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REPORT TO REACTOR URANIUM MINES LIMITED ON A GEOLOGICAL, GEOPHYSICAL AND DIAMOND DRILLING PROGRAM PORTOR TOWNSHIP SUDBURY DISTRICT, ONTATIO

Toronto, Ontario
December 31, 1968

P. W. Green, M.Sc.A., F.G.A.C.
Project Geologist
Watts, Griffis and McOuat Limited

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SUMMARY

Reactor Uranium Mines Limited holds 26 claims in two groups of 5 and 21 contiguous, unpatented mineral claims each, located in the southeastern corner of Porter Township, Sudbury Mining District, Ontario. These claims are under extension to December 31, 1968.

The Agnew Lake area is of general economic interest since the geology is similar to the Elliot Lake area. Chalcopyrite occurrences have also been known in the area for years. The claim groups lie between the properties of Spanish River Mines (copper) and Agnew Lake Mines (uranium).

The consolidated rocks underlying the claim groups are Precambrian in age. A sedimentary series composed mainly of feldspathic quartzites, argillaceous greywackes and minor conglomerates has been intruded by gabbros and diorites.

Uranium is associated with a conglomerate on claim S 138101 of group I [illegible] Companys' claims. Trenching and channel sampling were done on this showing by previous owners with inconclusive results.

Reactor Uranium Mines Limited carried out line cutting and reconnaissance scintillometer and magnetometer surveys on both claim groups. An E.M. survey was carried out on group II. Following the detailed geological mapping on group I, a program consisting of diamond drilling and detailed scintillometer work was carried out.

A total of 23.9 miles of picket line were cut on the claim groups. The regional structural trends are poorly defined by the magnetometer results on both groups. Three areas with insignificant though slightly above background radioactivity were located on the group II claims. The E.M. survey of group II located two weak conductors.

A diamond drilling program, consisting of 8 AXT holes for a total footage of 1,674 feet, was designed to test the uranium showing and explore for additional radioactive horizons. The best intersections are as follows: 2.08 pounds U_3O_8 over 7.0 feet from hole RUM-5, 2.08 pounds U_3O_8 over 2.9 feet from RUM-1 and 1.16 pounds U_3O_8 over 3.8 feet from RUM-3, all from the main showing. No new uranium-bearing horizons were discovered in the exploratory drilling or scintillometer surveys.

CONCLUSIONS AND RECOMMENDATIONS

No geophysical anomalies warranting diamond drilling were located on either claim group.

Diamond drilling of the Uranium showing on group I showed the geology to be very complex. Uranium exists in ore-grade quantities and in favourable rock types but both "quantities" and "types" are too erratic and complex for correlation or interpretation based on present data.

It is, therefore, recommended that no further work be done at this time. A reassessment of the uranium showing may be warranted, pending developments, on adjoining claim groups which might clarify the structural geology.

Respectfully submitted,

WATTS, GRIFFIS AND McOUAT LIMITED

Peter W Green.

Toronto, Ontario.
December 31, 1968.

P. W. Green, M.Sc.A., F.G.A.C.
Project Geologist

INTRODUCTION

This report describes the diamond drilling and exploration program carried out during 1968 for Reactor Uranium Mines Limited on their Porter Township claim groups, Sudbury District, Ontario.

The writer was on the property from November 3rd to December 11th, 1968 inclusive, during which time he directly supervised the diamond drilling program and personally examined the property and all the drill core.

The earlier geophysical program involving line cutting, magnetometer, electromagnetic, scintillometer surveys, done by Watts, Griffis and McOuat Limited, was directed by E. A. Tagseth, P. Eng., with whom the writer has had personal communication.

Full references are found in the bibliography. Another major source of information is "Geology of Porter Township" by R. M. Ginn, Ontario Department of Mines, Geological Report No. 5, 1961.

The writer thanks Mr. G. Whidden, Manager, and the staff of Spanish River Mines for 'barge transportation' across Agnew Lake during freeze-up.

PROPERTY AND LOCATION

The property of Reactor Uranium Mines Limited, located in Porter Township, Sudbury Mining District, Ontario, consists of two groups of 21 and 5 contiguous, unpatented, mineral claims more fully described as follows:

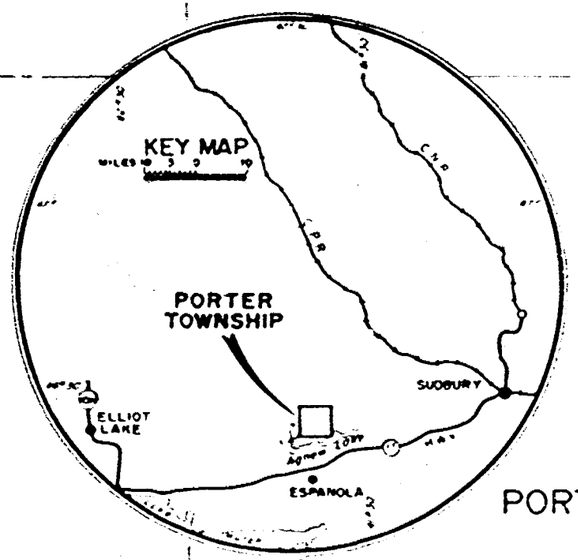
Claim No.	Lot	Concession	Date Recorded	Remarks
Group I				
S137891	NE 1/4, S 1/2, Lot 4	I	September 2, 1966	MRO, extension until December 31, 1968
S138101	SE 1/4, S 1/2, Lot 2	I	"	MRO
S138102	SW 1/4, S 1/2, Lot 2	I	"	MRO
S138103	SE 1/4, S 1/2, Lot 1	I	"	MRO
S138104	SW 1/4, S 1/2, Lot 1	I	"	MRO

Claim No.	Lot	Concession	Date Recorded	Remarks
Group II				
S 137768	SW 1/4, N 1/2, Lot 4	II	August 2, 1966	Extension to December 31, 1968.
S 137769	SE 1/4, N 1/2, Lot 5	II	"	"
S 137770	SW 1/4, N 1/2, Lot 5	II	"	"
S 137771	SE 1/4, N 1/2, Lot 6	II	"	"
S 137772	NE 1/4, S 1/2, Lot 6	II	"	"
S 137773	SE 1/4. S 1/2, Lot 6	II	"	"
S 137800	NE 1/4, S 1/2, Lot 4	II	"	"
S 137801	NW 1/4, S 1/2, Lot 4	II	"	"
S 137802	NE 1/4, S 1/2, Lot 5	II	"	"
S 137803	SE 1/4, S 1/2, Lot 5	II	"	"
S 137804	SW 1/4, S 1/2, Lot 4	II	"	"
S 137805	NE 1/4, N 1/2, Lot 5	I	"	"
S 137806	NW 1/4, S 1/2, Lot 5	II	"	"
S 137807	SW 1/4, S 1/2, Lot 5	II	"	"
S 137875	SE 1/4, S 1/2, Lot 4	I	"	"
S 137876	NE 1/4, S 1/2, Lot 4	I	"	"
S 137877	SE 1/4, N 1/2, Lot 4	I	"	"
S 137878	SW 1/4, N 1/2, Lot 4	I	"	"
S 137879	NE 1/4, N 1/2, Lot 4	I	"	"
S 137880	NW 1/4, N 1/2, Lot 4	I	"	"
S 137881	SE 1/4, S 1/2, Lot 4	II	"	"

The five claims in group I are subject to a Water Power Lease (wherein the land could be flooded) in addition to the regular 400-foot surface rights that the Department of Lands and Forests retains along all lakes and rivers.

Inco, Kerr-Addison, Broulan Reef, Spanish River Mines, and others hold staked ground adjoining all sides of the claim groups.

Assessment credit has been applied for and if accepted will hold the 5 claims of group I in good standing until September 1, 1971.



PORTER TWP.

STAKED

AGNEW LAKE MINES

KERR ADDISON

INCO

STAKED

HYMAN TWP.

DRURY TWP.

KERR ADDISON

STAKED

REACTOR

KERR ADDISON

INCO

REACTOR

Agnew Lake

Spanish River

STAKED

BROULAN REEF

STAKED

STAKED

Agnew Lake

DENISON

BROULAN REEF

DENISON

CONS MONTCALM

BROULAN REEF

NAIRN TWP

Hwy 17

C.P.R.

BALDWIN TWP.

LEGEND

PRECAMBRIAN

4 Gabbroic Intrusives

3 Sediments & Metasediments, Huronian & Older

2 Granitic Intrusives

1 Volcanics, basic

△ Known occurrences of uraniferous quartz pebble conglomerate

NOTE: Geology after J.E. Thomson, R.M. Ginn & K.D. Card

WATTS, GRIFFIS & McQUAT

REACTOR URANIUM MINE

LOCATION

Showing

Properties, Generalized G

Uranium Occurren

AGNEW LAKE AR

ONTARIO

SCALE: 1 Inch = 1 Mile

Application for extension to August 1, 1969, has been made on 3 claims in group II. S 137800, S 137805 and S 137880. Assessment credit has been applied for on the remainder of the group II claims which if accepted will hold the 18 claims until August 1, 1969. By August 1, 1969, 100 days assessment credit on each of the 3 claims and 33 days credit on each of the 18 claims must be submitted or the claims will be forfeited.

Porter Township is located on the north side of Agnew Lake which is about mid-way between Sudbury and Elliot Lake.

The uranium showing on claim S 138101 is less than three miles from the chalcopyrite deposit of Spanish River Mines and about six miles from the uranium deposit of Agnew Lake Mines.

ACCESS, CLIMATE, TOPOGRAPHY

The claims were reached by driving six miles on township roads, north from McKerrow (on highway No. 17 about 40 miles west of Sudbury) to Espanola Bay on Agnew Lake and then by small boat onto the claims of group I.

Spanish River Mines Limited maintained a 700-foot long ice-free channel across Agnew Lake using a compressed air bubbler system, to continue trucking development muck to their mill at Kidd Copper uninhibited by the ice. During freeze-up, November 30th to December 9th inclusive, this facility provided the only means of access.

Extremes of temperature for the period November 3rd to December 11th, 1968, are estimated to have been +40° F to 0° F. The first snow storm began on the night of November 9th. About a foot of hard-packed snow lay on the ground at the end of the diamond drilling program.

Prominent ridges which rise up to 200 feet above the general level of the area are generally underlain by quartzites. Lower, more gentle hills are generally underlain by basic intrusives. Large areas of moraine occur in the area. Beaver dams have flooded much of the low land on the group II claims preventing complete ground geophysical coverage in the summer. Agnew Lake covers roughly 30% of the group I claim area.

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GENERAL GEOLOGY

All the consolidated rocks in the Agnew Lake area are Precambrian in age.

The oldest rocks, considered to be Archean in age, are part of a volcanic complex including interbedded conglomerates, quartzites and pelitic sediments.

An assemblage of sedimentary rocks, believed to lie unconformably on the volcanic complex, has been classified as Huronian (Proterozoic). This assemblage, mainly of quartzites, greywackes and minor conglomerates is similar to the stratigraphy at Elliot Lake. In the Agnew Lake area, however, folding and faulting have resulted in steep dips and overturned beds. This sedimentary assemblage has been metamorposed in general, to a lesser degree than the underlying volcanic sequence.

Granitic and basic intrusions occur in the area.

Uranium occurrences have been found in the quartz pebble conglomerates at or near the sedimentary-volcanic contact.

Base metal sulphides have been found in fault zones and associated basic intrusives.

HISTORY AND PREVIOUS WORK

Charred stumps attest to the logging operations that were carried out in the Agnew Lake area early in the twentieth century.

Copper and nickel mineralization have been known in the Agnew Lake area for years.

Collins of the Geological Survey of Canada mapped the area on a scale of 1 inch to 1 mile and his map was published in 1938.

The Porter-Baldwin Township line was resurveyed in 1949-50. The rest of the Porter Township boundary was surveyed in the winter of 1955-56, and cross lines were run. The subdivision of Porter Township has been annulled except in the southeast and southwest corners. During 1968 the Porter-Baldwin Township line was recut.

The Ontario Department of Mines, in carrying out detailed township mapping in areas of economic interest has published geological maps of Baldwin, Porter, and Hyman Townships in 1952, 1961 and 1965 respectively.

A crash program by the government of the U.S.A. to stockpile uranium minerals for nuclear purposes in the early 1950's, set off the Blind River staking rush which led to the opening of the Elliot Lake area mines.

Several uranium-bearing occurrences were located in the Agnew Lake area by Chemical Research Corporation (Canada) Limited in 1953 and 1954. One of these occurs on claim S 138101 of Reactor Uranium Mines Limited; the others are beyond the limits of the Companys' claim groups. The work program of Chemical Research Corporation (Canada) Limited involved line cutting, mapping, prospecting with a geiger counter checking with a scintillometer, trenching and channel sampling. File No. 63A-200 of the Ontario Department of Mines assessment records in Toronto, contains partial results of this work. The claims were allowed to lapse.

Claim groups I and II were staked in 1966 for Can-New-Mex Uranium Mines Limited, and acquired by Reactor Uranium Mines Limited during 1968.

WORK PROGRAM

The work program on each claim group involved line cutting and reconnaissance scintillometer and magnetometer surveys. An E.M. survey was carried out on group II. The geology of group II was checked by reconnaissance methods. No new mapping was done. The geology of group I, however, was mapped in detail.

During the diamond drilling program, much detailed scintillometer work was done on outcrop and overburden of the group I claims to determine for each rock type, the background, and if possible, what constituted significant readings. As examples, the background at the campsite varied from .004 to .012 milliroentgens per hour and readings up to .03 to .04 milliroentgens per hour on and near the showing were meaningless due to the radioactive environment.

The diamond drilling was done by Continental Diamond Drilling Company Limited of Rouyn, Quebec, who drilled 8 AXT holes (1 3/16-inch core diameter) for a total footage of 1,674 feet, from November 3rd to December 11th, 1968. All the core is to be found at the campsite, approximately 13 + 50 E, 10 + 50 N on group I.

The core was checked in a standard manner with a scintillometer. The intensity of the radioactivity in a section was the main determining factor in sample length. The core was split and the samples shipped in specially constructed wooden boxes to Technical Service Laboratories where they were analyzed for U_3O_8 and ThO_2 by radiometric methods. A few samples were checked by chemical methods.

A tape and brunton survey tied in the trenches and diamond drill holes in the area of the showing and gave elevations, with the datum plane being the high water mark of Agnew Lake.

Two previously located E.M. conductors on group II were detailed during the diamond drill program. Neither warrants diamond drilling.

GROUP I CLAIMS

Property and Economic Geology

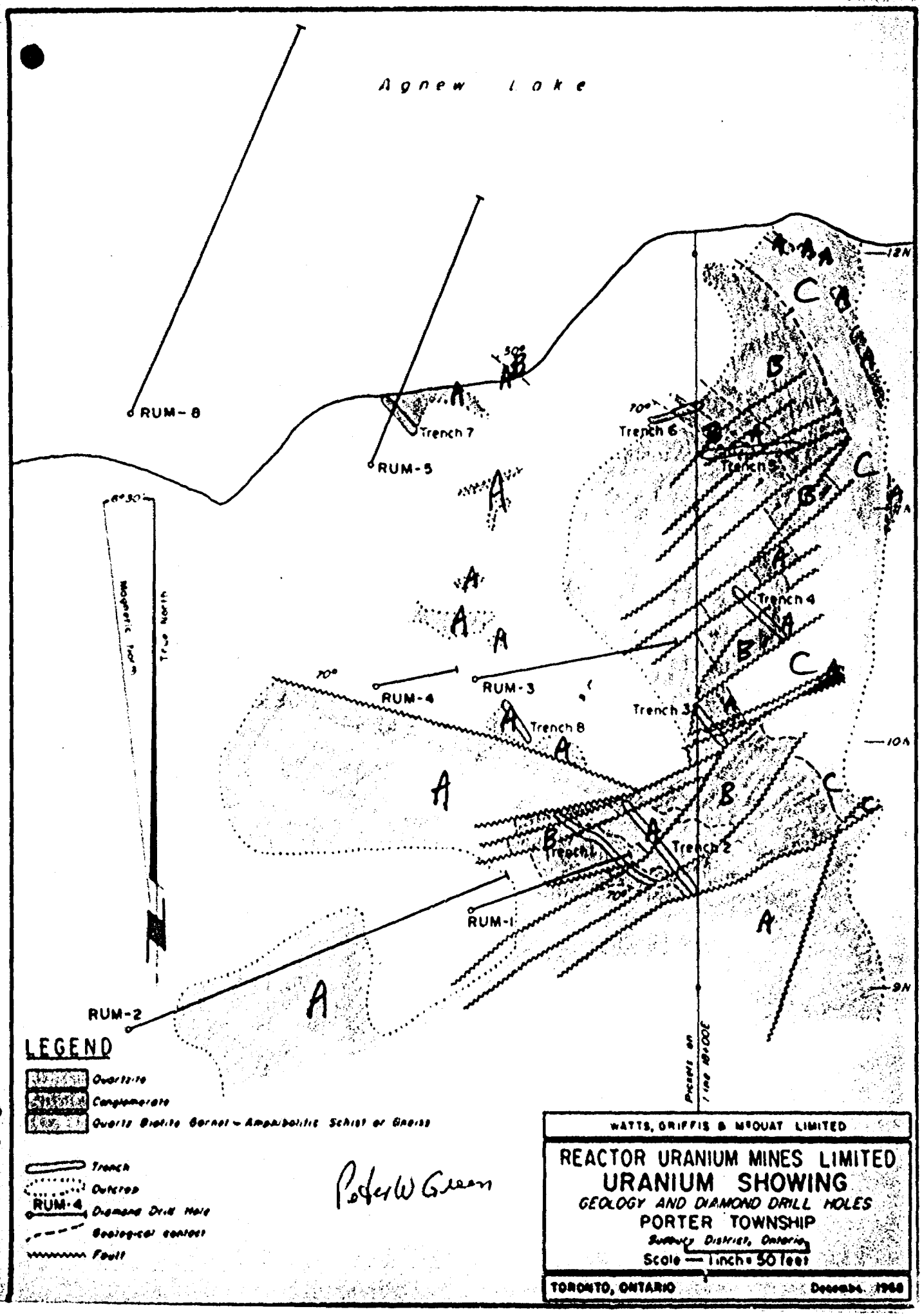
The claims were mapped on a scale of 1 inch to 50 feet, later plotted at 1 inch equals 100 feet.

The basic intrusive rocks are massive; the rest are schistose.

Agnew Lake and glacial overburden cover most of the eastern three claims. A low hill composed of massive to schistose amphibolite, pyroxene-amphibole rock and gabbro (possibly all phases of a multiple intrusion) and quartzite occurs in the southwest corner of claim S 138104.

The quartzite ridge which occurs on claim S 138101 is about 90 feet above the datum line. The uranium showing at the north end of this ridge was tested with six drill holes which returned inconclusive results.

The showing consists of a narrow conglomerate horizon with associated uranium values, separated from an underlying polymictic conglomerate by a few feet of quartzite. Overlying this "unit" is the quartzite mass that forms the spine of the ridge and beneath this unit is an assemblage of quartz-biotite-amphibolite-garnet schists, gneisses and quartzites. Trenches 5 and 6 show a similar rock sequence.



Peter W Green

The mass of quartzites above the conglomerate are fine to medium-grained, grey to grey buff in colour, variably sericitic, feldspathic and weather white. Scattered insignificant, short, narrow lenses continuing radioactivity were located in these quartzites as well as occasional areas with patchy "granitic alteration".

The conglomerate of the showing and in trenches 5 and 6 contains subrounded quartz pebbles and small, poorly defined altered basic rock fragments in a matrix that varies from relatively siliceous to quartz-mica-amphibole-garnet-pyrrhotite schist. This matrix, which contains the uranium, is similar to the matrix in the polymictic conglomerate and the underlying schists and was probably derived from the same source as, or from the weathering of, these last two rock types.

Gummite, a weathering product of uranium minerals, was found along a few fractures or schistosity planes in the southern end of trench 2. No other uranium or thorium minerals were positively identified.

Beneath the uranium-associated conglomerate occurs a narrow quartzite band which in places is, very dark grey to black but otherwise, is similar to the quartzites described above. Minor radioactivity is associated with this quartzite.

The polymictic conglomerate contains subrounded quartz pebbles, similar to the conglomerate above, quartzite pebbles, highly angular, schistose, basic rock fragments and rarely granitic or other acidic rock pebbles or boulders. The matrix is similar to the schist below or the conglomerate above. Practically no radioactivity was encountered in this horizon.

The contact between the polymictic conglomerate and the quartz-biotite-amphibolite-garnet schist is sharp where the matrix in the conglomerate is highly siliceous; otherwise it is gradational, since subrounded quartz fragments occur in the schist, some as pebbles, some related to the quartz stringers found in the area.

Quartzites within the schists are similar to the quartzites described above. Practically no radioactivity was detected in these quartzites and schists.

A regional northeasterly striking schistosity, that was superimposed on the rocks of the area created healed breccia zones within the quartzites and masked primary sedimentary features except rock contacts.

The Baldy Fault system as shown on the "Geology of Porter Township" map by R. M. Ginn, is parallel to the regional schistosity. The accompanying Uranium Showing map illustrates the complex faulting caused by this regional schistosity and affected by the gabbro intrusion which outcrops less than 100 feet to the east. This map also shows that the uranium-associated conglomerate could not be traced beyond the immediate area of trenches 1 and 2, and that the uraniferous upper conglomerate shown in trenches 5 and 6 is not necessarily the same conglomerate as is found in trenches 1 and 2. The conglomerate-quartzite contact dips at 70° to the southwest at the southern end of trench 1 and in trenches 5 and 6, and at 50° to the northeast in an outcrop, which is exposed only at very low water level, between trenches 6 and 7. Folding and drag folding effects on the structure have been masked by the faulting and schistosity. Lineation, most noticeably shown by the quartz pebbles, occurs in the plane of the schistosity with dips varying between over 80° to less than 70° in a northeasterly direction.

The greatest fault movement occurs at the southern end of the showing. Concentrations of uranium can occur in open fractures or schistosity associated with such areas of faulting, or folding.

A quartzite ridge which has been intruded by gabbro, occurs on claim S 138102 and is about 200 feet above the datum line. In the contact zone between the gabbro and the quartzite are small rounded slightly elongated fragments of quartz and quartzite in a dark quartz-biotite-amphibolite schist. This contact breccia highly resembles conglomerates in the area and on this ridge, the two units were mapped as one. Large blocks of quartzite, not shown on the geology map, occur in the contact breccia and in the gabbro and have the appearance of roof pendants.

Geophysical Results

Approximately 9.1 miles of picket line were cut. A Sharpe MF-1 magnetometer was used to read 534 stations. The readings barely reflect the structural geology. A relatively large negative reading of -1,320 gammas at 15 + 00 E, 5 + 00 N is probably caused by a concentration of pyrrhotite, common in the area.

A Precision De Luxe Scintillator was used for 260 readings on the reconnaissance survey. A detailed scintillometer survey was carried out during the diamond drilling program to determine what constituted background and significant readings for each rock type. Several readings were taken on small areas outcrop or overburden and a range of readings established. Except for the showing and the main quartzites

the background for the basic intrustives, conglomerates, contact breccias most of the overburden, the campsite, where the core was logged, the schists and lower quartzites, was .004 to .012 milliroentgens per hour. The main quartzites had a background range of .010 to .025 milliroentgens per hour with minor scattered insignificant lenses, up to 20 feet long by 2 inches wide with readings up to .080 milliroentgens per hour.

Readings taken on or close to the showing were generally higher than the range of readings just mentioned. Many specimens with readings of .03 to .04 milliroentgens per hour when removed from the showing area failed to show signs of radioactivity. The highest scintillometer reading of 2.6 milliroentgens per hour occurred in the southern end of trench 2 on a fracture or plane of schistosity containing gummite. The greatest fault movement is at the southern end of the showing area. The uranium concentrations of the showing may be due to such faulting or folding. Six drill holes were put down to test the showing. The diamond drilling results which are inconclusive are discussed separately. Radioactivity in the overburden 30 feet east of the collar of RUM-3 can be explained by thathole.

A conglomerate exposed in a trench at about 19 + 40 E, 7 + 50 N is erratically radioactive. RUM-6 was drilled under this trench with negative results.

No new radioactive zones were located by the scintillometer survey.

Diamond Drilling Results

Eight AXT (1 3/16-inch core diameter) holes were drilled between November 3rd and December 11th, 1968, for a total footage of 1,674 feet.

Six of these holes RUM-1 to -5 inclusive and RUM-8 were drilled to test the showing. The others, RUM-6 and -7, were cross-sectional exploratory holes.

RUM-1 was drilled to test the structure approximately 50 feet beneath trenches 1 and 2. As shown in the section two intersections occur. The first, 1.9 pounds U_3O_8 over 1.0 feet, occurring in a conglomerate is assumed to correspond to values in trench 1. The other intersection, 2.08 pounds over 2.6 feet occurs in the adjoining quartzite which is assumed to be the same one as in trenches 1 and 2.

RUM-2 was drilled under RUM-1 to intersect the structure about 150 feet beneath the surface. An assay of 2.4 pounds U_3O_8 over 0.3 feet, as shown on the section occurs on the edge of a fault block containing the conglomerate.

RUM-3 was drilled to intersect the structure 100 feet to the north of RUM-1 and about 50 feet vertically beneath trench 4. As shown on section, the conglomerate was intersected close to the collar, and an intersection of 1.16 pounds U_3O_8 over 3.8 feet obtained. Radioactivity detected in the overburden about 30 feet east of the collar can be explained by the intersection. RUM-4 was drilled on-line with RUM-3 to check the intersection. The drill hole remained in quartzite throughout its length. As shown on the same section as RUM-3 no significant values were obtained.

RUM-5 was drilled to test for a west extension of the conglomerate found in trench 6 and to check for radioacitvity. The best intersection of the diamond drilling program occurs in this hole where 2.08 pounds U_3O_8 over 7.0 feet was obtained in the conglomerate. The structure shown in the section is schematic and the core length, 7.0 feet, may bear no close relationship to the true width.

RUM-8, the last hole in the drill program, was put down to check the westward extension of the uranium-bearing conglomerate found in RUM-5 but on a parallel section, 100 feet to the west. As shown in the drill section a non-radioactive conglomerate was intersected.

The results of drilling holes RUM-1 to -5 inclusive and RUM-8, have led to two hypotheses regarding the showing. The first is that a urniferous conglomerate horizon has been highly faulted as shown on the map and sections, and folded, with possible local enrichment through re-mobilization of uranium. Drill intersections would be explained by the drill hole cutting the appropriate fault block segment.

The second hypothesis is that the uranium is concentrated in fractures caused by, and associated with the faulting and these fractures occur mainly in the conglomerate at the conglomerate-quartzite contact. As in the first hypothesis, remobilization of uranium from the conglomerate horizon may have caused some local enrichment. Significant values would be explained, in this case, by the drill hole having cut a uranium-bearing schistose or fractured area. The writer believes there is more merit in the ideas of the second hypothesis than in the first.

RUM-6 and -7 were drilled as exploratory holes to cross-section an area, as shown on the map, in an attempt to locate the postulated fault extension of the showing. RUM-6 had the additional purpose of testing beneath a trench in which erratic radioactivity had been detected. No radioactivity was detected in either hole. A section of 7.45% Cu over 1.5 feet with 0.13 oz. Au and 0.95 oz. Ag, was intersected in quartz near the collar of RUM-6. The outcrop in the immediate area of the intersection showed no evidence of the mineralization obtained in the drill hole.

DIAMOND DRILLING SUMMARY

Hole No.	Co-ordinates	Bearing	Dip	Casing	Depth	Intersections
RUM-1	17 + 04 E 9 + 32 N	N 74 E	-46°	6 feet	103 feet	1.9 lbs. U_3O_8/1.0' 2.08 lbs. U_3O_8/2.8'
RUM-2	15 + 60 E 8 + 84 N	N 70 E	-48°	5 feet	255 feet	2.4 lbs. U_3O_8/0.3'
RUM-3	17 + 06 E 10 + 26 N	N 79 E	-45°	7 feet	120 feet	1.16 lbs. U_3O_8/3.8'
RUM-4	16 + 64 E 10 + 24 N	N 79 E	-69.5°	6 feet	103 feet	
RUM-5	16 + 63 E 11 + 14 N	N 24 E	-48°	8 feet	179 feet	2.08 lbs. U_3O_8/7.0'
RUM-6	19 + 02 E 8 + 23 N	S 20 E	-22.5°	4 feet	195 feet	7.45% Cu/1.5'
RUM-7	22 + 38 E 3 + 29 N	N 17 W	-30°	8 feet	475 feet	
RUM-8	15 + 64 E 11 + 35 N	N 23 E	-45.5°	65 feet	244 feet	
8 Holes		Totals		109 feet	1,674 feet	

GROUP II CLAIMS

Geological and Geophysical Results

Quartzite ridges rise from large areas of low land some of which has been further inundated by beaver dams on Hunter Creek.

Approximately 14.8 miles of picket lines were cut from 3 base lines, on this claim group.

The geology was checked in a reconnaissance fashion with the "Geology of Porter Township" map by R. M. Ginn. No significant differences were observed, and no new geology map was made.

A magnetometer survey was carried out with a Sharpe MF-1 magnetometer and 728 stations were read.

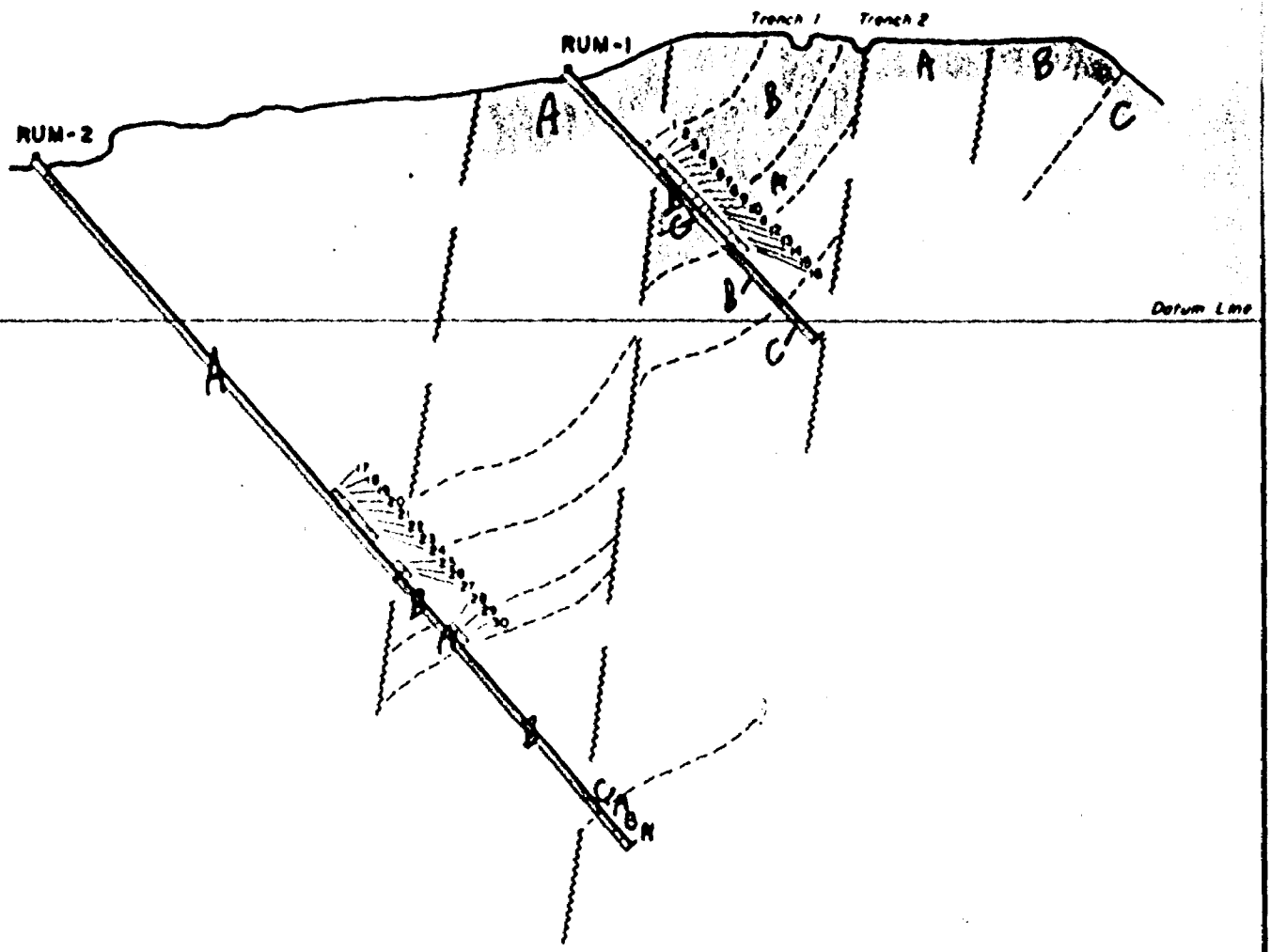
A few magnetic highs and lows occurring along the lines of the regional structural trends are probably caused by small concentrations of pyrrhotite, common in the area.

A De Luxe Scintillator made by Precision Instruments Limited was used in the reconnaissance scintillometer survey. Insignificant, but slightly above background radioactivity was recorded at three stations.

A Sharpe SE-250 was used in the E.M. survey in which 681 station readings were recorded. Two E.M. conductors were located, which when detailed, were considered insignificant.

APPENDIX 1

DIAMOND DRILL HOLE SECTIONS



Hole N°	Sample N°	% U_3O_8	% ThO_2	Length
RUM-1	1	<0.01	Nil	0.6'
	2	0.08	0.08	0.6'
	3	<0.01	Nil	2.9'
	4	0.095C	Nil	1.0'
	5	<0.01	Nil	1.3'
	6	<0.01	Nil	4.6'
	7	0.04	Nil	2.1'
	8	<0.01	Nil	3.2'
	9	0.02	Nil	3.0'
	10	<0.01	0.02	1.9'
	11	0.06	Nil	1.4'
	12	0.20C	Nil	1.5'
	13	Nil	0.02	5.7'
	14	<0.01	Nil	2.4'
	15	0.008C	Nil	1.9'
	16	0.01	Nil	2.4'
RUM-2	17	0.02	0.08	0.3'
	18	<0.01	Nil	1.4'
	19	0.09	0.16	0.5'
	20	<0.01	0.02	5.5'
	21	0.06	0.17	0.3'
	22	<0.01	Nil	6.6'
	23	0.05	0.1	0.4'
	24	Nil	0.01	3.0'
	25	0.02	0.01	3.0'
	26	0.12	0.05	0.3'
	27	0.01	Nil	1.7'
	28	<0.01	Nil	3.0'
	29	0.06	0.03	0.3'
	30	<0.01	Nil	3.7'

LEGEND

A — Quartzite
B — Conglomerate
C — Quartz Biotite Garnet-Amphibolitic Schist or Gneiss
Gabbro
LC — Lost Core

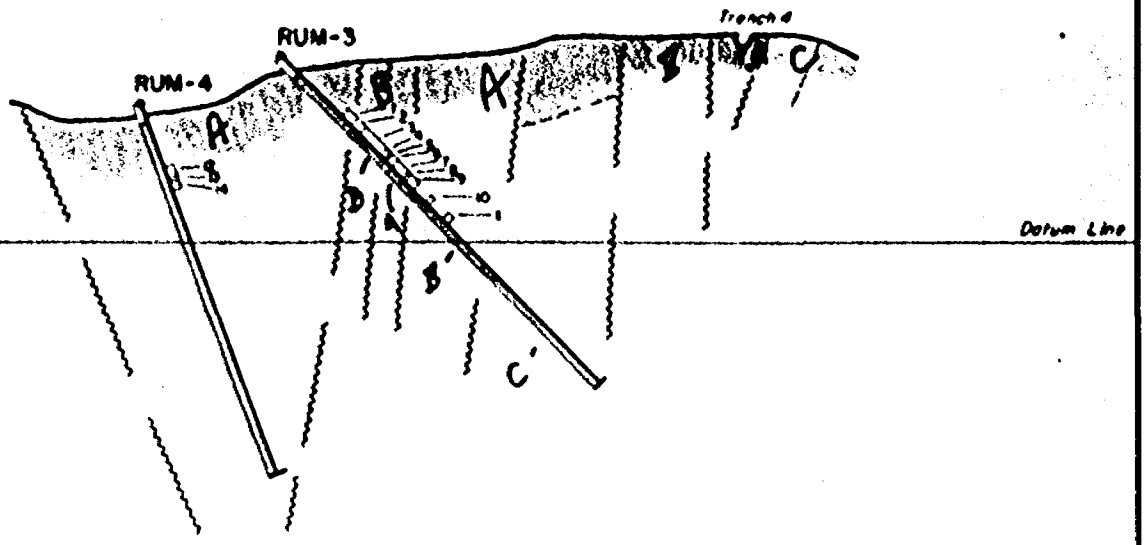
0.08 % U_3O_8 ..... Radiometric Analysis
0.008 C % U_3O_8 ..... Chemical Analysis

WATTS, GRIFFIS & McOUAT LIMITED

REACTOR URANIUM MINES LIMITED
DIAMOND DRILL HOLE SECTION

LOOKING N18°W
PORTER TOWNSHIP
Sudbury District, Ontario
Scale — 1 inch = 50 feet

TORONTO, ONTARIO — December 1968



Hole N°	Sample N°	% U_3O_8	% ThO_2	Length
RUM-3	1	<0.01	Nil	3.9'
	2	0.09	Nil	2.8'
	3	0.01	Nil	8.1'
	4	0.04	Nil	0.8'
	5	0.20	Nil	0.7'
	6	0.02	Nil	2.2'
	7	<0.01	Nil	4.0'
	8	0.06	Nil	0.4'
	9	0.01	Nil	3.8'
	10	0.04	Nil	0.7'
	11	0.03	Nil	2.0'
RUM-4	12	0.01	Nil	2.9'
	13	0.08	0.01	1.3'
	14	0.01	Nil	2.3'

LEGEND

A — Quartzite

B — Conglomerate

C — Quartz Biotite Garnet-Amphibolite Schist or Gneiss

Gabbro

LC — Lost Core

0.05 % U_3O_8 ..... Radiometric Analysis

WATTS, GRIFFIS & McOUAT LIMITED

REACTOR URANIUM MINES LIMITED
DIAMOND DRILL HOLE SECTION

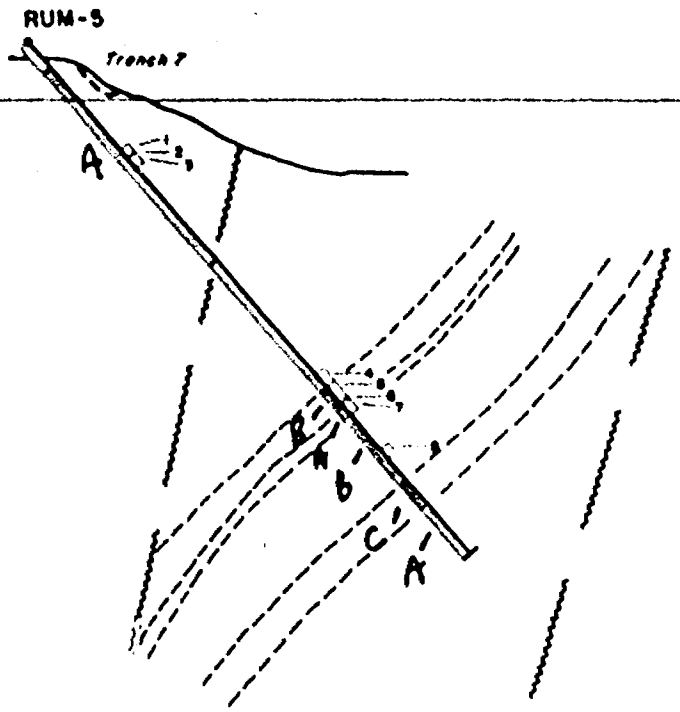
LOOKING N11°W

PORTER TOWNSHIP

Sudbury District, Ontario

Scale — 1 inch = 50 feet

TORONTO, ONTARIO ..... December 1968



LEGEND

- A — Overburden
- B — Conglomerate
- C — Quartz Biotite Garnet-Amphibolitic Schist or Gneiss
- Gabbro
- L.C. — Lost Core

0.26 % U_3O_8 ..... Radiometric Analysis
0.259C % U_3O_8 ..... Chemical Analysis

Hole No	Sample No	% U_3O_8	% ThO_2	Length
RUM-5	1	0.01	Nil	3.0'
	2	0.005	0.07	0.4'
	3	0.001	Nil	3.0'
	4	0.001	Nil	4.1'
	5	0.005	Nil	1.1'
	6	0.26 0.259C	0.06	1.9'
	7	0.01	Nil	3.6'
	8	0.02	0.02	8.7'

WATTS, GRIFFIS & McOUAT LIMITED

REACTOR URANIUM MINES LIMITED
DIAMOND DRILL HOLE SECTION

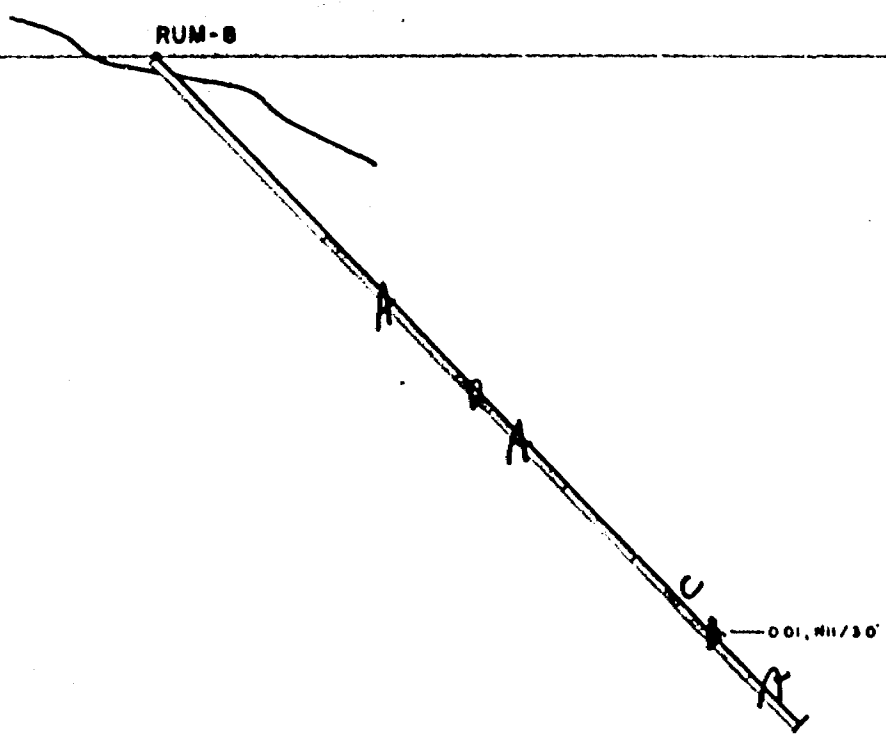
LOOKING N66°W

PORTER TOWNSHIP

Sudbury District, Ontario

Scale — 1 inch = 50 feet

TORONTO, ONTARIO ..... December 1968



LEGEND

A — Quartzite

B — Conglomerate

C — Quartz Biotite Garnet-Amphibolitic Schist or Gneiss

D — Gabbro

LC — Lost Core

Radiometric Analysis:
Assays in % U_3O_8 and % ThO_2 / length of sample

WATTS, GRIFFIS & McOUAT LIMITED

REACTOR URANIUM MINES LIMITED
DIAMOND DRILL HOLE SECTION

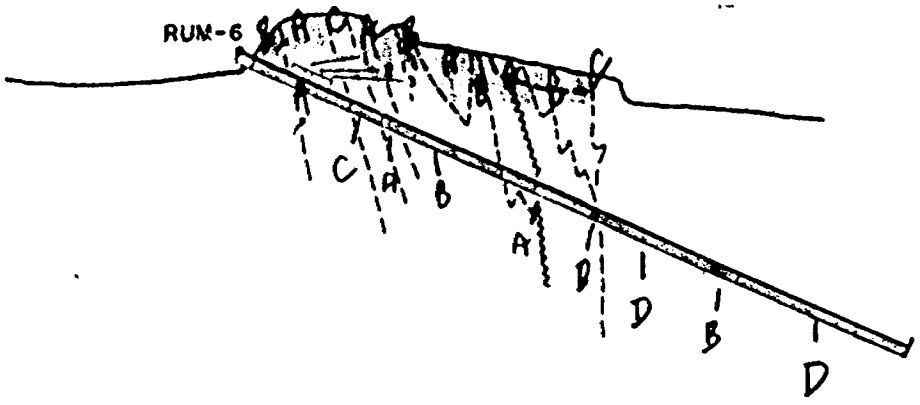
LOOKING N67°W

PORTER TOWNSHIP

Sudbury District, Ontario

Scale — 1 inch = 50 feet

TORONTO, ONTARIO — December 1968



LEGEND

A — Overlite
B — Conglomerate
C — Overlite Biotite Garnet-Amphibolitic Schist or Gneiss
D — Gabbro
LC — Lost Core

Hole N°	Sample N°	% Cu	oz. Au	oz. Ag	Length
RUM-6	1	0·13			4·3'
	2	7·45	0·13	0·95	1·5'
	3	0·22			5·9'

WATTS, GRIFFIS & McOUAT LIMITED

REACTOR URANIUM MINES LIMITED
DIAMOND DRILL HOLE SECTION

LOOKING N70°E

PORTER TOWNSHIP

Sudbury District, Ontario

Scale — 1 inch = 50 feet

TORONTO, ONTARIO — December 1968

RUM-7

L.C. L.C. L.C.

Datum Line Estimated

No samples

A B C D

LEGEND

A Quartzite

B Conglomerate

C Quartz Biotite Garnet-Amphibolitic Schist or Gneiss

D Gabbro

L.C. Lost Core

WATTS, GRIFFIS & McOUAT LIMITED

REACTOR URANIUM MINES LIMITED

DIAMOND DRILL HOLE SECTION

LOOKING N73°E

PORTER TOWNSHIP

Sudbury District, Ontario

Scale — 1 inch = 50 feet

TORONTO, ONTARIO — December 1968

LIST OF MAPS

(Bound Separately)

Map No.	Description		
642-1-1	Electromagnetic Survey	Group II claims	Scale: 1" = 100 feet
642-1-2	Magnetometer Survey	Group II claims	Scale: 1" = 100 feet
642-1-3	Scintillometer Survey	Group II claims	Scale: 1" = 100 feet
642-1-4	Magnetometer Survey	Group I claims	Scale: 1" = 100 feet
642-1-5	Scintillometer Survey	Group I claims	Scale: 1" = 100 feet
642-1-6	Geological Map	Group I claims	Scale: 1" = 100 feet

APPENDIX 5

INSTRUMENTS AND TECHNIQUES

A model 111B De Luxe "Scintillator" by Precision Radiation Instruments Incorporated was used in the scintillometer survey.

In the principal of scintillation, when gamma rays penetrate certain crystals, minute flashes of light are given off. These flashes of light are transformed into electrical energy which when converted and averaged are read in milliroentgens per hour.

The instrument uses a 1 1/2" by 1" sodium iodide crystal hermetically sealed in an aluminum can and an RCA 6199 photomultiplier tube.

The sensitivity of the scintillator is .0005 milliroentgens per hour and it has an accuracy of 5% of 3/4 full scale reading. The highest reading is 5 MR/HR. The instrument, it is claimed, can be operated effectively from -25° C to +40° C and over 15,000 feet altitude.

Calibrations were checked more often than the one hour continuous operating time suggested in the operations manual. Readings were taken with the instrument held on outcrop and overburden, perpendicular to the general surface at each place of measurement.

The specifications of the Sharpe MF-1 magnetometer are reproduced separately. Readings were taken in the prescribed manner. The instrument measures the intensity of the vertical component of the earth's magnetic field. The contour lines enclose areas of equal vertical magnetic intensity. Erratic high or low areas can be explained in the area of the claim groups by the dipole effect of pyrrhotitic concentrations.

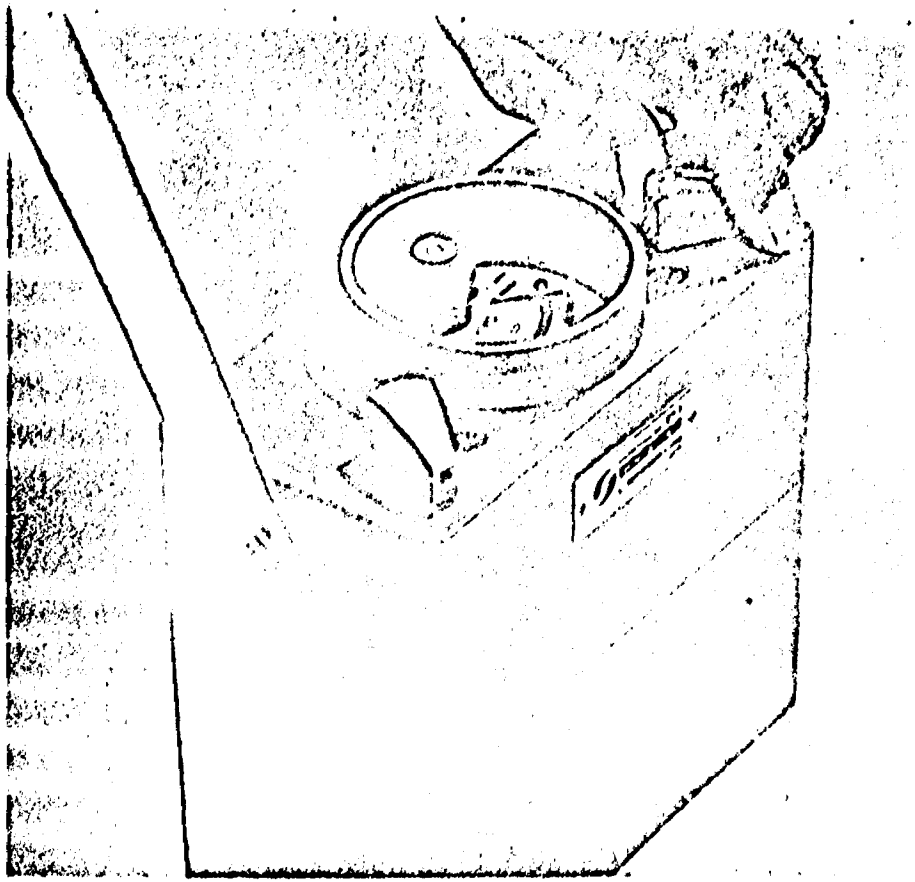
The principal of electromagnetic induction is used in the SE-250 instrument which was used in the electromagnetic survey of group II claims. The specifications of this instrument are reproduced separately. When a conductor is placed in an audio-frequency alternating magnetic field, eddy currents flow within the conductor creating a secondary field which distorts the primary field. The instrument measures this distortion.

On the electromagnetic survey the Broadside or Parallel Line Method was used wherein the transmitter coil at each station was held vertically and aimed at the receiver coil, 400 feet away, at the same

station on the next line. The receiver coil was rotated around an imaginary axis joining the two coils, until a null was heard. The breadth of the null, the angle of dip of the coil and the resultant shape of the curve are indicative of the character of the conductor located.

In the detailed survey the Fan Method was used where the transmitter coil remains at a specific location and is aimed at the receiver coil, on the next line, which is then moved from station to station until readings have been taken up to 400 to 500 feet each side of the suspected conductor. Again, the breadth of the null, the angle of dip, and shape of the curve are indicative of the character of the conductor.

MF-1 FLUXGATE MAGNETOMETER



A first order fluxgate type vertical component magnetometer. Advanced transistorized circuitry and extensive temperature compensation is the core of its accuracy comparable to precision tripod mounted Schmidt type magnetometers.

It is a hand held instrument and needs only coarse levelling and no orientation. Features such as direct reading of gamma values and the possibility of accurate zero setting at base stations ensure simplicity of operation and higher field economy.

The Model MF-1 Fluxgate Magnetometer is designed for accurate ground surveys in the mining industry as well as a basic component for air surveying by small aircraft. Technical data and comparison charts available on request.

SPECIFICATIONS

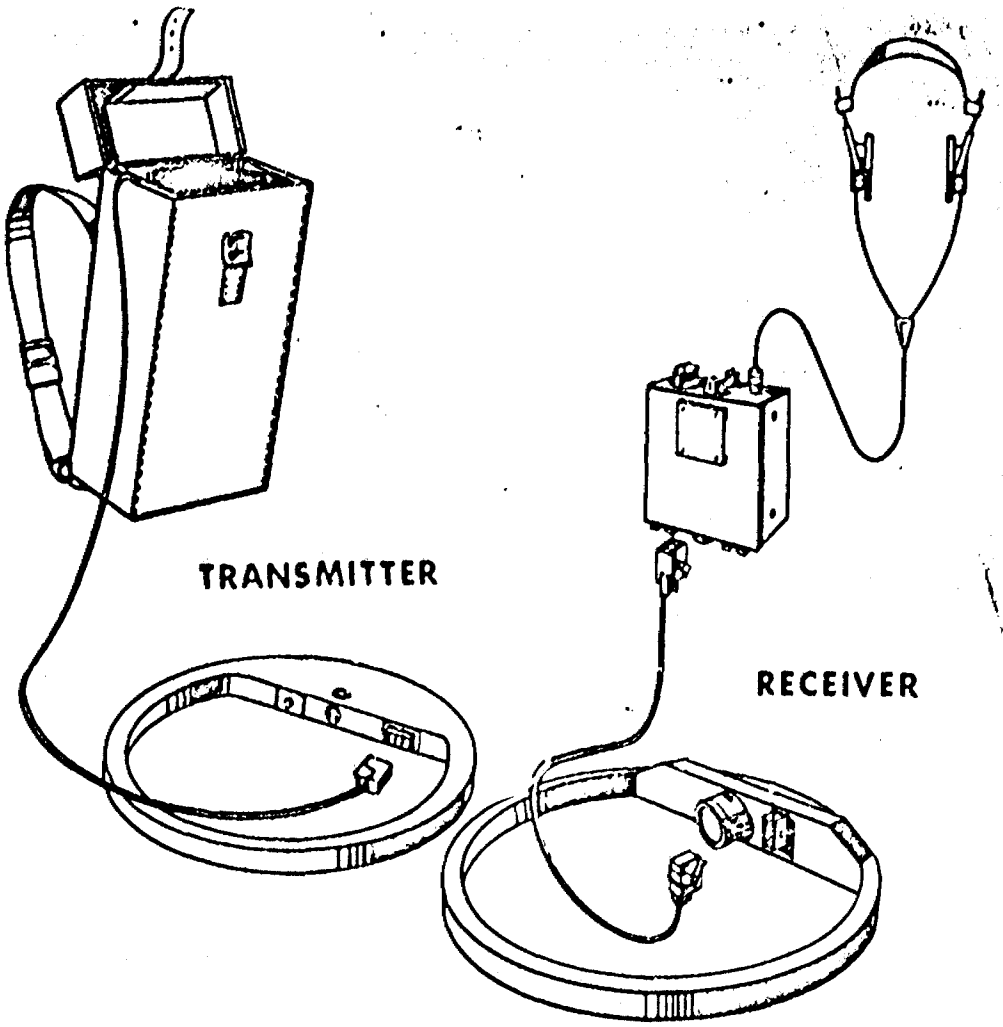
MAXIMUM SENSITIVITY:	20 gammas (per scale division) on 1000 gamma range.
READABILITY:	5 gammas (¼ scale division on 1000 gamma range.
RANGES: (FULL SCALE)	1,000 gammas 3,000 gammas 10,000 gammas 30,000 gammas 100,000 gammas
MAXIMUM RANGE:	± 100,000 gammas
LATITUDE ADJUSTMENT RANGES:	10,000 to 75,000 gammas, Northern hemisphere convertible to: 10,000 to 75,000 gammas, Southern hemisphere or ± 30,000 gammas equatorial.
DIMENSIONS: (INCLUDING BATTERY CASE)	7" x 4" x 16"
WEIGHT: (INCLUDING BATTERY CASE)	9 lbs.
BATTERIES:	12 Flashlight Batteries ("C" cell).

SE-250

ELECTROMAGNETIC UNIT

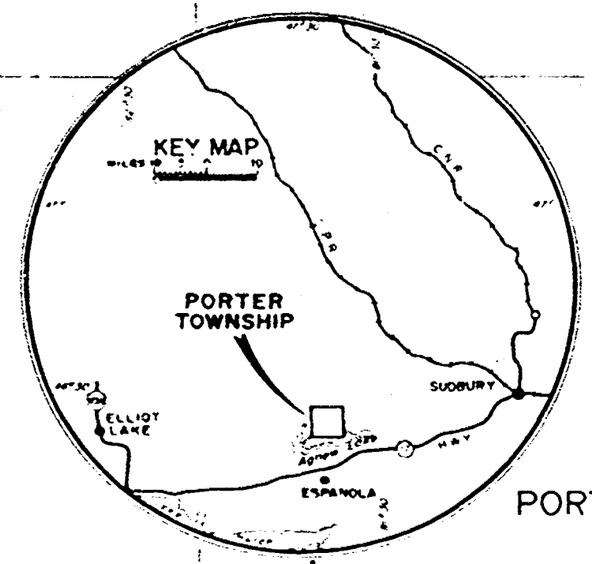
This unit was designed to give greater separation and deeper penetration than any similar battery-operated, single frequency, portable EM unit. The SE250 is fully transistorized with a standard frequency of 1000 cps., other frequencies optional. The primary signal is pulsating thus it can be readily distinguished from background noise.

The Model SE-250 Electromagnetic Unit is ruggedly built, yet light in weight permitting ease of carrying. The unit has been thoroughly tested to withstand the most extreme climatic conditions and can be tropicalized upon request.



SPECIFICATIONS

FREQUENCY RANGE:	1,000 cps. ± 2%.
FREQUENCY STABILITY:	Better than ± 2% over extended periods at normal ambient temperatures.
FREQUENCY TRACKING:	Receiver versus transmitter better than 1% over temperatures from —40°F to 104°F.
TRANSMITTER OUTPUT:	Approximately 150 MI at 1,000 cps. Higher outputs optional.
SEPARATION:	Up to 1,200 feet for ± 5° deflection.
RECEIVER LOOP:	Electrostatically shielded.
RECEIVER SENSITIVITY:	50 Millimicrovolts.
BATTERY:	2 x No. 731 Eveready lantern batteries or NEDA 918.
BATTERY LIFE:	Approximately 10 days.
WEIGHT:	Transmitter and coil overall 16½ lbs. — 7.5 Kgs. Coil 6 lbs., 2.7 Kg. Transmitter 10½ lbs. 4.75 Kg. Receiver weight overall 11 lbs. — 5 Kg. Receiver 3 lbs — 1.4 Kg. Coil — 8 lbs. — 3.6 Kg.



PORTER TWP.

STAKED

AGNEW LAKE MINES

KERR ADDISON

INCO

HYMAN TWP.

DRURY

STAKED

REACTOR

KERR ADDISON

INCO

REACTOR

Agnew Lake

Spanish River

STAKED

BROULAN REEF

STAKED

STAKED

Agnew Lake

DENISON

BROULAN REEF

DENISON

CONS. MONTCLERG

BROULAN REEF

NAIRN TWP.

Hwy. 17

C.P.R.

BALDWIN TWP.

LEGEND

PRECAMBRIAN

4 Gabbroic Intrusives

3 Sediments & Metasediments, Huronian & Older

2 Granitic Intrusives

1 Volcanics, basic

△ Known occurrences of uraniferous quartz pebble conglomerate

NOTE: Geology after J.E. Thomson, R.M. Ginn & K.D. Card

WATTS, GRIFFIS &

REACTOR URANIU

LOCATIO

Show

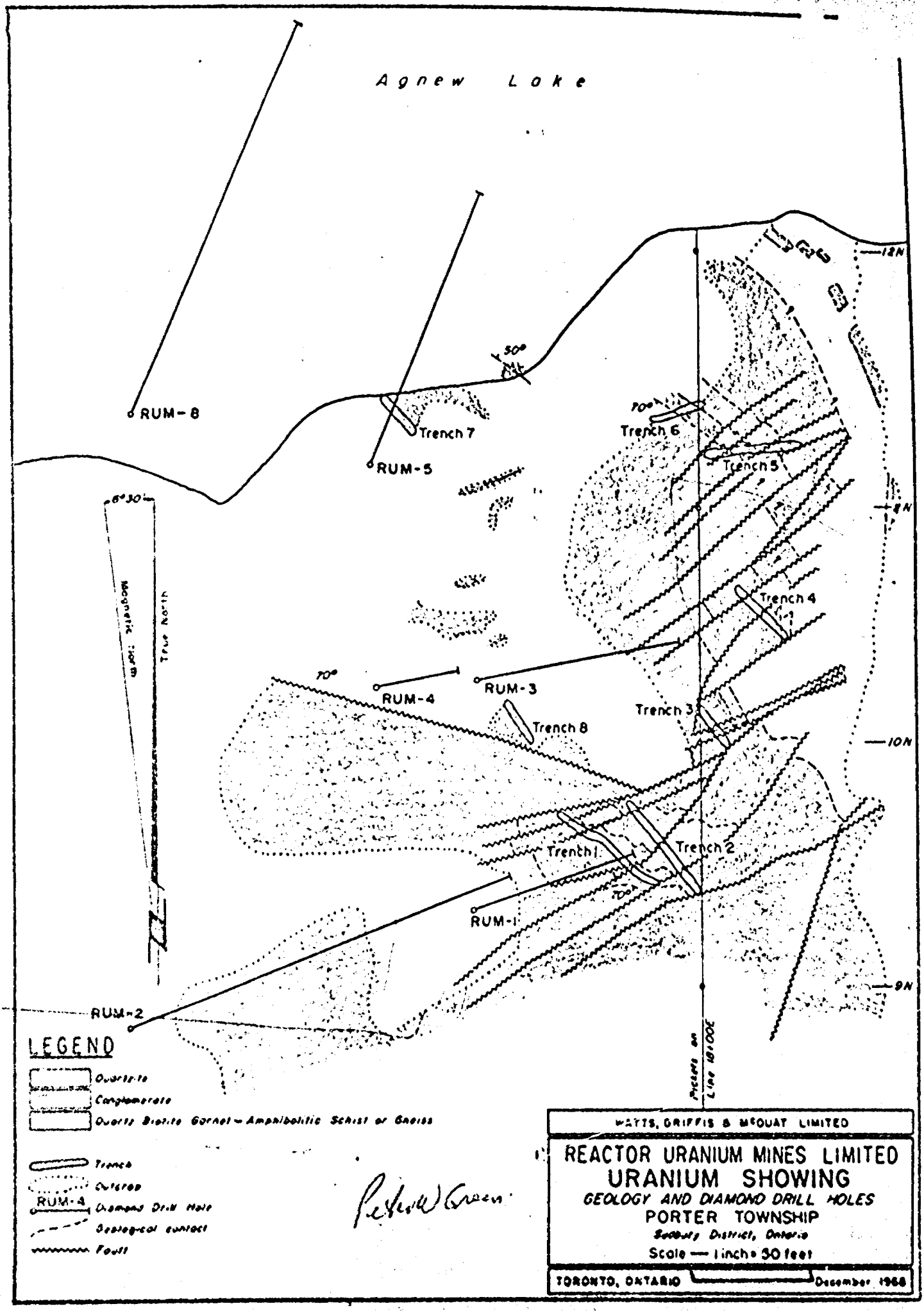
Properties, General

Uranium O

AGNEW LA

ONTA

SCALE: 1 Inch = 1 Mile


Agnew Lake
RUM-8
RUM-5
RUM-4
RUM-3
RUM-2
RUM-1
Trench 7
Trench 6
Trench 5
Trench 4
Trench 3
Trench 8
Trench 1
Trench 2
50°
70°
70°
70°
6°30'
Magnetic North
True North
12N
8N
10N
9N
Picked on Line 18+00E
LEGEND
Quartzite
Conglomerate
Quartz Biotite Garnet – Amphibolitic Schist or Gneiss
Trench
Outcrop
RUM-4 Diamond Drill Hole
Geological contact
Fault
WATTS, GRIFFIS & McQUAT LIMITED
REACTOR URANIUM MINES LIMITED
URANIUM SHOWING
GEOLOGY AND DIAMOND DRILL HOLES
PORTER TOWNSHIP
Sudbury District, Ontario
Scale — 1 inch = 50 feet
TORONTO, ONTARIO
December 1968

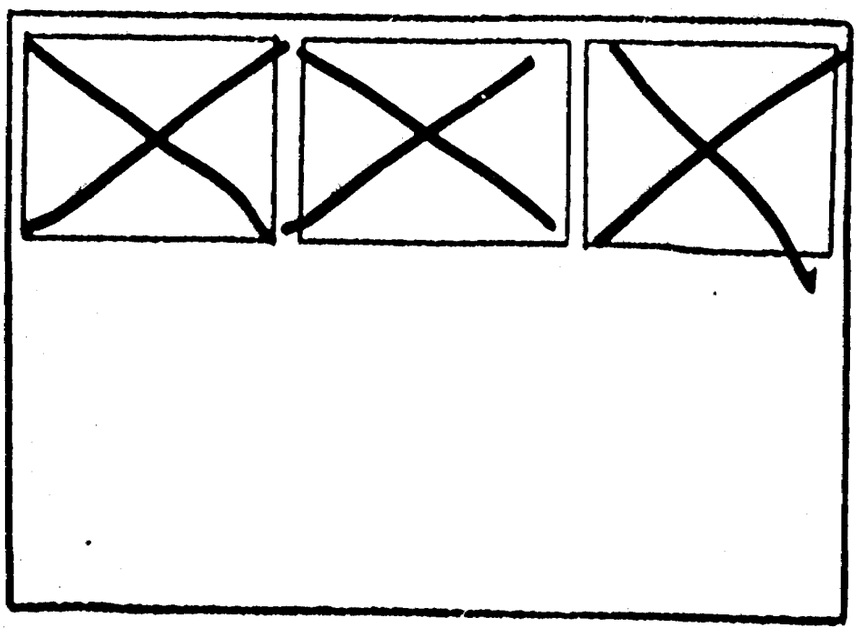
SEE ACCOMPANYING MAP(S) IDENTIFIED AS

PORTER-0020-#1

#2

#3

LOCATED IN THE MAP CHANNEL IN THE FOLLOWING SEQUENCE (X)



FOR ADDITIONAL

INFORMATION

SEE MAPS:

PORTER-0020 #3-6

WATTS, GRIFFIS & McOUAT LIMITED
CONSULTING GEOLOGISTS & ENGINEERS
91-159 BAY STREET — TORONTO

REACTOR URANIUM MINES LIMITED

GEOLOGICAL MAP

GROUP I.
PORTER TOWNSHIP
DISTRICT OF SUDBURY
— ONTARIO —

SCALE 0 50 100 200 feet | DATE November 1968 | SHEET No 642-1-6
DRAWN BY J. Homosits | APPROVED BY P.W.G.

L E G E N D

Rock types

5 Gabbro
4 Pyroxene – Amphibole rock
3 Quartz, Biotite, Amphibolite, Garnet, Schist and Gneiss
2 Quartzite
Conglomerate
1 Chlorite Schist

Mineralization

S Sulphide occurrence
Py Pyrite
Po Pyrrhotite
Cpy Chalcopyrite

Symbols

Outcrop
Geological contact
Fault vertical, inclined
Strike and dip of Schistosity inclined, vertical
Strike and dip of Bedding inclined, vertical, dip unknown
Breccia
Structurally disturbed zone
D.D.H.-3 Diamond Drill Hole

PORTER-0020 #1

WATTS, GRIFFIS & McOUAT LIMITED
CONSULTING GEOLOGISTS & ENGINEERS
WILTON BAY STREET — TORONTO

REACTOR URANIUM MINES LIMITED

MAGNETOMETER SURVEY

GROUP I.
PORTER TOWNSHIP
DISTRICT OF SUDBURY
ONTARIO

SCALE 0 50 100 200 Feet	DATE November 1968	SHEET No.
DRAWN BY: J. Homosits	APPROVED BY: P.W.G.	642-1-4

LEGEND

INSTRUMENT:..... Sharpe MF-1 Fluxgate Magnetometer
SENSITIVITY:..... 20 gammas per scale division
CONTOUR INTERVAL:..... 100 gammas

430 Reading in gammas
600 Magnetic contour

Magnetic North
True North

S137891

S138101

S138102

S138103

S138104

AGNEW LAKE

Agnew Lake

Base Line "A"

Porter Twp. | Hyman Twp.
Baldwin Twp. | Nairn Twp.

1" = 100'

PORTER-0020-#2

WATTS, GRIFFIS & McQUAT LIMITED
CONSULTING GEOLOGISTS & ENGINEERS
81-109 BAY STREET — TORONTO

REACTOR URANIUM MINES LIMITED

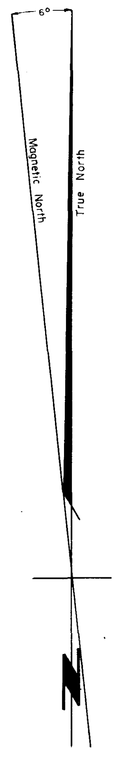
SCINTILLOMETER SURVEY

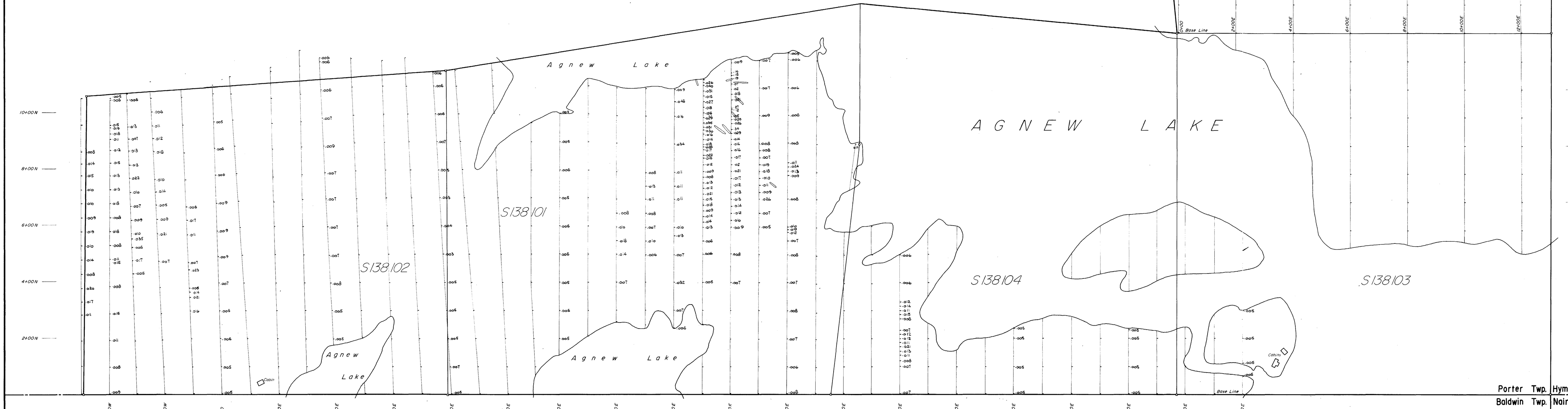
GROUP I.
PORTER TOWNSHIP
DISTRICT OF SUDBURY
ONTARIO

SCALE 0 50 100 200 Feet	DATE November 1968	SHEET No 642-1-5
DRAWN BY J. Homosits	APPROVED BY P.M.G.	

LEGEND

INSTRUMENT: ..... Precision Radiation Instruments, Inc. Scintillometer Model 111B
SENSITIVITY: ..... .001 Milliroentgens per hour
.014 ..... Reading in Milliroentgens per hour

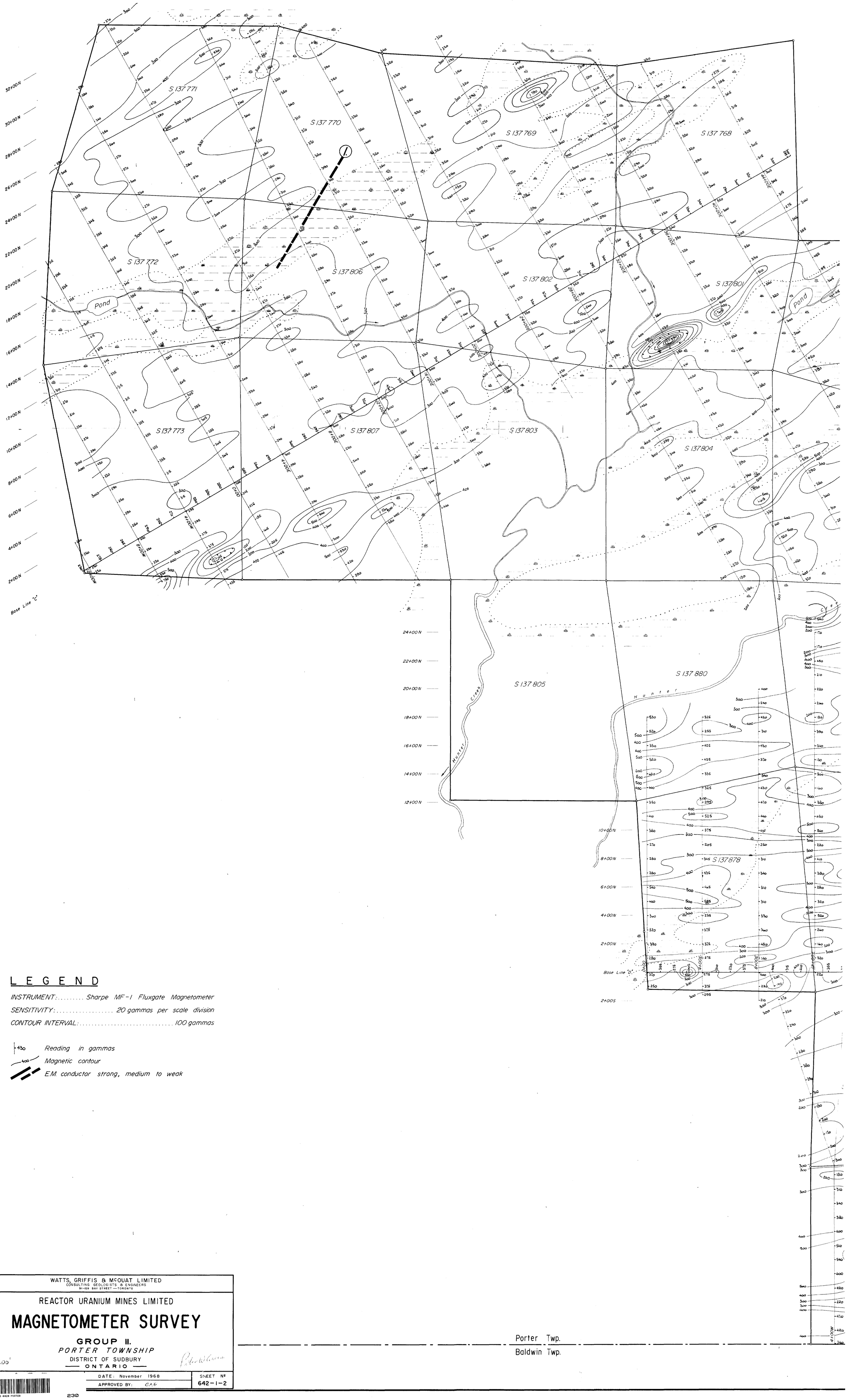




Porter Twp. Hyman Twp.
Baldwin Twp. Nairn Twp.

220

PORTER-0020-F



LEGEND

INSTRUMENT:..... Sharpe MF-1 Fluxgate Magnetometer

SENSITIVITY:..... 20 gammas per scale division

CONTOUR INTERVAL:..... 100 gammas

430 Reading in gammas

400 Magnetic contour

E.M. conductor strong, medium to weak

Porter Twp.

Baldwin Twp.

WATTS, GRIFFIS & McOUAT LIMITED
CONSULTING GEOLOGISTS & ENGINEERS
911-159 BAY STREET — TORONTO

REACTOR URANIUM MINES LIMITED

MAGNETOMETER SURVEY

GROUP II.

PORTER TOWNSHIP

DISTRICT OF SUDBURY

— ONTARIO —

1" = 100'

DATE: November 1968

APPROVED BY: GAG

SHEET Nº 642-1-2

S 137 771
S 137 770
S 137769
S 137 768
S 137 772
S 137 806
S 137 802
S 137 801
S 137 773
S 137 807
S 137 803
S 137 804
S 137 805
S 137 880
S 137 878
Sta. 2
Sta-1
Pond
Pond
Hunter Creek
Hunter Creek
Base Line "C"
Base Line "D"
Tx. on 4+00E
Tx. on 8+00E
Tx. on 12+00E
Tx. on 16+00E
Tx. on 20+00E
Tx. on 24+00E
Tx. on 28+00E
Tx. on 32+00E
Tx. on 36+00E
Tx. on 40+00E
Tx. on 0+00
Tx. on 4+00W
Tx. on 8+00W
Tx. on 12+00W
32+00N
30+00N
28+00N
26+00N
24+00N
22+00N
20+00N
18+00N
16+00N
14+00N
12+00N
10+00N
8+00N
6+00N
4+00N
2+00N
0+00
44+00E
40+00E
36+00E
32+00E
28+00E
24+00E
20+00E
16+00E
12+00E
8+00E
4+00E
0+00
4+00W
2+00S

LEGEND

Instrument: Sharpe S.E-250 E.M. unit

- *Strong conductor*
- *Medium to weak conductor*
- *Indefinite conductor*
- (2.) *Conductor number*
- *Broadside profile*
- *Fan method profile*
- △ Sta.-2 *Transmitter station*
- (2) *Profile from Station 2*

E.M. dip angles

N — 10° — 10° — S

Porter Twp.

Baldwin Twp.

WATTS, GRIFFIS & McOUAT LIMITED
CONSULTING GEOLOGISTS & ENGINEERS
91-159 BAY STREET — TORONTO

REACTOR URANIUM MINES LIMITED

ELECTROMAGNETIC SURVEY

GROUP II.

PORTER TOWNSHIP

DISTRICT OF SUDBURY

— ONTARIO —

Peter W Green
1" = 100'

DATE: November 1968	SHEET Nº 642-1-1
APPROVED BY: CAF	

240

S 137 771

S 137 770

S 137 769

S 137 768

S 137 772

S 137 806

S 137 802

S 137 801

Pond

Pond

S 137 773

S 137 807

S 137 803

S 137 804

S 137 805

S 137 880

S 137 878

Hunter Creek

Hunter Creek

Creek

Base Line "C"

Base Line "D"

Porter Twp.

Baldwin Twp.

L E G E N D

INSTRUMENT:.....Precision Radiation Instruments, Inc. Scintillometer Model IIIB

SENSITIVITY:.....001 Milliroentgens per hour

.014 .....Reading in Milliroentgens per hour

WATTS, GRIFFIS & McOUAT LIMITED
CONSULTING GEOLOGISTS & ENGINEERS
911-159 BAY STREET — TORONTO

REACTOR URANIUM MINES LIMITED

SCINTILLOMETER SURVEY

GROUP II.

PORTER TOWNSHIP

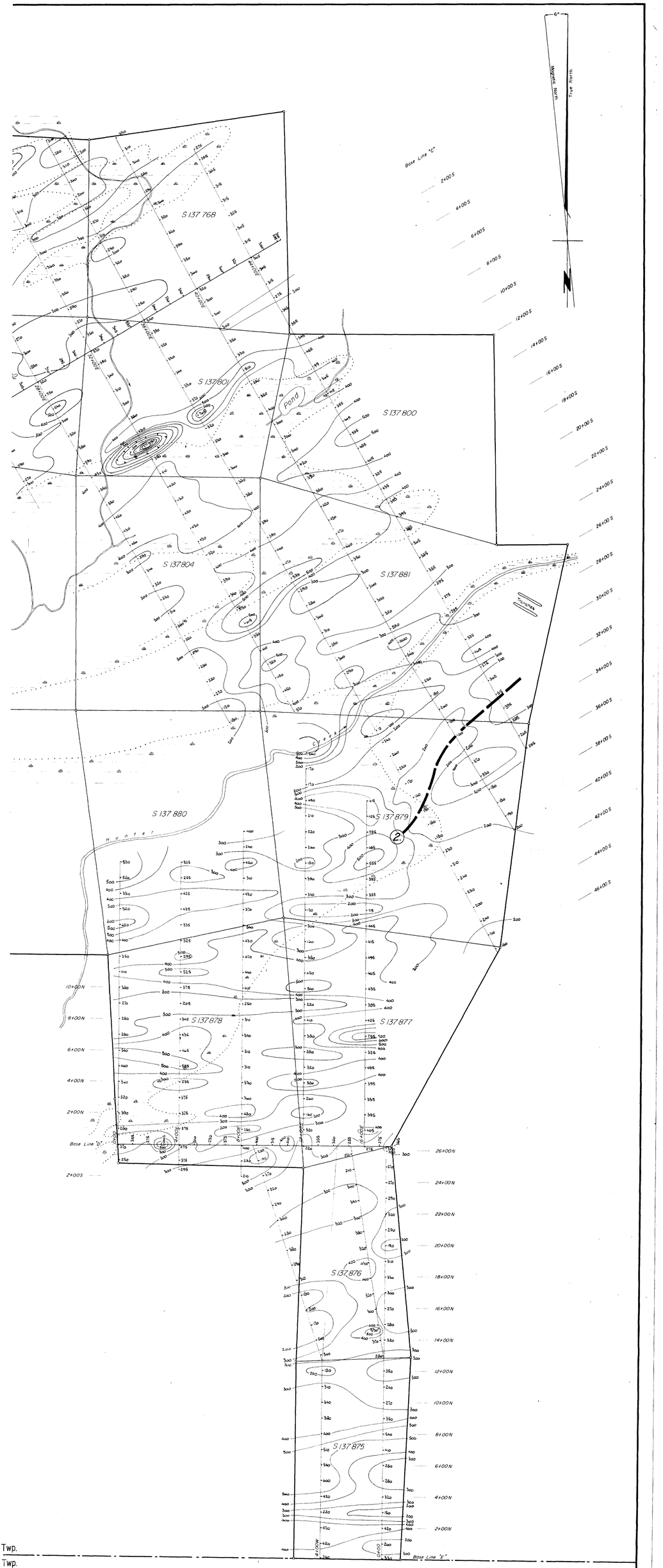
DISTRICT OF SUDBURY

— ONTARIO —

DATE: November 1968

APPROVED BY:

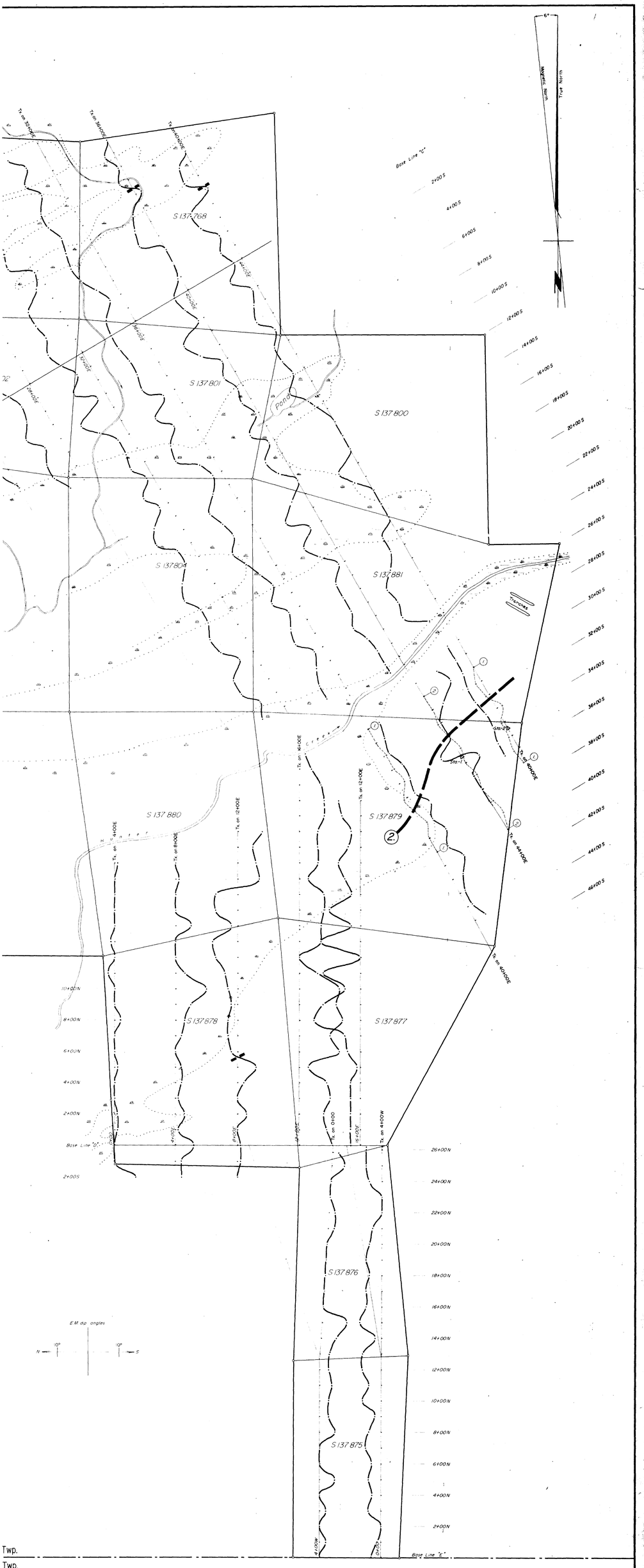
SHEET Nº 642-1-3



Twp.

Twp.

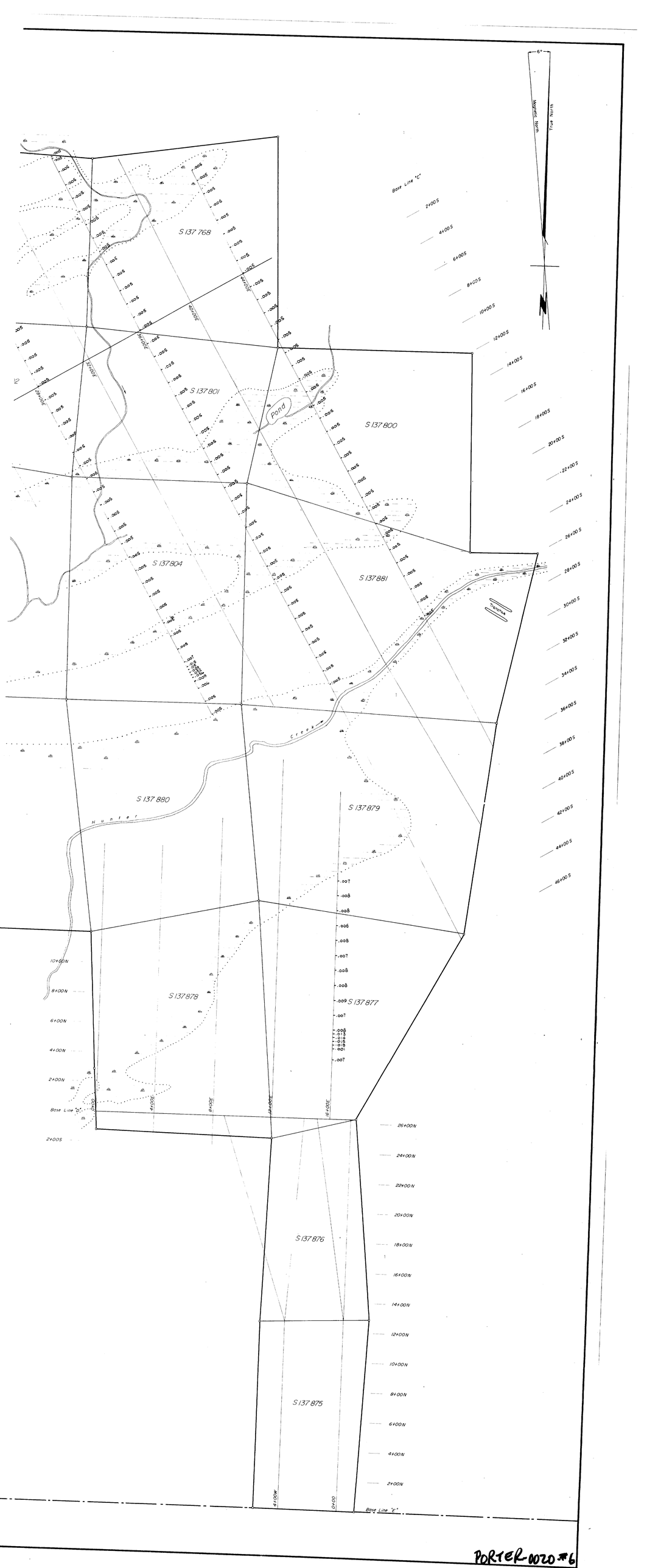
PORTER-0020-A-5



Twp.

Twp.

PORTER-0020-#4



PORTER-0020 #6