COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT.

BUREAU OF MINERAL RESOURCES
GEOLOGY AND GEOPHYSICS.

RECORDS.

1954/45

RADIOACTIVE SURVEYS KATHERINE - DARWIN AREA

REPORT ON ACTIVITIES
OF THE

DARWIN URANIUM GROUP.
AUGUST, 1954.

by

J.H. Lord.

DARWIN. N.T.

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ADMINISTRATIVE SECTION.

STAFF.

Movements:

H.A. Budge, geophysical assistant, arrived Darwin 14th August.

J.H. Lord, geologist and J.B. Misz, geophysicist, departed Darwin on 17th August and visited Mt. Isa returning on 23rd August.

F.F. Frankovich, geologist, departed Darwin 24th August.

Additions:

H. Boensch, survey hand, commenced 11th August.
B. Kreyzig, " " " 11th " .
B. Hack, " " " 13th " .
T. Lahn, " " " 13th " .

Resignations:

K. Higgins, cook's offsider, resigned 9th August.
L. Squires, field assistant, " 18th " .
H. Thomas, " " " 18th " .
E. Simpson, drill foreman, " 19th " .
W. Raine, cook, " 28th " .

HOUSING AND OFFICE ACCOMMODATION.

One house became available on 31st August. One house remains to be completed on the original contract of eight.

Three of the twelve houses at Fannie Bay are well advanced and the foundations have been set for four more.

The office at Woods Street still requires some minor work to complete it.

WINNELLIE STORE.

All surplus equipment to be sold at the forthcoming disposal sale has been sorted and delivered to the Department of Supply.

No further progress has been made on the conversion

of a room to a chemical laboratory at Winnellie, because the necessary requisition for water and power installation has not been received.

RADIOMETRIC LABORATORY.

The assaying section has been busy throughout the month and completed 374 assays. For several days the assaying was up-to-date but, with the arrival of samples from the A.B.C. Prospect and from companies at Mt. Isa, the delay at the end of the month was approximately one week.

During the month 44 instruments were repaired, of which 23 were for private persons.

Considerable time has been spent on the bore-logging instruments which have not operated satisfactorily. It is considered that the trouble has been rectified.

TRANSPORT.

Vehicles are operating satisfactorily, although some of the older landrovers require extensive repairs as a result of the hard work they have done this season.

VISITORS.

Mr. C.B. Campbell, Atomic Energy Division, Geological Survey of Great Britain, arrived in Darwin on 2nd August and departed on 19th August. His itinerary and movements were arranged by the Darwin office.

Mr. J. Webb, Principal Field Engineer, A.A.E.C., visited the Darwin Office on 9th August.

Professors Duncan and Worner, who visited Darwin from 23rd to 29th August, were shown the Darwin laboratory and conducted to Adelaide River, Brock's Creek, A.B.C. Prospect and Maranboy. They were flown into Sleisbeck, but were not accompanied by a Bureau geologist.

Senator W.H. Spooner and Dr. H.G. Raggatt were met at the airport on 21st and 24th August. They inspected the Darwin office and laboratory on 25th August.

TECHNICAL SECTION.

A.B.C. PROSPECT.

Two drills, which operated at the Prospect throughout August, completed 16 holes. The total footage drilled was 550 feet. Two drill foremen have resigned and drill helpers have been promoted. Progress in the future may be slower.

The drilling of the original prospect has been completed without disclosing any extension of the mineralisation. The geologists concerned are now drafting the report on the work completed.

Drilling is now being concentrated on the investigation of alluvium covered areas and minor anomalies disclosed by car-borne work and prospecting. A magnetic anomaly located by magnetic gridding will also be drilled.

ADELAIDE RIVER PROSPECT.

The radiometric gridding of this Prospect has been completed and the report is being prepared.

Uranium Development and Prospecting N.L. is continuing active development of the Prospect. On the Western lode, No.1 shaft has been sunk to 74 feet and a drive to the south for a distance of 64 feet has connected with the No. 2 shaft. A drive south from No.2 shaft has been driven a distance of 29 feet.

On the "Eastern" lode the adit, which has been driven northwards for a distance of 128 feet, has connected with No.4 shaft at a vertical depth of 56 feet. The adit is being continued northwards towards the No.3 shaft, which has been sunk to 27 feet.

A shaft (No.5) has been commenced to intersect the pitchblende reported in diamond drill hole No.4.

A shaft on a new prospect 1300 feet south-east of the original find, although it encountered copper mineralisation lost the radioactivity, but a cross-cut at a depth of 30 feet is said to have exposed torbernite ore.

The fifth diamond drill hole is in progress. All holes have been probed by the Bureau.

BROCK'S CREEK PROSPECT.

A Bureau geologist has continued doing geological and radiometric work on this Prospect, but he has ceased temporarily in order to complete other reports.

The company has been stoping rich ore from the incline shaft and cross-cutting from the vertical shaft to this shaft.

The company is considering engaging a drill for one or two short holes on the "find" 300 feet north of the original prospect. Geologist Firman has supplied the company with recommendations for the proposed drilling. (See Appendix III.)

BURRUNDIE PROSPECT.

The geophysical work at the Prospect has been completed and the report is almost finished. It has been suggested that one or two holes be drilled to test the formation at depth, although the chances of finding uranium mineralisation are not great.

EDITH RIVER PROSPECT.

The drill hole at Deposit F, Edith River, has continued to a depth of 270 feet. The drilling has been slow, due to the hardness of the granite encountered.

The hole should intersect the shear shortly.

AIRBORNE SCINTILLOMETER ANOMALIES.

With the issue of the Ban Ban Scintillometer Sheet, the investigation of the anomalies has commenced and will be continued whenever staff is available.

Fifty four anomalies have been investigated. These include all the first and second order anomalies on the sheet and a few of the adjacent third order anomalies. Reports of each are being prepared.

Only two anomalies inspected are worthy of further investigation namely:-

Second order anomaly No.93. Readings of eight times background were obtained on granitic soil adjacent to an outcrop of granite. Analysis will show the cause of this activity.

Second order anomaly No. 38. This occurs in a region of sheared blue schist. Readings of three times background were obtained against the shear, rising to over four times at a depth of one foot.

SLEISBECK PROSPECT.

During the month radiometric gridding has been done at this Prospect. No further work will be done, as the company considers that they can handle any further work required.

The company, according to reports, has continued costeaning and commenced diamond drilling but has not disclosed any results.

A regional party of the Bureau has been operating in the area to establish the position of the prospect in the stratigraphic succession.

NEW FINDS.

There were 47 Authorities to Prospect held at the end of July, with 40 pending. The interest in prospecting has been maintained throughout August.

No new finds have been reported this month. The find reported last month near Mr. Mable which has been inspected by Geologist Gardner, (See Appendix I) is of no economic importance.

The companies engaged in development work are:- Uranium Development and Prospecting (at Adelaide River), North Australian Uranium Corporation (at Sleisbeck), United Uranium (in Waterhouse area) and Brock's Creek Uranium. Several other companies are costeaning on their areas.

REGIONAL PARTY.

The report of the regional party for August is attached as Appendix V. The work near Sleisbeck has been very interesting as far as stratigraphy is concerned. It appears as if the uranium mineralisation is in lower Cambrian rocks.

MISCELLANEOUS ITEMS.

A monthly conference will be held at the Darwin office on 3rd September. It is not known yet whether the regional party will attend.

The third meeting of the local "Geology Club" was held in August when 20 persons heard Mr. C.B. Campbell give an informative talk on "Uranium Exploration in Portugal."

3rd September, 1954.

(J.H. Lord.)
Senior Geologist.

INSPECTION OF A PROPOSED AUTHORITY TO PROSPECT IN THE GROVE HILL DISTRICT. (Messrs. Corbett and Lucy.)

Location and Access:

About one and a half miles east of Mt. Bonnie on the Margaret River in the Grove Hill District. The area is indicated on a sketch plan sent to the Director of Mines with the original application of 28th July, 1954. Visitors to the area require a guide.

SITE 1.

Topography:

The prospect is situated on the south bank of a tributary of the Margaret River which flows ~~in a westerly direction~~ westward through hilly country.

Geology:

The rocks in the area are light grey siliceous siltstones which overlie dark grey sheared argillaceous siltstones. The beds strike north 5 degrees west and dip 30 degrees west. The dark grey sheared argillaceous siltstone contains pyrite casts in some places.

A lateritic conglomerate outcrops on the north bank of the creek.

The stream bed is covered by rubble containing pebbles and boulders of siltstone, laterite and dirdite.

No uranium mineralisation was seen in the outcrop or in the workings.

Workings:

A shaft has been put down to 8 feet in rubble on the south bank of the creek, two costeans have been put down in rubble (one of these bottoms on dark grey argillaceous siltstone) and five small pits have been dug along the south margin of the creek bed. The workings extend over a length of about 350 feet along the creek.

Radioactivity:

Measurements of radioactivity were made in the shaft and in costeans and pits. The readings ranged from 100 counts per minute to 300 counts per minute.

Readings of 120-140 counts per minute were made ~~of~~ on lateritic conglomerate exposed on the north bank of the creek. Readings of 100 counts per minute were made on siltstones outcropping south of the creek. A reading of 70 counts per minute was made on rubble in the creek bed. This reading is taken as background. The radioactivity in the prospect area varies from one and a half to four times background.

Remarks:

Corbett and Lucy were advised to increase the depth of one costean to test the radioactivity in the siltstones exposed at the base of the costean. They were also advised to sink the shaft to bedrock and to test the bedrock for radioactivity. This work will indicate whether or not the radioactivity is restricted to the rubble in the creek bed. It was suggested that samples should be sent to the B.M.R. for radiometric analysis if a significant increase in radioactivity was found.

SITE 2.

Location:

Site 1 bears 235° from Site 2 and is distant about one and a half miles.

Topography:

The prospect is situated in a steep-sided gully on a prominent ridge west of the Saunders Creek drainage basin.

Geology:

A small costean has exposed dark grey sheared argillaceous siltstones which strike 345 degrees and dip 70 degrees west.

No uranium mineralisation was seen.

Radioactivity:

Readings of 150 to 190 counts per minute were made in the costean. Background (measured on outcropping siltstones) is 75 counts per minute.

SITE 3.

Location:

Site 2 bears 345 degrees and is distant about half a mile from Site 3.

Topography:

The prospect is situated on a small drainage channel which joins Saunders Creek. The surrounding hills lie east of a high ridge.

Geology:

The rocks which crop out in the area are sheared dark grey argillaceous siltstones. No uranium mineralisation was seen.

Radioactivity:

Readings of 75 to 110 counts per minute were made. Background in this area (made on siltstones) is 75 counts per minute.

SITE 4.

Location:

Site 2 bears 357 degrees and lies about one and a half miles from Site 4.

Geology:

The dark grey sheared argillaceous siltstones which crop out in this area strike 320 degrees and dip 65 degrees west.

No uranium mineralisation was seen.

Radioactivity:

A reading of 115 counts per minute was made at the base of a small pit. A reading of 105 counts per minute was made on the dump from this pit.

Remarks on Sites 2 to 4:

Radioactivity is low and no mineralisation is visible in the rocks.

August, 1954.

J.B. Firman.
Geologist.

INSPECTION REPORT ON AREA 7 MILES WEST-NORTH-WEST OF STAPLETON SIDING.
(Prospected by P. Ethell.)

Introduction:

The localities prospected are within an area approximately 7 miles west-north-west of Stapleton Siding on the North Australian Railway, and are shown on the map accompanying this report, in Fig. 1 and 2. The area contains several radiometric anomalies detected by the airborne scintillometer survey of 1952. These were inspected by Fisher and Sleis in November, 1952. The localities prospected were plotted in their approximate positions on the Bureau map G71-92 of the Rum Jungle district.

Geology:

Fine-grained gneissic granite, the "Waterhouse" granite intrudes sediments of the Brock's Creek Group, which are Lower Proterozoic in age. A geological map comprises Fig. 2 of this report. A fracture filled with white quartz, brecciated and re-cemented by quartz, passes in an east-north-easterly direction (055 degrees) through locality 3. A late brecciation caused apparently by north-easterly cross-fracturing, and movement along the fault in restricted localities, ~~viz.~~ (over short lengths of it) has resulted in the introduction of some hematite into the vein-quartz. A similar formation described by Fisher and Sleis occurs ¼ to ½ mile to the north.

A strong fault trending 315 degrees M. passes through locality 3. It appears to be vertical, or dipping at a high angle. It is filled with quartz veins which have been brecciated and re-cemented by quartz on at least two occasions. Bands of quartz-breccia cemented by hematite have widths of up to 2 feet, are parallel to the strike of the fault zone, and crop out within a width of 50 feet. On the western side of a fault is a gossanous band about 1 foot wide which persists over a length of at least 500 feet. Gossanous detritus is scattered throughout the width of the fault zone and may indicate the occurrence of more than one gossanous band. No metallic minerals were seen, and the gossan may be pyritic only.

At locality 2, fine-grained gneissic granite outcrops through sandy soil on a north-north-easterly trending belt 200 feet wide and about 800 feet long. It contains a band of (?) meta-quartzite about 7 feet wide, a biotite-rich band about 15 feet wide, and is transected by narrow pegmatitic veins.

At locality 1, silty shales and slates, siltstones, and thin fine-grained quartzitic bands strike approximately north-west and appear to dip steeply. The lithology is more appropriate to the formation west of the plotted position of locality 1 in Fig. 2. About 600 feet to the west is a strong fault filled with white veins of reef quartz, striking approximately the same as the sedimentary beds. It was not examined. Approximately ¼ mile to the east are contact rocks consisting of brecciated, silicified, and slightly metamorphosed arenitic beds. The fine grained sediments are for the most part covered by a thin mantle of angular detritus. Some of these are silicified and slightly hematized and contain quartz stringers. Others are silicified and brecciated. A few fragments show small-scale puckering or drag-folding. Detrital quartz fragments from veins are up to 6 inches wide, and some are brecciated and impregnated with hematite.

Radio-activity:

Sleis and Fisher during 1952, stated that the granite generally gave high counts up to 200 per minute, using Austronic P.R.M. 200. The north-north-easterly trending reef formations gave counts up to 140 and the sediments generally about 80 per minute. They concluded that the anomalies were probably due to the contrast in radio-activity on either side of the granite contact and to outcropping patches of bare granite. The reef formation may have contributed to the anomalies.

At locality 2 the greissic granite examined by Gardner in August, 1954, on Austronic P.R.M. 200 (Serial No. 76) gave counts commonly of 200 per minute and in places slightly greater than 300 per minute. At the eastern edge of the outcrop of bare granite a hole 3 feet deep dug through the sandy soil exposed a narrow band of weathered granite that was slightly foliated or laminated. This may have been due to slight shearing; more probably, it is the result of simple weathering of the greissic granite. At the bottom of the hole the count is nearly 400 per minute. The weathered granite has not been visibly mineralized. No quartz veins or stringers are present, and no gossanous material could be found.

The north-north-easterly trending vein formation gave a count of 100 to 120 per minute. It resembles north-north-easterly trending fractures in granite in the Edith River area, which have been similarly filled with white quartz, brecciated and re-cemented with quartz, and later fractured and in part hematized. Those vein formations at Edith River have been examined carefully and appear to be devoid of significant uranium mineralization.

The north-westerly trending gossanous formation gave a count of 80 to 100 per minute. No significant radiometric anomaly was found in it over a short length that was tested. The hematitic breccia within it resembles similar breccia in north-north-westerly trending shear zones in the Cullen granite near Edith River. In places, they contain lenses of uraniferous hematitic breccia, which apparently are too small and too low in grade to be worth mining.

The silty shales, slates and siltstones of the Brock's Creek Group gave counts ranging from 60 to 120 per minute. No significant radiometric anomaly was found in the area examined.

Conclusions and Recommendations:

No uranium-prospect was found in the area examined. The highest counts were obtained on granite which has an exceptionally high background count. Any further work done in the area could be regarded only as prospecting.

The pit at the edge of the granite outcrop should be extended in an easterly direction to approximately 10 feet from the unweathered granite, to test the possibility of a concealed lode formation there. However it is considered that the radio-activity at the locality is due solely to the high background of the granite. Further prospecting in the granite country should be confined to a rapid traverse along the north-north-easterly trending vein-formation, and a more careful traverse along the gossanous formation.

The Brock's Creek sediments are a more favourable environment for possible uranium mineralization, and warrant systematic prospecting, but up to the present no uranium prospect is known to occur within them in the area examined.

August, 1954.

D.E. Gardner.

APPENDIX II - URANIUM COMPANIES AND SYNDICATES OPERATING IN NORTHERN TERRITORY - 31. 8.1954.

Name	Local Representatives or Geologist.	Southern Connections.
Austral Uranium Co.,N.D.	H.W.G. Good.	
Australian Mining and Smelting Co. Ltd;	H. Brennan	Zinc Corp.
Brock's Creek Uranium Co., N.L.	E. McDonald.	
Centralia Mines N.L.		
Central Uranium N.L.		Mr. Goodsir.
Enterprise Exploration Co. Pty. Ltd.	H. Brennan.	Zinc Corp.
Gold Mines of New Guinea.		
Hidden Valley Mining Syndicate.	W. Power.	
North Australian Uranium Corporation.	E. Becker. A.D.M. Bell.	
Northern Mines Development N.L.	K. Summers.	Dr. Garretty.
Northern Territory Prospecting and Development Co.,Ltd.		Hopkins.
Red Ned Gold Mine N.L.	J.S. Higgins.	
Rio Tinto Company.	R.S. Matheson.	
United Uranium.	J. Fisher.	Frank Jones (Mt.Isa.)
Uranium Corporation of Australia Pty. Ltd.	Trestrail.	Mr. Wharton. Rye Park Scheelite.
Uranium Investigations (N.T.) Syndicate.	Cutlack.	Clare Donaldson.
Uranium Oxide N.L.	Jensen.	Austral Mining Co. Poseidon N.L. Pioneer Mines.
Uranium Prospecting and Development N.L.	Coxon & Macdonald.	Mr. R. Sprigg.
Utinium Pty. Ltd.	Pitman.	
Y.M.C. Syndicate.	Young, Maslin & Cousins.	

APPENDIX III

PROPOSED DIAMOND DRILLING AT THE FLEUR DE LYS MINE BROCK'S CREEK. N.T.

Diamond drilling is expected to begin shortly at the new prospect located about 325 feet from the vertical shaft on a bearing of 308 degrees. Although a detailed mine survey has not been completed two exploratory drill holes are recommended. The drilling calculations are based on a plan of the mine area at a scale of 40 feet to 1 inch.

The ore mineral (torbernite) occurs as coatings on bedding plane surfaces and on wide spaced irregular fractures intersecting the bedding. The distribution of torbernite is controlled in the main, by the bedding and the drill holes are aimed to intersect the mineralised beds at a vertical depth of 50 feet.

Diamond Drill Hole No. 1.

Location: 210 feet on a bearing of 234 degrees, (magnetic) from base peg G5 (Marked peg in ground at prospect).

Drill direction: 060 degrees.

Depression: 43 degrees.

Drill depth to target: 57 feet.

Vertical depth: 50 feet.

Diamond Drill Hole No. 2.

Location: 238 feet on a bearing of 236 degrees (magnetic) from base peg G6 (Marked peg in ground at prospect).

Drill direction: 060 degrees.

Depression: 35 degrees.

Drill depth to target: 57 feet.

Vertical depth: 50 feet.

Both drills are directed at targets below restricted areas of high radioactivity where torbernite has been discovered. The radioactive areas occur in two separate horizons which are 35 feet apart (horizontal distance). Diamond Drill 1 can be extended beyond its target to a drill depth of 90 feet. At this distance it should intersect any continuation of the mineralised bed which forms the target for Diamond Drill 2. Diamond Drill 2 will pass through any continuation of the mineralised bed which forms the target for Diamond Drill 1 at a drill depth of 25 feet.

If the mineralisation is found to continue at depth then the drills should be depressed further from the original drill sites and in the same direction. Other drill sites can then be chosen at 20 feet intervals south east of Diamond Drill 1 and North west of Diamond Drill 2 to test the lateral extent of the deposit.

If the mineralisation does not continue at depth the areas of high radioactivity should be opened up by sinking shallow shafts. This will supply the necessary data for the calculation of new drill targets.

August, 1954.

(J.B. Firman.)
Geologist.

APPENDIX IV.

SOME IMPRESSIONS ON A VISIT TO MT. ISA URANIUM PROSPECTS.

A five-day visit was made to Mt. Isa to inspect the new uranium finds in that district. Time would permit only an inspection of the prospects in the vicinity of Mt. Isa.

After a visit to the area, one is impressed most by the amount of prospecting that has been done since the radioactivity was first found on 14th March, 1954, just five months ago. Now radioactivity has been proven over an area some 170 miles long and some 70 miles wide, according to reports. Applications were lodged for 280 leases, averaging 25 acres each, in the first three months.

The rate of surface prospecting and the opening up of new country is far more rapid than in the Northern Territory. This may be accounted for by the different mining laws. At Mt.Isa there are no large Authorities to Prospect and the mining laws, which necessitate the pegging of leases, encourage amateur or "week-end" prospectors, who are responsible for most of the new finds.

Due to the speed of the prospecting of the area, detailed investigation of the leases has been neglected in the rush to find new areas.

One of the chief problems requiring immediate attention is the determination of the exact nature of the mineralisation, which produces the radioactivity. If uranium is present in sufficient quantity, as it would appear, the metallurgical problem of its extraction requires urgent detailed investigation. Unless these problems are solved quickly the present keen interest may slacken.

The areas visited were:- "Quartz Blow" or Spear Creek area, "Glowing Hills" or Paroo Creek area, Gorge Creek area, the Mary Kathleen lease and other leases en route to these areas.

The prospects are in altered basic rocks, which include basalt flows, and are of lower Proterozoic age. In the vicinity of most of the prospects, it was possible to locate "limy" beds and the mineralisation appears to be controlled by complicated structures, which those interested have not yet found time to map or investigate.

In the "Quartz Blow" or Spear Creek area, the lodes are mainly narrow and controlled by complex folding and faulting of altered basic rocks. The radioactivity appears to be spasmodic, but this is probably due to structural control. Two shafts being sunk in this area are probably misplaced due to insufficient attention being paid to the structure in each case.

In the "Glowing Hills" or Paroo Creek area, the lodes are wider and longer but the radioactivity in not so strong. Drilling on the Pile lease has shown apparently that the mineralisation does not improve at depth, because Mt. Isa Mines Ltd. have suspended operations. On the Skal[illegible] lease, the site of the original find, the lode shows greater radioactivity and has been shown to persist to a depth of 200 feet by drilling. There are two blocks of ore on this lease several hundred feet long and up to 70 feet in width. If the grade proves to be workable there should be good open-cut propositions on this lease. It appears that the ore body may be displaced by a series of north-westerly faults and once again

detailed geological mapping may show favourable areas for prospecting.

In the Gorge Creek area, the Counter lease has a most promising lode up to 60 feet in width and 180 feet in length, which is said to assay 0.7% U_3O_8 over the maximum width. This assay is probably equivalent uranium. The lode is parallel to the bedding associated with a dark-grey quartzite containing magnetite and surrounded by highly altered basic rocks. The lode is displaced by the north-south faults, and mapping may disclose where the continuation of the lode may be found.

The Mary Kathleen is a spectacular lease with a steep slope some 150 feet high covered with outcrops and boulders for a length of approximately 300 feet. The area shows considerable radioactivity, with occasional readings up to 30,000 counts per minute on a Phillips counter. The mineral is said to be chiefly uranophane. It is doubtful if the deposit will bulk more than 0.5% U_3O_8.

It is amazing that so little work has been done on this deposit considering the publicity and the high bidding by interested companies. The only evidence of any work is a few small costeans.

Throughout the areas visited primary mineralisation occurs at the surface and only occasional small quantities of secondary yellow uranium mineral, probably autunite and ochre, are seen along fractures in the rock. Some evidence of copper is usually found.

The uranium mineral is rarely visible, but the mineralisation occurs near limestone or "limy" beds amongst altered basic rocks and frequently associated with quartzites. Granite intrusions usually exist within 3 or 4 miles.

Detailed geological mapping and investigation is required throughout to discover the mode of occurrence of the mineralisation and to locate further occurrences.

This district seems to be destined to be an important uranium producer providing sufficient of the radioactivity is due to uranium and that the uranium can be extracted.

August, 1954. J.H. Lord.

APPENDIX V.

MONTHLY REPORT REGIONAL GEOLOGICAL PARTIES, RADIOACTIVE SECTION. AUGUST, 1954.

SUMMARY OF ACTIVITIES:

The regional parties were reorganized during the month owing to the absence on sick leave of K.G. Smith, geologist-in-charge of the Tipperary party.

The Ban Ban party under D.A. White completed mapping the western section of the Ban Ban 1 mile area and continued mapping on the eastern section of this sheet. Geologists P.R. Dunn, R. Stewart and H. Quinlan assisted in this work.

A party under B.P. Walpole moved to the Gimbat area and commenced mapping in the area adjacent to the new "Sleisbeck" uranium prospect. Geologists engaged in this work are E. Malone and B.P. Walpole who were joined towards the end of the month by R. Stewart and P.R. Dunn.

Dr. G. Joplin, Australian National University, visited the field parties for 10 days from 19th August to 30th August.

Professors Dunkin and Worner, Melbourne University spent one day with the field parties and were shown the Maranboy and Yeuralba areas.

No prospecting work was carried out during the month.

GIMBAT AREA:

The equivalent of approximately one 1 mile area was mapped during the month. Mapping of the area surrounding the Sleisbeck discovery and of the Turnoff Creek region occupied most of this time. Particular attention was paid to the critical Lower Cambrian succession in the Turnoff Creek area. Information obtained from this work is still being analysed. Results to date however, indicate the necessity for a complete revision of ages and relationships of the Mt. Callanan and Edith River Groups. Uranium Mineralization in the Sleisbeck area is definitely within the Lower Cambrian beds and occurs at one point (No.4 Open cut) on a sheared contact between limestone and quartz siltstone. The limestones form lenses in a sequence dominated by volcanic rocks and are fossiliferous. The overall structural control of mineralisation is the south-easterly extension of the South Alligator River fault zone.

BAN BAN AREA:

Mapping of the eastern section of the Ban Ban 1 mile area is virtually completed. The mapping has disclosed a third recognizable unit, tentatively referred to as the "Mt. Masson Beds," within the Lower Proterozoic sequence. The unit consists of interbedded medium-grained quartz sandstone and greywacke which grade to quartz conglomerate and greywacke conglomerate, and banded siltstone. The Mt. Masson "Beds" are probably of formation rank and have a minimum thickness of 10,000 feet. They conformably underlie the Brock's Creek "Beds". (See July monthly report). On the Ban Ban Sheet, the Mt. Masson "Beds" crop out on the flanks of a domal structure, the core of which is occupied by the northern limit the Cullen Granite. Small syenite bodies occur near the south-western edge of the granite in this area.

RECONNAISSANCE TRAVERSES.

Two reconnaissance traverses were carried out during the month. One of these was from the Sleisbeck area through the valley of the South Alligator River to Coronation Hill. A considerable area of rhyolitic, dacitic and tuffaceous rocks was investigated. A second traverse east of the Mary River to the Mudgenbarrie Waterhole near Cannon Hill showed that the Mt. Masson Beds extend to the east at least to the South Alligator River. Outcrops east of this river on the line of the Traverse were very ppor and consisted mainly of silicified limestone. A small granite outcrop was located on Namambu Creek 12 miles N.S.W. from Mudgenbarrie. The granite is markedly different in composition from any of the known Lower Proterozoic granites in the Katherine Darwin Region. Specimens were collected for age determination.

August, 1954.

D.A. White.

B.P. Walpole.

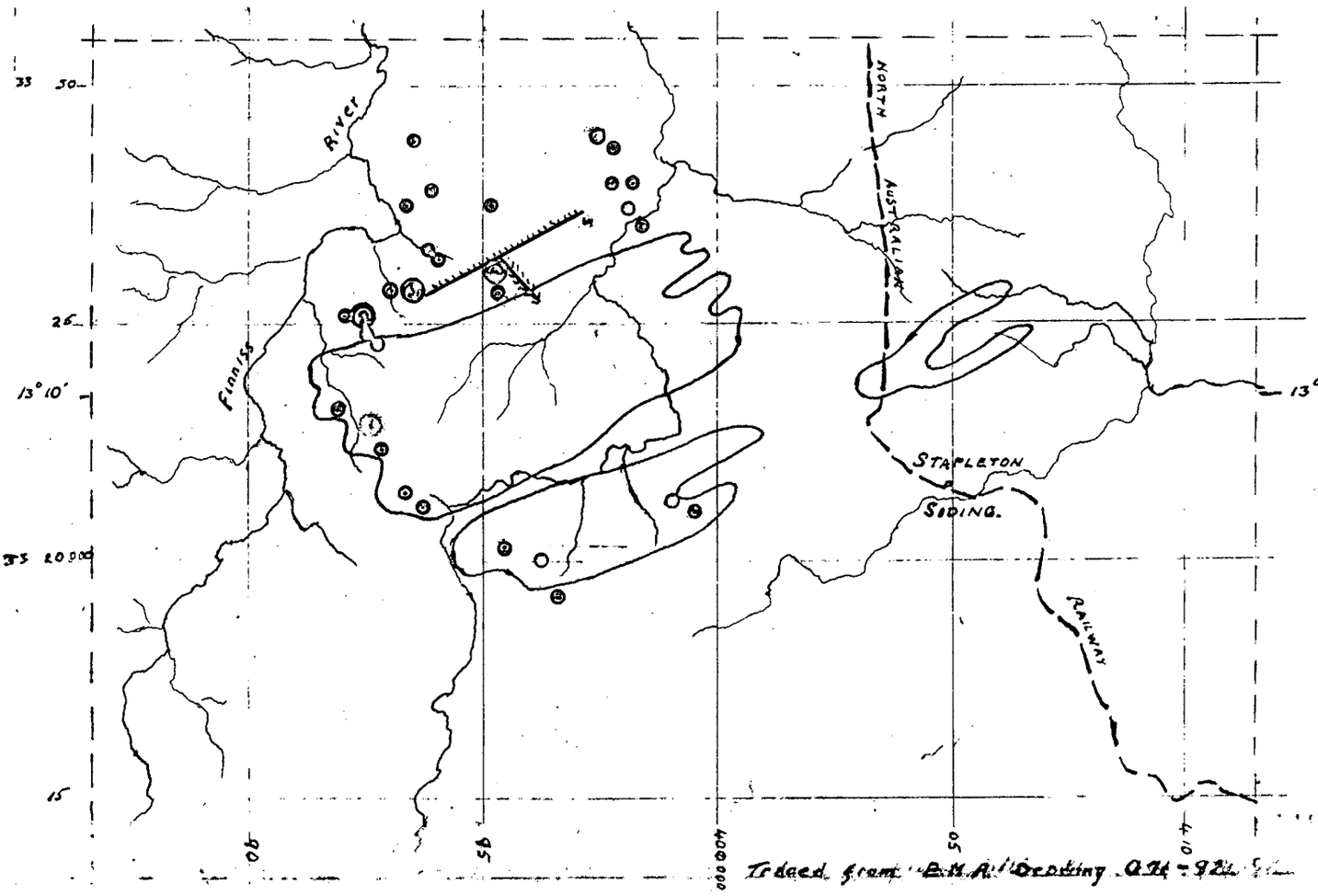

Fig. 1. LOCALITIES PROSPECTED BY P. ETHELL, AUGUST 1954.
AND NEARBY AIRBORNE SCINTILLOMETER ANOMALIES OF 1952.

Scale: 0 1 2 3 4 5 MILES

- ○ 1st Order anomaly
- ○ 2nd Order anomaly
- Continuous radio-activity with average of 2nd Order anomaly.
- ② Locality referred to in report.
- Quartzose vein formation
- Vein formation containing gossanous band.

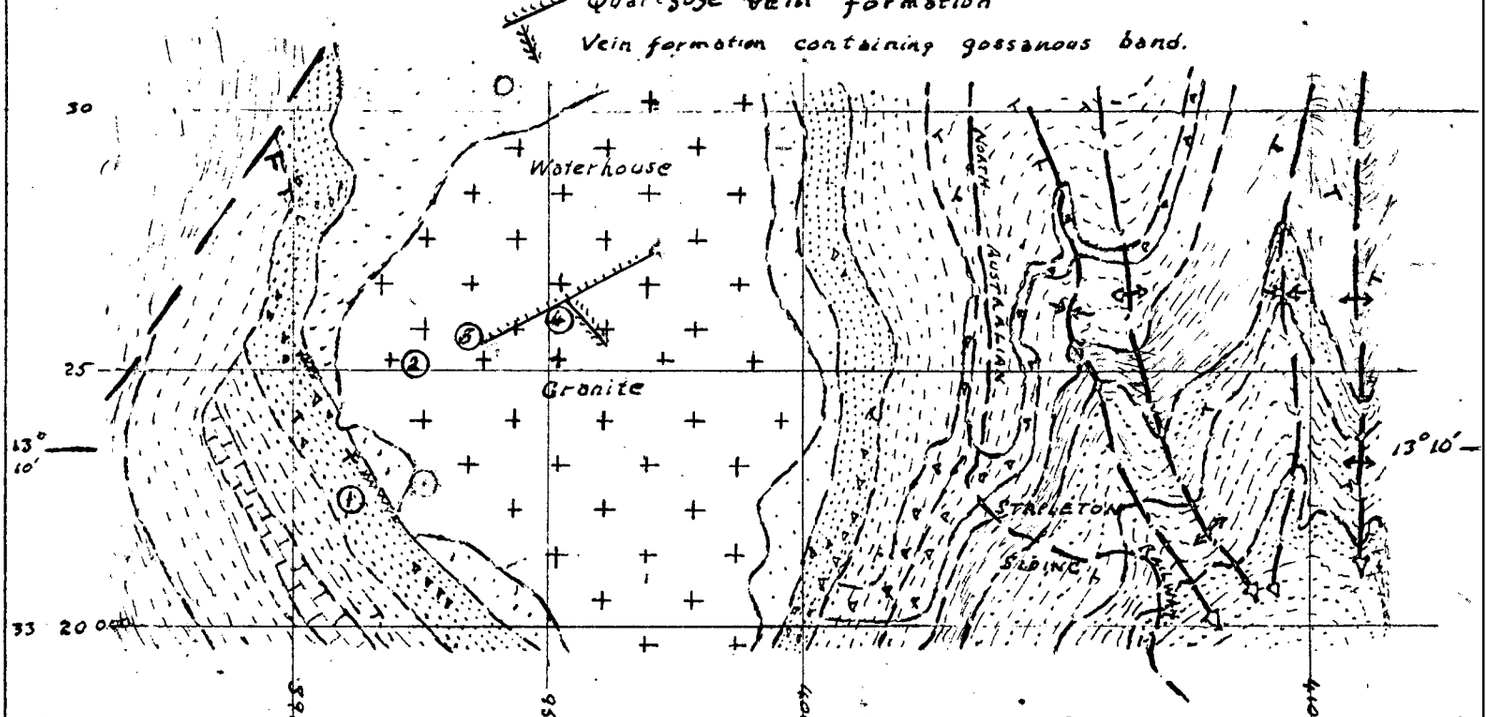

Fig. 2. LOCALITIES

GEOLOGICAL MAP SHOWING ~~LOCAL~~ PROSPECTED BY P. ETHELL.

Scale: 0 1 2 3 4 5 Miles

- "Waterhouse" granite.
- Metasediments and granitized (?) sediments.
- Quartzites, grits, and hematized boulder conglomerate.
- Slates, siltstone, quartzite, and impure limestone.
- Slates, shales, quartzites, tuffs, siltstone, hemat. quartzite breccia
- Banded slates, shales and siltstones.
- Sandstones, shales, and sandy micaceous limestone.
- Slates, shales, sandy shales, impure limestone.
- Grits, sandstones, sandy shales, and impure limestones.
- Arkose, felspathic sandstone, sandy shale, shale.
- Impure crystalline limestone found throughout most of the geological section.
- ② Locality referred to in report.
- Quartzose vein formation
- Vein formation containing gossanous band.