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DEPARTMENT OF NATIONAL DEVELOPMENT.

BUREAU OF MINERAL RESOURCES GEOLOGY AND GEOPHYSICS.

RECORDS. 1954/49

RADIOACTIVE SURVEYS KATHERINE - DARWIN AREA

REPORT ON ACTIVITIES

of the

DARWIN URANIUM GROUP,
SEPTEMBER, 1954.

by

J.H. Lord.

DARWIN. N.T.

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ADMINISTRATIVE SECTION:

STAFF.

Movements:

E. Clark, mechanic, transferred from the regional party to Mt. Isa on 2nd September.

Additions:

I. Magnoler, field assistant, commenced duty on 3rd September.

J.F. Sheridan, cook, commenced duty on 6th September.

H.J. Simper, field assistant, commenced duty on 6th September.

A.H. Randall, field assistant, commenced duty on 7th September.

J. Grigas, field assistant, commenced duty on 8th September.

D.F. Rees, cook, commenced duty on 13th September.

S.J. Gordon, field assistant, commenced duty on 15th September.

J. McGinn, bulldozer driver, commenced duty on 15th September.

(Mrs.) A. Alchin, cleaner, commenced duty on 16th September.

N.A. Moore, field assistant, commenced duty on 27th September.

C. Ewan, cook, commenced duty on 27th September.

Resignations:

J. Moore, drill foreman, resigned on 31st August.

H. Boensch, field assistant, was dismissed on 1st September.

B. Kreyzig, field assistant, was dismissed on 1st September.

(Mrs.) J.M. Walpole, cook, resigned, 1st September.

(Mrs.) D.R. White, cook, resigned, 2nd September.

J. Wright, field assistant, was killed in a road accident while off duty on 4th September.

T. Lahn, field assistant, resigned on 9th September.

(Mrs.) M.L. Nolan, cleaner, resigned on 15th September.

D.F. Rees, cook, was dismissed on 29th September.

W.A. Moore, field assistant, resigned on 30th September.

P. Mayman, geophysical assistant, resigned on 30th September.

HOUSING AND OFFICE ACCOMMODATION.

The final house in the original contract of eight became available early in September.

The next 12 houses at Fannie Bay are progressing. Two of the houses are roofed and have the walls and lining almost completed; two more are roofed and walls are well advanced. The framework of three other houses is almost completed.

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

WINNELLIE STORE.

The stores' procedure still suffers from insufficient clerical staff to handle it. With the return of the equipment at the end of the field season the position will deteriorate.

No further progress has been made on the conversion of a room to a chemical laboratory at Winnellie. The Department of Works has the necessary requisition for the installation of water and power, but have not yet commenced work.

RADIOMETRIC LABORATORY.

The assaying section was up-to-date with assays at the end of the month, having completed 405.

During the month 47 instruments were repaired, of which 17 were for private persons.

Bore logging equipment continues to occupy much of the technician's time.

TRANSPORT.

Throughout the month vehicles operated satisfactorily considering that the season is almost concluded. Several land-rovers require extensive overhauls.

VISITORS.

Dr. Ghosh, Geological Survey of India, arrived in Darwin on 7th September and departed early on the 10th September. He was shown the Darwin establishment, Rum Jungle and Adelaide River Prospect.

Four members of the C.S.I.R.O., Mr. Lewis, Mr. Thomas, Dr. Scott and Dr. Sutherland, arrived at the Darwin office on 14th September and were escorted to Katherine, visiting all the prospects en route.

Mr. P.B. Nye, Director of B.M.R., visited Darwin for the opening of the Rum Jungle Project on 17th September and visited the Darwin office on the following day.

Mr. S.J. Dickinson, Director of Mines, South Australia, who attended the opening of Rum Jungle was escorted to the Adelaide River and Brock's Creek Project. Under his own arrangements he visited Sleisbeck.

Dr. F. Booker, Government Geologist of N.S.W., arrived in Darwin on 27th September and departed on 3rd October. He was escorted to all prospects including Sleisbeck.

Mr. J.C. Webb, Principal Engineer of the Atomic Energy Commission, was in the Northern Territory from 13th to 30th September. He visited the Darwin office several times and was accompanied to several areas.

TECHNICAL SECTION.

A.B.C. PROSPECT.

Exploratory work has continued on the A.B.C. Reservation, by detailed ground investigation and drilling. Some holes were "wild-cats" on soil-covered areas.

Two new localities giving higher counts were located. One locality shows a small amount of uranium mineralisation, while the other is a soil-covered area.

A small amount of copper mineralisation was located within the volcanic valley, but it did not show any radioactivity.

All these new localities are being investigated in detail, with small costeans and drilling.

The car-borne unit completed the work on the reservation during September and moved to Brodribb to assist with the geophysical investigation of the Manton Dam area. Likely areas disclosed by this work are being investigated.

One drill is being withdrawn from this Prospect to work at Burrundie and the other will remain to drill the magnetic anomaly and any new areas located.

The report on the investigation of the original prospect is being compiled by the officers concerned.

ADELAIDE RIVER PROSPECT.

The report on the radiometric gridding of this prospect has been completed but it is waiting for the plan to be drafted.

Uranium Development and Prospecting N.L. is continuing active prospecting. There are now seven shafts and two adits on the Prospect. The chief effort is being concentrated on shaft No. 5, which is being sunk to intersect the pitchblend located in diamond drill hole No. 4.

Diamond drilling is continuing and the holes are being probed by the Bureau (see Plate I and II) Diamond drill hole No. 5 intersected a highly radioactive lode according to the probe results. This hole is some 200 feet south of No. 4.

BROCK'S CREEK PROSPECT.

No work has been done on this area by the Bureau during this month. It is intended to complete the work shortly.

The company has continued the slow development of the original find and has commenced a shaft on the second "find" 300 feet to the north of the original prospect.

Two diamond drill holes have also been sunk on the latter find to depths of 95 and 150 feet. These holes were located by the company and apparently did not yield any results of interest. The drilling, which was done by Enterprise Exploration, has ceased.

BURRUNDIE PROSPECT.

Preparations are being made to move a drill into this area during October. Due to the approach of the "wet" season it will be possible only to drill one of the suggested holes.

AIRBORNE SCINTILLOMETER ANOMALIES.

Reports on the fifty-four anomalies on the Ban Ban Scintillometer Sheet have been completed and distributed.

A geologist is now investigating anomalies on the Reynolds River Sheet.

SLEISBECK PROSPECT.

This Prospect was inspected during the month and a report is attached as Appendix I.

The regional party has completed its operations in the area.

NEW FINDS.

There were 37 Authorities to Prospect held at the end of September with 39 pending.

A new find has been made to the north-west of the B.M.R. Coronation Hill Reservation between Koolpin and Bamboo Creeks, which is claimed to be "better than Sleisbeck." The exact date of finding and the exact locality is unknown as there is a dispute between two companies regarding who is entitled to it legally.

Rio Tinto Co. reported some radioactivity near Mt. Tolmer recently. During the month self-potential traverses were made of the area and the report by J.B. Misz is attached as Appendix II.

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), Rio Tinto Co.(near Mt. Tolmer), and Brock's Creek Uranium Co. Several other companies are costeaning on their areas.

REGIONAL PARTY.

With the work at Sleisbeck completed, the regional party is now operating from one camp on the Mary River, east of Pine Creek. With the field season nearly completed the regional party is now working on unfinished one-mile sheets, such as Burnside and Burrundie.

K.G. Smith has reported an area of slightly increased radioactivity on the Burnside West sheet in a Cambrian rock of indefinite origin. Counts of 120 to 160 per minute on an Austronic P.R.M. 200 counter was obtained over an area of approximately 40 square yards. The background was 50 counts per minute.

When found this area was on Authority to Prospect No. 144, which has now been surrendered.

An inspection will be made as soon as possible.

The monthly report of the regional party has not yet been received.

EDITH RIVER PROSPECT.

The drill hole No. F2 at Deposit F, Edith River was stopped at 320 feet after passing through the shear zone and a number of quartz veins which showed no radioactivity.

Due to trouble with the probing apparatus this hole has not yet been probed.

The second and last hole at Edith River, No. A2 at Deposit A was commenced and had reached a depth of 160 feet by the end of the month.

A full report on the drilling at this Prospect will be prepared as soon as hole No. A2 is completed.

GEORGE CREEK PROSPECT.

On 13th September, Geologist J. Rade, located a small area of radioactivity near George Creek (see PLATE 6.) The area has been inspected and a reservation of two square miles was applied for on 30th September.

Over a few square feet a count of 10 to 15 times background can be obtained although there is no mineralisation on the surface. The area is of interest because the rocks resemble those in the vicinity of the Adelaide River Prospect.

As soon as staff are available geophysical and geological work will be done on this Prospect.

MISCELLANEOUS ITEMS.

Geobotanical Investigations:

Mr. A Debnam, geochemist, has completed geobotanical investigation of all known uranium prospects in the Darwin - Katherine area. He has accumulated considerable information on the relationship of uranium to the surrounding vegetation and considers that geobotanical and geochemical methods can be used to determine the sub-surface extent of known uranium deposits.

Mr. Debnam is now investigating portions of the A.B.C. Reservation away from the original find, to ascertain if he can locate any new areas of radioactivity using geobotanical methods.

Manton Dam Area:

Mr. J. Barlow is carrying out radiometric and self-potential investigations on this area.

Rum Jungle Area:

The metaliferous group of the Geophysical Section has operated throughout the month at Rum Jungle. Work has been done at Brown's, Mt. Fitch and Mt. Burton Prospects.

Monthly Conference:

This was held in Darwin on 3rd September and was attended by all resident geologists and geophysicists and Mr. Quinlan representing the regional party.

"Geology Club":

The fourth meeting was held in September when a series of lecturettes were given by Dr. Horvath and Messrs. Langron and Smellie.

September, 1954. J.H. Lord.

REPORT ON AN INSPECTION OF THE SLEISBECK URANIUM PROSPECT, N.T.

The Sleisbeck Prospect is situated on the north-west side of the Katherine River, approximately 72 miles on a bearing of 82½ degrees from Pine Creek, on Authority to Prospect No. 151.

Radioactivity was first discovered by George Sleis in June, 1954, at the eastern end of the No. 1 or East Hill (see attached plan.) Plate 3. Further prospecting has disclosed intermittent radioactivity for a distance of 1½ miles to the west-north-west.

Basic details of the Prospect are to be found in the following Bureau of Mineral Resource's reports:-

F. Frankovich: Reconnaissance Examination of Proposed Authority to Prospect No. 151 (Sleisbeck.)

J.B. Misz: Report on Inspection of Portion of Proposed Authority to Prospect No. 151 (Sleisbeck,) N.T.

It is pointed out that the orientation of PLATE 2 of Frankovich's report is in error by 180 degrees.

GEOLOGY.

The radioactivity occurs in a line of low hills (see attached plan and air photo Mt. Evelyn area No. 12/5134) of quartzite breccia which contains some lime in places (called silicified limestone breccia by the B.M.R. regional geologists) and is heamatised where the radioactivity occurs. The rock, which may belong to the Mt. Callinan formation, is situated in the East Alligator River fault zone which can be traced easily on the mosaic north-westwards through Coronation Hill.

Because of the rock's position in a fault zone, it is difficult to determine the true attitude of the deposit, which on present indications appears to dip steeply to the south.

No detailed mapping has been done and the first drill hole (which is probably being drilled with the dip) is not yet completed. The two small open-cuts do not yet show the dip due to leaching, blasting and bulldozing operations. In the floor of one open-cut dark grey shale or siltstone has been exposed, which appears to have a flat southerly dip, but this may be due to minor folding.

RADIOACTIVITY.

No. 1 or East Hill.

This hill (see attached sketch) consists of quartzite breccia, and radioactivity can be traced from the original find at the eastern end along a heamatised band on the northern side of the hill for some 700 feet. Counts are usually 2 to 5 times background, with occasional counts up to 10 to 15 times background.

Some finely divided secondary uranium mineral can be found near the western end of the hill and an open-cut on this occurrence is now being commenced.

No. 2 or Middle Hill.

This is the longest of the three elongated hills. Near the centre of this ridge on the southern slope occurs the most promising prospect, known as Exposure No. 4. At this point there is a change in the strike.

A small open-cut into the hill has been commenced on this exposure. It extends along the hill for some 60 feet with a maximum width of 40 feet, and has a face up to 10 feet high into the hill.

Considerable amounts of spectacular secondary uranium mineral can be found. It is said that pitchblende has been identified in one portion of the open-cut, but it was covered with rubble at the time of inspection. Dark grey shale, which occurs in the floor of this open-cut, is probably overlying the quartzite breccia forming the ridge.

On the ridge above the open-cut, hematised quartzite breccia extends over a length of 500 feet and up to 20 feet wide giving counts up to five times background. This could be the outcrop of the material being mined in the open-cut, which would indicate a southerly dip.

A diamond drill hole is being sunk, assuming a northerly dip, but this has apparently been unsuccessful.

It is estimated that 200 tons of ore have been stockpiled, which may bulk 1% U_3O_8.

No. 3 or West Hill.

At the eastern end of this hill there is an irregular band of heamatised quartzite breccia 150 feet long with counts up to 10 times background and some visible secondary uranium. This is known as the No. 3 Exposure.

Near the centre of the hill on the North side there is a small area (50 feet by 20 feet) which gives readings up to 20 times background with small quantities of visible secondary uranium mineral. This is known as Exposure No. 2.

At the western end there is an area (approximately 40 feet by 100 feet) of heamatised quartzite breccia which averages 10 times background with occasional counts up to 30 times. Some secondary uranium mineral can be found. A small open-cut has been commenced on this Exposure No. 1., but it is doubtful if the rock is of ore grade.

On the flats between these hills occasional outcrops are found which will give counts up to five times background, when they are heamatised.

CONCLUSIONS.

Over a length of one and a half miles areas of radioactivity occur worthy of extensive exploration. At one point (No. 2 or Middle Hill - Exposure No. 4) there is a spectacular display of secondary uranium minerals, which is producing high-grade ore, but the extent of this type of ore will be limited and the future will depend on the successful development of the primary

zone, if it can be located and is of the requisite grade.

The company has not yet done any detailed geology which should be a first essential for the successful and economic exploration of such a deposit.

RECOMMENDATION.

This find has attracted the attention of uranium prospectors to the possibilities in the East Alligator fault zone, an area previously recommended by the Bureau of Mineral Resources.

It is recommended that a nominal reward be made immediately for this find to be increased if and when larger quantities of ore are proved.

10th September, 1954.

J.H. Lord.
Senior Geologist.

SELF-POTENTIAL TRAVERSES AT MT. TOLMER PROSPECT STAPLETON AREA. N.T.

The Self-Potential work discussed below was undertaken at the request of Rio Tinto Co., which is presently investigating the prospect. Field readings were made on 15th September, 1954.

Geology (See PLATE 4.)

The radioactivity occurs in a gossanous shear 150 feet west of a prominent fault. The latter is evidenced by a prominent zone of silicification and brecciation, which joins the Giant's Reef Fault approximately 0.8 miles to the south.

Strong radioactivity occurs only at one point, this being where the gossanous shear cuts through a bed of grey shale at a very oblique angle. This point is also the site of the strongest iron staining apparent along the mapped portion of the shear. Abundant sulphide boxwork and pyrite casts occur.

The grey shale grades both upwards and downwards into a fine-grained, red, micaceous sandstone. The dip is steeply to the west.

Self-Potential Results (See PLATE 5.)

Traverse No. 1 was placed parallel to the gossanous shear as determined by the costeans. The purpose was to determine where the lowest potentials were along the strike of the mineralization, thereby locating the most favourable positions for traverses perpendicular to the elongation of mineralization. The Self-Potential line is 760 feet in length and extends across the entire mapped area.

An anomalously low potential zone occurs between costean E and a point midway between costeans A and K. This coincides with the zones of highest radioactivity and strongest gossan development.

Traverse No. 2 is at right angles to the strike of mineralization and crosses it between costean B and C, the centre of the anomaly recorded on traverse No. 1.

A small but unmistakable negative anomaly occurs over the mineralized gossan, the lowest potentials being directly on the gossan.

Traverse No. 3 was done to determine the effect of the local topography on the potential distribution. The traverse is well away from the anomalies on traverses No. 1 and No. 2. The relief along it is equal to the greatest relief in the mapped area.

The geological base line marks the centre of the ridge on which the prospect occurs. This ridge is approximately 30 feet above the two flat bottomed gullies shown on PLATE 4. West of the western gully, the surface rises steeply to perhaps 60 feet above the gully at the end of the self-potential traverse.

Pronouncedly low potentials are associated with the two gullies. This indicates that the western portion of the main

anomaly on traverse No. 2 is due to the gully, and hence the anomaly due to the lode is much narrower than would appear to be the case at first glance. The latter probably extends only 40 feet to either side of the gossan. The anomaly on traverse No. 2, 100 feet east of the gossan, is also a topographic effect.

Probably a more important feature of traverse No. 3 is the fact that no discernable anomaly is associated with the topographic ridge on which the gossan line occurs.

It will also be noted that traverse No. 3 crosses a considerable width of the grey shales where only a slight anomaly was recorded. Hence the main anomalies on traverses No. 1 and No. 2 can be partly, but not entirely ascribed to the slightly carbonaceous (?) shales.

CONCLUSIONS.

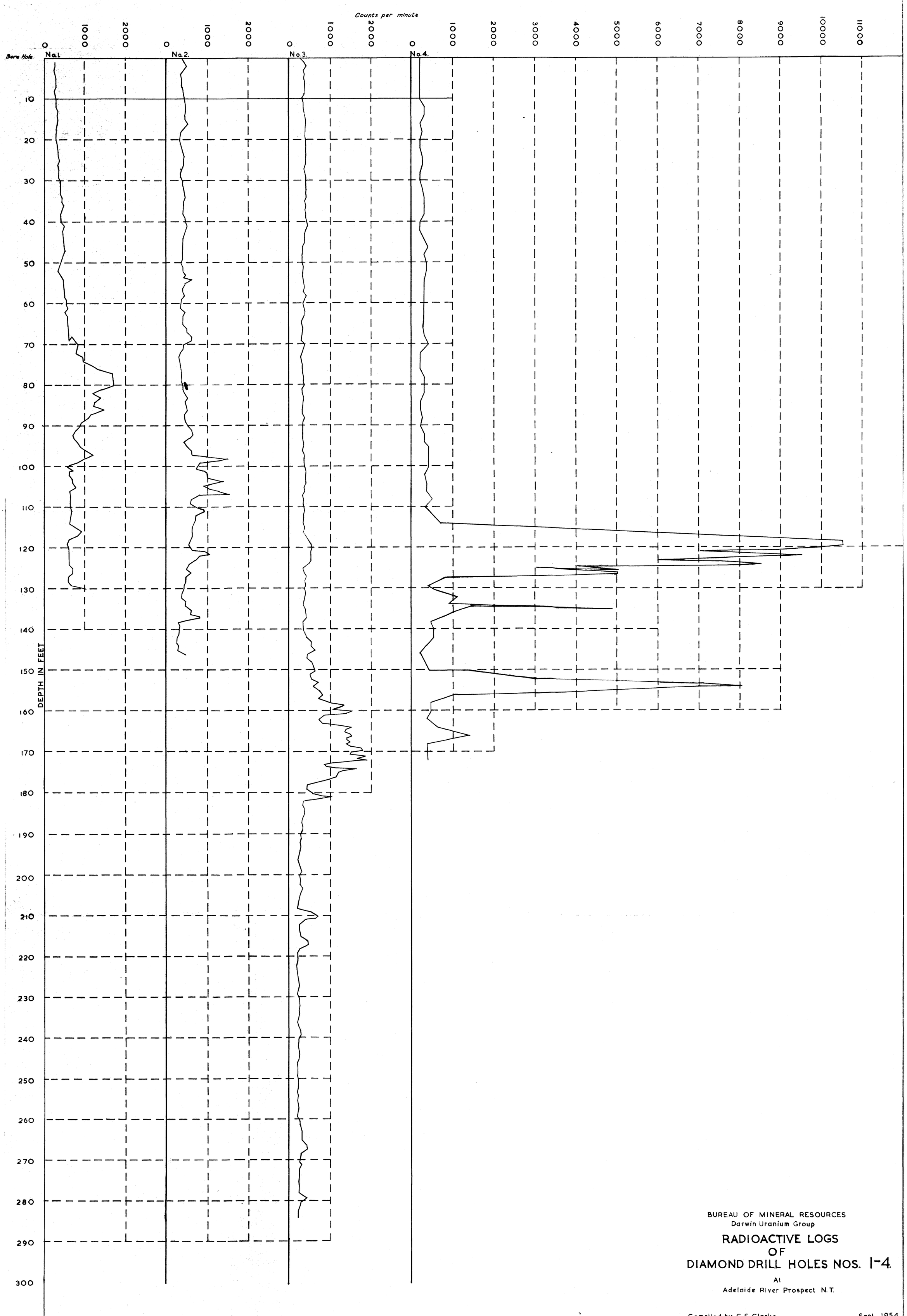
A small but definite self-potential anomaly is associated with the strongest radioactivity at Mt. Tolmer Prospect. This anomaly also corresponds to the strongest gossan development in the area. It has been shown that the anomaly on traverse No. 2 is the maximum obtainable along the gossan line in the mapped area and that it is not due to topography but may be partly due to the slightly carbonaceous (?) shales which correspond in position to the anomaly. The main self-potential anomaly does not extend beyond the limits of the surface gossan development. No estimate can be made of the depth or strength of primary sulphide mineralization. From the writer's past experience, the amount of sulphide indicated by the surface gossan would be ample to cause the anomaly obtained under the conditions existing at the time the survey was made.

J.B. Misz.

APPENDIX III - URANIUM COMPANIES AND SYNDICATES OPERATING IN NORTHERN TERRITORY - 30. 9. 1954.

Name	Local Representatives or Geologist.	Southern Connections.
Austral Uranium Co., N.L.	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.
Coronation Investments pty. Ltd.		
Enterprise Exploration Co. Pty. Ltd.	H. Brennan.	Zinc Corp.
Gold Mines of New Guinea.		
Hidden Valley Mining Syndicate.	W. Power.	
Metals Exploration Pty.Ltd.	R. Hare.	H.J.C.Connelly.
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.
Uranium Corporation of Australia Pty. Ltd.	Trestrail.	Mr. Wharton Rye Park Scheelite.
Uranium Investigations (N.T.) Syndicate.	Cutlack.	
Uranium Mt. Isa, Ltd.		C. 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.	

PLATE I



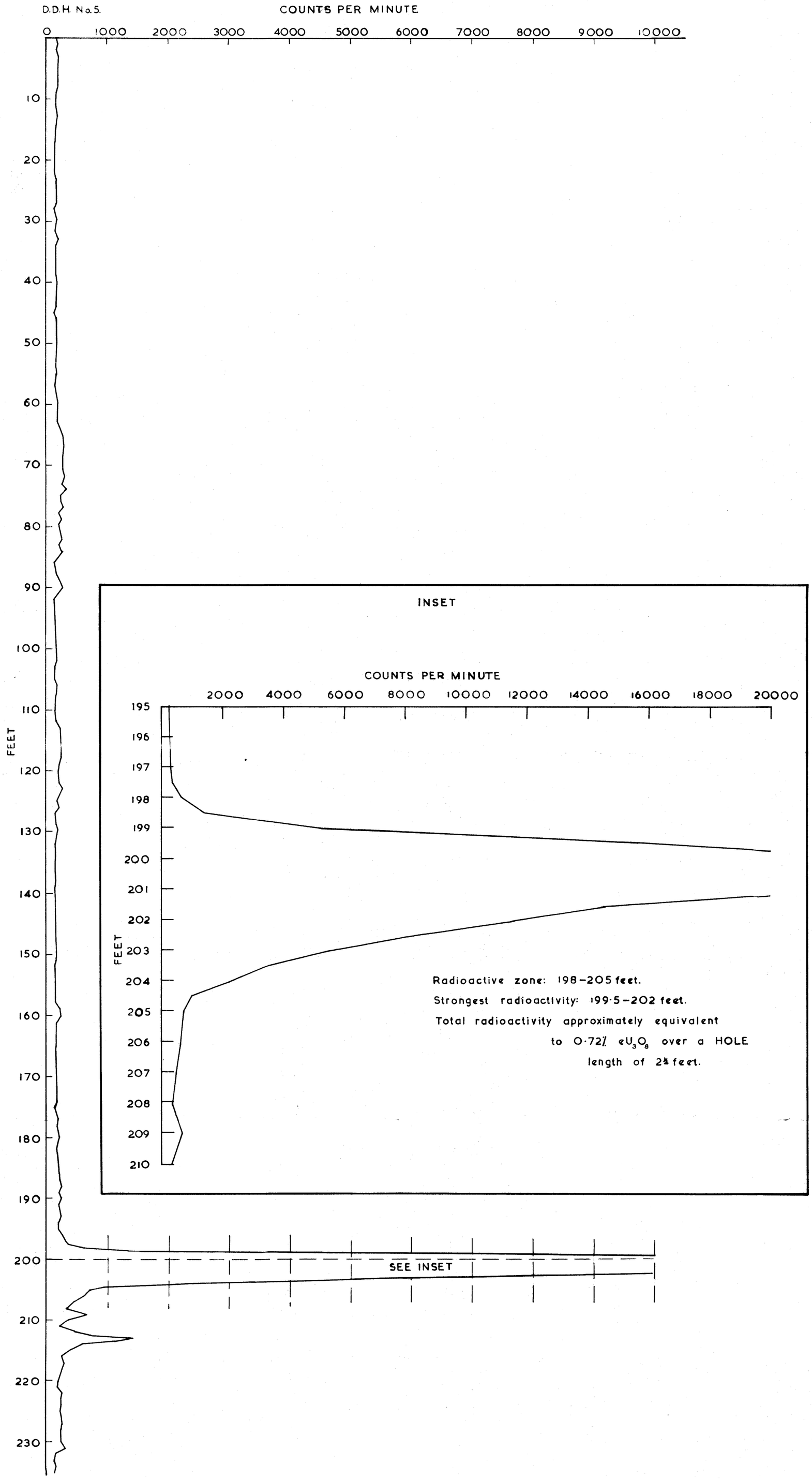
BUREAU OF MINERAL RESOURCES
Darwin Uranium Group

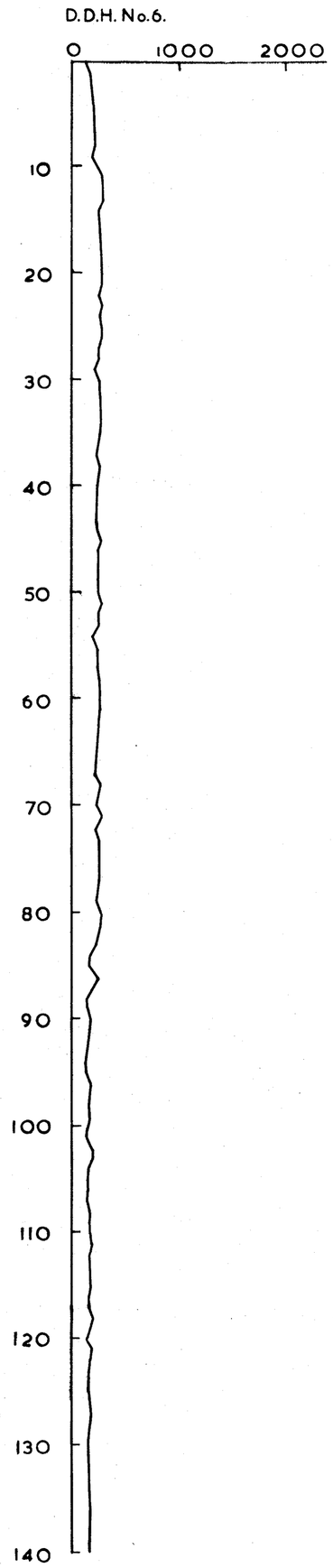
RADIOACTIVE LOGS OF DIAMOND DRILL HOLES NOS. 1-4.

At
Adelaide River Prospect N.T.

Compiled by G.F. Clarke. Sept. 1954.

PLATE 2.





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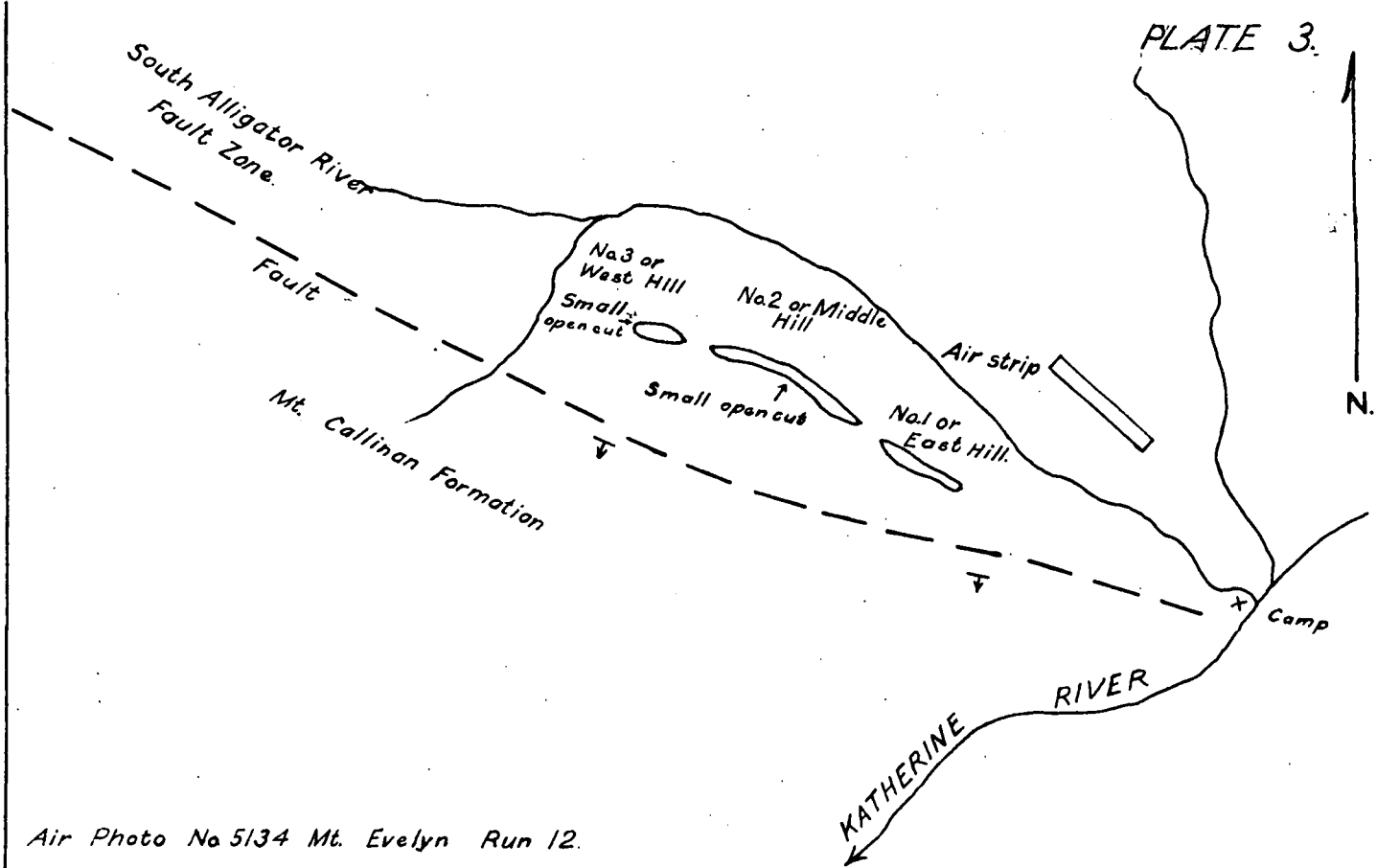
RADIOACTIVE LOGS OF DIAMOND DRILL HOLES NOS. 5-6.

AT
Adelaide River Prospect N.T.

Compiled by J. B. Misz. Sept. 1954.

PLATE 3.



Air Photo No 5134 Mt. Evelyn Run 12.

BUREAU OF MINERAL RESOURCES — Darwin Uranium Group

Sketch Plan of SLEISBECK PROSPECT N.T.

Approx. Scale: 1400 yards to an inch.

Sept. 1954

PLATE 4

TRAVERSE 1

TRAVERSE 2

TRAVERSE 3

BRECCIATED SILICIFIED ZONE

GREY SLATE

SHALE

GOSSAN BRECCIA LODE

FINE GRAINED MICACEOUS SANDSTONE & SANDY SHALE

FINE GRAINED SANDSTONE

BRECCIATED SILICIFIED ZONE

GOSSAN BRECCIA LODE

M N

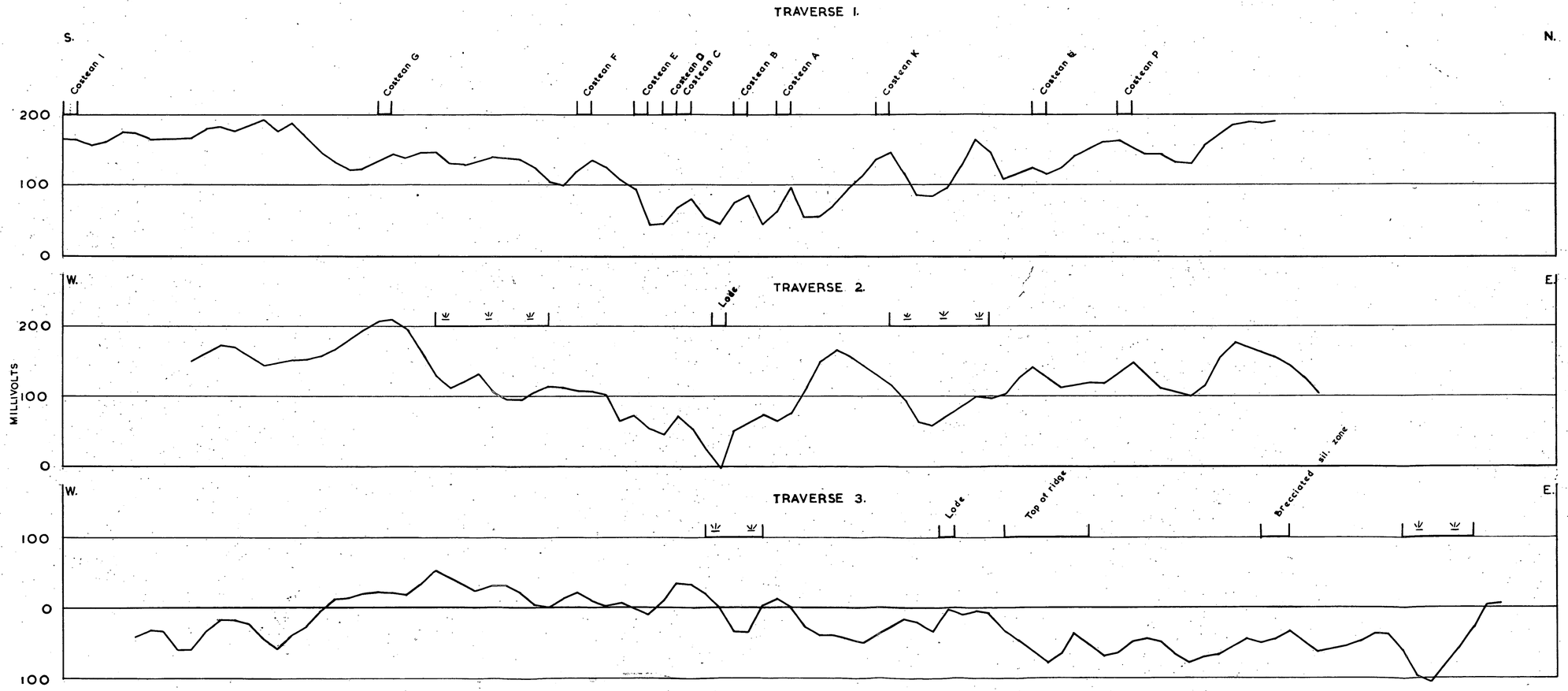
BUREAU OF MINERAL RESOURCES
Darwin Uranium Group
Geological Plan

MT. TOLMER PROSPECT

Scale: 40 feet to 1 inch

Geology & Survey by Rio Tinto Co.
Sept. 1954

PLATE 5



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Darwin Uranium Group
Self-Potential Traverses

MT. TOLMER POSPECT

Scale: 40 feet to 1 inch.

J.B. Misz. Sept. 1954.

98

ADELAIDE RIVER

BURNSIDE (WEST SHEET)

NORTH

150

149

SOUTH

153

RIVER

215

152

STUART

CREEK

RAILWAY

ADELAIDE

BRANCH

205

BURRELLS

WEST

HIGHWAY

Scale: 1 mile to an inch

N.B. The boundaries shown are approximate only.