



REPORT ON GEOCHEMISTRY, GEOLOGY
AND RADIOMETRIC SURVEY

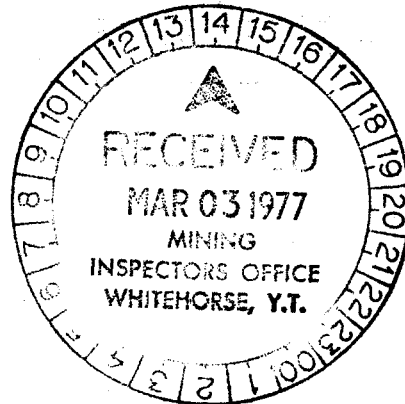
NOKLUIT 1-8 CLAIMS

WATSON LAKE MINING DISTRICT
CLAIM SHEET 105F/8

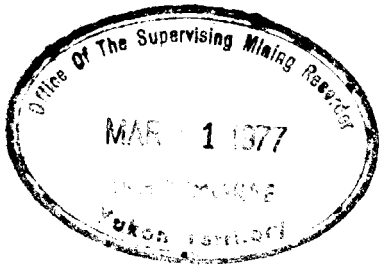
Lat. $61^{\circ}29'$ Long. $132^{\circ}11'$

20 JANUARY 1977

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



090152



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 \$ 400.00

W. Sinclair

Resident Geologist or
Resident Mining Engineer

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

B.R. Baxter
B.R. BAXTER
Supervising Mining Recorder

[Signature]
Commissioner of Yukon Territory

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FIGURE IN POCKET

Figure U-NK1 - Nokluit Claims; Geochemistry and Geology Scale 1:10,000

NOKLUIT PROPERTY

INTRODUCTION

The Nokluit radioactive showings were discovered in 1976 by Ukon Joint Venture (Chevron Canada Limited and Kerr-Addison Mines Limited) managed by Archer, Cathro & Associates Limited. The field crew was comprised of geological engineer Eric P. Onasick and prospector W. Doug Eaton, and was supervised by R. J. Cathro.

A suggestion by E. Dodson (Chevron Canada Ltd.) that a fluorite-bearing syenite exists in a favourable geological setting at the head of Ketza River led to the discovery of highly radioactive float there on 4 July 1976. The syenite was not located but the float was traced to outcrop and several other radioactive occurrences were noted in the vicinity. Eight claims were staked on 16 August 1976 to cover all of the observed occurrences, but UJV was not able to examine the property in detail in 1976 except for reconnaissance prospecting and sampling of showings. Snow hindered the investigation in some areas. Refer to Figure U-NK1 (in pocket).

PROPERTY, LOCATION AND ACCESS

The Nokluit property consists of eight contiguous mineral claims recorded in the Watson Lake Mining District as follows:

<u>CLAIM NAME</u>	<u>GRANT NUMBERS</u>	<u>EXPIRY DATE</u>
Nokluit 1-8	YA567-YA574	20 August 1977

The claims are located at latitude $61^{\circ}29'$ north and longitude $132^{\circ}11'$ west, situated on claim sheet 105F/8, 36 miles (58 km) south of Ross River and 110 miles (176 km) northeast of Whitehorse. Access was by helicopter from Whitehorse or Ross River, as well as from camps on the South Canal Road. A road follows the Ketz River valley and with minor repair at the south end, a four-wheel-drive vehicle could be driven to within 4 miles (6.5 km) of the property.

GEOMORPHOLOGY AND GLACIATION

The topography is characterized by elevations up to 6,500 feet (2000 m) and local relief of 2,500 feet (800 m). Pleistocene ice moved west and northwest along major valleys in the area, controlled by the mountains. The Ketz River drains the area to the Pelly and Yukon Rivers. Since the claims lie well above treeline, vegetation is sparse and is limited to grasses and minor buckbrush. The north side of the claims is a very steep cliff that is not ice-free until early August.

GEOLOGY AND MINERALIZATION

A well-defined northwest-trending fault at the head of White Creek separates two distinct rock assemblages. Movement on the fault elevated the western side about 1500 metres, juxtaposing Cambrian carbonates and phyllites of probable Hadrynian age to the west with a Silurian to Mississippian assemblage on the Nokluit claims to the east that closely resembles the host rocks on UJV's property. Only minor preliminary mapping was done here and it indicated that the Mississippian sequence consists of a basal unit of black to brown locally calcareous phyllite with minor sandstone and conglomerate (Msl) which

is overlain by thin bedded tuffaceous chert (quartzite) with disseminated pyrite and carbonates, and acid to intermediate submarine volcanic flows (Mv). These volcanics contain numerous blood-red pyrite gossans. A syenite body was mapped by British Yukon ECL on the Kay group of claims formerly at this location, but it was not found by the UJV crew. Syenites in this district are considered to be subvolcanic phase of the extrusive flows and tuffs.

Regional folding of the Cambrian and older rocks west of the main fault has formed the White Creek Anticline, which strikes and plunges gently to the east. A parallel anticline has also been mapped in the younger rocks to the east, related to a syncline just north of the claims. Minor faults occur in the area, parallel to the larger one, and may have some control over silver-lead (and possibly uranium) mineralization in the area. A quartzose breccia zone carrying limonite and some copper stain about one kilometre south of the claims may be part of the large northwest-trending fault, and graphite schist was noted in this zone. Minor folds complicate the structure and steeply-dipping quartz veins bearing traces of chalcopyrite and barite are scattered throughout the area. Non-radioactive mineralization is found in narrow discontinuous veins and consists mainly of galena and local sphalerite and chalcopyrite with appreciable silver values. Varying amounts of tetrahedrite, pyrite and pyrrhotite, manganiferous siderite, magnetite, barite and arsenopyrite accompany this mineralization.

UJV discovered eight radioactive showings labelled F, S and 1 to 6 on Figure U-NK1. The float showing (F) on claim 8 consists of boulders of light to dark purplish grey siliceous and brecciated volcanics with smoky quartz and magnetite veinlets. Pyrite, limonite, fluorite and galena appear in

minor to trace amounts. The boulders were traced to a small, poorly exposed but lower grade outcrop. Showing S was discovered on the ridge crest above the float train, where good exposure of quartz-carbonate flooded cherts with minor pyrite and limonite gave anomalously high radiation. The chert is bounded by dark green andesite. Sampling and radioactivity of this zone is discussed in the next section. Showing 1 is a 100 metre wide float train of purplish siliceous rock, called skarn in the field, containing abundant purple fluorite. Showing 2, an outcrop 2 to 4 metres wide, which is possibly the source of showing 1, consists of purple-to black-weathering rock with vitreous quartz veining containing disseminated medium to coarsely crystalline purple fluorite. This rock is purplish to dark grey on fresh surfaces. About 100 to 150 metres of chert with minor subangular fragments lie above this showing. A half-metre boulder containing an unknown black, spotted radioactive mineral was found at location 3, and this occurs about 200 metres downslope from the main showing (S). On the ridge south of this, a ten metre wide blood-red gossan developed at an acid volcanic contact, comprises showing 4 and just to the east a very narrow (30 cm) zone of buff to light brown radioactive material forms showing 5. On claim 1, a one metre wide zone of limy, buff coloured rock with irregular banding is strongly radioactive (showing 6) and resembles the F zone.

No radioactive minerals can be identified megascopically and the showings were recognized only on the basis of anomalous radioactivity. In general, there appears to be a consistent association of radioactive zones with purple fluorite, siliceous veining, and the chert-quartzite unit.

GEOCHEMISTRY AND RADIOMETRICS

The Nokluit area was initially discovered during regional airborne radiometric surveying using a Scintrex Model GAM-1 spectrometer with a 1853 cc NaI(Tl) crystal (Scintrex Model GSA-61) coupled to a Hewlett-Packard Model 7155A stripchart recorder. These instruments were mounted in a helicopter (Bell 206A) and lines were flown at about 100 km/hr with 50 to 75 m terrain clearance. Surveying used the total-count mode with a 3 second time constant, although spectral (U:Th) response was checked over anomalies.

A strong, sharp anomaly (2900/900 cps) associated with a strong limonitic gossan near the head of White Creek resulted in the discovery of showings F and S, and the other showings were later found by ground prospecting the area with a broadband scintillometer (Scintrex Model BGS-1SL with 43 cc NaI(Tl) crystal). Flight paths are shown on Figure U-NK1, although the anomaly at location S is not marked. Subsequent airborne flights checked the spectral (U:Th) response of several of these showings but although distinct peaks were recorded, the U:Th ratio was low in all cases. After the presence of thorium was recognized, further prospecting (airborne) stressed differences in U/Th zoning and uranium response has been disappointing.

On the ground, scintillometer response varied from as low as 50 cps in limestone to an average of 200 to 250 cps in the volcanics, with minor anomalies typically 400 to 500 cps, apparently from particular flows and normally associated with gossans, although no anomalously radioactive rock specimens were located. Table I on the following page lists the radioactive responses of the eight showings.

TABLE I
 SAMPLE ANALYSES AND SCINTILLOMETRY
 NOKLUIT CLAIMS

SAMPLE NUMBER	SHOWING NUMBER	SAMPLE WIDTH (metres)	SCINTILLOMETER FIELD READING (cps X100)	SCINTILLOMETER HAND SAMPLE (cps)	SPECTROMETER RATIO U:Th	GEOCHEMISTRY						
						U (ppm)	Th (ppm)	Ce (ppm)	La (ppm)	Nd (ppm)	Y (ppm)	Ce ₂ O ₅ (%)
G11601	S	1	50-100	670	7:5	74	3200	1000	50	500	300	-
G11602	S	2	80-100	1000	10:8	70	2300	-	-	-	-	-
G11603	S	2	50-80	680	8:5	52	1940	1500	1000	1500	1500	0.95
G173	S	5	10-20	80	2.5:1	0.5	-	-	-	-	-	-
G174	S	5	20-40	250	4:3	2	660	2000	1000	300	500	-
G175	S	4	15	125	3:2	3	-	-	-	-	-	-
G65	1	-	15-80	120	2:2	23	-	-	-	-	-	-
G66	2	-	15-90	400	4:2	60	2360	2000	2000	2000	2000	0.59
G67	3	-	13	200	2:1	53	-	-	-	-	-	-
G68	4	-	2	20	1:1	65	-	-	-	-	-	-
G69	5	-	25	200	3:1	26	-	-	-	-	-	-
G70	6	-	20-50	320	4:3	3.3	200	300	50	<200	50	0.06

Only a few regional geochemical samples (silts and waters) were taken and none of these returned anomalous values in uranium. 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 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. Rocks assays of the showings described above disclosed an abundance of thorium with only minor uranium mineralization. Rare earths and columbium content was found to be significant. Showing S was chip sampled where scintillometer readings were above 1000 cps, and representative rock specimens were taken at each of the showings 1 to 6. The assay data for these samples are displayed in Table I .

CONCLUSION

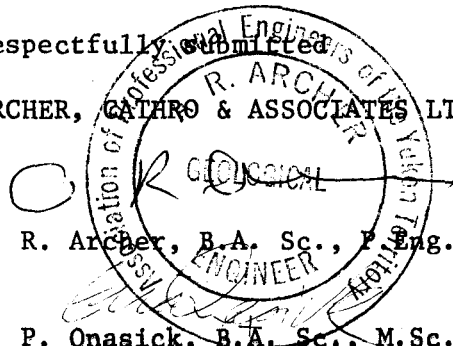
The lithology and structure in the Nokluit area is somewhat similar to the Guano claims, also staked by UJV in 1976, about 10 km west, including low uranium assays from strongly radioactive zones. Also, as at Guano, the rare

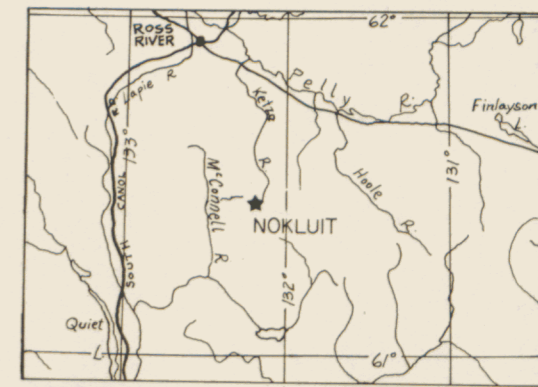
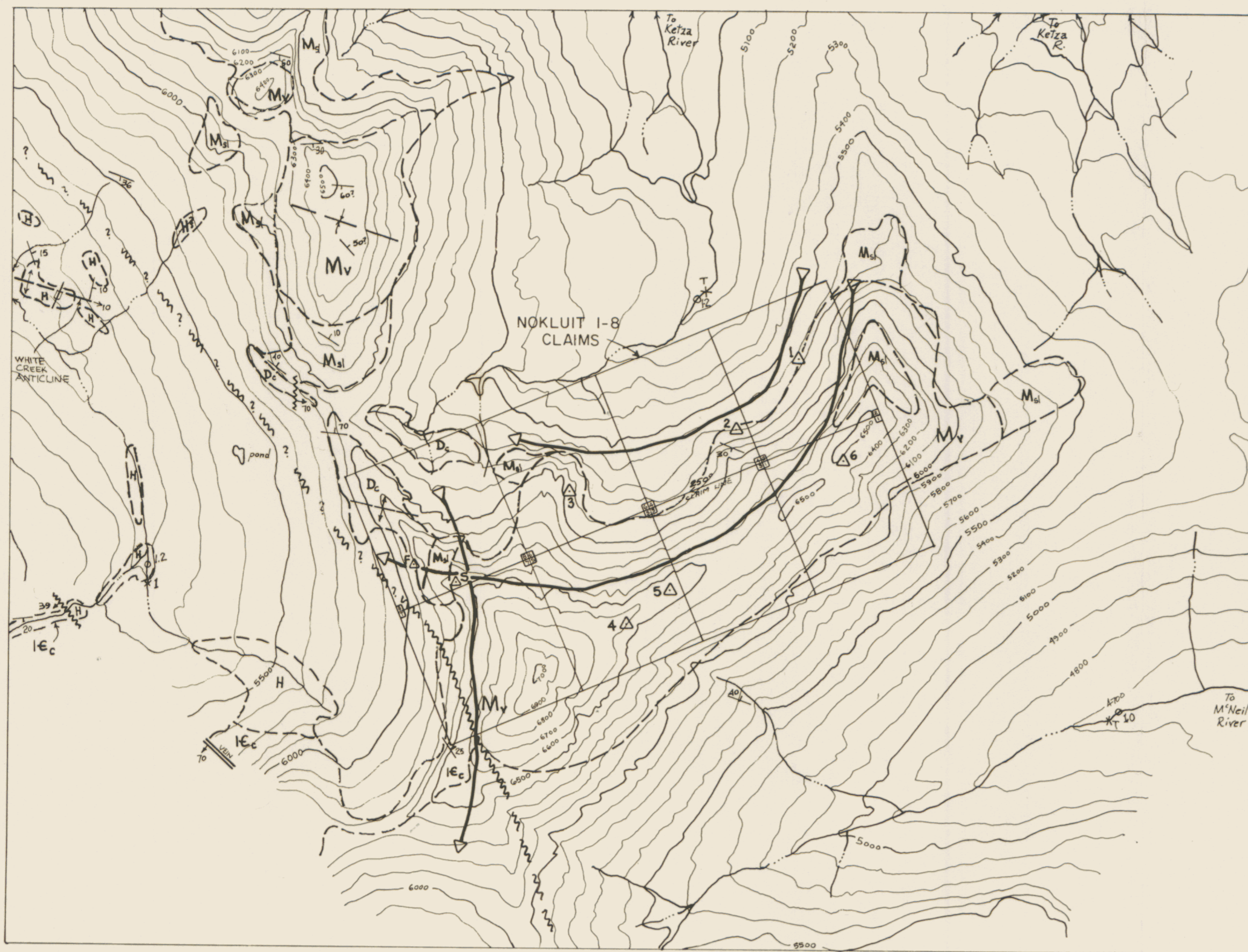
earth and columbium content of some samples is appreciable, and thorium mineralization is anomalously high. This suggests that the Guano-Nokluit region may be part of a broad province rich in rare earths, columbium and thorium. Uranium may possibly be found to concentrate in other locations, particularly if there has been a segregation of uranium and thorium due to differing geochemical mobilities. Recommendations for further work include detailed mapping and geochemical investigations of the claims, with emphasis on columbium and rare earths as well as uranium, and regional prospecting along structural features and in the Mississippian rocks. Any intrusive phases such as syenite or diorite should be investigated closely, particularly at their margins, and since the area lies in a base-and precious-metal province, geochemical samples should also be assayed for silver, gold, lead, zinc and copper.

Respectfully submitted
ARCHER, GATHRO & ASSOCIATES LTD.

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





LOCATION MAP SCALE 1:2,000,000

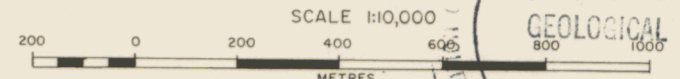
LEGEND

- X Silt sample ppm U
- O Water sample ppb U
- T Trace
- Fault (showing dip)
- Bedding attitude
- Anticline, syncline
- Vertical jointing
- 1-6 showings (see text)
F float train
S main showing
- Claimposts NOKLUIT 1-8
- Flight path

GEOLOGY

- MISSISSIPPIAN (Black Clastic Group)
- My** Syenite stocks and dikes contemporaneous with **Mv** unit.
 - Mv** Thin bedded quartzite or tuffaceous chert; acid to intermediate submarine flows.
 - Msl** Black to brown phyllite and slate with minor sandstone and conglomerate; locally calcareous.
- MIDDLE TO UPPER DEVONIAN
- D** Silty dolomite and dolomitic mudstone; thick to thin bedded.
- Angular unconformity —
- LOWER CAMBRIAN
- Icc** Massive, medium grey limestone becoming shaly and thin bedded in lower part.
- HADRYNIAN
- H** Grey phyllite grading upwards into shaly limestone.

Fig U-NKI
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GEOCHEMISTRY and GEOLOGY
 NOKLUIT CLAIMS
 UKON JOINT VENTURE



NTS 105F8

