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## COMMONWEALTH OF AUSTRALIA.

DEPARTMENT OF NATIONAL DEVELOPMENT.

BUREAU OF MINERAL RESOURCES

GEOLOGY AND GEOPHYSICS.

RECORDS.

1954/12

RADIOACTIVE SURVEYS KATHERINE - DARWIN AREA REPORT ON ACTIVITIES, FEBRUARY, 1954.

bу

J.H. LORD.

## RADIOACTIVE SURVEYS KATHERINE - DARWIN AREA

REPORT ON ACTIVITIES, FEBRUARY, 1954.

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#### ADMINISTRATIVE SECTION:

#### STAFF.

#### Movements:

- F. Firman, geologist, resumed duty after leave on 15th February.
- J. Moore, drill foreman, proceeded south on leave, 24th February, 1954.

## Additionst

T.E. Ward, drill helper, commenced duty 19th February, 1954.

#### OFFICE ACCOMMODATION.

The contractor is making good progress on the construction of the new office, and estimates that it will be completed by the end of March, four weeks ahead of schedule.

#### HOUSING.

One two-bedroom house became available during February and was occupied by D.E. Catley.

N.T. Administration made available an unfurnished flat for J.H. Lord on 22nd February, 1954. This flat is available until the house on Lot 2420 is completed.

The present stage in construction of all houses is shown in Appendix I.

#### Purniture:

The furniture officer has placed orders for the furniture for the next five houses and considers that it should arrive in Darwin by the end of March.

#### WINNELLIE STORE AND LABORATORY.

The steel shelving and bins have been delivered and all equipment has been sorted and stacked. The storemen are now repairing equipment ready for issue during the coming field season.

The radiometric laboratory commenced assaying operations at the beginning of February. Considerable trouble has been experienced with the air-conditioning units.

The present climatic conditions are causing Geiger counters to develop faults easily, and the technican at the laboratory is being kept busy on repair work particularly for the various companies and syndicates operating here.

#### TRANSPORT.

The landrovers of the Geological Section have been overhauled and are ready for use except for a few minor new parts that have not yet arrived. A supply of compasses and altimeters have been received for attaching to these landrovers.

The mechanics are starting now on the Morris 4 x 4 trucks.

#### VISITORS.

Mr. R.F. Thyer, Chief Geophysicist, visited Darwin from 6th to 12th February. Mr. Thyer inspected the Geophysical work and discussed current and future operations with Darwin officers. This discussion was most beneficial to those concerned.

It is suggested that during the coming field season a monthly meeting and discussion be held by those in charge of the various geological and geophysical operations in the Darwin area.

Dr. Sharpe, Rio Tinto Company, arrived on Tuesday, February 2nd, and was given assistance by the Bureau. The various prospects were discussed with him and on Wednesday, 3rd February, he was taken to Rum Jungle. On Thursday and Friday, 4th and 5th February, together wit with Dr. Junner, Brock's Creek and Edith River were visited but the attempt to reach the A.B.C. Prospect failed owing to the impassable nature of the track.

On Saturday, 6th February, by arrangement, Messrs. Duncan, Wright and Doctors Sharpe and Junner were introduced to the Administrator and Acting Director of Mines for discussions on the possibilities of commencing operations in the Northern Territory.

As a result of the above visit it appears to be almost certain that the Rio Tinto Company will commence operations here in April.

## TECHNICAL SECTION.

## EDITH RIVER PROSPECT.

The drilling at Edith River has not progressed as well as expected because of a) rain at the beginning of the month which made tracks impassable for some days, b) one drill helper has been in hospital for 18 days and c) the problems associated with installation of a new make of drill not previously seen by the operators.

Bore hole At at Deposit A (See Plate I) has been drilled to a depth of 1262 feet, where coarse-grained strongly sheared and hematised granite occurs. The hole has been probed and the counts rose to 400 per minute at 63 feet after averaging approximately 140 counts per minute. Apparently the hole is now penetrating the main shear zone.

Bore hole F1 at Deposit F (See Plate II) has been drilled to 45 feet. Fine-grained granite was encountered at first but it has now become coarse-grained. The hole has not been probed yet.

The shaft being sunk by Uranium Development and Prospecting, N.L. is down to 60 feet. Sulphides in the form of chalcopyrite and bornite have been encountered according to the company and have been seen in hand specimens in small quantities, but the operators were absent when an attempt was made to inspect the occurrence.

A sample taken from the dump where the greatest counts were given on the Geiger counter showed 0.106% eU308 when assayed by our laboratory.

## A.B.C. PROSPECT.

This prospect is now inaccessable due to about 10 inches of rain at the beginning of February. The Department of Works have not been able to continue road construction due to the weather conditions. It is doubtful if it will be possible to reach this Prospect for a few weeks except on horseback.

#### ELLA CREEK PROSPECT.

The geological and geophysical reports on this Prospect have been completed and distributed.

#### GEOPHYSICAL SECTION.

The operations of this section have been confined to the laboratory, probing of the drill holes at Edith River and investigations of the possibility of following the slate and limestone at Rum Jungle.

#### NEW FINDS.

Although keen interest continues in uranium prospecting, field work by the various persons interested has been greatly reduced this month owing to the rain making most tracks impassable and the grass obscuring the surface outcrops.

Twenty nine Authorities to Prospect were held at the 28th February, 1954, with nineteen pending. Although there has been no i increase in the total number of A.P.'s held this month, some have been converted into leases or cancelled and some new ones granted. The Mines Branch of Northern Territory Administration has requested that the Bureau should inspect some A.P.'s prior to their being granted in order to determine the prospects of the areas involved. Copies of the reports on these inspections are attached to Appendix II. No other discoveries of note have been reported in Darwin.

A press report of a find 30 miles west of Tennant Creek is being investigated by the local Mines' Branch Inspector of Mines.

The following persons are known to be actively engaged on development work:

Territory Uranium Syndicate, Brock's Creek, have continued a vertical shaft to nearly 47 feet and have reported the pressence of torbernite at this depth.

Uranium Development and Prospecting, N.L., Edith River, is sinking a vertical shaft at Deposit E and has reached a depth of 60 feet. They are cross-cutting east and west. Sulphides in the form of chalcopyrite and bornite have been encountered.

1st March. 1954.

(J.H. Lord.) Senior Geologist.

## Situation at 1st March, 1954.

Lot No.	No. of Bedrooms	Stage of Erection.			Tentative Allocation.	B. M. R. Estimate Weeks.
1 299	3	Occupied by J.B. Misz.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
2456	2	Occupied by D.E. Catley.				
2459	2	Completed, but not passed by Dept.	of Works.		Wyatt.	2
1 300	3	 Painting and decorating in progress.			Burns.	4
2457	2	 To be painted and decorated.			Moore.	6
2453	2	Interior carpentry in progress.			Mumme.	8
2431	3	Lining and interior carpentry in pro	gress.		Gardner.	10
2420	3	 Framework not yet completed.			Lord.	16
• .		£				
Fanny Bay.		12 houses not yet commenced.		·		
			•			

Office.

Walls and lining almost completed. Contractor considers he will finish by end of March, 1954.

## INSPECTION OF AUTHORITY TO PROSPECT NO. 30.

#### Description of A.P. No. 30.

All that piece or parcel of Crown Land in the Waggaman Goldfield situated in the Hundred of Playford, County of Palmerston, containing an area of 4.8 square miles, or thereabouts; and commencing at the 65 mile Road Peg thence running east for 24 chains to the western boundary of Authority to Prospect No. 20, thence south along the western boundary of Authority to Prospect No. 20 and its prolongation southwards for a distance of 6 miles, thence west for 64 chains to the eastern boundary of the Hundred of Waterhouse, thence north along the eastern boundary of the Hundred of Waterhouse for a distance of 6 miles, thence east for a distance of 40 chains to point of commencement, but excluding any mining tenements held or applied for.

#### Site 1.

#### Access

S ite 1 is located 400 yards east of the Stuart Highway along Stapleton Creek, and approximately 50 yards north of the creek.

## Topography:

This is an area of steep sided hills and ridges. The localities mentioned on A.P. 30 are best approached on foot.

### Geology:

Grey slaty shales which strike 110° and dip 50° W, are interbedded with greyish brown sandstones which are pyritic in places.

A small pit has been put down in the slaty shales.

## Radioactivity:

Readings made with an Austronic P.R.M. 200 on outcrops in and adjacent to the pit ranged from 200 - 400 c/m. The background count for this area is 120 c/m.

No mineralisation was seen which would account for the radio-activity.

## Site 2.

#### Access:

Site 2 is located 300 yards north of Site 1.

#### Topography:

This site is located on the northern slope of an east-west trending ridge.

#### GeologyL

The rocks in this area are greyish brown sandstones which contain small amounts of chlorite in the matrix.

#### Radioactivity:

ground in this area is approximately 20 of some outcrops. The back-

#### Eite 3.

#### Access:

The site is located about 150 yards north of Site 2 on the west slope of a hill.

## Geology:

The rocks are grey slaty shales interbedded with sandstones which are tuffaceous in appearance and contain relict structures of original minerals present before weathering.

## Radioactivity:

Readings made on outcrops in this area were 120 c/m. This is the background count for the area.

## Remarks:

The area warrants further prospecting and should be carefully checked with a geiger counter.

22nd February, 1954.

J.B. Firman.

## INSPECTION OF AUTHORITY TO PROSPECT NO. 54.

## Description of Area Applied For:

Gommencing at a point 12 chains east of the Edith River railway siding, thence on a bearing of 345 degrees for a distance of 3 miles 56 chains, to the south-west corner of Authority to Prospect No. 12, thence on a bearing of 90 degrees for a distance of two miles along the southern boundary of Authority to Prospect No. 12 and part of a reserve made under Section 147 of the Mining Ordinance 1939-1953, thence on a bearing of 165 degrees for a distance of three miles 56 chains, then on a bearing of 220 degrees for a distance of two miles to the point of commencement.

#### Access:

The southern end of the area is reached by following the Mt. Todd road for 2.3 miles from the Stuart Highway.

#### General Geology:

The area represents the northern extension of a shear zone in the Cullen Granite as described in a report "The Edith River Uranium Bearing Area," by N.H. Fisher.

Along this shear, quartz reefs and siliceous zones occur spasmodically from the southern boundary of the area to the Edith River. In places the quartz reefs are hematitic and brecciated but no mineralisation could be recognised.

Along the reefs many spots gave Geiger counter readings of  $1\frac{1}{2}$  times background. However the best recorded was only twice background.

#### Remarks:

No detailed prospecting has been carried out yet pending the approval of the Authority to Prospect, but the company concerned is shaft sinking a mineral leases 4 and 9. If workable lodes are exposed in this development work their extension in a northerly direction will be on the area applied for and the company deserves protection in this direction.

47th February, 1954.

(J.H. Lord.) Geologist.

## INSPECTION OF AUTHORITY TO PROSPECT NO. 57.

## Description of A.P. No. 57.

Waggman Goldfields: Margaret River locality - commencing at the S.E. corner of A.P. No. 44, thence north along the western boundary of A.P. No. 44 for 3 miles to the north eastern corner of A.P. No. 44, thence east for 12 miles, thence south for 3 miles thence west for 12 miles to point of commencement.

#### Access:

The sites mentioned may be approached from Corbetts' Camp which is located 3 miles north along the Grove Hill Track which joins the Stuart Highway 123 miles from Darwin.

#### Site 1.

#### ACCOBBS

This site may be approached from Corbetts' Camp and is located 220 yards upstream on Davis Creek from the junction of Davis Creek and the Margaret River.

## Topographys

Specimens collected by Mr. Corbett were found at the above locality in the bed of Bavis Creek. The site was covered by water.

## Geology:

Mr. Corbett collected a number of water worn pebbles from the creek bed and these were inspected at his camp. Some of the pebbles were otherous.

#### Radioactivity:

Readings of 120 counts per minute were made. This is the background count for the area.

#### Site 2.

#### Accesss

Approximately i mile from the Golden Dyke Mine on bearing of

## Topography:

This site is located on a soil covered slope adjoining low

#### Geology:

In this area weathered metasediments capped by a thin discontinuous haematitic and limonitic gossan are exposed in a small costean.

#### Radioactivity:

This Readings of 120 c/m were made at the base of a small costean. reading is background for the area.

## 81 to 3.

#### Access

The site is located  $1\frac{1}{2}$  miles north of Corbetts' Camp along the Grove Hill Track and  $\frac{1}{2}$  a mile south-east of the track.

## Topography:

The site is located on a low north-south trending ridge.

## Geology:

Dark grey slates strike 340° and dip 75° east in this area. A small costean has been put down to a depth of a few feet and malachite is exposed in the rock and in small quartz-filled fractures.

## Radioactivity:

Readings of 120 to 160 c/m were made in the costean and in an adjacent dump containing quartz and malachite.

#### Romarks:

No promising zones of radioactivity were noted on this A.P. The areas visited on this inspection do not warrant further development.

23rd February, 1954.

J. B. Firman.

#### INSPECTION OF AUTHORITY TO PROSPECT NO. 59.

#### Description of Area Applied For:

From a point located at the South-Western corner and adjoining Prospecting Area or reserve held by Messrs. Hoare and O'Connor, which is approximately 2 miles North-East (magnetic) from Mr. Hoare's homestead, and running 4 miles east, thence 14 miles south, thence 4 miles west and thence 14 miles north back to starting point.

#### Access:

Approximately half a mile South of the Edith River crossing on the main Stuart Highway and exactly opposite the Mt. Todd Battery Road - head in a Westerly direction for 4.8 miles - thence 2500 yards on a bearing of 230.

#### Geology:

Area consists of Lower Proterzoic coarse-grained granites cut by shear zones of various sizes striking approximately 350°.

#### Radioactivity:

A number of high spots were recorded all in shear zones.

However the most important gave readings of 1500 c/m (Background 70 c/m) 1000 c/m - down to 400 counts per minute.

The area of highest counts was extremely hematitic in nature. All specimens are strongly fluorescent.

#### Conclusions:

It was concluded that the radio activity was related to the shearing and almost wholly contained therein.

The numerous high spots varying from 5 to 20 times background that were examined warrant further work in the form of sample trenches and possibly drilling.

February, 1954.

J. D. Wyatt.

## INSPECTION OF AUTHORITY TO PROSPECT NO. 60.

## Description of Area Applied For:

Commencing from the N.E. corner point of 5.B. Tennyson's Fergusson River Authority to Prospect, thence on a bearing of 330° for a distance of 4.5 miles; thence on a bearing of 60° for a distance of 1 mile; thence on a bearing of 150° for a distance of 4.35 miles; thence on a bearing of 193° for a distance of 0.9 miles; thence on a bearing of 240° for a distance of 0.35 miles; thence on a bearing of 330° for a distance of 0.5 miles to datum.

## Access:

Approximately 2 miles North of Fergusson River Crossing on the main Stuart Highway thence 2.45 miles due East.

## Geology:

Area is situated in a shear zone occurring in Lower Proterozoic granite of course grain size striking 20 - 25°. Shearing is vertical in most instances.

## Radioactivity:

Whole sheared area giving counts of 200 /m approximately. (Background 75 c/m.) Whilst several "hot spots" examined gave counts of up to 1750 c/m.

In one area material was examined showing suspected Autunite or Torbernite varied in color from yellow to green. Although in this area only 500 c/m were registered.

In all cases of high counts strong hematisation occurred.

#### Conclusions:

As only a few of the "hot spots" were examined and in these, counts of up to twenty five times background were registered. It was concluded that this area is of sufficient interest to warrant further work in the form of costeaning and drilling.

It was noted that, as in previous sheared areas examined, high counts were associated with strong hematisation.

February, 1954.

J.D. Wyatt.

## INSPECTION OF AUTHORITY TO PROSPECT NO. 69 (Formerly NO. 5.)

#### Description of Area Applied For:

All that piece or parcel of Crown land situated in the Maranboy Goldfield and containing an area of 5 square miles more or less and commencing at a point which bears 83 degrees and is distant 16.7 miles from the Katherine railway station, thence east for a distance of 2 miles 20 chains, thence south for a distance of 2 miles 20 chains, thence north for a distance of 2 miles 20 chains, thence north for a distance of 2 miles 20 chains, to the point of commencement, and excluding therefrom all mining tenements held or applied for.

#### Access:

Two miles south of the 235 mile peg on the main Stuart Highway, thence 17.7 miles in a general North Easterly direction, along the old North South main highway.

## LOCALITY A.

#### Geology:

Situated on the edge of a small scarp approximately 200 feet long, the prospect consists of highly ferruginous sandstones in places silicified, and occurring with occasional white quartzite boulders.

#### Radioactivity:

In this locality two highspots were examined.

- (1) Small area approximately 6 feet by 2 feet in almost pure ferruginous material the original rock type being completely replaced or obliterated. Counts of up to 500 600 /m were recorded. (Background = 60 c/m.)
- (2) Small area 2 feet by 2 feet of 300 c/m. Along the whole scarp of approximately 200 feet by 50 feet, and counts of 150 200 /m were recorded.

In no place was it possible to record dips or strike but an outcrop of silicified sandstone nearby gave a strike of 145° dipping 80° West.

Mr. Tennyson has stated that a small amount of secondary uranium has been located in the ferruginous material, but no trace of any further amounts was found.

## LOCALITY B.

This area occurs approximately 300 yards from Locality A on a bearing of 330 degrees.

## Geology:

The Prospect occurs in an area of quartzite and sandstone rubble, in places silicified and lateritized.

## Radioactivity:-

(12") pits sunk in sandy rubble.

Over a larger area of some hundred yards in diameter, and general counts of 150 /m were obtained.

## Conclusions and Recommendations:-

It was concluded that the areas both A and B were of interest and warranted further prospecting.

However it was advised that in locality A, the ferruginous sandstone should be sent for assay to determine whether the radio-activity may be due to thorium.

17th February, 1954.

J.D. Wyatt.

## INSPECTION OF PROSPECTING AREA 88b.

14

## Description of Prospecting Area 88b.

Situated approximately 300 yards south-east of old Brock's Creek Railway. Commencing at Datum Peg N.W. corner, thence 20 chains east, thence 10 chains south, thence 20 chains west thence 10 chains north.

### Access:

From 112 mile peg on Stuert Highway along the Fountain Head Road to the Brock's Creek turn-off. The track to Burnside H.S. runs west from a point 25 miles north of the junction of the Brock's Creek and Fountain Head roads on the Brock's Creek Road.

#### Topography:

The Prospecting Area consists of a low ridge trending 3100.

## Geology:

The area consists of metasediments striking 075° and dipping 55° to the south-east. Rock types are dark grey and light grey slates interbedded with dark grey felspathic sandy slates. (These rocks are shown as "Pink Schiste" on the Brock's Greek map, NT(4-28.)

Quartz veins up to 4 feet in width, occur parallel to the trend of the country rock.

No mineralisation was noted, but the P.A. contains the old Faded Lily goldmine and numerous other shafts and costesns near the mine.

## Assay Results:

None are available, but a sample has been sent south for assay.

#### Radioactivity:

The sample mentioned above was taken from an exposure in a road cutting about 200 yards from the Faded Lily Hine on bearing 310°. The road cutting is close to the Darwin - Birdum Railway approximately 300 yards east of the Brock's Creek Siding.

Radioactivity was tested by an Austronic, P.R.M. 200.

The sample area and the other outcrops in the cutting gave counts of 6 to 8 on the multiple 20 scale range. This is the background count for the area.

Counts were background from the centre of the cutting to the Faded Lily Hine.

#### Remarks:

The area has not been thoroughly prospected and no further work by B.M.R. is warranted until some radioactivity has been located.

## INSPECTION OF MINERAL LEASE 83B.

#### Description Mineral Leases

Datum Peg is & a mile north of the 120 mile peg on the Stuart Highway, and is the south-west corner of the lease. The boundary extends 28 chains north-west, thence 14 chains north-east, thence 28 chains south-east and then 14 chains south-west back to the Datum Peg.

The lease, consisting of 40 acres, is on the Waggaman Goldfield and is held for tin and uranium by Prospector Mannings. featured recently in the press as a new uranium find.

#### Access

Hayes Creek is followed in a north-easterly direction for approximately 30 chains from Stuart Highway to some abandoned tin workings which are in the centre of the lease.

#### Geology:

Silicified shales and slates of the Brock's Creek group with quartz intrusions cover the area. Some tin has been produced.

## Radioactivity:

At his old camp site, Prospector Manning displayed a few pieces of leached shales showing copper mineralisation which gave a count of twice background on the Geiger Counter.

The best count obtained in the area was it times background on some graphitic shales in an old adit.

Although asked several times, the prospector could not find the locality showing copper mineralisation similar to that in his specimens. There was no evidence of any recent prospecting on the area.

#### Conclusions:

Present indications do not warrant any further work.

16th February 1954.

J.H. Lord.

It

## INSPECTION OF W.G. RADCLIFFE'S RESERVE, PINE CREEK.

#### Description of Area:

All that piece or parcel of land in the Agicondi Goldfield containing an area of 5 square miles more or less; commencing at a point on the Pine Creek to Katherine railway 30 chains north-west of the intersection of the said railway and the Stuart Highway (said intersection being located about 12 miles on an approximate bearing of 150 degrees from the Town of Playford, commonly known as Pine Creek,) thence by a line 238 degrees for a distance of 130 chains, thence by a line bearing 328 degrees for a distance of 180 chains, thence by a line bearing 56 degrees for a distance of about 190 chains to the Stuart Highway, thence by the Stuart Highway generally south easterly to a point thereon which bears 58 degrees from the point of commencement and thence by a line bearing 238 degrees for a distance of about 30 chains to the point of commencement excluding therefrom all existing mining temements held or applied for.

#### Access

Twelve miles south of Pine Creek on the main Stuart Highway, thence due west for approximately 100 yards until the old N-S Darwin Highway is intersected, thence along this highway Northwards for approximately 2 miles thence Westwards for approximately 300 yards.

#### Geology:

Area situated in decomposed granite in places strongly sheared.

## Mineralisation:

Strong copper staining with fragments of azurite and malachite - localised in quartz intrusion.

#### Radioactivity:

Restricted to two areas appreciably above background of 60 c/m.

- (1) Giving counts of 100 150 /m situated in shear zone with much copper staining.
- (2) Giving counts of 600 /m situated in creek bed among granite sand and sheared rubble. Approximately 18" x 18".

In neither case was there any indication of cause of radio-activity.

One other point of interest was the finding of small fragments of fluorescent material probably autumite in rubble thrown up from a shaft prospecting for tin associated with the quartz intrusion. No counts above background were obtained at this spot. It is worth noting that the material containing this secondary uranium was entirely dissimilar from rubble thrown up out of shaft.

#### Prospecting Work:

No work has yet been carried out by Mr. Radcliffe except investigations with a geiger counter, but as previously mentioned there is a shaft sunk in search of tin. This shaft is now filled with rubble and extends to a depth of about 15.

## Conclusions:

It was concluded that the high spot of 600 c/m be investigated by cutting a sample trench, firstly to find the extent of the high spot under the bank of the creek and also to see if counts increased with depth. The author will contact Mr. Radcliffe as soon as this has been done.

10th February, 1954.

J.D. Wyatt.

# APPENDIX III URANIUM COMPANIES AND SYNDICATES OPERATING IN NORTHERN TERRITORY - 28. 2. 54.

Name.	Local Represent- atives or Geologist.	Southern Connections.
Australian Mining and Smelting Co. Ltd.	H. Brennan	Zine Corp.
Enterprise Exploration Co. Pty. Ltd.	H. Brennan	Zinc Corp.
Hidden Valley Mining Syndicate.	W. Power.	
North Australian Uranium Corporation.	T. Becker G. Sleis	
Northern Mines Development E.L.	K. Summers	Dr. Garretty.
Northern Territory		(1975) Andrews (1975) Andrews (1975) Andrews (1975)
Northern Uranium Development N.L.	Fisher Barrett	Wott.
Rio Tinto Company.	Dr. Jumer.	Military (1997) Marine Military (1997)
Territory Uranium Syndicate.	•	Doria Gold Mines, Territory Scheelite.
Uranium Corporation of Australia Pty. Ltd.		Rye Park Scheelite.
Uranium Mines N. L.		H. J. C. Connelly.
Uranium Oxide N.L.		Austral Mining Co. Poseidon N.L. Pioneer Mines.
Uranium Prospecting and Development. N.L.	Coxon & Macdonald	Drummond.
Y. M. C. A. Syndicate.	Young, Maslin & Cousins.	



