REPORT ON SOIL GEOCHEMISTRY, GEOLOGY AND RADIOMETRIC SURVEYS

WERNECKE 1-82 CLAIMS

Mayo Mining District
Claim Sheet 106E/1
Lat. 65°08' N Long. 134°23'W
22 March, 1976

A.R. Archer Consulting Engineer

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 $4350.00

Resident Geologist or
~~Resident Mining Engineer~~

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

B. R. BAXTER
Supervising Mining Recorder

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 SOIL GEOCHEMISTRY, GEOLOGY AND RADIOMETRIC SURVEYS

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Latitude 65°08' North Longitude 134°23' West

22 March, 1976

Alan R. Archer Consulting Engineer

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INTRODUCTION

The Wernecke claims cover an uranium occurrence found by Wernecke Joint Venture (Standard Oil Co. of B.C. Ltd., Aquitaine Co. of Canada Ltd., and Messrs L & H Clay) in June, 1975 and explored by reconnaissance soil sampling, geological mapping and ground and airborne radiometric surveys. This work was performed on a part time basis during the period 27 July-September 9 by a field crew based at Kiwi Lake. The crew consisted of geologists U. Schmidt, A. Gregson, T. Bremner, J. Slater and field men D. Eaton, M. Buttle and R. Dennett. The project was managed by Archer, Cathro & Associates Ltd. and supervision was provided by M.P. Phillips and the writer.

PROPERTY, LOCATION AND ACCESS

The property consists of 82 Wernecke claims which are registered in the Mayo Mining District as follows:

CLAIM NAME	GRANT NUMBER	EXPIRY DATE
Wernecke 1-42	Y97944-Y97985	21 July, 1976
Wernecke 43-82	YA1353-YA1392	30 Sept, 1976

The property is located at latitude 65°08' north, longitude 134°23' west within NTS claim sheet 106E/1. Access is by helicopter from Kiwi Lake, nine miles to the northwest, which can be reached by float-equipped, fixed-wing aircraft from a charter base at Mayo, 120 miles to the southwest.

Claims were previously staked in this vicinity in July, 1910 but no sign of previous work has been found and the reason for staking is not known.

GEOLOGY AND MINERALIZATION

The Wernecke claims cover Quartet Mountain, a distinct, isolated, north trending, monolithic feature lying between the Bonnet Plume River valley and Quartet Lake. It has steep slopes, partially covered by talus and reaches an elevation of about 5,000 feet above sea level from a valley base of less than 2,000 feet above sea level. The lower slopes are well vegetated with spruce, willow and alder.

Quartet Mountain is mapped by the Geological Survey of Canada (D.K. Norris, Preliminary Geology Wind River Sheet released 15, May, 1975)as undivided Lower Proterozoic Unit HO phyllitic argillites and quartzites. Regional mapping by Wernecke Joint Venture (WJV) subdivides G.S.C. Unit HO into six units, numbered Units 1 to 6 respectively. Only two of the WJV units are present in Quartet Mountain as illustrated on Figure Q1. These are, Unit 3, a fine grained metavolcanic with mudstone interbeds that is occasionally altered to green phyllite and Unit 6, a fanglomerate or regolith. Mapping is complicated by at least three phases of folding with associated faulting and foliation. The main structural feature is an overturned, west-plunging fold that appears to have been responsible for the dominant direction of foliation in Unit 3. Superimposed on this is a system of gently north-plunging, open folds and a later weak system of west-plunging open folds. Quartz is occasionally present in weak fractures that trend north and dip steeply.

An area of mineralization at the north end of Quartet Mountain called the Main Showing was mapped in detail as plotted on Figure Q2. The showing occurs on a steep, north facing, mainly talus covered slope. Outcrop is scarce and mapping was based on identification of large talus blocks that have not moved far from their source. Unit 3 metavolcanics are divided into four sub-units on the

basis of colour varieties. The radioactive mineralization is found in coarse crystals widely disseminated along a distinctive light pink to buff banded zone that ranges from ten to more than fifty feet in thickness. A weak, north-trending, quartz-filled fracture is mineralized where it cuts the light coloured band of metavolcanics and for a short distance on either side. The mineralization occurs as hard, black, vitreous crystalline masses up to several inches in diameter that has been identified as brannerite with traces of thorite and uranothorite. Radioactivity in the light coloured volcanics occurs as similar coarse crystal clusters associated with quartz-filled microfractures and occasionally as small crystals disseminated along thin interbeds. Weathering produces red hematitic halos around mineral grains. Hematite is the only mineral associated with uranium. A specimen containing about five per cent mineral from the vein assayed 1.12 per cent U_3O_8, 0.10 per cent ThO_2, 0.005 per cent rare earths and 0.034 oz/ton gold, while a specimen from the volcanics containing about one per cent mineral assayed 0.23 per cent U_3O_8, 0.02 per cent Pb and a trace (190 ppb) gold. Radioactive float is found along a length in excess of 2,000 feet but does not appear to occur in sufficient quantities to suggest bedrock grade in excess of 0.05 per cent U_3O_8. Conventional surface sampling is not possible due to the disseminated nature of the mineralization and the lack of outcrop.

The other radioactive float occurrences on Quartet Mountain, shown on Figure Q1, have a similar type of mineralization but are not restricted to any particular colour of metavolcanics.

GEOCHEMISTRY

Geochemical sampling was only done during prospecting traverses, as plotted on Figure Q1. Soil samples were obtained from a C soil horizon by digging a shallow pit with a grub hoe and were analysed at Chemex Labs Ltd., North Vancouver, B.C. for copper, lead, zinc, uranium, vanadium and molybdenum. The uranium analysis was obtained by a standard fluorometric method on an ashed and double acidified, minus 32 mesh fraction. The remaining five elements were determined using atomic absorption spectrometry of a nitric-perchloric extraction of a minus 80 mesh fraction.

The samples exhibit a normal range of metal values for the district and those which are above threshold (3 ppm) in uranium are associated with above threshold molybdenum and copper in most instances. No areas of interest are indicated that were not located by prospecting.

RADIOMETRIC SURVEYS

A contour airborne radiometric survey was flown around Quartet Mountain at 500 foot elevation intervals using the Jet Range helicopter. The survey was flown at 60 miles per hour at a visually controlled ground clearance of 150 feet utilizing a Scintrex GSA-61 (113 cubic inch thallium activated sodium iodide crystal) sensor, Scintrex GAM-1 spectrometer analyser and a Hewlett-Packard 7155A strip chart recorder. The information gathered on the recorder is summarized on the left side of Figure Q1. In summary, the Main Showing at the north end of the mountain produces a small but distinct anomaly of 1800 cps over a background of about 1200 cps. Other zones of similar intensity were outlined on the northeast and southwest sides of the mountain in which prospecting later located mineralized float.

A 2,000 foot long picket baseline was established along the surface trace of the Main Showing by chain and compass. Radioactivity was measured at fifty foot intervals (see Figure Q2) on pace and compass crosslines 100 feet apart extending for several hundred feet on either side of the baseline using a Scintrex BGS-1S broadband scintillation counter (1 inch by 1 inch crystal) held at waist level or about three feet above the ground. Unfortunately, the survey was not done until late in the summer and a fresh fall of snow, combined with difficult footing on the coarse talus blocks, limited the capability of the operator to locate individual hot spots which would have outlined the zone of interest more precisely. The highest level of radioactivity is located in the vicinity of the mineralized fault which confirms prospecting observations.

CONCLUSIONS

The Wernecke claims require detailed prospecting, particularly on the northeast and southwest end of Quartet Mountain where airborne surveys show higher levels of radioactivity and reconnaissance prospecting has located mineralized float. The showings on Quartet Mountain appear to contain a primary type of mineralization introduced prior to erosion of the paleosurface on which Unit 6 rests. However, lack of alteration of the brannerite and its apparent abundance near the paleosurface suggests a secondary origin. Further geological investigation should attempt to determine which hypothesis is correct.

Respectfully submitted,

ARCHER, CATHRO & ASSOCIATES LTD.

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

MAIN SHOWING

QUARTET LAKES

134°25'

65°07'

LEGEND

Greater than 1500cps response

1400 Significant peak response values in cps

Airborne survey flown at 604RPM, 150ft ground clearance and 800foot contour intervals using Scintrex GSA-61 Na I (TL) (10cu. in.) crystal.

DETAIL MAP BASELINE (see FIG Q2)

MAIN SHOWING

boulders up to 1000

WERNECKE 1-82 CLAIMS

WERNECKE 1-82 CLAIMS

LOCATION MAP

SCALE IN MILES

GEOLOGY

PRECAMBRIAN

UNIT 6 BRECCIA

6 Grey resistant weathering breccia, with a variety of coarse angular fragments of metavolcanic rock, cherts, argillites

6a Same as above with limy matrix

UNIT 3 METAVOLCANICS

3 Slaty to phyllitic greenschist and muscovite-chlorite schist, phyllite

3c Green and cream colour banded volcanics, porphyritic, white and lithic tuffs in places

3d Dark blue-grey slaty argillite

LEGEND

- S_0 Original bedding
- S_1 Foliation
- L_2 Fold axis lineations of 2nd phase open folds
- FA_1 Fold axis of overturned isoclinal folding
- FA_2 Fold axis of 2nd phase open folding
- FA_3 Axes of major S_3 kink folding
- Major fold axis
- Minor fold axis
- Fold overturned
- Soil
- Rock
- Outcrop
- Geological boundary – defined, approximate
- 1000 ★ Well-positive float occurrence with reading in counts per second taken with a Scintrex BGS-1S Scintillometer (1" x 1" thallium activated sodium iodide crystal)

DIAMOND DRILLED 14 diam. by Chamex Labs Ltd., N. Vancouver

Association of Professional Engineers of the Province of British Columbia

J. D. R. ARCHER GEOLOGICAL ENGINEER

FIG. Q1

ARCHER, CATHRO & ASSOCIATES LTD.

GEOLOGY & GEOCHEMISTRY, AIRBORNE RADIOMETRIC SURVEY

QUARTET OCCURRENCE

WERNECKE 1-82 CLAIMS

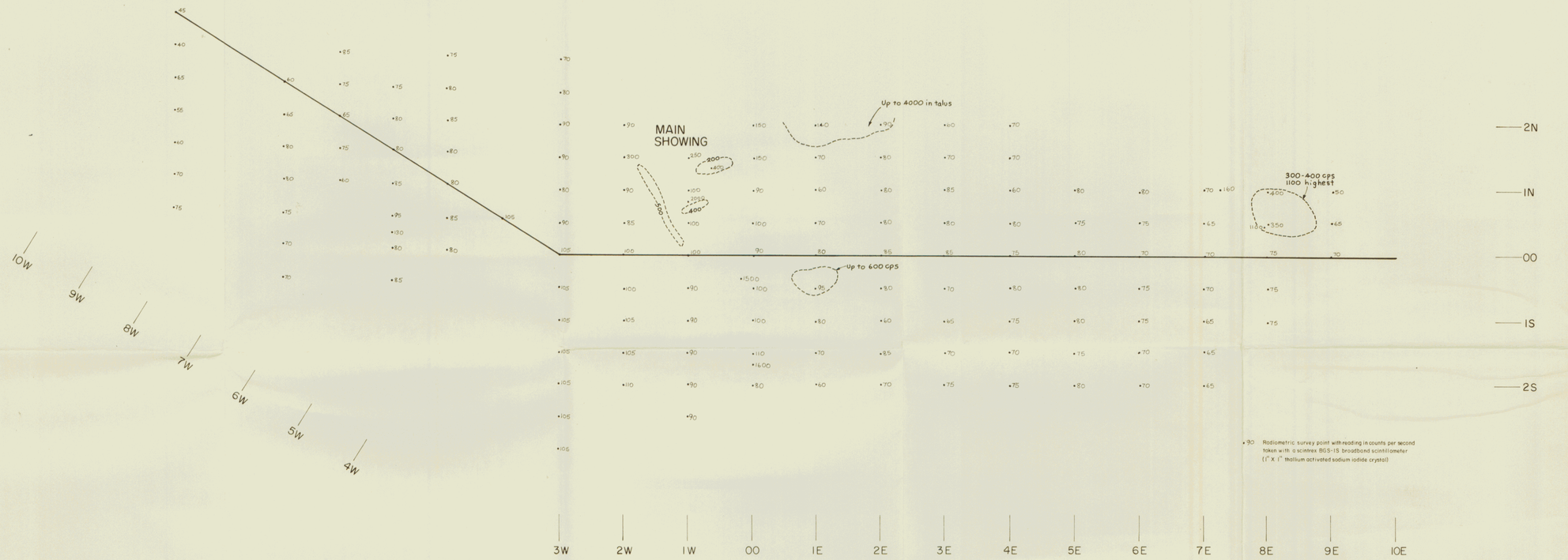
WERNECKE JOINT VENTURE

SCALE IN FEET

900 0 900 1800

To accompany report dated March, 1976

RADIOMETRIC SURVEY ALONG BASELINE OF MAIN SHOWING



•90 Radiometric survey point with reading in counts per second taken with a scintrex BGS-1S broadband scintillometer (1" X 1" thallium activated sodium iodide crystal)

GEOLOGY

PRECAMBRIAM

UNIT 6 BRECCIA

Grey weathering limey breccia, mainly coarse fragments of metavolcanics.

UNIT 3 METAVOLCANICS

Brown weathering magnetite bearing crystalline dolomite

Pink to brown banded tuffaceous acid volcanics primary host of mineralization.

Pale to dark green spotted and banded volcanics

White weathering, banded acid volcanics

Pale to dark green massive volcanics

LEGEND

Cleavage: inclined

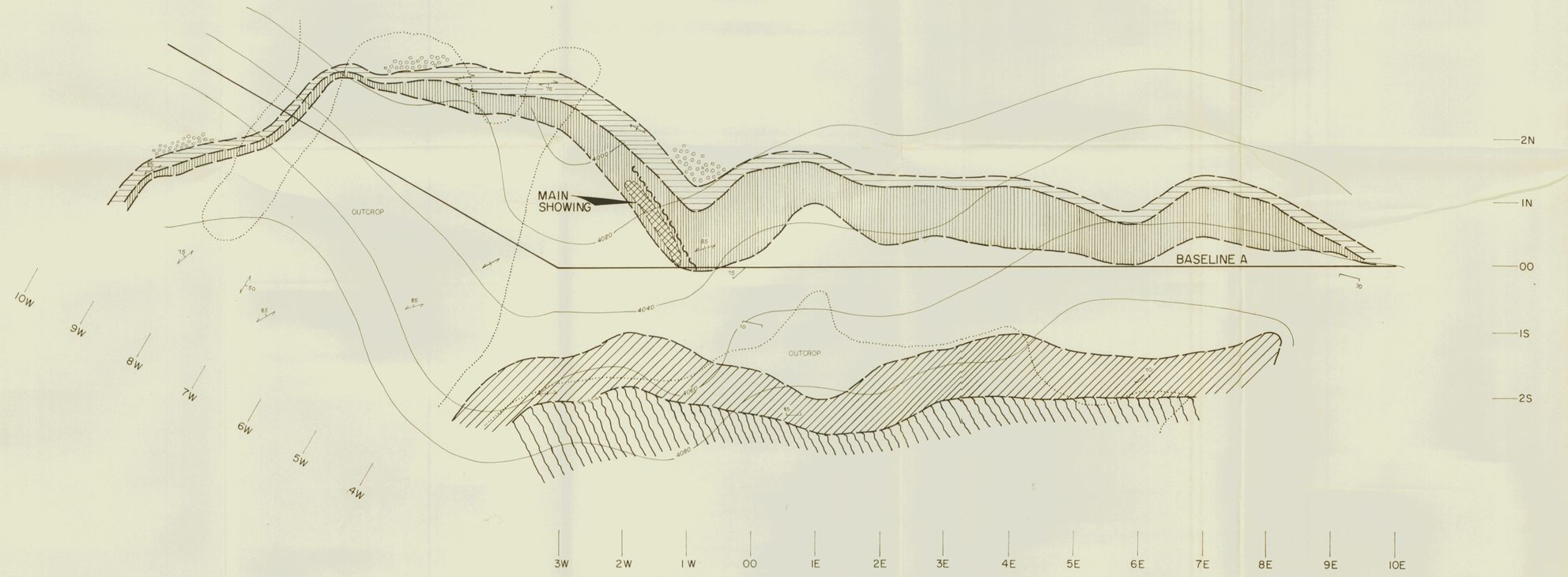
Foliation: inclined, vertical

Main showing float train

Limit of outcrop

Geological contact - approximate

DETAIL GEOLOGY ALONG BASELINE OF MAIN SHOWING



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J. R. ARCHER
GEOLOGICAL
ENGINEER

FIG. Q2

ARCHER, CATHRO & ASSOCIATES LTD.

DETAILED GEOLOGY AND RADIOMETRIC SURVEY

QUARTET OCCURRENCE

WERNECKE 1-82 CLAIMS

WERNECKE JOINT VENTURE

SCALE IN FEET

100 0 100 200

To accompany report dated March, 1976