

# ARCHER, CATHRO

AND ASSOCIATES LTD.

CONSULTING GEOLOGICAL ENGINEERS

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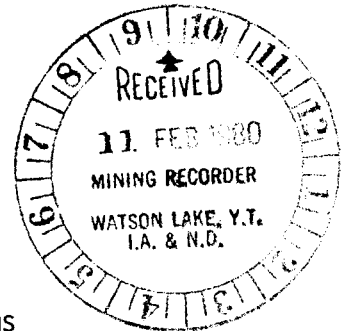
STANDARD BUILDING, VANCOUVER, B.C. 688-2568

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

ROCK SAMPLING PROGRAM

GUANO PROPERTY

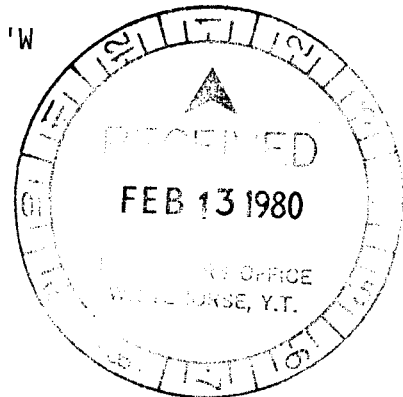
Guano 1-22 and Guayas 23-30 Claims



Claim Sheets 105F/8 and 105F/9

Latitude 61°30'N; Longitude 132°25'W

Work Done August 15 to 22, 1979



JANUARY 15, 1980

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

Consulting Engineer

090574

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

*Representation Work*

*\$3200.00*

Resident Geologist or  
Resident Mining Engineer

*J A Moun*  
Considered as representation work under  
Section 53 of the Yukon Quartz Mining Act.

*R Geologist Office*

*[Signature]*  
SUPERVISOR  
SUPERVISING Mining Recorder

*[Signature]*  
Commissioner of Yukon Territory

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APPENDIX 1 - Summary of Assay Results

Figure in Pocket

Figure U-GU 6

Guano Property: Geology, Radiometrics, REE  
Sample Location and U Geochemistry  
Scale 1:5,000

## INTRODUCTION

The 1979 program consisted of wide spaced chip sampling to determine if areas with significant rare earth or niobium values exist separately from the radioactive zones outlined in 1976 and 1977. A few samples were also collected from specific areas of unusual mineralogy within the skarn. A total of 102 samples were taken.

The program was conducted during the period August 15 to 22, 1979 by field men G. Matthews and D. Hillier under the supervision of the writer.

## PROPERTY, LOCATION AND ACCESS

The Guano property consists of 30 contiguous mineral claims recorded at Watson Lake as follows:

<u>CLAIM NAME</u>	<u>GRANT NUMBERS</u>	<u>EXPIRY DATE</u>
Guano 1-4	YA242-YA255	24 March, 1982
Guano 15-18	YA563-YA566	24 March, 1982
Guano 19-22	YA945-YA948	24 March, 1982
Guano 23-30	YA11192-YA11199	24 March, 1982

The claims are located at 61°30'N and 132°25'W, straddling NTS claim sheets 105F/8 and 9, some 58 km south of Ross River. Low quality bush roads extend to Seagull Creek, 10 km to the west, and to a mining property on Ketz River, 17 km to the northeast. Access during 1979 was by helicopter from Ross River.

The claims are registered in the name of Archer, Cathro and Associates Ltd. on behalf of the Ukon Joint Venture (Chevron Canada Ltd. and Kerr Addison Ltd.).

## GEOLOGICAL SETTING

The geological and morphological setting is described in detail in the 1975 Final Report and a University of British Columbia M.Sc. thesis by F. Chronic, which was co-sponsored by UJV and the Department of Indian Affairs and Northern Development in 1977.

The property lies within the rugged Pelly Mountains, which reach elevations of 2100 m above sea level and exhibit local relief of up to 1200 m. Ice scoured valleys with hanging, steep walled cirques are common features. Most of the property lies above timberline and covers a northeast-trending ridge and adjoining alpine-glacier-cut valley. In general, overburden is locally derived, allowing easy prospecting and crude geological mapping between outcrops, although glacial till increases toward the north end of the claims.

The claims cover the eastern contact of a Mississippian syenite stock that intrudes Cambrian phyllite; Silurian-Devonian dolomite, quartzite and limestone; and Mississippian felsic volcanics, tuff and minor chert. The syenite and volcanics are believed to be coeval. The following are brief descriptions of the major units shown on Figure U-GU6 in the pocket.

Cambrian Phyllite (Cs) - black, lustrous phyllites.

Silurian-Devonian Carbonate (D1) - buff and orange weathering grey dolomite, grey quartzite and thin to thick bedded, sometimes wavy banded, grey to white limestone. Limy units are altered to three varieties of skarn as described at the end of this section.

Mississippian Volcanics (Mv) - buff, felsic volcanics, metavolcanics and tuffs, platy to sheared in places. Minor buff to white chert. Cut by siliceous veins and dark coloured, fine grained dykes near the syenite contact.

Mississippian Syenite (My) - generally medium to coarse grained with some fine grained dyke-like phases. The hornblende content increases toward the contact, often forming mafic-rich zones. Dark, fine grained hornblende rich dykes and grey to green dykes that are difficult to distinguish from skarn are found in and around the contact. Disseminated purple fluorite is locally abundant.

Strong Skarn (DSK1) - a hard, dense, dark green to black, fine grained skarn that is formed immediately adjacent to the volcanics. Recognizable minerals include actinolite, tremolite, diopside, magnetite, serpentine and minor calcite, muscovite and biotite. Narrow, siliceous, zircon-rich veins (or dykes?) are common. All original bedding features are obliterated.

Weak Skarn (DSK2) - consists of a weak, discontinuous skarn between the strong skarn and the unaltered carbonate. Serpentine is the most common mineral but minor quantities of all minerals found in strong skarn are seen. The contact between weak and strong skarn is abrupt while the contact with unaltered carbonate is gradational.

Garnet Skarn (DSK3) - occurs as four xenoliths up to 30 m by 100 m in size within the syenite. They are composed almost entirely of medium to coarse grained, dark brown garnet with minor diopside.

The volcanic-skarn contact is marked by a pronounced overburden-filled linear which may represent a fault. Strong shearing in the volcanics parallel to the linear as well as sub-parallel shears in the skarn support this possibility. The abrupt contact between strong and weak skarn also suggests a structural control although no direct evidence of faulting was seen.

### MINERALIZATION

Previous work on the Guano claims located numerous discontinuous areas of anomalous radioactivity in skarn and syenite. Strongly radioactive specimens from eight narrow veins and small patches returned average assays of 0.044%  $U_3O_8$  (range 0.005 to 0.25%), 0.856%  $ThO_2$  (range 0.2 to 1.3%) 3.2% REE (range 0.6 to 5.5%), and 1.22%  $Nb_2O_5$  (range 0.03 to 2.15%) in 1976. Geochemical and radiometric surveys conducted in 1977 outlined five additional radiometric anomalies from which representative specimens ranged from 0.001% to 0.672%  $U_3O_8$ . No analyses were done for thorium, rare earths or niobium in 1977.

The 1979 program covered a 1400 m by 700 m area along the dark skarn-syenite contact southeast of Guano Lake, and a 200 m by 200 m area of bleached skarn and syenite northwest of Guano Lake, as illustrated on Figure U-GU6 in the pocket. Samples were taken over 50 m intervals along lines spaced 100 m or 200 m apart, coinciding with survey lines established in 1977. Each sample consisted of 70 to 80 chips taken at approximately 0.75 m intervals. In order of preference, the chips were obtained from outcrop, talus or rocks buried in soil. Near the head of the cirque, where cliffs made it impossible to sample the entire area of interest, talus derived from those inaccessible areas was sampled.

Samples were analyzed for potassium and sixteen rare earth elements at Chemex Labs Ltd., North Vancouver, using a semi-quantitative spectrographic technique. In addition, each sample was geochemically analyzed for  $U_3O_8$ , Th, Nb, Sn, W and Au, and several of the niobium-rich samples were analyzed for Ta. The radiometric response of each sample was measured in the field using a Scintrex BGS-1SL scintillometer. Sample descriptions, radiometric response and assays

are illustrated in tabular form in Appendix 2. Most samples returned weakly anomalous quantities of REE, Nb and Th and only background values for the other elements. The averages and ranges are as follows: 45.9 ppm total REE (below detection level for all elements to 1335 ppm); 3.8 ppm  $U_3O_8$  (<1 to 34); 25.3 ppm Th (<10 to 190); 138.9 ppm Nb (<10 to 900); 2.1 ppm Sn (1 to 24); 2.5 ppm W (1 to 22); and <10 ppb Au (<10 to 60). None of the Ta analyses exceeded the detection level of 50 ppm.

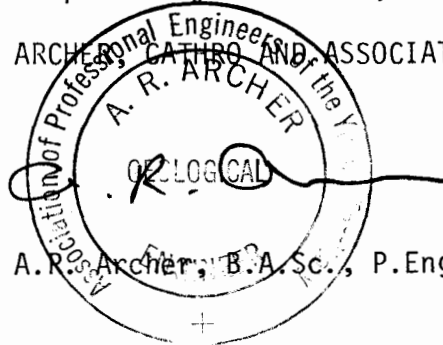
REE values are only anomalous within strong skarn (DSK1) near the head of Guano cirque. Here, two samples, one dominantly composed of skarn and the other of massive magnetite, returned 907 and 540 ppm REE and 540 and 20 ppm Nb respectively. Radiometric response for the skarn sample was 1.5 times background while the magnetite sample exhibited only background radioactivity. A sample across talus below the anomaly was also anomalous, returning 1335 ppm REE and 410 ppm Nb. Cerium and lanthanum are the major rare earth elements in the skarn and talus samples while samarium comprises over 90% of the rare earth elements in the magnetite. The anomalous area, including skarn and magnetite, is at least 50 m by 50 m in size and is open to the north and east. This area hosts some of the highly radioactive zones explored in 1976 and 1977.

The strongest Nb anomaly occurs in serpentine-rich skarn (DSK2) 500 m north of the REE anomaly. A single sample assayed 950 ppm Nb, 80 ppm Th, 25 ppm  $U_3O_8$ , and 55 ppm total REE. A highly radioactive siliceous dyke (called Showing 1 in the 1977 UJV Final Report) occurs in this area.

CONCLUSIONS

The only significant rare earth and niobium response obtained in the 1979 sampling is from areas known to contain narrow vein-like zones previously explored and sampled in 1976 and 1977. The best values of 0.13% REE and 0.09% Nb respectively are too low to be of economic interest, even in a bulk tonnage deposit.

Respectfully submitted,  
ARCHER, CATHRO AND ASSOCIATES LTD.



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

/mc





UKON JOINT VENTURE 1979

GUANO PROPERTY

Sample Number	Rock Type	Radioactivity CPS in bag	U <sub>3</sub> O <sub>8</sub> ppm	Nb ppm	Th ppm	Sn ppm	W ppm	Au ppb	Total	Rare Earths (%)								K %
										Ce	La	Lu	Nd	Sm	Yb	Sc	Y	
1169	30% calc-silicate 40% dolomite 20% serpentine/ actinolite 10% limestone	110/110	2	50		1	2		T									.7
1170	20% dolomite 50% tuff 30% skarn	140/140	3	380	40	1	2		.0065		.005							.0015 .5
1171	20% serpentine 20% dolomite 60% skarn	130/130	2			1	1		T									
1172	same as 1171	130/130	6	70	10	1	1		T									.7
1173	50% marble 30% carbonate 20% calc-silicate	130/130	4	60		1	2		.0017						.0002			.0015
1174	55% serpentinized limestone 15% dark skarn 30% pyritic carbonate	140/140	3	40		3	1		.001									.001
1175	20% tuff 30% light green skarn 40% chert 10% serpentine	130/120	8	90	30	1	1		.0082		.005				.0002			.003
1176	40% serpentine 20% quartzite 30% carbonate 10% calcite	130/130	3	130		1	1		.001									.001
1177	dark skarn	140/130	3	200	40	14	1		.0012						.0002			.001 1

## UKON JOINT VENTURE 1979

## GUANO PROPERTY

Sample Number	Rock Type	Radioactivity CPS in bag	U <sub>3</sub> O <sub>8</sub> ppm	Nb ppm	Th ppm	Sn ppm	W ppm	Au ppb	Rare Earths (%)										
									Total	Ce	La	Lu	Nd	Sm	Yb	Sc	Y	K %	
1178	dolomite dark skarn outcrop	130/130	2			4	1		T										
1179	dolomite outcrop, serpentine talus	120/120	3			2	2		T										
1180	dark skarn talus	200/130	7	410	90	10	8		.0085	.005			.0005			.003			1
1181	dark skarn talus	160/130	4	280	60	3	1		.0085	.005			.0005			.003			1
1182	tuff outcrop	150/140	3	280	60	3	6		.0012				.0002			.001			1
1183	syenite outcrop	130/130	2	140	30	1	8		T										2
1184	syenite outcrop	130/130	2	130	10	1	10	10	T										3
1185	syenite outcrop; syenite quartzite talus	150/130		160	20	1	12		T										2
1186	80% syenite talus 20% quartzite talus	130/130	2	160	10	1	8		.001							.001			1









UKON JOINT VENTURE 1979

GUANO PROPERTY

Sample Number	Rock Type	Radioactivity CPS in bag	U <sub>3</sub> O <sub>8</sub> ppm	Nb ppm	Th ppm	Sn ppm	W ppm	Au ppb	Rare Earths (%)										K %		
									Total	Ce	La	Lu	Nd	Sm	Yb	Sc	Y				
1223	phyllite argillite	120/120		40	10	1	2	10	T												.7
1224	phyllite	140/130	1	30	20	1	1		T												.7
1225	60% argillite 40% quartzite	130/130		20	10	1	1		T												.7
1226	65% serpentine 35% limestone	120/120	5	10		1	1		T												
1227	80% serpentine 10% dolomite 10% calcite	120/120	8	10		1	1		T												
1228	30% serpentine 25% calcite 35% tuff 10% muscovite	130/130	5	30	10	4	4		T												
1229	75% tuff 25% dark skarn	140/140		30	10	1	4		T												.7
1230	same as 1229	130/120	3	170	30	8	4		.0002								.0002				2
1231	40% tuff 30% weak serpentine 25% pyritic carbonate	130/130	1	80	20	1	8		.01	.01											.5

UKON JOINT VENTURE 1979

GUANO PROPERTY

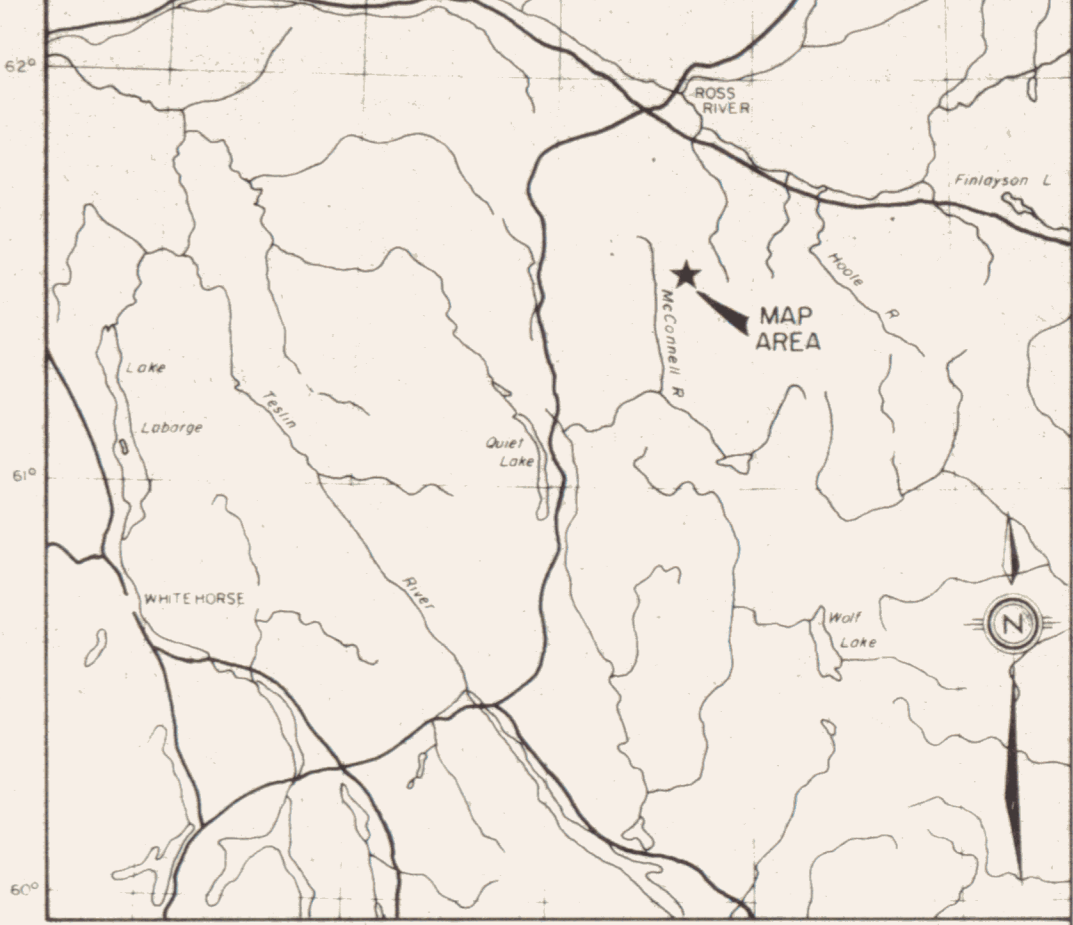
Sample Number	Rock Type	Radioactivity CPS in bag	U3O8 ppm	Nb ppm	Th ppm	Sn ppm	W ppm	Au ppb	Total Ce	Rare Earths (%)							K %	
										La	Lu	Nd	Sm	Yb	Sc	Y		
1232	same as 1231	140/140	1	290	30	1	4		.02	.02								
1233	65% calc-silicate	130/130	3	20	10	2	1		T									
1234	75% serpentine 25% chert	120/120	2	30		1	1		T									
1235	65% serpentine 30% chert 5% muscovitic carbonate	120/120	1	130	10	3	1	10	T									
1236	50% serpentine 50% chert/ tuff	120/120	1		20	2	1		T									
1237	50% serpentine 50% chert/ tuff	120/120	2	10	10	2	1		T									
1238	60% serpentine 40% chert/ tuff	180/130	18	340	110	2	1	10	T									
1239	95% chert/ 5% phyllite	130/120	4	50	10	1	1	10	T									
1240	chert/tuff	130/130	3	270	40	1	1	20	.0012					.0002	.001	.7		



UKON JOINT VENTURE 1979

GUANO PROPERTY

Sample Number	Rock Type	Radioactivity CPS in bag	U3O8 ppm	Nb ppm	Th ppm	Sn ppm	W ppm	Au ppb	Rare Earths (%)								K %	
									Total	Ce	La	Lu	Nd	Sm	Yb	Sc		Y
1255	garnet diopside skarn	130/130	1	180	20	1	1		.0107	.005						.0007		.005
1256	massive magnetite	130/130		20	10	4	1		.0575	.005					.05			.0005 1 Terbium .002
1257	pyritic skarn (80% pyrite) minor magnetite pyrrhotite	130/130	5	20		2	4		.005						.005			.7



**LEGEND**

- 75 (2-s) Radiometric station, reading at waist height with Sinter BGS-15L (43 cc crystal), and geochemistry in ppm Uranium
- 0.04% Rock sample location and assay in % U<sub>3</sub>O<sub>8</sub>
- Sleep cliff
- ★ Indicates an anomalous analysis in REE (Rare Earth Elements)
- Chip sample interval and sample number; U, Nb, Sr, W, Au, and REE analysis are summarized in Appendix 2 of 1979 UJV final report

**GEOLOGY**

- M<sub>v</sub>** MISSISSIPPIAN SYENITE - medium to coarse grained with some fine grained inter-lake phases. Disseminated purple fluorite locally abundant.
- M<sub>v</sub>** MISSISSIPPIAN VOLCANICS - buff, felsic metavolcanics and tuffs, platy to steeped in places. Minor buff to white chert.
- D<sub>z</sub>** SILURIAN - DEVONIAN CARBONATE - buff and orange weathering grey to white, grey quartzite and thin to thick bedded, sometimes wavy bedded, grey to white limestone. Lumpy units are altered to three varieties of skarn.
- Dsk<sub>1</sub>** STRONG SKARN - a hard, dense, dark green to black, fine grained calcite, tremolite, staurolite, magnetite, lepidolite. Skarn with minor calcite, muscovite and biotite. Original bedding features are obliterated.
- Dsk<sub>2</sub>** WEAK SKARN - mainly serpentine with traces of the strong skarn mineral suite. Original bedding visible.
- Dsk<sub>3</sub>** GARNET SKARN - medium to coarse grained, dark brown garnet with minor diopside.
- C<sub>s</sub>** CAMBRIAN PHYLLITE - black, lustrous phyllites
- massive pyrite in talus
- massive magnetite
- geological contact - observed, approximate
- - - - - approximate extent of skarn zones
- dike

**LEGEND**

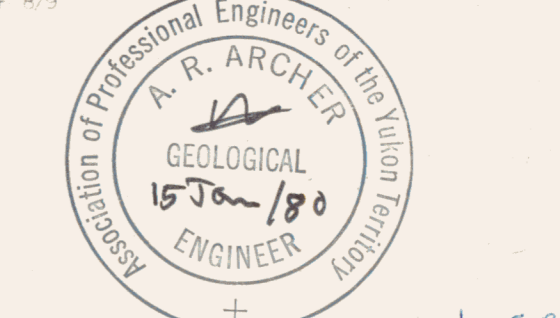
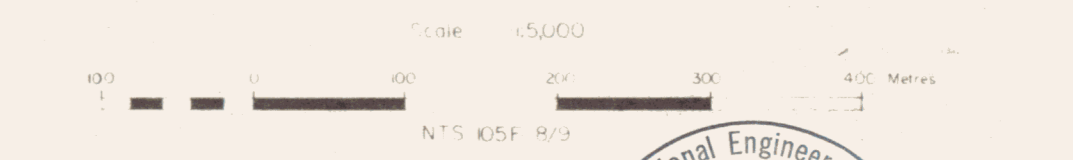
- 2200 scint station and reading at waist height
- 2200 anomaly due to boulders; reading at ground level
- 2000 anomaly due to small rock in talus; reading at ground level
- area of +3000 cps background of waist height
- hand trench
- 1900 rock sample location
- 0.04% and assay in % U<sub>3</sub>O<sub>8</sub>

Scale 1:500

640 N 650 N 660 N 670 N 680 N 690 N 700 N 710 N 720 N 730 N 740 N 750 N 760 N

100 W 110 W 120 W 130 W 140 W

Fig U-GUG  
 ARCHER-GUTHRIE ASSOCIATES LTD.  
**GEOLOGY, GEOCHEMISTRY and RADIOMETRICS**  
 GUANO I-22 and GUAYES 23-30 CLAIMS  
 UKON JOINT VENTURE



DETAIL RADIOMETRICS AND ASSAYS OF SHOWING 5

To accompany a report by A. R. Archer Ltd. UJV-80-001 dated 08/11/79