THE GRANITES

AUSTRALIA 1:250 000 GEOLOGICAL SERIES

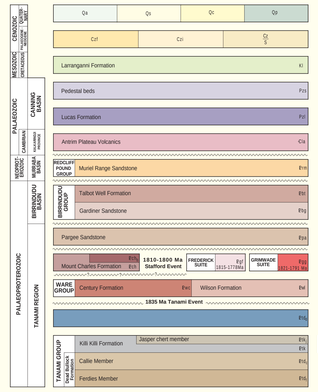
NORTHERN TERRITORY

SHEET SF 52-03

SCALE 1:250 000

5 0 5 10 15 20 25 kilometres

Projection: Universal Transverse Mercator
Grid Coordinates: Map Grid of Australia 1994 (MGA94) Zone 52
Horizontal Datum: Geocentric Datum of Australia 1994 (GDA94)



Qa *Alluvial, active drainage: sand, clay, gravel, minor lacustrine deposits*

Qs *Sand sheets and dune fields: aeolian sand, minor clay, spinifex cover*

Qc *Calcrete (travertine), often silicified*

Qy *Lacustrine, playa lake deposits: clay, halite, gypsum*

Czf *Ferricrete: flat-lying to gently dipping consolidated to semi-consolidated ironstone, commonly pisolitic, silica cemented, laterite capping*

Czi *Silcrete*

Cz1, Cz2, Cz3 *Elevated areas with undifferentiated underlying undivided basement rocks: sand, gravel, ferruginous gravel*

Kl **Larrangannni Formation:** *Sandstone, minor siltstone and conglomerate, poorly sorted, quartz rich*

Pzs **Pedestal beds:** *Quartz sandstone; minor conglomerate, siltstone, shale*

Plf **Lucas Formation:** *Calcareous and non-calcareous sandstone, siltstone and mudstone; minor limestone*

Ctv **Antrim Plateau Volcanics:** *Basalt lava: weathered, tholeiitic, generally capped by ferricrete, contains minor sandstone, chert*

REDCLIFF POUND GROUP

Ertr **Muriel Range Sandstone:** *Sublithic sandstone, quartz sandstone, minor siltstone, shale, conglomerate, arkosic breccia*

BIRRINDUDU GROUP

Etbl **Talbot Well Formation:** *Stromatolitic chert, cherty sandstone, minor siltstone, mudstone, limestone, quartz sandstone, sublithic sandstone*

Etbg **Gardiner Sandstone:** *Sublithic sandstone, quartz sandstone, conglomerate, siltstone and shale*

Etpa **Pargee Sandstone:** *Sandstone, conglomerate, siltstone: sublithic and lithic sandstone, quartz sandstone, conglomerate with jaspertitic and volcanic clasts*

GRIMWADE SUITE

Eggi *Biotite ±hornblende syenogranite to monzogranite: coarse- and fine-grained, equigranular to porphyritic, foliated*

FREDERICK SUITE

Ef *Biotite ±hornblende monzogranite to syenogranite: medium- to fine-grained, equigranular*

Etch **Mount Charles Formation:** *Sandstone, siltstone, basalt: thick-bedded lithic pebbly greywacke, laminated siltstone, shale, mafic volcaniclitic sandstone, basal quartzose sandstone*

Etch$_b$ *Basalt: massive, vesicular, brecciated or pillow tholeiitic*

WARE GROUP

Ewc **Century Formation:** *Quartz sandstone, fine-grained lithic sandstone, siltstone, granule and pebble conglomerate*

Ew **Wilson Formation:** *Lithic greywacke, quartz greywacke, granule sandstone; locally metamorphosed to phyllitic siltstone, fine-grained schist*

Lander Rock Formation

Etlr$_b$ *Biotite-muscovite-andalusite ±garnet pelitic schist and metapsammite*

Etlr$_d$ *Dolerite sills*

TANAMI GROUP

Killi Killi Formation

Etk *Greywacke, locally micaceous; quartz greywacke; lithic greywacke, quartz sandstone, siltstone, graphitic siltstone, granule conglomerate*

Etk$_j$ *Jasper chert member: Alternating pale and dark red or grey chert laminae*

Dead Bullock Formation,

Etd$_c$ ***Callie Member:*** *Siltstone, chert, carbonaceous shale and siltstone, iron-rich siltstone, banded ironstone, nodular chert; fine grained sandstone, minor calc-silicate rock*

Etd$_f$ ***Ferdies Member:*** *Feldspathic sandstone and conglomerate, quartz sandstone, minor siltstone, minor chert*

GEOCHRONOLOGY SAMPLE LOCATIONS

Ref No	Sample No	Easting	Northing
1	2000082034	556632	7762114
2	99496210	641612	7726041
3	99496220	586635	7778239
4	99496221	583763	7783781
5	99496224	565765	7778293
6	99496222	512226	7778235
7	2001082021	599115	7730736
8	2001082038	600795	7756265
9	2000082035	559114	7756264
10	2000082031	559116	7759372
11	2000082032	534691	7752014
12	99496209	545148	7756884
13	2001082513	537819	7751571
14	2001082512	528669	7756893
15	99496211	525660	7759372
16	2000082018	505980	7756659
17	99496207	617735	7755008
18	87495004	644274	7723548
19	2000082019	644274	7730054
20	99496212	641836	7730054
21	99496216	628979	7707673
22	99496213	649458	7729654
23	96490001	545148	7751884
24	2001082519	547329	7751133
25	2001082522	547329	7762114
26	2001082523	647430	7681229
27	99496218	509354	7756607
28	2003082649	571390	7710388
29	2003082650	571390	7707673
30	99496201	562521	7708960
31	99496206	523216	7762520
32	94496027	572982	7787714

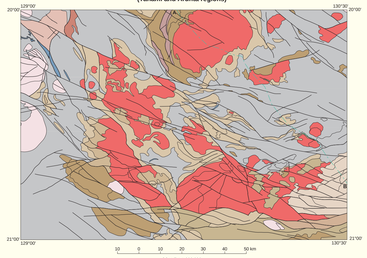
TOPOGRAPHICAL SYMBOLS

Sealed road
Unsealed road
Vehicle track
Vehicle track minor
Outstation
Landing ground
Trigonometrical station
River, creek
Waterhole
Direction of water flow
Bore

GEOLOGICAL SYMBOLS

Geological boundary; approximate
Quartz vein
Rhyolite dyke
Fault; concealed (interpreted from magnetic data)
Fault; mapped; concealed (interpreted from from remotely sensed data); Showing relative displacement of fault
Thrust fault, mapped
Plunging Anticline
Plunging Syncline
Trend-line
Strike and dip of strata (symbols in green taken from first edition mapping)
Horizontal strata (symbols in green taken from first edition mapping)
Vertical strata (symbols in green taken from first edition mapping)
Strike and dip of inverted strata (symbols in green taken from first edition mapping)
Strike and dip of strata: dot indicates proved direction of facing
Strike and dip of strata, facing not known (first edition mapping)
Strike and dip of foliation (symbols in green taken from first edition mapping)
Vertical foliation (symbols in green taken from first edition mapping)
Strike and dip of first cleavage (symbols in green taken from first edition mapping)
Strike and dip of second cleavage
Strike and dip of third cleavage
Vertical first cleavage (symbols in green taken from first edition mapping)
Vertical second cleavage
Vertical third cleavage
Plunge of stretching lineation
Plunge of intersection lineation (bedding/slaty cleavage)
Plunge of crenulation hinge
Minor fold showing plunge
Minor fold showing crenulation hinge parallel to plunge
Minor fold showing crenulation hinge parallel to fold plunge; axial surface and dip
Geochronological sample location and reference number
Drill holes: stratigraphic, sampled for geochemistry and geochronology
Abandoned mine or mineral occurrence; Au = gold, Cu = copper
Mine, gold
Tanami Seismic Survey line 2005; seismic line reference number

INTERPRETED GEOLOGY (Tanami and Arunta regions)



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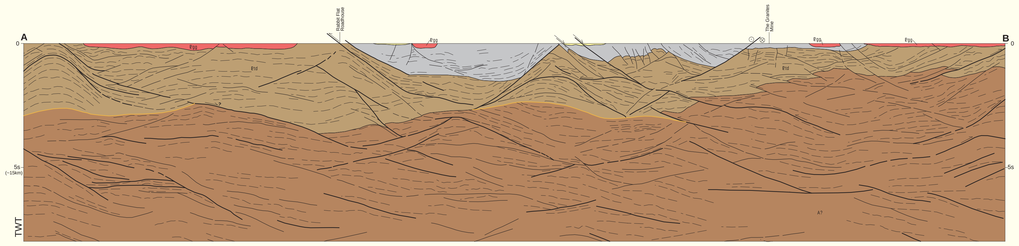
INTERPRETED GEOLOGY LEGEND

Egg GRIMWADE SUITE
Ef FREDERICK SUITE
Etch MOUNT CHARLES FORMATION
WARE GROUP
Ew WILSON FORMATION
Ewc CENTURY FORMATION
Etd$_b$ DOLERITE
TANAMI GROUP
Et UNDIVIDED TANAMI GROUP
Etk KILLI KILLI FORMATION
LANDER ROCK FORMATION
Etlr$_b$ *Amphibolite facies pelitic and psammitic schist, gneiss; includes undivided granite of Grimwade & Frederick Suites*
Etlr$_g$ *Greenschist to amphibolite facies pelitic and psammitic schist, gneiss; includes undivided granite of Grimwade & Frederick Suites*
DEAD BULLOCK FORMATION
Etd Undivided
Etd$_c$ Callie Member
Etd$_f$ Ferdies Member

INTERPRETED SEISMIC REFLECTION DATA

Traverse 05GA-T1, 8 second Two Way Time (~24km depth)
Scale V/H ~1
Modified after Goleby et al. (2009)

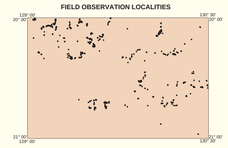


INTERPRETED SEISMIC FEATURES

Major fault or shear zone
Major fault or shear zone with sense of movement
Strike slip fault towards away
Major detachment fault
Significant seismic reflectors, structural and stratigraphic
Trend in seismic reflection data

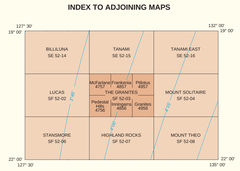
CENOZOIC — *Cenozoic sediments*
PALAEOPROTEROZOIC — **GRIMWADE SUITE**, *syenogranite to monzogranite*
PALAEOPROTEROZOIC — *Undivided* TANAMI GROUP, Killi Killi Formation
PALAEOPROTEROZOIC — *Undivided* TANAMI GROUP, Deak Bullock Formation
ARCHAEAN — *Mid-lower crust, possible Archaean.*

FIELD OBSERVATION LOCALITIES



MAP LOCALITY

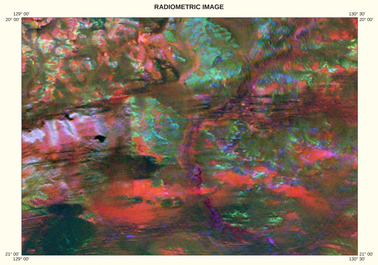
INDEX TO ADJOINING MAPS



MAGNETIC DECLINATION

Blue lines show magnetic declination for epoch 1995 derived from 1995 AGRF model. Annual change is 10.8' per year easterly at the centre of the map. Information is current for 1997.

RADIOMETRIC IMAGE



Calibrated radiometric data, with potassium (red), thorium (green), uranium (blue), total count (intensity)

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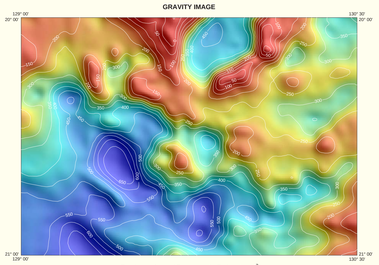
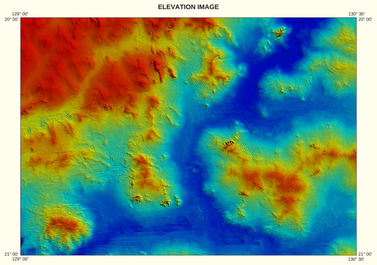
GRAVITY IMAGE



Pseudocolour Image of Bouguer gravity. Contours in μms^{-2}

SCALE 1:1 000 000

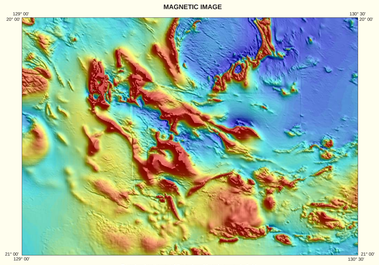
ELEVATION IMAGE



Elevation (Shuttle Radar Terrain Mission) with synthetic sun illumination from northeast

SCALE 1:1 000 000

MAGNETIC IMAGE



Pseudocolour image of the reduced to pole magnetic field

SCALE 1:1 000 000

Geology: 1999-2001: NTGS 1:100 000 geological series: M Hendrickx, A Crispe, L Vandenberg, A Dean, NTGS
1986-1998: North Flinders Mines NL
1988-1992: Zapopan NL
1993-1998: Otter Gold NL
First Edition Geology: 1972-1981: D Blake, I Plumpton, BMR; P Muhling, GSWA
Compiled: 2005-2011: L Vandenberg, A Crispe, NTGS
Design: 2005-2011: R Tomlinson, R Bousfield, NTGS
Digital Cartography: 2008-2014: L Heard, R Tomlinson, NTGS

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Produced by, and plot on demand created by the Northern Territory Geological Survey, Department of Mines and Energy, Darwin, Australia. Issued under the authority of the Minister for Mines and Energy, The Honourable WILLEM WESTRA VAN HOLTHE, MLA.

Base map compiled by NTGS from 1:250 000 - scale topographic data supplied by Geoscience Australia, Department of Resources, Energy and Tourism, Canberra.

This map is accompanied by a text publication: Ahmad M, Vandenberg LC and Wygralak AS, 2013, Tanami Region: in Ahmad M and Munson TJ (compilers), *Geology and mineral resources of the Northern Territory. Northern Territory Geological Survey, Special Publication 5.*

It is recommended that this map be referred to as: Vandenberg L and Crispe A, 2014, *The Granites, Northern Territory (Second Edition). 1:250 000 geological map series*, SF 52-03 . Northern Territory Geological Survey, Darwin.

DIGITAL DATA: Map data can be obtained from NTGS as hardcopy plots and digital files in Mapinfo and MicroStation formats. Information on formats, release conditions and costs are available from Minerals and Energy InfoCentre, 3rd floor Centrepoint Building, Stewart Phone (08) 8999 6443, or visit the NTGS website at www.minerals.nt.gov.au/ntgs, or email to Geoscience.Info@nt.gov.au.

Northern Territory Government

Department of Mines and Energy

NORTHERN TERRITORY GEOLOGICAL SURVEY

Ian Scrimgeour, Executive Director

THE GRANITES

1:250 000 GEOLOGICAL SERIES

SHEET SF 52-03

SECOND EDITION 2014

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WARNING : Colours will fade with prolonged exposure to light.