

A water sample in the creek draining the showing returned a weakly anomalous value of 2.8 ppb U.

The main showing consists of a radioactive, black, slightly organic to clayey soil. The highest value obtained from a pit at this location was 0.46 percent U_3O_8 and the following table of mesh fractions illustrates the uniformity of uranium concentration relative to grain size:

MESH FRACTION		SAMPLE #321	SAMPLE #322
	+ 3/8"	285 ppm U	no sample
-3/8"	+ 6	253	139 ppm U
-6	+ 20	253	387
-20	+ 35	262	345
-35	+ 80	240	284
-80	+ 100	284	226
-100		299	169

The loss-on-ignition (L.O.I., weight loss of sample from ashing of organics) was 12.3 percent, which is not unusually high for Yukon soils or silts and indicates that the presence of organics may not be sufficient explanation of the extremely high uranium content.

During the period 10 - 21 July 76 a 1400 x 1000 metre grid was established with topofil and compass, and stations were marked at fifty-metre intervals with half-and one-metre high pickets. A total of 264 grid soil samples were collected, and radiometric readings were taken at waist height every ten metres. Detail survey was done in the vicinity of the showing at five- and ten-metre intervals. Figure U-BN2 illustrates the grid geochemistry, radiometrics and detail scintillometer survey.

The geochemistry did not reveal any promising patterns, although uranium values tended to increase at the southern margin of the grid. The detail scintillometry, however, outlined an area of about 100 x 200 metres of twice-background radiation (150/75 cps), with an interior area of about 70 x 40 metres of seven to twenty times background, peaking at the showing itself (2850 cps at waist height, to 12000 cps on the ground). A distinct increase in radioactivity was noted along the length of the contact on the claims and at the contact exposed at the north end of Bun Lake (also detected by airborne radiometrics, see below).

As airborne radiometrics were successful in the discovery of the initial anomaly, detail flying was done on and adjacent to the claim group (see Figure U-BN1).

Airborne equipment consisted of a Scintrex Model GAM-1 spectrometer with a Model GSA-61 NaI(Tl) crystal (1853 cc) coupled to a Hewlett-Packard Model 7155A stripchart recorder. Lines were flown at about 100 km/hr and 50 to 75 m terrain clearance, in the total-count mode with 3 second time constant.

A regional survey was flown along the assumed intrusive/volcanic contact for several miles to the north and west, but no other radioactive zones were found. Four anomalies were found in the vicinity of the claims. Two large exposures of volcanic talus north of the claims gave values three times background (900/300 cps) but assays of these rhyolites were disappointing. A creek gulley at the northwest end of Bun Lake, which cuts the contact, was slightly anomalous (575/400 cps) and a silt sample here gave an encouraging value of 14 ppm U. An exposure of quartz monzonite southwest of the claims was mildly anomalous (1000/550 cps). The gossan at the south end of the grid was also slightly anomalous.

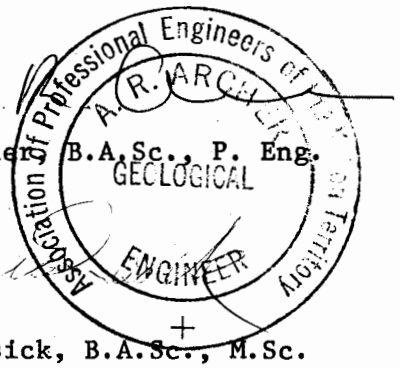
CONCLUSION

The geological setting of impermeable acid volcanics capping a regolith developed on the quartz monzonite batholith provides a favourable locus for deposition of uranium mineralization, particularly since the intrusive unit is weakly radioactive and has been moderately to strongly leached and pitted. The radioactivity at the intrusive/volcanic contact may simply represent local uranium accumulation or could be the edge of a paleodrainage channel that

extends some distance beneath the volcanic cover. Further work should consist of shallow drilling along Bun Creek to test the regolith below the volcanics.

Respectfully submitted

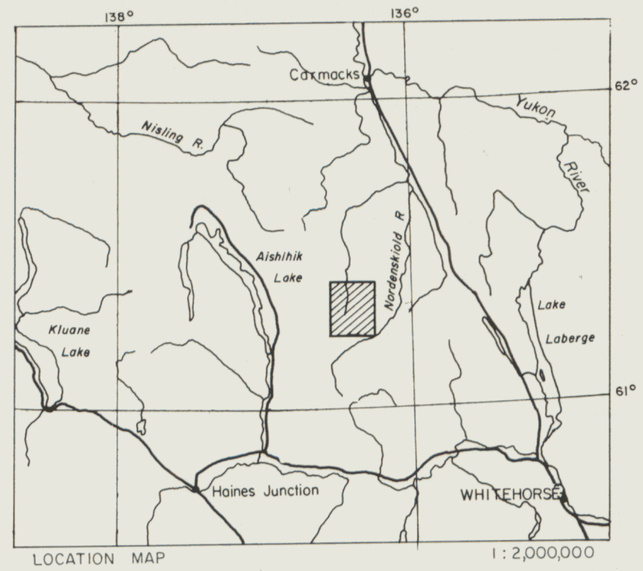
ARCHER, CATHRO & ASSOCIATES LIMITED



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

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

136°35' 136°30' 136°25' 136°20' 61°25' 61°20' 61°15'



LOCATION MAP 1 : 2,000,000

LEGEND

Flight Path and Number showing Anomaly (peak/background)

Showing and Grid Baseline

Tvr — Tertiary acid volcanics

Rqm — Triassic quartz monzonite

Geological Contact

Fig. U-BN1

ARCHER, CATHRO & ASSOCIATES LTD.

RADIOMETRICS

BUN AREA

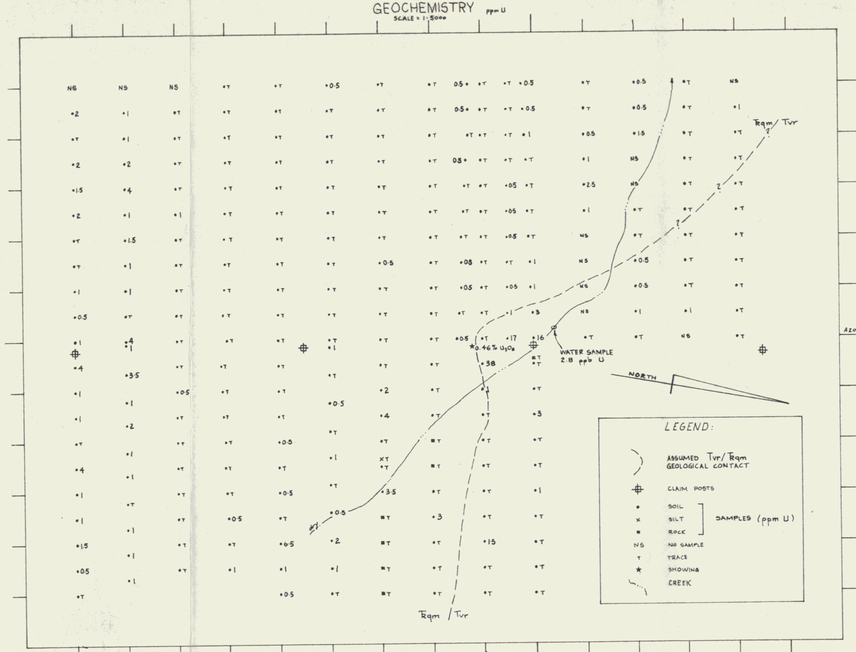
UKON JOINT VENTURE

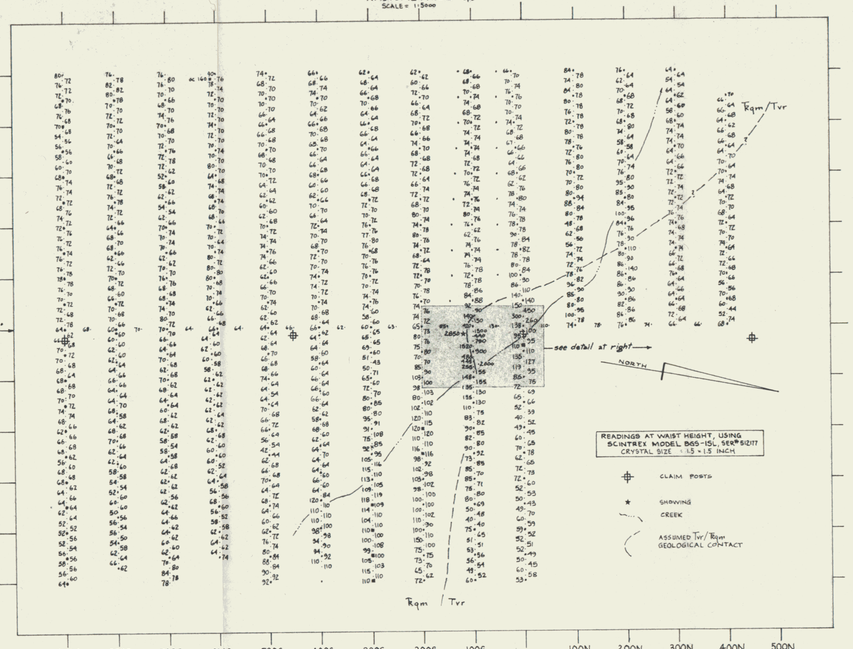
Scale 1 50,000

1000 0 1000 2000 3000 4000 Metres

NTS 115 H8

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





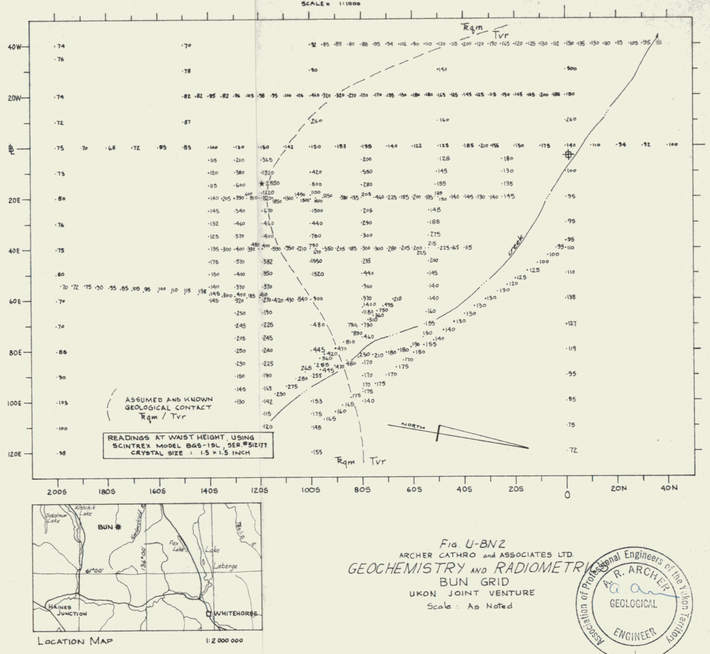


Fig U-BN2

ARCHER CATHRO and ASSOCIATES LTD

GEOCHEMISTRY AND RADIOMETRICS

BUN GRID

UKON JOINT VENTURE

Scale : As Noted

R. ARCHER

ASSOCIATION OF Professional Engineers of the YUKON Territory

GEOLOGICAL ENGINEER