

DRURY-0029-B1

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DAVID S. ROBERTSON & ASSOCIATES LIMITED

DRURY JOINT VENTURE  
DRURY TOWNSHIP, ONTARIO  
GEOLOGICAL REPORT

FOR

OCCIDENTAL MINERALS CORPORATION

David S. Robertson & Associates Limited  
Consulting Geologists & Mining Engineers  
Toronto 1, Canada

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## SUMMARY AND RECOMMENDATIONS

Huronian sediments underlie the Acme property, east of Agnew Lake Mines, Drury Township. The Huronian sequence consists of sericitic feldspathic quartzites and pelitic rocks similar to those found at Agnew Lake Mines. Radioactive quartz-pebble conglomerates are common to the sericitic quartzites and the ground was considered potential for the discovery of additional uranium ores.

The Huronian sediments are folded into a tight syncline trending east-west across the Acme property and north-south compressive forces have resulted in the southward thrusting of the northern granite borderlands over the adjacent Huronian strata. The north limb of the syncline is mainly buried by the overthrust although the basal section of the Huronian remains exposed for the full length of the property.

Extensive work performed by Acme in the period 1967 to 1969 resulted in no ore discoveries but did indicate extensive uraniumiferous pebble beds. The Acme drill results show that the best values occur in a drainage channel near the granite basement. The drilling near the basement returned sub-marginal values and left little likelihood that improvements could be expected. Trench samples of quartz-pebble conglomerates, occurring in favourable quartzites high in the Huronian sequence, returned interesting uranium assays over appreciable widths. Resampling in the trenches, however, disclosed that the widths were not true. The resampled uranium values were slightly lower than formerly indicated and widths substantially less than economic..

The property, which had only been partially drill tested was mapped in detail but no sedimentological evidence of additional drainage was found.

Work along the North shore of Lake Huron for sedimentary uranium deposits has shown that geological work can eliminate the necessity for large drilling expenditure. The Acme work, without an appreciation of the structure or sedimentation resulted in some expenditures which could have been avoided. The results of the present work show no evidence of additional drainage that would warrant further drilling, and the Acme work leaves little prospect that the known occurrences can be improved. It is not recommended that additional expenditures be made on Acme's Drury Township property.

## INTRODUCTION

The property in the Drury Joint Venture belongs to the Acme Gas and Oil Company, incorporated in the Province of Ontario. The property was acquired by Acme through staking in 1966 and during the period April, 1967 to May, 1969, Acme performed work on the property in the form of linecutting, prospecting, test pitting and diamond drilling.

The property was examined in April, 1969 by logging the drill cores. The evaluation was inconclusive because without a proper geological map, the drilling results could not be related to stratigraphy. Only 1/3 of the favourable contact areas had been drilled and numerous assays from pits along the entire strike length indicated interesting results. An earlier acquaintance with the property had confirmed that radioactive quartz-pebbles conglomerates existed in a sedimentary environment similar to that at Agnew Lake mines to the west. None of the Acme trenches were examined in April, 1969, because of snow conditions, but on the basis of the existing information, the property was recommended to Occidental for further exploration.

Early in September, 1969, it was learned that an agreement between Acme and Occidental on the Drury Township property. Upon ratification of the agreement by Acme shareholders on September 23, a field mapping program was immediately initiated and was completed in early November.

### THE PROPERTY LOCATION & ACCESS

The property is located in Drury Township, District of Sudbury, Province of Ontario approximately 25 miles west of the city of Sudbury.

The property consists of 91 unpatented mining claims and a patented lot totalling about 3900 acres. The claims are each 40 acres or more, numbered as follows :

S-13488-891 incl. (4)	S-137425-26 (2)
S-135353 (1)	S-138813-24 incl. (12)
S-136371-72 (2)	S-138842-45 inc. (4)
S-136377-78 (2)	S-139126-34 incl. (9)
S-137385 (1)	S-139404-16 incl. (13)
S-137622-23 (2)	S-139440-448 (9)
S-137423-24 (2)	S-140378-79 (2)
S-138836-41 incl. (6)	S-149200-09 incl. (10)
S-140891-93 incl. (3)	S-149212-13 (2)
S-140894 (1)	S-140374-77 incl. (4)

The patented lot, also optioned to Occidental consists of 160 acres, and is the south half of Lot 7, Concession 4, Drury Township. Both lot and claims are contiguous and show outlined on

the township plan enclosed.

The property may be reached from Sudbury via old Highway 17, leaving present Highway 17 at Whitefish or Nairn, both west of Sudbury. A road leading from old Highway 17 towards High Falls intersects the Agnew Lake Mine access road which in turn leads towards the property. About 2 miles north along the Agnew Lake Mines road and a short distance beyond Ministic Creek, another road leads northward into the Acme property. The gravel road on the Acme property services a number of gravel pits and a truck road, passable in good weather, leads from the first pit to the Acme camp in Lot 12, Concession 4 of Drury Township. The location of the Acme property, roads and camps are shown on the claim map accompanying this report.

#### GEOLOGY

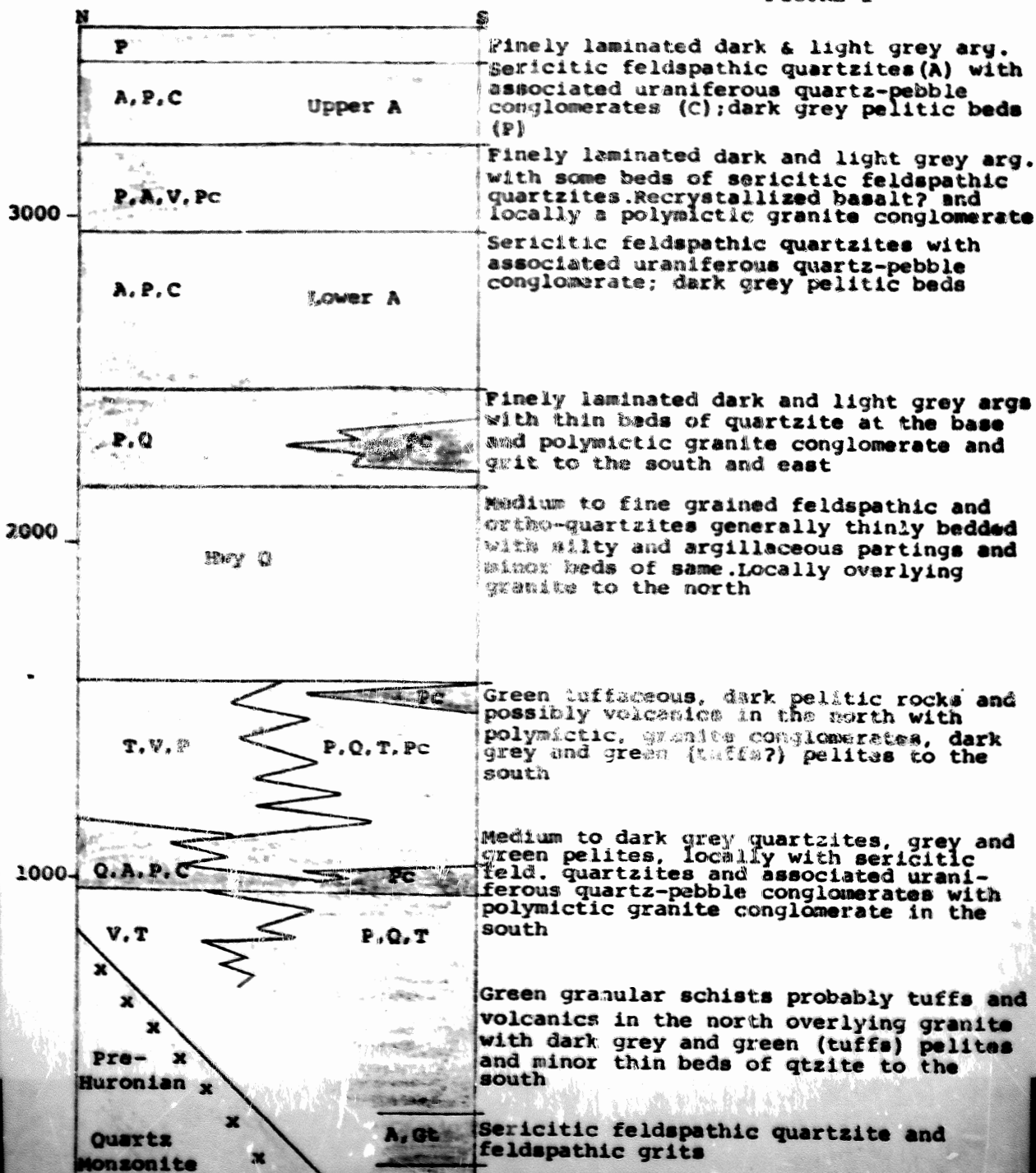
The rocks on the Acme property are all Precambrian, the oldest being Algonian granites of more than 2300 million years. All stratified rocks within the area are younger than the granite. Rocks of volcanic origin appear to be the oldest strata and they rest uncomfortably on the oldest Algonian granite notwithstanding the presence of quartz-feldspar veins in the volcanic sequence. The Huronian rocks which underlie most of the Acme property, are represented by basal pelitic rocks and are succeeded by feldspathic quartzites, pelites, conglomerates and possibly basaltic flows. Unconformities occur within the Huronian the extent of which are unknown. An unconformity of consequence may be present between the basal volcanic rock sequence and the mainly sedimentary sequence referred to as Huronian. Sharp breaks in the sedimentation as between a predominant quartzite phase and a succeeding pelite phase may represent major unconformities within the Huronian but only detailed regional stratigraphic work will tell. The youngest rocks of the area are Sudbury intrusive diabase which has undergone the same metamorphic effects as Huronian strata and olivine diabase which is younger still and unaffected by regional metamorphism.

#### STRATIGRAPHY

The Algonian granite, the oldest rock on the claims is a holocrystalline, leucocratic, coarse-grained quartz monzonite, consisting of both sodic and potassic feldspars, quartz and minor accessory dark minerals. The granite possessed considerable pre-Huronian relief in this area as indicated from our earlier work on the Agnew Lake Mines property and from additional observations on the Acme property. The basement relief is illustrated by the

quartzities shown as Q, designated "Highway" and coloured blue on the accompanying geological maps. These quartzites rest unconformably upon the granite  $\frac{1}{2}$  mile northwest of the Acme camp, whereas at numerous other places within the claims there is a greater thickness of this quartzite accompanied by additional lower strata. At Agnew Lake Mines the paleorelief was even lower to accommodate the ore zone quartzites and pelitic rocks. The maximum exposure of the stratigraphic column is shown on Figure I.

FIGURE I



The reader is advised to refer to Figure I and the geological maps in following the description of the stratigraphy. Figure I shows a south sloping basement surface with volcanics and tuffs on the granite to the north and pelites, tuffs, sericitic feldspathic quartzites and grit to the south at a lower stratigraphic position, but not necessarily older. The granite is not found on the south limb of the tightly folded syncline where the lower stratigraphy is exposed. The tuffs, volcanics and pelitic rocks sequence can be seen in contact with the granite. Higher stratigraphy laps onto the granite north of the Acme camp. There is possibly an unconformity between these volcanics and tuffs and the later sequence regionally referred to as Huronian. The oldest Huronian rocks are exposed on the south limb of the syncline and I would refer you to the area of Lot 10, south synclinal limb, of the Highway quartzites on Drawing I. Here, by structural implication, rocks shown as P and described as dark grey argillites, siltstones and greywackes and found both above and below a quartzite layer designated A, Q and Gt. The A, Q and Gt unit is near the bottom of the stratigraphic column in figure I. The sequence upward from here is that of pelitic rocks with some relatively fine-grained, light-grey quartzities occurring beneath a member of quartz and granite pebble conglomerate designated Pc or polymictic conglomerate. The sequence above the polymictic conglomerate is again pelites to the base of the Q designated "Highway" quartzite, south limb.

The same sequence on the north limb can best be seen north-west of the Acme camp at drill hole 68-2. Drill hole 68-2, collared in "Highway" quartzite, penetrated pelites to a sequence of sericitic feldspathic quartzities and grits before entering volcanics and the basement granite. The sericitic feldspathic quartzites with beds of pyritic quartz-pebble conglomerate are tentatively co-related with the polymictic conglomerate beneath the "Highway" quartzite, Lot 10, South limb.

Unfortunately, the Highway quartzite on the north limb is missing east of the Acme camp area and we can only speculate that the stratigraphy which we see overlying the volcanic tuff sequence at the granite contact, belongs to the pre-"Highway" succession. The absence of the "Highway" quartzite to the east is attributed to a north dipping thrust fault with the overthrust block covering most of the north limb stratigraphy. The favourable sericitic quartzite with uraniferous pebble beds found at drill hole 68-1 and 68-2, was not

seen elsewhere along the granite contact and is therefore considered to be a local facies of less favourable quartzites without radioactive pebble beds found farther east. These other quartzites farther east, found here and there in the overthrust north limb are fault sliced and broken lenses due to movement in the pelitic host rocks. The quartzites are accompanied by feldspathic grits but neither the quartzites or grits are radioactive.

The "Highway" quartzite designated Q or Q2 and coloured blue on the maps is the best stratigraphic marker in the region. The "Highway" quartzite consists of medium to fine-grained feldspathic and orthoquartzites, typically thinly bedded with silty and argillaceous partings. This quartzite is unfavourable to pyritic quartz-pebble conglomerate accumulations and represents an off-shore facies or condition of relative quiescence. On the north synclinal limb the "Highway" quartzite thins west of the property and is lost through thrusting east of the Acme camp. On the south limb east of the Acme camp it gradually thins with the appearance of interbedded polyzictic conglomerates and pelitic beds.

The "Highway" quartzite is succeeded by pelites and interbedded quartzites similar to the "Highway" quartzite. There is more pelitic material on the south limb indicating greater distance from source. The next succeeding sedimentary member has been designated the Lower A quartzite unit. The lower A unit is exposed east and west of the Acme camp on the north limb and through the full extent of the property on the south limb except west of the Acme camp. The rocks are sericitic, feldspathic quartzites with interlayered dark-grey argillites and greywacke. Pyritic quartz-pebble conglomerates are found at several horizons. The conglomerates are uraniferous and have been traced with pickets and rock cairns. Pits have been blasted into the occurrences at numerous places for the length of the Acme property. The pyritic, quartz-pebble beds of the lower A Unit are best developed just east of the Acme camp where early uranium work was carried out by Sagamore Explorations in the last 1950s.

Succeeding the Lower A unit is an argillite and greywacke member designated primarily as P for pelites. Volcanics may occur in this member with basaltic flow-like rocks found on the north limb, northwest of the Acme camp. Here, the possible volcanics are followed by granite pebble polymictic conglomerate not found elsewhere in this member. The widespread occurrence of igneous rocks in this member



has lead to the speculation that volcanism did not occur during the interval. However, much of the igneous rock in the member is obviously intrusive even though recrystallization causes considerable difficulty in distinguishing between intrusive and extrusive forms.

Succeeding the pelitic-volcanic member is the Upper A quartzite unit consisting of sericitic feldspathic quartzites typically crossbedded, poorly sorted, and coarse grained; similar to the lower A unit and likewise containing pyritic, quartz-pebble conglomerates. The radioactive conglomerate are found at several horizons in the upper A unit in the south synclinal limb. The conglomerates in the upper A of the south limb have been extensively pitted and traced by picket lines across the Acme property. The Upper A unit is poorly represented on the north limb of the syncline because of thrusting.

Succeeding the upper A unit is another pelitic member consisting primarily of laminated argillites which, in at least in one place, show an uncorformable relationship to the upper Aquartzites. Little of this pelitic member is present because of thrusting.

#### STRUCTURE

The Huronian sediments have been tightly folded into a syncline on the Acme property. The strata dip almost vertically with beds overturned as much as  $10^{\circ}$  on the north limb of the syncline. The axis of the syncline trends slightly south of east with little or no pitching or plunging along its length in the property. Foliation is intense parallel to the fold axis. Here and there bedding crosses the foliation at right angles. The intensity of foliation makes identification of bedding difficult. Crossbedding within the quartzite is often confused with cleavages and graded bedding is more commonly the method upon which top determinations are made. Minor faulting is evident upon close inspection, however, major faults transverse to the fold axis are not a significant feature on the property in spite of the number of such faults shown on the Cunningham and government maps. Lineation is vertical with quartz pebbles drawn out in pencil form within the plane of foliation. Drag folds plunge vertical and several directions of strong cleavages are apparent. One cleavage direction is nearly horizontal and Sudbury diabase sheets appear to have been intruded along these in the eastern portion of the property. The diabase sheets cover relatively large areas whereas the quartzite strata show no notable displacement on either side of

the diabase sheets. One fault was recognized for a distance of a mile or more close to the axial plane of the syncline. The apparent displacement on the fault is slight, although in the steeply dipping strata it may be considerable.

Apart from the tight synclinal structure through the Acme property, the most important structural feature is a north-dipping thrust fault which runs the full length of the property. The thrust fault is not exposed but the structural implications are apparent from the stratigraphic succession. The south limb of the syncline is missing or buried west of the Acme camp and the north limb is partially buried to the east. This may be seen on the geological maps. The top determinations made in the Lower and Upper A quartzite units determine the relative position of the synclinal axis. From this it is obvious that the north limb is mainly unexposed east of the Acme camp, and the south limb to the west. Thrust faulting, known to occur at Agnew Lake Mines, best explains the structural discontinuity. The interpreted position of the thrust is shown on the geological maps. The sedimentary sequence south of the thrust west of the Acme camp was in doubt at the time of the mapping, and might be clarified with our present knowledge of the thrust. However, there is no economic advantage in redoing the geology of this section.

A north-dipping thrust fault is known at Agnew Lake Mines from the development work presently underway. The thrust was unknown during the exploration period because of extensive drift in the valley covering the deposit.

#### QUARTZ-PEBBLE CONGLOMERATES

There are two types of quartz-pebble conglomerates on the property. The first, which is of no economic interest, consists of closely-packed, large quartz-pebbles and cobbles in a quartzite matrix with little or no pyrite. One such conglomerate is located at the granite basement on line of section of drill hole 68-7, 300 feet west of the road to the farthest gravel pit. This conglomerate, upwards of 20 feet thick, pinches rapidly to the west and is of unknown extent eastward. No radioactivity was encountered in the drill hole, nor is the conglomerate radioactive on surface. Another occurrence is approximately 800 feet east of the first and appears to be stratigraphically higher although through structural irregularities it may be the same unit. The easterly showing is likewise non-radioactive and the pebbles are not as closely packed. The quartzite

matrix of the easterly showing is similar to the quartzite strata 30-40 feet above the westerly showing which supports the opinion that they are separate units. Conglomerates of this type, close to the basement, tightly packed, coarse and associated with rocks of volcanic origin are common regionally and have little associated radioactivity. These quartz washes can be thick and extensive. A similar conglomerate unit was drilled on the Broulan Reef property in Shakespeare Township disclosing impressive widths of conglomerate but disappointing uranium values.

The second type of quartz-pebble conglomerate is similar to the radioactive, pyritic, quartz-pebble conglomerate found at Agnew Lake Mines. This type of pebble bed occurs at distinct horizons in the rock units designated A on the illustrations. Within the A quartzite units, there exists at least 6 horizons and some have been traced for a mile or more. The pebbles are loosely packed, pea to walnut-sized quartz with a size mode of about  $\frac{1}{2}$  to  $\frac{3}{4}$  inch diameter. The pebbles are stretched vertically in the plane of foliation and the matrix in all cases is a feldspathic, sericitic quartzite. The pyrite content is less than 5%, much lower than found at Elliot Lake but approximately the same as that of Agnew Lake Mines.

All of this latter type of conglomerate is radioactive, and, in places, highly so. These conglomerate beds were readily picked up with scintillometer during mapping and it was found that the Acme crew had done likewise. The conglomerate layers were extensively hammered and numerous pits blasted therein. In places, the conglomerate beds were traced with pickets and small rock cairns.

The showings indicated on the Cunningham map, show U308 values from 5.4 lbs/ton across 2.5 feet to 1.0 lbs/ton across 12 feet in the high range, and from trace to 0.2 lbs/ton across 5 feet in the low range. The true widths of the conglomerate layers in most cases were found to be less than indicated by Cunningham. As a check against the Acme sampling which, from appearances, was conscientiously performed, we re-sampled, with chips, the better Cunningham showings. These results are given in Table I.

## RESAMPLING OF ACME TRENCHES

LOCATION	STRATA	POSITION	LIMB	ACME # A/W #U308/Ft.	DJV A/W #U308/Ft.	DJV A/W #ThO2/Ft.	ThO2 U308	COMMENTS
Baseline, 80E	Lower A	Top	North	0.75/8.0	0 0.50/3.7	0.35/3.7	0.7	Most radioactive section, 0.5' pebble, 1.4' qtzite, 1.8' pebbles
76E, 3N	Lower A	Middle	North	1.60/2.5	1 1.02/1.7	3.40/1.7	3.3	Most radioactive section 1.7' of grit and pebble conglomerate
79E, 3N	Lower A	Middle	North	1.50/5.0	1 1.24/1.8	3.70/1.8	3.1	Most radioactive section, 1.8' of grit and pebbles
58N, 2+50S	Upper A	Middle	South	1.00/12.5	0 0.65/2.4	0.40/2.4	0.6	Acme samples length of a drag-fold true width 2.4' of pebbles in 2 bands, 1.7' pebbles, 1.7' qtzite, 2.1' pebble & grit
65E, 5S	Upper A	Bottom	South	0.95/6.0	0 0.99/5.5	1.19/5.5	1.2	
55+50E 9+50S	Lower A	Bottom	South	5.00/2.5	2 2.38/2.5	1.04/2.5	0.4	1.5' pebbles (3.72#) and 1.0' grit (0.38#)
46E, 2N	Lower A	Middle	North	0.50/8.0	0 0.46/1.1	2.20/1.1	4.8	Most radioactive section; included about 0.5' pebbles
42E, 3S	Lower A	Top	South	1.40/2.0	1 1.24/1.5	1.80/1.5	1.4	Most radioactive section in pit
AVERAGE				1.20/5.8	1 1.05/2.5	1.44/2.5	1.4	
3/4 mi. W of DJV	Below Hwy Q	?	North		0 0.14	0.6	4.0	Grab sample of weather surface material from in-faulted 6' quartz pebble bed in granite on Kerr Addison property 2 mi. of the mine and 3/4 mi. W of DJV

On Table I it may be seen that the re-sampling resulted in somewhat lower assays than obtained by Cunningham. The Cunningham assays were done by the radiometric technique based on beta activity. Another assayer was used on the re-sampling but the radiometric method was again employed. The assays are slightly lower as may be seen by the comparison on Table I. To check the relative abundance of thorium-uranium we had thoriums run by our assayer and found that the average ratio was lower than what we had anticipated. We therefore, sent three of the re-samples to a referee assayer, choosing the X-Ray spectographic method, which, from past experiences, we have found to be the most accurate and precise method of determining uranium and thorium. These results have us much larger Tho<sup>2</sup> and slightly lower U3O8 returns and brought the thorium:uranium ratios more in keeping with those at Agnew Lake Mines. It is therefore concluded that the Acme assays are somewhat higher than they should be and that the Tho<sup>2</sup>:U3O8 ratio is greater than 2:1.

The main discrepancy we have found with the Cunningham sampling is the width ascribed to the assays. We have significantly reduced most of the widths which an inspection of Table I will show. Where we have reduced the widths we found that the Cunningham sampling was taken along or at an acute angle to the bedding. The strata are contorted in many places with small offsets along cleavage planes. We were able to trace stratigraphy through the pits and to re-sample the conglomerate beds at right angles to the strata.

Also given in Table I is an assay of a grab sample taken from a pyritic, quartz-pebble conglomerate on the Kerr Addison property 3/4 mile west of the Acme ground. The Kerr Addison showing is a highly radioactive, pyritic, quartz-pebble conglomerate bed about 6 feet wide in an in-faulted block in the granite area west of the Acme ground. The showing has been thought of as an indication of later eastward migration of stream deposition. The conglomerate showing is 2 miles east of the mine and close to the known Acme occurrences. It is one of the most attractive exposures in the area and the low uranium assay from the grab sample was disappointing. The grab was taken from the surface of the outcrop which was leached. The high thorium ratio tends to confirm the leaching.

Assays of sampled drill cores taken by Cunningham are summarized in Table II. No resampling was done of the drill cores because the values in general are low. The core was scinted before splitting and increased radioactivity is characterized by higher assays.

None of the assays are of the lower and upper A units of the north synclinal limb. This is because the overthrusting has removed the north limb A units in the drill hole sections. The best assays are from the north limb in the A unit beneath the Highway quartzite. This was to be expected since this lowermost A unit is closer to source, being within 200 feet of the granite basement on the north limb.

#### AGNEW LAKE MINES, A REVIEW

To assess the hidden potential of the Acme property, the underground workings of the Agnew Lake Mines were visited on November 21 and the pre-development drill information was reviewed. Initially the Agnew Lake Mines property had somewhat in excess of 20,000 feet of diamond drilling on 2 groups of showings in the area of what is now the mine. One group of these showings was within a Huronian enclave in the granite where assays in excess of 1 lb/ton U<sub>3</sub>O<sub>8</sub> were obtained across true widths of about 5 feet in trenches. Also, core drilling had returned values of 2 lbs. over core lengths of 5 to 15 feet. The true width in the drill holes was unknown and the structure complex. The second group of showings was approximately 1000 feet south in another quartzite layer where narrow, pyritic pebbles beds were exposed. Drill results of the south group were far less encouraging. The earlier interpretations linked the two groups of showings by folding and faulting. Through a study of the drill cores and the few outcrops which were available, it was determined that the 2 groups of showings were not the same and that the structure although it showed faulting, was monoclinial. With the added realization that the intervening ground between the 2 groups of showings had not been drilled, that in the north group the showings lapped up on the granitic basement and from the regional study, great basement relief existed, it was felt that still other layers of quartzite with uraniferous quartz-pebble conglomerates probably lay buried in the drifted valley and still others were blind at depth off a south sloping paleoplane. Through diamond drilling, a channel between the granitic borderlands was located in which an A type quartzite layer was found with uraniferous quartz-pebble conglomerates. Further drilling to greater depths discovered still another A type quartzite layer with uraniferous conglomerates at what is considered to be a lower topographic position between the granitic borderlands. This situation is depicted in Figure 2a showing the original impression of the Agnew Lake Mine deposit from surface diamond drilling. Faulting was suspected even at this stage of the work because of the moderate dip of the No.3 zone as compared to the steep dip of the 2 zone; however, 3 separate zones, 2,3&5 were never doubted.

SOUTH

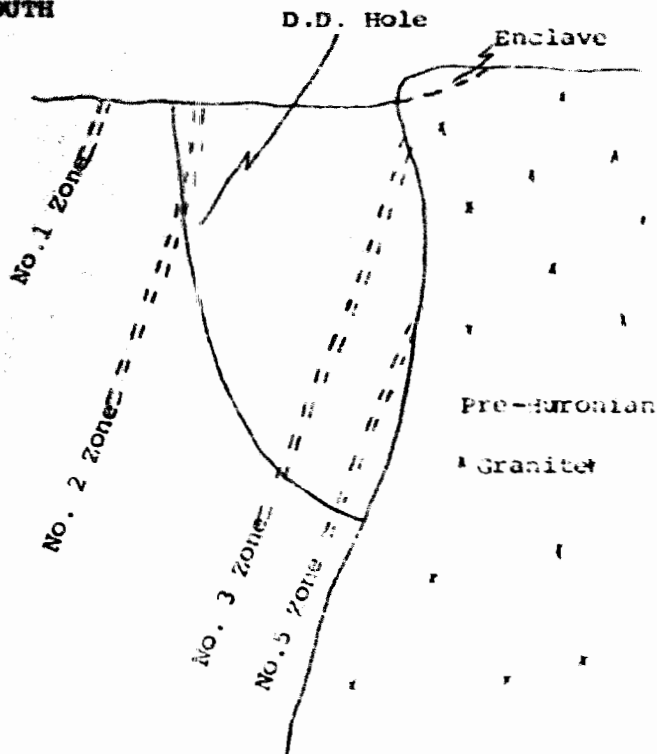


Figure No. 2A  
1967

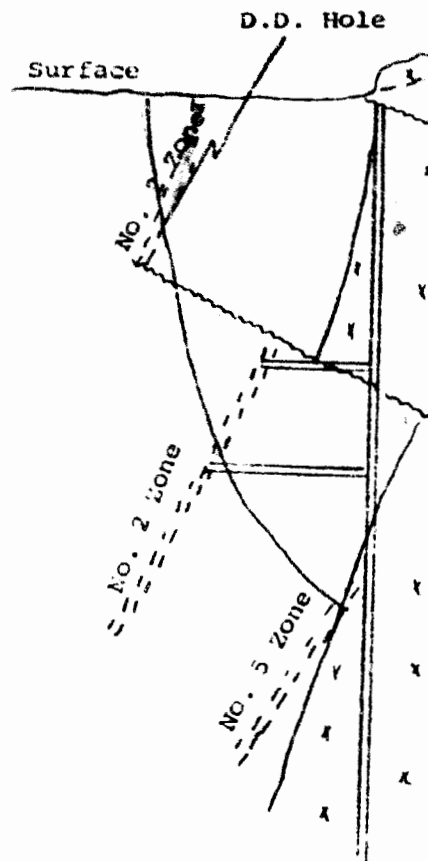


Figure No. 2B  
1969

DRURY joint venture  
Drury Twp, Ontario  
History, Agnew LAKE mi

SOUTH

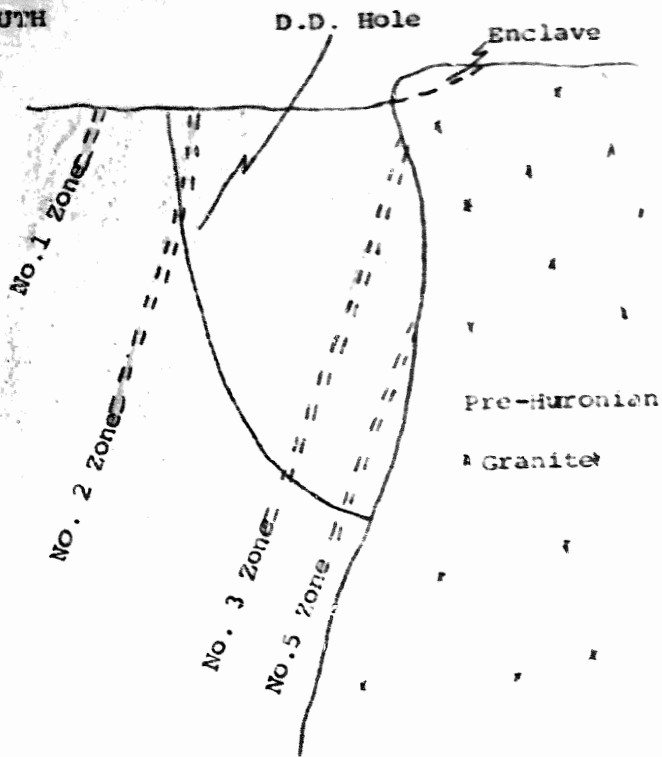


Figure No. 2A  
1967

NORTH

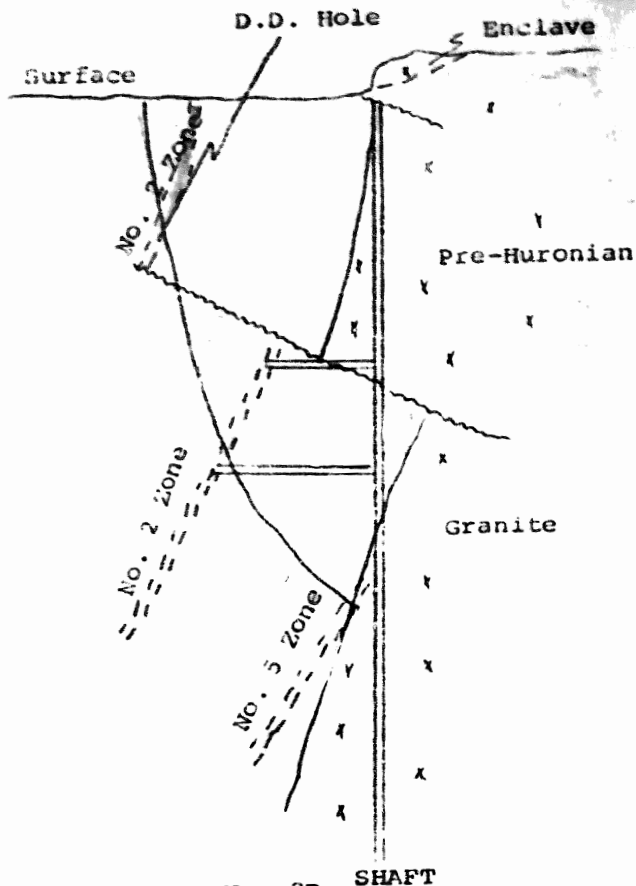


Figure No. 2B  
1969

DRURY joint venture  
Drury Twp, Ontario  
History, Agnew LAKE Mines

26 NOV/29  
FB



The mine is developing on 2 levels, the 900 and 1300 from a 3100 foot shaft. Drifting is in progress in the 3 zone on the 1300 foot level and encouraging results are being obtained. Diamond drilling from the levels and from the shaft stations indicate that the 2 zone is a thrust repeat of the 3 zone. At this stage, it is not possible to determine whether the 5 zone is a further thrust repetition of the 2 zone; however information to date suggests that it is a separate and distinct unit. Thrusting has been from north to south with the granite basement thrust over the Huronian sediments, perhaps with significant strike slip movement on the thrust plane. The 2 zone, from surface drilling done by the earlier workers, showed extensive weathering of the pyrite to a depth of 300 feet, the limit of their drilling. Deeper holes of the Kerr Addison program showed less leaching of the pyrite and it was hoped that at depth uranium values would be economic. Leaching to depths in excess of 300 feet is a very extraordinary in the dense Huronian quartzites. Three zone, the underthrust expression of 2 zone is totally unleached and in that respect is quite different in appearance from the 2 zone. The weathering characteristics explain some dissimilarities between the zone but strike slip movements is suspected to explain other differences. The 2 zone of the overthrust sheet, has not been opened from underground.

To review the situation at Agnew Lake Mines which made it an attractive prospect from the beginning, I would stress the following points

- 1) there was a favourable type of quartzite present on and close to the granitic basement.
- 2) there were pyritic radioactive, quartz-pebble conglomerates in the favourable quartzite layers.
- 3) the intervening drifted ground between the 2 groups of occurrences was unexplored.
- 4) ore grade values occurred in the quartzite zone near the granite.
- 5) there was greater lateral extent of low values in the 2 zone high above the basement. The height above basement could be attributed to distance from source, so that the great strike length of 2 zone was consistent with a broadening fan of deposition away from its point of debauchment, and even though values ostensibly were non-economic they would well be expected to be low in the outer limits of this upper fan deposit.

## DRURY JOINT VENTURE

TABLE II

## ACME CORE ASSAYS

HOLE NO.	STRATUM	POSITION	DIP	SAMPLE NO.	GRADE (lbs)		LENGTH	
					U3O8	ThO2	(FT.)	COMBIN #J306/1
A.Q.1	Lower A	Middle	South	D1-1	0.4	0.11	3.7	
				D1-2	0.5	0.17	3.5	
				D1-3	0.6	0.12	3.2	
				D1-4	0.6	0.15	1.8	
				D1-5	0.4	0.10	1.5	
A.Q.2	Lower A	Middle	South	None				
68-1	A Unit Below Hwy Q.	Bottom	North	2690	Tr		2.5	
				2691	Tr		2.5	
				2692	0.2		3.0	
				2693	Tr		3.0	
				2694	0.2		5.0	
				2695	0.2		2.0	
				2696	0.5		2.0	0.40/
				2697	Tr		2.5	
				2698	Tr		3.0	
				2699	Tr		3.0	
				2700	0.4		2.5	
				2680	0.2		2.0	0.28/
				2681	0.2		2.0	
				2682	0.2		2.0	
				2683	0.6		2.0	
				2684	0.6		2.0	0.5/1
				2685	0.4		2.5	
				2686	0.4		2.5	
				2687	0.2		2.5	
				2688	0.2		3.0	0.26/
				2689	0.4		3.0	
				2670	1.2		2.0	1.10/
				2671	1.0		2.0	
2672	0.2		2.5					
2673	Tr		2.5					
2674	Tr		2.0					
2675	Tr		2.0					
2676	Tr		5.0					
2677	Tr		3.0					
2678	Tr		3.0					
2679	Tr		5.0					

HOLE NO.	STRATUM	POSITION	LIMB	SAMPLE NO.	GRADE (lbs)		LENGTH (ft.)	COMB #U30
					U30s	Tho2		
68-2	Below Hwy Q	Bottom	North	2862	?		6.0	
				2863	?		4.0	
				2864	1.2		2.0	
				2865	0.4		2.0	
				2866	0.4		3.0	
				2867	?		3.0	
				2868	0.4		3.0	
				2869	0.4		2.0	
				2870	0.2		3.0	
				2871	0.2		3.0	
				2872	0.4		3.0	
				2873	0.6		4.0	
68-3			North	None			10 ft. run longer before complete	
68-4	Not Drilled							
68-5	Below Hwy Q		North	None				
68-6	Below Hwy Q		North	None				
68-7	Below Hwy Q	Bottom	North	2767	0.6		4.0	
				2768	0.2		5.0	
				2769	0.2		5.0	
				2770	Tr		5.0	
68-8	Lower A	Top	North	2775	0.2		4.0	
				2776	Tr		6.0	
				2777	0.2		2.5	
				2778	Tr		2.5	
				2779	Tr		2.5	
				2780	Tr		2.5	
				2781	Tr		2.5	
				2782	Tr		2.5	
				2783	0.6		2.5	
				2784	Tr		2.5	
				2785	Tr		2.5	
68-9	Below Hwy Q	Bottom	North	75119	Tr		2.5	
				75120	0.2		2.5	
				75121	Tr		2.5	
				75122	Tr		2.5	

**BROWN JOINT VENTURE**

**TABLE II**  
Page 3

HOLE NO.	STRATUM	POSITION	LIMB	SAMPLE NO.	GRADE (lbs)		LENGTH (FT.)	
					U308	ThO2		COMBIN #U308/F
68-9				75123	Tr		2.5	
				75124	Tr		2.5	
				75125	Tr		2.5	
				75126	Tr		2.5	
				75127	Tr		2.5	
				75128	Fr		2.5	
				75129	Fr		1.0	
68-10	Below Hwy Q	Bottom	North	75137	Tr		3.0	
				75138	Tr		3.0	
				75139	N11		3.0	
				75140	Tr		1.0	
68-11	Below Hwy Q		North	None				
68-12	Below Hwy Q	Bottom	North	145	1.2		2.0	
				146	1.0		1.0	
				147	0.2		3.0	
69-13	Lower A	Bottom	South	100160	Tr		2.0	
				100161	Tr		3.0	
				100162	Tr		2.0	
				100163	Tr		2.0	
				100164	Tr		2.0	
		Middle Top	100165			2.0		
			100170			2.0		
			100171			2.0		
		Middle	100172			1.0		
			100173			1.0		
100174			2.0					
69-14	Lower A Upper A	Bottom	South	100162	0.6		1.0	
				100163	Tr		2.0	
		100164		1.3		1.0		
		100165		Fr		2.0		
		Middle		100166	0.2		3.0	
				100167	Tr		2.0	
				100168	Tr		3.0	
69-15			South	None				

*David S. Robertson & Associates Limited*

DRURY JOINT VENTURE  
DRURY MINE, ONTARIO  
GEOLOGICAL REPORT

for

OCCIDENTAL MINERALS CORPORATION

David S. Robertson & Associates Limited,  
Consulting Geologists & Mining Engineers,  
Toronto 1, Canada

  
F. G. Barnes Ph. D.

16 January, 1970

SUMMARY AND RECOMMENDATIONS

Huronian sediments underlie the Acme property, east of Agnew Lake Mines, Drury Township. The Huronian sequence consists of sericitic feldspathic quartzites and pelitic rocks similar to those found at Agnew Lake Mines. Radioactive quartz-pebble conglomerates are common to the sericitic quartzites and the ground was considered potential for the discovery of additional uranium ores.

The Huronian sediments are folded into a tight syncline trending east-west across the Acme property and north-south compressive forces have resulted in the southward thrusting of the northern granite borderlands over the adjacent Huronian strata. The north limb of the syncline is mainly buried by the overthrust although the basal section of the Huronian remains exposed on the full length of the property.

Extensive work performed by Acme in the period 1967 to 1969 resulted in no ore discoveries but did indicate extensive uraniferous pebble beds. The Acme drill results show that the best values occur in a drainage channel near the granite basement. The drilling near the basement returned sub-marginal values and left little likelihood that improvements could be expected. Trench samples of quartz-pebble conglomerates, occurring in favourable quartzites high in the Huronian sequence, returned interesting uranium assays over appreciable

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widths. Resampling in the trenches; however, disclosed that the widths were not true. The resampled uranium values were slightly lower than formerly indicated and widths substantially less than economic.

The property, which had only been partially drill tested was mapped in detail but no sedimentological evidence of additional drainage was found.

Work along the North Shore of Lake Huron for sedimentary uranium deposits has shown that geological work can eliminate the necessity for large drilling expenditures. The Acme work, without an appreciation of the structure or sedimentation resulted in some expenditures which could have been avoided. The results of the present work show no evidence of additional drainage that would warrant further drilling, and the Acme work leaves little prospect that the known occurrences can be improved. It is not recommended that additional expenditures be made on Acme's Drury Township property.

INTRODUCTION

The property in the Drury Joint Venture belongs to the Acme Gas and Oil Company, incorporated in the Province of Ontario. The property was acquired by Acme through staking in 1966 and during the period April, 1967 to May, 1969, Acme performed work on the property in the form of linecutting, prospecting, test pitting and diamond drilling.

The property was examined in April, 1969, by logging the drill cores. The evaluation was inconclusive because without a proper geological map, the drilling results could not be related to stratigraphy. Only 1/3 of the favourable contact area had been drilled and numerous assays from pits along the entire strike length indicated interesting results. An earlier acquaintance with the property had confirmed that radioactive quartz-pebble conglomerates existed in a sedimentary environment similar to that at Agnew Lake Mines to the west. None of the Acme trenches were examined in April, 1969, because of snow conditions, but on the basis of the existing information, the property was recommended to Occidental for further exploration.

Early in September, 1969, it was learned that an agreement was imminent between Acme and Occidental on the Drury Township property. Upon ratification of the agreement by Acme shareholders on September 23, a field mapping program was immediately initiated and was completed in early November.



THE PROPERTY  
LOCATION MAPS

The property is located in Drury Township, District of Sudbury, Province of Ontario approximately 20 miles west of the city of Sudbury.

The property consists of 91 patented mining claims and a patented lot totalling about 3900 acres. The claims are each 40 acres or more, numbered as follows:

S-134888-891 incl. (4)	S-137425-26 (2)
S-135353 (1)	S-138813-24 incl. (12)
S-136371-72 (2)	S-138842-45 incl. (4)
S-136377-78 (2)	S-139126-34 incl. (9)
S-137385 (1)	S-139404-16 incl. (13)
S-137622-23 (2)	S-139440-448 incl. (9)
S-137423-24 (2)	S-140378-79 (2)
S-138836-41 incl. (5)	S-149200-09 incl. (10)
S-140891-93 incl. (3)	S-149212-13 (2)
S-140894 (1)	S-140374-77 incl. (4)

The patented lot, also optioned to Occidental consists of 160 acres, and is the south half of Lot 7, Concession 4, Drury Township. Both lot and claims are contiguous and shown outlined on the township plan enclosed.

The property may be reached from Sudbury via old Highway 17, leaving present Highway 17 at Whitefish or Nairn, both west of Sudbury. A road leading from old Highway 17 towards High Falls intersects the Agnew Lake Mine access road which in turn leads towards the property. About 2 miles north along the

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Agnew Lake Mines road and a short distance beyond Ministic Creek, another road leads northward into the Acme property. The gravel road on the Acme property services a number of gravel pits and a track road, passable in good weather, leads from the first pit to the Acme camp in Lot 12, Concession 10, Perry Township. The location of the Acme property, roads and camps are shown on the claim map accompanying this report.

GEOLOGY

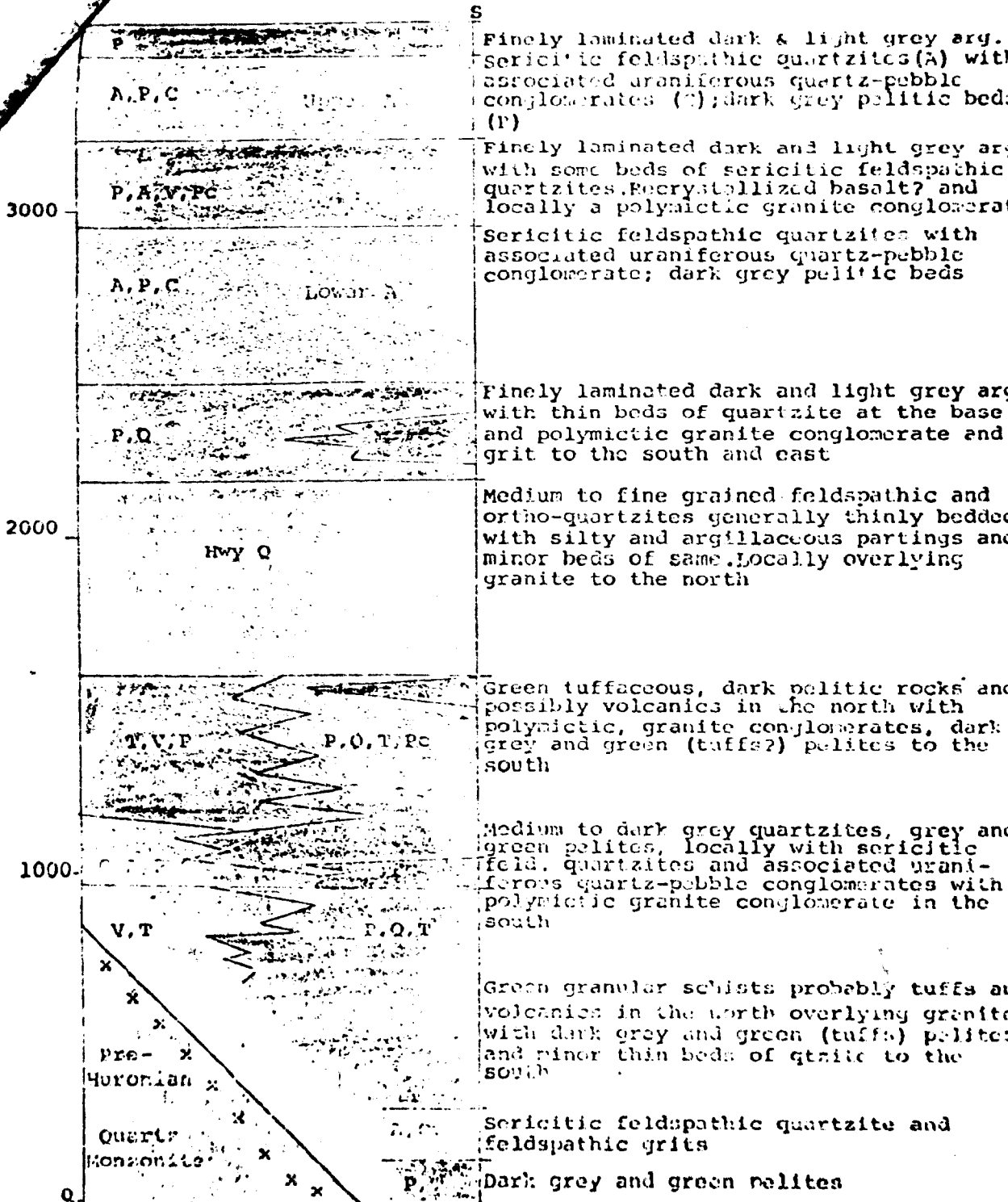
The rocks on the Acme property are all Precambrian, the oldest being Algonian granites of more than 1300 million years. All stratified rocks within the area are younger than the granite. Rocks of volcanic origin appear to be the oldest strata and they rest unconformably on the older Algonian granite notwithstanding the presence of quartz-feldspar veins in the volcanic sequence. The Huronian rocks which underlie most of the Acme property, are represented by basal pelitic rocks and are succeeded by feldspathic quartzites, pelites, conglomerates and possibly basaltic flows. Unconformities occur within the Huronian, the extent of which are unknown. An unconformity of consequence may be present between the basal volcanic rock sequence and the mainly sedimentary sequence referred to as Huronian. Sharp breaks in the sedimentation as between a predominant quartzite phase and a succeeding pelite phase may

represent major unconformities within the Huronian but only detailed regional stratigraphic work will tell. The youngest rocks of the area are Sudbury intrusive diabase which has undergone the same metamorphic effects as the Huronian strata and olivine diabase which is younger still and unaffected by regional metamorphism.

#### Stratigraphy

The Algoman granite, the oldest rock on the claims is a holocrystalline, leucocratic, coarse-grained quartz monzonite, consisting of both sodic and potassic feldspars, quartz and minor accessory dark minerals. The granite possessed considerable pre-Huronian relief in this area as indicated from our earlier work on the Agnew Lake Mines property and from additional observations on the Acme property. The basement relief is illustrated by the quartzites shown as Q, designated "Highway" and coloured blue on the accompanying geological maps. These quartzites rest unconformably upon the granite  $\frac{1}{2}$  mile northwest of the Acme camp, whereas at numerous other places within the claims there is a greater thickness of this quartzite accompanied by additional lower strata. At Agnew Lake Mines the paleorelief was even lower to accommodate the ore zone quartzites and pelitic rocks. The maximum exposure of the stratigraphic column is shown on Figure 1.

FIGURE I



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The reader is advised to refer to Figure 1 and the geological maps in following the description of the stratigraphy. Figure 1 shows a south sloping basement surface with volcanics and tuffs on the granite to the north of pelites, tuffs, sericitic feldspathic quartzite and tuff to the south at a lower stratigraphic position, but not necessarily older. The granite is not found on the south limb of the tightly folded syncline where the lower stratigraphy is exposed. The tuffs, volcanics and pelitic rock sequence can be seen in contact with the granite. Higher stratigraphy lies onto the granite north of the Acme camp. There is possibly an unconformity between these volcanics and tuffs and the later sequence regionally referred to as Huronian. The oldest Huronian rocks are exposed on the south limb of the syncline and I would refer you to the area of Lot 10, south synclinal limb, of the Highway quartzites on Drawing 1. Here, by structural implication, rocks shown as P and described as dark grey argillites, siltstones and greywackes are found both above and below a quartzite layer designated A, Q and St. The A, Q and St unit is near the bottom of the stratigraphic column in Figure 1. The sequence upward from here is that of pelitic rocks with some relatively fine-grained, light-grey quartzites occurring beneath a member of quartz and granite pebble conglomerate designated Pc or polyaesthetic conglomerate. The sequence above the polyaesthetic

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conglomerate is again pelites to the east of the Q designated "Highway" quartzite, south limb.

The same sequence on the north limb can best be seen northwest of the Acme camp at drill hole 68-1. Drill hole 68-2, collared in "Highway" quartzite, passes pelites to a sequence of sericitic feldspathic quartzites and sits before entering volcanics and the basement granite. The sericitic feldspathic quartzites with beds of pyritic quartz-pebble conglomerate are tentatively correlated with the pelitic conglomerate beneath the "Highway" quartzite, west of, south limb.

Unfortunately, the Highway quartzite on the north limb is missing east of the Acme camp area and we can only speculate that the stratigraphy which is overlain by the volcanic cuff sequence at the granite contact, belongs to the pre-"Highway" succession. The absence of the "Highway" quartzite to the east is attributed to a north dipping thrust fault with the overthrust block covering most of the north limb stratigraphy. The favourable sericitic quartzite with uraniferous pebble beds found at drill hole 68-1 and 68-2, was not seen elsewhere along the granite contact and is therefore considered to be a local facies of less favourable quartzites without radioactive pebble beds found farther east. These other quartzites farther east, found here and there in the overthrust north limb are fault

sliced and broken lenses due to movement in the pelitic host rocks. The quartzites are also permeated by feldspathic grits but neither the quartzites or grits are radioactive.

The "Highway" quartzite which is shown in blue and coloured blue on the maps is the best stratigraphic marker in the region. The "Highway" quartzite consists of up to line-grained feldspathic and orthoquartzites, typically thinly bedded with silty and argillaceous partings. This quartzite is unfavourable to pyritic quartz-pebble conglomerate accumulations and represents an off-shore facies or condition of relative quiescence. On the north synclinal limb the "Highway" quartzite thickens west of the property and is lost through the valley east of the Acme camp. On the south limb east of the Acme camp it gradually thins with the appearance of interbedded polystratified conglomerates and pelitic beds.

The "Highway" quartzite is succeeded by pelites and interbedded quartzites similar to the "Highway" quartzite. There is more pelitic material on the south limb indicating greater distance from source. The next succeeding secondary marker has been designated the Lower A quartzite unit. The Lower A unit is exposed east and west of the Acme camp on the north limb and through the full extent of the property on the south limb except west of the Acme camp. The rocks are sericitic, feldspathic

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quartzites with interlayered tan-grey, micritic and greywackes. Pyritic quartz-pebble conglomerates are found at several horizons. The conglomerates are uraniumiferous and have been traced with pickets and rock cairns. Pits have been drilled into the occurrences at numerous places for the length of the same property. The pyritic, quartz-pebble beds of the Lower A unit are best developed just east of the Acme camp where early uranium work was carried out by Sagamore Exploration in the late 1950's.

Succeeding the Lower A unit is an argillite and greywacke member designated primarily as a pelitic. Volcanics may occur in this member with basaltic flow-like rocks found on the north limb, northwest of the Acme camp. Here, the possible volcanics are followed by granite pebble polygenic conglomerate not found elsewhere in this member. The widespread occurrence of igneous rocks in this member has led to the speculation that volcanism did occur during this interval. However, much of the igneous rock in the member is obviously intrusive even though recrystallization causes considerable difficulty in distinguishing between intrusive and extrusive forms.

Succeeding the pelitic-volcanic member is the Upper A quartzite unit consisting of sericitic feldspathic quartzites typically crossbedded, poorly sorted, and coarse grained; similar to the Lower A unit and likewise containing pyritic, quartz-pebble



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conglomerates. The radioactive conglomerates are found at several horizons in the Upper A unit in the south synclinal limb. The conglomerates in the lower part of the south limb have been extensively pitted and show distinct lines across the Acme property. The Upper A unit is poorly represented on the north limb of the syncline because of thrusting.

Succeeding the Upper A unit is another pelitic member consisting primarily of laminated argillites which, in at least one place, show an unconformable relationship to the Upper A quartzites. Little of this pelitic member is present because of thrusting

Structure

The Huronian sediments have been generally folded into a syncline on the Acme property. The strata dip almost vertically with beds overturned as much as 10° on the north limb of the syncline. The axis of the syncline trends slightly south of east with little or no pitching or plunging along its length in the property. Foliation is intense parallel to the fold axis. Here and there bedding crosses the foliation at right angles. The intensity of foliation makes identification of bedding difficult. Crossbedding within the quartzites is often confused with cleavage and graded bedding is more

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commonly the method upon which topographic locations are made. Minor faulting is evident upon close inspection; however, major faults transverse to the fold axis are not a significant feature on the property in spite of the number of such faults shown on the Cunningham and Galloway maps. Lamination is vertical with quartz pebbles arranged in pencil form within the plane of foliation. One foliation plane, vertical and several directions of strong cleavage are apparent. One cleavage direction is nearly horizontal. The diabase sheets appear to have been intruded along the fault in the eastern portion of the property. The diabase sheets cover relatively large areas whereas the quartzite strata show no notable displacement on either side of the diabase sheets. The fault was recognized for a distance of a mile or more close to the axial plane of the syncline. The apparent displacement on the fault is slight, although in the steeply dipping strata it may be considerable.

Apart from the tight synclinal structures through the Acme property, the most important structural feature is a north-dipping thrust fault which runs the full length of the property. The thrust fault is not exposed but the structural implications are apparent from the stratigraphic succession. The south limb of the syncline is missing or buried west of the Acme camp and the north limb is partially buried to the east. This may be

seen on the geological maps. The top determinations made in the Lower and Upper A quartzite units determine the relative position of the synclinal axis. From this it is obvious that the north limb is mainly unexposed east of the Acme camp, and the south limb to the west. Thrust faulting, known to occur at Agnew Lake Mines, best explains the structural discontinuity. The interpreted position of the thrust is shown on the geological maps. The sedimentary sequence south of the thrust west of the Acme camp was in doubt at the time of the mapping, and might be clarified with our present knowledge of the thrust. However, there is no economic advantage in redefining the geology of this section.

A north-dipping thrust fault is known at Agnew Lake Mines from the development work presently underway. The thrust was unknown during the exploration period because of extensive drift in the valley covering the deposit.

#### QUARTZ-PEBBLE CONGLOMERATES

There are two types of quartz-pebble conglomerates on the property. The first, which is of no economic interest, consists of closely-packed, large quartz-pebbles and cobbles in a quartzite matrix with little or no pyrite. One such conglomerate

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is located at the granite contact. A section of drill hole 68-7, 300 feet west of the road to the farthest gravel pit. This conglomerate, composed of quartz pebbles, pinches rapidly to the west and is of unknown extent. Some radioactivity was encountered in the drill hole, but the conglomerate radioactive on surface. Another occurrence is approximately 800 feet east of the first and appears to be stratigraphically higher although through structural complexities it may be the same unit. The easterly showing is otherwise non-radioactive and the pebbles are not as closely packed. The quartzite matrix of the easterly showing is similar to the quartzite strata 30-40 feet above the westerly showing, which supports the opinion that they are separate units. Conglomerates of this type, close to the basement, tightly packed, coarse and associated with rocks of volcanic origin are common regionally and have little associated radioactivity. These quartzite washes can be thick and extensive. A similar conglomerate unit was drilled on the Boulton Reef property in Shakespeare Township disclosing impressive widths of conglomerate but disappointing uranium values.

The second type of quartz-pebble conglomerate is similar to the radioactive, pyritic, quartz-pebble conglomerates found at Agnew Lake Mines. This type of pebble bed occurs at distinct horizons in the rock units designated 7 on the illustrations.

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Within the 7 quartzite units, there are at least 6 horizons and some have been traced for a mile or more. The pebbles are loosely packed, pea to walnut size quartz with a size mode of about  $\frac{1}{2}$  to  $\frac{3}{4}$  inch diameter. The pebbles are stretched vertically in the plane of foliation and the matrix in all cases is a feldspathic, sericitic quartzite. The pyrite content is less than 5%, much lower than that at Elliot Lake but approximately the same as that at Lynx Lake Mines.

All of this latter type of conglomerate is radioactive, and, in places, highly so. These conglomerate lenses were readily picked up with scintillometer during mapping and it was found that the Acme crew had done likewise. The conglomerate layers were extensively hammered and numerous ore blasted therein. In places, the conglomerate lenses were marked with pickets and small rock cairns.

The showings, indicated on the Cunningham map, show U308 values from 5.4 lbs/ton across 7.5 feet to 1.0 lbs/ton across 12 feet in the high range, and from trace to 0.2 lbs/ton across 5 feet in the low range. The true widths of the conglomerate layers in most cases were found to be less than indicated by Cunningham. As a check against the Acme sampling which, from appearances, was conscientiously performed, we re-sampled, with chips, the better Cunningham showings. These results are given in Table I

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On Table I it may be seen that the re-sampling resulted in somewhat lower assays than obtained by Cunningham. The Cunningham assays are based on the radiometric technique based on beta activity. Another assay was run on the re-sampling but the radiometric method was not used. The assays are slightly lower as may be seen by the comparison on Table I. To check the relative abundance of thorium-uranium we had thoriums run by our assayer and found that the evenness ratio was lower than what we had anticipated. We therefore sent three of the re-samples to a referee assayer, choosing the X-Ray spectrographic method which, from past experience, we have found to be the most accurate and precise method of determining uranium and thorium. These results have brought the thorium-uranium ratios more in keeping with those at Agnew Lake mines. It is therefore concluded that the Acme assays are somewhat higher than they should be and that the  $\text{ThO}_2:\text{U}_3\text{O}_8$  ratio is greater than 2:1.

The main discrepancy we have found with the Cunningham sampling is the width ascribed to the assays. We have significantly reduced most of the widths which an inspection of Table I will show. Where we have reduced the widths we found that the Cunningham sampling was taken along or at an acute angle to the bedding. The strata are contorted in many places

## JOINT VENTURE

TABLE I

## G OF ACME TRENCHES

DJV A/W #U308/Ft.	DJV A/W #ThO2/Ft.	<u>ThO2</u> U308	COMMENTS
0.50/3.7	0.35/3.7	0.7	Most radioactive section, 0.5' pebble, 1.4' qtzite, 1.8' pebbs.
1.02/1.7	3.40/1.7	3.3	Most radioactive section 1.7' of grit and pebble conglomerates
1.24/1.8	3.70/1.8	3.1	Most radioactive section, 1.8' of grit and pebbles
0.55/2.4	0.40/2.4	0.6	Acme samples length of a drag-fold true width 2.4' of pebbles in 2 bands, 1.7' pebbles, 1.7' qtzite, 2.1' pebble & grit
0.99/3.5	1.19/3.5	1.2	
2.30/2.5	1.04/2.5	0.4	1.5' pebbles (3.72%) and 1.0' grit (0.38%)
0.45/1.1	2.20/1.1	4.8	Most radioactive section; inclined about 0.5' pebbles
1.24/1.5	1.80/1.5	1.4	Most radioactive section in pit
1.05/2.5	1.44/2.5	1.4	
0.14	0.6	4.0	Grab sample of weather surface material from un-faulted 6' quartz pebble bed in granite on Kerr Addison property 2 mi. E of the mine and 3/4 mi. W of DJV

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DRIFT JOINT VENTURE

RESAMPLING OF ADZE TR

LOCATION	STRATA	POSITION	DIRE	ADZE # ADZE #ADZE/FT.	DIV #ADZE #ADZE/FT.
Baseline, 80E	Lower A	Top	North	0.75/3.0	0.50/3.7
76E, 3N	Lower A	Middle	North	1.60/2.5	1.02/1.7
79E, 3N	Lower A	Middle	North	1.50/5.0	1.24/1.8
58N, 2+50S	Upper A	Middle	South	1.00/12.5	0.55/2.4
65E, 5S	Upper A	Bottom	South	0.95/3.0	0.99/3.5
55+50E 9+50S	Lower A	Bottom	South	5.00/2.5	2.30/2.5
46E, 2N	Lower A	Middle	North	0.50/3.0	0.45/1.1
42E, 3S	Lower A	Top	South	1.30/2.0	1.24/1.5
AVERAGE				1.20/3.8	1.05/2.5 1.80
3/4 mi. V of D57	Below Hwy G	?	North		0.14



## *Devil's Den & Associates Limited*

with small offsets along the fault. They were able to trace stratigraphy through the pits and to re-sample the conglomerate beds at right angles to the strata.

Also given in Table I is a grab sample taken from a pyritic, quartz-pebble conglomerate on the Kerr Addison property 3/4 mile west of the Kerr Addison. The Kerr Addison showing is a highly radioactive, pyritic, quartz-pebble conglomerate bed about 6 feet wide in a fractured block in the granite area west of the road. This showing has been thought of as an indication of later stream deposition of stream deposition. The conglomerate showing is 1 mile east of the mine and close to the known Acme occurrences. It is one of the most attractive exposures in the area and the low uranium assay from the grab sample was disappointing. The sample was taken from the surface of the outcrop which was leached. The high thorium ratio tends to confirm the leaching.

Assays of sampled drill cores taken by Cunningham are summarized in Table II. No resampling of none of the drill cores because the values in general are low. The core was scinted before splitting and increased radioactivity is characterized by higher assays. None of the assays are of the lower and upper A units of the north synclinal limb. This is because the overthrusting has removed the north limb A units in the drill

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**These sections.** The best assays are from the north limb in the A unit beneath the Highway quartzite. This was to be expected since this lowermost A unit is closer to source, being within 200 feet of the granite base, and is of the same grade.

Agnew Lake Mine, Ontario

To assess the nickel potential of the above property, the underground workings of Agnew Lake Mine were visited on November 21 and the pre-developed structure information was reviewed. Initially the Agnew Lake Mine property had somewhat in excess of 20,000 feet of allowed ceiling on 2 groups of showings in the area of what is now the mine. One group of these showings was within 500 feet of the level in the granite where assays in excess of 100 lbs. of nickel were obtained across true widths of about 3 feet in thickness. Also, core drilling had returned values of 1 lbs. of nickel per ton of ore of 5 to 15 feet. The true width in the drill hole was 10 feet and the structure complex. The second group of showings was approximately 1000 feet south in another quartzite layer where narrow, pyritic pebble beds were exposed. Drill results of the south group were far less encouraging. The earlier interpretations linked the two groups of showings by folding and faulting. Through a study of the drill cores and the few outcrops which were available, it was determined that the 2 groups of showings were not the same and that the structure although it showed faulting, was

*David A. Robertson & Associates Limited*

monoclinial. With the added realization that the intervening ground between the 2 groups of workings had not been drilled, that in the north group the 3 zone lay atop up on the granitic basement and from the regional geology, the basement relief existed, it was felt that still another layer of quartzite with uraniferous quartz-pebble conglomerates, probably 150' buried in the drifted valley and still above the level at depth off a south sloping paleoplane. Through diamond drilling, a channel between the granitic borderlands was found to contain an A type quartzite layer was found with uraniferous quartz pebble conglomerates. Further drilling to greater depths discovered still another A type quartzite layer with uraniferous conglomerates at what is considered to be a lower topographic position between the granitic borderlands. This situation is depicted in Figure 2a showing the original impression of the Agnew Lake Mine deposit from surface diamond drilling. Further, as suspected even at this stage of the work because of the moderate dip of the No. 3 zone as compared to the steep dip of 2 zone; however, 3 separate zones, 2, 3 and 5 were never located.

The mine is developing on 2 levels, one 900 and 1300 from a 3100 foot shaft. Drifting is in progress in the 3 zone on the 1300 foot level and encouraging results are being obtained. Diamond drilling from the levels and from the shaft stations

SOUTH

D.D. Hole

Enclave

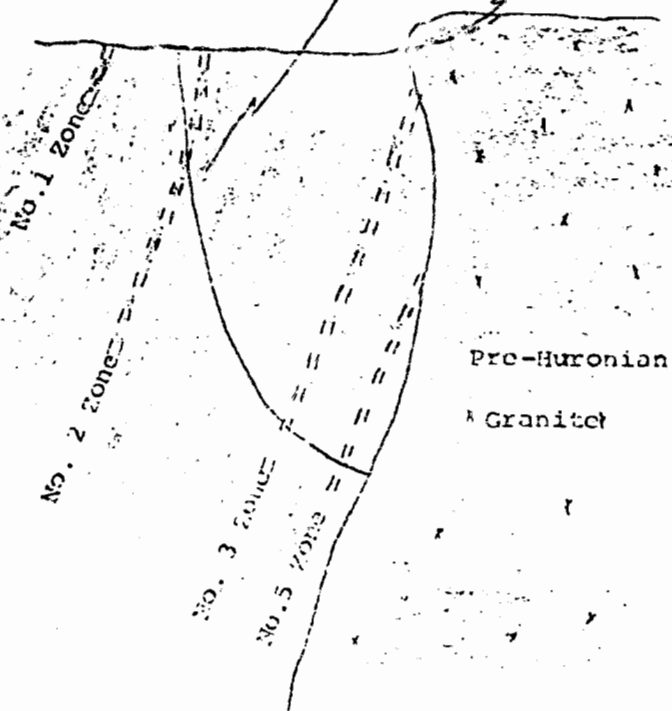


Figure No. 2A  
1967

D.D. Hole

Enclave

Surface

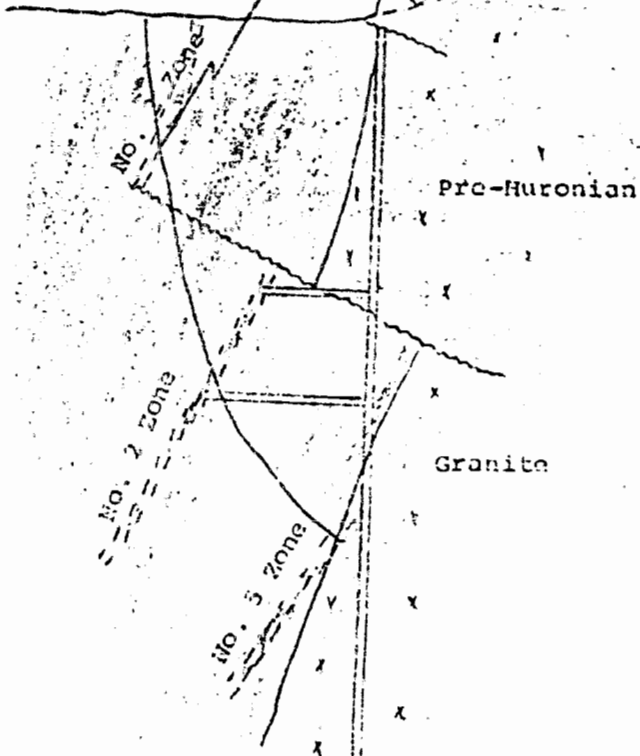


Figure No. 2B  
1969

## *United Reclamation & Minerals Limited*

indicate that the 2 Zone is a thrust sheet of the 3 Zone. At this stage, it is not possible to determine whether the 5 Zone is a further thrust repetition of the 2 Zone; however information to date suggests that it is a thrust sheet of a distinct unit. Thrusting has been from north to south over the granite basement thrust over the Huronian as the 2 Zone is marked with significant strike slip movement on the thrust plane. The 2 Zone, from surface drilling done by the earlier workers, showed extensive weathering of the pyrite to a depth of 300 feet, the limit of their drilling. Deeper holes done under Wilson program showed less leaching of the pyrite and it was hoped that at depth uranium values would be economic. Leaching to depths in excess of 300 feet is very extraordinary in the dense Huronian quartzites. Three Zone, the up-slope expression of 2 Zone is totally unleached and in that respect is quite different in appearance from the 2 Zone. The weathering characteristics explain some dissimilarities between the zones but strike slip movements is suspected to explain other differences. The 2 Zone of the overthrust sheet, has not been opened from underground.

To review the situation at Snow Lake Mines which made it an attractive prospect from the beginning, I would stress the following points:

1. there was a favourable type of quartzite present on and close to the granitic basement.

*British Petroleum & Associates Limited*

2. there were pyritic ironiferous, quartz-calcite conglomerates in the favourable quartzite layers.
3. the intervening drifted ground between the 2 groups of occurrences was unproductive.
4. ore grade values were low in the 2 Zone near the granite.
5. there was greater lateral extent of low values in the 2 Zone high above the basement. The low values in the basement could be attributed to distance from source, so that the great strike length of the zone was a result of the spreading fan of deposition away from its point of detachment and even though values ostensibly were somewhat higher, would well be expected to be low in the outer limits of this upper fan deposit.

## DRURY JOINT VENTURE

TABLE II

## ACME CORE ASSAYS

HOLE NO.	STRATUM	POSITION	LINE	SAMPLE NO.	GRADE (lbs.)		LENGTH	
					U3O8	ThO2	(FT.)	COMBINED U3O8/FR.
A.Q.1	Lower A	Middle	South	D1-1	0.4	Nil	1.7	
				D1-2	0.8	1.2	3.8	
				D1-3	0.8	0.2	3.2	
				D1-4	1.6	Nil	1.3	
				D1-5	0.4	1.0	1.3	
A.Q.2	Lower A	Middle	South	None				
68-1	A Unit Below Key Q.	Bottom	North	2690	Tr		2.5	
				2691	Tr		2.5	
				2692	0.2		3.0	
				2693	Tr		3.0	
				2694	0.2		5.0	
				2695	0.2		2.0	
				2696	0.6		2.0	0.40/4.0
				2697	Tr		2.5	
				2698	Tr		5.0	
				2699	Tr		5.0	
				2700	0.4		2.5	
				2680	0.2		2.0	0.26/6.5
				2631	0.2		2.0	
				2682	0.2		2.0	
				2683	0.6		3.0	
				2684	0.6		2.0	0.5/10.0
				2685	0.4		2.5	
				2686	0.4		2.5	
				2687	0.2		2.5	
				2688	0.2		3.0	0.26/8.5
				2689	0.4		3.0	
				2670	1.2		2.0	1.10/4.0
				2571	1.0		2.0	
				2672	0.2		2.5	
2673	Tr		2.5					
2674	Tr		2.0					
2675	Tr		2.0					
2676	Tr		3.0					
2677	Tr		5.0					
2678	Tr		5.0					
2679	Tr		5.0					

DAVID S. ROBERTSON & ASSOCIATES  
LIMITED

HOLE NO.	STRATUM	POSITION	LITH	SAMPLE NO.	GRADE (lbs)		LENGTH (ft.)	COMBL #U308
					U308	Thoz		
66-2	Below Hwy C	Bottom	North	2862	?		5.0	
				2863	?		4.0	
				2864	1.2		2.0	
				2865	0.4		2.0	
				2866	0.4		3.0	
				2867	?		3.0	
				2868	0.4		3.0	
				2869	0.4		2.0	
				2870	0.2		3.0	
				2871	0.2		3.0	
				2872	0.4		3.0	
2873	0.6		1.0					
66-3			North	None	Hole abandoned before complete			
66-4	Not Drilled							
66-5	Below Hwy C		North	None				
66-6	Below Hwy C		North	None				
66-7	Below Hwy C	Bottom	North	2767	0.6		4.0	
				2768	0.2		3.0	
				2769	0.1		3.0	
				2770	Tr		3.0	
66-8	Lower A	Top	North	2775	0.2		3.0	
				2776	Tr		3.0	
				2777	0.2		2.5	
				2778	Tr		2.5	
				2779	Tr		2.5	
				2780	Tr		2.5	
				2781	Tr		2.5	
				2782	Tr		2.5	
				2783	0.6		2.5	
				2784	Tr		2.5	
				2785	Tr		2.5	
66-9	Below Hwy C	Bottom	North	75119	Tr		2.5	
				75120	0.2		2.5	
				75121	Tr		2.5	
				75122	Tr		2.5	



CIE NO.	STRATUM	POSITION	LIMB	SAMPLE NO.	GRADE (lbs)		LENGTH	
					U308	thol	(ft.)	COMBINED #U308/ft.
6-9				75123	Tr		2.5	
				75124	Tr		2.5	
				75125	Tr		2.5	
				75126	Tr		2.5	
				75127	Tr		2.5	
				75128	Tr		2.5	
				75129	Tr		1.0	
6-10	Below Hwy Q	Bottom	North	75137	Tr		5.0	
				75138	Tr		5.0	
				75139	Nil		3.0	
				75140	Tr		4.0	
6-11	Below Hwy Q		North	None				
6-12	Below Hwy Q	Bottom	North	145	0.2		2.0	
				146	1.0		2.0	
				147	0.2		3.0	
6-13	Lower A	Bottom	South	150	Tr		2.0	
				151	Tr		3.0	
				152	1.2		1.0	
				153	Tr		2.0	
				100169			1.0	
		Middle Top	100170			4.0		
			100171			3.0		
			100172			1.0		
		Middle	100173			1.0		
			100174			2.0		
6-14	Lower A Upper A	Bottom	South	100162	0.6		1.0	
				100163	Tr		2.0	
				100164	4.3		1.0	
		Middle	100165	Tr		2.0		
			100166	0.2		3.0		
			100167	Tr		2.0		
			100168	Tr		3.0		
6-15			South	None				

## ACME CORE ASSAYS

POSITION	LINE	SAMPLE NO.	GRADE (lbs)		LENGTH	
			U308	ThO2	(Ft.)	COMBINED U308/FT
Middle	South	D1-1	0.4	Nil	1.7	
		D1-2	0.8	1.2	3.8	
		D1-3	0.8	0.2	3.2	
		D1-4	1.6	Nil	1.3	
		D1-5	0.4	1.0	1.3	
Middle	South	None				
Bottom	North	2690	Tr		2.5	
		2691	Tr		2.5	
		2692	0.2		3.0	
		2693	Tr		3.0	
		2694	0.2		5.0	
		2695	0.2		2.0	
		2696	0.6		2.0	0.40/4
		2697	Tr		2.5	
		2698	Tr		5.0	
		2699	Tr		5.0	
		2700	0.4		2.5	
		2680	0.2		2.0	0.28/6
		2681	0.2		2.0	
		2682	0.2		2.0	
		2683	0.6		3.0	
		2684	0.6		2.0	0.5/10
		2685	0.4		2.5	
		2686	0.4		2.5	
		2687	0.2		2.5	
		2688	0.2		3.0	0.26/8
		2689	0.4		3.0	
		2670	1.2		2.0	1.10/4
		2671	1.0		2.0	
		2672	0.2		2.5	
2673	Tr		2.5			
2674	Tr		2.0			
2675	Tr		2.0			
2676	Tr		5.0			
2677	Tr		5.0			
2678	Tr		5.0			
2679	Tr		5.0			

ATOMIC ENERGY CONTROL BOARD

P.O. BOX 1046

OTTAWA, CANADA  
K1P 5S9

MATERIAL AND EQUIPMENT CONTROL  
DIRECTORATE



COMMISSION DE  
CONTRÔLE DE L'ÉNERGIE ATOMIQUE

CASE POSTALE 1046

OTTAWA, CANADA  
K1P 5 S9

FILE NO. 22-A-40  
DOSSIER

25 April 1973

Mr. E.A. Pigulski  
Treasurer  
Acme Gas & Oil Co., Limited  
50 King Street West, Suite 1400  
Toronto-Dominion Centre  
Toronto 1, Ontario

Dear Sir:

This will acknowledge and thank you for  
your letter of April 18, 1973, giving a Nil report  
of work carried out during 1972 under Exploration  
Permit MX23/68.

Yours very truly,

R.F. Scarth  
Associate Scientific Adviser

/epd

c.c. Deputy Minister  
Dept. of Energy, Mines & Resources

Mr. J.A. Robertson  
Ontario Ministry of Natural Resources ✓

*Approved*

*Scarth*

ATOMIC ENERGY CONTROL BOARD

P.O. BOX 1048

OTTAWA, CANADA  
K1P 5S9



RESTRICTED  
REGISTERED

COMMISSION DE  
CONTRÔLE DE L'ÉNERGIE ATOMIQUE

CASE POSTALE 1048

OTTAWA, CANADA  
K1P 5 S9

FILE NO. 22-A-10  
CONFIDENTIAL

July 7, 1972

Mr. J.L.C. Jenner,  
President,  
Acme Gas & Oil Co., Limited,  
c/o Wills, Bickle & Company Limited,  
Toronto-Dominion Centre,  
Box 32,  
Toronto 1, Ontario.

Dear Sir:

This will acknowledge and thank you for  
your letter of July 5, 1972 giving a nil report,  
in triplicate, of work carried out during 1971  
under Exploration Permit HK23/68.

Yours very truly,

A handwritten signature in cursive script, appearing to read "E.M. Nolan".

E.M. Nolan,  
Senior Administrative Officer.

/em

c.c. Mr. G.R. Guillet,  
Ontario Department of Mines (with copy of report)

c/o Wills, Bickle &  
Company Limited  
XXXXXXXXXXXXXXXXXXXX

Toronto-Dominion Centre  
Box 32  
XXXXXXXXXXXXXXXXXXXX

CONFIDENTIAL

July 5, 1972.

E. M. Nolan, Esq.,  
Senior Administrative  
Officer,  
Atomic Energy Control Board,  
P. O. Box 1046,  
OTTAWA, Ontario.

Dear Mr. Nolan:

Re: Acme Gas & Oil Co., Limited  
File No. 22-A-40=

---

Acme did not carry out any work in 1971 on its claims near Agnew Lake, Ontario, but wishes to retain its exploration permit as further exploration work may be carried out on the above property at a later date.

Yours sincerely,

JLCJ/11h

J. L. C. Jenner,  
President.

ATOMIC ENERGY CONTROL BOARD

P.O. BOX 1045

OTTAWA, CANADA  
K1P 5S9



~~RESTRICTED~~  
REGISTERED  
COMMISSION DE  
CONTRÔLE DE L'ÉNERGIE ATOMIQUE

CASE POSTALE 1045

OTTAWA, CANADA  
K1P 5 S9

FILE NO. 22-A-40  
DOSSIER

October 25, 1971

Mr. J.L.C. Jenner,  
Wills, Bickle & Company Limited Investments,  
Box 32, Toronto-Dominion Centre,  
Toronto 1, Ontario.

Dear Sir:

This will acknowledge and thank you for your letter dated October 18, 1971 giving a Nil report of work carried out during 1970 by Acme Gas and Oil Company Limited under Exploration Permit MX23/68.

Since no work was performed during 1970, would you please advise whether Exploration Permit MX23/68 should now be revoked.

Yours very truly,

E. M. Nolan,  
Senior Administrative Officer.

/emm

c.c. Mr. G.R. Guillet,  
Ontario Department of Mines (with copy of report)

WILLS, BICKLE & COMPANY  
LIMITED  
INVESTMENTS

22-7-40

E NOLAN

CONFIDENTIAL

PRESIDENT  
ALASTAIR STEVENSON  
EXECUTIVE VICE-PRESIDENT  
PETER S. GOODERHAM

VICE-PRESIDENTS  
J. BARRY CURTIS  
GEORGE OLLERENSHAW  
CARLETON R. SLIPP

EDWIN W. AUSTIN  
CHARLES F. AYERS  
DAVID H. BUTTERFIELD  
JEREMY M. COLMAN  
ROBERT E. JERRIS  
ALBERT LAUBER  
RICHARD A. G. ROBINSON

MEMBERS  
THE TORONTO STOCK EXCHANGE  
THE INVESTMENT DEALERS ASSOCIATION OF CANADA  
BOX 42 TORONTO DOMINION CENTRE  
TORONTO 1

CABLE ADDRESS  
WILBRICO  
TELEX 02 2316  
TOR 364 3081  
MTL 851 8039

October 18, 1971.

Mr. E. M. Nolan,  
Senior Administrative Officer,  
Atomic Energy Control Board,  
P. O. Box 1046,  
OTTAWA, Canada.

Dear Sir:

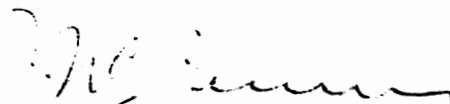
Re: Acme Gas and Oil Company Limited,  
File Number 22-A-40

I am president of the above company and your letter of July 20, addressed to Mr. Pigulski, has just come to my attention.

I would advise that in the year 1970 the above company carried out no work on Exploration Permit MX23/68.

I trust the above is the information you require.

Yours very truly,



J. L. C. Jenner.

JLCJ/11h

AK  
0030

Atomic Energy Commission de contrôle  
Control Board de l'énergie atomique  
Directorate of Licensing  
Safeguards & Nuclear Materials  
Licensing Division

*MMA P*  
*22-A-40*

Your file Votre référence

Our file Notre référence

22-A-40

January 17, 1977

Acme Gas and Oil Ltd.  
601 - 330 Bay Street  
Toronto, Ontario  
M5H 2S8

Attention: Mr. J. L. C. Jenner  
President

Dear Mr. Jenner:

With reference to our telephone conversation of January 6, 1977, as no work has been done on the property listed under Exploration Permit MX 23/68 for the past three years, and no further work is planned at this time, we have revoked your permit as requested. Enclosed is the original and a copy of this revocation.

Once you plan to resume work on these or other properties, please contact the Atomic Energy Control Board to determine the requirements for an exploration permit at that time.

If we can be of any further assistance, please do not hesitate to call.

Yours sincerely,

*N. S. Blackman*

Mrs. N. S. Blackman

:sb  
Encs.

cc: Geological Survey of Canada  
Ontario Division of Mines  
Ministry of Natural Resources

P.O. Box 1046  
Ottawa, Canada  
K1P 5S9

C.P. 1046  
Ottawa, Canada  
K1P 5S9





Atomic Energy  
Control Board  
Directorate of Licensing

Commission de contrôle  
de l'énergie atomique

Your file    votre référence

Our file    Notre référence

22-A-40

January 17, 1977

EXPLORATION PERMIT MX 23/68

REVOCATION

Acme Gas and Oil Ltd.  
601 - 330 Bay Street  
Toronto, Ontario  
M5H 2S8

Exploration Permit MX 23/68 issued to Acme  
Gas and Oil Ltd. on 23 May, 1968 is hereby revoked.

ATOMIC ENERGY CONTROL BOARD

By

Chief

Safeguards & Nuclear Materials Licensing  
Division

ACME GAS AND OIL CO. - AECB

D.D.H.

UNLOGGED -	68-3	:	ABANDONED BEFORE COMPL.
	68-4	:	NOT DRILLED
	68-5	:	NO SAMPLES TAKEN
	68-8	:	—
	68-9	:	—
	68-10	:	—
	68-11	:	—
	68-12	:	—
	69-13	:	—
	69-14	:	—
	69-15	:	NO SAMPLES TAKEN

NO RECORD OF THE ABOVE HOLES (IN LOGS)

# ACME GAS & OIL CO., LIMITED

1705 VICTORY BUILDING

80 RICHMOND ST. WEST



*The Prospect of Today  
is the Hope of To-morrow*

TORONTO 1, CANADA


## Acme to Drill Uranium Showing

Acme Gas & Oil Co., Limited has obtained an option to acquire 1,200 acres in Drury Township, Agnew Lake Area, of Ontario, situated about four miles to the east of the Kerr Addison - Quebec Mattagami property. These claims straddle the same quartzite formation that contains the Kerr Addison - Quebec Mattagami orebody.

Preliminary work on the property has turned up a number of uranium occurrences in the quartz pebble conglomerate and several shallow trenches were opened up with a plugger drill. One trench returned values of 1.56 lbs. U<sub>3</sub>O<sub>8</sub> per ton over a width of 20 ft. and lesser values were obtained in other trenches. As some pyrite was associated with the uranium, it is believed that surface leaching may have occurred and lowered the uranium content.

The Company is moving a drill into the property to drill a series of holes.

April 11th, 1967.

  
J. L. C. Jenner,  
Vice-President.

Acme Gas and Oil

25/2/76

Material on file in Toronto:

Stratigraphic Fence Diagram - Drury Joint Venture 20/11/69

Geology - Drury Joint Venture 3/12/69

Copy of Kerr-Addison Map 2142 Nov 7/68  
surface geology.

COPY

NEITHER THE ONTARIO SECURITIES COMMISSION NOR THE TORONTO STOCK EXCHANGE HAS IN ANY WAY PASSED UPON THE MERITS OF THE SECURITIES OFFERED HEREUNDER AND ANY REPRESENTATION TO THE CONTRARY IS AN OFFENCE.

---

STATEMENT OF MATERIAL FACTS

ACME GAS & OIL CO., LIMITED

The shares being offered hereunder are not offered to non-residents of Canada or to residents of any jurisdiction in Canada where such shares may not be lawfully offered for sale and purchase orders will not be accepted from any person or his agent who appears to be or is believed to be a non-resident of Canada or a resident of such a jurisdiction in Canada. For particulars of these offerings see Items 1, 2, 3 and 9 hereof.

NEW OFFERING

OFFERING OF A SUFFICIENT NUMBER OF TREASURY SHARES WITHOUT PAR VALUE (BUT IN ANY EVENT NOT EXCEEDING 513,000 SHARES) IN THE CAPITAL OF ACME GAS & OIL CO., LIMITED TO NET THE COMPANY A MINIMUM OF \$100,000 AND AT A PRICE OF NOT LESS THAN 20 1/2¢ PER SHARE.

Doherty, Roadhouse & McCuaig, Simpson Tower, Toronto, Ontario, as agent for Acme Gas & Oil Co., Limited (the "Company") is offering these shares by means of a fixed price offering through the facilities of The Toronto Stock Exchange at such price as shall be determined by the Company with the approval of The Toronto Stock Exchange. The proceeds of the sale of these shares less normal brokerage commission will accrue to the benefit of the Company's treasury.

This offering will take place on a date to be specified by the Company in consultation with The Toronto Stock Exchange, which date shall be announced by the said Exchange within a period not being less than five business days and not more than twenty-one business days after the date of the mailing of this Statement of Material Facts by the Company. On said date between the hours of 9:00 a.m. and 9:30 a.m., a book will be maintained on the Floor of The Toronto Stock Exchange to receive purchase orders. Under the terms of this offering, Doherty, Roadhouse & McCuaig may reserve no more than 75% of the offered shares for its clients.

This offering is subject to sufficient purchase orders being received to net the Company a minimum of \$100,000. The offering will be withdrawn by the Company if sufficient purchase orders are not received to net the Company \$100,000. The Toronto Stock Exchange may cancel this offering if, in its opinion, bona fide public distribution has not been affected.

SECONDARY OFFERING

OFFERING OF 241,617 PREVIOUSLY ISSUED SHARES WITHOUT PAR VALUE BY SELLING SHAREHOLDERS.

In addition to the shares being offered as aforesaid, Doherty, Roadhouse & McCuaig, acting on behalf of James L. C. Jenner, the President of the Company, V. Noble Harbinson, Dale Corman, Robert Prittie, Wilmot L. Matthews, Bud Boyer, Herbert M. Stanley, Robert Joseph McGowan, Messrs. Lang, Michener, Cranston, Farquharson & Wright and Bradley Bros. Diamond Drilling (collectively called the "Selling Shareholders"), is offering through the facilities of The Toronto Stock Exchange by means of an open market distribution all or any part of 241,617 shares of the Company owned by the Selling Shareholders. For particulars of this offering, see Items 1, 2, 3 and 9 hereof. This offering is restricted

Division of Ontario) with a net area of about 348 square miles after deducting areas of claims and leases held by others. These Townships have been withdrawn from staking until November 30th, 1971. Consideration for the option was \$12,500 paid to A.C.R. The area held under option shall be reduced on or before November 30th, 1971 by the Company giving notice as to the number of 40-acre units or claims which it wishes to hold under option until November 30th, 1972. In order to maintain the option in good standing, it is necessary to expend on exploration by November 30th, 1971, \$50,000 and a further amount by November 30th, 1972 of \$50,000 or a greater sum calculated by multiplying \$100 by the number of 40-acre units which the Company elects on or before November 30th, 1971 to hold under option. Under the terms of an agreement No. 2 dated October 1st, 1966 between A.C.R. and B. W. Lang (amended by letter dated May 9th, 1968, and assigned to the Company and further amended by letter agreement dated September 25th, 1969) the Company holds a 5-year plus working option on 2 Townships (being Townships 26 in Range 26 and No. 27 in Range 25, in the District of Algoma, Ontario) with a net area of about 67 square miles after deducting areas of claims and leases held by others. These Townships have been withdrawn from staking until November 30th, 1971. Consideration paid for the option was \$5,500 paid to A.C.R. The area held under option shall be reduced on or before November 30th, 1971, by giving notice as to the number of 40-acre units or claims which the Company wishes to hold under option until November 30th, 1972. In order to maintain the option in good standing, it is necessary to expend on exploration \$35,000 by September 30th, 1968 which amount was expended by September 30th, 1968 and a further amount by November 30th, 1972 of \$40,000, or a greater sum calculated by multiplying \$100 by the number of 40-acre units which the Company elects on or before November 30th, 1971 to hold under option. For the purpose of determining whether minimum expenditures have been made from time to time it is intended to interpret the two agreements as one by adding together the minimum expenditures required to keep the two options in good standing. The Company may incorporate a new company or companies, from time to time after the Company has expended \$275,000 on the exploration of the 12 Townships, on or before November 30th, 1972 to acquire such of the 40-acre units or claims then held under option as the Company may decide. A.C.R. will issue for the 40-acre units acquired by each new company, a lease for 21 years renewable from time to time, for 21 years if the property is in commercial production but if commercial production is not commenced within 10 years the lease will be transferred back to A.C.R. Vendor's shares shall be issued by each new company and shall be for a number in accordance with the Ontario Securities Commission regulations (10% free and 90% escrowed) of which 25% shall be issued to A.C.R. and 75% to the Company. A.C.R. shall have the right to subscribe from time to time up to a maximum of 25% of the financing of any new company. A.C.R. shall nominate one of the five directors of each company. The Company (and the new companies) agree to ship all freight on A.C.R. railroad and steamships providing rates and services are competitive with others. An agreement made as of the 15th day of August, 1969 between the Company and Occidental Corporation of Canada ("Occidental") whereby Occidental acquired the right to carry on the exploration and development of the Company's property in Drury Township, Ontario, was terminated as of February 16th, 1970, after an expenditure of \$27,092.00 (U.S.). The Company received from Occidental \$7,500.00 (Can.) cash in settlement of the Company's rights under the agreement. The Company retained a one hundred percent (100%) interest in 67 claims and a patented parcel of 150 acres in Drury Township. An agreement dated the 30th day of April, 1969, between the Company and McIntyre Porcupine Mines Limited ("McIntyre") whereby McIntyre acquired the right to carry on exploration and development of the Company's property in Tully Township, Ontario, was terminated as of April 30th, 1970, after McIntyre had performed geophysical surveying and diamond drilling. The Company has a one hundred percent (100%) interest in its properties in Tully Township, Ontario. Under an agreement dated the 30th day of September, 1969, between the Company, Jorex Limited, Siscoe Mines Limited, Yellowknife Mines Limited, Midcon Oil & Gas Limited, Inter-Rock Oil Co. of Canada Limited and Mespi Mines Limited, the parties agreed to explore and develop the properties optioned to the Company from A.C.R. under the agreements described above. An aggregate of \$12,391.00 was expended by the parties with the exception

