LAND 52-1-60

ASSESSMENT REPORTS

Dawson M.D.

MAP No. 115 O/14 116B/3 TYPE OF WORK: Geological Geochemical Radiometric

REPORT FILED UNDER	Ukon Joint Venture 090188
DATE PERFORMED	October, 1976 DATE FILED: April 22, 1977.
LOCATION – LAT.	64°01'N Tinhorn Gulch area, Yukon
LONG.	139°04W
CLAIM Nos.	Surprize 1-16
	1,3,5,7, YA9565-68, 10,12,14,16 + YA9569-72,2,4,6,8,= YA9573-76, 9,11,13,15=YA9577-80.
$7,868.10	
WORK DONE BY	A.R. Archer & E.P. Onasick (Archer Cathro & Assocs)
WORK DONE FOR	Report presents results of ground radiometric survey,
REMARKS	geological survey and uranium geochemistry for water, silt, and soil samples.

REPORT ON GEOCHEMISTRY, GEOLOGY AND RADIOMETRIC SURVEY

SURPRIZE 1-16 CLAIMS

DAWSON MINING DISTRICT
CLAIM SHEET 115O/15, 116B/3
Lat. 64°01' Long. 139°04'
20 JANUARY 1977

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

This report [illegible] by the Geological [illegible] recommended to the Commissioner to be considered as representation work in the amount of $ 7868.10

[signature]
[illegible] or
~~Resident Mining Engineer~~

Considered as representation work under Section 59 (1), Yukon Quartz Mining Act.

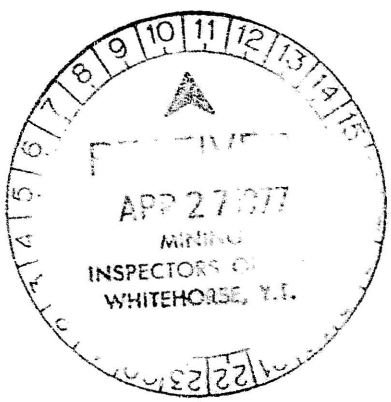
B. R. BAXTER
Supervising Mining Recorder

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

SURPRIZE 1-16 CLAIMS

DAWSON MINING DISTRICT

CLAIM SHEET 115O/15, 116B/3

Latitude 64°27' Longitude 139°04'

20 January 1977

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

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UNEXPECTED PROPERTY

INTRODUCTION

An old showing situated on Australian Hill, immediately southeast of Dawson Airport between Klondike River and Hunker Creek, was investigated by Ukon Joint Venture (Chevron Canada Limited and Kerr-Addison Mines Limited, managed by Archer, Cathro & Associates Limited) because it contained purple fluorite in a Tertiary intrusion. Preliminary airborne spectrometric reconnaissance by the UJV crew (geological engineer Eric P. Onasick and prospector W. Doug Eaton, supervised by R. J. Cathro) gave only a weak anomaly in this area but initial water sampling returned one very high uranium assay. Subsequent water sampling, which also returned extremely high values, and a small soil anomaly delineated an area of interest which was staked and detail grid-sampled in the periods 11 to 22 and 24 to 29 October 76 by geologist Mike P. Phillips, and prospectors Frank Gish and Jack Dennett from 11 to 31 October 76. Refer to Figures U-UN1 and U-UN2 (in the pocket).

PROPERTY, LOCATION AND ACCESS

The Unexpected property consists of 16 contiguous mineral claims recorded in the Dawson Mining District as follows:

CLAIM NAME	GRANT NUMBERS	EXPIRY DATE
Surprize 1,3,5,7	YA9565-YA9568	14 October 77
Surprize 10,12,14,16	YA9569-YA9572	14 October 77
Surprize 2,4,6,8	YA9573-YA9576	14 October 77
Surprize 9,11,13,15	YA9577-YA9580	14 October 77

The claims are located at latitude 64°01' north and longitude 139°04' west, straddling claim sheets 115 O/14 and 116 B/3, 18 miles (29 km) east of Dawson. The Hunker Creek Road crosses the south end of the claim group.

GEOMORPHOLOGY AND GLACIATION

The topography is typical of the unglaciated terrain throughout the Dawson Range. Rounded subdued hills rise to elevations of 2,500 feet (800 m) with local relief of up to 1,500 feet (500 m). Streams occupy V-shaped valleys which have been strongly modified by late Tertiary rejuvenation. Outcrop is very rare and most hillsides are mantled by a thin cover of residual till, soil and humus. Vegetation is characterized by open pine and aspen on south facing slopes with thick moss cover and block spruce on north facing slopes, where permafrost extends to surface.

GEOLOGY AND MINERALIZATION

This property is situated within the Klondike placer gold district, which is underlain by a series of metamorphic rocks that have been loosely subdivided as the Pelly Gneiss, Klondike Schist, Schist-Gneiss Unit, and Nasina Quartzite. These rocks have recently been restudied and correlated with unmetamorphosed assemblages in Central Yukon by D. J. Tempelman-Kluit of the GSC. Stratigraphic relations, thicknesses and relative ages of the metamorphic rocks are obscure because exposure is so poor, primary layering has been destroyed, and contacts are gradational. The Pelly Gneiss is a muscovite-biotite-quartz-feldspar rock with excellent pervasive foliation but poor compositional layering. Its mineralogy approximates granodiorite and it probably

represents a sheared and metamorphosed plutonic rock. The Klondike Schist is more greenish with abundant chlorite, muscovite and quartz in a flaser structure that has resulted from granulation and shearing. The schist contains minor interfoliated augen gneiss and amphiobolite and was probably derived from felsic to intermediate volcanic rocks with lesser amounts of sedimentary rock. The Schist-Gneiss Unit is an undivided mixture of the two units and it contains a narrow belt of garnet amphibolite sheared serpentinite and crystalline marble. Tempelman-Kluit has correlated this belt with Pennsylvanian and Permian rocks of the Anvil Range Group. The other units correlate best with Upper Devonian-Mississippian strata of the Sylvester Group and its metamorphosed equivalent, the Englishmans Complex. The last unit, the Nasina Quartizite consists of micaceous quartzite with interfoliated graphitic biotite-muscovite schist and minor amphibolite and marble. This unit, assumed to be Ordovician-Devonian in age, is almost certainly a metasediment with the amphibolite representing a metavolcanic member. The age of the metamorphism is Early or Middle Triassic.

Published GSC maps indicate that Australian Hill is underlain by Nasina Quartzite containing ultrabasic lenses. However, the southwest side of Hunker Creek is mapped as Klondike Schist. Metamorphic rocks seen on and near the claims consist of chlorite schists, micaceous quartzite and muscovite-biotite quartz-feldspar gneiss, suggesting that the property could be underlain by any one or all of the GSC units. The units are probably so complexly mixed by folding and thrusting that careful mapping will be required to distinguish a stratigraphic pattern.

An unmapped porphyry stock about 3.75 miles (6 km) long and 1.8 miles (3 km) wide intrudes the metamorphic rocks on the Surprize claims. Similar

plutons have been mapped several miles to the south and southwest and others are rumoured to be present in the Klondike District. The stock consists of rounded smoky quartz eyes and occasional subhedral to euhedral feldspar phenocrysts up to 1 mm long in an aphanitic white to buff groundmass. The porphyry commonly weathers medium brown and produces a brown sandy soil that contrasts markedly to the darker soil derived from schists. It has not been dated but is similar to Eocene plugs elsewhere in the Dawson Range that have been dated at about 50 m.y. and it is thought to be related in age to nearby basic volcanic flows.

Prospectors at the turn of the century located traces of gold and silver in a fluorite-rich section of the porphyry. The fluorite is finely disseminated in a fine-grained, non-porphyritic phase of the stock. No other mineralization has been seen in surface float but this may be a reflection of the poor exposure and deep leaching. The GSC has recovered wood tin, topaz, fluorite and tourmaline from nearby streams and has postulated that the porphyry stocks are the likely source.

GEOCHEMISTRY AND RADIOMETRICS

Reconnaissance airborne spectrometry flown over the Unexpected area on 1 June 76 detected a very weak anomaly (900/450 cps) in the vicinity of the quartz porphyry, but excessive vegetation and snow cover prevented a ground check at that time. No other anomalies were found from the air. A Scintrex Model GAM-1 spectrometer with 1853 cc NaI(Tl) crystal was mounted in a helicopter, and lines were flown in the total-count mode at about 100 km/hr and 50 to 75 m terrain clearance.

Initial ground follow-up by UJV consisted of ground traverse in the vicinity of the airborne anomaly, with collection of water, silt and soil samples, and prospecting by scintillometer (Scintrex broadband, Model BGS-1SL with 43 cc NaI(Tl) cyrstal). Typical scintillometer readings are low, varying between 30 and 70 cps, and none of the soild and rocks were anomalous. However, a trhorough water-sampling program of all creeks draining the southwestern slopes of the ragret area yielded uranium values in excess of 15 ppb, with a maximum of 46 ppb on a small stream between Tinhorn Gulch and Fifty-Four Pup. (See Figure U-UN1 for regional geochemistry.) Follow-up traverses on these latter two creeks collected water along their lengths that were also highly anomalous, typically in excess of 30 ppb U, and one soil sample near the headwaters of Tinhorn Gulch assayed 192 ppm U, with surrounding values of 27, 33, 74 ppm. A contrast in scintillometer readings coincided with the anomalous soils (160 to 210 cps).

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 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°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 pre-

concentrated 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.

Values were encouraging enough to warrant staking of 16 claims to cover the western contact of the quartz porphyry. In the period 11 - 29 October 76, the UJV crew (geologist Mike P. Phillips and prospectors Frank Gish and Jack Dennett) scintillometer-surveyed and grid-sampled soils and rock fragments on the claims (see Figure U-UN2). Two distinct areas of anomalous radiation (twice background or greater) were outlined, one slightly uphill from the original soil anomaly and another about 1650 metres to the south. Maximum readings obtained in each area were 160 and 100 cps respectively. The original soil anomaly was duplicated, but was shown to be small in area. The new area of high geochemical values on claim 6 also occurs slightly downhill from a scintillometer anomaly, with uranium values between 10 and 80 ppm in an area of about 500 x 500 metres, with a central high value of 550 ppm. Both anomalous areas lie within 100 metres of the assumed edge of the underlying intrusive, and occur in organic, swampy soil.

CONCLUSION

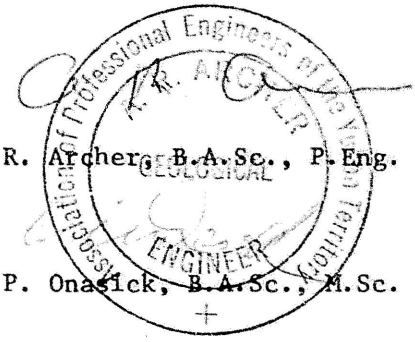
The unusual geochemical and radiometric responses found at this property are difficult to interpret, and further work will be required to determine if uranium is being depleted or concentrated at surface. Since glaciation has not scoured the weathered surface, deep leaching and consequent supergene enrichment may have occurred and may partly explain the low response in soil geochemistry and scintillometry.

The intrusive is probably the original source of uranium. Uranium mobilized from the intrusive by leaching may have formed secondary concentrations along fractures or in zones of porosity in the contacting metamorphics and these provide the most likely exploration target.

In any case, the next phase of work should include bulldozer trenching in the vicinity of the radiometric and geochemical anomalies or alternatively a program of diamond drilling to investigate the possible existence of supergene enrichment developed from deep leaching of the surface rocks.

Respectfully submitted

ARCHER, CATHRO & ASSOCIATES LIMITED



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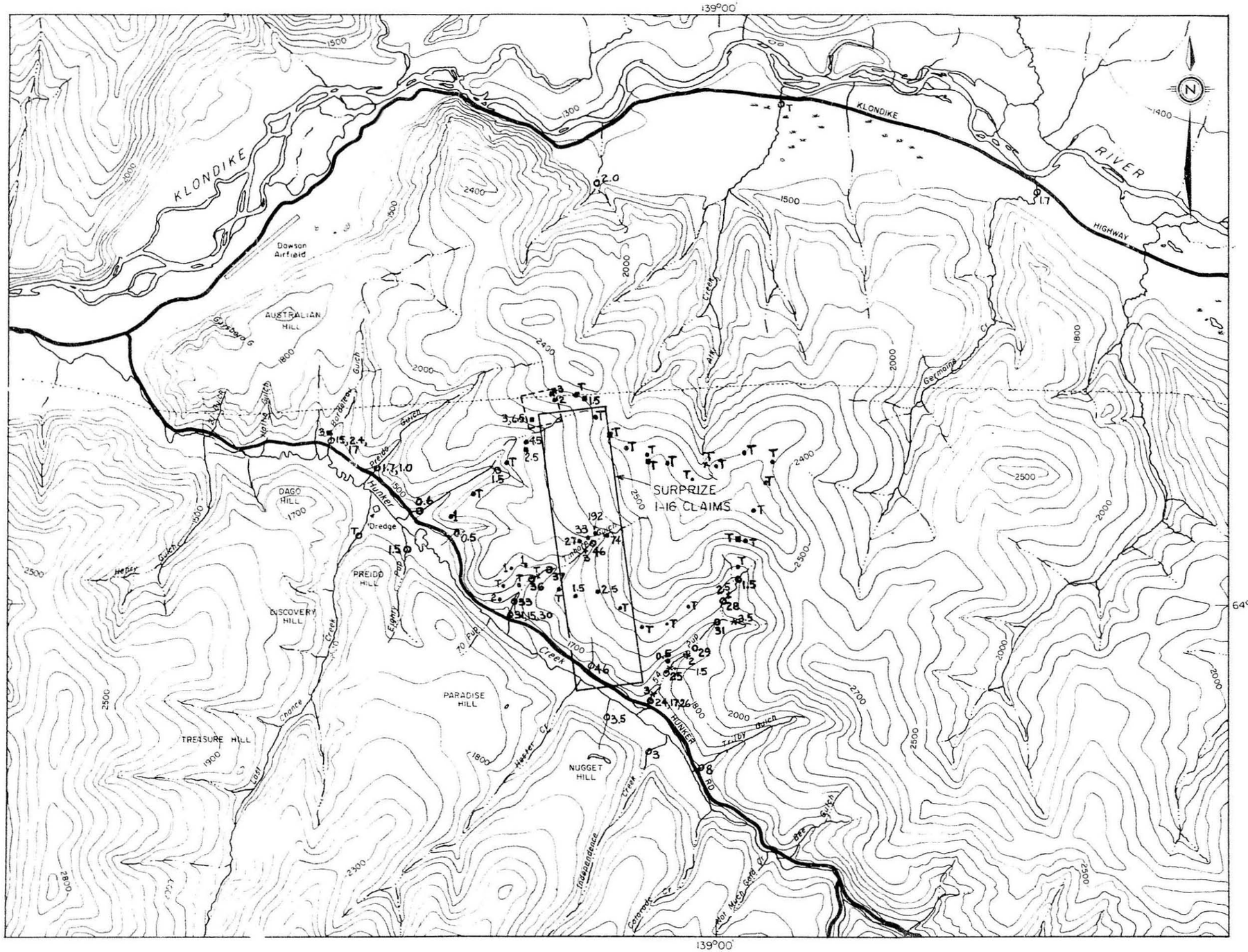

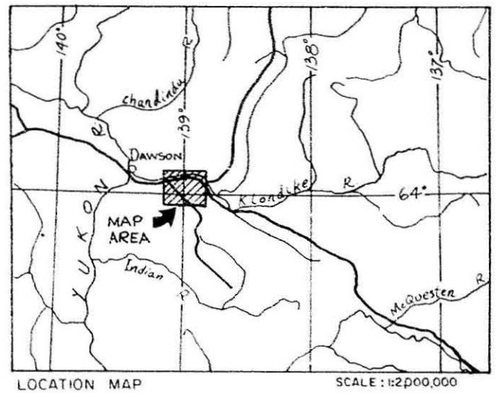

LOCATION MAP SCALE : 1:2,000,000

LEGEND

- • Soil ppm U
- x Silt ppm U
- ■ Rock ppm U
- o Water ppb U
- T Trace

SURPRIZE claims boundary

UNEXPECTED claim

Power line

Fig. U-UN1

ARCHER, CATHRO & ASSOCIATES LTD

REGIONAL GEOCHEMISTRY

UNEXPECTED AREA

UKON JOINT VENTURE

SCALE 1:50,000

1000 0 1000 Metres 2000 3000 4000

NTS 115O 14
116B 2

Association of Professional Engineers

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


HUNKER CREEK ROAD
NORTH
GRID BASELINE AZIMUTH 166°
LOCATION MAP
SCALE: 1 2,000,000
UNEXPECTED REGION
SURPRIZE 1-16 CLAIMS
LEGEND
Grid lines
Right side shows scintillometry (counts per second), using Scintrex model BGS-ISL: 2.65 cu. inch NaI (Tl) crystal
Left side shows soil geochemistry (ppm Uranium); T - Trace
Assumed geological boundary between feldspar porphyry (Qfp) and schist/gneiss (Psn)
Outcrop
Creek
Boundary of organic-rich topographical low area
Power line
Claim boundary, SURPRIZE 1-16 claims
Claim posts and numbers
Fig. U-UN2
ARCHER, CATHRO & ASSOCIATES LTD.
GEOCHEMISTRY and RADIOMETRICS
UNEXPECTED GRID
SURPRIZE 1-16 CLAIMS
UKON JOINT VENTURE
SCALE 1:2500
Metres
NTS 116B/3
NTS 115O/14
To accompany a report by A.Archer and E. Onasick dated Dec. 1976