MAR 19680013: NORTHEASTERN ALBERTA

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ACKNOWLEDGMENT

We wish to acknowledge with sincere appreciation the time and services rendered by George Hart, bush pilot, based at Fort Chipewyan, Alberta.

This capable pilot, flying a Cessna 185, equipped with floats, devoted much time to the operation. Also, during adverse flying weather he endured considerable risk while delivering needy supplies.

FOREWARD

THE MINERAL - URANIUM (U308)

Uranium was first discovered in the year 1789 by a German scientist named Martin Klaporth. It has the highest atomic weight of any element found in nature and is highly radio-active. It is not a rare metal. It is more common in the earth than such elements as mercury, silver and iodine. But the concentration of uranium in most rocks is only a few parts per million.

Pure uranium is a silvery metal, softer than iron. It is found, in this area, in both pitchblende and uraninite deposits. The richest uranium ore pitchblende, contains uranium oxides. It is a dark bluish-black mineral with a pitch like lustre to it. It is easily recognized by an experienced prospector.

Uranium combines vigorously with oxygen and is highly pyrophoric. It forms several different oxides. Chemically the most important are uranium dioxide (UO2) and uranium trioxide (UO3).

Fission of the uranium atom results in the release of tremendous energy. This energy may be used in weapons, fuels, science, industry and medicine.

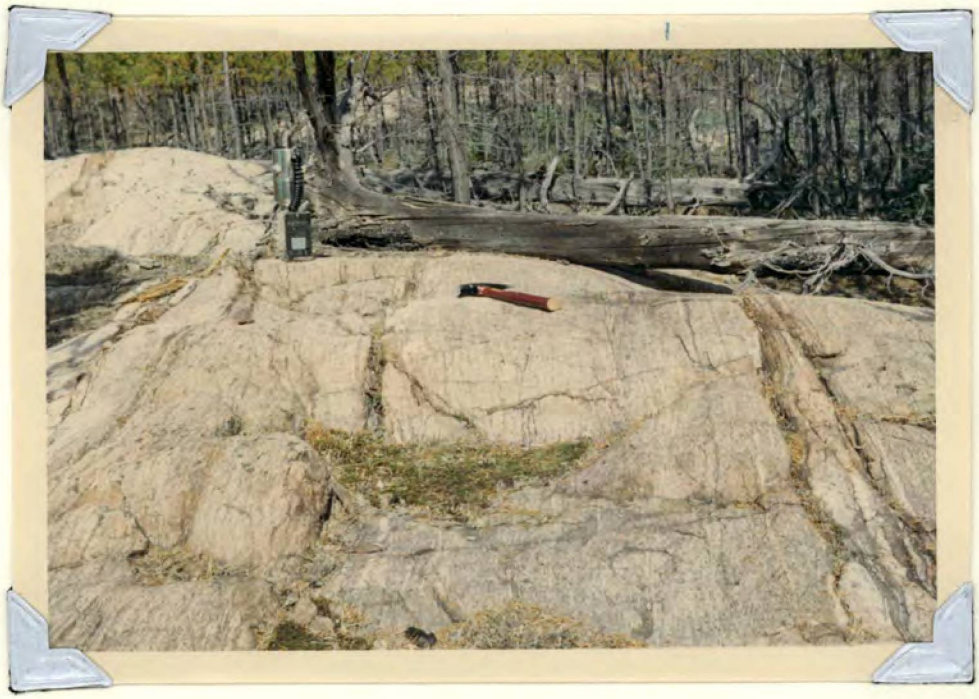
The world demand for this valuble metal will triple by 1972. Therefore a great deal more deposits have to be discovered within the next few years.

THE WORK

In August, 1968, a two man prospecting crew landed by aircraft and set up camp on rock along the north shore of an unnamed lake (Wilson Lake) located directly east of Turtle Lake. The lake and camp were located in Sec. 31-119-3-W4.

The purpose of the operation was - through the medium of prospecting - to cover as large an area as possible with ground scintillometers, obtaining interesting samples over the permit area prior to freeze-up. In this regard, in the first two weeks a total of 56 miles were covered, collecting 22 samples.

One of the maps that is enclosed in this report (scale 2" - 1 mile) reveals (a) the main traverses (b) the scintillometer reading in MR/hr - e.g. .001 and sample number. In calculating a background of three was used. Negative readings or recordings were purposely omitted although the traverse is shown.



LOCATION

Permit 41 = 9600 acres
Permit 42

Quartz Mineral Permits #41 & 42 contain approximately 39,680 acres of the Pre-Cambrian shield in the north east corner of Alberta, north of Lake Athabasca.

ACCESS

The permits are readily accessible by float equipped aircraft from Fort Chipewyan, Fort Smith, Fort McMurray or Uranium City. These places are serviced readily by Commercial Airlines. Also, the prospective area lies approximately 15 miles from Lake Athabasca which is serviced by tugs and barges of Northern Transportation Company.

DISCUSSION

The general elevation is approximately 1000 feet with local variations up to about four hundred feet. Foot travel within the permit area is extremely difficult due to the rough terrain. Areas of traverse (between faults) are filled with very deep floating muskeg, while the remainder is covered with broken rock bearing slim stands of spruce, pine, birch, poplar and tamarack. It would appear a forest fire went through the southern part of Permit 41 several years ago leaving in the wake large amounts of deadfall one to four feet in height. (See figure 1).

INSTRUMENTS

The prospecting equipment used included the following:

1. a 111B Precision Scintillometer
2. a W56 Fisher Scintillodyne
3. a PRSA EL-tronics Geiger Counter.

These instruments performed very well when the weather was warm and dry,

INSTRUMENTS - cont.

however, during cool, damp or wet weather they were rendered unserviceable and could only be used after being dried slowly over a catalytic tent heater. Also, both scintillometers were affected by thunderstorms as well as the Aurora (Northern Lights).

Other pieces of equipment included geological hammers, wedges, compasses, pack boards, aerial photos, stereoscope, etc.

PHYSIOGRAPHY

The peneplained surface of the area is typical of the Pre-cambrian Shield where Pleistocene glacial scouring has left numerous rock-basin lakes, low rounded hills and a general rugged surface. Locally, it is rough, characterized by striated out crops and narrow basin lakes. The distribution and shapes of the lakes are controlled by factors of structure and lithology with modification by ice-erosion. Narrow, elongated bays are associated with the erosion of fault zones, and straight shore lines suggest fault line features. Fractured zones or structurally weak rocks have been plucked out by ice erosion, particularly on the west and south-west lake shores, lending rise to irregular shore lines.

GENERAL

The general north east orientation of the shore line is parallel to the Lake Athabasca tectonic trend. The principal expression of this structure on shore can be seen in the section from Fidler Point to Fort Chipewyan. A wide zone of strong northeast faults has sliced up an area predominantly underlain by granites and granite gneisses. As the Allan fault is approached, there is a tendency for some of the north east faults to swing more northerly into the major Allan fault. Basically, Permit 41 and the southern portion of

GENERAL - cont.

Permit 42 are located on the wide shear zone or fishtailing of the Allan fault.

GEOLOGY

There are four main parallel faults about three quarters of a mile apart, in the central portion of Permit 41. They are north west trending and intersect the major Allan fault at an average angle of 130°. They extend to the north west of the Allan fault, however, in some cases are depleted to large fingers or several minor faults. The general direction of the strike is northerly. The general rock type is granite and granite gneiss which make up the majority of the out crops. Schistosity as well as falcation are well developed in the permit area. The faults together with strong fractures are clearly visible from the air, as well as glacial markings. Dykes, lenses and quartz veins are prevalent throughout.

The entire permit area is blessed with the complete traversing on a North-South axis of the Allan Fault. This magnificent structure is more than one hundred miles in length and is generally referred to as a shear zone. It averages from one to over five miles in width and it may hold rich mineralization. It may be followed northerly into the North West Territories and southerly to the shore of Lake Athabasca at Lapworth and Fidler Points. The entire length of this major fault is intersected by many minor faults of north east-west and north west-east trending. The permit area covers, in strike length, seventeen miles of this highly potential ore bearing possibility.

Distribution of uranium deposits is distinctly controlled by regional structure.

Although many more age determinations are required before the broad stratigraphic framework of this part of the orogen can be elucidated, available

GEOLOGY - cont.

structural and geochronological data suggest that the faulting may be partly underlain by pre-Hudsonian assemblages, Because uranium deposits are genetically related to granitization and metamophism, regional deposits, uranium mineralization is largely confined to linear belts.

In the permit area, some of these linear belts were found to emanate radio-activity especially in or near large fissures or cracks. Further exploration work such as drilling would evaluate the theory that the Allan fault, combined with intersecting minor faults prevalent over the entire permit area - provides potential ore-bearing structures. Geophysical work in detail would have to be commenced prior to any drilling employed.

OBSERVATIONS & CONCLUSIONS

Throughout the geophysical prospect it was noted that the samples of rock obtained always gave a lesser reading than the out crop. In many cases the sample reading was only one-tenth of the original reading in mass.

The theory is advanced that predominantly speaking, the higher instrument readings were generally always obtained from large breaks, crack or fractures in the citizen rocks. Therefore, it is felt the interesting deposits are harbored or overlain by "mother rock" and further work could prove highly interesting and beneficial to the permit holder.

[redacted]

Figure 1 (Deadfall).

Permit No. 41

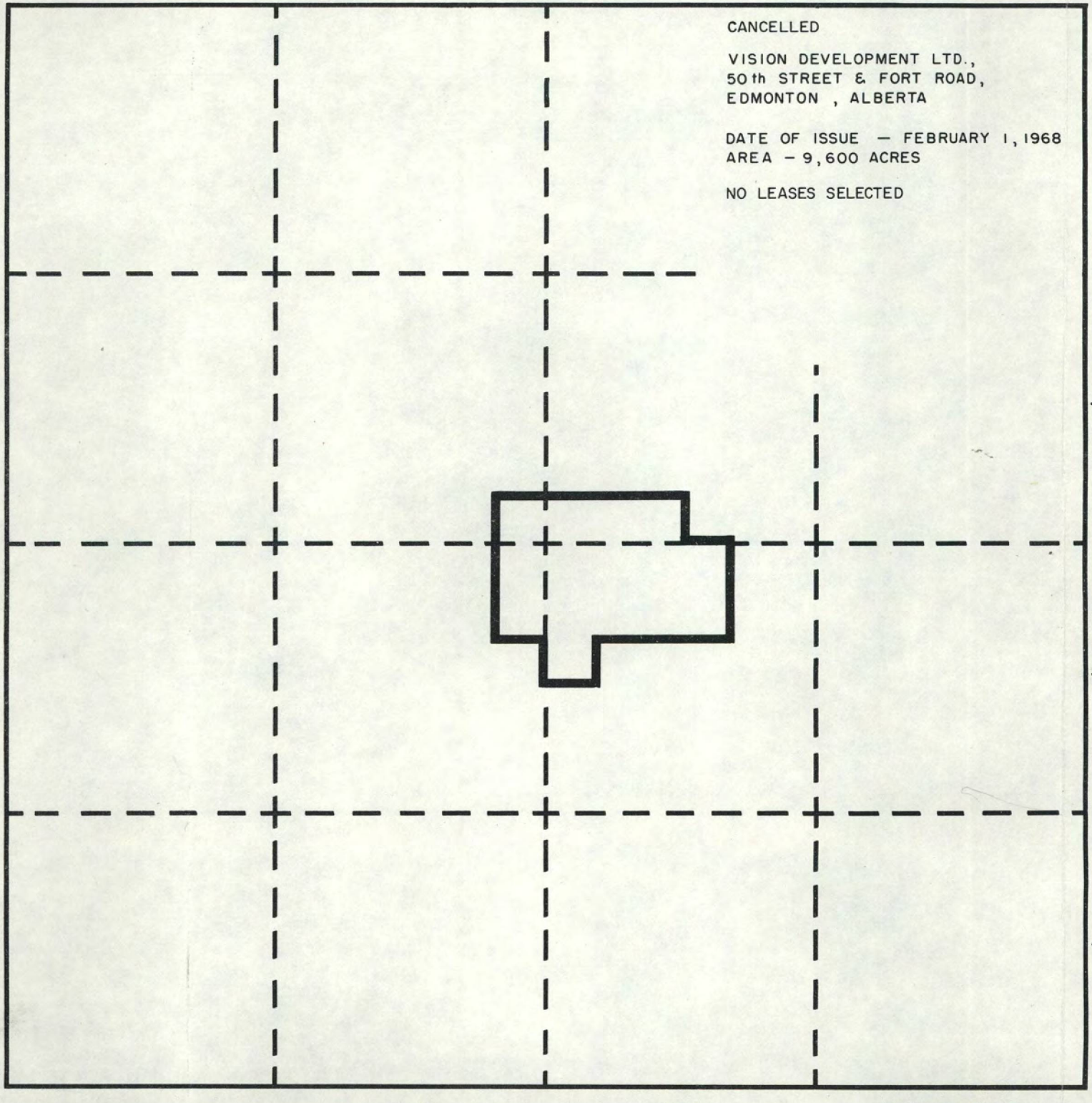
Looking East from a high point on the Allan Fault
Permit 41 (Figure 2)

A Typical minor fault - Sec 31 Tp 119 Rg 3 W 4 M (Figure 3)

Elongated Lake Permit 42 (Figure 4)

South End of Woodman Lake Permit 42 (Figure 5)

QUARTZ MINERAL EXPLORATION PERMIT No. 41



QUARTZ MINERAL EXPLORATION PERMIT No. 42