



SANDFIRE RESOURCES NL

Yiyintyi Prospect SEL 26837

Drilling Completion Report

Author

Phillipa Kiernan

February 2012

**TABLE OF CONTENTS**

1.0	EXECUTIVE SUMMARY	4
2.0	INTRODUCTION	5
3.0	TENEMENT AND ACCESS	5
4.0	GEOLOGY	5
5.0	PREVIOUS EXPLORATION	6
5.1	Introduction	6
5.2	Geological Mapping	6
5.3	Geophysics	6
5.4	Drilling	6
6.0	SANDFIRE EXPLORATION	6
6.1	Introduction	6
6.2	Geophysical Compilation	6
6.3	Prospect Mapping	6
6.4	Drilling	6
7.0	2011 DRILLING PROGRAM	7
7.1	Introduction	7
7.2	Results	7
7.2.1	Lithology	7
7.2.2	Mineralisation	7
7.2.3	Geochemistry	7
7.2.4	Geophysics	8
8.0	CONCLUSIONS AND RECOMMENDATIONS	8
9.0	REFERENCES	8

APPENDICES:**APPENDIX A – YIYINTYI DRILLING PROPOSAL****APPENDIX B – MOUNT YOUNG EXPLANATORY NOTES.****APPENDIX C – MOUNT YOUNG 1:250K MAP, NTGS.****APPENDIX D – FIELD RECONNAISSANCE REPORT.****APPENDIX E – NOTE ON GEOLOGY AND RADIOMETRICS IN THE VICINITY OF THE YIYINTYI DRILL HOLES 11BLRC0174-0176; BORROLOOLA PROJECT, NT.****LIST OF FIGURES:**

Figure 1. Borroloola tenements and prospects.	9
Figure 2. Regional geology from Mount Young 1:250,000 map. Red cross marks Yiyintyi prospect.	10
Figure 3. 2011 Drilling..	10
Figure 4. Drill holes.....	10
Figure 5. Historical Drilling.....	11
Figure 6. Regional gravity survey. Red cross marks Yiyintyi prospect.	11



Figure 7. Magnetics survey.	11
Figure 8. EM survey.	11
Figure 9. Radiometrics. Uranium channel.	11
Figure 10. Yiyintyi survey area flight paths.....	11

LIST OF TABLES:

Table 2-1. Location and Depth of RC holes at Yiyintyi.....	5
Table 3-1. Tenement Details.	5
Table 6-1. 2010 Assay Results.	7
Table 7-1. 2011 Assay Results and depth interval.....	8



1.0 EXECUTIVE SUMMARY

The Yiyintyi prospect is located in tenement SEL26837 approximately 115km northwest of Borroloola, Northern Territory. Access is along the Lorella Springs Road and then 70km north along access tracks. Sandfire Resources NL (Sandfire) completed three holes for 442m testing an unconformity related uranium target that was interpreted from an AEM survey. Previous work on the prospect includes percussion, AC and RC drilling, geological mapping and geophysical surveys.

Drilling targeted the base of the Yiyintyi Formation which has an unconformable lower contact with the Scrutton Volcanics and is prospective for hosting uranium. The base of the Yiyintyi Formation was not penetrated by the three holes and the best result was 2.4ppm U in hole 11BLRC0176 (20-24m interval).

The elevated uranium levels shown by the AEM survey have not been accounted for by the drilling. Geophysical surveys were flown over Yiyintyi prior to completion of the 2011 program and the results are currently being processed. Further work is planned for 2012 to test geophysical anomalies at Yiyintyi West.



2.0 INTRODUCTION

Sandfire Resources NL (Sandfire) completed 3 RC holes for 442m to test an unconformity related uranium target at the Yiyintyi East prospect interpreted from a regional AEM survey. Previous work on the prospect includes percussion, AC and RC drilling, geological mapping and geophysical surveys.

The prospect is in the flat embayment west of the Yiyintyi Range and was mapped prior to drilling. M. McKenzie and A. Hansen (2011) predict Nathan or McArthur Group sediments are under the outcropping Cainozoic cover in the embayment. W. Herrmann and P. Kiernan (2011) found the Yiyintyi Sandstone is overlain by flat lying cover on the edge of the Range. The drilling proposal is in Appendix A.

Drilling intercepted Cainozoic cover and Yiyintyi Sandstone. The base of the Yiyintyi Sandstone and top of the Scrutton Volcanics were not intersected.

Hole ID	Final Depth (m)	Easting	Northing	Nat_RL
11BLRC0174	150	575350	8314650	20.01
11BLRC0175	172	575350	8314750	20.21
11BLRC0176	120	575254	8314763	16.75

Table 2-1. Location and Depth of RC holes at Yiyintyi.

3.0 TENEMENT AND ACCESS

The Yiyintyi prospect is in tenement SEL 26837 approximately 115km northwest of Borroloola and south of the Limmen Bight River, Northern Territory (Figure 1). Access is along the Lorella Springs Road and then 70km north along access tracks.

The tenement is substitution exploration licence 26837 which was granted in 2009 with details in Table 3-1.

Lease	Status	Current Area	Area Units	Current Commitment	Applied Date	Grant Date	Expiry Date	Group Report Number
SEL 26837	Granted	473	Blocks	\$139,000	24-Jun-08	9-Jun-09	8-Jun-13	C121/09 Borroloola

Table 3-1. Tenement Details.

4.0 GEOLOGY

The Yiyintyi East prospect is located on the Mount Young SE53-15 1:250k and the Tawallah Range 1:100k NTGS geological sheet and details of the geology are in the Mount Young 250k explanatory notes (Appendix B) (Haines et al., 1993). The prospect is less than 100m from outcropping Yiyintyi Sandstone (Pty) and Cainozoic cover (Cz) that form the Yiyintyi Range in the Mesoproterozoic McArthur Basin (Figure 2 and 3). The contact between the Yiyintyi Sandstone and the underlying Scrutton Volcanics is unconformable so Yiyintyi is considered prospective for an unconformity related uranium deposit.

At the eastern side of the Yiyintyi Range, the Yiyintyi Sandstone dips 20-40° northeast and has a variable strike from 300° to 350° (W. Herrmann and P. Kiernan, 2011). The prospect is at 20m elevation in an embayment of low relief with a thin layer of alluvial cover that is less than 8m thick.



5.0 PREVIOUS EXPLORATION

5.1 Introduction

Previous exploration on the tenement includes:

- Geological mapping;
- Geophysical surveys; and
- Percussion, RC and AC Drilling (Mn exploration in north of tenement)

5.2 Geological Mapping

Regional mapping at 250k and 100k scale was done by Haines et al (1993) for the Northern Territory Geological Survey (NTGS) (Appendix E). The Yiyintyi Sandstone forms the boomerang-shaped, faulted Yiyintyi Range. The eastern Range near the Yiyintyi prospect dips 5° to 65° northeast and the dip is shallower at 15° in the western Range. The flat lying Cainozoic cover is around 20m thick in the embayment (1:250k Haines et al., 1993).

5.3 Geophysics

In 2005 a gravity survey was flown by Aerodata Holdings Ltd for the NTGS covering the Mount Young map area (Figure 5) (Haines et al., 1993).

5.4 Drilling

The tenement has been explored since 1978 when six percussion holes for 51m were drilled looking for manganese by Western Mining Corporation Ltd (Western Mining). In 1980 Western Mining explored again for manganese and drilled 21 percussion holes for 574m (Figure 6). A further 39 holes (diamond and RC) have been drilled for 2609.85m on the tenement. The dates and company information is not available.

6.0 SANDFIRE EXPLORATION

6.1 Introduction

Sandfire have explored the prospect since 2010 and have completed the following work on the area:

- Geophysical compilation
- Prospect mapping
- RC drilling

6.2 Geophysical Compilation

There have been multiple surveys completed in the area including EM, radiometric and regional gravity surveys. Typical images are shown in Figures 7, 8 and 9. A regional gravity survey was carried out by 2005. Figure 7 shows there is an elevated magnetic signal over the Yiyintyi Range.

6.3 Prospect Mapping

The Yiyintyi Range was mapped by helicopter assisted reconnaissance trips in 2011. Appendix D contains the report by M. McKenzie and A. Hansen (2011) on the structural complexities. Appendix E is by W. Herrmann and P. Kiernan (2011) on the geology and radiometrics of the area around the 2011 drill holes.

6.4 Drilling



In 2010 Sandfire explored for U and drilled 8 RC holes for 1193m. Lithologies drilled were interpreted to be dolomite and siltstones from McArthur Group and quartzite and sandstone from the Yiyintyi Formation. The assays show the peak uranium value is 7.64ppm in hole BLRC055 and the uranium levels are consistent with background levels are not anomalous. Hole BLRC055 has anomalous Cu measuring 1110ppm at 35-36m depth (Table 6-1).

Hole ID	Max U (ppm)	Max Cu (ppm)	Max Pb (ppm)	Max Zn (ppm)
BLRC052	0.14	14	8	9
BLRC053	2.24	76	32	56
BLRC054	2.16	95	89	173
BLRC055	7.64	1110	56	127
BLRC056	4.38	118	53	241
BLRC057	3.54	117	258	151
BLRC058	4.24	118	74	266
BLRC059	0.84	23	8	6

Table 6-1. 2010 Assay Results.

7.0 2011 DRILLING PROGRAM

7.1 Introduction

In 2011 3 RC holes for 442m were drilled at the Yiyintyi prospect that targeted anomalous uranium shown by an AEM survey (Table 2-1). Two holes were drilled on a north-south line 100m apart and the third hole was 100m west of the northern hole (Figure 4). The holes had a dip of -60° with an azimuth 270°.

7.2 Results

7.2.1 Lithology

Drilling intersected thickly bedded Yiyintyi Formation (Pty) from the lower Tawallah Group beneath Cenozoic cover (KI) (Appendix X- Cross Sections). Pty is a fine-medium grained, highly indurated pale pink-grey quartzite. It is massive with some poorly sorted beds and has intervals of quartz veining. KI is a poorly sorted, fine grained white-orange quartzite with a sugary texture. The cover and underlying Yiyintyi Formation are remarkably similar so the location of the unconformity between them is difficult to identify in RC chips. Kaolinite alteration in hole 11BLRC0176 and quartz veining have been interpreted as marking the base of cover at around 20m. Cover is flat lying and the drilling did not indicate a dip direction for the Yiyintyi Formation.

7.2.2 Mineralisation

There are minor specks of pyrite in hole 11BLRC0174 from 138 -150m and in 11BLRC0176 from 37-117m. The pyrite occurs in the Yiyintyi Formation.

7.2.3 Geochemistry

Assays from Yiyintyi holes show there are no anomalous results. The peak uranium is 2.4ppm in hole 11BLRC0176 which is consistent with background uranium (Table 7-2). The uranium levels are highest at the top of holes 11BLRC0174 and 11BLRC0175. Preliminary traverses with a scintillometer suggest the uranium levels may be associated with salt pans and are a surficial feature. The readings are in the report by W. Herrmann and P. Kiernan (2011).

Hole ID	Max U	Max Cu	Max Pb	Max Zn
---------	-------	--------	--------	--------



	(ppm)	(ppm)	(ppm)	(ppm)
11BLRC0174	1.4	14	11.5	11
11BLRC0175	1.8	16	55	9
11BLRC0176	2.4	11	24	8

Table 7-1. 2011 Assay Results and depth interval.

7.2.4 Geophysics

Prior to completion of Sandfire's 2011 exploration program, Southern Geoscience carried out new geophysical survey at 150m spacing over two areas at Yiyintyi. One at the east and one at the west of the Range (Figure 10). The data is currently being modelled and we are awaiting the results.

8.0 CONCLUSIONS AND RECOMMENDATIONS

The AEM anomaly was targeted by 3 RC holes and the best result was 2.4ppm U in hole 11BLRC0176 (20-24m interval) which is not anomalous. Drilling did not penetrate the base of the Yiyintyi Formation and the Scrutton Volcanics remain unseen in the Yiyintyi area. No major mineralisation was identified.

It is recommended that more mapping is done to better understand of the structure of the Yiyintyi Range. When the results of the recent geophysical survey have been modelled, it will allow for identification of possible drill targets for 2012.

9.0 REFERENCES

- Haines, P.W., Pietsch, B.A., Rawlings, D.J., and Madigan, T.L., 1993, 1:250,000 Geological Map Series, Explanatory Notes, Mount Young SE53-15.
- Herrmann, W., 2011, Geology of Lorella Pocket, Borroloola Exploration
- Herrmann, W. and Kiernan, P., 2011, Note on Geology and Radiometrics in the vicinity of Yiyintyi Drill Holes 11BLRC0174 to 11BLRC0176; Borroloola Project, NT.
- McKenzie, M. And Hansen, A., 2011, Field Reconnaissance Report.

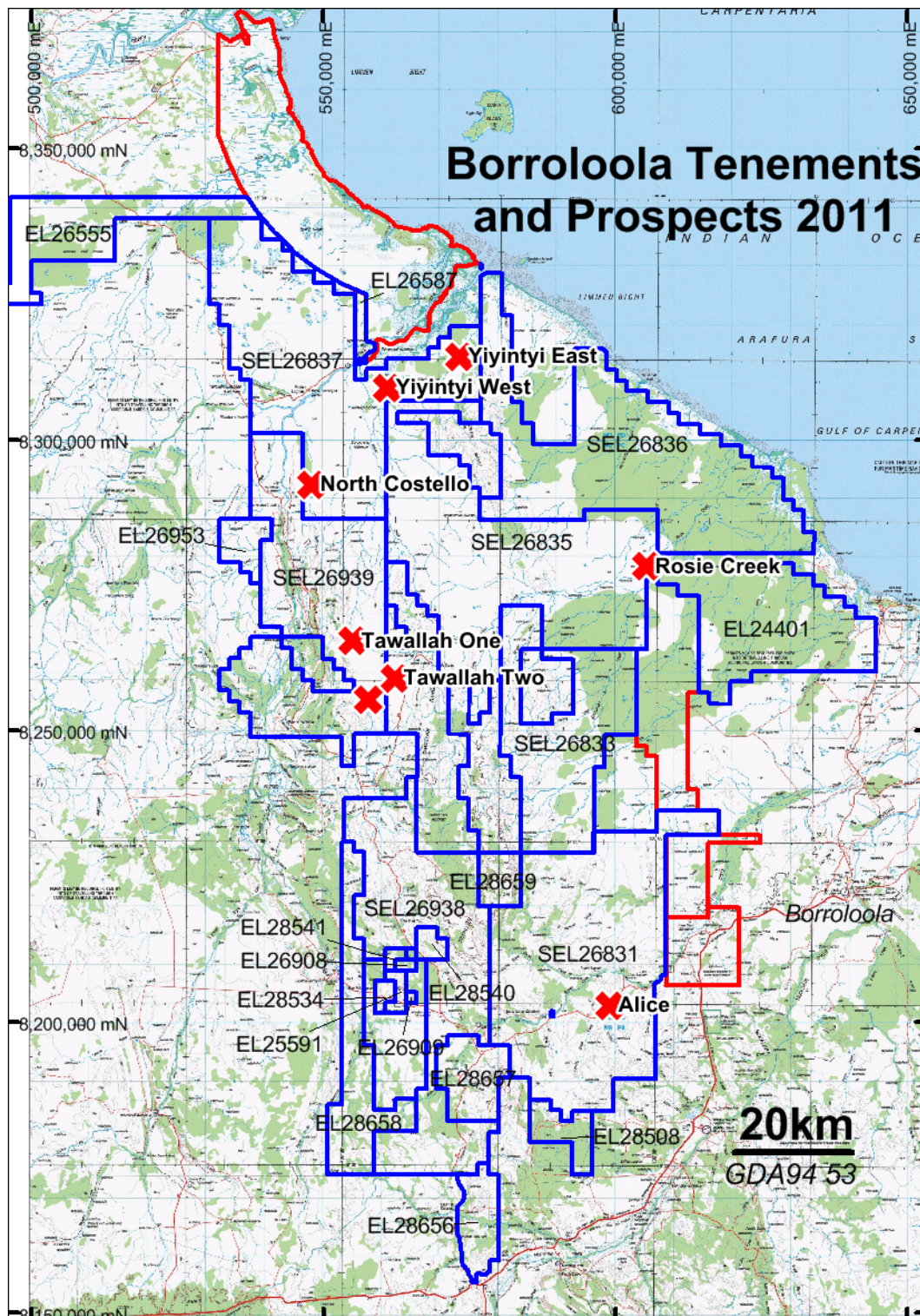


Figure 1. Borroloola tenements and prospects.

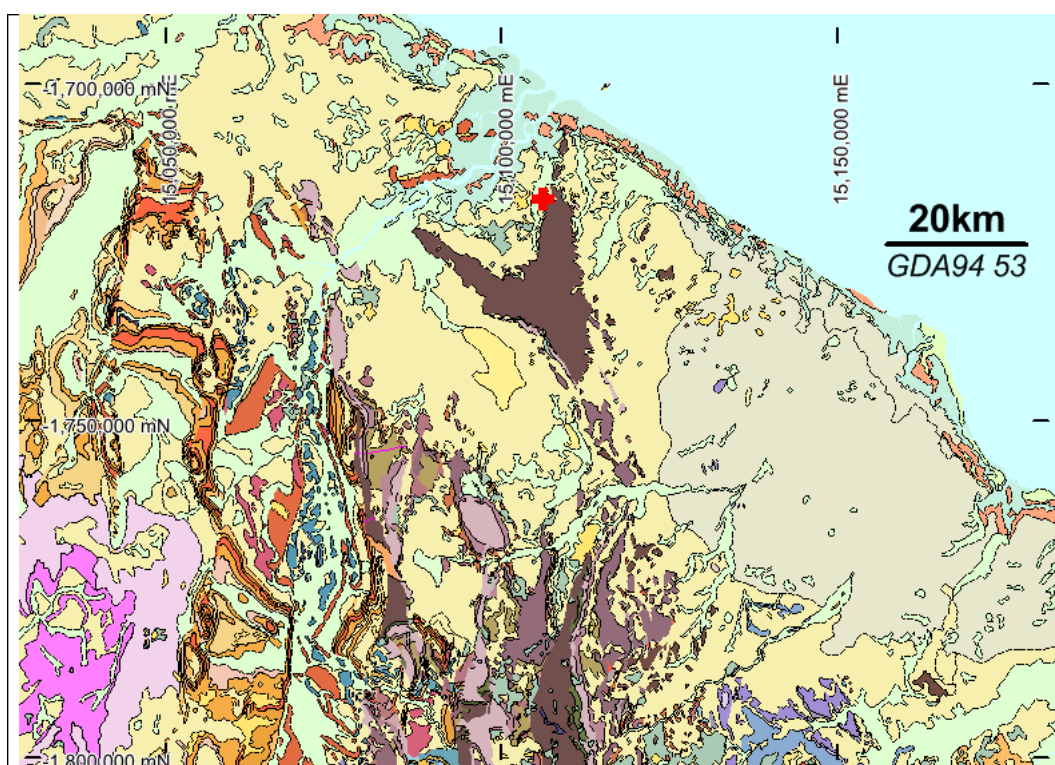


Figure 2. Regional geology from Mount Young 1:250,000 map. Red cross marks Yiyintyi prospect.

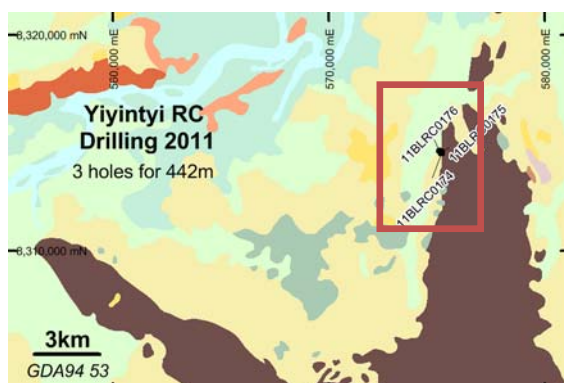


Figure 3. 2011 Drilling. Geophysical survey area highlighted in red.

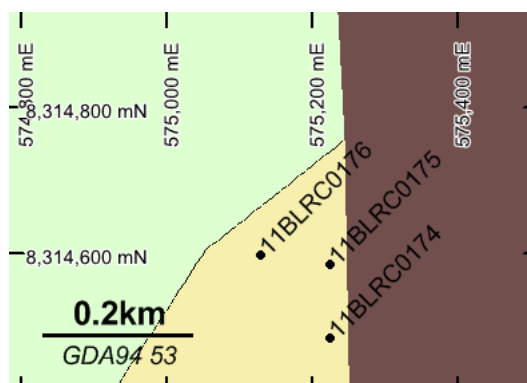


Figure 4. Drill holes

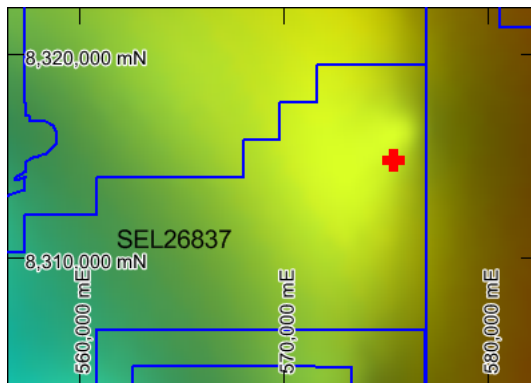


Figure 5. Regional gravity survey. Red cross marks Yiyintyi prospect.

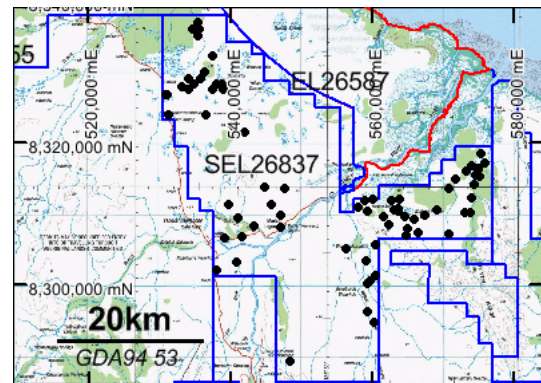


Figure 6. Historical Drilling.

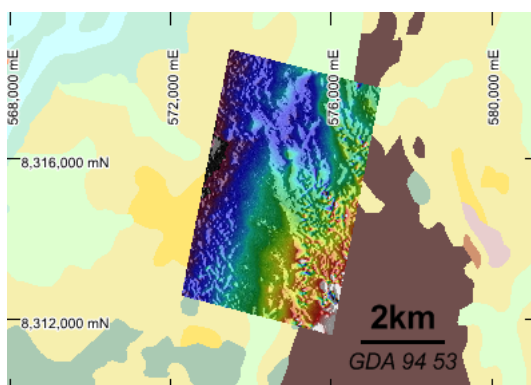


Figure 7. Magnetics survey.

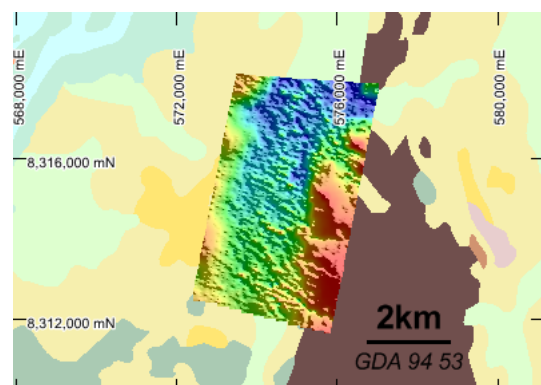


Figure 8. EM survey.

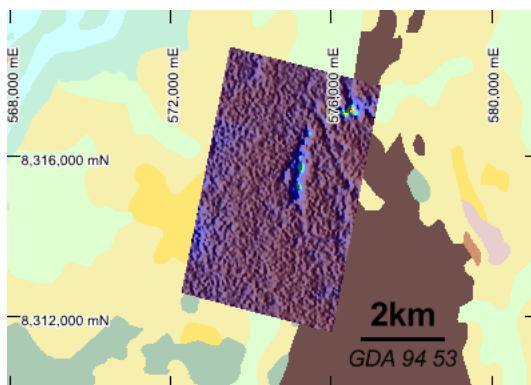


Figure 9. Radiometrics. Uranium channel.

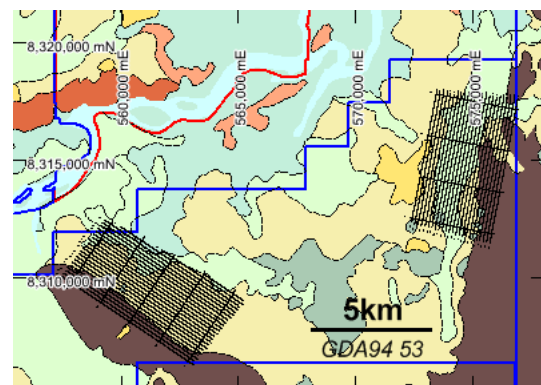


Figure 10. Yiyintyi survey area flight paths.



APPENDIX A – YIYINTYI DRILLING PROPOSAL



**APPENDIX B – MOUNT YOUNG EXPLANATORY NOTES,
HAINES ET AL. (1993)**



APPENDIX C – MOUNT YOUNG 1:250K MAP, NTGS.



**APPENDIX D – FIELD RECONNAISSANCE REPORT, M. MCKENZIE
AND A. HANSEN, 2011.**



**APPENDIX E – NOTE ON GEOLOGY AND RADIOMETRICS IN THE
VICINITY OF THE YIYINTYI DRILL HOLES 11BLRC0174-0176;
BORROLOOLA PROJECT, NT.**

