Abminga bedrock drilling program 2001

Naomi Tucker, Justin Gum, Simon Constable and Rian Dutch

Government of South Australia
Department for Manufacturing, Innovation, Trade, Resources and Energy

Report Book 2012/00008

Abminga bedrock drilling program 2001

Naomi Tucker, Justin Gum, Simon Constable and Rian Dutch

Geological Survey of South Australia
Resources and Energy Group

May 2012

Report Book 2012/00008

Government of South Australia
Department for Manufacturing, Innovation, Trade, Resources and Energy

Resources and Energy Group
Department for Manufacturing, Innovation, Trade, Resources and Energy
Level 7, 101 Grenfell Street, Adelaide
GPO Box 1264, Adelaide SA 5001
Phone +61 8 8463 3037
Email dmitre.minerals@sa.gov.au
www.minerals.dmitre.sa.gov.au

South Australian Resources Information Geoserver (SARIG)
SARIG provides up-to-date views of mineral, petroleum and geothermal tenements and other geoscientific data. You can search, view and download information relating to minerals and mining in South Australia including tenement details, mines and mineral deposits, geological and geophysical data, publications and reports (including company reports).
www.sarig.dmitre.sa.gov.au

Preferred way to cite this publication
Tucker N, Gum J, Constable S and Dutch R 2012. *Abminga bedrock drilling program 2001*, Report Book 2012/00008. Department for Manufacturing, Innovation, Trade, Resources and Energy, South Australia, Adelaide.

ABBREVIATIONS

COLOUR

Black	bk
Blue	bl
Brown	brn
Buff	buff
Clear	clr
Cream	crm
Green	grn
Grey	gy
Maroon	mar
Orange	or
Pink	pk
Purple	ppl
Red	rd
White	wht
Yellow	yw
Light	lt
Pale	ple
Medium	m
Dark	dk

GRAINSIZE

Very fine	vfg
Fine	fg
Medium	mg
Coarse	cg
Very coarse	vcg

MINERALOGY

Actinolite	ac
Adularia	ad
Albite	ab
Allanite	all
Alunite	al
Amphibole Group	am
Ankerite	ank
Anorthite	an
Anorthoclase	anth
Apatite	ap
Arsenopyrite	ars
Asbestos	asb
Barite	ba
Basement	base
Beryl	be
Biotite	bi
Bornite	bn
Bronzite	brz
Calcite	ct
Carbonate	CaCO3
Clay, undiff.	cy
Chalcedony	chy
Chalcocite	cct
Chalcopyrite	cpy
Chert	ch
Chlorite	chl
Clinopyroxene	cpx
Cordierite	cor
Dickite	dk
Diopside	diop
Dolomite	dol
Epidote	ep
Feldspar, undiff.	feld
Fluorite	fl
Forsterite	for
Garnet group	gn
Galena	ga
Glauconite	glau
Goethite/limonite	goe
Gold	gold
Gossan	goss
Gravel	grav
Grits	grits
Groundmass	gmass
Gypsum	gy
Halite	ha
Hematite	hm
Hornblende	hbl
Hypersthene	hyp
Illite	ill
Ilmenite	ilm
Iron oxide, undiff.	Fe-Ox
Jade	jade
Jasper	ja
Kaolinite group	kao
K-feldspar	K-spar
Kyanite	ky
Labradorite	la
Laterite	lat
Limonite/goethite	lim
Mafic	maf
Maghemite	magh
Magnesite	mag
Magnetite	mt
Malachite	mal
Manganese oxide	mang
Martite	mar

Mica group	mi
Microcline	mic
Monazite	mon
Muscovite	mus
Nickel minerals	ni
Olivine group	ol
Opal	op
Orthoclase	or
Orthopyroxene	opx
Pisolite	pisol
Plagioclase	plag
Phlogopite	phl
Pisolite	pisol
Pseudotachylite	pseudo
Pyrite	py
Pyroxene group	px
Pyrrhotite	prh
Quartz	qz
Rhodochrosite	rh
Sand	sand
Scapolite	sc
Sericite	ser
Serpentinite	sp
Siderite	sid
Sillimanite	sil
Spinel group	sp
Staurolite	stl
Sulphide, undiff.	sul
Talc	tc
Tourmaline	tour
Tremolite	tm
Wad (undiff. Mn & Fe oxides)	wd
Zircon	zr

WEATHERING

Deep	dp
Moderate	mod
Slight	sl
Fresh	fr
Base of complete oxidation	BOCO
Base of partial oxidation	BOPO

TEXTURE

Brecciated	bx
Phenocrysts	phn
Leucocratic	leu
Gneissic	gns
Schistose	sch
Foliated	fol
Trachytic	trac
Migmatic	mig
Metasomatic	met
Melanocratic	mel
Mafic	maf
Massive	mass

MUSGRAVE PROVINCE ROCK TYPES

HOLOCENE

Qha ***Alluvial deposits*** Undifferentiated alluvial/fluvial sediments deposited in drainage.
Qha8 ***Colluvial deposits*** Undifferentiated alluvial/fluvial sediments deposited in drainage.
Qhe ***Aeolian deposits*** Red, clayey sands occurring as blow outs and dunes fixed by vegetation.
Qhl3 ***Clay pan deposits*** Clay deposits in lakes and drainage.

PLEISTOCENE

Qpe ***Aeolian deposits*** Red, clayey sands occurring as blow outs and dunes now fixed by vegetation.
Qp\ca ***Calcareous deposits*** Calcrete or earthy calcareous material in the weathering profile.
Qpl ***Lacustrine deposits*** Saline material or bedded clays.
Qpu ***Undifferentiated deposits*** Red, clay-rich deposits with variable amount of granular quartz, usually restricted to areas underlain by kaolinised basement.
Qpa ***Alluvial deposits*** Sediments deposited in drainage.
Qpt ***Talus deposits*** Colluvium and low-angle deposits marginal to ranges and inselburgs.
Qpp ***'Pavement' deposits*** Debris formed by in-situ weathering of basement rocks consisting of earthy matrix and relatively unweathered fragments of basement rocks.

CAINOZOIC: MIOCENE-?PLEISTOCENE

Tl ***Lacustrine deposits***

TmQlm Limestone, red bed facies, sand, grit, and flood plain clay. Palaeochannel facies.
TmQlm1 Basal grit, cemented by blue chalcedony, with clasts of common opal and ferrotitanium oxide in indurated kaolinite matrix.
TmQlm2 Green gypsiferous clay, sometimes carbonaceous; may contain ferrotitanium oxide nodules.
TmQlm3 Olive green, calcareous sandy clay. May contain saprolite or polished silcrete pebbles.
TmQlm4 White, yellow chalcedony; siliceous, nodular dolomite; white earthy carbonate; pink, brown sparite.

T ***Alluvial deposits***

T\sf2 ***Indurated grits and sands*** Grey, red-brown and variegated silcrete and ferricrete, developed in thin alluvial/colluvial grit and sand.
T\po1 ***Porcellanite*** White, vitreous, translucent silicified claystone (porcellanite).
T\po2 ***Indurated claystone*** Indurated claystone of derived origin; may be silicified (related to porcellanite).
T2 ***Talus deposits*** Silcrete conglomerate as talus around silcrete capped mesas.

T ***Products of weathered basement***

T\sf1 ***Ferricrete and silcrete*** Silcrete and ferricrete, developed in kaolinised basement.
T\dw2 ***Pallid zone*** Kaolinised basement, quartz and kaolin with no visible "original" texture.
T\fe2 ***Mottled zone*** Titaniferous iron-pan veins, flats or rhyzomorphic networks.
T\dw1 ***Kaolinised basement*** Kaolinisation in which relict granitic/gneissic texture is preserved.
T\si1 ***Jasper*** Jasper, ferruginous chalcedony, formed in ultrabasic rocks during lateritic weathering.
Tfe1 ***Ochre*** Goethitic and nickeliferous in parts, developed on or near ultrabasic rocks during lateritic weathering.

NEOPROTEROZOIC

IGNEOUS

N-t ***Amata Dolerite*** Dolerite, dark green, fine-grained, fractured. Igneous textures commonly preserved.

MESOPROTEROZOIC

IGNEOUS

Giles Complex

Mg ***Undifferentiated Giles Complex*** Layered mafic-ultramafic intrusions with plagioclase rich rocks, with olivine gabbro, norite, and anorthosites. Ultrabasics of olivine orthopyroxenite. Strongly layered.

Mgt ***Teizi Anorthosite*** Anorthosite-troctolite, metamorphosed concordant sill-like intrusion. Age of Giles Complex: 1185±5 Ma, emplacement ~1200 Ma.

Mg1 ***Ultrabasic rocks*** Pyroxenite, picrite.
Mg2 ***Basic rocks*** Norite, gabbro, anorthosite, troctolite; norite dykes.
Mg3 ***Anorthosite*** 90%+ plagioclase, and minor pyroxene and olivine.
Mg4 ***Serpentinite***
Mg5 ***Pyroxenite*** Mainly pyroxene.
Mg6 Picrite, troctolite, olivine gabbro, peridotite.
Mg7 Coarse-grained, anorthositic contact zone with metasediments.

Pitjantjatjara Supersuite

Mp ***Undifferentiated Pitjantjatjara Supersuite*** Adamellite; alkali granite; diorite, often porphyritic, foliated or even massive.
Mpa ***Ampeinna Granite*** Granite, biotite-hornblende, porphyritic.
Mpc ***Cartoberinna Granite*** Granite, massive, medium-grained, biotitic.
Mpe ***Ernabella Adamellite*** Adamellite, orthopyroxene and clinopyroxene.
Mpi ***Ilbillie Adamellite*** Adamellite. Age 1150 (Rb/Sr), 1100 (K/Ar).
Mpn ***Ngarinya Adamellite*** Adamellite, charnockitic. Crystallisation age 1186±10 Ma on U-Pb zircon.
Mpp ***Permano Adamellite*** Adamellite, foliated.

Mp1 Aplite of Indulkana shear zone.
Mp2 Biotite and hornblende adamellite.
Mp3 Microadamellite, microgranite.
Mp4 Hypersthene adamellite (charnockite).
Mp5 Gneissic granite.
Mp6 Granite with accessory allanite.
Mp7 Vein pegmatite; quartz + alkali feldspar ± magnetite, biotite, allanite, monazite, other radioactive minerals.
Mp8 Zoned pegmatite; quartz core, graphic quartz-microcline middle zone, margin rich in biotite, magnetite, radioactive minerals.
Mp9 Microgranite marginal to Mk2 and as dykes.
Mp10 Granite porphyry, varying from alkaline granite to mangerite (hypersthene-monzonite) or trondhjemite
Mp11 Reticulate-textured quartz-feldspar pegmatite as semi-conformable or cross-cutting bands.

M-a ***Alcurra Dyke Swarm*** Dolerite, dark grey, medium to fine-grained, olivine, hypersthene. Poikilitic texture.

MN3 Undifferentiated basic dykes, Musgrave Block.
M20 Olivine norite/micronorite dykes.
M21 Gabbro/microgabbro dykes.
M22 Dolerite dykes.
M23 Undifferentiated doleritic/gabbroic dykes of the Musgrave Block.

M24 Altered basic dykes in shear zones, Musgrave Block.
M25 Leucocratic dolerite dykes, Musgrave Block.

METAMORPHIC

Mr ***Birksgate Complex*** Gneiss, granulite and amphibolite facies (equigranular quartz + feldspar), with hornblende, biotite, orthopyroxene and clinopyroxene, south of the Woodroffe Thrust.
Mrw ***Wataru Gneiss*** Gneiss, massive, granulitic (equigranular quartz + feldspar), with hornblende, biotite, orthopyroxene and clinopyroxene.
Mrw1 Bedded amphibolite?
Mrw2 Quartzite?
Mr1 Hornblende-plagioclase gneiss.
Mr2 Felsic (quartzo-feldspathic) granulite gneiss, garnet-rich bands, macro-layered.
Mr3 Basic granulite.
Mr4 Altered granulite and gneissic granulite.
Mr5 Intermediate granulite; feldspar-pyroxene granulite, garnet-rich in part.
Mr6 Quartzite, quartz granulite, quartz-sillimanite granulite.
Mr7 Plagioclase-pyroxene-garnet granulite, dark-coloured.
Mr8 Quartz-plagioclase-pyroxene-garnet granulite.
Mr9 Quartz-K-feldspar-plagioclase-hypersthene-garnet granulite.
Mr10 Marble, coarse, calcsilicate.
Mr11 Garnet-quartz-microperthite quartzite.
Mr12 Quartzite, quartz-microperthite.
Mr13 Pyroxene granulite, pyroxene gneiss, amphibolite.
Mr14 Garnet gneiss.
Mr15 Bedded amphibolite?
Mr16 Quartzite?
Mr17 Leucocratic quartz-feldspar gneiss ± biotite, hypersthene, hornblende, clinopyroxene, garnet.
Mr18 Melanocratic quartz-hypersthene gneiss, stringers of quartz or quartz-plagioclase.
Mr19 Aluminous gneiss, with variable amounts of sillimanite, cordierite, garnet, K-feldspar.
Mr20 Mafic gneiss, variable amount of plagioclase, may contain accessory quartz.
Mr21 Calc-silicates with calcium and magnesium-rich minerals.
Mr22 Glassy magnetite quartzite ± garnet, pyroxene. Possibly iron formation.

mi Migmatite or migmatisation, undifferentiated.
my Mylonitised rocks, undifferentiated.
my2 Shear zones, mylonite, cataclasite of Musgrave Block.

CONTENTS

TABLES

FIGURES

Abminga Bedrock Drilling Program 2001

Naomi Tucker, Justin Gum, Simon Constable and Rian Dutch

ABSTRACT

The Abminga bedrock drilling program was initiated as part of the Targeted Exploration Initiative of South Australia (TEISA) strategy in 1999. Drilling was proposed for the easternmost Musgrave Block on the Tieyon and Ayres Range South pastoral leases, to the immediate east of the Anangu Pitjantjatjara (AP) Lands — a region with very little known geological information on the underlying basement rock. Accordingly, the aim of the program was to investigate the nature of the basement below shallow cover to produce comprehensive, accurate and relevant geoscientific data on the easternmost Musgrave Block.

The program commenced in early May and was completed by early August 2001, after having been delayed twice by rain. The final program consisted of 140 reverse circulation drillholes totalling 5123 m with all but a few drillholes intersecting fresh basement. The program drilled through cover to target lithologies corresponding to various aeromagnetic signatures on the Alcurra, Tieyon and Treloar 1:100 000 map sheets.

The majority of drillholes intersected Birksgate Complex with numerous occurrences of Pitjantjatjara Supersuite granitoids. Olivine-dolerite dykes, some of which contained visible sulphides, were also intersected. Large zones exhibiting a low magnetic signature, which had previously been interpreted as possible ultramafic intrusions, were identified as chloritic alteration zones in Birksgate and Pitjantjatjara Supersuite host lithologies.

Various drillhole samples have been analysed for geochemistry, petrology and groundwater chemistry.

NOTE: The Abminga bedrock drilling program was undertaken in 2001. Due to unforeseen circumstances this report was not finalised until 2012. This report provides the reference for the drilling data which is available on-line via SARIG.

INTRODUCTION

BACKGROUND INFORMATION

The South Australian Government signalled its continuing confidence in the ability of the mining sector to play a key role in the State's economic growth by committing $23.2 million to be spent over the years 1998–2002, on a phased, regional exploration strategy for minerals, petroleum and groundwater. This strategy, known as the Targeted Exploration Initiative of South Australia (TEISA), a collaboration between PIRSA, exploration companies and the Australian Geological Survey Organisation (AGSO, now Geoscience Australia), employed a practical partnership approach to the stimulation of private exploration activity in South Australia and subsequently reduced exploration risk by providing high-quality geoscientific data at an early stage of the drilling program.

The targeted areas of the strategy were the Musgrave Block (a geological province in the Anangu Pitjantjatjara Lands), the Southern Gawler Craton (including the Eyre and Yorke Peninsulas), the eastern Adelaide Geosyncline, the Curnamona Province and areas of South Australia’s key sedimentary basins, including the Murray and Cooper Basins.

For the Abminga Drilling Program, the strategy was to undertake exploration in the easternmost Musgrave Block via a bedrock drilling program with the aim to provide comprehensive, accurate and relevant geoscientific data which would become available to industry and may encourage private companies to focus their future exploration efforts on this region. The drilling was proposed for a region where there was very little known geological information on the basement rock under a shallow cover of younger sediments. The drilling program inevitably provided valuable information to PIRSA's geological and groundwater databases with significant potential to improve the knowledge and understanding of the geological history of the region.

LOCATION

The 140 completed drillholes are located within the 1:250 000 Abminga map sheet with 115, 13 and 11 drillholes corresponding to the Tieyon, Treloar and Alcurra 1:100 000 map sheets, respectively (Fig. 1). All completed drillholes are located within sections of the Ayers Range South and Tieyon pastoral properties where the land is used primarily for cattle grazing.

This region consists of gently undulating plains with some granitic outcrops and low, silcrete capped mesas. In the north-eastern part of the area, the landscape is dissected by silcrete capped tablelands with crusty, red, duplex soils and earthy sands. The mean annual rainfall is 200 mm; some local water resources are provided by dams but mostly is obtained from bores located on relatively shallow sources in fractured basement rocks.

The closest open community to the drilling site is the Kulgera township in the Northern Territory located approximately 85 km by road from Tieyon Station. Marla, South Australia, is located 178 km south of Kulgera along the Stuart Highway. Alice Springs is the main population centre some 360 km by road north from Tieyon.

GEOLOGICAL SETTING

The Musgrave Province is an E-W trending area approximately120 000 km^2 which lies in the far north-west corner of South Australia and ranges in age from the earliest Mesoproterozoic to Neoproterozoic (Wade et al., 2008). The oldest rocks in the Musgrave Province are felsic and mafic Musgravian gneisses resulting from arc-related magmatism in the early Mesoproterozoic (Wade et al., 2008). The crystalline basement gneisses are comprised of metamorphic rocks of the granulite and amphibolite facies, intruded by granitic plutons and mafic and ultramafic rocks of the Giles Complex (Woodhouse and Gum, 2003). Granitic magmatic events occurred at 1.3 and 1.2–1.14 Ga, featuring voluminous A-type granites of the Pitjantjara Supersuite which range from adamellite to diorite in composition and exhibit a porphyritic texture (Wade et al., 2008).

Emplacement of the voluminous mafic-ultramafic Giles Compex and associated granulite facies metamorphism of the Giles Event (1.08–1.04 Ga) occurred at 1.078 Ga. The Giles Event is defined by massive to variably deformed mafic-ultramafic, fault bound layered intrusions which are considered to represent discrete bodies from the extensional regime associated with generation of the Warakurna Large Igneous Province (Wade et al., 2008).

Alcurra Dolerite (1.08 Ga), olivine dolerites (1.0 Ga) and the Amata Dolerites (0.8 Ga) dissect much of the Musgrave Province.

Much of the tectonic character of the Musgrave Province was shaped during Grenvillian aged (1.2–1.1 Ga) tectonism and later reworking during the Petermann Orogeny (620–530 Ma) — the earliest Cambrian intraplate transpressional event which resulted in deep crustal exhumation of the northern Musgrave Province (Wade et al., 2008). The south dipping Woodroffe thrust fault separates the dominantly amphibolite facies rocks in the Mulga Park Domain to the north of the province, from the granulite facies dominated Fregon Domian to the south (Wade et al., 2008).

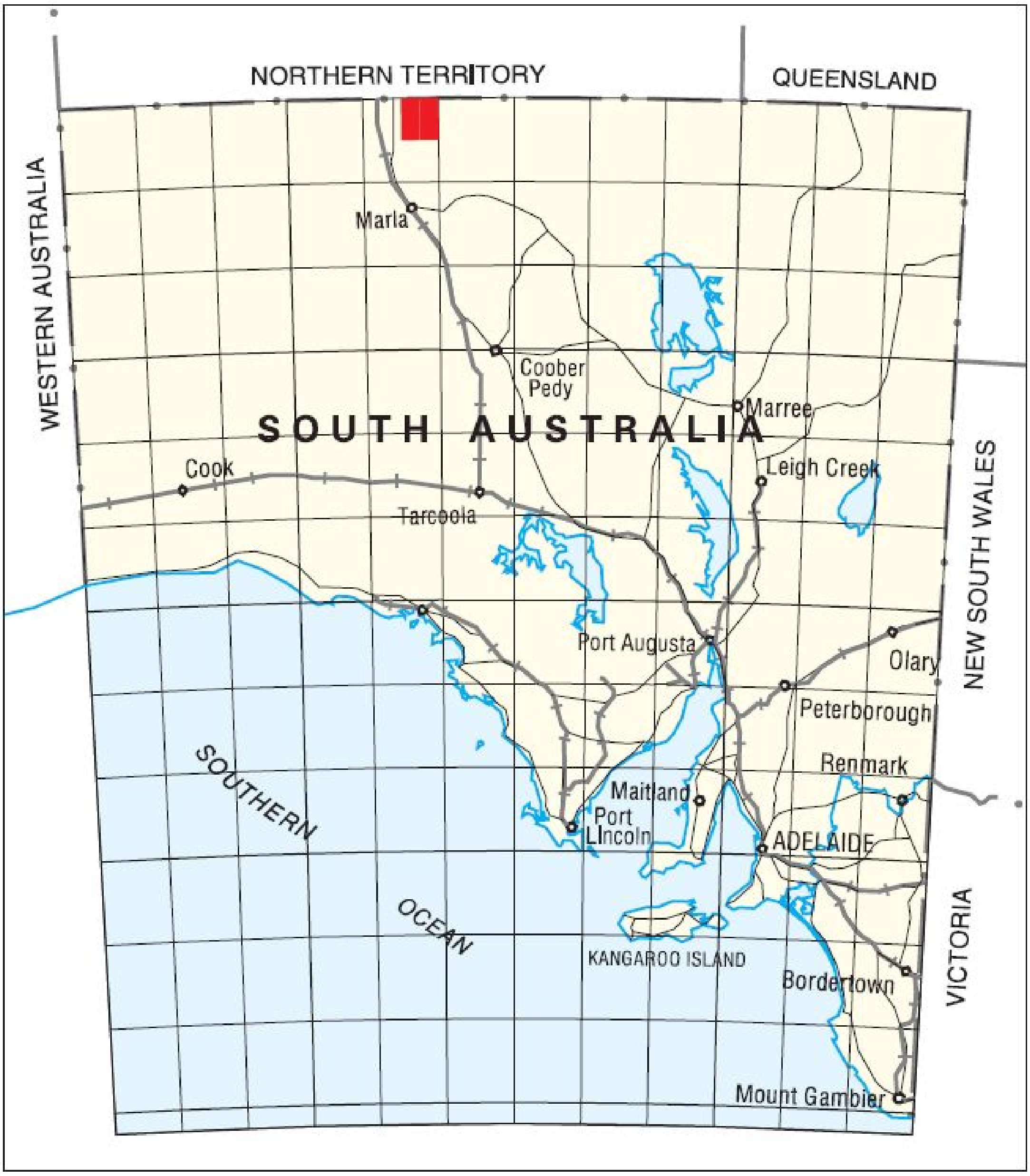

Figure 1. Location of the target area centred on the Tieyon 1:100 000 map sheet in the far north of South Australia.

The drilling area lies in the Fregon Domain which is represented by a largely felsic Musgravian gneiss termed the Birksgate Complex. A recently-recognised metasedimentary cover sequence overlies the Musgravian gneiss in the eastern Musgrave Province. A period of extension at 1.4 Ga resulted in deposition of the protoliths to these metasedimentary rocks which are inter-layered with felsic, mafic and calc-silicate gneisses and represent a metavolcanic succession (Wade et al., 2008).

The current boundaries of the Musgrave Province are defined by the relatively unaltered Neoproterozoic to Paleozoic-aged sedimentary rocks of the Officer Basin, the late Paleozoic Arckaringa Basin and the Mesozoic Eromanga Basin (Gum and Constable, 2003; Wade et al., 2008). The Eromanga Basin is early-Jurassic to mid-Cretaceous in age and comprises an early sequence of fluvial sandstone units, including the Algebuckina Sandstone deposited in a moderate-high energy transgressive period. The Algebuckina Sandstone is a grey, fine to very fine sandstone with locally developed coarser interbeds and carbonaceous claystones (Alexander and Kreig, 1995). It is overlain by fine-grained, flood-plain and lacustrine sandstone and siltstone units of the Cadna-owie Formation (Alexander and Kreig, 1995). Overlying the Cadna-owie Formation, the Bulldog Shale is a grey marine mudstone representing the marine shaley interval of the

Eromanga Basin. It consists of dark grey, biturbated and fossiliferous shaley mudstone with pale gray micaceous silt to very fine sand intervals. The Bulldog shale is often chemically altered producing multi-hued colouration and a silicified or porcalanitic texture (Alexander and Kreig, 1995).

The Musgrave Province records an extended history of metamorphism and deformation and is accordingly traversed by a series of major shear zone systems and low grade mylonite zones which overprint higher grade mylonitic fabrics and impart the prominent east-west landscape expression (Wade et al., 2008; Gum and Constable, 2003). This is consistent with movement along the north-directed Woodroffe Thrust (Wade et al., 2008) and high strain development along shear zones during the late Neoproterozoic to earliest Cambrian Petermann Orogeny (Gum and Constable, 2003).

PREVIOUS EXPLORATION

The region was most recently held by Craton Resources who targeted nickel-copper-cobalt sulphide mineralisation however, no field work was undertaken. Nickel sulphide mineralisation was also targeted during the mid 1990s by CRA-RTZ. A total of 43 holes were drilled over 3 traverses in the Bruce Bore area, and a single hole on the Cavanagh prospect. All drilling activity was located on Ayres Range South pastoral lease. Unconformity-hosted uranium mineralisation was targeted in the early 1980s by AFMECO however only one hole, CUR-7, sited within the ELA, was investigated. In the 1960s, the SADME Groundwater Group also undertook a drilling program to investigate available groundwater resources to meet water requirements for the construction of the Stuart Highway and the Tarcoola to Alice Springs railway.

PROGRAM PLAN

MANAGEMENT AND PRELIMINARIES

The Abminga bedrock drilling program was planned for completion with a total cost of $190 000 in 1999/2000. As part of the TEISA program, funds for the program were carried forward to 2000/2001 in which the drilling contract component of the budget was then set at $100 000.

The program was designed to investigate the nature of the Musgrave Block below shallow cover on the Tieyon and Ayres Range South pastoral leases to the immediate east of the Anangu Pitjantjatjara (AP) Lands. A field visit was made to the lessees of Tieyon Station by Marc Davies on 8 December 1999, and the lessees of Ayres Range South were also contacted. The Department of Environment Heritage and Aboriginal Affairs (DEHAA) were consulted regarding the existence of registered ‘Aboriginal Sites’ within the area of the ELA.

The area covered by the proposed drilling program was subject to a Native Title claim by the Eringa Native Title Group. Consequently, MER undertook a site clearance with the Traditional Owners of Tieyon Station area, which included the principal claimant for the Eringa Native Title claim. As a result of slow progress through legal representatives for the Eringa claimants and excessive charges proposed for aboriginal heritage site clearances by the Aboriginal Legal Rights Movement (ALRM), Traditional Owners for the area were contacted directly by PIRSA’s Aboriginal Liason Officer, Rob Larkins.

As a result, an aboriginal heritage site clearance over Tieyon was undertaken from June 28–30th 2000. The majority of the proposed drill sites were cleared, four sites were marginally shifted and one was deemed too sensitive and the drill site was not cleared. Total cost of the clearance was less than $5000.

Ground magnetic and gravity surveys were undertaken along the proposed drill traverses in July–August 2000 by MER staff and a temporary camp was established near Tieyon Station.

SUMMARY OF DRILLING OPERATIONS

Drillholes were generally spaced 2–5km along station tracks as per the Tieyon Pastoral Lease (Fig. 2). Drillholes targeted as many of the outcropping rock types and aeromagnetic signatures as possible (Fig. 3).

The program was carried out by Johannsen-Drilling, using RC air-core and percussion methods. The water requirements for this drilling method were considered to be minimal and needs were met by local bores and/or dams, dependent on negotiations with the lessees of the pastoral leases.

Logging samples representing one to two metre depth intervals were laid out in small hand dug pits at each site. Small samples of each interval were collected for storage at the PIRSA core library in Glenside. Composite samples and representative end-of-hole sample intervals — generally of 'basement' rocks — were collected for petrological and geochemical analysis. Information on depths to standing water and estimated yields were recorded where possible and water samples were collected where flow was deemed significant. Table 1 provides a drilling program summary for each drillhole.

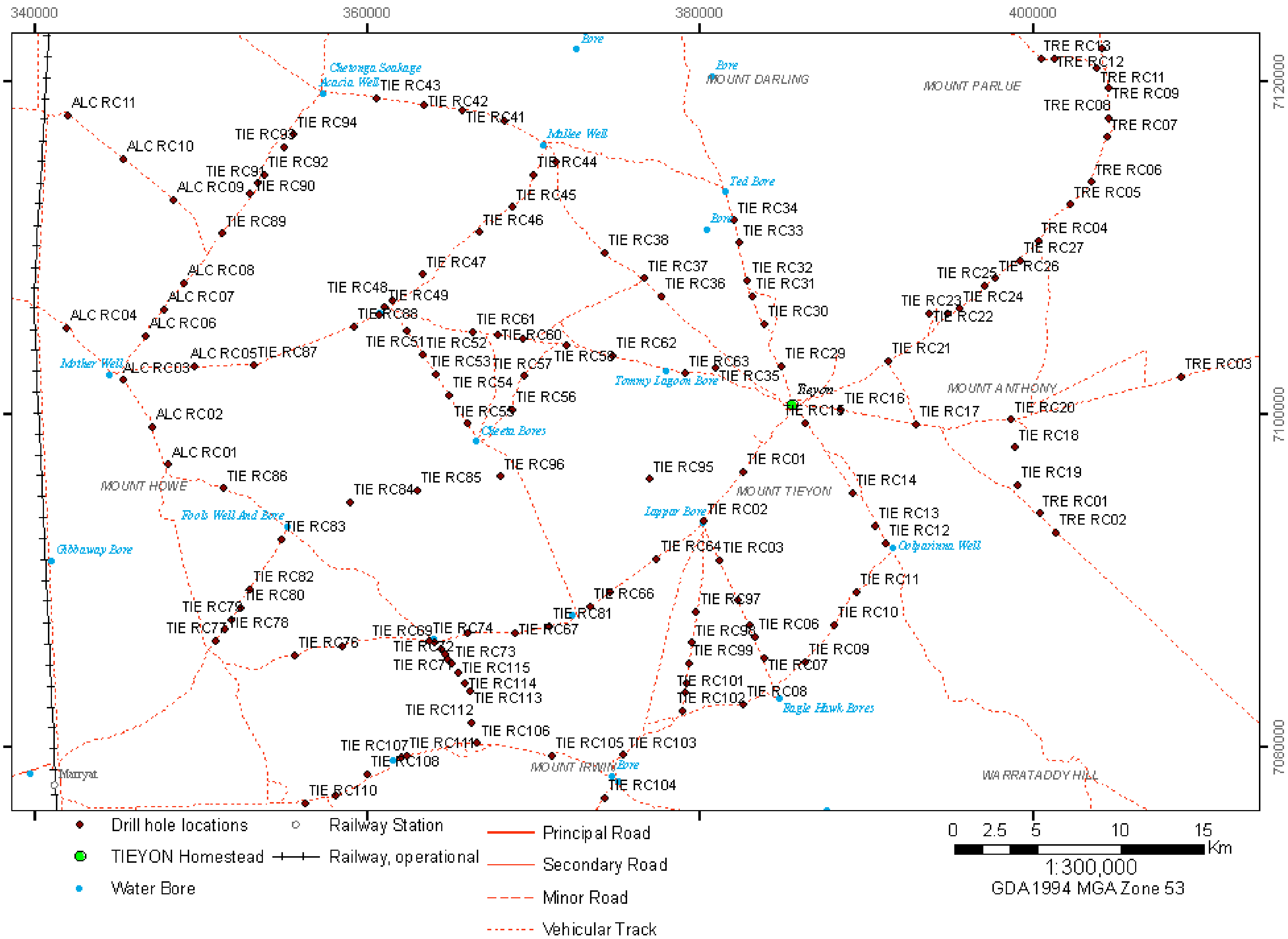

Figure 2. Location map of the Abminga Bedrock Drilling Program drill sites.

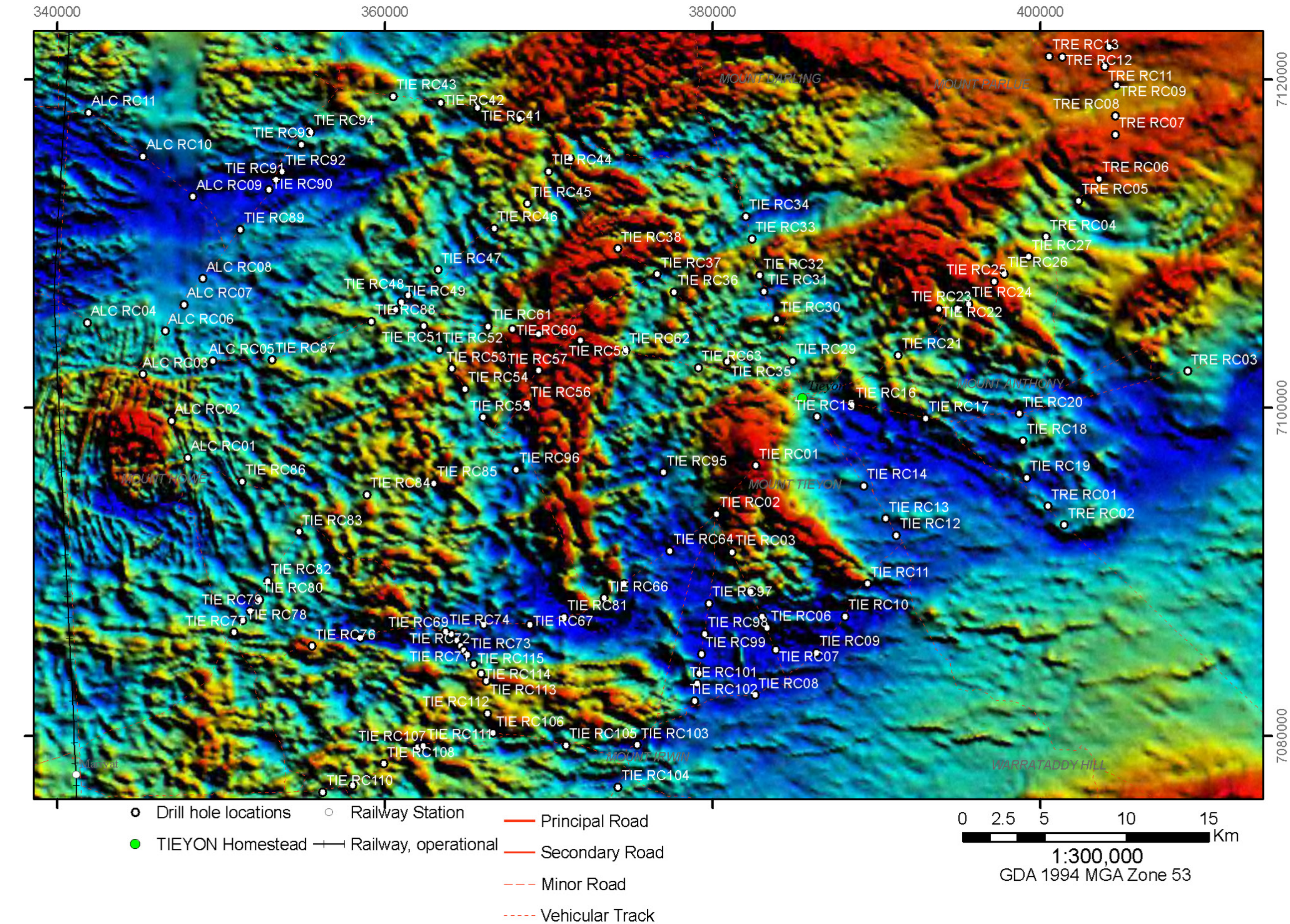

Figure 3. Location of drillholes on total magnetic intensity image.

Table 1. Abminga Drilling Program drillhole summary

Drillhole	Target	Easting	Northing	Elevation (m)	Redox boundary (m)	Depth (m)	Water table (m)	Water flow
ALC RC01	Low magnetic circular feature - alteration?	347967.00	7096951.00	426	38	24	-	Very Minor
ALC RC02	Low magnetic zone around granite.	346971.00	7099212.00	435	38	36	15	Very Minor
ALC RC03	Gabbro dyke.	345220.00	7102041.00	430	38	45	28	Minor
ALC RC04	Low magnetic zone - Birksgate Complex?	341849.00	7105180.00	450	14	15	-	Dry
ALC RC05	Low magnetic signature, possibly ultramafic unit.	349518.00	7102858.00	438	19	24	-	Dry
ALC RC06	Moderately magnetic signature.	346595.00	7104689.00	433	12	15	-	Very Minor
ALC RC07	Moderately magnetic Birksgate Complex.	347729.00	7106280.00	442	25	30	13	Minor
ALC RC08	Low magnetic zone.	348890.00	7107860.00	438	38	33	-	Dry
ALC RC09	Very low magnetic zone - ultramafics?	348292.00	7112856.00	440	38	60	<24	Strong
ALC RC10	Moderate magnetic Birksgate Complex.	345236.00	7115318.00	452	38	36	-	Minor
ALC RC11	Alcurra dykes?	341903.00	7117971.00	465	38	30	19	Moderate
TIE RC01	Kulgera Suite.	382622.00	7096490.00	407	6	10	-	Dry
TIE RC02	Kulgera Granite.	380216.00	7093538.00	396	37	44	15	Minor
TIE RC03	Kulgera Suite.	381176.00	7091209.00	371	38	46	-	Dry
TIE RC04	Marryat Fault.	382306.00	7088783.00	387	48	52	16	Very Minor
TIE RC05	Low magnetic unit, possibly mafic dyke.	383017.00	7087263.00	377	32	34	20	Minor
TIE RC06	Ultramafics.	383331.00	7086603.00	379	>34	34	18	Minor
TIE RC07	Ultramafics.	383840.00	7085267.00	379	44	48	17	Very Strong
TIE RC08	Birksgate/Ultramafic contact.	382581.00	7082511.00	369	20	24	9	Minor
TIE RC09	Ultramafics.	386312.00	7085078.00	376	>38	38	16	Moderate
TIE RC10	Ultramafic/Kulgera contact.	388075.00	7087290.00	359	28	36	-	Dry
TIE RC11	Marryat Fault.	389432.00	7089284.00	370	22	30	-	Dry
TIE RC12	Birksgate complex.	391203.00	7092246.00	363	42	44	6	Strong
TIE RC13	Dolerite dyke.	390547.00	7093242.00	367	36	40	10	Minor
TIE RC14	Birksgate Complex.	389222.00	7095237.00	365	16	32	13	Moderate
TIE RC15	Birksgate Complex.	386362.00	7099452.00	378	8	10	-	Dry
TIE RC16	Birksgate Complex/Kulgera Suite.	388500.00	7100201.00	381	9	18	-	Dry
TIE RC17	Dolerite/fault.	392975.00	7099364.00	387	26	30	9	Very Minor
TIE RC18	Birksgate Complex.	398933.00	7097987.00	372	14	20	-	Dry
TIE RC19	Birksgate Complex.	399148.00	7095732.00	366	34	40	-	Dry
TIE RC20	Birksgate Complex.	398695.00	7099643.00	363	>110	110	-	Dry
TIE RC21	Birksgate Complex.	391323.00	7103213.00	399	46	48	30	Very Strong
TIE RC22	Very high GM spike-Kulgera Suite?	393767.00	7106002.00	401	16	44	30	Minor
TIE RC23	Low ground magnetic signature.	394942.00	7106067.00	403	70	94	-	Dry
TIE RC24	Moderately high ground magnetic signature.	395606.00	7106335.00	410	100	104	30	Minor
TIE RC25	Moderately high, erratic ground magnetics.	397168.00	7107707.00	398	12	18	-	Dry

Drillhole	Target	Easting	Northing	Elevation (m)	Redox boundary (m)	Depth (m)	Water table (m)	Water flow
TIE RC26	Low, erratic ground magnetics.	397771.00	7108162.00	397	-	30	-	Dry
TIE RC27	Fault zone/dolerite?	399257.00	7109207.00	392	14	24	-	Dry
TIE RC28	Kulgera Suite?	399399.00	71222193.00	390	-	102	-	Dry
TIE RC29	Dolerite dyke.	384877.00	7102867.00	393	-	13	-	Dry
TIE RC30	Dolerite dykes.	383893.00	7105422.00	422	-	9	-	Dry
TIE RC31	Strong magnetic signature.	383130.00	7107089.00	415	-	10	-	Dry
TIE RC32	Erratic magnetic signature.	382871.00	7108056.00	412	-	12	-	Dry
TIE RC33	Low ground magnetic signature.	382382.00	7110287.00	419	-	49	-	Dry
TIE RC34	Very low magnetic (ultramafic?).	382016.00	7111648.00	437	-	31	-	Dry
TIE RC35	Birksgate complex/dolerite.	380892.00	7102811.00	381	-	19	-	Dry
TIE RC36	Highly magnetic stratigraphy.	377655.00	7107057.00	381	-	6	-	Dry
TIE RC37	Coglin Lineament.	376623.00	7108140.00	381	-	18	10	Strong
TIE RC38	Kulgera Suite.	374212.00	7109698.00	443	-	11	-	Dry
TIE RC39	Kulgera/Birksgate contact.	371332.00	7115192.00	455	-	24	-	Dry
TIE RC40	Fault zone/ Kulgera Suite.	368200.00	7117600.00	451	-	10	-	Dry
TIE RC41	Birksgate complex.	365656.00	7118290.00	452	-	31	-	Dry
TIE RC42	Birksgate Complex.	363388.00	7118592.00	446	-	23	12	Strong
TIE RC43	Low magnetic (ultramafic?).	360504.00	7118974.00	434	-	52	-	Strong
TIE RC44	High magnetic - Kulgera Suite.	369992.00	7114406.00	381	-	16	-	Dry
TIE RC45	High magnetic - Kulgera Suite.	368702.00	7112437.00	450	-	43	-	Dry
TIE RC46	Moderate magnetic - Birksgate Complex.	366666.00	7110932.00	415	-	34	-	Dry
TIE RC47	Moderate magnetic (structural?) feature.	363249.00	7108395.00	426	-	17	-	Dry
TIE RC48	Low magnetic unit (structural related?).	361422.00	7106841.00	426	-	28	-	Dry
TIE RC49	Low magnetic unit (structural related?).	361011.00	7106413.00	417	-	39	-	Dry
TIE RC50	Intersection of structures/dykes.	360666.00	7105967.00	407	-	13	-	Dry
TIE RC51	High magnetic spike - dolerite.	362360.00	7104980.00	406	-	13	-	Dry
TIE RC52	Moderate magnetic signature - Birksgate Complex.	363316.00	7103551.00	405	-	18	-	Dry
TIE RC53	High magnetic spike - dolerite.	364077.00	7102379.00	405	-	6	-	Dry
TIE RC54	High magnetic unit - Kulgera Suite.	364865.00	7101138.00	406	-	28	-	Dry
TIE RC55	Low magnetic signature (ultramafic?).	365994.00	7099408.00	402	-	48	-	Dry
TIE RC56	High magnetic - Kulgera Suite.	368691.00	7100227.00	429	-	6	-	Dry
TIE RC57	High magnetic - Kulgera Suite.	369378.00	7102276.00	425	-	8	-	Dry
TIE RC58	Kulgera Suite.	371919.00	7104118.00	430	-	14	-	Dry
TIE RC59	Kulgera Suite.	369364.00	7104488.00	430	26	29	29	Minor
TIE RC60	Birksgate Complex/shear zone.	367793.00	7104779.00	431	-	34	-	Minor
TIE RC61	Birksgate Complex/shear zone.	366299.00	7104952.00	426	-	30	-	Dry
TIE RC62	Boundary of Birksgate Complex and Kulgera Suite.	374700.00	7103500.00	433	-	10	-	Dry
TIE RC63	Moderate magnetic signature (structural related).	379115.00	7102444.00	434	-	22	-	Dry

Drillhole	Target	Easting	Northing	Elevation (m)	Redox boundary (m)	Depth (m)	Water table (m)	Water flow
TIE RC64	Birksgate Complex or dolerite.	377389.00	7091280.00	374	-	48	25	Minor
TIE RC65	Kulgera Suite or alteration.	374591.00	7089279.00	390	37	42	-	Dry
TIE RC66	Circular, low magnetic anomally.	373393.00	7088417.00	388	-	60	20	Very Strong
TIE RC67	Low magnetic - Birksgate Complex/ultramafic unit.	368833.00	7086795.00	390	-	34	-	Minor
TIE RC68	Ultramafics.	366015.00	7086782.00	381	-	33	25	Dry
TIE RC69	Ultramafic unit/Marrayat Thrust.	364041.00	7086228.00	390	-	10	-	Dry
TIE RC70	Ultramafic unit/Marrayat Thrust.	364401.00	7085834.00	391	-	16	-	Dry
TIE RC71	Ultramafic unit/Marrayat Thrust.	364603.00	7085498.00	401	-	28	-	Dry
TIE RC72	Dolerite dyke?	364808.00	7085230.00	381	-	20	-	Dry
TIE RC73	Dolerite dyke.	365022.00	7084950.00	383	-	30	-	Minor
TIE RC74	Ultramafic/Marrayat Thrust.	363715.00	7086368.00	383	-	9	-	Dry
TIE RC75	Marrayat Fault/dolerite.	358479.00	7085990.00	407	-	12	-	Dry
TIE RC76	Marrayat Fault/dolerite.	355558.00	7085486.00	417	-	28	-	Dry
TIE RC77	High magnetic - dolerite.	350777.00	7086318.00	407	-	7	-	Dry
TIE RC78	Erratic magnetic signature.	351336.00	7087056.00	400	-	12	-	Dry
TIE RC79	Low magnetic signature - ultramafics.	351797.00	7087616.00	409	-	30	-	Dry
TIE RC80	Low magnetic signature - ultramafics.	352339.00	7088305.00	414	38	42	15	Strong
TIE RC81	Very low magnetic halo.	370923.00	7087241.00	374	42	45	15	Strong
TIE RC82	Magnetic high (structural related).	352841.00	7089466.00	389	26	39	15	Minor
TIE RC83	Moderate magnetic signature (structural related).	354756.00	7092439.00	384	38	36	13	Strong
TIE RC84	Moderately high magnetic signature.	358897.00	7094709.00	414	38	42	15	Very Strong
TIE RC85	Low magnetic feature (structural related).	362970.00	7095398.00	404	26	30	-	Dry
TIE RC86	Moderate magnetic signature (structural related).	351289.00	7095519.00	414	38	36	-	Minor
TIE RC87	Shear zone/dyke.	353113.00	7102944.00	413	60	63	20	Very Minor
TIE RC88	High magnetic signature - dyke?	359180.00	7105255.00	412	38	42	30	Very Minor
TIE RC89	Highly magnetic zone.	351185.00	7110850.00	445	38	36	-	Dry
TIE RC90	Ultra-low magnetic signature.	352915.00	7113268.00	439	38	36	30	Very Minor
TIE RC91	Ultra-low magnetic - shear zone/ultramafic related.	353363.00	7113884.00	433	38	60	18	Minor
TIE RC92	Ultra-low magnetic - ultramafic.	353723.00	7114382.00	439	38	45	<24	Moderate
TIE RC93	Moderate magnetic signature - Birksgate Complex?	354923.00	7116038.00	438	38	30	-	Very Minor
TIE RC94	Low magnetic- ultramafics.	355463.00	7116802.00	439	38	45	25	Very Minor
TIE RC95	Moderate magnetic Birksgate Complex/structural.	376985.00	7096071.00	389	32	42	15	Very Minor
TIE RC96	Moderate magnetic Birksgate Complex.	367991.00	7096241.00	400	45	54	21	Very Minor
TIE RC97	Low magnetic signature - ultramafic.	379773.00	7088096.00	372	46	51	16	Strong
TIE RC98	Low magnetic signature - ultramafic.	379497.00	7086224.00	371	44	48	16	Very Strong
TIE RC99	Very low magnetic signature - ultramafic.	379330.00	7084998.00	377	51	54	13	Very Strong
TIE RC100	Very low magnetic signature - ultramafic.	379149.00	7083794.00	371	>45	45	13	Very Strong
TIE RC101	Moderate magnetic spikes - dykes.	379068.00	7083198.00	368	42	51	11	Minor

Drillhole	Target	Easting	Northing	Elevation (m)	Redox boundary (m)	Depth (m)	Water table (m)	Water flow
TIE RC102	Highly magnetic spike - dyke.	378910.00	7082145.00	382	18	35	15	Very Minor
TIE RC103	Low magnetic ultramafics/structural related.	375403.00	7079464.00	367	>9	9	-	Minor
TIE RC104	Structurally complex zone.	374221.00	7076899.00	371	38	24	>24	Dry
TIE RC105	Low magnetic zone (structural related).	371041.00	7079438.00	381	6	18	15	Very Minor
TIE RC106	Moderate magnetic signature.	366582.00	7080182.00	387	38	42	15	Very Minor
TIE RC107	Complex magnetic structure.	361995.00	7079305.00	380	33	35	-	Dry
TIE RC108	Quartz vein structure.	359919.00	7078317.00	400	15	18	>18	Dry
TIE RC109	Moderate magnetic signature.	358016.00	7076997.00	410	38	12	>12	Dry
TIE RC110	Moderate magnetic feature (structural related).	356215.00	7076584.00	407	38	12	15	Dry
TIE RC111	Circular magnetic, structure/trees.	362340.00	7079412.00	391	38	24	>24	Dry
TIE RC112	Moderate magnetic signature and structure.	366255.00	7081394.00	372	38	66	20	Very Minor
TIE RC113	Bilp in magnetic high - dolerite.	366186.00	7083342.00	377	25	31	20	Very Minor
TIE RC114	Low magnetic - structure related/dolerite?	365860.00	7083795.00	380	23	30	5	Very Minor
TIE RC115	Dolerite dyke.	365430.00	7084394.00	384	17	30	13	Very Minor
TRE RC01	Birksgate Complex.	400435.00	7094009.00	352	62	66	-	Very Minor
TRE RC02	Ultramafics.	401453.00	7092873.00	345	96	111	-	Very Minor
TRE RC03	Kulgera Suite, magnetic high.	408980.00	7102228.00	357	>110	110	-	Dry
TRE RC04	Birksgate Complex.	400354.00	7110426.00	390	>110	110	-	Dry
TRE RC05	Kulgera Suite.	402311.00	7112604.00	382	-	76	-	Dry
TRE RC06	Kulgera Suite.	403575.00	7113942.00	384	-	14	-	Dry
TRE RC07	Faultzone junction.	404544.00	7116653.00	365	-	111	-	Minor
TRE RC08	Coglin Lineament.	404578.00	7117794.00	366	-	106	-	Dry
TRE RC09	Birksgate Complex.	404634.00	7119644.00	381	-	91	-	Dry
TRE RC10	Very high linear magnetic unit.	404178.00	7121987.00	370	-	99	-	Dry
TRE RC11	Very high linear magnetic unit.	403908.00	7120798.00	372	-	68	-	Dry
TRE RC12	Kulgera Suite/pegmatite.	401334.00	7121368.00	374	-	50	-	Dry
TRE RC13	Kulgera Suite?	400534.00	7121402.00	384	-	15	-	Dry

SAMPLING AND ANALYSIS

Samples were collected and logged at one to two metre intervals for each drillhole. A representative sample was placed in a plastic jar and stored in core trays which are currently stored in the MPE Core Storage Facility at Glenside. Detailed geological logs for each one to two metre segment are found in Appendix 1.

The magnetic susceptibility of each sample segment was recorded using an Exploranium KT-9 Kappameter and is also recorded in the drillhole log (Appendix 1). Values are recorded as SI units x 10^3.

GEOCHEMISTRY

The drillholes were compositely sampled for geochemistry according to lithology across the whole depth of the hole (Appendix 2). The maximum composite sample interval was 10 m. A grab sample was taken from each one to two metre sample of the composite interval and combined to form a two to five kilogram sample. Composite samples were sent to Amdel for analysis of the following suite of elements:

- Ca, Cr, Fe, K, Mg, Mn, Na, Ni, P, S, Sc, Ti, V, Sr (IC3E – mixed acid digest, measured by ICP-OES).
- Ag, As, Bi, Cd, Co, Cs, Cu, Ga, In, Mo, Nb, Pb, Sb, Se, Te, Th, Tl, U, W, Zn, Y (IC3M – mixed acid digest, measurement by ICP-MS).
- Ce, La, Dy, Er, Eu, Gd, Ho, Lu, Nd, Pr, Sm, Tb, Tm, Yb (IC3R – mixed acid digest, measurement by ICP-MS).
- Au, Pt, Pd (FA3M – fused sample dissolved in aqua regia, measurement by graphite furnace AAS or ICP-MS).

Where recognisable basement was intersected in the final one to two metre sample (end-of-hole, EOH), additional geochemical analyses were undertaken and were sent to Amdel for the following elements and methods:

- Al_2O_3, CaO, Fe_2O_3, K_2O, MgO, MnO, Na_2O, P_2O_5, SiO_2, S, TiO_2, Cr, Sc, V (IC4 – whole rock total fusion, measurement by ICP-OES).
- LOI (GRAV7 – measurement by weight loss).
- Ba, Be, Hf, Rb, Sn, Sr, Ta, Zr (IC4M – whole rock total fusion, measurement by ICO-MS).
- Ag, As, Bi, Cd, Co, Cs, Cu, Ga, In, Mo, Nb, Ni, Pb, Sb, Se, Te, Th, Tl, U, W, Zn, Y (IC3M – mixed acid digest measurement by ICP-MS).
- Ce, La, Dy, Er, Gd, Ho, Lu, Nd, Pr, Sm, Tb, Tm, Yb (IC3R – mixed acid digest, measurement by ICP-MS).
- Au, Pt, Pd (FA3M – fused sample dissolved in aqua regia, measurement by graphite furnace AAS or ICP-MS).

Appendix 2 provides a list of collected samples for geochemical analysis and their corresponding drillhole. Results of all geochemical sample assays for composite and end-of-hole samples are also found in Appendix 2.

GROUNDWATER

The drilling program drillhole summary (Table 1) indicates the presence of groundwater and a subjective measure of the flow rate encountered (as dry, weak, medium or strong) for each drillhole. Where flow was significant to justify the conversion of the RC drillhole into a water bore, a groundwater sample was taken. Nine samples were sent to Amdel for testing of the following:

- pH in water (E2600).
- Electrical Conductivity (E2430 – µS/cm at 25°C).
- Total Dissolved Solids in water, TDS (E2690).
- Sulphate (E2720).
- Chloride (E2380).
- Nitrate as N (E2550).
- Total alkalinity (E2310).
- Dissolved metals in water – Na, K, Ca, Mg (E4810, measured by ICP-AES).
- Dissolved metals in water – As, Cd, Co, Cr, Cu, Ni, Pb, Zn (E4870, measured by ICP-MS).
- Total hardness (E2530).
- Standard water analysis (E2540).

An additional six samples were taken and tested by the drilling company Johannsen-Drilling. Sample details are presented in Tables 3 and 4, and results of the Amdel groundwater analysis are shown in Table 5.

PETROGRAPHY

Selected chips from EOH drill core samples of fresh basement rock were sent to Ian Pontifex and Associates for thin section preparation and petrological description. A total of 31 representative end-of-hole samples and one outcrop sample were analysed in two separate sessions. Detailed descriptions of the petrography are attached as Appendix 3 (refer to Pontifex report 8102 22/6/01 and Pontifex report 8116 7/8/01).

ENVIRONMENTAL CONSIDERATIONS AND REHABILITATION

Environmental impacts of the drilling program were minimised by adopting environmental objectives as defined in PIRSA's *Statement of Environmental Objectives for Mineral Exploration in SA,* and adhering to the environmental management practices outlined in PIRSA's *Environmental Guidelines for Mineral Exploration in SA.* Rehabilitation was accordingly undertaken in line with these guidelines and in consultation with lessees as deemed necessary.

All field personnel were made aware of the environmental objectives of the project and accordingly of their environmental responsibilities and obligations with respect to the Aboriginal Heritage Act to ensure no damage to previously unrecognised sites.

All work was confined to pre-existing roads and tracks. Damage caused by vehicle movements was minimised by allowing only a single entry-exit point to all sites, including the temporary campsite. Vehicle tracks which fell on open ground during manoeuvring at drill sites were raked and levelled after completion of the drillhole. Drilling took place entirely during the daylight hours and the drilling rig spent only a short time at each drilling location. When required, road verges were also restored.

Drill sites were restored as close as possible to their original condition ensuring that disturbance to native vegetation was maintained at a minimum. Drill cuttings were collected in plastic bags from which samples were extracted for analysis and following drilling, excess cuttings were backfilled into the hole, buried or removed as to minimise any disturbance to the surroundings. All drillholes were effectively plugged and covered over apart from those where a significant portion of the water table had been encountered. PIRSA's Groundwater Branch was consulted in regard to the hydrogeological aspects of the area and water was found to mostly occur within fractured basement rocks and to a lesser extent within Tertiary Palaeochannels. Where groundwater was intersected, drillholes were abandoned in line with PIRSA's *General Specifications for the Construction and Abandonment of Drillholes for Mineral Exploration*. In these cases, the hole casing was left protruding from the ground as an interim measure for the landowner. It was agreed with the landowner that these would be plugged below the surface and covered within the following 2–3 weeks. Water brought to the surface by the drilling operations was managed so as to cause minimal disturbance.

Additional temporary markers such as pegs used for ground magnetic surveys were also removed on completion of the program. All rubbish was removed from the site and disposed of in town rubbish dumps.

Following completion of the drilling program, random representative sites and additional sites where further clarification of rehabilitation requirements had been requested, were inspected for compliance to initial environmental objectives. All holes had been drilled and rehabilitated during June/July/August 2001, 2–3 months prior to commencement of the inspection. Environmental impacts were minimised to the extent that most of the sites were hard to find. For sites where surface cuttings had been raked out and covered over with soil, it was noticed that the cuttings were becoming visible at the surface due to disturbance of the thin soil cover by cattle, wind and water since drilling had ceased. It is recommended for future drilling that excess cuttings be backfilled, buried or removed from the site to reduce this issue.

RESULTS

GEOLOGY

The drillhole lithology summary (Table 2) provides a comparison between the targeted lithologies, logged result and petrographical descriptions (as per Appendix 3) for each representative end-of-hole sample. Thicknesses of Quaternary and Tertiary sediments, depth at which basement was intersected and depth of weathering of the basement, based on field observations, are also shown. The full drill logs are provided in Appendix 1.

GEOCHEMISTRY

Samples were assayed with a variety of techniques and detection limits. All assays were converted to ppm or ppb and values below the detection limit were assumed to be half the detection limit.

While no economic intervals of mineralisation were intersected, several intervals of elevated values (with respect to mean values) were recorded. Anomalous values of copper were evident in several holes intersecting the Marryat Shear Zone. High nickel values were also found in the intersection of possible Giles Complex mafic troctolite (TIE RC89) but values were no higher than would be expected as background levels for a mafic-ultramafic rock of this affinity. Platinum and palladium were also very anomalous in this hole and in ALC RC07, where orthopyroxene bearing quartz diorites were intersected.

The detailed geochemical data sets for composite and end-of-hole samples are provided in Appendix 2.

PETROGRAPHY

In total, 151 end-of-hole samples, one outcrop sample and nine rock pieces (Report No. 8192) were collected and sent, in five sub-batches, to Pontifex and Associates for petrographical analysis by Alan Purvis.

Drill core samples were analysed using composite thin sections in epoxy, polished thin sections and separate polished sections to selectively examine opaque minerals. The following table summarises the report and corresponding drillhole numbers.

Report No.	Date	No. of samples	Drillhole nos
8102	3/7/01	13	TIERC 32, 35, 42, 46-49, 58, 59, 71, 77
8116	7/8/01	19	TIERC02-21
8139	15/10/01	32	TIERC22-57
8155	27/11/01	34	TIERC59-80 and TRERC01-13
8180	12/2/02	36	TIERC81-113
8192	5/3/02	27	TIERC89a, 89b, 113-115, ALCRC01-11 and rock samples TIE 13a-27c (7), ALC 02a, 02b

Full petrographical descriptions of the samples including mineralogy and rock classification are included as Appendix 3.

PALYNOLOGY

One sample from drillhole TIE RC28 was submitted for palynological analysis and dating. The sample was processed using standard palynological processing and was undertaken in the Mineral Resources Laboratory by Lyn Broadbridge. Palynological analysis was conducted by Liliana Stoian using a Zeiss Photomicroscope III.

The sample (R472478) was taken for the TIE RC28 combined 90–94 m interval cutting and corresponds to slides S9757-1 and S9757-2.

The sample was of good yield and preservation for occurrence and analysis of palynofloras. Spores were abundant (50%) and included high frequency for *Ceratosporites equalia, Baculatisporites comaumensis, Osmaundacidites wellmanii, Cyathidites australis, Foraminisporis wonthaggiensis, F. Dayli, Contignisporites cooksonae, Retriletes austroclavatidites,* with rare *Teticulatisporites pudens, Neoraistrickia truncates, Retitriletes reticulumsporites, Rouseisporites simplex, Crybelosporites stylosus, Dictyophyllidites crenatus, Antulsporites saevus, Classopollis chateaunovii, Cyclosporites hughesii, Foraminisporis asymmetricus, Leptolepidites major, Sestrosporites pseudoalveolatus* and reworked Permian spores.

Gymnosperms (21%) were well represented and included *Microcachryidites antarcticus, Callialasporites dampierii, C. Trilobatus, Podocarpidites ellipticus, P. Multesimus, Alisporites grandis, A. Similis* and *A. Lowoodensis*.

Dinoflagellate cysts (29%) were also well represented and included *Diconodium davidii, Lithodinia helbyi, Heslertonia striata, Pseduceratium turneri, Canningia colliveri, Spinidinium boydii, Canninginopsis intermedia, Numus monoculatus, Microdinium veligerum* and *Endoceratium ludbrookiae.*

The sample is assigned to the Diconodinium davidii zone based on the presence of the nominate species *Diconodinium davidii* in association with *Psudoceratium turneri, Heslertonia striata, Lithodinia helbyi, Leptodinium asymmetricum,* and *Spinidinium boydii* together with other accessory forms including *Dingodinium cerviculum, Canningia colliveri, Wallodinium lunum, Necrobroomea micropoda* and *Numus monoculatus*. The prescence of *Canninginopsis intermedia* (found only in the Muderongia tetracantha Zone, Early Albian) together with other species which begin their range from Albian (*Cyclonephelium clathromarginatum, Stephodinium coronatum, Microdinium veligerum, Ascodinium parvum* and *Endoceratium ludbrookiae*) suggest that the sample may be placed at the top of the Diconodinium davidii Zone, Late Aptian.

The assignment to the Cyclosporites hughesii Zone is based on the spore-pollen assemblage with the prescence of nominated species *Cyclosporites highesii* in association with other taxa including *Dictyophyllidites crenatus, Crybelosporites stylosus, Callialasporites trilobatus, Rouseisporites simplex* and *Cyathidites asper*, and other accessory forms such as *Callialasporites dampierii*, *Contignisporites cooksonii, Ceratosporites equalis, Foraminisporis asymmetricus, F. Daylii, F. Wonthaggiensis, Neoraistrickia truncates, Klukisporites scaberis* and *Retitriletes austroclavatidites*.

An early interpretation suggested that the sample might belong to the Cadna-owie Formation. Palaeontological data for Cadna-owie derived mainly from palynomorph assemblages with lesser microplankton, algae and dinoflagellates. Previous studies of Cadna-owie Formation show that it is within the Foraminisporis wonthaggiensis Zone of mid-Neocomian to Barremian age. The top of this formation ranges up into the base of the Cyclosporites hughesii Zone of Aptian age.

The Late Aptian age for the sample, with rich microplankton assemblages and abundant Podocarpaceae and ferns suggests that it is assigned to the Bulldog Shale.

Table 2. Drillhole lithology summary

Drillhole	Target	Logged	Petrology	Quaternary	Tertiary	Depth to basement	Weathering (B.O.P.O.)
ALC RC01	Circular alteration feature.	Gneiss	Weakly altered granulite derived from quartz diorite	5m	1m	4m	22m
ALC RC02	Magnetic zone around granite.	Gneiss	Biotite-hornblende granulite derived from gabbro/diorite, and granitoid/pegmatite	2m	10m	24m	31m
ALC RC03	Gabbro dyke.	Dolerite	Altered and brecciated rocks derived from quartz diorite/gabbro.	11m	-	11m	28m
ALC RC04	Birksgate Complex?	Gneiss	Quartz diorite	2m	-	2m	14m
ALC RC05	Ultramafic unit?	Gneiss	Tonalite and granodiorite	9m	-	9m	>24m
ALC RC06	Moderately magnetic feature.	Gneiss	Granulite-facies diorite and quartz diorite	2m	-	2m	>15m
ALC RC07	Birksgate Complex.	Gneiss	Quartz diorite, transitional to quartz monzodiorite fragmented by clay.	20m	-	20m	28m
ALC RC08	Low magnetic zone.	Gneiss	Tonalite, gabbro/diorite and metagabbro.	<4m	-	4m	>33m
ALC RC09	Ultramafic unit?	Gneiss and dolerite chilled margin	Altered olivine basalt and fractured granitoid gneisses	13m	-	16m	>60m
ALC RC10	Birksgate Complex.	Gneiss	Altered, fractured and brecciated monzogranite	<22m	-	22m	>36m
ALC RC11	Alcurra dykes?	Mafic gneiss	Metamorphosed gabbros and feldspathic pyroxenites with upper amphibolites-granulite facies metamorphism	5m	-	5m	>30m
TIE RC01	Kulgera Suite.	Granite, Kulgera Suite	-	2m	-	2m	6m
TIE RC02	Kulgera Granite.	Leucratic adamellite, Kulgera Suite	Monzogranite (Kulgera)	31m	3m	32m	38m
TIE RC03	Kulgera Suite.	Granite, Kulgera Suite	Syenogranite (Kulgera)	11m	25m	16m	38m
TIE RC04	Marryat Fault.	Granite, Kulgera Suite	Quartz monzonite to syenogranite (Kulgera)	21m	27m	24m	48m
TIE RC05	Mafic dyke.	Granite, Kulgera Suite	Monzogranite (Kulgera)	28m	-	28m	32m
TIE RC06	Ultramafic unit.	Gneiss, Birksgate Gneiss?	Quartz syenite or pegmatite (Kulgera)	25m	9m	26m	>34m
TIE RC07	Ultramafic unit.	Gneiss, Birksgate Gneiss	Weakly foliated quartz diorite (Birksgate), and quartz syenite or pegmatite (Kulgera)	24m	12m	26m	44m
TIE RC08	Birksgate/ultramafic contact.	Gneiss, Birksgate Gneiss	Hornblende quartz diorite (Birksgate)	6m	10m	16m	20m
TIE RC09	Ultramafic unit.	Basement not intersected	-	36m	2m	-	-
TIE RC10	Ultramafic/Kulgera contact.	Granite, Kulgera Suite	Quartz syenite and quartz-epidote rock (Kulgera)	18m	1m	19m	26m
TIE RC11	Marryat Fault.	Felsic Birksgate Gneiss	Quartz syenite/ syenogranite/ monzogranite/ quartz monzonite? (Kulgera)	1m	9m	10m	22m
TIE RC12	Birksgate complex.	Birksgate Gneiss	Biotite granodiorite (Kulgera)	18m	14m	24m	38m
TIE RC13	Dolerite dyke.	Birksgate Gneiss	Hornblende quartz, diorite gneiss, quartz-rich tonalite gneiss (Birksgate), quartz-rich syenogranite (Kulgera)	16m	18m	16m	36m
TIE RC14	Birksgate Complex.	Granitic gneiss	-	2m	14m	8m	16m

Drillhole	Target	Logged	Petrology	Quaternary	Tertiary	Depth to basement	Weathering (B.O.P.O.)
TIE RC15	Birksgate Complex.	Birksgate Gneiss	Biotite-hornblende tonalite gneiss (Birksgate)	1m	-	1m	6m
TIE RC16	Birksgate Complex/Kulgera Suite.	Foliated felsic gneiss	-	7m	-	7m	-
TIE RC17	Dolerite/fault.	Dolerite, Alcurra Dyke Suite	Weathered dolerite, quartz-K-spar-chlorite with magnetite, apatite and zircon (Alcurra dykes)	4m	10m	6m	>30m
TIE RC18	Birksgate Complex.	Granite, Kulgera Suite	Quartz syentie or pegmatite (Kulgera)	1m	-	1m	>20m
TIE RC19	Birksgate Complex.	Kulgera Suite Gneiss	Biotite tonalite gneiss (Birksgate) and quartz-rich monzogranite (Kulgera)	2m	20m	2m	>40m
TIE RC20	Birksgate Complex.	Kulgera Suite Gneiss	Syenogranite and biotite quartz diorite gneiss (Kulgera)	-	110m	108m	-
TIE RC21	Birksgate Complex.	Granite and gneiss, Kulgera Suite	Quartz syenite, epidote-clay gouge and biotite quartz diorite gneiss (Kulgera)	2m	22m	6m	46m
TIE RC22	Kulgera Suite?	Birksgate gneiss	Massive monzogranite (Kulgera?)	1m	15m	16m	42m
TIE RC23	Low magnetic feature.	Birksgate gneiss	Massive microcline-rich syenogranite (Kulgera)	2m	18m	58m	92m
TIE RC24	Moderately high magnetic feature.	Birksgate gneiss	Massive syenogranite (Kulgera)	2m	68m	92m	100m
TIE RC25	Moderately high, erratic magnetic signature.	Birksgate (granitic) gneiss	Quartz-rich leucocratic tonalite (unamed suite A - Low-K granitoids)	2m	-	2m	10m
TIE RC26	Low, erratic ground magnetic signature.	Birksgate (granitic) gneiss	Heterogeneous metasediments (Birksgate)	1m	-	1m	26m
TIE RC27	Fault zone/dolerite?	Granitoid, Kulgera Suite	Quartz-rich tonalite (unnamed suite A – Low-K granitoids)	1m	-	8m	14m
TIE RC28	Kulgera Suite?	Birksgate gneiss	Massive to foliated, altered granodiorite with carbonate and zeolite veins (Kulgera)	-	-	98m	100m
TIE RC29	Dolerite dyke.	Birksgate (felsic) gneiss	Foliated tonalite and quartz diorite, and quartz-epidote altered rock (unnamed suite A – Low-K granitoids)	-	-	4m	>4m
TIE RC30	Dolerite dykes.	Birksgate gneiss	Quartz diorite, pegmatite and diorite/gabbro (unnamed suite A – Low-K granitoids)	-	-	0m	2m
TIE RC31	Strong magnetic signature.	Birksgate gneiss	Altered granodiorite (Kulgera) and quartz diorite or tonalite (unnamed suite A – Low-K granitoids)	-	-	0m	6m
TIE RC32	Erratic magnetic signature.	Felsic gneiss	Weakly foliated biotite-hypersthene tonalite	-	-	0m	6m
TIE RC33	Low magnetic signature.	Granite, Kulgera Suite	Pegmatite of quartz syenite composition (Kulgera)	-	-	10m	42m
TIE RC34	Ultramafic unit?	Granite, Kulgera Suite	Altered granodiorite (Kulgera)	-	-	2m	22m
TIE RC35	Birksgate complex/dolerite.	Dolerite, Alcurra Dykes	Unmetamorphosed basalt-dolerite with weak alteration and incipient metamorphism.	-	-	14m	>19m
TIE RC36	Highly magnetic stratigraphy.	Birksgate gneiss	Leucocratic quartz diorite and monzodiorite (unnamed suite A – Low-K granitoids)	-	-	2m	-

Drillhole	Target	Logged	Petrology	Quaternary	Tertiary	Depth to basement	Weathering (B.O.P.O.)
TIE RC37	Coglin Lineament.	Granite, Kulgera Suite	Altered syenogranite with carbonate-fluorite veins (Kulgera)	-	-	2m	4m
TIE RC38	Kulgera Suite.	Granite, Kulgera Suite	Syenogranite to monzogranite (Kulgera)	-	-	4m	-
TIE RC39	Kulgera/Birksgate contact.	Granite, Kulgera Suite	Quartz monzonite (Kulgera)	-	-	20m	>24m
TIE RC40	Fault zone/ Kulgera Suite.	Granite, Kulgera Suite	Altered leucocratic syenogranite (Kulgera)	-	-	0m	6m
TIE RC41	Birksgate complex.	Granite, fractured, Kulgera Suite	Mylonitic breccia (Kulgera?)	-	-	0m	>31m
TIE RC42	Birksgate Complex.	Mafic-ultramafic pyroxenite?	Dolerite with clay, sericrete, amphibole and biotite alteration.	-	-	0m	12m
TIE RC43	Ultramafic?	Birksgate gneiss	Monzogranite, transitional to granodiorite (Kulgera)	-	-	36m	48m
TIE RC44	Kulgera Suite.	Birksgate gneiss	Monzogranite to syenogranite (Kulgera)	-	-	6m	8m
TIE RC45	Kulgera Suite.	Granite/altered gneiss-amphibole mafic unit	Altered monzogranite (Kulgera)	-	-	36m	38m
TIE RC46	Birksgate Complex.	Birksgate gneiss	Biotite-hypersthene tonalite gneiss	-	-	14	-
TIE RC47	Moderately magnetic (structural?) feature.	Magnetic granite-granodiorite with fine grained mafic igneous rock (Birksgate gneiss?)	Mafic rock with hornblende, clinopyroxene and biotite, and felsic rock with quartz, antiperithinc plagioclase and mafic minerals.	-	-	10	-
TIE RC48	Low magnetic unit (structural related?).	Felsic-magnetic mafic igneous rock in contact with gneiss	Biotite-tonalite gneiss	-	-	0m	>24m
TIE RC49	Low magnetic unit (structural related?).	Felsic-magnetic mafic igneous rock	Altered biotite-tonalite gneiss and granodiorite	-	-	0m	36m
TIE RC50	Intersection of structures/dykes.	Birksgate gneiss?	Tonalite gneiss and foliated, metamorphosed gabbro/ diorite (Birksgate)	-	-	4m	-
TIE RC51	Dolerite.	Gneiss	-	-	-	1m	-
TIE RC52	Birksgate Complex.	Granite, Kulgera Suite	Gneisses of granodiorite to monzogranite composition (Birksgate)	-	-	2m	6m
TIE RC53	Dolerite.	Granite, Kulgera Suite	Uncertain gneisses, possibly granitoids or metasediments (Birksgate)	-	-	1m	2m
TIE RC54	Kulgera Suite.	Birksgate gneiss	Diorite to tonalite gneiss (unnamed suite B-high grade metamorphics)	-	-	6m	-
TIE RC55	Ultramafic unit?	Birksgate gneiss	Quartz-diorite gneiss (unnamed suite B-high grade metamorphics)	-	-	12m	44m
TIE RC56	Kulgera Suite.	Granite, Kulgera Suite	Monzogranite (Kulgera)	2m	-	2m	-
TIE RC57	Kulgera Suite.	Granite, Kulgera Suite	Syenogranite to monzogranite with mafic clots (Kulgera)	2m	-	2m	-
TIE RC58	Kulgera Suite.	Granite	Monzogranite or adamellite enriched in minor elements	-	-	0m	-
TIE RC59	Kulgera Suite.	Mafic (pyroxenite), Giles Complex	Unmetamorphosed, altered olivine dolerite (Alcurra)	-	22m	22m	24m

Drillhole	Target	Logged	Petrology	Quaternary	Tertiary	Depth to basement	Weathering (B.O.P.O.)
TIE RC60	Birksgate Complex/shear zone.	Birksgate gneiss	Foliated and massive granodiorite and monzogranite (Kulgera)	1m	23m	16m	28m
TIE RC61	Birksgate Complex/shear zone.	Birksgate gneiss	Quartz-diorite gneiss (mafic metamorphic unit)	2m	14m	2m	16m
TIE RC62	Boundary of Birksgate Complex and Kulgera Suite.	Birksgate gneiss	Granodiorite-monzogranite (Kulgera) and diorite (unnamed suite A-Low-K granitoids)	1m	-	1m	-
TIE RC63	Moderate magnetic signature (structural related).	Birksgate (granitic) gneiss with pegmatite veins	Pegmatite and granodiorite (unnamed suite B-high grade metamorphics)	13m	-	13m	-
TIE RC64	Birksgate Complex or dolerite.	Birksgate (granitic) gneiss	Massive syenogranite (Kulgera)	3m	12m	22m	40m
TIE RC65	Kulgera Suite or alteration.	Birksgate gneiss with pegmatite veins?	Massive syenogranite (Kulgera)	10m	-	15m	36m
TIE RC66	Circular, low magnetic anomally.	Kulgera suite granite with veins/ mafics/ pseudotachylite	Massive quartz syenite (Kulgera)	10m	-	40m	>60m
TIE RC67	Birksgate Complex/ultramafic unit.	Birksgate gneiss	Tonalite (unnamed suite A-Low-K granitoids)	6m	6m	20m	30m
TIE RC68	Ultramafics unit.	Granite?	Dolerite (Alcurra)	1m	-	10m	>33m
TIE RC69	Ultramafic unit/Marrayat Thrust.	Birksgate (granitic) gneiss	Massive to foliated syenogranite to quartz syenite (Kulgera), and tonalite (unnamed suite A-Low-K granitoids)	1m	-	1m	8m
TIE RC70	Ultramafic unit/Marrayat Thrust.	Birksgate (granitic) gneiss	Foliated granodiorite (Birksgate)	1m	-	1m	12m
TIE RC71	Ultramafic unit/Marrayat Thrust.	Amphibole/pyroxene, mafic/ultramafic unit	Dolerite, highly altered with clay and veins of iron-rich prehnite; leucocratic syenogranite gneiss	-	2m	0m	>28m
TIE RC72	Dolerite dyke?	Birksgate gneiss	Syenogranite (Kulgera) and granodiorite (Birksgate)	-	-	0m	12m
TIE RC73	Dolerite dyke.	Birksgate gneiss	High grade metagabbro (mafic metamorphic unit)	2m	-	2m	-
TIE RC74	Ultramafic/Marrayat Thrust.	Birksgate (granitic) gneiss	Foliated granodiorite (Birksgate)	1m	-	1m	6m
TIE RC75	Marrayat Fault/dolerite.	Granite	Syenogranite (Kulgera)	1m	-	1m	>12m
TIE RC76	Marrayat Fault/dolerite.	Birksgate gneiss	Massive granodiorite with rare shear zones (unnamed suite A-Low-K granitoids)	4m	-	4m	22m
TIE RC77	Dolerite.	Pyroxenite and kaolinised granite	Unmetamorphosed olivine dolerite	2m	-	2m	>7m
TIE RC78	Erratic magnetic signature.	Pyroxenite, Giles Complex	Fresh dolerite (Alcurra) with magnetite, clay and carbonate veins	1m	-	2m	>12m
TIE RC79	Ultramafic unit.	Birksgate (granitic) gneiss	High-temperature syenogranite (Kulgera)	4m	-	8m	>30m
TIE RC80	Ultramafic unit.	Granite, Kulgera Suite	Altered quartzofeldspathic gneiss with brittle deformation zones and clay-filled fractures (Birksgate)	4m	-	19m	38m
TIE RC81	Very low magnetic halo.	Granite	Biotite monzogranite (Kulgera?)	6m	32m	30m	42m
TIE RC82	Magnetic high (structural related).	Granitic gneiss	Monzogranite /granulite-facies metagranitoid, but not foliated.	2m	22m	26m	36m

Drillhole	Target	Logged	Petrology	Quaternary	Tertiary	Depth to basement	Weathering (B.O.P.O.)
TIE RC83	Moderate magnetic signature (structural related).	Granitic gneiss	Granulite-facies gneiss of quartz diorite composition.	1m	24m	25m	32m
TIE RC84	Moderately high magnetic signature.	Basement not intersected	-	18m	>24m	-	-
TIE RC85	Low magnetic feature (structural related).	Gneiss	Granulite-facies gneiss of monzogranite composition.	18m	-	18m	-
TIE RC86	Moderate magnetic signature (structural related).	Gneiss	Altered granodiorite gneiss	10m	-	10m	>36m
TIE RC87	Shear zone/dyke.	Gneissic granite with mylonitic lineations	Quartz-rich quartzofeldspathic rock and quartz diorite gneiss with amphibolite-facies metamorphism.	14m	>49m	14m	>63m
TIE RC88	Dyke?	Gneiss	Granulite-facies gneiss with retrograde pumpellyite.	26m	-	26m	40m
TIE RC89	Highly magnetic zone.	Anomalous ultramafic	Amphibolite facies metamorphosed ultramafic (unnamed suite B?-high grade metamorphics, possibly related to Giles Complex)	2m	-	2m	-
TIE RC90	Ultra-low magnetic signature.	Dolerite	Mylonitised mafic fragments, fractured diorite, uartz monzodiorite, quartz monzonite and granodiorite.	24m	-	26m	-
TIE RC91	Shear zone/ultramafic unit.	Gneiss	Gneiss of diorite to monzogranite composition, possibly derived from massive gabbro	<40m	-	40m	>58m
TIE RC92	Ultramafic unit.	Gneiss-dolerite	Porphyritic basalt with carbonate veins, granodiorite (Kulgera) and altered monzodiorite.	33m	-	33m	40m
TIE RC93	Birksgate Complex?	Granite	Weakly altered syenogranite (Kulgera?)	>2m	-	-	-
TIE RC94	Ultramafic unit.	Granite	Recrystallised monzogranite and diorite gneiss	27m	-	27m	>30m
TIE RC95	Birksgate Complex/structural feature.	Gneiss	Granodiorite veined by epidote and clay	27m	-	27m	36m
TIE RC96	Birksgate Complex.	Granite	Leucratic biotite syenogranite, transitional to monzogranite	6m	-	34m	>54m
TIE RC97	Ultramafic unit.	Granite	Weakly altered monzogranite	22m	-	38m	44m
TIE RC98	Ultramafic unit.	Granite	Weakly altered monzogranite	33m	-	41m	44m
TIE RC99	Ultramafic unit.	Pegmatite/granite	Altered syenogranite	45m	-	46m	52m
TIE RC100	Ultramafic unit.	Granite	Leucocratic syenogranite	37m	-	37m	>45m
TIE RC101	Mafic dykes.	Granite with chlorite veins	Monzogranite, brecciated granitoid and epidote-rich granite.	21m	-	21m	>51m
TIE RC102	Mafic Dyke.	Dolerite	Granophyric dolerite	17m	-	17m	30m
TIE RC103	Ultramafic unit	Granite	Weakly altered leucocratic syenogranite	8m	-	8m	>9m
TIE RC104	Structurally complex zone.	Granite	Monzogranite	2m	-	2m	>24m
TIE RC105	Structural feature.	Granitic gneiss	Altered monzogranite, leucocratic	-	-	0m	14m

Drillhole	Target	Logged	Petrology	Quaternary	Tertiary	Depth to basement	Weathering (B.O.P.O.)
			syenogranite and granodiorite				
TIE RC106	Moderate magnetic signature.	Gneiss	Weathered granodiorite	1m	-	18m	40m
TIE RC107	Complex magnetic structure.	Gneiss	Foliated quartz diorite	2m	-	2m	20m
TIE RC108	Quartz vein.	Granitic gneiss	Monzogranite	2m	-	4m	14m
TIE RC109	Moderate magnetic signature.	Gneiss	Foliated (gneissic) monzogranite	1m	-	1m	>12m
TIE RC110	Structural feature.	Gneiss with pegmatite veins	Foliated monzogranite and massive leucocratic monzogranite to syenogranite	1m	-	1m	>12m
TIE RC111	Circular magnetic unit, structural feature.	Granitic gneiss	Foliated quartz diorite	2m	-	2m	22m
TIE RC112	Structural feature.	Granite?	Altered, foliated quartz diorite and syenogranite.	6m	-	18m	>66m
TIE RC113	Dolerite.	Gneiss with altered pegmatite veins	Biotite-hornblende monzogranite	4m	-	14m	>31m
TIE RC114	Structural feature/dolerite.	Felsic gneiss	Monzogranite	3m	-	3m	26m
TIE RC115	Dolerite dyke.	Gneiss	Altered, foliated granodiorite	3m	-	3m	26m
TRE RC01	Birksgate Complex.	Granite, Kulgera Suite	Syenogranite (Kulgera)	6m	46m	50m	>66m
TRE RC02	Ultramafic unit.	Algebuckina Sandstone	Sandstone (Algebuckina)	10m	101m	-	-
TRE RC03	Kulgera Suite.	Basement not intersected	-	2m	108m	-	-
TRE RC04	Birksgate Complex.	Birksgate Gneiss	Weathered granitoid, massive and undeformed - syenogranite (Kulgera?)	-	-	98m	104m
TRE RC05	Kulgera Suite.	Granite, Kulgera Suite	Leucocratic syenogranite (Kulgera)	-	-	60m	72m
TRE RC06	Kulgera Suite.	Granite, Kulgera Suite	Monzogranite (Kulgera)	-	-	0m	4m
TRE RC07	Fault zone junction.	Basement not intersected	-	-	-	-	-
TRE RC08	Coglin Lineament.	Basement not intersected	-	-	-	-	-
TRE RC09	Birksgate Complex.	Granite, Kulgera Suite	Weathered granitoid (Kulgera)	-	-	82m	88m
TRE RC10	Very high linear magnetic unit.	Granite, Kulgera Suite	Weathered massive biotite granodiorite (Kulgera)	-	-	98m	-
TRE RC11	Very high linear magnetic unit.	Birksgate Gneiss with Fe alteration	Heterogeneous gneissic/granitoid fragments (Birksgate?)	-	-	56m	60m
TRE RC12	Kulgera Suite/pegmatite.	Birksgate Gneiss	Weathered amphibole gneiss and weakly altered foliated tonalite (Birksgate)	-	-	36m	>50m
TRE RC13	Kulgera Suite?	Birksgate Gneiss	Altered and partly brecciated monzogranite (Kulgera?)	-	-	4m	10m

GROUNDWATER

Nine groundwater samples were submitted to Amdel for analysis. A summary of the samples and their corresponding drillholes are shown in Table 3. The detailed groundwater analysis for these samples is summarised in Table 5.

Table 3. Samples submitted for groundwater analysis

Sample Number	Drillhole name	Depth from (m)	Comments
RS481281	ALC RC11	28	Water table hit at 19m. Water in fractured rock aquifer. Moderate flow.
RS481282	ALC RC09	54	Water table hit at 24m. Strong flow in fractured rock aquifer.
RS481285	TIE RC81	45	-
RS481286	TIE RC83	36	Water table hit at 13m. Strong flow in cover gravels.
RS481287	TIE RC84	42	Water table hit at 13m. Water in cover sediments down to 42m. Very strong flow. Hole abandoned due to water flow.
RS481289	TIE RC92	44	Water table hit at 24m. Moderate flow from cover gravels.
RS481290	TIE RC97	51	Water table hit at 16m. Weak flow in sandy cover aquifer; stronger flow in Algebuckina/Q contact and Pg/J-K contact.
RS481291	TIE RC98	42	Water table hit at 16m. Very strong flow in Q gravels at approximately 30m.
RS481292	TIE RC99	54	Water table hit at 13m. Very strong flow in Q gravels at approximately 30m. Wettest hole drilled.

Six additional samples were collected and analysed by Johannsen-Drilling for a measure of electrical conductivity and total dissolved solids. Table 4 summarises the results of these samples.

Table 4. Groundwater analysis of samples from TIE RC07, 12, 21, 37, 42 and 80

Sample Number	Drillhole name	Depth from (m)	TDS (ppm)	EC (µS/cm)	Comments
RS477572	TIE RC07	48	1373	2480	Water table hit at 17m. Strong flow in cover sediments.
RS477573	TIE RC12	44	3087	5510	Water table hit at 6m. Strong flow in cover sediments.
RS477574	TIE RC21	48	2618	4690	Water table hit at 30m. Very strong flow in fractured rock aquifer.
RS477585	TIE RC37	18	11489	19470	Intersected water table at 10m. Strong flow from fractured rock aquifer.
RS477586	TIE RC42	23	1116	2020	Intersected water table at 12-15m. Quite deep but should be less affected by recent rains. Strong flow from fractured rock aquifer.
RS477587	TIE RC80	42	2092	3760	Water table hit at 15m.

Table 5. Groundwater analysis

	Method	E2600	E2430	E2690	E2720	E2380	E2550	E2310	E2310	E2310	E2310	E4810	E4810	E4810
	Description	**pH**	**EC at 25°C (µS/cm)**	**TDS (ppm)**	**Sulphate (ppm)**	**Chloride (ppm)**	**Nitrate as N (ppm)**	**Total Alkalinity (ppm)**	**Bicarbonate (ppm)**	**Carbonate (ppm)**	**Hydroxide (ppm)**	**Sodium (ppm)**	**Potassium (ppm)**	**Calcium (ppm)**
	Detection limit	0.1	1	1	1	1	0.01	1	1	1	1	0.2	0.1	0.1
Sample	RS481281	8.1	1500	960	91	220	30.7	210	210	nd	nd	190	34	44
	RS481282	8	1700	1100	84	280	40.1	160	160	nd	nd	220	40	41
	RS481285	8.2	3100	2000	290	590	33.7	280	280	nd	nd	580	41	27
	RS481286	8.2	3000	1900	260	590	30	270	270	nd	nd	570	33	31
	RS481287	8.1	1500	950	100	210	32.7	200	200	nd	nd	250	29	24
	RS481289	8.1	1500	980	100	210	36.7	190	190	nd	nd	230	40	28
	RS481290	7.8	2300	1400	230	390	24	180	180	nd	nd	390	34	33
	RS481291	8.1	3200	2000	290	600	31.2	290	290	nd	nd	590	45	36
	RS481292	8.2	2100	1400	180	370	31.8	250	250	nd	nd	400	34	27

	Method	E4810	E2530	E2540	E2540	E2540	E4870	E4870	E4870	E4870	E4870	E4870	E4870	E4870
	Description	**Magnesium (ppm)**	**Total hardness (ppm)**	**Cation Total (ppm)**	**Anion Total (ppm)**	**Ion Balance (%)**	**Arsenic (ppm)**	**Cadmium (ppm)**	**Cobalt (ppm)**	**Chromium (ppm)**	**Copper (ppm)**	**Nickel (ppm)**	**Lead (ppm)**	**Zinc (ppm)**
	Detection limit	0.1	0.5	0.1	0.1	0.1	0.001	0.0001	0.001	0.001	0.001	0.001	0.001	0.002
Sample	RS481281	40	270	14.6	14.4	1	0.003	nd	Nd	0.006	0.001	0.002	nd	Nd
	RS481282	39	260	16	15.5	1	0.003	nd	Nd	0.006	nd	0.002	nd	0.002
	RS481285	43	240	31.3	30.5	1	0.008	nd	Nd	0.013	0.001	nd	nd	Nd
	RS481286	42	250	30.4	29.6	1	0.008	nd	Nd	0.009	0.001	0.001	nd	Nd
	RS481287	27	170	15.1	14.4	3	0.003	nd	Nd	0.009	nd	nd	nd	Nd
	RS481289	34	210	15.1	14.5	2	0.002	nd	Nd	0.006	nd	0.001	nd	Nd
	RS481290	31	210	21.9	21.3	2	0.005	0.0001	Nd	0.004	0.003	0.002	nd	0.017
	RS481291	42	260	32.1	30.9	2	0.007	nd	Nd	0.011	0.002	0.002	nd	0.004
	RS481292	34	210	22.3	21.6	2	0.004	nd	Nd	0.009	nd	0.001	nd	Nd

REFERENCES

Alexander, E.M and Kreig, G.W. (1995). Stratigraphy – lower non-marine succession. In: Drexel, J.F. and Preiss, W.V. (Eds), 1995. The geology of South Australia. Vol 2, The Phanerozoic. South Australia. Geological Survey. Bulletin, 54.

Gum, J. And Constable, S. (2003). Mann Bedrock Drilling Program. *South Australia. Department of Primary Industries and Resources. Report Book* 2003/20.

Wade, B.P., Kelsey, D. E., Hand, M. and Barovich, K. M. (2008). The Musgrave Province; Stitching North, West and South Australia. Precambrian Research. 166. 370-386

Woodhouse, A. And J.C. Gum (2003). Explorers Guide to the Musgrave Province. Adelaide, *South Australia. Department of Primary Industries and Resources. Report Book* 2003/21.

APPENDIXES

1. ABMINGA BEDROCK DRILLING PROGRAM DRILL LOG SHEETS
2. GEOCHEMISTRY
3. PETROLOGICAL REPORTS

1. ABMINGA BEDROCK DRILLING PROGRAM DRILL LOG SHEETS

TIE RC01 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC01	0	2	Qs	Rd	fg	qtz	feld				Red sand 0-1m, weathered granite, minor silcrete fragments.	1.20
	2	4	Pg	Pk	mg		qtz, plag		bio		Weathered medium grained granite (B.O.C.O).	1.92
	4	6	Pg	Pk	mg		qtz, plag		bio, mag		Weathered medium grained granite.	1.31
	6	8	Pg	Pk	mg		qtz, plag		bio, mag		Pink fresh medium grained granite (B.O.P.O.)	9.20
	8	10	Pg	Pk	mg		qtz, plag		bio, mag		Pink fresh medium grained granite.	11.80

TIE RC02 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC02	0	2	Qs	Rd	fg	qtz					Red partially consolidated aeolian sand.	0.77
	2	4	Qu	Rd	vfg		qtz, clay	feld			Red sand and clay with minor weathered granite fragments.	0.85
	4	6	Qu	Rd	vfg		qtz, clay	feld	grav		Red sand and clay with minor weathered granite fragments, minor silcrete fragments and well rounded gravel fragments.	0.60
	6	8	Qu	Rd	vfg		qtz, clay	feld, grav	pisol		Red sand and clay with minor weathered granite fragments trace ferruginous pisolitic fragments and well rounded gravel fragments.	0.86
	8	10	Qu	Rd	vfg		qtz, clay	feld, grav	pisol		Red sand and clay with minor weathered granite fragments trace ferruginous pisolitic fragments and well rounded gravel fragments.	0.98
	10	12	Qu	Rd	vfg		qtz, clay	feld, grav	pisol		Red sand and clay with minor weathered granite fragments trace ferruginous pisolitic fragments and well rounded gravel fragments.	0.63
	12	14	Qu	Rd	vfg		qtz, clay	feld, grav			Red sand and clay with minor weathered granite fragments and well rounded gravel fragments.	0.57
	14	16	Qu	Lt brn	vfg		qtz, clay	feld			Red sand and clay with minor weathered granite fragments (damp sample).	0.56
	16	18	Qu	Lt brn	vfg		qtz, clay	feld			Red sand and clay with minor weathered granite fragments (damp sample).	1.06

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	18	20	Qu	Lt brn	vfg		qtz, clay	feld			Red sand and clay with minor weathered kaolinised granite (wet sample).	0.41
	20	22	Qu	Lt brn	vfg		qtz, clay	feld			Red sand and clay with minor weathered kaolinised granite (wet sample).	0.54
	22	24	Qu	Lt brn	vfg		qtz, clay	feld	bio		Red sand and clay with minor weathered kaolinised granite (wet sample).	0.44
	24	26	Qu	Lt brn	vfg		qtz, clay	feld	bio		Red sand and clay with minor weathered kaolinised granite (wet sample).	0.54
	26	28	Qu	Lt brn	vfg		qtz, clay	feld	bio		Red sand and clay with minor weathered kaolinised granite (wet sample).	0.40
	28	30	Qu	Lt brn	vfg		qtz, clay	feld	bio		Red sand and clay with minor weathered kaolinised granite (wet sample).	0.41
	30	32	Qu/Tpn	Lt brn	vfg		qtz, clay	feld	bio		Red sand and clay with weathered kaolinised granite (wet sample).	0.27
	32	34	Tpn	Wh	fg		gtz, feld	bio			White, weathered, fine grained equigranular granite (wet sample).	0.29
	34	36	Pg	Yw	fg		gtz, feld	bio			Yellow, weathered, fine grained, equigranular granite (wet sample) (B.O.C.O).	0.34
	36	38	Pg	Yw	fg		qtz, clay	hbl, bio	mag		Yellow fine grained granite (damp sample).	1.43
	38	40	Pg	Pk-brn	fg		qtz, clay	hbl, bio	mag		Pink-brown, fine grained granite (B.O.P.O.).	2.44
	40	42	Pg	Pk-brn	fg		qtz, clay	hbl, bio	mag		Pink-brown, fine grained granite.	2.51
	42	44	Pg	Pk-brn	fg		qtz, plag, mic,clay	hbl, bio	mag, bio		Pink-brown, fine grained, weakly deformed quartz/ plagioclase/ microcline leucocratic adamellite.	1.22

TIE RC03 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC03	0	2	Qs	Rd	fg	qtz					Red partially consolidated aeolian sand.	0.67
	2	4	Qu	Rd	vfg		clay	qtz, feld			Red sand and clay with minor weathered granite fragments.	0.67
	4	6	Qu	Rd	vfg		clay	qtz, feld			Red partially consolidated sand and clay.	0.42
	6	8	Qu	Rd	vfg		clay	qtz, feld			Red partially consolidated sand and clay.	0.37
	8	10	Qu	Rd	vfg		clay	qtz, feld			Red partially consolidated sand and clay, minor granite fragments.	0.33
	10	12	Qu/Tpq	Wh	mg	silica	qtz	clay			White silicified sandstone/silcrete, minor red sand and clay.	0.37
	12	14	Tpq	Wh + rd	mg	silica	qtz				White silicified sandstone/silcrete and red Fe/silica silcrete.	0.17
	14	16	Tpq/Tpk	Wh + rd	mg	silica	qtz, kao				White silicified sandstone/silcrete, red Fe/silica silcrete and white kaolinised granite.	0.15
	16	18	Tpk	Wh	mg		qtz, kao				White kaolinised granite.	0.18
	18	20	Tpn	Wh	mg		qtz, kao				White kaolinised (weakly foliated?) granite.	0.19
	20	22	Tpn	Wh	mg		qtz, kao				White kaolinised granite.	0.16
	22	24	Tpn	Wh	mg		qtz, kao				White kaolinised granite.	0.19
	24	26	Tpn	Wh	mg		qtz, kao				White kaolinised granite and trace Fe staining.	0.24
	26	28	Tpn	Wh	mg		qtz, kao				White kaolinised granite and trace Fe staining.	0.35
	28	30	Tpn	Yw	mg		qtz, kao				Yellow kaolinised granite and minor Fe staining.	0.94
	30	32	Tpn	Yw	mg		qtz, kao				Yellow kaolinised granite and minor Fe staining.	0.72
	32	34	Tpn	Yw	mg		qtz, kao		bio		Yellow kaolinised granite and minor Fe staining.	0.28
	34	36	Tpn	Yw	mg		qtz, kao		bio		Yellow kaolinised granite and minor Fe staining.	0.21
	36	38	Pg	Yw	mg		qtz	feld, kao, bio			Yellow weakly kaolinised granite and minor Fe staining.	0.36
	38	40	Pg	Yw	mg		qtz	feld, kao, bio			Yellow, massive equigranular granite.	0.36
	40	42	Pg	Yw	mg		qtz, feld	hbl, bio			Yellow, massive equigranular granite.	0.58
	42	44	Pg	Yw	mg		qtz, feld	hbl, bio			Yellow, massive equigranular granite.	0.79
	44	46	Pg	Yw	mg		qtz, feld	hbl, bio			Yellow, massive equigranular granite.	1.08

TIE RC04 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC04	0	2	Qs/Qu	Rd	fg	qtz	clay				Red sand (0-1m) and clay (1-2m) (cyclone contamination).	0.65
	2	4	Qu	Rd	vfg		qtz	feld			Red sand and clay with common weathered granite fragments.	0.53
	4	6	Qu	Rd-brn	vfg		qtz, feld				Red sand and clay with weathered granite fragments.	0.48
	6	8	Qu	Rd-brn	vfg			qtz, feld			Red sand and clay with minor weathered granite fragments.	0.36
	8	10	Qu	Rd-brn	vfg			qtz, feld			Red sand and clay with minor weathered granite fragments.	0.37
	10	12	Qu	Rd-brn	vfg			qtz, feld			Red sand and clay with minor weathered granite fragments.	0.36
	12	14	Qu	Rd-brn	vfg			qtz, feld	bio		Red sand and clay with minor weathered granite fragments.	0.28
	14	16	Qu	Rd-brn	vfg			qtz, feld	bio		Red sand and clay with minor weathered granite fragments.	0.41
	16	18	Qu	Rd-brn	vfg			qtz, feld	bio		Red sand and clay with minor weathered granite fragments (damp sample).	0.33
	18	20	Qu	Rd-brn	vfg			qtz, feld	bio		Red sand and clay with minor weathered granite fragments (damp sample).	0.31
	20	22	Qu/Tpq	Rd-brn	vfg			qtz, feld	bio		Red sand and clay with minor weathered granite fragments and minor silcrete (damp sample).	0.40
	22	24	Qu/Tpq	Rd-brn	vfg			qtz, feld	bio		Red sand and clay with minor weathered granite fragments and minor silcrete (damp sample).	0.17
	24	26	Tpq/Tpk	Wh	vfg	kao		qtz			White kaolinised granite with little or no structure preserved (damp sample).	0.06
	26	28	Tpk	Wh	vfg	kao		qtz			White kaolinised granite with little or no structure preserved.	0.10
	28	30	Tpk	Wh	vfg	kao		qtz			White kaolinised granite with little or no structure preserved.	0.13
	30	32	Tpk	Wh	vfg	kao		qtz			White kaolinised granite with little or no structure preserved.	0.09
	32	34	Tpk	Wh	vfg	kao		qtz			White kaolinised granite with little or no structure preserved.	0.14
	34	36	Tpk	Wh	vfg	kao		qtz			White kaolinised granite with little or no structure preserved.	0.16
	36	38	Tpk	Wh	vfg	kao		qtz, feld			White kaolinised granite (damp sample).	0.12
	38	40	Tpk/Tpf	Gy-brn	fg	clay	qtz, feld		bio		Grey-brown, fine grained, weathered granite (?) (damp sample) (B.O.C.O.).	0.18

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	40	42	Tpf	Ppl-brn	fg	clay	qtz, feld	bio			Purple-brown, fine grained, weathered granite (?) with Fe-rich clay mottled zone (damp sample).	0.07
	42	44	Tpf	Ppl-brn	fg	clay	qtz, feld	bio			Purple-brown, fine grained, weathered granite (?) with Fe-rich clay mottled zone (wet sample).	0.10
	44	46	Tpf	Ppl-brn	fg	clay	qtz, feld	bio	ep		Purple-brown, fine grained, weathered (sheared?) granite (?) with Fe-rich clay mottled zone + trace epidote veins (wet sample).	0.10
	46	48	Tpk	Wh	fg	kao	qtz, feld	bio			White, fine grained, weathered granite (?) (wet sample).	0.32
	48	50	Pg	Gy-brn	fg		qtz, alk/plag feld	mag, hbl	ep		Grey-white, fine grained granite with trace epidote alteration (B.O.P.O.).	17.30
	50	52	Pg	Gy-brn	fg		qtz, alk/plag feld	mag, hbl			Grey-white, fine grained granite.	17.70

TIE RC05 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC05	0	2	Qs	Rd	fg	qtz					Red partially consolidated aeolian sand and trace granite fragments.	0.66
	2	4	Qu	Rd	vfg		clay	qtz, feld			Red sand and clay with minor weathered granite fragments.	1.00
	4	6	Qu	Rd	vfg		clay	qtz, feld			Red sand and clay with minor weathered granite fragments.	0.80
	6	8	Qu	Rd	vfg		clay	qtz, feld			Red sand and clay with minor weathered granite fragments.	0.75
	8	10	Qu	Rd	vfg		clay	qtz, feld			Red sand and clay with minor weathered granite fragments and trace silcrete.	0.54
	10	12	Qu	Rd	vfg		clay	qtz, feld			Red sand and clay with minor weathered granite fragments and trace silcrete.	0.45
	12	14	Qu	Rd	vfg		clay	qtz, feld			Red sand and clay with minor weathered granite fragments.	0.31
	14	16	Qu	Pk	fg		clay, silica	qtz, feld			Red sand and clay and gritty sillcrete.	0.27
	16	18	Qu	Brn	vfg		clay	qtz, feld			Red sand and clay with minor weathered granite fragments.	0.25
	18	20	Qu	Brn	vfg		clay	qtz, feld			Red sand and clay with minor weathered granite fragments.	0.33
	20	22	Qu	Brn	vfg		clay	qtz, feld			Red sand and clay with minor weathered granite fragments (damp sample).	0.14
	22	24	Qu	Brn	fg		clay, lat	qtz, feld			Red sand and clay, common brown ferruginous (?) lateritic (?) fragments and minor weathered granite fragments (damp sample).	0.13
	24	26	Qu	Brn	fg		clay	qtz, feld	lat		Red sand and clay and minor weathered granite fragments (damp sample).	0.16
	26	28	Qu	Brn	fg		clay	qtz, feld	lat		Red sand and clay and minor weathered granite fragments (damp sample).	0.24
	28	30	Pg	Pk-brn	mg		qtz, plag, alk	hbl, mt			Weakly weathered fine grained adamellite (B.O.C.O.).	7.47
	30	32	Pg	Pk-brn	mg		qtz, plag, alk	hbl, mag			Weakly weathered fine grained adamellite.	13.50
	32	34	Pg	Pk-brn	mg		qtz, plag, alk	hbl, mag	gnt		Off-white, fine grained adamellite and trace garnet (cyclone contamination) (B.O.P.O.).	18.40

TIE RC06 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC06	0	2	Qs	Rd	fg	qtz					Red partially consolidated aeolian sand (minor contamination).	0.73
	2	4	Qu	Rd	vfg		sand, clay	qtz, feld			Red sand and clay with weathered granite and silcrete fragments.	1.59
	4	6	Qu	Rd	vfg		clay	qtz, feld	lat		Red clay with minor weathered granite and laterite fragments (cyclone contamination).	0.61
	6	8	Qu	Rd	vfg		clay	qtz, feld	lat		Red clay with minor weathered granite and laterite fragments (cyclone contamination).	0.52
	8	10	Qu	Rd	vfg		clay	qtz, feld	lat		Red clay with minor weathered granite and laterite fragments (cyclone contamination).	0.63
	10	12	Qu	Rd	vfg		clay	qtz, feld	lat		Red clay with minor weathered granite and laterite fragments (cyclone contamination).	0.31
	12	14	Qu	Brn	vfg		clay	qtz, feld	lat		Red clay with minor weathered granite and laterite fragments cemented with calcite (?).	0.39
	14	16	Qu	Brn	vfg		clay	qtz, feld			Red clay with minor weathered granite fragments.	0.28
	16	18	Qu	Brn	vfg		clay	qtz, feld			Red clay with minor weathered granite fragments.	0.40
	18	20	Qu	Brn	vfg		clay	qtz, feld			Red clay with minor weathered granite fragments (damp Sample).	0.34
	20	22	Qu	Brn	vfg		clay	qtz, feld			Red clay with minor weathered granite fragments (damp Sample).	0.19
	22	24	Qu	Brn	vfg		clay	qtz, feld			Red clay with minor weathered granite fragments (damp Sample).	0.21
	24	26	Qu/Tpk	Brn + yw	vfg		clay	qtz, feld			Brown and yellow clay with quartz and feldspar fragments; yellow, kaolinised granite (?).	0.06
	26	28	Tpk	Wh	fg		clay	qtz, feld			White, kaolinised, fine grained granitic gneiss (?).	0.09
	28	30	Tpk	Wh	fg		clay	qtz, feld			White, kaolinised, fine grained granitic gneiss (?).	0.08
	30	32	Tpk	Wh	fg		clay	qtz, feld	bio		White, kaolinised, fine grained quartz / feldspar / biotite granitic gneiss (?) (B.O.C.O.).	0.06
	32	34	Tpk	Wh	fg		clay	qtz, feld	bio		White, kaolinised, fine grained quartz/ feldspar/ biotite granitic gneiss (?).	0.12

TIE RC07 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy abdt	Mineralogy maj	Mineralogy min	Mineralogy tr	Mineralogy rare	Description	Magnetic susceptibility
TIE RC07	0	2	Qs	Rd	fg			qtz			Red partially consolidated aeolian sand (minor contamination).	0.60
	2	4	Qu	Rd	vfg		sand, clay		qtz, feld		Red sand and clay with trace quartz/feldspar fragments (trace contamination).	0.64
	4	6	Qu	Rd	vfg		sand, clay		qtz, feld		Red sand and clay with trace quartz/feldspar fragments (trace contamination).	0.73
	6	8	Qu	Rd	vfg		sand, clay		qtz, feld		Red sand and clay with trace quartz/feldspar fragments (trace contamination).	0.63
	8	10	Qu	Rd-brn	vfg		sand, clay	qtz, feld			Red sand and clay with minor quartz/feldspar fragments and minor silcrete/calcrete fragments.	0.31
	10	12	Qu	Rd-brn	vfg		sand, clay	qtz, feld			Red-brown silicified/calcified clay with common grits.	0.32
	12	14	Qu	Rd-brn	vfg		sand, clay	qtz, feld			Red-brown sand and clay with minor quartz/feldspar fragments.	0.23
	14	16	Qu	Rd-brn	vfg		sand, clay	qtz, feld			Red-brown sand and clay with minor quartz/feldspar fragments.	0.25
	16	18	Qu	Brn	vfg		sand, clay	qtz, feld			Red-brown sand and clay with minor quartz/feldspar fragments (major contamination due to damp sample).	0.26
	18	20	Qu	Brn	vfg		sand, clay	qtz, feld			Brown sand and clay with minor quartz/feldspar fragments (contamination?) (damp sample).	0.33
	20	22	Qu	Brn	vfg		sand, clay	qtz, feld			Brown sand and clay with minor quartz/feldspar fragments (contamination?) (damp sample).	0.39
	22	24	Qu	Brn	vfg		sand, clay	qtz, feld			Brown sand and clay with minor quartz/feldspar fragments (contamination?) (damp sample).	0.17
	24	26	Tpk/Tpf	Wh	fg		clay, kao	qtz, Fe-ox			White, kaolinised rock (no structure) and red/ orange/ yellow Fe cements (wet sample).	0.05
	26	28	Tpn	Wh	fg		clay, kao	qtz			White, kaolinised, granitic gneiss.	0.23
	28	30	Tpn	Wh	fg		clay, kao	qtz			White, kaolinised, granitic gneiss.	0.19
	30	32	Tpn	Wh	fg		clay, kao	qtz			White, kaolinised, granitic gneiss.	0.12
	32	34	Tpn	Wh	fg		clay, kao	qtz			White, kaolinised, granitic gneiss.	0.02
	34	36	Tpn	Wh	fg		clay, kao	qtz			White, kaolinised, granitic gneiss.	0.12
	36	38	Pgn	Yw-grn	fg		clay, ser	qtz, feld	bio		Yellow-green, fine grained, sericitised (?) weathered granite (B.O.C.O.).	0.16
	38	40	Pgn	Yw-grn	fg		qtz, bio	plag			Yellow-green, fine grained, granitic gneiss.	0.30

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	40	42	Pgn	Yw-grn	fg		qtz, bio	plag			Yellow-green, fine grained, granitic gneiss.	0.30
	42	44	Pgn	Yw-grn	fg		qtz, bio	plag			Yellow-green, fine grained, granitic gneiss.	3.41
	44	46	Pgn	Wh	fg		qtz, hbl, alk	bio, plag			White, fine grained, granitic gneiss (B.O.P.O.).	6.66
	46	48	Pgn	Wh	fg		qtz, hbl, alk	bio, plag			White, fine grained, granitic gneiss + pegmatite veins.	8.84

TIE RC08 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC08	0	2	Qs	Rd	fg			qtz, feld			Red partially consolidated aeolian sand (minor contamination).	0.54
	2	4	Qu	Rd	vfg		sand, clay	qtz, feld			Red sand and clay with trace quartz/feldspar fragments (trace contamination).	0.46
	4	6	Qu	Rd	vfg		sand, clay	qtz, feld			Red sand and clay with trace quartz/feldspar fragments (trace contamination).	0.42
	6	8	Tpk	Lt brn	vfg		clay				Buff clay.	0.17
	8	10	Tpk	Lt brn	vfg		clay		qtz, feld		Buff clay, trace quartz and feldspar grits (damp sample, water injection).	0.15
	10	12	Tpk	Lt brn	vfg		clay		qtz, feld		Buff clay, trace quartz and feldspar grits (damp sample, water injection).	0.16
	12	14	Tpk	Lt brn	vfg		clay		qtz, feld		Buff clay, trace quartz and feldspar grits (damp sample, water injection).	0.13
	14	16	Tpn	Yw-brn	fg		clay		qtz, feld, bio		Buff clay, trace quartz/feldspar/biotite altered granite (?) (wet sample, water injection).	0.15
	16	18	Pgn	Yw-brn	fg		clay	qtz, hbl	feld, bio		Grey-green clay and weathered biotite/ hornblende/ quartz gneiss (wet sample, water injection) (B.O.C.O.).	0.15
	18	20	Pgn	Gy-wh	fg		qtz	hbl, feld	bio		Grey-white fine grained amphibole gneiss.	0.53
	20	22	Pgn	Grn-wh	fg		qtz	hbl, feld	bio		Green-white fine grained amphibole gneiss (B.O.P.O.).	1.48
	22	24	Pgn	Grn-wh	fg		qtz	hbl, feld	bio		Green-white fine grained amphibole gneiss.	1.70

TIE RC09 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC09	0	2	Qs	Rd	fg		sand	clay, qtz, feld			Red, partially consolidated aeolian sand (minor contamination).	1
	2	4	Qu	Rd	vfg		clay	qtz, feld			Red clay with quartz/feldspar fragments. Cemented with calcite/silica (?) (minor contamination).	0.72
	4	6	Qu	Rd-brn	vfg		clay	qtz, feld			Red-brown clay with quartz/feldspar fragments. Cemented with calcite/silica (?) (minor contamination).	0.64
	6	8	Qu	Brn	vfg		clay	qtz, feld			Brown clay with quartz/feldspar fragments.	0.65
	8	10	Qu	Brn	vfg		clay	qtz, feld			Brown clay with quartz/feldspar fragments.	0.34
	10	12	Qu	Brn	vfg		clay	qtz, feld			Brown clay with quartz/feldspar fragments and minor calcite/silica (?) cement.	0.24
	12	14	Qu	Brn	vfg		clay	qtz, feld			Brown clay with quartz/feldspar fragments and common calcite/silica (?) cement.	0.29
	14	16	Qu	Brn	vfg		clay	qtz, feld			Brown clay with quartz/feldspar fragments and common calcite/silica (?) cement.	0.2
	16	18	Qu	Brn	vfg		clay	qtz, feld			Brown clay with quartz/feldspar fragments and minor calcite/silica (?) cement (damp sample).	0.14
	18	20	Qu	Brn	fg		qtz, clay	feld	ep		Brown clay with quartz/feldspar fragments, minor calcite/silica (?) cement and trace epidote altered granite fragments (damp sample).	0.1
	20	22	Qu	Brn	vfg		clay	qtz, feld			Brown clay with quartz/feldspar fragments and minor calcite/silica (?) cement (damp sample).	0.3
	22	24	Qu	Brn	vfg		clay	qtz, feld			Brown clay with quartz/feldspar fragments, minor calcite/silica (?) cement and trace Fe-altered granitic gneiss (?) (damp sample).	0.18
	24	26	Qu	Grn-brn	fg		clay	qtz, am?			Green-brown, fine grained, clay-altered, amphibole gneiss (?) (damp sample).	0.19
	26	28	Qu	Grn-brn	fg		clay	qtz, am?			Green-brown + white, fine grained, clay-altered amphibole gneiss (?) (damp sample).	0.3
	28	30	Qu	Yw	fg		qtz, feld, clay	bio			Yellow, fine grained, weathered quartz/feldspar/ (biotite) granitic gneiss (?) (wet sample) (B.O.C.O.).	0.26
	30	32	Qu	Yw	fg		qtz, feld, clay	bio			Yellow, fine grained, weathered quartz/feldspar/ (biotite) granitic gneiss (?) (wet sample).	0.03
	32	34	Qu	Yw	fg		qtz, feld, clay	bio			Yellow, fine grained, weathered quartz/feldspar/ (biotite) granitic gneiss (?) (wet sample).	1.04
	34	36	Qu	Yw	fg		qtz, feld, clay	pisolith			Yellow brown clay with common quartz/feldspar grits and lateritic pisoliths.	0.55
	36	38	Tpk	Wh	fg		kaol, qtz		ep		White kaolin-altered granite/gneiss (?) and trace epidote altered veins (?).	0.14

TIE RC10 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC10	0	2	Qs	Rd	fg	qtz					Red, partially consolidated, aeolian sand.	0.75
	2	4	Qu	Rd	fg		qtz, clay				Red, fine grained sand and clay, cemented in part, quartz/feldspar grits and silcrete fragments.	0.78
	4	6	Qu	Rd-brn	vfg		silica, clay				Red-brown, very fine grained, silicified clay.	0.42
	6	8	Qu	Rd	fg		qtz, clay	feld			Red, fine grained, sand and clay, + minor quartz/feldspar grits.	0.42
	8	10	Qu	Rd	fg		qtz, clay	feld			Red, fine grained, sand and clay, and minor quartz/feldspar grits.	0.46
	10	12	Qu	Rd	fg		qtz, clay	feld			Red, fine grained, sand and clay, and minor quartz/feldspar grits.	0.45
	12	14	Qu	Rd	fg		qtz, clay	feld			Red, fine grained sand and clay, and minor quartz/feldspar grits, trace calcareous/siliceous cement.	0.37
	14	16	Qu	Brn	fg		qtz, clay, calc	feld			Brown and (white), fine grained, calcareous cemented clay with quartz/feldspar grits.	0.33
	16	18	Qu	Brn	fg		qtz, clay	feld			Brown and (white), fine grained clay with quartz/feldspar grits.	0.38
	18	20	Tpk/Pgn	Pk	mg		qtz, plag, clay				White clay saprolite and pink, medium grained, massive granite (B.O.C.O.).	0.26
	20	22	Pgn	Pk	mg		qtz, plag, clay		bio		Pink, medium grained, massive granite and minor yellow clay alteration.	0.30
	22	24	Pgn	Pk	mg		qtz, plag, clay		bio		Pink, medium grained, massive granite and minor yellow clay alteration.	0.52
	24	26	Pgn	Pk	mg		qtz, plag, clay		bio		Pink, medium grained, massive granite and minor yellow clay alteration.	0.55
	26	28	Pgn	Pk	mg		qtz, plag, clay		bio		Pink, medium grained, massive granite and minor yellow clay alteration (B.O.P.O.).	0.38
	28	30	Pgn	Dk brn	mg		qtz, Fe mins?	mang, ep			Dark brown, medium grained, Fe (?) altered granite and common epidotic veining.	0.93
	30	32	Pgn	Pk	mg		qtz, plag, clay		bio, amp		Pink, medium grained, massive granite.	1.20
	32	34	Pgn	Pk	mg		qtz, plag, clay		bio, amp		Pink, medium grained, massive granite.	2.02
	34	36	Pgn	Pk	mg		qtz, plag, clay	bio, amp, mag	ep		Pink, medium grained, massive granite.	2.79

TIE RC11 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC11	0	2	Qs/Tpq	Rd	fg		qtz				Red, partially consolidated, aeolian sand, white silcrete and common contamination.	0.41
	2	4	Tpk	Wht	fg		kaol	qtz			White, kaolin-altered granite.	0.13
	4	6	Tpk	Wht	fg		kaol	qtz			White, kaolin-altered granite.	0.14
	6	8	Tpk	Wht	fg		kaol	qtz			White, kaolin-altered granite.	0.12
	8	10	Tpf	Wht, yw	fg		kaol	qtz, Fe-ox			White, kaolin-altered granite with Fe-oxide mottling.	0.11
	10	12	Pgn	Ple grn	fg		clay	qtz, amp			Pale green, clay-altered amphibole/quartz gneiss.	0.16
	12	14	Pgn	Ple grn	fg		clay, qtz, feld	am			Pale green, clay-altered amphibole/quartz granitic gneiss.	0.23
	14	16	Pgn	Ple grn	fg		clay, qtz, feld	am			Pale green, clay-altered amphibole/quartz granitic gneiss.	0.17
	16	18	Pgn	Yw-brn	mg		qtz, feld	am			Yellow brown, medium grained, altered (?) granitic gneiss (B.O.C.O.).	0.55
	18	20	Pgn	Yw-brn	mg		qtz, feld	am	bio		Yellow brown, medium grained, altered (?) granitic gneiss.	0.89
	20	22	Pgn	Yw-brn	mg		qtz, feld	am	bio		Yellow brown, medium grained, altered (?) granitic gneiss.	1.14
	22	24	Pgn	Yw-brn	mg		qtz, feld, bio	am, mang			Yellow brown, medium grained, altered (?) granitic gneiss + very coarse grained biotite and manganese (?) (B.O.P.O.).	2.60
	24	26	Pgn	Yw-brn	mg		qtz, feld, bio	am, mang			Yellow brown, medium grained, altered (?) granitic gneiss + very coarse grained biotite and manganese (?).	2.21
	26	28	Pgn	Yw-brn	mg		qtz, feld, bio	am, mang			Yellow brown, medium grained, altered (?) granitic gneiss + very coarse grained biotite and manganese (?).	2.44
	28	30	Pgn	Yw-brn	mg		qtz, feld, bio	am, mang			Yellow brown, medium grained, altered (?) granitic gneiss + very coarse grained biotite and manganese (?).	2.56

TIE RC12 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC12	0	2	Qs	Rd	fg		qtz				Red, partially consolidated, aeolian sand and minor, coarse grained colluvium.	0.49
	2	4	Qu	Rd-brn	vfg		silica, clay				Red-brown, very fine grained silica/carbonate cemented clay.	0.31
	4	6	Qu	Rd-brn	vfg		silica, clay	qtz			Red-brown, very fine grained silica/carbonate cemented clay and minor grits.	0.19
	6	8	Qu	Lt brn	fg		clay	silica, qtz			Light brown fine grained silica/carbonate (cemented) clay and minor grits (damp sample).	0.17
	8	10	Qu	Lt brn	fg		clay	silica, qtz			Light brown fine grained silica/carbonate (cemented) clay and minor grits (damp samole).	0.09
	10	12	Qu	Wht, rd	fg		clay	qtz, silica, Fe-ox			White and red-brown, fine grained, silica/carbonate (cemented) clay and minor grits (damp sample).	0.09
	12	14	Qu	Wht, rd	fg		clay	qtz, silica, Fe-ox			White and red-brown, fine grained, silica/carbonate (cemented) clay and minor grits (damp sample).	0.12
	14	16	Qu	Wht, rd	fg		clay	qtz, silica, Fe-ox			White and red-brown, fine grained, silica/carbonate (cemented) clay and minor grits (wet sample).	0.19
	16	18	Qu	Wht, rd	fg		qtz, clay	Fe-ox, musc			White and red-brown, fine grained, silica/carbonate (cemented) clay and grits (wet sample).	0.14
	18	20	Tpk	Wht	vfg		kaol	qtz			White, kaolin-altered basement.	0.15
	20	22	Tpk	Wht	vfg		kaol	qtz			White, kaolin-altered basement.	0.17
	22	24	Tpk	Wht	vfg		kaol	qtz	ser		White, kaolin-altered basement.	0.15
	24	26	Tpn	Ple grn	fg		clay, ser	qtz	feld		Pale green, fine grained, sericite-altered basement (B.O.C.O.).	0.13
	26	28	Tpn	Ple grn	fg		clay, ser	qtz, feld	bio		Pale green, fine grained, sericite-altered basement.	0.13
	28	30	Tpn	Dk grn	fg		clay, ser	qtz, feld, bio			Dark green, fine grained, sericite-altered basement.	0.25
	30	32	Tpn	Dk grn	fg		clay, ser	qtz, feld, bio			Dark green, fine grained, sericite-altered basement.	0.47
	32	34	Pgn	Yw-brn	mg		qtz, feld, lim	bio			Yellow-brown, medium grained altered (?) granitic gneiss and common limonite.	0.56
	34	36	Pgn	Yw-brn	mg		qtz, feld, lim	bio			Yellow-brown, medium grained heavily altered (?) granitic gneiss and common limonite.	0.43
	36	38	Pgn	Yw-brn	mg		qtz, feld, lim	bio			Yellow-brown, medium grained altered (?) granitic gneiss and common limonite.	0.53
	38	40	Pgn	Wh-grn	fg		qtz, feld, bio				White-green, feldspar-rich granite gneiss (B.O.P.O.).	0.54
	40	42	Pgn	Wh-grn	fg		qtz, feld, bio	Fe-ox			White-green, feldspar-rich granite gneiss and Fe-oxide veins/alteration.	0.65
	42	44	Pgn	Wh-grn	fg		qtz, feld, bio				White-green, feldspar-rich granite gneiss.	0.63

TIE RC13 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC13	0	2	Qs	Rd	fg		qtz				Red, partially consolidated, aeolian sand and minor, coarse grained colluvium.	0.64
	2	4	Qs	Rd	fg		qtz	feld			Red, partially consolidated, aeolian sand and common, coarse grained colluvium.	0.28
	4	6	Qu	Lt brn	fg		clay	silica, qtz			Light brown, fine grained, silica/carbonate (cemented) clay and minor grits.	0.18
	6	8	Qu	Lt brn	fg		clay	silica, qtz			Light brown, fine grained, silica/carbonate (cemented) clay and minor grits.	0.1
	8	10	Qu	Rd	vfg		clay				Red clay with trace quartz grit.	0.11
	10	12	Qu	Rd-brn	vfg		clay				Red-Brown clay with trace quartz grit (damp sample).	0.1
	12	14	Qu	Brn	vfg		clay				Brown clay with minor quartz grit (damp sample).	0.14
	14	16	Qu	Brn	vfg		clay	silica, qtz			Brown clay with common coarse grained colluvium, silica/calc cemented (damp sample).	0.3
	16	18	Tpk	Wh /pk	vfg		kao				White-pink, kaolin-altered basement.	0.08
	18	20	Tpk	Yw/wh	vfg		kao, lim		qtz		Yellow-white, kaolin-altered basement.	0.12
	20	22	Tpk	Yw/wh	vfg		kao, lim		qtz		Yellow-white, kaolin-altered basement.	0.02
	22	24	Tpk	Wh /pk	vfg		kao				White-pink, kaolin-altered basement.	0.07
	24	26	Tpk	Wh /pk	vfg		kao	qtz			White-pink, kaolin-altered basement (damp sample).	0.06
	26	28	Tpk	Wh /pk	vfg		kao	qtz			White-pink, kaolin-altered basement (damp sample).	0.07
	28	30	Tpk	Yw/wh	vfg		kao, lim		qtz		Yellow-white, kaolin-altered basement (damp).	0.03
	30	32	Tpk	Yw/wh	vfg		kao, lim		qtz		Yellow-white, kaolin-altered basement (damp sample).	0.04
	32	34	Tpk	Yw/wh	vfg		kao, lim		qtz		Yellow-white, kaolin-altered basement (damp sample).	0.05
	34	36	Pgn	Yw/wh	fg		clay, bio, qtz	feld			Yellow, fine grained, quartz/biotite/feldspar granitic gneiss (B.O.C.O.).	0.08
	36	38	Pgn	Wh	fg		bio, qtz	Fe-ox, feld			Clear/white, fine grained, quartz/biotite/feldspar granitic gneiss and minor Fe-altered veins (B.O.P.O.).	0.59
	38	40	Pgn	Wh	fg		bio, qtz	feld			Clear/white, fine grained, quartz/biotite/feldspar granitic gneiss and minor pegmatite veins.	0.53

TIE RC14 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC14	0	2	Qu	Rd/yw	fg		sand, Fe-ox	qtz			Red and yellow fine grained cemented sand and minor grits.	0.55
	2	4	Tpf	Yw-brn	fg		clay, Fe-ox	ser, qtz			Yellow-brown, fine grained limonite-altered intrusive (?)	0.20
	4	6	Tpf	Yw-brn	fg		clay, Fe-ox	ser, qtz			Yellow-brown, fine grained limonite-altered intrusive (?)	0.16
	6	8	Tpf	Yw-brn	fg		clay, Fe-ox	ser, qtz, kao			Yellow-brown, fine grained limonite-altered intrusive (?) with white kaolin.	0.14
	8	10	Tpk	Wh	fg		kao	qtz			White kaolin-altered basement.	0.25
	10	12	Tpk	Wh	fg		kao	qtz, ser	feld		White kaolin-altered basement.	0.25
	12	14	Tpf	Grn brn	fg		kao, ser	qtz	feld		Green-brown, sericite-altered basement (damp sample) (B.O.C.O.).	0.17
	14	16	Tpf	Grn brn	fg		kao, ser	qtz, bio	feld		Green-brown, sericite-altered basement (damp sample).	0.21
	16	18	Pgn	Pk/wh	fg		qtz, plag	bio			Pink-grey, fine grained foliated granitic gneiss (damp sample) (B.O.P.O.).	0.37
	18	20	Pgn	Pk/wh	fg		qtz, plag	bio			Pink-grey, fine grained foliated granitic gneiss and coarse grained quartz/plagioclase veins (damp sample).	0.23
	20	22	Pgn	Pk/wh	fg		qtz, plag	bio			Pink-grey, fine grained foliated granitic gneiss and coarse grained quartz/plagioclase veins (damp sample).	0.40
	22	24	Pgn	Pk/wh	fg		qtz, plag	bio			Pink-grey, fine grained foliated granitic gneiss and coarse grained quartz/plagioclase veins (damp sample).	0.51
	24	26	Pgn	Pk/wh	fg		qtz, plag	bio			Pink-grey, fine grained foliated granitic gneiss and coarse grained quartz/plagioclase veins (damp sample).	0.67
	26	28	Pgn	Pk/wh	fg		qtz, plag	bio			Pink-grey, fine grained foliated granitic gneiss and coarse grained quartz/plagioclase veins (damp sample).	0.90
	28	30	Pgn	Pk/wh	fg		qtz, plag	bio	mang		Pink-grey, fine grained foliated granitic gneiss and coarse grained quartz/plagioclase veins (damp sample).	2.02
	30	32	Pgn	Pk/wh	fg		qtz, plag	bio			Pink-grey, fine grained foliated granitic gneiss and coarse grained quartz/plagioclase veins (damp sample).	3.68

TIE RC15 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC15	0	2	Qs/Pgn	Wh	fg		qtz, hbl, feld	sand			Red sand (0-20cm), colluvium (20-50-cm); white, fine grained, quartz/ hornblende/feldspar/ (magnetite) gneiss.	9.42
	2	4	Pgn	Wh	fg	horn	qtz, feld	bio	mt		White, fine grained hornblende/quartz/feldspar/ (magnetite) amphibole gneiss (minor contamination).	9.59
	4	6	Pgn	Wh	fg		qtz, hbl, feld	bio	mt		White, fine grained hornblende/quartz/feldspar/ (magnetite) amphibole gneiss (minor contamination).	9.31
	6	8	Pgn	Wh	fg	qtz, feld	hbl	bio	mt		White, fine grained hornblende/quartz/feldspar/ (magnetite) amphibole gneiss.	8.94
	8	10	Pgn	Wh	fg	qtz, feld	hbl	bio	mt, chl		White, fine grained, hornblende/quartz/ feldspar/ (magnetite) amphibole gneiss and trace chlorite veins (?).	14.70

TIE RC16 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC16	0	2	Qa	Rd	fg		sand/clay	qtz/feld			Red semi-consolidated sand/clay and minor coarse grained qtz/feld alluvium.	0.70
	2	4	Qa	Rd	fg		sand/clay	qtz/feld			Red semi-consolidated sand/clay and minor coarse grained qtz/feld alluvium.	0.58
	4	6	Qa	Rd	fg		sand/clay	qtz/feld			Red semi-consolidated sand/clay and minor coarse grained qtz/feld alluvium.	0.56
	6	8	Qa/Pgn	Yw	cg		qtz/feld	hbl/bio			Coarse grained basal qtz/feld alluvium and fine grained horn/qtz gneiss.	8.84
	8	10	Pgn	Wht	fg		qtz/feld	hbl/bio	mag		White, fine grained, foliated qtz/feld/(horn/bio) gneiss.	12.40
	10	12	Pgn	Wht	fg		qtz/feld	hbl/bio	mag		White, fine grained, foliated qtz/feld/(horn/bio) gneiss.	3.73
	12	14	Pgn	Wht	fg		qtz/feld	hbl/bio	mag		White, fine grained, foliated qtz/feld/(horn/bio) gneiss.	11.00
	14	16	Pgn	Wht	fg		qtz/feld	bio	mag		White, fine grained, foliated qtz/feld/(bio) gneiss.	9.89
	16	18	Pgn	Wht	fg		qtz/feld	bio	mag		White, fine grained, foliated qtz/feld/(bio) gneiss.	10.30

TIE RC 17 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC17	0	2	Qu	Rd	fg		sand/clay	qtz/feld			Red semi-consolidated sand/clay and coarse grained qtz/feld alluvium.	0.36
	2	4	Qu	Rd	fg		sand/clay	qtz/feld			Red semi-consolidated sand/clay and coarse grained qtz/feld alluvium.	0.32
	4	6	Tpq	Yw	fg		sand/qtz				Yellow, fine grained, gritty silicrete.	0.30
	6	8	Tpf	Yw	fg		qtz/clay	bio?			Yellow, fine grained, kaolin/limonite altered basement.	0.13
	8	10	Tpf	Yw	fg		qtz/clay	bio			Yellow, fine grained, kaolin/limonite altered basement (damp sample).	0.20
	10	12	Tpf	Yw	fg		qtz/plag/clay	bio			Yellow fine grained kaolin/limonite altered granite (?) (damp sample).	0.35
	12	14	Tpf	Yw	fg		qtz/plag/clay	bio			Yellow fine grained kaolin/limonite altered granite (?) (damp sample).	0.27
	14	16	Pgn	Pk	mg		plag/qtz	clay/bio			Pink, medium grained feld/qtz/bio granite and minor yellow clay (damp sample).	0.34
	16	18	Pgn	Pk	mg		plag/qtz	clay/bio			Pink, medium grained feld/qtz/bio granite and minor yellow clay (damp sample).	0.35
	18	20	Pgn	Pk	mg	plag		qtz/clay/bio			Pink, medium grained feld/qtz/bio granite and minor yellow clay (damp sample).	0.38
	20	22	Pgn	Pk	mg	plag		qtz/clay/bio	chl		Pink, medium grained feld/qtz/bio granite and minor yellow clay (damp sample).	0.58
	22	24	Pgn	Pk	mg	plag		qtz/chl/bio			Pink medium grained feld/qtz/chl/bio altered granite (damp sample).	0.56
	24	26	Pgn	Pk	mg	plag		qtz/chl			Pink medium grained feld/qtz/chl/bio altered granite.	0.58
	26	28	Pgn	Rd/grn	mg	plag/chl		qtz			Pink medium grained feld/qtz/chl/bio altered granite.	0.53
	28	30	Pgn/Pdt	Dk grn	vfg	chl/ amp?		plag			Dark green, very fine grained chl/amp (?) altered dolerite (?) and minor plag/qtz granite.	2.22

TIE RC18 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC18	0	2	Qp/Pgn	Pk	fg	plag	qtz/clay	bio			Minor colluvium and pink/white fine grained weakly foliated equigranular plag/qtz/bio granite.	0.12
	2	4	Pgn	Pk	fg	plag	qtz	bio			Pnk/wht fine grained weakly foliated equigranular plag/qtz/bio granite.	0.27
	4	6	Pgn	Pk	fg	plag	qtz	bio			Pnk/wht fine grained weakly foliated equigranular plag/qtz/bio granite.	0.43
	6	8	Pgn	Pk	fg	plag	qtz	bio			Pnk/wht fine grained weakly foliated equigranular plag/qtz/bio granite.	0.75
	8	10	Pgn	Pk	fg	plag	qtz	bio			Pnk/wht fine grained weakly foliated equigranular plag/qtz/bio granite.	0.52
	10	12	Pgn	Pk	fg	plag	qtz	bio			Pnk/wht fine grained weakly foliated equigranular plag/qtz/bio granite.	0.55
	12	14	Pgn	Pk	fg	plag	qtz	bio			Pnk/wht fine grained weakly foliated equigranular plag/qtz/bio granite.	0.61
	14	16	Pgn	Pk	fg	plag	qtz	bio,horn			Pnk/wht fine grained weakly foliated equigranular plag/qtz/bio granite.	0.61
	16	18	Pgn	Pk	fg	plag	qtz	bio,horn			Pnk/wht fine grained weakly foliated equigranular plag/qtz/bio granite.	1.06
	18	20	Pgn	Pk	fg	plag	qtz	bio,horn			Pnk/wht fine grained weakly foliated equigranular plag/qtz/bio granite.	0.88

TIE RC19 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC 19	0	2	Qu	Red	fg		sand/clay	qtz/feld			Red semi consolidated alluvial sand/clay and minor coarse qtz/feld alluvium.	0.49
	2	4	Tpf	Yell	vfg		kao,lim,qtz				Yellow/white very fine grained kaolinised and Fe altered granitic gneiss.	0.20
	4	6	Tpf	Yell	vfg		kao,lim,qtz				Yellow/white very fine grained kaolinised and Fe altered granitic gneiss.	0.15
	6	8	Tpn	Wht	vfg		kao	qtz			White kaolinised gneiss.	0.13
	8	10	Tpn	Wht	vfg		kao	qtz	ser		White kaolinised gneiss.	0.07
	10	12	Tpn	Wht/pnk	vfg		kao	qtz/ser			White/pink kaolinised gneiss.	0.08
	12	14	Tpn	Pnk	fg		kao	qtz	ser		Pink weathered granititc gneiss.	0.24
	14	16	Tpn	Wht	fg		qtz/kao	feld/bio			Pink weathered granititc gneiss.	0.12
	16	18	Tpn	Wht	fg		qtz/kao	feld/bio	ep?		Pink weathered granititc gneiss and pale green epidotic (?) altered gneiss.	0.18
	18	20	Tpn	Wht	fg		qtz/kao	feld/bio			Pink weathered granititc gneiss.	0.36
	20	22	Tpn	Wht	fg		qtz/kao	feld/bio			Pink weathered granititc gneiss.	0.07
	22	24	Pgn	Wht/or	fg		qtz/feld	bio/clay			White to yellow fine grained granititc gneiss.	0.17
	24	26	Pgn	Wht/or	fg		qtz/feld	bio/clay			White to yellow fine grained granititc gneiss.	0.21
	26	28	Pgn	Wht/or	fg		qtz/feld	bio/clay			White to yellow fine grained granititc gneiss.	0.18
	28	30	Pgn	Wht/or	fg		qtz/feld	bio/clay			White to yellow fine grained granititc gneiss.	0.41
	30	32	Pgn	Wht/or	fg		qtz/feld	bio/clay			White to yellow fine grained granititc gneiss.	0.28
	32	34	Pgn	Wht/or	fg		qtz/feld	bio/clay	ep?		White to yellow fine grained granititc gneiss and trace epidote veins (?).	0.30
	34	36	Pgn	Wht/or	fg		qtz/feld	bio			White to yellow fine grained granititc gneiss.	0.39
	36	38	Pgn	Wht/or	fg		qtz/feld	bio			White to yellow fine grained granititc gneiss.	0.67
	38	40	Pgn	Wht/or	fg		qtz/feld	bio			White to yellow fine grained granititc gneiss and minor pegmatite veins.	0.34

TIE RC20 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC20	0	2	Tak	Wht/mar	vfg	clay					White and maroon, very fine grained shale (Bulldog shale).	0.13
	2	4	Tak	Wht/mar	vfg	clay	Fe-ox				Wht/mar very fine shale (Bulldog shale) with Fe-ox liesegang bands.	0.04
	4	6	Tak	Wht/mar	vfg	clay	Fe-ox				Wht/mar very fine shale (Bulldog shale) with Fe-ox liesegang bands.	0.04
	6	8	Tak	Wht/yw	vfg	clay	lim				Wht/mar very fine shale (Bulldog shale) with Fe-ox liesegang bands.	0.08
	8	10	Tak	Wht/yw	vfg	clay	lim				Wht/mar very fine shale (Bulldog shale) with Fe-ox liesegang bands.	0.16
	10	12	Tak	Wht/yw	vfg	clay	lim	qtz			Wht/mar very fine shale (Bulldog shale) with Fe-ox liesegang bands and minor quartz grits.	0.28
	12	14	Tak	Wht/yw	vfg	clay	lim				Wht/yell very fine shale (Bulldog shale) with liesegang bands.	0.17
	14	16	Tak	Pk	vfg	clay		qtz			Pink clays and minor quartz grits.	0.21
	16	18	Tak	Yw	vfg	clay					Yellow clay.	0.16
	18	20	Tak	Yw	vfg	clay					Yellow clay.	0.42
	20	22	Tak	Yw	vfg	clay					Yellow clay.	0.17
	22	24	Tak	Yw	vfg	clay		qtz			Yellow clay and minor yellow quartz.	0.43
	24	26	Tak	Yw	vfg	clay		qtz			Yellow clay and minor yellow quartz.	0.49
	26	28	Tak	Yw	vfg	clay		qtz			Yellow clay and minor yellow quartz.	0.24
	28	30	Tak	Yw	vfg	clay	lim	qtz			Yellow limonite clay and minor yellow quartz.	0.41
	30	32	Tak	Buff	vfg	clay					Buff clay.	0.16
	32	34	Tak	Buff	vfg	clay		qtz			Buff clay and minor clear quartz.	0.14
	34	36	Tak	Buff	vfg	clay		qtz			Buff clay and minor clear quartz.	0.52
	36	38	Tak	Buff	vfg	clay		qtz			Buff clay and minor clear quartz.	0.48
	38	40	Tak	Buff	vfg	clay		qtz			Buff clay and minor clear quartz.	0.44
	40	42	Tak	Buff	vfg	clay		qtz			Buff clay and minor clear quartz.	0.65
	42	44	Tak	Buff	fg	clay	qtz				Buff clay-rich fine grained sandstone.	0.48
	44	46	Tak	Buff	vfg	clay		qtz			Buff clay and minor clear quartz.	0.39
	46	48	Tak	Buff	vfg	clay	qtz				Buff clay and clear quartz.	0.37
	48	50	Tak	Buff	vfg	clay		qtz			Buff clay and clear quartz.	0.84
	50	52	Tak	Buff	mg	clay	qtz				Buff clay-rich medium grained sandstone.	0.48
	52	54	Tak	Buff	mg	clay	qtz				Buff clay-rich medium grained sandstone.	0.39
	54	56	Tak	Buff	fg	clay	qtz				Buff clay-rich fine grained sandstone.	0.28
	56	58	Tak	Yw	fg	clay	qtz	lim			Yellow clay-rich limonite, fine grained sandstone.	0.16

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	58	60	Tak	Buff	vfg	clay		qtz, lim			Buff limonite clay and minor clear quartz.	0.09
	60	62	Tak	Buff	vfg	clay		qtz			Buff clay and minor clear quartz.	0.36
	62	64	Tak	Buff	vfg	clay		qtz, lim			Buff limonite clay and minor clear quartz.	0.30
	64	66	Tak	Buff	vfg	clay		qtz, lim			Buff limonite clay and minor clear quartz.	0.39
	66	68	Tak	Buff	vfg	clay		qtz, lim			Buff limonite clay and minor clear quartz.	0.27
	68	70	Tak	Buff	vfg	clay		qtz, lim			Buff limonite clay and minor clear quartz.	0.11
	70	72	Tak	Buff	vfg	clay		qtz, lim			Buff limonite clay and minor clear quartz.	0.84
	72	74	Tak	Buff	fg	clay	qtz		lim		Buff clay-rich fine grained (limonite) sandstone.	0.17
	74	76	Tak	Buff	fg	clay	qtz		lim		Buff clay-rich fine grained (limonite) sandstone and minor coarse quartz.	0.15
	76	78	Tak	Buff	fg	clay	qtz		lim		Buff clay-rich fine grained (limonite) sandstone.	0.14
	78	80	Tak	Buff	fg	clay	qtz		lim		Buff clay-rich fine grained (limonite) sandstone.	0.56
	80	82	Tak	Buff	mg	clay	qtz		lim		Buff clay-rich fine grained (limonite) sandstone.	0.28
	82	84	Tak	Buff	mg	clay	qtz		lim		Buff clay-rich fine grained (limonite) sandstone.	0.53
	84	86	Tak	Buff	cg	clay	qtz		lim		Buff clay-rich fine grained (limonite) sandstone.	0.44
	86	88	Tak	Buff	fg	clay	qtz		lim		Buff clay-rich fine grained (limonite) sandstone.	0.35
	88	90	Tak	Buff	fg	clay	qtz		lim		Buff clay-rich fine grained (limonite) sandstone and minor coarse quartz.	0.42
	90	92	Tak	Buff	vfg	clay		qtz, lim			Buff limonite clay and minor clear quartz.	0.44
	92	94	Tak	Wht	vfg	clay		qtz			White kaolinite and very fine grained quartz.	0.64
	94	96	Tak	Buff	fg	clay	qtz		lim		Buff clay-rich fine grained (limonite) sandstone and minor coarse grained quartz grits.	0.51
	96	98	Tak	Buff	fg	clay	qtz				Buff clay-rich fine grained sandstone.	0.37
	98	100	Tak	Buff	fg	clay	qtz	feld	lim		Buff clay-rich fine grained (limonite) sandstone.	0.11
	100	102	Tak	Buff	fg	clay	qtz	feld	lim		Buff clay-rich fine grained (limonite) sandstone and minor coarse quartz.	0.39
	102	104	Tak	Yw/grn	fg	clay		qtz/feld			Yellow green very fine grained clay with coarse quartz/feldspar grains.	0.81
	104	106	Tak	Yw	fg	clay	qtz	lim			Yellow clay-rich limonite fine grained sandstone.	0.23
	106	108	Tak	Yw	fg	clay	qtz	lim			Yellow clay-rich limonite fine grained sandstone.	0.31
	108	110	tpg	Ple grn	fg	kaol	qtz, ser,chl				Very coarse grained basal conglomerate (qtz+feld), pale green fine grained foliated amphibole (?) gneiss with quartz veining.	0.55

TIE RC21 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC21	0	2	Qs	Rd	cg		qtz				Red alluvial sand and coarse grained quartz alluvial gravel.	0.62
	2	4	Taq	Rd-brn	cg		qtz				Coarse grained quartz-rich alluvial gravel and dark brown indurated clay (?)	0.29
	4	6	Taq	Rd-brn	cg		qtz				Coarse grained quartz-rich alluvial gravel and dark brown indurated clay (?)	0.52
	6	8	Taq/Tak	Wht	fg		kao	qtz			White kaolinised basement (?) and minor coarse grained quartz alluvium.	0.29
	8	10	Tak	Wht	fg		kao	qtz			White kaolinised basement (?)	0.34
	10	12	Tak	Wht	fg		kao	qtz			White kaolinised basement (?)	0.44
	12	14	Tak	Wht	fg		kao	qtz, feld			White kaolinised basement (?)	0.34
	14	16	Tak	Wht	fg		kao, qtz, feld				White kaolinised basement (?)	0.34
	16	18	Tak	Wht	fg		kao, qtz, feld				White kaolinised basement (?)	0.50
	18	20	Tpn	Ple grn	fg		kao, qtz, feld				Pale green kaolinised granitic gneiss (?)	0.39
	20	22	Tpn	Ple grn	fg		kao, feld	qtz			Pale green kaolinised granitic gneiss (?)	0.40
	22	24	Tpn	Ple grn	fg		kao, feld	qtz			Pale green kaolinised granitic gneiss (?)	0.55
	24	26	Pgn	Rd	fg		feld	qtz			Red Fe-altered feldspar/qtz granitic gneiss.	1.36
	26	28	Pgn	Yw-brn	fg		feld, qtz, lim		chl		Yellow/brown fine grained massive limonite altered granitic gneiss.	0.77
	28	30	Pgn	Yw-brn	fg		feld, qtz, lim		chl, mang		Yellow/brown fine grained massive limonite altered granitic gneiss.	0.89
	30	32	Pgn	Yw-brn	fg		feld, qtz, lim	bio			Yellow/brown fine grained massive limonite altered granitic gneiss and black graphitic (?) scum (very wet, B.O.C.O.).	0.96
	32	34	Pgn	Pk	fg		feld,qtz	bio			Pink fine grained granitic gneiss (very wet).	0.84
	34	36	Pgn	Pk	fg		feld,qtz	bio			Pink fine grained granitic gneiss (very wet).	1.23
	36	38	Pgn	Pk	fg		feld,qtz	bio	lim/clay		Pink fine grained granitic gneiss and minor altered limonite (very wet).	0.74
	38	40	Pgn	Pk	fg		feld,qtz	bio, lim	clay		Pink fine grained granitic gneiss and minor altered limonite (very wet).	1.26
	40	42	Pgn	Pk	fg		feld,qtz	bio, lim	clay		Pink fine grained granitic gneiss and minor altered limonite (very wet).	1.02
	42	44	Pgn	Pk	fg		feld,qtz	bio, lim	ep		Pink fine grained granitic gneiss, minor altered limonite and trace epidote veins (very wet).	0.75
	44	46	Pgn	Pk	fg		feld,qtz	bio, lim	clay		Pnk fg granitic gneiss + com lim alt(very wet)	0.69
	46	48	Pgn	Pk	fg		feld,qtz	bio, chl, ep			Pink fine grained granitic gneiss-epidote/chlorite altered alt and breccia (very wet) (B.O.P.O.).	0.98

TIE RC22 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC22	0	2	Qs/Tpq	Rd	fg		qtz, silica	clay			Red alluvial sand and white fine grained gritty silcrete.	0.60
	2	4	Tpq	Rd/wht	fg		qtz, silica	clay			Red alluvial sand and white fine grained gritty silcrete.	0.51
	4	6	Tpk	Rd/brn	fg		qtz,clay	lim			Red brn very fine grained clay, minor grits and minor limonite.	0.30
	6	8	Tpq	Red/wht	fg		qtz, silica, Fe-ox	clay			Red-white fine grained gritty silcrtete/ferecrete.	0.63
	8	10	Tpq	Rd/wht	fg		qtz, silica, Fe-ox	clay			Red-white fine grained gritty silcrtete/ferecrete.	0.87
	10	12	Tap	Wht	vfg		clay, silica				White porcellanite.	0.30
	12	14	Tap	Wht	vfg		clay, silica				White porcellanite.	0.21
	14	16	Tap	Wht	vfg		clay, silica		qtz		White porcellanite and quartz.	0.16
	16	18	Pgn	Grn	fg		clay, qtz, bio				Green fine grained quartz/biotite gniess (B.O.C.O.).	0.25
	18	20	Pgn	Grn	fg		clay, qtz, bio				Green fine grained quartz/biotite gniess.	0.38
	20	22	Pgn	Grn	fg		clay, qtz, bio		feld		Green fine grained quartz/biotite gniess.	0.34
	22	24	Pgn	Yw brn	fg		clay, qtz, bio	lim	feld		Green fine grained quartz/biotite gniess with alteration to limonite.	0.39
	24	26	Pgn	Yw brn	fg		qtz, bio	lim	feld		Green fine grained quartz/biotite gniess with alteration to limonite.	1.19
	26	28	Pgn	Yw brn	fg		qtz, bio, lim	feld			Green fine grained quartz/biotite gniess with alteration to limonite.	1.97
	28	30	Pgn	Yw brn	fg		feld , qtz, bio	lim	mag		Green fine grained quartz/biotite gniess with minor alteration to limonite.	2.46
	30	32	Pgn	Yw brn	fg		feld , qtz, bio	lim	mag		Green fine grained quartz/biotite gniess with minor alteration to limonite.	2.68
	32	34	Pgn	Yw brn	fg		feld , qtz, bio	lim	mag		Green fine grained quartz/biotite gniess with minor alteration to limonite.	2.27
	34	36	Pgn	Yw brn	fg		feld , qtz, bio	lim	mag		Green fine grained quartz/biotite gniess with minor alteration to limonite.	2.48
	36	38	Pgn	Yw brn	fg		feld , qtz, bio	lim	mag		Green fine grained quartz/biotite gniess with minor alteration to limonite.	8.41
	38	40	Pgn	Yw brn	fg		feld , qtz, bio	lim	mag		Green fine grained quartz/biotite gniess with minor alteration to limonite.	12.20
	40	42	Pgn	Yw brn	fg		feld , qtz, bio	lim	mag		Green fine grained quartz/biotite gniess with minor alteration to limonite.	8.04
	42	44	Pgn	Wht	fg		feld , qtz, bio	mag	lim	py?	Green fine grained quartz/bio/tite gniess with trace limonite and pyrite (?) (B.O.P.O.)	18.70

TIE RC23 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC23	0	2	Qs	Rd	fg		qtz, pisol				Red fine grained alluvial sand and coarse grained alluvial gravel.	0.71
	2	4	Taq	Wht	fg		silica, qtz				White fine grained gritty silcrete (silic Algebuckina?).	0.40
	4	6	Tpq	Rd/wht	fg		qtz, silica	clay			Red-white fine grained gritty silcrtete.	0.18
	6	8	J-K	Rd/wht	fg		qtz	clay			Red-white fine gritty silcrtete and minor siltstone.	0.35
	8	10	J-K	Wht	fg		qtz	clay			Red-white fine gritty silcrtete and minor siltstone.	0.49
	10	12	J-K	Wht	fg		qtz	clay			Red-white fine gritty silcrtete and minor siltstone.	0.55
	12	14	J-K	Wht	fg		qtz	clay			White fine grained to medium grained gritty sandstone.	0.41
	14	16	J-K	Wht	vfg		clay	qtz			White very fine siltstone and minor sandstone beds.	0.17
	16	18	J-K	Wht	vfg		clay	qtz			White very fine siltstone and minor sandstone beds.	0.26
	18	20	J-K	Wht	vfg		clay	qtz			White very fine siltstone and minor sandstone beds.	0.25
	20	22	J-K	Wht	vfg		clay	qtz			White very fine siltstone, minor sandstone beds and minor red clay.	0.16
	22	24	J-K	Wht	vfg		clay	qtz			White very fine siltstone and minor sandstone beds.	0.21
	24	26	J-K	Wht	vfg		clay	qtz			White very fine siltstone and minor sandstone beds.	0.43
	26	28	J-K	Wht	vfg		clay				White very fine grained siltstone.	0.14
	28	30	J-K	Wht	vfg		clay				White very fine grained siltstone.	0.39
	30	32	J-K	Wht	vfg		clay				White very fine grained siltstone.	0.14
	32	34	J-K	Wht	vfg		clay		qtz		White very fine siltstone and trace sandstone beds.	0.68
	34	36	J-K	Pnk	vfg		clay				Pink very fine grained siltstone.	0.34
	36	38	J-K	Wht	vfg		clay				White very fine grained siltstone.	0.25
	38	40	J-K	Pk	vfg		clay				Pink very fine grained siltstone.	0.06
	40	42	J-K	Pk + yw	vfg		clay	lim	qtz		Pink very fine grained siltstone, trace quartz and minor alteration to limonite.	0.48
	42	44	J-K	Pk + yw	vfg		clay	lim			Pink very fine siltstone and minor alteration to limonite.	0.23
	44	46	Tpk	Yw	vfg		clay	lim			Yellow-brown very fine grained limonite clay.	0.19
	46	48	Tpk	Yw	vfg		clay	lim			Yellow-brown very fine grained limonite clay.	0.11
	48	50	Tpk	Rd	vfg		clay	Fe-ox			Yellow-brown very fine grained Fe-ox clay.	0.61
	50	52	Tpk	Pk, yw	vfg		clay	lim	qtz		Pink very fine grained siltstone, trace quartz and minor alteration to limonite.	0.76
	52	54	Tpk	Pk, yw	vfg		clay	lim	qtz		Pink very fine grained siltstone, trace quartz and minor alteration to limonite.	0.07
	54	56	Tpk	Pk, yw	vfg		clay	lim	qtz		Pink very fine grained siltstone, trace quartz and minor alteration to limonite.	0.65

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	56	58	Tpk	Pk, yw	vfg		clay	lim	qtz		Pink very fine grained siltstone, trace quartz and minor alteration to limonite.	0.27
	58	60	Pgn	Ple grn	fg		clay		qtz, bio		Pale green clay-altered feld/bio/(qtz) gneiss.	0.59
	60	62	Pgn	Yw			clay, lim		qtz, bio		Yellow very fine grained clay/limonite altered basement.	0.49
	62	64	Pgn	Yw			clay, lim		qtz, bio		Yellow very fine grained clay/limonite altered basement.	0.65
	64	66	Pgn	Ple grn	fg		clay		qtz, bio		Pale green clay altered feld/bio/(qtz) gneiss.	0.73
	66	68	Pgn	Yw			clay, lim		qtz, feld, bio		Yellow very fine grained clay/limonite altered basement.	0.86
	68	70	Pgn	Yw			clay, lim		qtz, feld, bio		Yellow very fine grained clay/limonite altered basement.	0.75
	70	72	Pgn	Grn	fg		clay		qtz, feld, bio		Green/white fine grained clay-altered qtz/feld/bio gneiss (B.O.C.O.).	0.14
	72	74	Pgn	Grn	fg		clay		qtz, feld, bio		Green/white fine grained clay-altered qtz/feld/bio gneiss.	0.39
	74	76	Pgn	Grn	fg		clay		qtz, feld, bio		Green/white fine grained clay-altered qtz/feld/bio gneiss.	0.43
	76	78	Pgn	Grn	fg		clay		qtz, feld, bio		Green/white fine grained clay-altered qtz/feld/bio gneiss.	0.34
	78	80	Pgn	Grn	fg		clay		qtz, feld, bio		Green/white fine clay-altered qtz/feld/bio gneiss.	0.51
	80	82	Pgn	Grn	fg		clay		qtz, feld, bio		Green/white fine clay-altered qtz/feld/bio gneiss.	0.54
	82	84	Pgn	Grn	fg		clay		qtz, feld, bio		Green/white fine clay-altered qtz/feld/bio gneiss.	0.61
	84	86	Pgn	Grn	fg		clay		qtz, feld, bio		Green/white fine clay-altered qtz/feld/bio gneiss.	0.54
	86	88	Pgn	Grn	fg		feld,bio	qtz			Green/white fine alkali feld/qtz/bio gneiss and coarse grained pink plagioclase-rich pegmatite.	1.10
	88	90	Pgn	Grn	fg		feld,bio	qtz			Green/white fine alkali feld/qtz/bio gneiss and coarse grained pink plagioclase-rich pegmatite.	0.95
	90	92	Pgn	Grn	fg		feld,bio	qtz, lim			Green/white fine grained alkali feld/qtz/bio gneiss and coarse grained pink plagioclase-rich pegmatite.	1.93
	92	94	Pgn	Grn	fg		feld,bio	qtz			Green/white fine alkali feld/qtz/bio gneiss and coarse grained pink plagioclase-rich pegmatite (B.O.P.O.).	2.05

TIE RC24 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC24	0	2	Qs	Rd	fg		qtz,pisol				Red fine grained alluvial sand and coarse grained alluvial gravel.	0.43
	2	4	Taq	Pk/red	fg		qtz				Pink and red fine grained indurated sandstones.	0.37
	4	6	Taq	Pk/red	fg		qtz, clay				Pink and red fine grained indurated sandstones and yellow and pink very fine grained indurated claystones (cyclone contamination).	0.23
	6	8	Taq	Pk/red	fg		qtz, clay				Pink and red fine grained indurated sandstones and yellow and pink very fine grained indurated claystones (cyclone contamination).	0.13
	8	10	J-K	Ppl/wht	vfg		clay	Fe-ox			Purple and white very fine grained Fe-ox altered claystone (Algebukina?).	0.18
	10	12	J-K	Pk/rd	fg		qtz, clay				Pink and red fine grained indurated sandstones.	0.12
	12	14	J-K	Ppl/wht	vfg		clay	Fe-ox, qtz			Purple/ white very fine grained Fe-ox altered claystone (Algebukina?) and minor red sandstone laminations.	0.06
	14	16	J-K	Yw	vfg		clay	lim			Yellow very fine limonite altered claystone (Algebukina?).	0.10
	16	18	J-K	Yw/wht	vfg		clay	lim			Yellow very fine limonite altered claystone (Algebukina?).	0.19
	18	20	J-K	Wht	vfg		clay				White very fine limonite altered claystone (Algebukina?).	0.13
	20	22	J-K	Wht + ppl	vfg		clay		qtz		White and purple very fine grained limonite altered claystone and trace siltstone (Algebukina?).	0.08
	22	24	J-K	Yw	vfg		clay	lim, qtz			Yellow very fine grained limonite altered siltstone (Algebukina?).	0.09
	24	26	J-K	Yw	vfg		clay, qtz	lim			Yellow very fine grained limonite altered siltstone (Algebukina?).	0.21
	26	28	J-K	Pk/wht	vfg		clay	Fe-ox			Pink and white very fine grained Fe-ox altered claystone (Algebukina?).	0.24
	28	30	J-K	Pk/wht	vfg		clay	Fe-ox			Pink and white very fine Fe-ox claystone (Algebukina?) and red sandstone laminations.	0.15
	30	32	Tpk	Pk/wht	vfg		clay	qtz			Pink and white clay and minor clear quartz girts (altered Algebuckina?).	0.22
	32	34	Tpk	Pk/wht	vfg		clay	qtz			Pink and white clay and minor clear quartz girts (altered Algebuckina?).	0.53
	34	36	Tpk	Pk/wht	vfg		clay	qtz			Pink and white clay and minor clear quartz girts (altered Algebuckina?).	0.15
	36	38	Tpk	Wht	vfg		clay		qtz		White very fine grained clay and trace clear quartz grits (altered Algebuckina?)	0.17

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	38	40	Tpk	Wht	vfg		clay				White very fine grained clay (altered Algebuckina?)	0.07
	40	42	Tpk	Wht	vfg		clay				White very fine grained clay (altered Algebuckina?)	0.10
	42	44	Tpk	Wht	vfg		clay		qtz		White very fine grained clay and trace clear quartz grits (altered Algebuckina?)	0.08
	44	46	Tpk	Wht	vfg		clay		qtz		White very fine grained clay and trace clear quartz grits (altered Algebuckina?)	0.55
	46	48	Tpk	Wht	vfg		clay				White very fine grained clay (altered Algebuckina?)	0.07
	48	50	Tpk	Wht	vfg		clay				White very fine grained clay (altered Algebuckina?)	0.16
	50	52	Tpk	Wht	vfg		clay		qtz		White very fine grained clay and trace clear quartz grits (altered Algebuckina?)	0.12
	52	54	Tpk	Wht	vfg		clay	qtz			White very fine grained clay and trace clear quartz grits (altered Algebuckina?)	0.32
	54	56	Tpk	Wht	vfg		clay, qtz				White very fine grained clay, clear and smokey quartz gravel (alt Algebuckina?)	0.49
	56	58	Tpk	Wht	vfg		clay		qtz		White very fine grained clay and trace clear quartz grits (altered Algebuckina?)	0.81
	58	60	Tpk	Wht	vfg		clay	qtz			White very fine grained clay, clear and smokey quartz gravel (alt Algebuckina?)	0.60
	60	62	Tpk	Wht	vfg		clay	qtz			White very fine grained clay, clear and smokey quartz gravel (alt Algebuckina?)	0.77
	62	64	Tpk	Wht	vfg		clay	qtz			White very fine grained clay, clear and smokey quartz gravel (alt Algebuckina?)	1.15
	64	66	Tpk	Wht	vfg		clay	qtz			White very fine grained clay, clear and smokey quartz gravel (alt Algebuckina?)	0.95
	66	68	Tpk	Wht	vfg		clay				White very fine grained clay (altered Algebuckina?)	0.29
	68	70	Tpk	Wht	vfg		clay	qtz			White very fine clay and minor clear/smokey quartz (altered Algebuckina?)	0.49
	70	72	Tpk	Wht	vfg		clay, qtz				White very fine clay and minor clear/smokey quartz (altered Algebuckina?)	0.76
	72	74	Tpk	Wht	vfg		clay		qtz		White very fine grained clay and trace clear quartz grits (altered Algebuckina?) (wet sample).	0.15
	74	76	Tpk	Wht	vfg		clay		qtz		White very fine grained clay and trace clear quartz grits (altered Algebuckina?) (wet sample).	0.28
	76	78	Tpk	Wht	vfg		clay		qtz		White very fine grained clay and trace clear quartz grits (altered Algebuckina?) (wet sample).	0.13
	78	80	Tpk	Wht	vfg		clay		qtz		White very fine grained clay and trace clear quartz grits (altered Algebuckina?) (wet sample).	0.15

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	80	82	Tpk	Wht	vfg		clay		qtz		White very fine grained clay and trace clear quartz grits (altered Algebuckina?) (wet sample).	0.29
	82	84	Tpk	Wht	vfg		clay		qtz		White very fine grained clay and trace clear quartz grits (altered Algebuckina?) (wet sample).	0.38
	84	86	Tpk	Wht	vfg		clay		qtz		White very fine grained clay and trace clear quartz grits (altered Algebuckina?) (wet sample).	0.23
	86	88	Tpk	Wht	vfg		clay		qtz		White very fine grained clay and trace clear quartz grits (altered Algebuckina?) (wet sample).	0.20
	88	90	Tpk	Wht	vfg		clay		qtz		White very fine grained clay and trace clear quartz grits (altered Algebuckina?) (wet sample).	0.27
	90	92	Tpk	Wht	vfg		clay		qtz		White very fine grained clay and trace clear quartz grits (altered Algebuckina?) (wet sample) and a single altered mafic clast.	0.23
	92	94	Pgn	Grn	vfg		clay, bio?,chl	qtz/feld	am?		Green clay/chlorite altered quartz/feldspar amphibole gneiss (B.O.C.O.)	0.15
	94	96	Pgn	Grn	vfg		clay, bio?,chl	qtz/feld	am?		Green clay/chlorite altered quartz/feldspar amphibole gneiss.	0.11
	96	98	Pgn	Grn	vfg		clay, bio?,chl	qtz/feld	am?		Green clay/chlorite altered quartz/feldspar amphibole gneiss.	0.25
	98	100	Pgn	Grn	vfg		clay, bio?,chl	qtz/feld	am		Green clay/chlorite altered quartz/feldspar amphibole gneiss.	0.21
	100	102	Pgn	Grn	fg		bio	am/qtz/feld			Green clay/chlorite altered quartz/feldspar amphibole gneiss (B.O.P.O.).	2.23
	102	104	Pgn	Grn	fg		bio	am/qtz/feld			Green clay/chlorite altered quartz/feldspar amphibole gneiss.	9.41

TIE RC25 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC25	0	2	Qs	Rd	fg		qtz, pisol				Red fine grained alluvial sand and coarse grained alluvial gravel.	1.00
	2	4	Pgn	Wht	fg	feld/qtz		bio	mag		White fine grained quartz/feldspar/biotite granitic gneiss (B.O.C.O.).	3.05
	4	6	Pgn	Wht	fg	qtz	feld	bio	mag		White fine grained quartz/feldspar/biotite granitic gneiss.	2.63
	6	8	Pgn	Wht	fg	qtz	feld	bio, hbl	mag		White fine grained quartz/feldspar/biotite granitic gneiss.	3.13
	8	10	Pgn	Wht	fg	qtz	feld	bio, hbl	mag		White fine grained quartz/feldspar/biotite granitic gneiss.	2.50
	10	12	Pgn	Wht	fg	qtz	feld	bio	mag		White fine grained quartz/feldspar/biotite granitic gneiss (B.O.P.O.)	1.20
	12	14	Pgn	Wht	fg	qtz	feld	bio	mag		White fine grained quartz/feldspar/biotite granitic gneiss.	1.86
	14	16	Pgn	Wht	fg	qtz	feld	bio	mag		White fine grained quartz/feldspar/biotite granitic gneiss.	1.25
	16	18	Pgn	Wht	fg	qtz	feld	bio	mag		White fine grained quartz/feldspar/biotite granitic gneiss.	2.00

TIE RC26 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC26	0	2	Qs/Pgn	Rd	fg		qtz, feld				Red, fine grained alluvial sand, minor coarse alluvial gravel and white, fine qtz/feld/bio granitic gneiss.	0.32
	2	4	Pgn	Wht	fg	qtz	feld	bio			White fine grained qtz/feld/bio granitic gneiss.	0.28
	4	6	Pgn	Wht	fg	qtz	feld	bio	Fe-ox		White fine grained qtz/feld/bio granitic gneiss, trace ferruginous veins and minor red sand contamination.	0.42
	6	8	Pgn	Wht	fg	qtz	feld	bio	Fe-ox		White fine grained qtz/feld/bio granitic gneiss and trace ferruginous veins.	0.53
	8	10	Pgn	Wht	fg	qtz	feld	bio			White fine grained qtz/feld/bio granitic gneiss (B.O.C.O.).	0.46
	10	12	Pgn	Wht	fg	qtz	feld		bio		White fine grained qtz/feld/bio granitic gneiss.	0.38
	12	14	Pgn	Wht	fg	qtz	feld		bio		White fine grained qtz/feld/bio granitic gneiss.	0.60
	14	16	Pgn	Wht	fg	qtz	feld	bio			White fine grained qtz/feld/bio granitic gneiss and granite with coarse feld.	0.85
	16	18	Pgn	Wht	fg	qtz	feld	bio	Fe-ox		White fine grained qtz/feld/bio granitic gneiss, trace ferruginous veins and granite with coarse grained feldspar.	1.17
	18	20	Pgn	Wht	fg	qtz	feld		bio		White fine grained qtz/feld/bio granitic gneiss and granite with coarse feld.	0.68
	20	22	Pgn	Wht	fg	qtz	feld		bio		White fine grained qtz/feld/bio granitic gneiss and granite with coarse feld.	0.90
	22	24	Pgn	Wht	fg	qtz	feld		bio, amp		White fine grained quartz/feld/bio granitic gneiss and pink medium grained porphyritic feld/qtz granite with trace black very fine grained biotite/amphibole gneiss.	0.99
	24	26	Pgn	Wht	fg	qtz	feld		bio		White fine grained qtz/feld/bio granitic gneiss.	0.93
	26	28	Pgn	Wht	fg	qtz	feld		bio		White fine grained quartz/feld/bio granitic gneiss and pink medium grained porphyritic feld/qtz granite (B.O.P.O.).	1.07
	28	30	Pgn	Wht	fg	qtz	feld		bio, amp		White fine grained quartz/feld/bio granitic gneiss and pink medium grained porphyritic feld/qtz granite with trace black very fine grained biotite/amphibole gneiss.	4.73

TIE RC27 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC27	0	2	Qa/J-k	Pk	vfg	clay		qtz			Minor red sand, coarse grained alluvium and pink clay (Algebuckina?)	0.23
	2	4	J-K	Yw	vfg	clay		qtz			Yellow clay and minor quartz grits (Algebuckina?)	0.12
	4	6	J-K	Yw	vfg	clay		qtz			Yellow clay and minor quartz grits (Algebuckina?)	0.07
	6	8	J-K	Yw	vfg	clay		qtz			Yellow clay and minor quartz grits (Algebuckina?)	0.18
	8	10	Tpn	Buff	vfg	clay		qtz	bio		Buff kaolin altered quartz/feld (?)/biotite gneiss (B.O.C.O.).	1.17
	10	12	Pgn	Wht	fg		qtz, feld		bio		White fine grained qtz/feld/bio gneiss.	3.03
	12	14	Pgn	Wht	mg		qtz, feld		bio, mag		White fine grained qtz/feld/bio adamellite (?).	2.40
	14	16	Pgn	Pk	mg		qtz, feld	bio, am	ep, mag		Pink medium grained quartz/feld/bio adamellite (?) and black-green very fine grained qtz/amp/bio gneiss with trace epidote veins (B.O.P.O.)	9.08
	16	18	Pgn	Pk	mg		qtz, feld	bio, am	ep, mag		Pink medium grained quartz/feld/bio adamellite (?) and black-green very fine grained qtz/amp/bio gneiss with trace epidote veins (B.O.P.O.)	9.46
	18	20	Pgn	Grn	mg		qtz, amp, bio	feld	mag		Black-green very fine grained qtz/amp/bio gneiss.	5.34
	20	22	Pgn	Pk	mg		qtz, feld	bio, am, mag			Pink medium grained qtz/feld/bio granitic gneiss (?) and black-green very fine grained qtz/amp/bio gneiss.	7.59
	22	24	Pgn	Pk	mg		qtz, feld	mag	bio, amp		Pink medium grained qtz/feld/bio granitic gneiss (?) and black-green very fine grained qtz/amp/bio gneiss.	2.87

TIE RC28 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC28	0	2	J-K	Buff/Red	fg		clay/qtz				Fine grained banded clay-rich sandstone with trace quartz (Algebuckina).	0.35
	2	4	J-K	Buff/Red	fg		clay/qtz				Fine grained banded clay-rich sandstone with trace quartz (Algebuckina).	0.22
	4	6	J-K	Buff/Red	fg		clay/qtz				Fine grained banded clay-rich sandstone with trace quartz (Algebuckina).	0.11
	6	8	J-K	Buff/Red	fg		clay/qtz				Fine grained banded clay-rich sandstone with trace quartz (Algebuckina).	0.08
	8	10	J-K	Buff/Red	fg		clay/qtz				Fine grained banded clay-rich sandstone with trace quartz (Algebuckina).	0.12
	10	12	J-K	Buff/Red	fg		clay/qtz				Fine grained banded clay-rich sandstone with trace quartz (Algebuckina).	0.07
	12	14	J-K	Buff/Red	fg		clay/qtz				Fine grained banded clay-rich sandstone with trace quartz (Algebuckina).	0.20
	14	16	J-K	Buff/Red	fg		clay/qtz				Fine grained banded clay-rich sandstone with trace quartz (Algebuckina).	0.10
	16	18	J-K	Buff/Red	fg		clay/qtz				Fine grained banded clay-rich sandstone with trace quartz (Algebuckina).	0.17
	18	20	J-K	Buff	fg		clay/qtz				Fine grained banded clay-rich sandstone with trace quartz (Algebuckina).	0.07
	20	22	J-K	Buff/Red	fg		clay/qtz				Fine grained banded clay-rich sandstone with trace quartz (Algebuckina).	0.22
	22	24	J-K	Buff/Red	fg		clay/qtz				Fine grained banded clay-rich sandstone with trace quartz (Algebuckina).	0.34
	24	26	J-K	Buff/Red	fg		clay/qtz				Fine grained banded clay-rich sandstone with trace quartz (Algebuckina).	0.17
	26	28	J-K	Buff	fg		clay/qtz				Creme fine grained banded clay-rich sandstone and quartz grits (Algebuckina).	0.27
	28	30	J-K	Buff	fg		clay/qtz	lim			Creme fine grained banded clay-rich sandstone and quartz grits (Algebuckina).	0.52
	30	32	J-K	Buff/Red	fg		clay/qtz				Fine grained banded clay-rich sandstone with trace quartz (Algebuckina).	0.32
	32	34	J-K	Buff/Red	fg		clay/qtz				Fine grained banded clay-rich sandstone with trace quartz (Algebuckina).	0.58
	34	36	J-K	Buff	fg		clay/qtz				Creme fine grained banded clay-rich sandstone and quartz grits (Algebuckina).	0.49
	36	38	J-K	Buff	fg		clay/qtz				Creme fine grained banded clay-rich sandstone and quartz grits (Algebuckina).	0.17
	38	40	J-K	Buff	fg		clay/qtz				Creme fine grained banded clay-rich sandstone and quartz grits (Algebuckina).	0.14

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	40	42	J-K	Buff	fg		clay/qtz				Creme fine grained banded clay-rich sandstone and quartz grits (Algebuckina).	0.38
	42	44	J-K	Buff	fg		clay/qtz				Creme fine grained banded clay-rich sandstone and quartz grits (Algebuckina).	0.15
	44	46	J-K	Buff	fg		clay/qtz				Creme fine grained banded clay-rich sandstone and quartz grits (Algebuckina).	0.25
	46	48	J-K	Buff	fg		clay/qtz				Creme fine grained banded clay-rich sandstone and quartz grits (Algebuckina).	0.09
	48	50	J-K	Buff	fg		clay/qtz				Creme fine grained banded clay-rich sandstone and quartz grits (Algebuckina).	0.09
	50	52	J-K	Buff	fg		clay/qtz				Creme fine grained banded clay-rich sandstone and quartz grits (Algebuckina).	0.25
	52	54	J-K	Buff	fg		clay/qtz				Creme fine grained banded clay-rich sandstone and quartz grits (Algebuckina).	0.46
	54	56	J-K	Buff	fg		clay/qtz				Creme fine grained banded clay-rich sandstone and quartz grits (Algebuckina).	0.20
	56	58	J-K	Buff	fg		clay/qtz				Creme fine grained banded clay-rich sandstone and quartz grits (Algebuckina).	0.16
	58	60	J-K	Buff	fg		clay/qtz				Creme fine grained banded clay-rich sandstone and quartz grits (Algebuckina).	0.29
	60	62	J-K	Buff/Yw	fg		clay/qtz				Creme fine grained banded clay-rich sandstone and quartz grits (Algebuckina).	0.63
	62	64	J-K	Buff/Yw	fg		clay/qtz				Creme fine grained banded clay-rich sandstone and quartz grits (Algebuckina).	0.32
	64	66	J-K	Buff	fg		clay/qtz				Fine grained banded clay-rich sandstone with trace quartz (Algebuckina).	0.82
	66	68	J-K	Buff/Yw	fg		clay/qtz				Fine grained banded clay-rich sandstone with trace quartz (Algebuckina).	0.51
	68	70	J-K	Buff/Yw	fg		clay/qtz				Fine grained banded clay-rich sandstone with trace quartz (Algebuckina).	0.39
	70	72	J-K	Buff/Yw	fg		clay/qtz				Fine grained banded clay-rich sandstone with trace quartz (Algebuckina).	0.12
	72	74	J-K	Buff	fg		clay/qtz				Fine grained banded clay-rich sandstone with trace quartz (Algebuckina).	0.09
	74	76	J-K	buff/yell	fg		clay/qtz				Fine grained banded clay-rich sandstone with trace quartz (Algebuckina).	0.52
	76	78	J-K	Buff	fg		clay/qtz				Fine grained banded clay-rich sandstone with trace quartz (Algebuckina).	0.40
	78	80	J-K	Buff	fg		clay/qtz				Creme fine grained banded clay-rich sandstone, quartz grits and a minor ferruginous zone (Algebuckina).	0.57

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	80	82	J-K	Buff	fg		clay/qtz				Creme fine grained banded clay-rich sandstone, quartz grits and a minor ferruginous zone (Algebuckina).	0.24
	82	84	J-K	Buff	fg		clay/qtz				Creme fine grained banded clay-rich sandstone and quartz grits (Algebuckina).	0.42
	84	86	J-K	Buff	fg		clay/qtz				Creme fine grained banded clay-rich sandstone, quartz grits and a minor ferruginous zone (Algebuckina).	0.33
	86	88	J-K	Buff/yw	fg		clay/qtz				Fine grained banded clay-rich sandstone with trace quartz (Algebuckina), deep weathered basement.	0.23
	88	90	J-K	Buff/yw	fg		clay/qtz				Creme fine grained banded clay-rich sandstone and trace clear quartz grits. (Algebuckina)	0.18
	90	92	J-K	Dk brn	fg		clay, black min.				Dark brown clay wth black mineral, possibly anthracite/sulphides-pyrite (?).	0.24
	92	94	J-K	Dk brn	fg		clay, black min.				Dark brown clay wth black mineral - anthracite (?).	0.20
	94	96	J-K	Buff/yw	fg		clay/qtz				Darker creme fine grained banded clay-rich sandstone and trace clear quartz grits and cherts.	0.61
	96	98	J-K	Buff/yw	fg		clay/qtz				Darker creme fine grained banded clay-rich sandstone and trace clear quartz grits and cherts.	0.84
	98	100	pgn	Buff/yw	fg		clay qtz fsp	bt mu	alt ep?		Weathered feldspar, biotite, and quartz granitic gneiss.	0.26
	100	102	pgn	Buff/yw	fg		fsp bt qtz	mu			Feldspar/biotite/quartz granitic gneiss.	0.90

TIE RC29 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC29	0	2	J-K	Rd/buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	1.14
	2	4	J-K	Buff/yw	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.43
	4	6	Pgn	Brn	fg-mg		qtz, clay	bio			Weathered basement (?).	0.28
	6	8	Pgn	-	fg-mg		qtz, feld, clay	bio, ep			Weathered granite	0.7
	8	10	Pgn	-	fg-mg		feld, bio, qtz	ep			Weathered gneissic granite	1.19
	10	12	Pgn	-	fg-mg		qtz, bio, ep, feld				Fine grained gneiss with possible epidote alteration.	9.03
	12	13	Pgn	-	fg-mg		qtz, bio, ep, feld				Fine grained gneiss with possible epidote alteration.	12.3

TIE RC30 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC30	0	2	Pgn	-	fg-mg		qtz, feld, clay	bio			Weathered granite (?).	0.69
	2	4	Pgn	-	fg-mg		qtz, feld, bio				Granite	0.6
	4	6	Pgn	-	fg-mg		qtz, feld, bio				Granite	0.78
	6	8	Pgn	-	fg-mg		qtz, feld, bio	mus			Gneiss	13.3
	8	9	Pgn	-	fg-mg		qtz, feld, bio	mus			Gneiss	13.3

TIE RC31 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC31	0	2	Pgn	-	fg-mg		qtz, feld, clay	bio, mus			Weathered granite (?)	4.76
	2	4	Pgn	-	fg-mg		qtz, feld, clay	bio, mus			Weathered granite (?)	0.51
	4	6	Pgn	-	fg-mg		qtz, feld	bio, mus			Weathered granite	5.27
	6	8	Pgn	-	fg-mg		qtz, feld, bio	mus			Foliated granite-gneiss	6.72
	8	10	Pgn	-	fg-mg		qtz, feld, bio	mus			Interleaved granite and gneiss	3.55

TIE RC32 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC32	0	2	Pgn	-	fg-mg		qtz, bio, am, clay				Weathered basement	3.04
	2	4	Pgn	-	fg-mg		qtz, bio, am, clay				Weathered granite/gneiss	6.24
	4	6	Pgn	-	fg-mg		qtz, bio, mus				Gneiss	15
	6	8	Pgn	-	fg-mg		qtz, bio, mus				Gneiss	19.1
	8	10	Pgn	-	fg-mg		qtz, bio, mus				Gneiss	4.66
	10	12	Pgn	-	fg-mg		qtz, bio, mus				Gneiss	8.84

TIE RC33 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC33	0	2	J-K	Rd/buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.64
	2	4	J-K	Wht	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.04
	4	6	J-K	Wht	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.05
	6	8	J-K	Wht	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.08
	8	10	J-K	Wht	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.1
	10	12	Pgn	Wht	fg		clay, qtz	feld ?			Creme fine grained banded clay-rich sandstone and trace clear qtz grits, possibly weathered basement.	0.19
	12	14	Pgn	Wht / yw	fg		clay, qtz, feld				Creme fine grained clay and weathered basement.	0.12
	14	16	Pgn	Wht / yw	fg		clay, qtz, feld				Creme fine grained clay and weathered basement.	0.14
	16	18	Pgn	Wht / yw	fg		clay, qtz, feld				Creme fine grained clay and weathered basement.	0.15
	18	20	Pgn	Wht / yw	fg		clay, qtz, feld				Creme fine grained clay and weathered basement.	0.15
	20	22	Pgn	Buff	fg		clay, qtz, feld	bio			Creme fine grained clay and weathered basement.	0.18
	22	24	Pgn	Buff	fg		clay, qtz, feld	bio			Creme fine grained clay and weathered basement.	0.16
	24	26	Pgn	Buff	fg		clay, qtz, feld	bio			Creme fine grained clay and weathered basement.	0.16
	26	28	Pgn	Buff	fg		clay, qtz, feld	bio			Creme fine grained clay and weathered basement.	0.12
	28	30	Pgn	Buff	fg		clay, qtz, feld	bio			Creme fine grained clay and weathered basement.	0.14
	30	32	Pgn	Buff	fg		clay, qtz, feld	bio			Creme fine grained clay and weathered basement.	0.32
	32	34	Pgn	Buff	fg		clay, qtz, feld	bio			Creme fine grained clay and weathered basement.	0.31
	34	36	Pgn	Buff	fg		clay, qtz, feld	bio			Creme fine grained clay and weathered basement.	0.33
	36	38	Pgn	Buff	fg		clay, qtz, feld	bio			Weathered granite.	0.24
	38	40	Pgn	Buff	fg		feld, qtz	bio			Weathered granite.	0.31
	40	42	Pgn	Buff	fg		feld, qtz	bio			Weathered granite.	0.29
	42	44	Pgn	Buff	fg		feld, qtz, bio				Granite and gneiss.	0.36
	44	46	Pgn	Buff	fg		feld, qtz, bio mus				Granite	0.27
	46	48	Pgn	Buff	fg		feld, qtz, bio mus				Granite and possible metallic mineral.	0.35
	48	49	Pgn	Buff	fg		feld, qtz, bio, mus				Granite and small fne grained biotite, muscovite, and chlorite shears. Possible graphitic staining on feldspar.	0.29

TIE RC34 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC34	0	2	J-K	Rd/buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina?).	2.06
	2	4	Pgn	Rd	fg		clay, qtz, feld				Fine grained clay and trace clear qtz grits, weathered basement.	1.35
	4	6	Pgn	Rd	fg		clay, qtz, feld				Fine grained clay and trace clear qtz grits, weathered basement.	0.83
	6	8	Pgn	Rd	fg		clay, qtz, feld				Fine grained clay and trace clear qtz grits, weathered basement.	0.46
	8	10	Pgn	Rd	fg		clay, qtz, feld				Fine grained clay and trace clear qtz grits, weathered basement.	0.73
	10	12	Pgn	Rd	fg		clay, qtz, feld				Fine grained clay and trace clear qtz grits, weathered basement, less clay.	0.36
	12	14	Pgn	Brn	fg		clay, qtz, feld	bio			Weathered granite.	0.43
	14	16	Pgn	Brn	fg		clay, qtz, feld	bio			Weathered granite.	0.29
	16	18	Pgn	Brn	fg		clay, qtz, feld	bio			Weathered granite.	0.13
	18	20	Pgn	Brn	fg		clay, qtz, feld	bio			Weathered granite.	0.15
	20	22	Pgn	Brn	fg		clay, qtz, feld	bio			Weathered granite.	0.33
	22	24	Pgn	Brn	fg		feld, qtz	bio, hbl			Granite	0.37
	24	26	Pgn	Brn	fg		fsp qtz	bio, hbl			Granite with ferruginous/ sulphide metallic coating.	0.52
	26	28	Pgn	Brn	fg		feld, qtz, bio, hbl				Granite with slight ferruginous/ sulphide metallic coating.	4.56
	28	30	Pgn	Brn	fg		feld, qtz, bio, hbl				Granite	2.91
	30	31	Pgn	Brn	fg		feld, qtz, bio, hbl				Granite	1.83

TIE RC35 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC35	0	2	J-K	Buff/pk	fg		clay, qtz				Sandstone and trace clear qtz grits, silicified surficial material (silcrete).	2.69
	2	4	pgn	Buff	fg-mg		feld, qtz, bio, mus				Weathered granite.	1.29
	4	6	pgn	Buff	fg-mg		feld, qtz, bio, mus	ep			Medium to coarse grained granite.	4.87
	6	8	pgn	Buff	fg-mg		feld, qtz, bio, mus	ep			Medium to coarse grained granite.	4.45
	8	10	pgn	Buff	fg-mg		feld, qtz, bio, mus	ep			Medium to coarse grained granite.	4.38
	10	12	pgn	Buff	fg-mg		feld, qtz, bio, mus	ep			Medium to coarse grained granite.	4.17
	12	14	pgn	Buff	fg-mg		feld, qtz, bio, mus	ep			Medium to coarse grained granite.	4.75
	14	16	pgn	Blk	vfg		Too fine to see				Very fine grained mafic dyke with possible chlorite alteration.	5.22
	16	18	pgn	Blk	vfg		am, hbl				Very fine grained mafic dyke with possible chlorite alteration.	10.3
	18	19	pgn	Blk	vfg		am, hbl				Very fine grained mafic dyke with possible chlorite alteration.	9.48

TIE RC36 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC36	0	2	J-K	Buff/pk	fg		clay, qtz				Sandstone and trace clear quartz grits, silicified surficial material (silcrete and weathered granite).	5.1
	2	4	pgn	Buff	fg-mg		feld, qtz, bio, mus				Medium to coarse grained granite.	2.87
	4	6	pgn	Buff	fg-mg		feld, qtz, bio, mus				Medium to coarse grained granite.	8.86

TIE RC37 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC37	0	2	J-K	Buff/pk	fg		clay, qtz				Sandstone and trace clear qtz grits, silicified surficial material (silcrete and weathered granite.	2.09
	2	4	j-K	Buff-brn	fg-mg		clay, qtz, feld				Clays and weathered granite.	0.21
	4	6	pgn	Buff-brn	fg-mg		qtz, feld	ep			Granite	0.44
	6	8	pgn	Buff-brn	fg-mg		qtz, feld	bio			Granite	4.1
	8	10	pgn	Buff-brn	fg-mg		qtz, feld, bio	ep			Granite, damp sample	3.97
	10	12	pgn	Buff-brn	fg-mg		qtz, feld, bio	ep			Granite, wet sample	4.07
	12	14	pgn	Buff-brn	fg-mg		qtz, feld, bio	chl			Granite with chlorite alteration (?) and weathering front (wet sample).	1.25
	14	16	pgn	Buff-brn	fg-mg		qtz, feld, bio				Granite, wet sample	5.97
	16	18	pgn	Buff-brn	fg-mg		qtz, feld, bio				Granite, wet sample	11.7

TIE RC38 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC38	0	2	J-K	Buff/pk	fg		clay, qtz				Sandstone and trace clear qtz grits, silicified surficial material (silcrete and weathered granite).	2.81
	2	4	J-K	Buff/pk	fg		clay, qtz				Sandstone and trace clear qtz grits, silicified surficial material (silcrete and weathered granite).	5.65
	4	6	pgn	Buff-brn	fg-mg		fsp, qtz, bio	am?, hbl			Granite	12.4
	6	8	pgn	Buff-brn	fg-mg		fsp, qtz, bio	am?, hbl			Granite	8.74
	8	10	pgn	Buff-brn	fg-mg		fsp, qtz, bio	am?, hbl			Granite	6.2
	10	11	pgn	Buff-brn	fg-mg		fsp, qtz, bio	am?, hbl			Granite	17.1

TIE RC39 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC39	0	2	J-K	Buff/yw	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace qtz grits (Algebuckina).	0.1
	2	4	J-K	Buff/yw	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace qtz grits (Algebuckina).	0.04
	4	6	J-K	Buff/yw	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace qtz grits (Algebuckina).	0
	6	8	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace qtz grits (Algebuckina).	0.01
	8	10	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace qtz grits (Algebuckina).	0.06
	10	12	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace qtz grits (Algebuckina).	0.12
	12	14	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace qtz grits (Algebuckina).	0.08
	14	16	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace qtz grits (Algebuckina).	0.07
	16	18	J-K	Buff	fg		clay, qtz, feld				Creme fine grained banded clay-rich sandstone and trace qtz grits (Algebuckina) and weathered granite.	0.16
	18	20	J-K	Buff	fg		clay, qtz, feld				Creme fine grained banded clay-rich sandstone and trace qtz grits (Algebuckina) and weathered granite.	0.37
	20	22	pgn	Buff/brn	fg-mg		clay, qtz, feld	bio			Weathered granite	1.03
	22	24	pgn	Buff/brn	fg-mg		clay, qtz, feld	bio			Weathered granite	2.22

TIE RC40 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC40	0	2	pgn	Buff/pk	fg-mg		clay, qtz, feld				Sandstone and trace clear qtz grits silicified surficial material (silcrete and weathered granite).	0.37
	2	4	pgn	Buff/pk	fg-mg		clay, qtz, feld				Sandstone and trace clear qtz grits silicified surficial material (silcrete and weathered granite).	0.46
	4	6	pgn	Buff/brn	fg-mg		qtz, feld				Weathered granite	0.56
	6	8	pgn	Buff/brn	fg-mg		qtz, feld	bio			Granite	0.37
	8	10	pgn	Buff/brn	fg-mg		qtz, feld	bio			Granite	0.52

TIE RC41 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC41	0	2	pgn	Buff	fg-mg		clay, qtz, feld				Creme fine clay and weathered granite.	0.96
	2	4	pgn	Buff	fg-mg		clay, qtz, feld	bio			Creme fine grained clay, weathered granite and highly weathered gneiss.	0.12
	4	6	pgn	Buff	fg-mg		clay, qtz, feld	bio			Creme fine grained clay, weathered granite and highly weathered gneiss.	0.09
	6	8	pgn	Buff	fg-mg		clay, qtz, feld	bio			Creme fine grained clay, weathered granite and highly weathered gneiss.	0.14
	8	10	pgn	Buff	fg-mg		clay, qtz, feld	bio			Creme fine grained clay, weathered granite and highly weathered gneiss.	0.13
	10	12	pgn	Buff	fg-mg		clay, qtz, feld	bio			Creme fine grained clay, weathered granite and highly weathered gneiss.	0.17
	12	14	pgn	Buff	fg-mg		clay, qtz, feld	bio			Creme fine clay and weathered granite.	0.24
	14	16	pgn	Buff	fg-mg		clay, qtz, feld	bio			Creme fine clay and weathered granite.	0.33
	16	18	pgn	Buff	fg-mg		clay, qtz, feld	bio			Creme fine grained clay and slightly weathered granite.	0.5
	18	20	pgn	Buff	fg-mg		clay, qtz, feld	bio			Creme fine grained clay and slightly weathered granite.	0.39
	20	22	pgn	Buff	fg-mg		clay, qtz, feld	bio			Creme fine grained clay, weathered granite and weathered gneiss.	0.39
	22	24	pgn	Buff	fg-mg		qtz, feld, bio	clay			Granite, slightly weathered.	6.39
	24	26	pgn	Buff	fg-mg		qtz, feld, bio	clay, ep?			Granite, slightly weathered.	6.03
	26	28	pgn	Buff	fg-mg		qtz, feld, bio				Granite, slightly weathered.	3.77
	28	30	pgn	Buff	fg-mg		qtz, feld, bio				Granite, slightly weathered.	0.82
	30	31	pgn	Buff	fg-mg		qtz, feld, bio				Granite, weathered with clay filled fractures.	0.92

TIE RC42 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC42	0	2	pgn	Buff/pk	fg-mg		clay, qtz, fsp				Sandstone and trace clear qtz grits silicified surficial material (silcrete and weathered granite).	0.74
	2	4	pgn	Buff/pk	fg-mg		clay, qtz, fsp				Sandstone and trace clear qtz grits silicified surficial material (silcrete and weathered granite).	0.73
	4	6	pgn	Buff/pk	fg-mg		clay, qtz, fsp				Sandstone and trace clear qtz grits silicified surficial material (silcrete and weathered granite).	0.88
	6	8	pgn	Buff/pk	fg-mg		clay, qtz, fsp				Sandstone and trace clear qtz grits silicified surficial material (silcrete and weathered granite-gneiss).	0.84
	8	10	pgn	Buff/pk	fg-mg		clay, qtz, fsp				Clay-andstone and trace clear qtz grits silicified surficial material (silcrete and weathered granite-gneiss).	0.59
	10	12	pgn	Buff/pk	fg-mg		clay, qtz, fsp				Clay-andstone and trace clear qtz grits silicified surficial material (silcrete and weathered granite-gneiss) - possibly mafic.	0.89
	12	14	pgn	Brn-blk	fg		am, hbl, prx				Fine-medium grained mafic-ultramafic pyroxenite (?).	2.62
	14	16	pgn	Brn-blk	fg		am, hbl, prx				Fine-medium grained mafic-ultramafic pyroxenite (?).	2.51
	16	18	pgn	Brn-blk	fg		am, hbl, prx				Fine-medium grained mafic-ultramafic pyroxenite (?).	4.27
	18	20	pgn	Brn-blk	fg		am, hbl, prx				Fine-medium grained mafic-ultramafic pyroxenite (?).	3.57
	20	22	pgn	Brn-blk	fg		am, hbl, prx				Fine-medium grained mafic-ultramafic pyroxenite (?).	3.56
	22	23	pgn	Brn-blk	fg		am, hbl, prx				Fine-medium grained mafic-ultramafic pyroxenite (?).	5.75

TIE RC43 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC43	0	2	J-K	Buff/pk	fg-mg		clay, qtz, feld				Clayey sandstone and trace clear qtz grits, silicified surficial material.	0.48
	2	4	J-K	Buff/pk	fg-mg		clay, qtz, feld				Clayey sandstone and trace clear qtz grits, silicified surficial material.	0.67
	4	6	J-K	Buff/pk	fg-mg		clay, qtz, feld				Clayey sandstone and trace clear qtz grits, silicified surficial material.	0.36
	6	8	J-K	Buff/pk	fg-mg		clay, qtz, feld				Clayey sandstone and trace clear qtz grits, silicified surficial material.	0.53
	8	10	J-K	Buff/pk	fg-mg		clay, qtz, feld				Clayey sandstone, trace qtz grits and silicified surficial material-large feld grains.	0.37
	10	12	pgn	Buff/pk	fg-mg		clay, qtz, feld		dark Fe mineral		Clayey sandstone, trace clear qtz grits, silicified surficial material and qtz/feld? granite clasts.	0.34
	12	14	pgn	Buff/pk	fg-mg		clay, qtz, feld		dark Fe mineral		Clayey sandstone, trace clear qtz grits, silicified surficial material and qtz/feld? granite clasts.	0.16
	14	16	pgn	Buff/pk	fg-mg		clay, qtz, feld		dark Fe mineral		Clayey sandstone, trace clear qtz grits, silicified surficial material and qtz/feld? granite clasts.	0.23
	16	18	pgn	Buff/pk	fg-mg		clay, qtz, feld		dark Fe mineral		Clayey sandstone and trace clear qtz grits, silicified surficial material and qtz/feld? granite clasts.	0.29
	18	20	pgn	Buff/pk	fg-mg		clay, qtz, feld		dark Fe mineral		Clayey sandstone and trace qtz grits, silicified surficial material and qtz/feld? granite clasts.	0.28
	20	22	J-K	Buff/pk	fg-mg		clay, qtz, feld				Claystone and trace clear qtz grits.	0.25
	22	24	J-K	Buff/pk	fg-mg		clay, qtz, feld				Claystone and trace clear qtz grits.	0.16
	24	26	J-K	Buff/pk	fg-mg		clay, qtz, feld				Claystone and trace clear qtz grits.	0.36
	26	28	J-K	Buff/pk	fg-mg		clay, qtz, feld				Claystone, trace clear qtz grits and feldspar.	0.4
	28	30	J-K	Buff/pk	fg-mg		clay, qtz, feld				Claystone, trace clear qtz grits and feldspar.	0.3
	30	32	J-K	Buff/pk	fg-mg		clay, qtz, feld				Claystone, trace clear qtz grits, feldspar and minor leuco feldspar.	0.63

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy abdt	maj	min	tr	rare	Description	Magnetic susceptibility
	32	34	J-K	Buff/pk	fg-mg		clay, qtz, feld				Claystone, trace clear qtz grits, large feldspar and minor leuco feldspar.	0.56
	34	36	J-K	Buff/pk	fg-mg		clay, qtz, feld	bio			Claystone, trace clear qtz grits and pink feldspar.	0.71
	36	38	pgn	Buff/pk	fg-mg		clay, qtz, feld	bio			Weathered granite	1.47
	38	40	pgn	Buff/pk	fg-mg		clay, qtz, feld	bio			Weathered granite	1.42
	40	42	pgn	Olive	fg-mg		feld, ep	Fe-ox			Altered (?) weathered mafic differentiate.	1.22
	42	44	pgn	Olive	fg-mg		feld, ep	Fe-ox			Altered (?) weathered mafic differentiate.	1.15
	44	46	pgn	Olive	fg-mg		feld, ep	Fe-ox			Altered (?) weathered mafic differentiate.	1.35
	46	48	pgn	Olive	fg-mg		feld, ep	qtz			Epidote alteration zone.	0.91
	48	50	pgn	Buff-brn	mg		qtz fsp bt				Granite - gneiss.	1.76
	50	52	pgn	Buff-brn	mg		qtz, feld, bio				Granite - gneiss.	5.17

TIE RC44 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy abdt	maj	min	tr	rare	Description	Magnetic susceptibility
TIE RC44	0	2	J-K	Buff/pk	fg		clay, qtz				Sandstone and trace clear qtz grits, silicified surficial material (silcrete-Algebuckina).	0.96
	2	4	J-K	Buff/pk	fg		clay, qtz	feld			Sandstone and trace clear qtz grits, silicified surficial material (silcrete-Algebuckina). Possible weathered granite.	0.24
	4	6	J-K	Buff/pk	fg		clay, qtz				Sandstone and trace clear qtz grits, silicified surficial material (silcrete-Algebuckina).	0.57
	6	8	pgn	Brn	fg		clay, qtz	feld	bio		Sandstone and trace clearr qtz grits and weathered granite.	3.76
	8	10	pgn	Brn	mg		feld, qtz, bio	hbl			Medium grained granite.	1.83
	10	12	pgn	Brn	mg		feld, qtz, bio	hbl			Medium grained granite.	5.23
	12	14	pgn	Brn	mg		feld, qtz, bio	hbl			Medium grained granite.	4.33
	14	16	pgn	Brn	mg		feld, qtz, bio	hbl			Medium grained granite.	9.04

TIE RC45 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC45	0	2	J-K	Buff/pk	fg		clay, qtz				Sandstone and trace clear qtz grits, silicified surficial material (silcrete/Algebuckina).	0.35
	2	4	J-K	Wht	fg		clay, qtz				Kaolin and trace clear qtz grits-Algebuckina (?).	0.1
	4	6	J-K	Buff/yw	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.17
	6	8	J-K	Buff/yw	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.15
	8	10	J-K	Buff/yw	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.23
	10	12	J-K	Buff/yw	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.21
	12	14	J-K	Buff/yw	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.15
	14	16	J-K	Buff/yw	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.16
	16	18	J-K	Buff/yw	fg		clay, qtz	lim	feld		Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina) and trace feldspar.	0.18
	18	20	J-K	Buff/yw	fg		clay, qtz	lim	feld		Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina) and trace feldspar.	0.16
	20	22	J-K	Grn	fg		clay, qtz		feld		Green fine grained clay and trace feldspar.	0.15
	22	24	J-K	Buff/yw	fg		clay, qtz	lim	feld		Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina) and trace feldspar.	0.18
	24	26	J-K	Grn	fg		clay, qtz		feld		Green fine grained clay and trace feldspar.	0.13
	26	28	J-K	khaki	fg		clay, qtz		feld		Khaki fine grained clay, qtz and trace feldspar.	0.1
	28	30	J-K	khaki	fg		clay, qtz				Khaki fine grained clay and qtz.	0.14
	30	32	J-K	khaki	fg		clay, qtz				Khaki fine grained clay and qtz.	0.27
	32	34	J-K	khaki	fg		clay, qtz				Khaki - grey minor green fine grained clay and quartz.	0.29
	34	36	J-K	khaki	fg		clay, qtz		feld		Khaki - grey qtz and feldspar.	0.39
	36	38	pgn	Creme	fg-mg		qtz, bio, feld, clay				Ferruginous weathered granite.	0.44
	38	40	pgn	Creme	mg		qtz, feld, bio				Granite	0.69
	40	42	pgn	Creme	mg		qtz, feld, bio				Granite/gneiss	7.54
	42	43	pgn	Creme	mg		qtz, feld, bio	am, chl			Altered gneiss, changing lithology at 42m into an amphibole bearing mafic unit.	7.13

TIE RC46 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC46	0	2	J-K	Buff/pk	fg		clay, qtz				Sandy silts and clear qtz grits.	0.72
	2	4	J-K	Yw	fg		clay, qtz	wthrd ep?			Green and buff fine grained clay and weathered granite.	0.08
	4	6	J-K	Yw	fg		clay, qtz	wthrd ep?	feld		Green and buff fine grained clay and weathered granite.	0.1
	6	8	J-K	Yw	fg		clay, qtz	wthrd ep?			Green and buff fine grained clay and weathered granite.	0.08
	8	10	pgn	Brn	fg		clay, qtz				Dark brown siltstone (?) and weathered basement.	0.06
	10	12	pgn	Brn	fg		ep, qtz	Fe-ox			Epidote, Fe-rich rock.	0.38
	12	14	pgn	Brn	fg-mg		ep, qtz				Shiny green- silvery lustereous mineral.	0.59
	14	16	pgn	Olive	mg		qtz, bio, feld				Weathered granite.	0.85
	16	18	pgn	Olive	mg		qtz, bio		feld		Weathered granite-gneiss.	2.24
	18	20	pgn	Olive	mg		qtz, bio		feld		Weathered granite-gneiss.	3.45
	20	22	pgn	Gy	mg		qtz, bio	hbl amph			Gneiss	14.8
	22	24	pgn	Gy	mg		qtz, bio	hbl, am?, cpx, chl	py?		Medium grained mafic igneous rock with primary disseminated sulphides-pyrite?	12.1
	24	26	pgn	Gy	mg		qtz, hbl	chl			Altered, medium grained mafic rock.	16.2
	26	28	pgn	Gy	mg		qtz, opx, am?, hbl, grn, transluscent mineral		py		Fine-medium grained mafic igneous rock with primary disseminated sulphides-pyrite?	19.6
	28	30	pgn	Gy	mg		qtz, opx, am?, hbl, grn, transluscent mineral		py		Fine-medium grained mafic igneous rock with primary disseminated sulphides-pyrite?	20
	30	32	pgn	Gy	mg		qtz, opx, am?, hbl, grn, transluscent mineral		py		Fine-medium grained mafic igneous rock with primary disseminated sulphides-pyrite?	19.5
	32	34	pgn	Gy	mg		qtz, opx, am?, hbl, grn, transluscent mineral		py		Fine-medium grained mafic igneous rock with primary disseminated sulphides-pyrite?	20.5

TIE RC47 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC47	2	4	pgn	Buff/pk	fg		qtz, bio, feld				Weathered gneiss	1.17
	4	6	pgn	Buff/pk	fg		qtz, bio, feld				Weathered gneiss	1.61
	6	8	pgn	Buff/pk	fg		qtz, bio, feld	hbl, ep			Weathered gneiss - contact (?) with more mafic rock (hbl amph) at 7m.	1.36
	8	10	pgn	Gy	mg		qtz, plag, am?, hbl				Medium grained mafic igneous rock.	3.88
	10	12	pgn	Gy	mg		qtz, plag, am?, hbl				Medium grained granite-granodiorite with fine grained mafic igneous rock.	7.05
	12	14	pgn	Gy	mg		plag?, hbl	qtz			Medium grained hbl/plag mafic-ultramafic igneous rock and plag/qtz rock (coarser grained)-anorthosite (?).	6.22
	14	16	pgn	Gy	mg		qtz, plag, am?, hbl				Medium grained granite-granodiorite with finer grained mafic igneous rock.	2.83
	16	17	pgn	Gy	mg		qtz, plag, opx, am?, hbl, green transluscent mineral		py		Medium grained mafic igneous rock with primary disseminated sulphides-pyrite?	16.4

TIE RC48 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC48	0	2	Pgn	Buff/pk	fg		clay, qtz	feld			Sandy silts, clear qtz grits and weathered granite.	0.72
	2	4	Pgn	Buff/pk	fg		clay, qtz		feld		Sandy silts, clear qtz grits, weathered granite and insitu weathering of mafics (fine grained kaolinised rock).	0.31
	4	6	Pgn	Buff/pk	fg		clay, qtz		feld		Sandy silts, clear qtz grits, weathered granite and insitu weathering of mafics (fine grained kaolinised rock).	0.18
	6	8	Pgn	Brn	fg		ep, qtz	Fe-ox			Weathered epidote Fe-rock (insitu weathering of a mafic rock).	0.16
	8	10	Pgn	Brn	fg		ep, qtz, hbl	Fe-ox			Weathered epidote, hbl, qtz, Fe-rock (insitu weathering of a mafic rock).	0.88
	10	12	Pgn	Brn	fg		ep, qtz, hbl	Fe-ox			Epidote, hbl, qtz, Fe-rock (insitu weathering of a mafic rock) and granite.	0.14
	12	14	Pgn	Brn	fg-mg		qtz, bio, hbl				Granite - gneiss.	0.5
	14	16	Pgn	Brn	fg-mg		qtz, bio, hbl	Fe-ox	ep		Weathered granite - gneiss	0.47
	16	18	Pgn	Brn	fg-mg		qtz, bio, hbl	Fe-ox			Weathered granite - gneiss	1.42
	18	20	Pgn	Brn	fg-mg		qtz, bio, hbl	Fe-ox			Weathered granite - gneiss	2.04
	20	22	Pgn	Brn	fg-mg		qtz, bio, hbl	Fe-ox			Weathered granite - gneiss	2.97
	22	24	Pgn	Brn	fg-mg		qtz, bio, hbl	Fe-ox			Weathered granite - gneiss	3.65
	24	26	Pgn	Buff/pk	fg		qtz, bio, feld	hbl	py, mus		Weathered gneiss - contact (?) with more mafic composition rock - green mineral, plag, pyrite contact at 25m.	7.66
	26	28	Pgn	Gy	mg		qtz, opx, am?, hbl, green translucent mineral		py		Fine to medium grained mafic igneous rock with primary disseminated sulphides (?) pyrite, granite deeper at 27m (?).	5.12

TIE RC49 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC49	0	2	pgn	Buff/pink	fg		clay, qtz	feld			Sandy silts clear qtz grits and weathered granite.	0.32
	2	4	pgn	Buff/pink	fg		clay, qtz	feld			Clayey silts clear qtz grits and trace weathered granite.	1.04
	4	6	pgn	Buff/yw	fg		clay, qtz				Clayey silts clear qtz grits and ferruginous stone.	0.26
	6	8	pgn	Buff/yw	fg		clay, qtz				Clayey silts clear qtz grits and ferruginous stone, possibly weathered basement.	0.25
	8	10	pgn	Buff/yw	fg		clay, qtz				Clayey silts clear qtz grits and ferruginous stone, minor granite.	0.09
	10	12	pgn	Buff	fg		clay, qtz, feld				Weathered granite.	0.17
	12	14	pgn	Buff	fg		clay, qtz, feld, hbl				Weathered granite-gneiss	0.19
	14	16	pgn	Buff	fg		clay, qtz, feld				Weathered granite.	0.26
	16	18	pgn	Buff	fg		clay, qtz, feld, hbl				Weathered granite-gneiss	0.18
	18	20	pgn	Buff	fg		clay, qtz, feld				Weathered granite.	0.21
	20	22	pgn	Buff	fg		clay, qtz, feld, hbl				Weathered granite.	0.15
	22	24	pgn	Olive	fg		clay, qtz, feld, hbl				Weathered mafic/gneiss.	0.17
	24	26	pgn	Buff	fg		clay, qtz, feld, hbl				Weathered granite.	0.19
	26	28	pgn	Buff	fg		clay, qtz, feld, hbl	epi			Weathered granite - possible weathered mafics.	0.19
	28	30	pgn	Buff	fg		clay, qtz, feld, hbl	epi			Weathered granite - possible weathered mafics.	0.31
	30	32	pgn	Buff	fg		clay, qtz, feld, hbl	epi			Weathered granite - possible weathered mafics.	0.16
	32	34	pgn	Buff	fg		clay, qtz, feld, hbl	epi			Granite - possible weathered mafics.	0.23
	34	36	pgn	Buff	fg		clay, qtz, feld, hbl	epi			Granite - possible weathered mafics.	0.5
	36	38	pgn	Gy	mg		qtz, plag, am?, hbl, green transluscent mineral		py		Fine-medium mafic igneous rock with primary disseminated sulphides (pyrite).	6.29
	38	39	pgn	grey	m		qtz, plag, am?, hbl, green transluscent mineral		py		Fine-medium mafic igneous rock with primary disseminated sulphides (pyrite).	8.15

TIE RC50 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC50	0	2	J-K	Buff/pk	fg		clay, qtz	feld			Sandy silts clear qtz grits and feldspar.	0.61
	2	4	J-K	Buff/pk	fg		clay, qtz	feld			Sandy silts clear qtz grits and feldspar.	0.52
	4	6	pgn	Buff/pk	fg-mg		feld, qtz, hbl	bio			Granite-gneiss.	3.52
	6	8	pgn	Buff/pk	fg-mg		K-feld?, qtz, hbl	plag, bio			Granite-gneiss.	8.17
	8	10	pgn	Buff/pk	fg-mg		K-feld?, qtz, hbl	plag, bio			Granite-gneiss.	4.24
	10	12	pgn	Buff/pk	fg-mg		K-feld?, qtz, hbl	plag, bio			Granite-gneiss.	2.77
	12	13	pgn	Buff/pk	fg-mg		K-feld?, qtz, hbl	plag, bio			Granite-gneiss.	1.74

TIE RC51 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC51	0	2	J-K	Buff/pk	fg		clay, qtz, feld, hbl, bio				Sandy silts clear qtz grits - gneiss at 1m.	2.86
	2	4	pgn	Buff/pk	fg-mg		feld, qtz, hbl	bio			Gneiss	6.53
	4	6	pgn	Buff/pk	fg-mg		feld, qtz, hbl	bio			Gneiss	13
	6	8	pgn	Buff/pk	fg-mg		feld, qtz, bio, hbl	bio, mus			Gneiss and bio, hbl, qtz rock at 7m (more mafic segregation of gneiss).	16.4
	8	10	pgn	Buff/pk	fg-mg		feld, qtz, bio, hbl	bio, mus			Gneiss - more mafic	15.8
	10	12	pgn	Buff/pk	fg-mg		feld, qtz, bio, hbl	bio, mus			Gneiss	10.1
	12	13	pgn	Buff/pk	fg-mg		feld, qtz, bio, hbl	bio, mus			Gneiss	12.8

TIE RC52 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC52	0	2	J-K	Rd	fg		clay,qtz	feld			Sandy silts, clear qtz grits and feldspar.	0.88
	2	4	pgn	Buff	fg		clay, qtz, fsp, hbl	bio			Weathered granite - gneiss.	0.92
	4	6	pgn	Buff	fg		clay, qtz, fsp, hbl	bio			Weathered granite - gneiss.	6.27
	6	8	pgn	Buff	fg		qtz, fsp, hbl	bio			Granite - gneiss.	2.19
	8	10	pgn	Buff	fg		qtz, fsp, hbl, bio	mus			Gneiss	7.21
	10	12	pgn	Buff	fg		qtz, fsp, hbl, bio	mus			Gneiss	7.63
	12	14	pgn	Buff	fg		qtz, fsp, hbl, bio, chl	am, mus			Gneiss	7.72
	14	16	pgn	Buff	fg		qtz, fsp, hbl, bio				Gneiss	7.81
	16	18	pgn	Buff	cg		qtz, fsp, hbl, bio				Gneiss	

TIE RC53 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC53	0	2	J-K	Rd	fg		clay, qtz	feld			Sandy silts clear qtz grits and feldspar granite at 1m.	3.83
	2	4	pgn	Pk-gy	fg-mg		feld, qtz, hbl, bio				Coarse granite and finer grained gneiss.	3.84
	4	6	pgn	Pk-gy	fg-mg		feld, qtz, hbl, bio				Coarse granite and finer grained gneiss.	6.32

TIE RC54 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC54	0	2	J-K	Rd	fg-mg		clay, qtz	feld			Sandy silts clear qtz grits and feldspar.	1.14
	2	4	J-K	Rd	fg-mg		clay, qtz	feld			Sandy silts clear qtz grits and feldspar.	0.75
	4	6	J-K	Rd	fg-mg		fine clay, qtz		coarse feld		Clayey-sandy silts clear qtz grits and feldspar.	0.62
	6	8	pgn	Rd	fg-mg		fine clay, qtz		coarse feld		Clayey-sandy silts clear qtz grits and feldspar and bio/hbl/chl fragments.	2.25
	8	10	pgn	Olive	fg-mg		qtz, bio, hbl	fsp			Weathered fine grained mafic (?) gneiss/intrusive.	11.8
	10	12	pgn	Olive	fg-mg		qtz, bio, hbl, feld	mus			Slghtly weathered fine grained (?) mafic gneiss and coarse granodiorite (?)	12.9
	12	14	pgn	Olive	fg-mg		qtz, bio, hbl, feld	mus			Slghtly weathered fine grained (?) mafic gneiss and coarse granodiorite (?)	15.5
	14	16	pgn	Olive	fg-mg		qtz, bio, hbl, feld	mus			Slghtly weathered fine grained (?) mafic gneiss and coarse granodiorite (?)	13.1
	16	18	pgn	Olive	fg-mg		qtz, bio, hbl, feld	mus			Slghtly weathered fine grained (?) mafic gneiss and coarse granodiorite (?)	15.2
	18	20	pgn	Olive	fg-mg		qtz, bio, hbl, feld	mus			Slghtly weathered fine grained (?) mafic gneiss and coarse granodiorite (?)	10.7
	20	22	pgn	Olive	fg-mg		qtz, bio, hbl, feld	coarse mus			Slghtly weathered fine grained (?) mafic gneiss and coarse granodiorite (?)	9.07
	22	24	pgn	Olive	fg-mg		qtz, bio, hbl, feld, am	mus			Fine-medium grained qtz, plag, amph, hbl, bio gneiss and coarser bio, mus, hbl (?) oxidised granodiorite.	22.3
	24	26	pgn	Olive	fg-mg		qtz, bio, hbl, feld, am	mus			Fine-medium grained qtz, plag, amph, hbl, bio gneiss and coarser bio, mus, hbl (?) oxidised granodiorite.	11.1
	26	28	pgn	Olive	fg-mg		qtz, bio, hbl, feld, am		chl, py		Fine-medium qtz plag amph hbl bt gneiss, sulphides in 26-27m, disseminated pyrite occurs in thin-cross cutting, (0.5mm) band of chlorite.	21.4

TIE RC55 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC55	0	2	J-K	Rd	fg-mg		clay, qtz	feld			Sandy silts clear qtz grits and feldspar.	1.03
	2	4	J-K	Rd	fg-mg		fine clay, qtz	feld			Clayey-sandy silts clear qtz grits and feldspar.	0.76
	4	6	J-K	Rd	fg-mg		fine clay, qtz	feld			Clayey-sandy silts clear qtz grits and feldspar.	0.16
	6	8	J-K	Rd	fg-mg		fine clay, qtz	feld			Clayey-sandy silts clear qtz grits and feldspar.	0.44
	8	10	J-K	Rd	fg-mg		fine clay, qtz, feld				Clayey-sandy silts clear qtz grits and feldspar.	0.36
	10	12	J-K	Rd	fg-mg		sandy silts, qtz, feld				Sandy silts clear qtz grits and feldspar.	0.83
	12	14	pgn	Buff	fg-mg		qtz, feld, bio	hbl			Weathered granite (?) and weathered, more mafic rock.	2.11
	14	16	pgn	Buff	fg-mg		qtz, feld, bio				Weathered granite (?)	0.57
	16	18	pgn	Buff	fg-mg		qtz, feld, bio	hbl			Weathered granite (?) and weathered, more mafic rock.	0.5
	18	20	pgn	Buff	fg-mg		qtz, feld, bio	ep, hbl			Weathered granite (?) and weathered, more mafic rock.	0.44
	20	22	pgn	Buff	fg-mg		qtz, feld, bio				Weathered granite	0.5
	22	24	pgn	Buff	fg-mg		qtz, feld, bio				Weathered granite	0.7
	24	26	pgn	Buff	fg-mg		qtz, feld, bio				Weathered granite	0.17
	26	28	pgn	Buff	fg-mg		qtz, feld, bio				Weathered granite	0.8
	28	30	pgn	Buff	fg-mg		qtz, feld, bio				Weathered granite	0.62
	30	32	pgn	Buff	fg-mg		qtz, feld, bio				Weathered granite and ferruginous mafic unit pyroxenite (?)	0.66
	32	34	pgn	Buff	fg-mg		qtz, feld, bio				Weathered granite and ferruginous mafic unit pyroxenite (?)	0.3
	34	36	pgn	Olive	fg-mg		qtz, feld, bio	ep, hbl			Slightly weathered fine grained gneiss.	0.33
	36	38	pgn	Olive	fg-mg		qtz, feld, bio	ep, hbl			Slightly weathered fine grained gneiss.	0.53
	38	40	pgn	Olive	fg-mg		qtz, feld, bio, hbl	ep			Slightly weathered fine grained gneiss - more mafic segregation.	0.29
	40	42	pgn	Olive	fg-mg		qtz, feld, bio, hbl	ep			Slightly weathered fine grained gneiss - more mafic segregation (coarse biotite).	0.54
	42	44	pgn	Olive	fg-mg		qtz, feld, bio, hbl	ep			Slightly weathered fine grained gneiss - interleaved felsic, more mafic segregation.	0.49
	44	46	pgn	Olive	fg-mg		qtz, feld, bio, am	ep, hbl			Fine grained gneiss.	0.55
	46	48	pgn	Olive	fg-mg		qtz, feld plag?, bio, hbl, am	ep			Slightly weathered fine grained gneiss - more mafic segregation.	1.0

TIE RC56 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC56	0	2	Qt	Rd	fg		clay, qtz	feld			Sandy silts, clear qtz grits and feldspar - weathered granite.	0.72
	2	4	pgn	Buff	fg-mg		qtz, feld, bio	hbl			Granite	1.00
	4	6	pgn	Buff	fg-mg		qtz, feld, bio	hbl			Granite	1.49

TIE RC57 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC57	0	2	Qt	Rd	fg		clay, qtz	feld			Sandy silts, clear qtz grits and feldspar - weathered granite.	3.39
	2	4	Pgn	Wht	fg-mg		qtz, feld	hbl, mag	bio		White medium grained equigranular feld/qtz/hbl Granite and trace red alluvium content.	17.20
	4	6	Pgn	Wht	fg-mg		qtz, feld	hbl, mag	bio		White medium grained equigranular feld/qtz/hbl granite.	17.60
	6	8	Pgn	Wht	fg-mg		qtz, feld	hbl, mag	bio		White medium grained equigranular feld/qtz/hbl granite.	17.20

TIE RC58 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC58	0	2	Pgn	Wht/pk	fg-mg		qtz, feld	hbl, bio	mag		White medium grained equigranular feld/qtz/hbl granite.	16.10
	2	4	Pgn	Wht/pk	fg-mg		qtz, feld	hbl, bio	mag		White medium grained equigranular feld/qtz/hbl granite.	17.20
	4	6	Pgn	Wht/pk	fg-mg		qtz, feld	hbl, bio	mag		White medium grained equigranular feld/qtz/hbl granite.	17.00
	6	8	Pgn	Wht/pk	fg-mg		qtz, feld	hbl, bio, ep	mag		White medium grained equigranular feld/qtz/hbl granite, epidote veins and brick red feldspar alteration.	12.80
	8	10	Pgn	Wht/pk	fg-mg		qtz, feld	hbl, bio, mag			White medium grained equigranular feld/qtz/hbl granite.	13.60
	10	12	Pgn	Wht/pk	fg-mg		qtz, feld	hbl, bio, mag			White medium grained equigranular feld/qtz/hbl granite.	22.10
	12	14	Pgn	Wht/pk	fg-mg		qtz, feld	hbl, bio, ep	mag		White medium grained equigranular feld/qtz/hbl granite, epidote veins and brick red feldspar alteration.	23.20

TIE RC59 Drilhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC59	0	2	Tpf	Brn	vfg	clay		Fe-ox, lim			Brown clay altered mafic.	1.54
	2	4	Tpf	Brn	vfg	clay		Fe-ox, lim			Brown clay altered mafic.	0.68
	4	6	Tpf	Brn	vfg	clay		Fe-ox, lim			Brown clay altered mafic.	0.56
	6	8	Tpf	Grn	vfg	clay	ser	Fe-ox, lim			Green clay/sericite altered mafic (damp?).	1.12
	8	10	Tpf	Grn	vfg	clay	ser	Fe-ox, lim			Green clay/sericite altered mafic (damp?).	0.62
	10	12	Tpf	Grn	vfg	clay	ser	Fe-ox, lim	bio		Green clay/sericite altered mafic (damp?).	0.58
	12	14	Tpf	Grn	vfg	clay	ser	Fe-ox, lim			Green clay/sericite altered mafic.	0.86
	14	16	Tpf	Grn	vfg	clay	ser	Fe-ox, lim	Mang		Green clay/sericite altered mafic.	1.19
	16	18	Tpf	Grn	vfg	clay	ser	Fe-ox, lim	Mang		Green clay/sericite altered mafic.	1.45
	18	20	Tpf	Grn	vfg	clay	ser	Fe-ox, lim	Mang		Green clay/sericite altered mafic.	0.28
	20	22	Tpf	Grn	vfg	clay	ser	Fe-ox, lim	Mang		Green clay/sericite altered mafic.	0.34
	22	24	Pum	Rd/blk	fg		mang		cpy?		Green clay/sericite altered mafic and red-black manganese altered ultramafic? (B.O.C.O.)	0.47
	24	26	Pum	Rd/blk	fg		mang		cpy?		Green clay/sericite altered mafic and red-black manganese altered ultramafic? (B.O.P.O.)	0.83
	26	28	Pum	Blk	fg		ol, px	mag	py		Dark green fine grained equigranular pyroxenite?	7.27
	28	29	Pum	Blk	fg		ol, px	mag	py		Dark green fine grained equigranular pyroxenite?	12.00

TIE RC60 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC60	0	2	Qa/Tpq	Red	fg		qtz				Red alluvial sand and white silic clay (?), orange silcrete and cyclone contamination.	0.63
	2	4	Tpq	Pk	fg -cg	qtz					Pink fine silicified sandstone/silcrete and coarse qtz grits. Minor contamination.	0.44
	4	6	Tpq	Pk	fg -cg	qtz	feld?				Pink fine silicified sandstone/silcrete and coarse qtz grits. Minor contamination.	1.79
	6	8	Tpq/Tpf	Wht + brn	fg		qtz, Fe-ox, mang				White silic silcreted fine grained sandstone and qtz/feld (?) grits and brown manganese altered ultramafic.	1.05
	8	10	Tpf	Wht + brn	fg	clay	Fe-ox				White and brown very fine grained clay/Fe-ox altered pyroxenite (?) and minor qtz veins.	0.81
	10	12	Tpf	Wht + brn	fg	clay	Fe-ox		qtz		White and brown very fine grained clay/Fe-ox altered pyroxenite.	1.16
	12	14	Tpf	Wht + brn	fg	clay	Fe-ox				White and brown very fine grained clay/Fe-ox altered pyroxenite (?) and minor qtz veins (wet sample).	1.89
	14	16	Tpf	Rd/blk	vfg		Fe-ox, mang	qtz			Brown clay altered pyroxenite and Fe/Mn (?) altered pyroxenite (?) (wet sample).	0.64
	16	18	Tpf	Wht + brn	vfg	clay		qtz			White very fine grained kaolin and minor clear and red qtz (altered granitic gneiss?), wet sample.	0.18
	18	20	Tpf	Wht + brn	vfg	clay		qtz			White very fine grained kaolin and minor clear and red qtz (altered granitic gneiss?), wet sample.	0.19
	20	22	Tpf	Wht + brn	vfg	clay		qtz			White very fine grained kaolin and minor clear and red qtz (altered granitic gneiss?), wet sample.	0.14
	22	24	Tpf	Wht + brn	vfg	clay	qtz				White very fine grained kaolin (altered granitic gneiss?), wet sample.	0.09
	24	26	Pgn	Wht + brn	vfg	clay	qtz				White very fine grained kaolin (altered granitic gneiss?).	0.21
	26	28	Pgn	Wht	vfg		qtz, feld	clay, bio	chl		White very fine grained kaolin/qtz/feld/bio granitic gneiss (?) and chlorite veinlets (B.O.C.O.)	0.56
	28	30	Pgn	Gy	vfg		qtz, feld	clay, bio	chl		Grey very fine grained kaolin/qtz/feld/bio granitic gneiss (?) and chlorite veinlets (B.O.P.O.)	1.78
	30	32	Pgn	Gy/pk	vfg		qtz, feld	bio	chl		Grey-pink very fine grained qtz/feld/bio granitic gneiss (?) and chlorite veinlets.	3.28
	32	34	Pgn	Gy/pk	vfg		qtz, feld	bio	chl		Grey-pink very fine grained qtz/feld/bio granitic gneiss (?) and chlorite veinlets.	2.80

TIE RC61 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC61	0	2	Qa	Rd	fg		qtz, clay				Red alluvial sand (indurated) and brown clay. Minor contamination.	1.60
	2	4	Tpf	Pk	vfg		qtz, clay				Pink silicified fine grained clay-rich altered basement.	1.28
	4	6	Tpf	Pk	vfg		qtz, clay				Pink silicified fine grained clay-rich altered basement.	0.97
	6	8	Tpf	Or	vfg		qtz, clay				Orange fine grained clay- rich altered basement.	1.15
	8	10	Tpf	Or	vfg		qtz, clay				Orange fine grained clay- rich altered basement.	0.97
	10	12	Tpf	Or	vfg		qtz, clay		bio		Orange fine grained clay- rich altered granitic gneiss.	1.45
	12	14	Tpf	off wht	vfg		qtz, clay	bio	mag		Orange fine grained clay- rich altered granitic gneiss.	9.73
	14	16	Tpf	off wht	vfg		qtz, clay	bio	mag		Orange fine grained clay- rich altered granitic gneiss.	9.73
	16	18	Pgn	Wht-brn	fg		qtz, feld	bio, Fe-ox	mag		Orange fine grained clay- rich altered granitic gneiss and minor Fe-ox veins.	8.21
	18	20	Pgn	Wht-brn + pk	fg		qtz, feld	bio, Fe-ox	mag, chl?		Off white fine grained qtz/feld/bio granitic gneiss and pink altered feldspar. Chlorite/epidote veins (?).	4.92
	20	22	Pgn	Wht-brn	fg		qtz, feld	bio, lim	mag		Off white fine grained qtz/feld/bio granitic gneiss and minor limonite veins.	15.00
	22	24	Pgn	Wht-brn	fg		qtz, feld, hbl	bio, lim	mag		Off white fine grained qtz/feld/bio granitic gneiss and minor coarse grained pegmatite veins.	10.80
	24	26	Pgn	Wht-brn	fg		qtz, feld, hbl	bio, lim	mag		Off white fine grained qtz/feld/bio granitic gneiss and minor coarse grained pegmatite veins.	10.60
	26	28	Pgn	Wht-brn	fg		qtz, feld, hbl	bio, Fe-ox	mag		Off white fine grained qtz/feld/bio granitic gneiss and minor Fe-ox veins.	6.77
	28	30	Pgn	Wht-brn	fg		qtz, feld, hbl, cpx	bio, Fe-ox	mag		Off white fine grained qtz/feld/bio granitic gneiss and minor Fe-ox veins.	13.70

TIE RC62 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC62	0	2	Qp/Pgn	Wht	fg		qtz, clay		bio		White silicified clay rich sandstone (?) and off white fine grained qtz/feld granite (?).	5.61
	2	4	Pgn	off wht	fg		qtz, alk, plag	bio, hbl			White silicified clay rich sandstone (?) and off white fine grained qtz/feld granite (?).	5.64
	4	6	Pgn	off wht	fg		qtz, alk, plag	bio, hbl			White silicified clay rich sandstone (?) and off white fine grained qtz/feld granite/granitic gneiss (?).	6.82
	6	8	Pgn	off wht	fg		qtz, alk, plag	bio, hbl			White silicified clay rich sandstone (?) and off white fine grained qtz/feld granite/granitic gneiss (?).	8.58
	8	10	Pgn	off wht	fg		qtz, feld, bio				Off white fine grained qtz/feld granite/granitic gneiss.	8.61

TIE RC63 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC63	0	2	Qa	Rd	fg		qtz				Red indurated alluvial sand.	1.35
	2	4	Qa	Rd	fg		qtz				Red indurated alluvial sand and coarse grained alluvial grit.	1.34
	4	6	Qa	Rd	cg		qtz, feld, Fe-ox				Very coarse alluvium and white fine grained silicified sandstone/silcrete.	0.64
	6	8	Qu	Rd	fg		clay	qtz, feld	Fe-ox		Red/orange clay and minor qtz/feld alluvium and calcareous cement (?).	1.31
	8	10	Qu	Rd	fg		clay	qtz, feld	Fe-ox		Red/orange clay and minor qtz/feld alluvium and calcareous cement (?).	1.73
	10	12	Qu	Rd	fg		clay	qtz, feld	Fe-ox		Red/orange clay and minor qtz/feld alluvium and calcareous cement (?).	1.94
	12	14	Qu/Pgn	Rd	fg		clay	qtz, feld	Fe-ox		Red/orange clay and minor qtz/feld alluvium and calcareous cement (?) and minor qtz/bio/feld/hbl granite (?).	1.14
	14	16	Pgn	off wht	fg		qtz, feld	bio, hbl	mag		Off white fine equigranular qtz/feld/hbl/bio granite.	5.33
	16	18	Pgn	off wht	fg		qtz, feld	bio, hbl	mag		Off white fine grained equigranular qtz/feld/hbl/bio granitic gneiss (damp sample)	4.87
	18	20	Pgn	off wht	fg		qtz, feld	bio, hbl, mag			White fine equigranular qtz/feld/hbl/bio granitic gneiss.	20.70
	20	22	Pgn	off wht	fg		qtz, feld	bio, hbl			Off white fine grained equigranular qtz/feld/hbl/bio granitic gneiss and trace medium grained plagioclase pegmatite veins.	12.80

TIE RC64 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC64	0	2	Qa	Rd	fg		sand				Red aeolian sand indurated at depth.	0.62
	2	4	Qa/j-k	Rd	fg		sand				Red aeolian sand indurated and white fine grained sillic sandstone.	0.65
	4	6	J_K	Wht	fg		qtz, clay				White silic fine grained clay-rich sandstone.	0.18
	6	8	J_K	Wht + Buff	fg		qtz, clay				White and buff silic fine grained clay-rich sandstone.	0.09
	8	10	J-K	Wht + Buff	fg		qtz, clay	Fe-ox			White and buff silic fine grained clay-rich sandstone and minor Fe-ox alteration.	0.10
	10	12	J-K	Wht + purp	fg		qtz, clay	Fe-ox			White and purple silic fine grained clay-rich sandstone and minor Fe-ox alteration.	0.06
	12	14	J-K	wht + ppl	fg	clay		qtz, Fe-ox			White and purple silic fine grained clay-rich sandstone and minor Fe-ox alteration.	0.08
	14	16	J-K	Wht + Rd	fg	clay		qtz, Fe-ox			White and red silic fine grained clay-rich sandstone and minor Fe-ox alteration.	0.00
	16	18	J-K	Wht + Rd	fg	clay		qtz, Fe-ox			White and red silic fine grained clay-rich sandstone and minor Fe-ox alteration (damp sample).	0.00
	18	20	J-K	Wht + Rd	fg	clay		qtz, Fe-ox			White and red silic fine grained clay-rich sandstone and minor Fe-ox alteration (damp sample).	0.12
	20	22	J-K	Wht + Rd	fg	clay		qtz, Fe-ox			White and red silic fine grained clay-rich sandstone and minor Fe-ox alteration (damp sample).	0.16
	22	24	Tpf	Wht + Rd	fg	clay		qtz, Fe-ox			White and red mottled fine grained basement and minor Fe-ox alteration.	0.10
	24	26	Tpf	Wht + Rd	mg	clay	Fe-ox	qtz, chl, ser			White and red mottled fine grained Fe/ser basement.	0.15
	26	28	Tpf	Wht + Rd	mg	clay	Fe-ox	qtz, chl, ser			White and red mottled fine grained Fe/ser altered mafic gneiss (?).	0.14
	28	30	Tpf	Wht + yw	vfg	clay	lim				White and yellow very fine grained clay alteration of mafic gneiss (?).	0.09
	30	32	Tpf	Wht + yw	vfg	clay	lim, ser	qtz			White and yellow very fine grained clay alteration of mafic gneiss (?).	0.09

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	32	34	Pgn	Wht + yw	fg		lim, ser, qtz, clay				White and yellow fine grained granitic gneiss (?).	0.08
	34	36	Pgn	Wht + yw	fg		lim, ser, qtz	clay, feld			White and yellow fine grained granitic gneiss (?).	0.16
	36	38	Pgn	Wht + yw	fg		qtz, feld	lim, clay			White and yellow fine grained granitic gneiss (?).	0.24
	38	40	Pgn	Wht + yw	fg		qtz, feld	lim, clay, ep			White and yellow fine grained granitic gneiss (?) with minor epidote alteration.	0.25
	40	42	Pgn	off wht	fg-mg		qtz, feld	lim	bio		Off wht fine-medium grained qtz/feld/bio granitic gneiss.	0.18
	42	44	Pgn	off wht	fg-mg		qtz, feld	lim	bio		Off wht fine-medium grained qtz/feld/bio granitic gneiss.	0.30
	44	46	Pgn	off wht	fg-mg		qtz, feld	lim, bio			Off wht fine-medium grained qtz/feld/bio granitic gneiss and minor limonite alteration.	0.53
	46	48	Pgn	off wht	fg-mg		qtz, feld	lim, bio			Off wht fine-medium grained qtz/feld/bio granitic gneiss and minor limonite alteration.	0.92

TIE RC65 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC65	0	2	Qa	Rd	fg		sand				Red aeolian sand, indurated and cyclone contamination.	0.45
	2	4	Qa	Rd	fg		sand, qtz				Red aeolian sand and minor quartz grit, cyclone contaminated.	0.59
	4	6	Qa	Rd	fg		sand, qtz				Red aeolian sand and minor quartz grit.	0.62
	6	8	Qa	Rd	fg		sand, qtz				Red aeolian sand and minor quartz grit.	0.51
	8	10	Qa	Rd	fg		sand, qtz				Red aeolian sand and minor quartz grit.	0.46
	10	12	J-Ka	Buff	fg		clay, qtz				Buff fine grained silic clay-rich sandstone (Algebukina).	0.09
	12	14	J-Ka	Buff	fg		clay, qtz				Buff fine grained silic clay-rich sandstone (Algebukina).	0.10
	14	16	J-Ka/Pgn	Buff + yw	fg		clay, qtz	lim, ser			Buff fine grained silic clay-rich sandstone (Algebukina) and yellow fine grained limonite altered qtz/feld granitic gneiss.	0.14
	16	18	Pgn	Yw brn	fg		clay, qtz	lim, ser, bio			Yellow fine grained limonite altered qtz/bio/feld? granitic gneiss (B.O.C.O.)	0.32
	18	20	Pgn	Yw brn	fg		clay, qtz	lim, ser, bio			Yellow fine grained limonite altered qtz/bio/feld? granitic gneiss.	0.21
	20	22	Pgn	Yw brn	fg		clay, qtz	lim, ser, bio			Yellow fine grained limonite altered qtz/bio/feld? granitic gneiss.	0.27
	22	24	Pgn	Yw brn	fg		clay, qtz	lim, ser, bio			Yellow fine grained limonite altered qtz/bio/feld? granitic gneiss.	0.23
	24	26	Pgn	Yw brn	fg		clay, qtz	lim, ser, bio			Yellow fine grained limonite altered qtz/bio/feld? granitic gneiss.	0.32
	26	28	Pgn	Yw brn	fg		clay, qtz	lim, ser, bio	feld		Yellow fine grained limonite altered qtz/bio/feld? granitic gneiss and trace red Fe-rich breccia.	0.40

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	28	30	Pgn	Yw brn	fg		clay, qtz	lim, ser, bio, plag			Yellow fine grained limonite altered qtz/bio/feld? granitic gneiss.	0.28
	30	32	Pgn	Yw brn	fg		clay, qtz, plag	lim, ser, bio			Yellow fine grained limonite altered qtz/bio/feld? granitic gneiss.	0.30
	32	34	Pgn	Yw brn	fg		clay, qtz, plag	lim, bio			Yellow fine grained limonite altered qtz/bio/feld? granitic gneiss.	0.22
	34	36	Pgn	Yw brn	fg		clay, qtz, plag	bio, mag	lim		Yellow fine grained limonite altered qtz/bio/feld? granitic gneiss.	0.21
	36	38	Pgn	off wht	fg-mg		feld, hbl,qtz	bio, garn, mag			Yellow fine grained limonite altered qtz/bio/feld? granitic gneiss and offwhite fine-medium grained feld/hbl/qtz/garnet gneiss.	21.10
	38	40	Pgn	off wht	fg-mg		feld, hbl,qtz	bio, garn, mag			Yellow fine grained limonite altered qtz/bio/feld? granitic gneiss, offwhite fine-medium grained feld/hbl/qtz/garnet gneiss and medium grained pink pegmatite veins.	22.80
	40	42	Pgn	off wht	fg-mg		feld, hbl,qtz	bio, garn, mag			Offwhite fine-medium grained feld/hbl/qtz/garnet gneiss and medium grained pink pegmatite veins.	24.50

TIE RC66 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC66	0	2	Qa	Rd	fg		sand				Red aeolian sand (cyclone contaminated).	0.74
	2	4	Qa	Rd	fg		sand				Red aeolian sand.	0.44
	4	6	Qa	Rd	fg		sand				Red aeolian sand, indurated and cyclone contaminated.	0.66
	6	8	Qa	Rd	fg		sand	qtz, pisol			Red aeolian sand, indurated, and minor alluvial grits.	0.47
	8	10	Qa	Rd	fg		sand				Red aeolian sand, indurated.	0.73
	10	12	Tpf	Brn	vfg		clay	qtz			Brown clay and minor qtz grits (?) (damp).	0.53
	12	14	J-Ka	Brn +wht	vfg	clay		qtz, pisol			Brown and white clay-rich sandstone (?) and minor qtz/pisolite alluvium (?) (damp)-Algebuckina (?).	0.16
	14	16	J-Ka	Brn +wht	vfg	clay		qtz, pisol			Brown and white clay-rich sandstone (?) and minor qtz/pisolite alluvium (?) (wet)-Algebuckina (?).	0.37
	16	18	J-Ka	Buff	fg	clay	qtz				Buff clay-rich silic sandstone (?) and minor qtz grits (damp)-Algebuckna (?)	0.07
	18	20	J-Ka	Buff	fg	clay		qtz			Buff clay-rich silic sandstone (damp)-Algebuckina (?)	0.07
	20	22	J-Ka	Buff	fg	clay	qtz				Buff clay-rich silic sandstone (?) and minor qtz grits (damp)-Algebuckina (?)	0.10
	22	24	J-Ka	Buff	fg	clay	qtz				Buff clay-rich silic sandstone (?) and qtz grits (damp)-Algebuckina (?)	0.10
	24	26	J-Ka	Buff + yw	fg	clay	qtz, lim				Buff clay-rich silic sandstone (?) and qtz grits with orange limonite altered Algebuckina (wet) (?).	0.09
	26	28	J-Ka	Buff + yw	fg	clay	qtz, lim				Buff clay-rich silic sandstone (?) and qtz grits with orange limonite altered Algebuckina (wet) (?).	0.30
	28	30	J-Ka	Buff + yw	fg	clay	qtz, lim				Buff clay-rich silic sandstone (?) and qtz grits with orange limonite altered Algebuckina (wet) (?).	0.18
	30	32	J-Ka	Buff + yw	fg	clay	qtz, lim				Buff clay-rich silic sandstone (?) and qtz grits with orange limonite altered Algebuckina (wet) (?).	0.28
	32	34	J-Ka	Brn	fg	clay	qtz, lim				Buff clay-rich silic sandstone (?) and qtz grits with orange limonite altered Algebuckina (wet) (?).	0.33
	34	36	J-Ka	Brn	fg	clay	qtz	Fe-ox			Buff clay-rich silic sandstone (?) and qtz grits with orange Fe-ox altered Algebuckina (wet) (?).	0.46
	36	38	J-Ka	Brn	fg	clay	qtz	Fe-ox			Buff clay-rich silic sandstone (?) and qtz grits with orange Fe-ox altered Algebuckina (wet) (?).	0.40

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	38	40	J-Ka	Brn	fg	clay		qtz, Fe-ox			Buff clay-rich silic sandstone (?) and qtz grits with orange Fe-ox altered Algebuckina (wet) (?).	0.26
	40	42	Pgn	Wht	mg-cg	kao	qtz				White medium-coarse grained kaolin (porcellanite) altered granite.	0.24
	42	44	Pgn	Wht	mg-cg	kao	qtz, alkali feld				White medium-coarse grained kaolin (porcellanite) altered granite.	0.22
	44	46	Pgn	Wht	mg-cg	kao		qtz			White medium-coarse grained kaolin (porcellanite) altered granite.	0.13
	46	48	Pgn	Wht	mg-cg	kao	lim	qtz			White medium-coarse grained kaolin (porcellanite) altered granitic gneiss and limonite clay.	0.15
	48	50	Pgn	Wht	mg-cg	kao	lim	qtz			White medium-coarse grained kaolin (porcellanite) altered granitic gneiss and minor limonite clay.	0.13
	50	52	Pgn	Wht	mg-cg	kao	qtz	lim			White medium-coarse grained kaolin (porcellanite) altered granitic gneiss and minor limonite clay.	0.15
	52	54	Pgn	Yw	mg	kao	qtz, feld	bio			Yellow medium grained qtz/feld/bio granitic gneiss.	0.09
	54	56	Pgn	Yw	mg	kao	qtz, feld	bio			Yellow medium grained qtz/feld/bio granitic gneiss.	0.07
	56	58	Pgn	Yw/wht	mg	kao	qtz, feld	bio, lim	ep		Yellow medium grained qtz/feld/bio granitic gneiss and minor limonite/epidote altered veins.	13.70
	58	60	Pgn	wht	mg		qtz, feld, chl	bio, mag			White feld/qtz/bio/mag granite and black chlorite (?) veins/mafics/ pseudotachylite (?).	21.10

TIE RC67 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	Rare		
TIE RC67	0	2	Qa	Rd	fg		sand				Red aeolian sand.	0.68
	2	4	Qa	Rd	fg		sand				Red alluvial sand, indurated.	0.58
	4	6	Qa	Rd	fg		sand,	qtz			Red alluvial sand, indurated and trace alluvial grits.	0.55
	6	8	J-Ka	Brn	fg		sand, clay	qtz			Brown fine grained sand and clay and trace qtz grits (Algebuckina/cadna?).	0.57
	8	10	J-Ka	Brn	fg		sand, clay	qtz			Brown fine grained sand and clay and trace qtz grits (wet) (Algebuckina/cadna?).	0.35
	10	12	J-Ka	Brn/wht	fg		clay	qtz	Fe-ox		Brown fine grained sand and clay and trace qtz grits (wet) (Algebuckina/cadna?).	0.25
	12	14	J-Ka	Brn/wht	fg		clay	qtz	Fe-ox		Brown fine grained sand and clay and trace qtz grits (wet) (Algebuckina/cadna?).	0.15
	14	16	J-Ka	Brn/wht	fg		clay	qtz	Fe-ox		Brown fine grained sand and clay and trace qtz grits (wet) (Algebuckina/cadna?).	0.11
	16	18	J-Ka	Brn/wht	fg		clay	qtz	Fe-ox		Brown fine grained sand and clay and trace qtz grits (wet) (Algebuckina/cadna?).	0.10
	18	20	J-Ka	Brn/wht	fg		clay	qtz	Fe-ox		Brown fine grained sand and clay and trace qtz grits (wet) (Algebuckina/cadna?).	0.12
	20	22	Tpk	off wht	fg		clay, ser	qtz	Fe-ox		Off white fine grained sericite and clay altered basement (?).	0.13
	22	24	Tpk	off wht	fg		clay, ser	qtz	Fe-ox		Off white fine grained sericite and clay altered basement (?).	0.04
	24	26	Tpk	off wht	fg		clay, ser	qtz	Fe-ox		Off white fine grained sericite and clay altered basement (?).	0.07
	26	28	Pgn	wht/yw	fg		qtz, kao, ser	lim			White sericite/clay altered fine grained gneiss and minor limonite alteration (rare shear planes, slickensides).	0.18
	28	30	Pgn	wht/yw	fg		qtz, kao, ser	lim			White sericite/clay altered fine grained gneiss and minor limonite alteration.	0.16
	30	32	Pgn	Blk	fg		hbl, bio, qtz		mag		Black fine grained foliated eqigranular hbl/bio/qtz gneiss.	1.90
	32	34	Pgn	Blk/clr	fg		hbl, bio, qtz, feld		mag		Black fine grained foliated eqigranular hbl/bio/qtz gneiss.	25.30

TIE RC68 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC68	0	2	Qa/J-k	Rd/wht	vfg		clay, sand				Red aeolian sand and white kaolinised silts/sandstone.	1.05
	2	4	J-K	Pk	fg		clay, sand	qtz, Fe-ox			White kaolinised silts/sandstone, minor qtz grits and minor Fe-ox.	0.21
	4	6	J-K	Pk	fg		clay, sand	qtz, Fe-ox			White kaolinised silts/sandstone, minor qtz grits and minor Fe-ox.	0.15
	6	8	J-K/Pum	Pk/blk	fg		clay, px, am	qtz, Fe-ox			White kaolinised silts/sandstone, minor qtz grits, minor Fe-ox and black fine grained equigranular ultramafics.	0.24
	8	10	Pgn	wht	mg		clay, ser	qtz, Fe-ox			White kaolin altered granite/gneiss and trace red Fe-ox altered granite (?).	0.21
	10	12	Pgn	Red	mg		qtz, feld, ser, Fe-ox	chl?			Red medium grained Fe altered granite (?) and minor chlorite veins.	0.08
	12	14	Pgn	Red	mg		qtz, feld, ser, Fe-ox	chl?			Red medium grained Fe altered granite (?) and minor chlorite veins.	0.30
	14	16	Pgn	Red	mg		qtz, feld, ser, Fe-ox	chl?			Red medium grained Fe altered granite (?) and minor chlorite veins.	0.46
	16	18	Pgn	Red	mg		qtz, feld, ser, Fe-ox	ser, chl?			Red medium grained Fe altered granite (?) and minor chlorite veins.	0.27
	18	20	Pgn	Red	mg		qtz, feld, ser, Fe-ox	ser	chl, mang		Red medium grained Fe altered granite (?) and minor chlorite veins.	0.35
	20	22	Pgn	Red	mg		qtz, feld, ser, Fe-ox	ser	chl, mang		Red medium grained Fe altered granite (?) and minor chlorite veins.	0.36
	22	24	Pgn	Red	mg		qtz, feld, ser, Fe-ox	ser	chl, mang		Red medium grained Fe altered granite (?) and minor chlorite veins.	0.52
	24	26	Pgn	Red	mg		qtz, feld, ser, Fe-ox	ser	chl, mang		Red medium grained Fe altered granite (?) and trace epidote (?) veins.	0.53
	26	28	Pgn	Red	mg		qtz, feld, ser, Fe-ox	ser	chl, mang		Red medium grained Fe altered granite (?) and trace epidote (?) veins.	0.70
	28	30	Pgn	Red	mg		qtz, feld, ser, Fe-ox	ser	chl, mang		Red medium grained Fe altered granite (?) and trace epidote (?) veins.	0.59
	30	32	Pgn	Red	mg		qtz, feld, ser, Fe-ox	ser	ep, ct		Red medium grained Fe altered granite (?) and trace epidote (?) and calcite veins.	0.61
	32	33	Pgn	Red	mg		qtz, feld, ser, Fe-ox	ser	ep, ct		Red medium grained Fe altered granite (?) and trace epidote (?) and calcite veins.	0.57

TIE RC69 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC69	0	2	Qa/Pgn	Rd/wht	fg-mg		qtz, feld, sand	bio			Red aeolian sand on white medium grained qtz/feld/(bio) weathered granitic gneiss.	0.52
	2	4	Pgn	Yw/wht	fg		qtz, feld	bio			White medium grained qtz/feld/(bio) weathered granitic gneiss with trace pegmatite veins.	1.03
	4	6	Pgn	Yw/wht	fg		qtz, feld	bio			White medium grained qtz/feld/(bio) weathered granitic gneiss with trace pegmatite veins.	1.12
	6	8	Pgn	Yw/wht	fg		qtz, feld	bio	mang		White medium grained qtz/feld/(bio) weathered granitic gneiss with trace pegmatite veins.	1.30
	8	10	Pgn	Pk/wht	fg		qtz, feld	bio	mang		Pink and white medium grained qtz/feld/(bio) weathered granitic gneiss with trace pegmatite veins.	1.80

TIE RC70 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC70	0	2	Qa/Pgn	Rd/wht	fg-mg		qtz, feld, sand	bio			Red aeolian sand on white medium grained qtz/feld/(bio) weathered granitic gneiss.	0.36
	2	4	Pgn	Yw	fg		qtz, feld	bio			Yellow fine grained qtz/feld/(bio) weathered granitic gneiss and trace pegmatite veins (cyclone contamination).	0.16
	4	6	Pgn	Yw	fg		qtz, feld	bio, hbl	gn		Yellow fine grained qtz/feld/(bio) weathered granitic gneiss.	0.87
	6	8	Pgn	Yw	fg		qtz, feld	bio, hbl	gn		Yellow fine grained qtz/feld/(bio) weathered granitic gneiss.	0.97
	8	10	Pgn	Yw	fg		qtz, feld	bio, hbl	gn		Yellow fine grained qtz/feld/(bio) weathered granitic gneiss.	0.64
	10	12	Pgn	Yw	mg		qtz, feld	bio	hbl		Yellow fine grained qtz/feld/(bio) weathered pegmatic granite and minor gneiss.	0.84
	12	14	Pgn	Yw/wht	fg		qtz, feld	bio, hbl			Yellow/white fine grained qtz/feld/(bio) weathered granitic gneiss.	1.19
	14	16	Pgn	Yw/wht	fg		qtz, feld	bio, hbl			Yellow/white fine grained qtz/feld/(bio) weathered granitic gneiss.	11.20

TIE RC71 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC71	0	2	Tpf	Brn	vfg	clay					Brown clay altered basement.	1.36
	2	4	Pum	Brn/grn	fg	clay		am, px			Brown clay altered mafic and dark green fine equigranular am/px? mafic/ultramafic.	0.67
	4	6	Pum	Dk grn	fg		am, px	lim	qtz, ct		Dark green fine equigranular am/px? mafic/ultramafic and minor limonite alteration and ct/qtz veinlets.	1.61
	6	8	Pum	Dk grn	fg		am, px	lim	qtz, ct, ep		Dark green fine equigranular am/px? mafic/ultramafic and minor limonite alteration and ct/qtz/ep veinlets.	2.20
	8	10	Pum	Dk grn	fg		am, px	lim	qtz, ct, ep		Dark green fine equigranular am/px? mafic/ultramafic and minor limonite alteration and ct/qtz/ep veinlets.	2.29
	10	12	Pum	Dk grn	fg		am, px	lim	qtz, ct, ep		Dark green fine equigranular am/px? mafic/ultramafic and minor limonite alteration and ct/qtz/ep veinlets.	2.01
	12	14	Pum	Dk grn	fg		am, px	lim	qtz, ct, ep		Dark green fine equigranular am/px? mafic/ultramafic and minor limonite alteration and ct/qtz/ep veinlets.	3.37
	14	16	Pum	Dk grn	fg		am, px	lim	qtz, ct, ep		Dark green fine equigranular am/px? mafic/ultramafic and minor limonite alteration and ct/qtz/ep veinlets.	4.87
	16	18	Pum	Dk grn	fg		am, px	lim	ep		Dark green fine equigranular am/px? mafic/ultramafic and minor limonite alteration and epidote veinlets.	1.43
	18	20	Pum	Dk grn	fg		am, px	lim, plag?	ep		Dark green fine equigranular am/px? mafic/ultramafic and minor limonite alteration and epidote veinlets.	0.89
	20	22	Pum	Dk grn	fg		am, px	lim, plag?	ep		Dark green fine equigranular am/px? mafic/ultramafic and minor limonite alteration and epidote veinlets.	3.59
	22	24	Pum	Dk grn	fg		am, px	lim, plag?	ep		Dark green fine equigranular am/px? mafic/ultramafic and minor limonite alteration and epidote veinlets.	1.79
	24	26	Pum	Dk grn	fg		am, px	lim	ep		Dark green fine equigranular am/px? mafic/ultramafic and minor limonite alteration and epidote veinlets.	2.31
	26	28	Pum	Dk grn	fg		am, px	lim	ep, niccolite?		Dark green fine equigranular am/px? mafic/ultramafic and minor limonite alteration and epidote veinlets also containing (niccolite?).	7.53

TIE RC72 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC72	0	2	Pgn	Yw	fg		qtz, feld	bio			Yellow, fine grained, weathered, quartz/feldspar/biotite granitic gneiss.	0.25
	2	4	Pgn	Yw+pk	fg		qtz, feld	bio			Yellow and pink, fine grained, weathered quartz/feldspar/biotite granitic gneiss.	0.28
	4	6	Pgn	Or	fg		qtz, feld	bio			Orange fine grained altered (?) qtz/feld/bio gneiss.	0.85
	6	8	Pgn	Or	fg		qtz, feld	bio			Orange fine grained altered (?) qtz/feld/bio gneiss.	0.63
	8	10	Pgn	Or/pk	fg-mg		qtz, feld	bio			Orange and pink fine grained altered (?) qtz/feld/bio gneiss with medium grained pegmatite veins.	0.50
	10	12	Pgn	Or/pk	fg		qtz, feld	bio			Orange and pink fine grained altered (?) qtz/feld/bio gneiss.	0.96
	12	14	Pgn	Or/pk	fg-mg		qtz, feld	bio	hbl		Orange and pink fine grained altered (?) qtz/feld/bio gneiss with medium grained pegmatite veins.	0.89
	14	16	Pgn	wht/pk	fg-mg		qtz, feld	bio, hbl	py, prh		Orange and pink fine grained altered (?) qtz/feld/bio gneiss and trace pyrite/phlogopite?	1.11
	16	18	Pgn	wht/pk	fg-mg		qtz, feld	bio, hbl			White and pink fine grained qtz/feld/bio gneiss.	6.15
	18	20	Pgn	wht/pk	fg-mg		qtz, feld	bio, hbl			White and pink fine grained qtz/feld/bio gneiss.	6.20

TIE RC73 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC73	0	2	Qu	Rd	fg		qtz				Red fine grained qtz-rich alluvium and cyclone contamination.	0.69
	2	4	Pmn	Grn-wht	fg	clay	qtz, hbl				Greenish white fine grained foliated clay-altered qtz/hbl gneiss (wet).	0.25
	4	6	Pmn	Grn	fg	hbl	bio, qtz				Greenish white fine grained foliated clay-altered qtz/hbl gneiss (wet).	0.25
	6	8	Pgn	Pk	mg		plag, qtz	hbl, bio			Pink medium grained pegmatite veins (?) and minor green fine grained hbl/bio/qtz gneiss.	0.31
	8	10	Pgn	Pk	mg		plag, qtz	hbl, bio			Pink medium grained pegmatite veins (?) and minor green fine grained hbl/bio/qtz gneiss.	0.24
	10	12	Pmn	Grn	fg	hbl	bio, qtz				Green fine grained hbl/bio/qtz gneiss.	0.62
	12	14	Pgn	Grn	mg		plag, qtz, hbl, bio		lim		White medium grained pegmatite veins (?) and green fine grained hbl/bio/qtz gneiss.	0.36
	14	16	Pgn	Grn	mg		hbl, bio	lim			Green fine grained hbl/bio/qtz gneiss and limonite veins.	0.58
	16	18	Pgn	Grn	mg		hbl, bio, mag	lim			Green fine grained hbl/bio/qtz gneiss and limonite veins.	2.53
	18	20	Pmn	Dk grn	fg		hbl, feld	mag, qtz	ct, lim		Green fine grained hbl/bio/qtz gneiss and calcareous/limonite veins.	39.20
	20	22	Pmn	Dk grn	fg		hbl, feld	mag, qtz	ct, lim		Green fine grained hbl/bio/qtz gneiss, pink mediium grained pegmatite veins and calcareous/limonite veins.	8.00
	22	24	Pmn	Dk grn	fg		hbl, feld	mag, qtz	ct, lim		Dark green fine grained foliated am/feld gneiss and trace ct/ep veins.	1.38
	24	26	Pmn	Dk grn	fg		hbl, feld	mag, qtz	ct, lim		Dark green fine grained foliated am/feld gneiss and trace ct veins.	7.26
	26	28	Pmn	Dk grn	fg		hbl, feld	mag, qtz	ct, lim		Dark green fine grained foliated am/feld gneiss and trace ct veins.	23.20
	28	30	Pmn	Dk grn	fg		hbl, feld	mag, qtz	ct, lim		Dark green fine grained foliated am/feld gneiss and trace ct veins.	25.70

TIE RC74 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC74	0	2	Qc/Pgn	Wht	vfg		CaCO3	qtz, bio, feld			White calcrete cover and minor white qtz/bio/feld gneiss.	0.12
	2	4	Pgn	Buff	fg		feld, qtz, bio				Buff fine grained feld/qtz/bio granitic gneiss.	7.47
	4	6	Pgn	Wht	fg		kao, qtz	feld, hbl, bio			White kaolin altered gneiss (?) and black/green fine grained, foliated hbl/feld/qtz/bio amp/gneiss.	0.75
	6	8	Pgn	Blk/pk	fg-mg		qtz, feld, hbl	bio, mag			Black/green fine grained, foliated hbl/feld/qtz/bio amp/gneiss and pink feld/qtz pegmatite veins.	6.90
	8	9	Pgn	Blk/pk	fg-mg		qtz, feld, hbl	bio, mag			Black/green fine grained, foliated hbl/feld/qtz/bio amp/gneiss and trace pink feld/qtz pegmatite veins.	11.70

TIE RC75 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC75	0	2	Qc/Pgn	Pk	mg		feld, qtz	bio, ct			White calcrete and pink feld/qtz/bio granite.	0.78
	2	4	Pgn	Pk	mg		feld, qtz	bio			Pink feld/qtz/bio granite.	0.68
	4	6	Pgn	Pk	mg		feld, qtz	bio	mag		Pink feld/qtz/bio granite.	1.81
	6	8	Pgn	Pk	mg		feld, qtz	hbl	bio, mag		Pink feld/qtz/bio/hbl granite.	1.90
	8	10	Pgn	Pk	mg		feld, qtz	hbl	bio, mag		Pink feld/qtz/bio/hbl granite.	2.13
	10	12	Pgn	Pk	mg		feld, qtz	hbl, chl	bio, mag		Pink feld/qtz/bio/hbl granite and minor chlorite veins.	5.35

TIE RC76 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC76	0	2	Qa	Red	fg		sand, qtz	ct			Red alluvial/aeolian sand, indurated in part, and minor calcrete.	1.20
	2	4	Qa	Red	fg		sand, qtz	ct			Red alluvial/aeolian sand indurated in part, minor calcrete and minor coarse grained alluvium (trace ultramafic fragments).	0.43
	4	6	Pgn	Pnk/Wht	mg	clay	qtz				Buff clay and white kaolin-altered basement.	0.29
	6	8	Pgn	Wht	mg	clay	qtz				White kaolin-altered basement.	0.18
	8	10	Pgn	Ple grn	mg	clay	qtz				Pale green kaolin-altered basement.	0.29
	10	12	Pgn	Wht	mg	clay	qtz	feld			White kaolin altered granite.	0.35
	12	14	Pgn	Yell	fg		qtz, clay	feld, bio			Yellow fine grained weathered qtz/feld/bio granite.	0.38
	14	16	Pgn	Yell	fg		qtz, clay	feld, bio			Yellow fine grained weathered qtz/feld/bio granite.	0.65
	16	18	Pgn	Yell	fg		qtz, feld	clay, bio			Yellow fine grained weathered qtz/feld/bio granite.	0.63
	18	20	Pgn	Yell	fg		qtz, feld	clay, bio			Yellow fine grained weathered qtz/feld/bio granite.	0.69
	20	22	Pgn	Yell/Grn	fg		qtz, feld, hbl	bio, mag			Yellow fine grained weathered qtz/feld/bio granite and green fine grained foliated hbl/feld/qtz/mag gneiss.	1.52
	22	24	Pgn	Grn	fg		qtz, feld, hbl	bio, mag			Green fine grained foliated hbl/plag/qtz/mag gneiss and pnk-yellow fine grained qtz/feld/bio pegmatite veins.	15.40
	24	26	Pgn	Yell/Grn	fg		qtz, feld, hbl	bio, mag			Green fine grained foliated hbl/plag/qtz/mag gneiss and pnk-yellow fine grained qtz/feld/bio pegmatite veins.	2.14
	26	28	Pgn	Wht/Pnk	fg		qtz, feld, hbl	bio, mag			White-green fine grained foliated hbl/plag/qtz/mag gneiss and pnk-yellow fine grained qtz/feld/bio pegmatite veins.	7.69

TIE RC77 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC77	0	2	Qa	Rd	fg	sand					Red aeolian sand.	0.88
	2	4	Pum	Brn	vfg	clay		am, px			Brown clay and trace dark green medium grained equigranular pyroxenite?	6.77
	4	6	Pum	Blk	mg		px, am	feld?			Dark green/black medium grained massive pyroxenite?	11.40
	6	7	Pum	Blk	mg		px, am	feld?, kao			Dark green/black medium grained massive pyroxenite (?) And white kaolinised granite.	7.07

TIE RC78 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC78	0	2	Qa/Pum	Rd	fg	sand		lim, am			Red aeolian sand and yellow fine grained limonite altered dolerite (?)/ultra-mafic.	5.36
	2	4	Pum	Yw, or	fg		lim amp feld		mag		Yellow and orange fine-medium grained limonite altered pyroxenite?	4.27
	4	6	Pum	Dk grn	fg		am, feld, qtz	lim, mag, chl			Yellow and orange fine-medium grained limonite altered pyroxenite (?) with chlorite veins.	6.28
	6	8	Pum	Dk grn	fg		am, feld, qtz	lim, mag, chl			Yellow and orange fine-medium grained limonite altered pyroxenite (?) with chlorite veins.	7.38
	8	10	Pum	Dk grn	fg		am, feld, qtz	mag, chl	lim		Green and yellow fine-medium grained limonite altered pyroxenite (?) with chlorite veins.	12.10
	10	12	Pum	Dk grn	fg		am, feld, qtz	mag, chl			Green and yellow fine-medium grained pyroxenite (?) with chlorite veins.	15.10

TIE RC79 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC79	0	2	Qa	Rd	fg		sand, qtz, clay				Red aeolian/alluvial sand, indurated.	0.52
	2	4	Qa	Pk	fg		sand, qtz, clay				Pink fine grained silic/calcareous alluvial sands and clays.	0.28
	4	6	J-K	Pk	fg		sand, qtz, clay				Pink fine grained silic/calcareous alluvial sands and clays (Algebuckina?).	0.57
	6	8	J-K	Pk	fg		sand, qtz, clay				Pink fine grained silic/calcareous alluvial sands and clays (Algebuckina?) and trace altered basement.	0.89
	8	10	Pgn	Pk	fg-mg		qtz, feld	clay			Pink fine grained to medium grained qtz/feld granitic gneiss?	2.43
	10	12	Pgn	Pk	fg-mg		qtz, feld	clay	bio		Pink fine grained to medium grained qtz/feld granitic gneiss?	0.34
	12	14	Pgn	Pk	fg-mg		qtz, feld	clay	bio		Pink fine grained to medium grained qtz/feld granitic gneiss (?) and white kaolinised altered granite.	0.28
	14	16	Pgn	Pk	fg-mg		qtz, feld	clay	bio		Pink fine-medium grained qtz/feld granite.	0.45
	16	18	Pgn	Pk	fg-mg		qtz, feld		clay, bio		Pink fine-medium grained qtz/feld granite.	0.61
	18	20	Pgn	Pk, yw	fg-mg		qtz, feld	lim?	clay, bio		Pink fine-medium grained qtz/feld granite, partially limonite altered.	0.92
	20	22	Pgn	Yw, pk	fg-mg		qtz, feld, lim		clay, bio		Pink fine-medium grained qtz/feld granite, strongly limonite altered.	1.44
	22	24	Pgn	Pk	fg-mg		qtz, feld		clay, bio, chl		Pink fine-medium grained qtz/feld granite with trace chlorite veins.	0.29
	24	26	Pgn	Brn	fg		qtz, feld, Fe-ox				Brown fine grained Fe altered (?) granitic gneiss.	0.64
	26	28	Pgn	Brn	fg		qtz, feld, Fe-ox				Brown fine grained Fe altered (?) granitic gneiss.	1.01
	28	30	Pgn	Brn	fg		qtz, feld, Fe-ox				Brown fine grained Fe altered (?) granitic gneiss.	0.54

TIE RC80 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC80	0	2	Qa	Rd	fg		sand, qtz, clay				Red aeolian sand (0-1m), red alluvial sands and clays cemented in parts.	0.78
	2	4	Qa	Rd	fg		qtz, clay				Red alluvial sands and clays, cemented in parts.	0.19
	4	6	J-K	Buff	fg		qtz, clay				Buff fine grained cemented sands and clays (Algebuckina/Bulldog?).	0.21
	6	8	J-K	Buff	fg		qtz, clay				Buff fine grained cemented sands, clays and grits (Algebuckina/Bulldog?) and white porcellanite.	0.11
	8	10	J-K	Buff/grn	fg		qtz, clay				Buff fine grained cemented sands, clays and grits (Algebuckina/Bulldog?).	0.18
	10	12	J-K	Buff/grn	fg		qtz, clay				Buff fine grained cemented sands, clays and grits (Algebuckina/Bulldog?).	0.23
	12	14	J-K	Brn	fg		qtz, clay	lim			Buff fine grained cemented sands, clays and grits (Algebuckina/Bulldog?).	0.13
	14	16	J-K	Brn	fg		qtz, clay, lim				Buff fine grained cemented sands, clays and grits (Algebuckina/Bulldog?) (damp sample).	0.44
	16	18	J-K	Brn	fg		qtz, clay, lim				Buff fine grained cemented sands, clays and grits (Algebuckina/Bulldog?) (damp sample).	0.24
	18	20	J-K/Pgn	Wht/grn	fg - mg	kao	qtz, ser		lim		White and pale green fine-medium kaolin altered granitic gneiss and minor buff, fine grained cemented sands, clays and grits (Algebuckina/Bulldog?) (damp sample).	0.09
	20	22	Pgn	Wht/grn	fg - mg	kao	qtz, ser				Wht and ple grn fine grained to mg kaol altered granitic gneiss	0.05
	22	24	Pgn	Wht/pk	fg - mg	kao	qtz, feld	bio			White and pale green fine-medium kaolin altered granitic gneiss.	0.07
	24	26	Pgn	Wht/pk	fg - mg		qtz, feld	bio			White and pale green fine-medium kaolin altered granitic gneiss.	0.18
	26	28	Pgn	Wht/pk	fg - mg		qtz, feld	bio	ep		White and pale green fine-medium kaolin altered granitic gneiss and trace epidote veins (B.O.C.O.).	0.21
	28	30	Pgn	Wht/pk	fg - mg		qtz, feld	bio, lim	hbl		Yellow and pink fine-medium altered granitic gneiss, limonite veins and minor pegmatite veins.	0.40
	30	32	Pgn	Wht/pk	fg - mg		qtz, feld	bio, lim, hbl			Yellow and pink fine-medium altered granitic gneiss, limonite veins and minor pegmatite veins.	0.31

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	32	34	Pgn	Wht/pk	fg - mg		qtz, feld	bio, hbl	lim		Yellow and pink fine-medium altered granitic gneiss, limonite veins and minor pegmatite veins.	0.51
	34	36	Pgn	Wht/pk	fg - mg		qtz, feld	bio, hbl, lim			Yellow and pink fine-medium altered granitic gneiss, limonite veins and minor pegmatite veins.	0.72
	36	38	Pgn	Wht/pk	fg - mg		qtz, feld	bio, hbl, lim			Yellow and pink fine-medium altered granitic gneiss, limonite veins and minor pegmatite veins.	0.85
	38	40	Pgn	Brn/pk	fg - mg		qtz, feld	Fe-ox?			Brown fine-medium grained Fe-altered (?) gneiss and minor pegmatite veins (B.O.P.O.)	0.30
	40	42	Pgn	Brn/pk	fg - mg		qtz, feld	hbl, bio			Brown fine-medium grained feld/qtz/hbl/bio and minor pegmaitte veins.	0.57

TIE RC81 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC81	0	2	Qa	Rd	fg		sand, qtz, clay				Red aeolian sand (0-1m), red alluvial sands and clays cemented in parts, carbonate roots (?).	0.46
	2	4	Qa	Rd	fg		qtz, clay				Red alluvial sands and clays with minor quartz grit horizons.	0.47
	4	6	Qa	Rd	fg		qtz, clay				Red alluvial sands and clays with minor quartz grit horizons.	0.27
	6	8	Taq	Rd/buff	fg-mg		qtz, clay				Red alluvial grits, sands and clays on buff medium grained cemented sands and clays.	0.12
	8	10	Taq	Rd	fg-mg		qtz, clay				Red alluvial medium grained grits, sands and clays.	0.14
	10	12	Taq	Red/buff	fg-mg		qtz	clay			Red and buff fine to medium grained cemented alluvial grits, sands and minor clays.	0.10
	12	14	Taq	Buff	fg-mg		qtz	clay			Buff fine to medium grained cemented alluvial grits, sands and minor clays.	0.12
	14	16	Tap	Buff	vfg		silica, clay				Buff very fine grained vitreous porcellanite.	0.04
	16	18	Taq	Brn/rd	fg		qtz, clay				Brown red fine grained clay-rich sands (damp sample).	0.19
	18	20	Taq	Brn/rd	fg		qtz, clay				Brown red fine grained clay-rich sands (wet	0.09

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
											sample).	
	20	22	Taq	Yw	fg		qtz, clay				Yellow to green fine grained clay, and yellow to black gravels and sands (wet).	0.36
	22	24	Taq	Yw	fg		qtz, clay				Yellow to green fine grained clay, and yellow to black gravels and sands (wet).	0.18
	24	26	Taq	Yw-or	fg		qtz	clay			Yellow to green fine grained clay, and yellow to black gravels and sands (wet).	0.57
	26	28	Taq	Yw-or	fg		qtz	clay			Yellow to green fine grained clay, and yellow to black gravels and sands (wet).	0.37
	28	30	Taq	Yw-or	fg		qtz	clay			Yellow to green fine grained clay, and yellow to black gravels and sands (wet).	0.24
	30	32	Taq/Tpn	Yw/wht	fg		qtz	clay, feld	bio		Yellow quartz grit and white kaolinised qtz/feld/bio granite (wet sample- water injection).	0.10
	32	34	Tpn	Yw/wht	fg		qtz	clay, feld	bio		Yellow quartz grit and white kaolinised qtz/feld/bio granite (damp sample- water injection).	0.52
	34	36	Tpn	Yw/wht	fg		qtz	feld, bio	clay		Yellow quartz grit and white kaolinised qtz/feld/bio granite (damp sample- water injection).	0.38
	36	38	Tpn	Yw/wht	fg		qtz	feld, bio	clay		Yellow quartz grit and white kaolinised qtz/feld/bio granite (damp sample- water injection).	0.42
	38	40	Pga	Yw/wht	fg		qtz	feld, bio	mag, clay		Yellow quartz grit and white kaolinised qtz/feld/bio granite (damp sample- water injection).	0.40
	40	42	Pga	Wht/ppl, grn	mg		qtz, feld	bio	mag		White qtz/feld/bio/mag granite with minor green alteration (?) of feldspars (B.O.C.O.).	7.38
	42	44	Pgn	Wht	mg		qtz, feld	bio	mag		White qtz/feld/bio/mag granitic gneiss (B.O.P.O.).	16.90
	44	45	Pga	Wht/ppl, grn	mg		qtz, feld	bio	mag		White qtz/feld/bio/mag granitic gneiss.	15.00

TIE RC82 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC82	0	2	Qa	Rd	fg		qtz, clay				Red aeolian sand.	0.54
	2	4	Taq	Rd	fg		qtz, clay,silica				Red clayey sand, partially silcreted.	0.32
	4	6	Taq	Or	fg		qtz, clay,silica				Pale orange clayey sand, partially silcreted.	0.13
	6	8	Taq	Grn/brn	fg		silica	qtz, clay			Pale green and red brown silcrete, ferricrete and porcellanite.	0.24
	8	10	Taq	Grn/brn	fg		silica	qtz, clay			Pale green and red brown silcrete and ferricrete.	0.17
	10	12	Taq	Rd, brn	fg		qtz,clay	silica, Fe-ox			Red brown sandy clay, partially silcreted.	0.21
	12	14	Taq	Rd, brn	fg		qtz,clay	silica, Fe-ox			Red brown sandy clay, partially silcreted (damp).	0.46
	14	16	Taq	Ple brn	fg		qtz,clay	silica, Fe-ox	Carbona ceous?		Pale brown partially silcreted clay and sand with trace carbonaceous interbeds (?).	0.22
	16	18	Taq	Khaki	mg-cg		qtz	Fe-ox			Khaki quartz grit with rounded ferricrete gravel.	0.39
	18	20	Taq	Pale brn	mg-cg		qtz	ja?			Pale brown partially silcreted and ferricreted gritty sandstone.	0.36
	20	22	Taq	Pale brn	fg		qtz, clay			silica	Pale brown clayey gritty sandstone and rare greenish silcrete.	0.29
	22	24	Taq	Pale brn	fg		qtz, clay				Pale brown clayey gritty sandstone and rare greenish silcrete.	0.22
	24	26	?Pgn	Pale brn	fg		qtz, clay		feld		Pale brown clayey sand with granitic gravel.	0.18
	26	28	Pgn	Pale brn	cg		qtz, bio, feld	hbl	ep		Pale brown granitic gneiss with epidote alteration, still damp.	0.26
	28	30		Brn/gy	cg		qtz, bio, feld	hbl			Pale brown and grey granitic gneiss with altered biotite (?), dry.	0.42
	30	32		Brn/gy	cg		qtz, bio, feld	hbl				0.66
	32	34		Brn/gy	cg		qtz, bio, feld	hbl	ep		Pale brown and grey granitic gneiss with epidote alteration.	3.19
	34	36		Brn/gy	cg		qtz, bio, feld	hbl			Pale brown and grey granitic gneiss with epidote alteration.	0.83
	36	38		Brn/gy	cg		qtz, bio, feld	hbl			Pale brown and grey granitic gneiss with epidote alteration, fairly fresh.	2.06
	38	39		Brn/gy	cg		qtz, bio, feld	hbl	ep		Pale brown and grey granitic gneiss with epidote alteration, fairly fresh.	8.51

TIE RC83 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC83	0	2	Qa/Taq	Rd/buff	fg		sand, qtz, clay				Red aeolian sand (0-1m), and buff alluvial sands and clays.	0.85
	2	4	Taq	Rd/buff	fg		sand, qtz, clay				Red aeolian sand (0-1m), and buff alluvial sands and clays.	0.77
	4	6	Taq	Rd/buff	fg		sand, qtz, clay				Red aeolian sand (0-1m), and buff alluvial sands, clays and minor coarse grained grits.	0.36
	6	8	Taq	Rd/buff	fg		sand, qtz, clay				Red aeolian sand (0-1m), and buff alluvial sands, clays and minor coarse grained grits.	0.06
	8	10	Taq	Buff/ple grn	fg-mg		sand, qtz	clay	ep, mang		Red aeolian sand (0-1m), and buff alluvial sands, clays and minor coarse grained grits. Minor pale green epidote alteration (?) and manganese veining (?).	0.26
	10	12	Taq	Buff/ple grn	fg-mg		qtz	clay	ep, mang		Red aeolian sand (0-1m), and buff alluvial sands, clays and minor coarse grained grits. Minor pale green epidote alteration (?) and manganese veining (?).	0.20
	12	14	Taq	Buff	fg-mg		qtz	clay	mang		Buff alluvial sands, clays and minor coarse grained grits. Trace manganese veining (?), damp sample.	0.20
	14	16	Taq	Buff	fg		qtz, clay				Buff alluvial sands, clays and minor coarse grained grits, damp sample.	0.22
	16	18	Taq	Rd/buff	fg-cg		qtz, clay	gravel			Buff alluvial sands, clays and very coarse grained gravels, damp sample.	0.30
	18	20	Taq	Rd/buff	fg-cg		qtz, clay	gravel			Buff alluvial sands, clays and very coarse grained gravels, damp sample.	0.18
	20	22	Taq	Yw/buff	fg		qtz, clay				Yellow and buff alluvial sands and clays, damp sample.	0.81
	22	24	Taq	Buff/ple grn	fg-mg		qtz	clay	ep?		Buff alluvial sand, clays and coarse grained grits. Minor pale green alteration epidote (?), damp sample.	0.10
	24	26	Taq/Pgn	Buff/wht	fg		qtz,feld	bio, mus			Off white fine grained, foliated qtz/feld/bio granitic gneiss, damp sample. Minor gravels and biotite alteration (?) to a golden colour (B.O.C.O.).	0.21
	26	28	Pgn	Wht/yw	fg		qtz, feld		bio, mag		Off white fine grained, foliated qtz/feld/bio granitic gneiss, damp sample. Minor gravels and biotite alteration (?) to a golden colour.	0.77

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	28	30	Pgn	Wht/yw	fg		qtz, feld	bio, mus	epi, mag		Off white fine grained, foliated qtz/feld/bio granitic gneiss, damp sample. Minor gravels and biotite alteration (?) to a golden colour. Trace pale green epidote veins.	0.67
	30	32	Pgn	Wht/yw	fg		qtz, feld	bio, mus	hbl, ep, mag		Off white fine grained, foliated qtz/feld/bio granitic gneiss, damp sample. Minor gravels and biotite alteration (?) to a golden colour. Trace pale green epidote veins.	0.79
	32	34	Pgn	Blk, wht	fg		qtz, hbl	feld, bio	mag		Black and white fine grained, foliated qtz/hbl/feld/bio granitic gneiss.	1.48
	34	36	Pgn	Blk, wht	fg		qtz, hbl	feld, bio, mag			Black and white fine grained, foliated qtz/hbl/feld/bio granitic gneiss.	19.60

TIE RC84 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC84	0	2	Qa	Rd brn	fg		qtz, clay, CaCO3				Red brown partially calcreted sand and clay (0-1m aeolian sand).	0.92
	2	4	Qa	Rd brn	fg-cg		qtz, clay, silica				Red brown partially silcreted, clayey, gritty sand.	0.71
	4	6	Qa	Ple brn	fg		qtz, clay, silica				Red brown partially silcreted, clayey, gritty sand.	0.41
	6	8	Qa	Rd brn	fg-mg		qtz, clay				Red brown clayey sand with angular quartz gravel to 4mm.	0.41
	8	10	Qa	Rd brn	fg		qtz, clay				Pale brown partially silcreted and ferricreted clayey sand. Rare angular qtz gravel to 5mm.	0.44
	10	12	Qa	Ple brn	fg		qtz, clay, silica				Pale brown partially silcreted gritty clayey sand. Rare manganese on fracture surfaces.	0.22
	12	14	Qa	Ple brn	fg-cg		qtz, clay, silica				Pale brown silcreted, gritty, clayey sand. Rare manganese on fracture surfaces. Damp 13-14m.	0.25
	14	16	Qa	Ple brn	fg-cg		qtz, clay, silica				Pale brown partially silcreted gritty clayey sand. Rare manganese on fracture surfaces.	0.20

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	16	18	Qa	Ple brn	fg-mg		qtz, clay, silica				Pale brown partially silcreted gritty clayey sand. Rare manganese on fracture surfaces.	0.23
	18	20	Taq	Ple brn	fg-mg		qtz, clay, silica				Pale brown partially silcreted sandy clay.	0.26
	20	22	Taq	Ple brn	fg-mg		qtz, clay	Fe-ox			Pale brown sandy clay with ferricrete fragments.	0.72
	22	24	Taq	Ple brn	fg-cg		qtz, clay		silica, Fe-ox		Pale brown sandy clay with ferricrete fragments.	1.43
	24	26	Taq	Ple brn	fg-cg		qtz, clay		silica, Fe-ox		Pale brown sandy clay with ferricrete fragments.	0.72
	26	28	Taq	Ple brn	fg		qtz, clay	silica, Fe-ox			Pale brown partially silcreted and ferricreted clayey gritty sand.	0.13
	28	30	Taq	Ple brn	fg		qtz, clay	silica, Fe-ox			Pale brown partially silcreted and ferricreted clayey gritty sand.	0.14
	30	32	Taq	Ple brn	fg		qtz, clay	silica, Fe-ox			Pale brown partially silcreted and ferricreted clayey gritty sand.	0.39
	32	34	Taq	Ple brn	fg		qtz, clay	silica, Fe-ox			Pale brown partially silcreted and ferricreted clayey gritty sand. Rounded ferricrete to 1 cm.	0.42
	34	36	Taq	Ple brn	fg		qtz, clay	silica, Fe-ox			Pale brown partially silcreted and ferricreted clayey gritty sand. Rounded ferricrete to 1 cm.	0.70
	36	38	Taq	Brn	mg-vcg		qtz, clay		silica, Fe-ox		Brown clayey medium to coarse grained sand. Some rounded ferricrete to 4 mm.	0.77
	38	40	Taq	Rd brn/gy	mg-vcg		qtz, clay	silica			Red brown to grey partially silcreted clayey sand.	0.24
	40	42	Taq	Gy	mg-vcg		qtz, clay	silica			Grey partially silcreted clayey sand.	0.27

TIE RC85 Drilllhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC85	0	2	Qs/Qc	Rd	fg		sand, qtz, clay				Red aeolian sand (0-1m), red alluvial sands and clays.	0.72
	2	4	Qc	Rd	fg		sand, qtz, clay				Red (in part) alluvial sands and clays and minor coarse grained qtz grits.	0.37
	4	6	Qc	Buff	fg		clay	qtz, sand			Red (in part) alluvial sands and clays and minor coarse grained qtz grits.	0.22
	6	8	Qc	Buff	fg		clay	qtz, sand			Red (in part) alluvial sands and clays and minor coarse grained qtz gneiss grits.	0.31
	8	10	Qc	Buff	fg		clay	qtz, sand			Buff alluvial (sands) and clays and minor coarse qtz gneiss grits.	0.53
	10	12	Qc	Buff	fg		clay	qtz, sand			Buff alluvial (sands) and clays and minor coarse qtz gneiss grits.	0.37
	12	14	Qc	Wht	fg		clay	sand	qtz		Buff alluvial (sands) and clays and trace coarse qtz gneiss grits.	0.26
	14	16	Qa	Buff/rd	fg		clay	qtz, sand	mang		Buff and red alluvial sands and clays and trace manganese staining.	0.19
	16	18	Qa	Buff/rd	fg		clay	qtz, sand	mang		Buff and red alluvial sands and clays and trace manganese staining.	0.44
	18	20	Pgn	Off wht	fg		qtz	feld, bio	$CaCO_3$		Off white fine grained qtz/feld/bio gneiss (?) and minor carbonate veins.	2.09
	20	22	Pgn	Off wht	fg		qtz	feld, bio	hbl	mag	Off white fine grained qtz/feld/bio/hbl/mag gneiss.	2.89
	22	24	Pgn	Off wht	fg		qtz	feld, bio	hbl	mag	Off white fine grained qtz/feld/bio/hbl/mag gneiss.	2.95
	24	26	Pgn	Off wht	fg		qtz	feld, bio	hbl	mag	Off white fine grained qtz/feld/bio/hbl/mag gneiss.	3.28
	26	28	Pgn	Off wht	fg		qtz	feld, bio	hbl	chl, mag	Off white fine grained qtz/feld/bio/hbl/mag gneiss and trace chlorite veins (?).	4.63
	28	30	Pgn	Off wht	fg		qtz	feld, bio	hbl	mag	Off white fine grained qtz/feld/bio/hbl/mag gneiss and trace limonite veins (?).	6.25

TIE RC86 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC86	0	2	Qa	Rd brn	fg-mg		qtz, clay	calcrete			Red brown partially calcreted sand and clay (0-1m aeolian sand).	3.02
	2	4	Qa	Rd brn	fg-mg		qtz, clay				Red brown partially calcreted sand and clay.	3.91
	4	6	Qa	Rd brn	fg-mg		qtz, clay				Red brown clayey sand, very weakly cemented.	2.11
	6	8	Qa	Rd brn	fg-mg		qtz, clay				Red brown clayey sand, very weakly cemented.	0.98
	8	10	Qa	Rd brn	fg-mg		qtz, clay				Red brown clayey sand, partially silcreted. Rare sub-angular qtz gravel to 5mm.	0.64
	10	12	Pgn	Off wht	mg-cg		qtz, feld, bio				Pale brown & grey gneiss with red feldspar, altered. Brassy micas.	0.86
	12	14	Pgn	Off wht	mg-cg		qtz, feld, bio				Pale brown & grey gneiss with red feldspar, altered. Brassy micas.	1.87
	14	16	Pgn	Ple brn	mg-cg		qtz, feld, bio				Pale brown granitic gneiss with red feldspar, altered. Brassy micas.	1.03
	16	18	Pgn	Ple brn	mg-cg		qtz, feld, bio				Pale brown granitic gneiss with red feldspar, altered. Brassy micas.	5.54
	18	20	Pgn	Ple brn	mg-cg		qtz, feld, bio		gn?		Pale brown granitic gneiss with red feldspar, altered. Brassy micas.	5.85
	20	22	Pgn	Ple brn	mg-cg		qtz, feld, bio				Pale brown granitic gneiss with red feldspar, altered. Brassy micas and trace brown garnet (?).	3.85
	22	24	Pgn	Dk gy	fg		qtz, hbl	feld, bio			Dark grey microgneiss with less feldspar and foliation, 20% mafics trace alteration, magnetite and red feldspar alteration.	5.56
	24	26	Pgn	Dk gy	fg		qtz, hbl	feld, bio			Dark grey microgneiss with less feldspar and foliation, 20% mafics trace alteration, magnetite and red feldspar alteration.	9.36
	26	28	Pgn	Gy-brn	fg-cg		qtz, hbl, feld	bio			Grey microgneiss and rare mafic layering. Damp at 27m.	1.96
	28	30	Pgn	Brn	mg		qtz, feld, bio				Brown to grey medium grained gneiss with red feldspar alteration.	4.41
	30	32	Pgn	Gy	mg		qtz, feld, mus	bio, chl		ep	Grey muscovite gneiss with minor chlorite. Damp sample.	0.39
	32	34	Pgn	Brn-gy	mg		qtz, feld, bio	mus		ep	Brown and grey gneiss with significant red feldspar alteration.	15.70
	34	36	Pgn	Brn-gy	mg		qtz, feld, bio			ep	Brown and grey gneiss with significant red feldspar alteration.	5.05

TIE RC87 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC87	0	2	Qa	Rd brn	fg-mg		qtz, clay	calcrete			Red brown aeolian sand over clayey sand with calcrete fragments.	1.15
	2	4	Qa	Rd brn	fg		qtz, clay			calcrete	Red brown clayey sand and grit with rare calcrete fragments.	0.74
	4	6	Qc	Rd brn	fg		calcrete	qtz, clay			Red brown calcreted clayey sand.	0.44
	6	8	Qc	Or	fg		qtz, clay	calcrete			Orange calcreted clayey sand.	0.63
	8	10	Qc	Or	fg		calcrete	qtz, clay			Orange calcreted clayey sand. Rare sub-angular quartz gravel to 6mm.	1.15
	10	12	Qc	Or	fg		calcrete	qtz, clay			Orange calcreted clayey sand. Some manganese staining.	3.01
	12	14	Qc	Or	fg		calcrete	qtz, clay			Orange calcreted clayey sand. Some manganese staining.	1.11
	14	16	Tpk/Tpf	Rd brn/gy	fg-mg		qtz, feld	bio			Red brown and grey weathered gneissic granite with abundant transported fine grained mafic fragments decreasing with depth.	4.13
	16	18	Tpk/Tpf	Rd brn/gy	fg-mg		qtz, feld	bio				6.30
	18	20	Tpk/Tpf	Or	fg-mg		qtz, feld	bio			Orange very weathered transported gneiss fragments.	1.40
	20	22	Tpk/Tpf	Rd brn	fg-cg		qtz, feld	bio			Red brown very weathered gneiss (?) with rounded ferricrete and rare mafic fragments. Possible manganese (?).	5.49
	22	24	Tpk/Tpf	Rd brn	fg-cg		qtz, feld					0.83
	24	26	Tpk/Tpf	Or	mg		qtz, feld	clay			Orange, very weathered gneiss (?) with red feldspar alteration.	0.17
	26	28	Tpk/Tpf	Ple or	mg		qtz, feld				Pale orange granitic gneiss with red feldspar alteration.	0.25
	28	30	Tpk/Tpf	Ple brn	mg		qtz, feld	clay			Brown kaolinised granite with red feldspar alteration and rare dark fragments-manganese?	0.28
	30	32	Tpk/Tpf	Ple brn	mg		qtz, feld				Brown kaolinised granite with red feldspar alteration and rare dark fragments-manganese?	0.28
	32	34	Tpk/Tpf	Ple brn	mg		qtz, feld, clay				Brown kaolinised granite with red feldspar alteration and rare dark fragments-manganese?	0.19
	34	36	Tpk/Tpf	Ple brn	mg		clay	qtz, feld			Pale brown clay with granite fragments and red feldspar alteration.	0.25
	36	38	Tpk/Tpf	Ple brn	mg		clay	qtz, feld			Pale brown clay with granite fragments and red feldspar alteration.	0.28
	38	40	Tpk/Tpf	Off wht	mg		clay	qtz, feld			Off white clay with granite fragments and red	0.36

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
											feldspar alteration.	
	40	42	Tpk/Tpf	Ple brn	mg		clay	qtz, feld			Pale brown clay with granite fragments and red feldspar alteration.	0.26
	42	44	Tpk/Tpf	Ple brn	mg		clay	qtz, feld			Pale brown clay with granite fragments and red feldspar alteration.	0.30
	44	46	Tpk/Tpf	Ple brn	mg		clay	qtz, feld			Pale brown clay with granite fragments and red feldspar alteration.	0.25
	46	48	Tpk/Tpf	Off wht	mg		qtz, feld	clay			Pale brown to off white granite fragments in clay.	0.25
	48	50	Tpk/Tpf	Off wht	mg		qtz, feld	clay			Pale brown to off white granite fragments in clay.	0.26
	50	52	Tpk/Tpf	Ple brn	mg		clay	qtz, feld			Pale brown clay with granite fragments and red feldspar alteration.	0.25
	52	54	Tpk/Tpf	Ple brn	mg		qtz, feld	clay			Pale brown kaolinised granite with pink feldspar alteration.	0.19
	54	56	Tpk/Tpf	Ple brn	mg		qtz, feld	clay			Pale brown kaolinised granite with pink feldspar alteration.	0.22
	56	58	Tpk/Tpf	Ple brn	mg		qtz, feld	clay			Pale brown kaolinised gneissic granite with pink feldspar alteration.	0.20
	58	60	Tpk/Tpf	Ple brn	mg		qtz, feld	bio? hbl		pseudo	Pale brown gneissic granite with red feldspar alteration, some epidote alteration and rare pseudotachylite (?). Becoming fresher.	0.39
	60	62	Tpk/Tpf	Off wht/gy	mg		qtz, feld	bio? hbl			Pale brown gneissic granite with red feldspar alteration, some epidote alteration and rare pseudotachylite (?). Becoming fresher.	3.21
	62	63	Tpk/Tpf	Off wht/gy	mg		qtz, feld	bio? hbl			Grey and off white gneissic granite with red feld. alt. and mylonitic lineations.	3.50

TIE RC88 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC88	0	2	Qs	Rd	fg		sand				Red aeolian sand.	0.86
	2	4	Qs/Qc	Rd	fg		sand, CaCO3	clay			Red aeolian sand (2-2.5m), red calcareous alluvial sands and clays, and minor qtz rich coarse grained gravels.	0.36
	4	6	Qc	Rd	fg		sand, CaCO3	clay			Red calcrete alluvial sands and clays and minor qtz rich coarse gravels.	0.20
	6	8	Qc	Buff	vfg		clay, CaCO3	sand			Buff calcrete-rich alluvial clays and sands, and trace qtz rich coarse grained gravels.	1.75
	8	10	Qc	Buff	vfg		clay, CaCO3	sand			Buff calcrete-rich alluvial clays and sands, and trace qtz rich coarse grained gravels.	0.22
	10	12	Qc	Buff	vfg		clay, CaCO3	sand			Buff calcrete-rich alluvial clays and sands, and trace qtz rich coarse grained gravels.	0.24
	12	14	Qc	Buff/ppl, grn	fg		sand, clay, CaCO3				Buff and pale grn calcareous alluvial clays and sands.	0.10
	14	16	Qc	Buff/ppl, grn	mg		sand, clay, CaCO3				Buff and pale grn calcareous alluvial clays and sands and minor coarse qtz-rich gravels.	0.15
	16	18	Qc	Buff/brn	mg		sand, clay, CaCO3	mang, lim			Buff and pale grn calcareous alluvial clays and sands and minor coarse qtz-rich gravels. Brown fine grained limonite contaminated sands and manganese veins (?).	0.07
	18	20	Qc	Buff/brn	mg		sand, clay, CaCO3	lim-Fe			Buff and pale grn calcareous alluvial clays and sands and minor coarse qtz-rich gravels. Brown fine grained limonite/Fe contaminated sands.	0.13
	20	22	Qc	Buff/brn	mg		sand, clay, CaCO3	lim-Fe			Buff and pale grn calcareous alluvial clays and sands and minor coarse qtz-rich gravels. Brown fine grained limonite/Fe contaminated sands.	0.20
	22	24	Qu	Red/yw	fg		clay, sand, Fe-lim				Red and yellow clay rich sands and trace medium grained qtz grits.	0.38
	24	26	Qu	Or	fg-cg		clay, sand, Fe-lim	gravel			Red and yell clay rich sands, medium-coarse qtz gneiss and black dolerite/ultramafic gravels.	1.59
	26	28	Pgn	off wht	fg		qtz, feld	bio, chl, hbl			Off white fine grained foliated qtz/feld/(bio/chl/hbl) gneiss with rare hbl/qtz gniess.	2.40

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	28	30	Pgn	off wht	fg		qtz, feld	bio, chl, hbl	mag, lim		Off white fine grained foliated qtz/feld/(bio/chl/hbl) gneiss with minor limonite alteration.	0.97
	30	32	Pgn	off wht	fg		qtz, feld	bio, chl, hbl	mag		Off white fine grained foliated qtz/feld/(bio/chl/hbl) gneiss.	10.10
	32	34	Pgn	off wht	fg		qtz, feld	bio, chl, hbl	mag		Off white fine grained foliated qtz/feld/(bio/chl/hbl) gneiss (B.O.C.O.).	7.62
	34	36	Pgn/peg	yw/pk	fg-mg		qtz, feld	bio, chl, hbl,lim	ep		Yellow limonite altered fine grained foliated qtz/feld/(bio/chl/hbl/mag) gneiss, pegmatite veins and qtz/lim/ep veins.	0.72
	36	38	Pgn	off wht/yw	fg		qtz, feld	bio, chl, hbl	lim	ep	Off white fine grained foliated qtz/feld/(bio/chl/hbl/mag) gneiss and minor limonite altered gneiss and trace epidote alteration.	0.61
	38	40	Pgn	ple grn	fg		qtz, feld	bio, chl, hbl	mag	lim	Pale green fresh fine grained, foliated qtz/feld/(bio/chl/hbl/mag) gneiss and rare limonite altered gneiss.	15.20
	40	42	Pgn	ple grn	fg		qtz, feld	bio, chl, hbl	mag		Pale green fresh fine grained, foliated qtz/feld/(bio/chl/hbl/mag) gneiss and minor chlorite veins (B.O.P.O.).	16.60

TIE RC89 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC89	0	2	Qs	Rd/or	fg-mg	calcrete	qtz, silt	clay			Red-brown, aeolian sand (0-1m) and orange calcrete with some black manganese (?) staining (1-2m).	2.30
	2	4	Pgn	Off wht	fg-cg		qtz, feld, bio	calcrete			Off-white to grey gneiss with calcrete fragments.	3.66
	4	6	Pgn	Off wht	fg-cg		qtz, feld, bio				Off-white to grey gneiss.	5.58
	6	8	Pum	Off wht	fg-cg		qtz, bio	ct?, kao			Pale grey to off-white carbonate/kaolin-rich, micaceous ultramafic (?) rock.	3.79
	8	10	Pum	Off wht	fg-cg		qtz, bio				Pale grey to off-white carbonate/kaolin-rich, micaceous ultramafic (?) rock.	13.40
	10	12	Pum	Off wht	fg-cg		qtz, bio				Dark brown, limonitic ultramafic (?) rock.	17.90
	12	14	Pgn	Off wht	fg-cg		feld, hbl?	qtz			Pale brown, limonitic gneiss.	4.46
	14	16	Pgn	Brn/off wht	fg-cg		qtz, CaCO3	kao			Pale brown to off-white, chloritic gneiss and mafic rock. Calcareous (?) and kaolinitic.	8.05
	16	18	Pgn	Brn/grn	mg		maf, feld	kao, CaCO3			Brown/green chloritic, ferruginised, kaolinitic, calcareous (?) gneiss.	7.03
	18	20	Pgn	Brn/grn	mg		maf, feld	kao, CaCO4			Brown/green chloritic, ferruginised, kaolinitic, calcareous (?) gneiss.	5.35
	20	22	Pgn	Brn/grn	mg		maf, feld	kao, CaCO5			Brown/green chloritic, ferruginised, kaolinitic, calcareous (?) gneiss.	11.80
	22	24	Pgn	Brn	mg		qtz, feld, bio	bio, hbl, mt			Brown, limonitic, magnetite gneiss.	8.15
	24	26	Pgn	Brn	mg		qtz, feld, bio	bio, hbl, mt			Brown, limonitic, magnetite gneiss.	17.70
	26	28	Pgn	Brn	mg		qtz, feld, bio	bio, hbl, mt			Brown, limonitic, magnetite gneiss. Kaolinitic/calcareous (?) in part.	9.65
	28	30	Pgn	Brn	mg		qtz, bio, mt, feld				Brown, limonitic, schistose magnetite gneiss.	20.90
	30	32	Pgn	Brn	mg		qtz, bio, mt, feld				Brown, limonitic, schistose magnetite gneiss.	19.60
	32	34	Pgn	Brn	mg		qtz, bio, mt, feld				Brown, limonitic, schistose magnetite gneiss.	27.10
	34	36	Pgn	Brn	mg		qtz, bio, mt, feld				Dark grey, limonitic, schistose magnetite gneiss.	27.90

TIE RC90 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC90	0	2	Qs	Rd	fg		sand				Red aeolian sand, cyclone contaminated.	1.13
	2	4	Qs/Qc	Rd	fg		clay	sand, CaCO3			Red aeolian sand (2-3m), red calcrete contaminated alluvial sands and clays, cyclone contaminated.	0.99
	4	6	Qc	Rd	fg		clay	sand, CaCO3			Red clay and minor red calcrete contaminated alluvial sands and clays and trace qtz-rich coarse grained gravels.	0.53
	6	8	Qc	Buff	fg		clay, CaCO3	sand			Buff calcrete contaminated alluvial clays and sands.	0.39
	8	10	Qc	Buff	fg		clay, CaCO3	sand			Buff calcrete contaminated alluvial clays and sands.	0.25
	10	12	Qc	Buff	fg-cg		clay, CaCO3	sand			Buff calcrete contaminated alluvial clays and sands and trace coarse qtz grits.	1.33
	12	14	Qc	Buff	fg-cg		clay, CaCO3	sand			Buff calcrete contaminated alluvial clays and sands and trace coarse qtz grits.	0.33
	14	16	Qc	Buff	fg-cg		clay, CaCO3	sand			Buff calcrete contaminated alluvial clays and sands and trace coarse qtz grits/ basement grits.	1.07
	16	18	Qa	Rd brn	cg		gravels	sand			Red and brown coarse-very coarse grained basal gravels of basement, qtz and ferricrete.	2.97
	18	20	Qa	Rd brn	cg		gravels	sand			Red and brn coarse-very coarse basal gravels of qtz and ferricrete	1.09
	20	22	Qa	Buff	fg		clay	sand	gravel		Buff alluvial clay and sand and trace red and brown coarse-very coarse basal gravels of basement, qtz and ferricrete.	0.55
	22	24	Qc	Buff	fg		clay	sand, gravel			Buff alluvial clay and sand and trace red and brown coarse-very coarse basal gravels of basement, qtz and ferricrete.	0.94
	24	26	Pgn	Dk brn	vfg		qtz	Fe-ox			Dark brown very fine grained massive quartzite with Fe-ox staining? Minor cyclone contamination.	2.38
	26	28	Pgn	Dk brn	fg		qtz, hbl, bio	Fe-ox			Dk brn fg qtz/hbl/bio gneiss with Fe-ox veins.	8.99
	28	30	Pgn	Brn	fg		qtz, feld	hbl, bio, Fe-ox			Brown fine grained qtz/feld/ (hbl/bio) gneiss with Fe-ox veins. Minor cyclone contamination.	4.54
	30	32	Pgn	Grn	fg		qtz, feld, chl	hbl, bio	Fe-ox		Green, fine qtz/feld/chl/ (hbl/bio) gneiss, trace pink pegmatite and Fe-ox veins. Cyclone cont.	7.27
	32	34	Pgn	Dk grn	fg		qtz, feld, chl	hbl, bio	Fe-ox		Dark green fine grained qtz/feld/chl/ (hbl/bio) gneiss with trace Fe-ox veins. Cyclone contamination.	7.07
	34	36	Pgn	Grn	fg		qtz, feld, chl	hbl, bio			Green fine grained qtz/feld/chl/ (hbl/bio) gneiss, trace pink pegmatite veins and chlorite alteration.	5.04

TIE RC91 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC91	0	2	Qa	Rd brn	fg-cg		qtz				Red brown silty aeolian sand, 10% coarse-very coarse sand.	0.82
	2	4	Qa	Rd brn	fg-cg		qtz				Red brown silty aeolian sand, fragments of orange calcrete and trace qtz gravel.	0.83
	4	6	Qa	Or	fg-mg		calcrete				Orange calcrete with minor red brown sand and sub-rounded ferricrete fragments.	0.46
	6	8	Qa	Or	fg-mg		calcrete				Orange calcrete with minor red brown sand and trace angular quartz gravel.	0.31
	8	10	Qa	Or	fg		calcrete	qtz			Orange calcreted fine sand with trace manganese staining and rare quartz gravel.	0.37
	10	12	Qa	Or	fg		calcrete	qtz			Orange calcreted fine sand with trace Mn staining and rare quartz gravel	0.25
	12	14	Qa	Or	fg		calcrete	qtz			Orange calcreted fine sand with white $CaCO_3$ (?) veins.	0.27
	14	16	Qa	Or	fg		calcrete				Orange calcrete with fragments of ferricrete.	0.38
	16	18	Qa	Or	gravel		calcrete, qtz				Orange calcrete with fragments of ferricrete, 50% fragments mafic gravel.	2.18
	18	20	Qa	Or	gravel		calcrete, qtz				Orange qtz/calcrete/ferricrete gravel and qtz/feld bedrock fragments. Slightly damp, very clayey.	1.33
	20	22	Qa	Or	gravel		calcrete, qtz, clay				Orange qtz/calcrete/ferricrete gravel and qtz/feld bedrock fragments. Slightly damp, very clayey.	0.40
	22	24	Qa	Or	gravel		qtz, clay, Fe-ox				Orange very clayey sub-rounded qtz/ferricrete/bedrock gravel.	0.67
	24	26	Qa	Or	gravel		qtz, clay, Fe-ox				Orange slightly clayey sub-rounded qtz/ferricrete/bedrock gravel.	1.36
	26	28	Qa	Or	gravel		qtz, clay, Fe-ox		mi		Orange very clayey (micaceous, kaolinitic) subrounded qtz/ ferricrete/ bedrock gravel.	0.54
	28	30	Qa	Or	fg		qtz, clay			kao	Orange weakly cemented clayey sand with rare kaolinised bedrock fragments.	0.44
	30	32	Qa	Or	fg		qtz, clay			kao	Orange weakly cemented clayey sand with rare kaolinised bedrock fragments.	1.12
	32	34	Qa	Brn	gravel		qtz, clay, Fe-ox			kao	Brown fine quartz gravel with round.-subrounded ferricrete and kaolin.	0.75
	34	36	Qa	Or	gravel		qtz, Fe-ox	kao	feld		Orange, very clayey qtz/ferricrete/kaolin/bedrock gravel and bright red fericrete.	0.73
	36	38	Qa	Or	gravel		qtz, Fe-ox	kao	feld			0.80

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	38	40	Qa	Brn	cg		qtz, feld, clay			mi	Pale brown clayey, limonitic pegmatite gravel with bright red feldspar alteration.	0.82
	40	42	Pgn	Brn/gy	mg		qtz, feld	bio, hbl	lim		Brown and grey limonitic gneiss with pink feldspar alteration and red brown fragments-haematite breccia fragments (?)/ dolerite (?).	2.69
	42	44	Pgn	Brn/gy	mg		qtz, feld	bio, hbl			Brown and grey limonitic gneiss with pink feldspar alteration and red brown fragments-haematite breccia fragments (?)/ dolerite (?).	1.68
	44	46	Pgn	Brn/gy	mg		qtz, feld	bio, hbl	lim		Brown and grey limonitic granite gneiss. Trace greenish fine grained, altered dolerite.	1.07
	46	48	Pgn	Brn/gy	mg		qtz, feld	bio, hbl	lim		Brown and grey limonitic granite gneiss. Trace greenish fine grained, altered dolerite.	1.49
	48	50	Pgn	Brn/gy	mg		qtz, feld	bio, hbl	lim	chl	Brown and grey limonitic granite gneiss. Trace chlorite and greenish fine grained, altered dolerite.	4.03
	50	52	Pgn	Gy	mg		qtz, feld, bio, hbl			chl	Grey gneiss with trace pink feldspar and chlorite alteration. Possible disemminated sulphides.	5.99
	52	54	Pgn	Gy	mg		qtz, feld, bio, hbl			chl	Grey gneiss with trace pink feldspar and chlorite alteration. Possible disemminated sulphides.	11.80
	54	56	Pgn	Gy	mg		qtz, feld, bio, hbl			chl	Grey gneiss with trace pink feldspar and chlorite alteration. Possible disemminated sulphides.	5.84
	56	58	Pgn	Gy	mg		qtz, feld, bio, hbl			chl	Grey gneiss with trace pink feldspar and chlorite alteration. Possible disemminated sulphides.	1.76
	58	60	Pgn	Gy	mg		qtz, feld, bio, hbl		lim	chl, ep	Grey, slightly limonitic gneiss with trace pink feldspar, epidote and chlorite alteration.	3.06

TIE RC92 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC92	0	2	Qs	Rd	fg		sand				Red aeolian sand and algal mag, cementing surface grains.	0.70
	2	4	Qs/Qc	Rd	fg		clay	sand, CaCO3			Red aeolian sand (2-3.5m) and red calcrete contaminated alluvial sands and clays.	0.56
	4	6	Qc	Rd	fg		clay	sand, CaCO3			Red aeolian sand and red calcrete contaminated alluvial sands and clays.	0.62
	6	8	Qc	Rd	fg		clay	sand, CaCO3			Red clay and minor red calcrete contaminated alluvial sands and clays and trace qtz rich coarse grained gravels.	0.68
	8	10	Qc	Buff	fg		clay, CaCO3	sand			Buff calcrete contaminated alluvial clays and sands.	0.43
	10	12	Qc	Buff	fg		clay, CaCO3	sand	gravel		Buff calcrete contaminated alluvial clays and sands and trace qtz-rich coarse grained gravels.	0.27
	12	14	Qc	Buff	fg		clay, CaCO3	sand	gravel		Buff calcrete contaminated alluvial clays and sands and trace qtz-rich coarse grained gravels.	0.36
	14	16	Qc	Brn	fg		clay, CaCO3	sand	mang, gravel		Buff calcrete contaminated alluvial clays and sands and trace qtz-rich coarse grained gravels and manganese dendrites.	0.43
	16	18	Qa	Buff	fg-cg		clay	gravel, sand			Buff alluvial clay, sand and red and brown coarse to very coarse basal gravels of qtz and ferricrete.	1.37
	18	20	Qa	Rd brn	cg		gravels	sand			Red and brown coarse-very coarse basal gravels of qtz and ferricrete.	0.98
	20	22	Qa	Buff	fg-cg		clay	sand	gravel		Buff alluvial clay, sand and red and brown coarse to very coarse basal gravels of qtz and ferricrete.	0.69
	22	24	Qa	Red brn	cg		gravel	sand			Red and brown coarse-very coarse basal gravels of qtz and ferricrete (cyclone contamination).	0.43
	24	26	Qa	Buff	fg-cg		clay	gravel, sand	mang		Buff alluvial clay, sand and red and brown coarse to very coarse basal gravels of qtz and ferricrete.	0.58
	26	28	Qa	Buff	fg-cg		clay, qtz	gravel, sand	bio		Buff alluvial clay, sand and red and brown coarse to very coarse basal gravels of qtz and ferricrete.	0.20

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	28	30	Qa	Buff	fg-cg		gravel, sand	clay			Buff alluvial clay, sand and red and brown coarse to very coarse basal gravels of qtz and ferricrete (damp sample).	0.20
	30	32	Qa	Buff	fg-cg		gravel, sand	clay			Buff alluvial clay, sand and red and brown coarse to very coarse basal gravels of qtz and ferricrete (damp sample and poor return).	0.39
	32	34	Qa/Pgn	Gy-pk	fg		qtz, feld	bio, hbl	clay		Trace red and brown coarse-very coarse basal gravels of qtz and ferricrete and grey fine grained, foliated qtz, feld, bio, hbl gneiss with pink fine grained pegmatite veins (damp sample).	0.31
	34	36	Pgn	Gy	fg		qtz, feld	bio, hbl	clay		Grey fine grained foliated qtz, feld, bio, hbl gneiss and trace pink fine grained pegmatite veins (damp sample).	2.45
	36	38	Pgn	Gy	fg		qtz, feld	bio, hbl			Grey fine grained, foliated qtz, feld, bio, hbl gneiss.	4.38
	38	40	Pgn	Gy, ple grn	fg		qtz, feld	bio, hbl	chl, Fe-ox		Grey to pale green fine grained foliated qtz,feld, bio, hbl gneiss and trace pink fine grained pegmatite veins, trace chlorite alteration and trace Fe-ox altered veins (damp sample) (B.O.C.O.).	4.56
	40	42	Pgn	Gy, ple grn	fg		qtz, feld	bio	chl		Grey to pale green fine grained foliated quartz, feld, bio gneiss and minor pink fine grained pegmatite veins and trace chlorite alteration /veins (minor cyclone contamination) (B.O.P.O.).	12.90
	42	44	Pgn+ Pdt	Gy, blk	vfg-fg		qtz, feld	bio			Grey fine grained foliated qtz, feld, bio, gneiss and minor black very fine grained dolerite (?) dykes.	10.80
	44	45	Pgn	Gy	fg		qtz, feld	bio			Grey fine grained foliated qtz, feld, bio, gneiss and minor black very fine grained dolerite (?) dykes (cyclone contamination).	4.12

TIE RC93 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC93	0	2	Qs	Rd	fg		sand				Red aeolian sand.	0.84
	2	4	Qs	Rd	fg		sand				Red aeolian sand.	0.45
	4	6	Qs	Rd	fg		sand				Red aeolian sand.	0.47
	6	8	Qs	Rd	fg		sand				Red aeolian sand.	0.58
	8	10	Qs	Rd	fg		sand				Red aeolian sand.	0.48
	10	12	Qs	Rd	fg		sand				Red aeolian sand.	0.44
	12	14	Qs	Rd	fg		sand				Red aeolian sand.	0.32
	14	16	Qs	Rd	fg		sand				Red aeolian sand.	0.30
	16	18	Qs	Rd	fg		sand				Red aeolian sand.	5.66
	18	20	Qs	Rd	fg		sand				Red aeolian sand.	4.85
	20	22	Qs	Rd	fg		sand				Red aeolian sand.	7.09
	22	24	Qs	Rd	fg		sand				Red aeolian sand.	7.06
	24	26	Qs	Rd	fg		sand				Red aeolian sand.	6.88
	26	28	Qs	Rd	fg		sand				Red aeolian sand.	10.80
	28	30	Qs	Rd	fg		sand				Red aeolian sand.	11.90

TIE RC94 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC94	0	2	Qs	Rd	fg		sand				Red aeolian sand and common organic matter.	0.96
	2	4	Qs/Qa	Rd	fg		clay	sand, gravel			Red aeolian sand (2-3m), red alluvial sands and clays.	0.76
	4	6	Qa	Rd	fg		clay	sand, gravel			Minor red alluvial sands and clays and minor qtz/feld-rich coarse grained gravels.	0.43
	6	8	Qa	Rd	fg		clay	sand, gravel			Minor red alluvial sands and clays and minor qtz/feld-rich coarse grained gravels.	0.48
	8	10	Qc	Buff	fg		clay, $CaCO_3$	sand	gravel		Buff calcrete contaminated alluvial clays and sands and trace qtz rich coarse grained gravels.	0.21
	10	12	Qc	Buff	fg		clay, $CaCO_3$	sand	mang		Buff calcrete contaminated alluvial clays and sands and trace manganese dendrites.	0.17
	12	14	Qc	Buff	fg		clay, $CaCO_3$	sand	mang		Buff calcrete contaminated alluvial clays and sands and trace manganese dendrites.	0.28
	14	16	Qc	Buff	fg		clay, $CaCO_3$	sand	mang		Buff calcrete contaminated alluvial clays and sands and trace manganese dendrites.	0.32

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	16	18	Qa	Buff	fg-cg		clay	sand	gravel		Buff alluvial clay and sand and trace red and brown coarse-very coarse grained basal gravels.	0.13
	18	20	Qa	Buff	fg-cg		clay	sand, gravel			Buff alluvial clay and sand and trace red and brown coarse-very coarse grained qtz/feld basement gravels, trace contaminated.	0.38
	20	22	Qa	Buff	fg-cg		clay	sand, gravel			Buff alluvial clay and sand and trace red and brown coarse-very coarse grained qtz/feld basement gravels, trace contaminated.	0.29
	22	24	Qa	Buff	fg-cg		clay	sand, gravel			Buff alluvial clay and sand and trace red and brown coarse-very coarse grained qtz/feld basement gravels, trace contaminated.	0.35
	24	26	Qa	Buff	fg-cg		clay	sand, gravel			Buff alluvial clay and sand and trace red and brown coarse-very coarse grained qtz/feld basement gravels, trace contaminated. Damp sample.	0.30
	26	28	Qa/Pg	Wht	fg-mg		qtz, feld, clay		gravel		White fine-medium grained kaolin altered qtz/feld granite (?) and trace red, black and brown coarse to very coarse basal gravels of qtz and ferricrete (damp sample).	0.18
	28	30	Pg	Wht, ppl, grn	fg-mg		qtz, feld, clay	ep	bio		White fine-medium grained kaolin/epidote altered qtz/feld/(bio) granite (?) (damp sample).	0.37
	30	32	Pg	Wht, ppl, grn	fg-mg		qtz, feld, clay	ep	bio		White fine-medium grained kaolin/epidote altered qtz/feld/(bio) granite (?) (damp sample).	0.41
	32	34	Pg	Wht, ppl, grn	fg-mg		qtz, feld, clay	ep	bio		White fine-medium grained kaolin/epidote altered qtz/feld/(bio) granite (?) (damp sample).	0.57
	34	36	Pg	Wht, ppl, grn	fg-mg		qtz, feld, clay	ep	bio		White fine-medium grained kaolin/epidote altered qtz/feld/(bio) granite (?) (damp sample).	1.59
	36	38	Pg	Wht, ppl, grn	fg-mg		qtz, feld, clay	ep	bio		White fine-medium grained kaolin/epidote altered qtz/feld/(bio) granite (?) (damp sample).	1.63
	38	40	Pg	Wht, ppl, grn	fg-mg		qtz, feld, clay	ep	bio		White fine-medium grained kaolin/epidote altered qtz/feld/(bio) granite (?) (damp sample).	1.96
	40	42	Pg	Wht, ppl, grn	fg-mg		qtz, feld, clay	ep	bio		White fine-medium grained kaolin/epidote altered qtz/feld/(bio) granite (?) (damp sample).	1.31

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	42	44	Pg	Wht, ppl, grn	fg-mg		qtz, feld, clay	ep	bio		White fine-medium grained kaolin/epidote altered qtz/feld/(bio) granite (?) (damp sample).	1.99
	44	45	Pg	Wht, ppl, grn	fg-mg		qtz, feld, clay	ep	bio		White fine-medium grained kaolin/epidote altered qtz/feld/(bio) granite (?) (damp sample).	2.19

TIE RC95 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC95	0	2	Qs	Rd	fg		sand				Red aeolian sand and common organic matter (trace contamination from previous hole).	1.29
	2	4	Qs/Qc	Rd, buff	fg		clay	sand, CaCO3			Red aeolian sand (2-3.5m), buff calcrete contaminated alluvial sands and clays.	1.12
	4	6	Qc	Buff	fg		clay	sand, CaCO4	gravel		Buff alluvial clays and sands and trace qtz rich coarse grained gravels.	1.51
	6	8	Qc	Buff	fg		clay	sand, CaCO5	gravel		Buff alluvial clays and sands and trace qtz rich coarse grained gravels.	1.39
	8	10	Qc	Buff	fg		clay, CaCO3	sand			Buff calcrete contaminated alluvial clays and sands.	0.39
	10	12	Qc	Buff	fg		clay, CaCO3	sand	gravel		Buff calcrete contaminated alluvial clays and sands and trace qtz/ferricrete coarse grained gravels.	0.67
	12	14	Qc	Buff	fg		clay, CaCO3	sand			Buff calcrete contaminated alluvial clays and sands.	0.40
	14	16	Qc	Buff	fg		clay, CaCO3	sand	gravel		Buff calcrete contaminated alluvial clays and sands and trace qtz-rich coarse gravels. Trace contamination.	0.45
	16	18	Qa	Buff	fg		clay	sand, CaCO3	gravel		Buff alluvial clays and sands and trace qtz rich coarse grained gravels. Damp sample.	0.55
	18	20	Qa	Buff	fg-cg		clay	gravel, sand			Buff alluvial clay and sand and minor red and brown coarse-very coarse grained basal gravels	0.26

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy abdt	maj	min	tr	rare	Description	Magnetic susceptibility
											of qtz and ferricrete (very damp sample).	
	20	22	Qa	Buff	fg-cg		clay	sand, CaCO4			Buff alluvial clay and sand and minor red and brown coarse-very coarse grained basal gravels of qtz and ferricrete (very damp sample, poor sample return).	0.21
	22	24	Qa	Buff	fg-cg		clay	gravel, sand			Buff alluvial clay and sand and minor red and brown coarse-very coarse grained basal gravels of qtz and ferricrete (very damp sample, poor sample return).	0.16
	24	26	Qa	Buff	fg-cg		clay	sand, CaCO5			Buff alluvial clay and sand and minor red and brown coarse-very coarse grained basal gravels of qtz and ferricrete (very damp sample, poor sample return).	0.11
	26	28	Qa/Pg	Buff, wht	fg-cg		clay, qtz	feld, gravel			Buff alluvial clay and sand and minor red and brown coarse-very coarse basal gravels of qtz and ferricrete, and white kaolin altered granite (?) (damp sample).	0.23
	28	30	Pg	off wht	fg		qtz, kao	feld	bio		Off white kaolin altered fine grained, foliated (?) qtz/feld/bio granite.	0.15
	30	32	Pg	off wht	fg		qtz, kao	feld, bio	hbl		Off white kaolin altered fine grained, foliated (?) qtz/feld/bio granite and green clay mafic gneiss xenoliths.	0.26
	32	34	Pgn	Gy-grn, pk	fg-mg		qtz, feld	hbl, bio			Pink medium grained qtz/feld/bio granite and grey-green fine grained foliated qtz/feld/hbl/bio gneiss.	0.60
	34	36	Pgn	Gy-grn, pk	fg-mg		qtz, feld	hbl, bio	chl, lim		Pink medium grained qtz/feld/bio granite and grey-green fine grained foliated qtz/feld/hbl/bio gneiss and minor green lim/chl altered dolerite dykes.	2.35
	36	38	Pgn	Gy-grn, pk	fg-mg		qtz, feld	hbl, bio, chl			Pink medium grained qtz/feld/bio granite and grey-green fine grained foliated qtz/feld/hbl/bio gneiss and minor green chl altered veins (B.O.P.O.).	1.72
	38	40	Pgn	Gy-grn, pk	fg-mg		qtz, feld	hbl, bio, chl			Pink medium grained qtz/feld/bio granite and grey-green fine grained foliated qtz/feld/hbl/bio gneiss and minor green chl altered veins (wet sample, contaminated).	5.07
	40	42	Pgn	Gy-grn, pk	fg-mg		qtz, feld	hbl, bio, chl			Pink medium grained qtz/feld/bio granite and grey-green fine grained foliated qtz/feld/hbl/bio gneiss and minor green chl altered veins (wet sample, contaminated).	4.99

TIE RC96 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC96	0	2	Qs	Rd	fg		sand				Red aeolian sand and common organic matter, cyclone contamination.	0.95
	2	4	Qs/Qc	Rd	fg		clay	sand, CaCO3	gravel		Red aeolian sand (2-3.5m), red calcrete contaminated alluvial sands and clays trace qtz-rich gravels, cyclone contamination.	0.80
	4	6	Qc	Buff	fg		clay, caco3	sand			Buff calcrete contaminated alluvial clays and sands.	0.76
	6	8	J-K	Yw-wht	fg		clay	sand, CaCO3			Yellow-white alluvial clays and sands (Algebuckina?).	0.28
	8	10	J-K	Yw-wht	fg		clay	sand, CaCO3	grits		Yellow-white alluvial clays and sands (Algebuckina?) and trace qtz grits (cyclone contamination).	0.16
	10	12	J-K	Wht	fg		clay	sand, CaCO3	grits		White alluvial clays and sands and trace qtz grits (cyclone contamination) (Algebuckina?).	0.21
	12	14	J-K	Wht	fg		clay	sand	grits		White alluvial clays and sands and trace qtz grits (cyclone contamination) (Algebuckina?).	0.18
	14	16	J-K	Wht	fg		clay	sand	grits		White alluvial clays and sands and trace qtz grits (cyclone contamination) (Algebuckina?).	0.22
	16	18	J-K	Wht	fg		clay	sand	grits		White alluvial clays and sands and trace qtz grits (cyclone contamination) (Algebuckina?).	0.14
	18	20	J-K	Wht	fg		clay	sand	grits		White alluvial clays and sands and trace qtz grits (Algebuckina?).	0.08
	20	22	J-K	Wht	fg		clay	sand, grits			White alluvial clays and sands and minor qtz grits (Algebuckina?), damp sample.	0.15
	22	24	J-K	Wht	fg		clay	sand, grits			White alluvial clays and sands and minor qtz grits (Algebuckina?), damp sample.	0.05
	24	26	J-K	Wht	fg		clay	sand, grits			White alluvial clays and sands and minor qtz grits (Algebuckina?), damp sample.	0.08
	26	28	J-K	Yw-wht	fg		clay	sand, grits			Yellow-white alluvial clays and sands (Algebuckina?) and minor qtz grits (cyclone contamination), damp sample.	0.08
	28	30	J-K	Yw-wht	fg		clay	sand, grits			Yellow-white and pink alluvial clays and sands (Algebuckina?) and minor qtz grits (cyclone contamination), damp sample.	0.11

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	30	32	J-K	Yw-wht	fg		clay	sand	grits		Yellow-white and pink alluvial clays and sands (Algebuckina?) and minor qtz grits (cyclone contamination), damp sample.	0.07
	32	34	J-K	Yw-wht	fg		clay	sand	grits		Yellow-white and pink alluvial clays and sands (Algebuckina?) and minor qtz grits (cyclone contamination), damp sample.	0.09
	34	36	Pg	Pk, wht	fg		clay	qtz, feld			Pink and white clays, weathered qtz/feld granites and trace qtz grits (Algebuckina?), damp sample.	0.17
	36	38	Pg	Pk, wht	fg		clay	qtz, feld			Pink and white clays, weathered qtz/feld granites and trace qtz grits (Algebuckina?), damp sample.	0.14
	38	40	Pg	Pk, wht	fg		clay	qtz, feld			Pink and white clays, weathered qtz/feld granites and trace qtz grits (Algebuckina?), damp sample.	0.10
	40	42	Pg	Pk, wht	fg		clay	qtz, feld			Pink and white clays, weathered qtz/feld granites and trace qtz grits (Algebuckina?), damp sample.	0.15
	42	44	Pg	Pk, wht	fg		clay	qtz, feld			Pink and white clays, weathered qtz/feld granites and trace qtz grits (Algebuckina?), damp sample.	0.08
	44	46	Pg	Pk, grn	fg		clay	qtz, feld	bio, chl		Pink and white clays, weathered qtz/feld granites and green bio/chl rich clay (B.O.C.O.).	0.24
	46	48	Pg	Or, wht	fg		clay	qtz, feld, lim	bio		Clear weathered qtz/feld/bio granites and limonite altered veins (Algebuckina?).	0.40
	48	50	Pg	Or, wht	fg		clay, lim	qtz, feld	bio		Clear weathered qtz/feld/bio granites and limonite altered veins (Algebuckina?).	1.63
	50	52	Pg	Or, wht	fg		clay, lim	qtz, feld	bio		Clear weathered qtz/feld/bio granites and limonite altered veins (Algebuckina?).	1.90
	52	54	Pg	Or	fg		clay	qtz, feld, lim	bio		Yellow qtz/feld/bio granites and white qtz/bio gneiss xenoliths with minor limonite alteration/veins (Algebuckina?).	1.87

TIE RC97 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC97	0	2	Qs	Rd	fg		sand				Red aeolian sand, cyclone contamination.	0.59
	2	4	Qa	Rd	fg		clay	sand			Red aeolian sand (2-2.5m) and red alluvial sands and clays, cyclone cont.	0.61
	4	6	Qa	Rd	fg-cg		clay	sand, gravel			Red alluvial clays and sands and minor qtz-rich coarse grained gravels, cyclone cont.	0.58
	6	8	Qa	Rd	fg-mg		clay	sand, gravel			Red alluvial clays and sands and minor qtz-rich coarse grained gravels, cyclone cont.	0.41
	8	10	Qa	Or	fg-mg		clay	sand, gravel			Orange alluvial clays and sands and minor qtz-rich medium grained grits, minor cyclone cont.	0.38
	10	12	Qa	Buff	fg-mg		clay	sand	grit		Buff alluvial clays and sands trace qtz-rich medium grained grits, cyclone cont.	0.28
	12	14	Qc	Buff	fg-mg		clay	sand, CaCO3	grit		Buff carbonate contaminated alluvial clays and sands and trace qtz-rich medium grained grits, poor sample return.	0.38
	14	16	Qc	Buff	fg-mg		clay	sand, CaCO4	grit		Buff carbonate contaminated alluvial clays and sands and trace qtz-rich medium grained grits, poor sample return; damp sample.	0.18
	16	18	Qc	Buff	fg-mg		clay	sand, CaCO5	grit		Buff carbonate contaminated alluvial clays and sands and trace qtz-rich medium grained grits, poor sample return; damp sample.	0.21
	18	20	Qc	Rd	fg-mg		clay	sand, CaCO6	mang		Red carbonate contaminated alluvial clays and sands and trace manganese dendrites, poor sample return; damp sample.	0.19
	20	22	Qa	Wht, rd	vfg		clay		grit, mang		White and red very fine grained massive claystone with trace sands and grits and trace manganese dendrites, damp sample.	0.16
	22	24	J-K	Wht	vfg		clay		grit, mang		Wht very fine grained banded claystone with trace sands and grits and trace manganese dendrites, damp sample; poor sample return.	0.09
	24	26	J-K	Wht	vfg		sand, clay	grit	mang		Wht very fine grained banded claystone with trace sands and grits and trace manganese dendrites, damp sample; poor sample return.	0.07
	26	28	J-K	Wht	fg-mg		clay	sand, grits			White clays and sands and minor qtz grits (Algebuckina?), damp sample.	0.15

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	28	30	J-K	Wht	fg-mg		clay	sand, grits			White clays and sands and minor qtz grits (Algebuckina?), wet sample.	0.08
	30	32	J-K	Wht	fg		clay		sand, grits		White clays and sands and minor qtz grits (Algebuckina?).	0.06
	32	34	J-K	Wht	fg		clay		sand, grits		White clays and sands and minor qtz grits (Algebuckina?).	0.06
	34	36	J-K	Wht + yell	fg		clay	lim	sand, grits		White clays and sands and minor qtz grits (Algebuckina?), damp sample.	0.06
	36	38	J-K	Wht + pnk	fg		clay	Fe-ox, sand			White and pink clays and sands (Algebuckina?), damp sample.	0.07
	38	40	Pg	Wht + pnk	fg		clay	qtz, feld			White and pink kaolin-altered qtz/feld granite (?) (damp sample).	0.06
	40	42	Pg	Wht + yell	fg		clay	qtz, lim			White and yellow kaolin-altered qtz/feld granite (?) and contaminated sands and trace qtz grits (wet sample).	0.06
	42	44	Pg	Wht + yell	fg		clay	qtz, lim			White and yellow kaolin-altered qtz/feld granite, wet sample.	0.06
	44	46	Pg	Wht	fg		qtz, feld	bio	chl		White qtz/feld/bio granite and trace chlorite veins/alteration (B.O.P.O.).	3.65
	46	48	Pg	Wht	fg		qtz, feld	bio	chl	mag	White qtz/feld/bio/mag granite and trace chlorite veins/alteration.	6.27
	48	50	Pg	Wht	fg		qtz, feld	bio	chl	mag	White qtz/feld/bio/mag granite and trace chlorite veins/alteration.	7.50
	50	51	Pg	Wht	fg		qtz, feld	bio	chl	mag	White qtz/feld/bio/mag granite and trace chlorite veins/alteration.	7.68

TIE RC98 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC98	0	2	Qs	Rd	fg		sand				Red aeolian sand.	0.55
	2	4	Qs/Qa	Rd	fg-mg		sand, clay	grits			Red aeolian sand (2-3.5m), red alluvial sands, clays and minor medium grained qtz-rich grits.	0.51
	4	6	Qa	Rd	fg-mg		sand, clay	grits			Red alluvial sands, clays and minor medium grained qtz-rich grits, cyclone cont.	0.48
	6	8	Qa	Brn	fg-mg		clay	sand	grits		Red alluvial sands, clays and minor medium grained qtz-rich grits.	0.35
	8	10	Qc	Brn	fg-mg		clay	sand, CaCO3	grits		Red alluvial sands, clays, calcrete contamination and minor medium grained qtz-rich grits. Rare porcellanite.	0.21
	10	12	Qc	Buff	fg-mg		clay, CaCO3	sand	grit	mang	Buff carbonate contaminated alluvial clays and sands, trace qtz-rich medium grained grits and trace manganese dendrites (cyclone cont.).	0.20
	12	14	Qc	Buff	fg-mg		clay, CaCO3	sand	grit	mang	Buff carbonate contaminated alluvial clays and sands, trace qtz-rich medium grained grits and trace manganese dendrites.	0.17
	14	16	Qc	Buff	fg-mg		clay, CaCO3	sand, grit			Buff carbonate contaminated alluvial clays and sands, trace qtz-rich medium grained grits.	0.11
	16	18	Qc	Buff	fg-mg		clay, CaCO3	sand, gravel			Buff carbonate contaminated alluvial clays and sands and minor qtz-rich coarse grained gravels, damp sample.	0.15
	18	20	Qa	Brn	fg-mg		clay	sand, lim?	grit		Brown contaminated ferruginous (?) alluvial clays and sands and trace qtz-rich medium grained grits, damp sample.	0.15
	20	22	Qa	Brn	fg		clay	sand, lim?			Brown contaminated ferruginous (?) alluvial clays and sands, damp sample.	0.10
	22	24	Qa	Brn	fg		clay	sand, lim?			Brown contaminated ferruginous (?) alluvial clays and sands, damp sample; poor sample return.	0.90
	24	26	Qa	Brn	fg		clay	sand, lim?			Brown contaminated ferruginous (?) alluvial clays and sands, wet sample; almost no sample return.	0.14
	26	28	Qa	Brn	fg to mg		clay	sand, lim?	grit		Brown contaminated ferruginous (?) alluvial clays and sands, wet sample; almost no sample return.	0.23

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	28	30	Qa	Brn	fg to mg		clay	sand, lim?, grits			Brown contaminated ferruginous (?) alluvial clays and sands, wet sample; almost no sample return.	0.25
	30	32	Qa	Brn	fg to mg		clay	sand, lim?, grits			Brown contaminated ferruginous (?) alluvial clays and sands, wet sample; almost no sample return.	0.38
	32	34	Qa/J-K	Brn, wht	fg to mg		clay	sand, lim?, grits			Brown contaminated ferruginous (?) alluvial clays and sands and trace white claystone (Algebuckna?), wet sample; almost no sample return.	0.46
	34	36	J-k	wht	fg to mg		clay	qtz			White clay and clear rounded medium grained qtz grits (Algebuckna) (wet 34-35m, dry 35-36m).	0.19
	36	38	J-k	wht	fg to mg		clay	qtz			White clay and clear ronded medium grained qtz grits (Algebuckna).	0.28
	38	40	J-k	wht	fg to cg		clay	qtz			White clay and clear ronded coarse grained qtz grits (Algebuckna).	0.33
	40	42	J_K/Pg	wht/yell	fg to mg		clay	qtz, feld			White clay and clear ronded coarse grained qtz grits (Algebuckna) and yellow, medium grained qtz/feld granite.	0.26
	42	44	Pg	wht	fg		qtz, feld		bio, chl		White qtz/feld/(bio) granite and trace chlorite veins/alteration (B.O.C.O.).	3.51
	44	46	Pg	Ple grn	fg		qtz, feld	bio, chl, ep			Pale green qtz/feld/bio granite and chl/epid veins/alteration (B.O.P.O.).	1.69
	46	48	Pg	Ple grn	fg		qtz, feld	bio, chl, ep			Pale green qtz/feld/bio granite and chl/epid veins/alteration, cyclone cont.	1.75

TIE RC99 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC99	0	2	Qs	Rd	fg		sand				Red aeolian sand and common organic matter, cyclone contamination.	0.53
	2	4	Qs/Qc	Rd	fg		clay	sand, CaCO3	grits		Red aeolian sand (2-3.5m), red calcrete contaminated alluvial sands and clays and trace fine grained qtz-rich grits.	0.46
	4	6	Qc	Rd	fg-mg		clay	sand, CaCO3			Red calcrete contaminated alluvial sands and clays and minor medium grained qtz-rich grits.	1.13
	6	8	Qa	Brn	fg-mg		clay	sand, lim?, grits			Brown contaminated ferruginous (?) alluvial clays and sands and minor qtz-rich medium grained grits.	0.26
	8	10	Qc	Buff	fg		clay, CaCO3	sand	grit	mang	Buff carbonate contaminated alluvial clays and sands trace qtz-rich fine grained grits and trace manganese dendrites.	0.25
	10	12	Qc	Buff	fg		clay, CaCO3	sand	grit	mang	Buff carbonate contaminated alluvial clays and sands trace qtz-rich fine grained grits and trace manganese dendrites.	0.18
	12	14	Qa	Wht, buff	fg		clay	sand, lim	grit		Brown contaminated ferruginous (?) alluvial clays and sands and white very fine grained claystone/porcellanite (?) (damp).	0.09
	14	16	Qa	Brn	fg-mg		clay	sand, lim?, gravels			Brown contaminated ferruginous (?) alluvial clays and sands and minor qtz-rich medium grained gravels, damp sample.	0.13
	16	18	Qc	Buff	fg		clay, CaCO3	sand	grit	mang	Buff carbonate contaminated alluvial clays and sands trace qtz-rich fine grained grits and trace manganese dendrites. Damp; poor sample return.	-
	18	20	Qa	Brn	fg-mg		clay	sand, lim?, grits			Brown contaminated ferruginous (?) alluvial clays and sands and minor qtz-rich medium grained grits, damp sample; poor sample return.	-
	20	22	Qa	Brn	fg-mg		clay	sand, lim?, grits			Brown contaminated ferruginous (?) alluvial clays and sands and minor qtz-rich medium grained grits, damp sample; poor sample return.	-
	22	24			fg-mg						Almost no sample return; no sample to log.	-
	24	26	Qa	Brn	fg-mg		clay	sand, lim?, grits			Brown contaminated ferruginous (?) alluvial clays and sands and minor qtz-rich medium grained grits, damp sample; poor sample return.	-

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	26	28	Qa	Brn	fg		clay	sand, lim	grit		Brown contaminated ferruginous (?) alluvial clays and sands and minor qtz-rich fine grained grits, damp sample; poor sample return.	-
	28	30	Qa	Brn	fg		clay, sand	lim			Brown contaminated ferruginous (?) alluvial clays and sands, damp sample.	-
	30	32	Qa	Brn	fg		clay, sand	lim			Brown contaminated ferruginous (?) alluvial clays and sands, wet; poor sample recovery.	-
	32	34	Qa	Brn	fg		clay, sand	lim	grit		Brown contaminated ferruginous (?) alluvial clays and sands, wet; poor sample recovery.	-
	34	36	Qa	Brn	fg		sand	lim	grit		Brown contaminated ferruginous (?) alluvial sands, wet; poor sample recovery. Clay possibly washed away.	-
	36	38	Qa	Brn	fg-cg		sand	lim, gravels			Brown ferruginous (?) alluvial sands and qtz basement rich coarse gravels, wet; poor sample recovery.	-
	38	40	Qa	Brn	fg-cg		sand	lim, gravels			Brown ferruginous (?) alluvial sands and qtz basement rich coarse gravels, wet; poor sample recovery.	-
	40	42	Qa	Brn	fg-cg		sand	lim, gravels			Brown ferruginous (?) alluvial sands and qtz basement rich coarse gravels, wet; poor sample recovery.	-
	42	44	Qa	Brn	fg-cg		sand	lim, gravels			Brown ferruginous (?) alluvial sands and qtz basement rich coarse gravels, wet; poor sample recovery.	-
	44	46	Qa/J-K	Brn, wht	fg-cg		sand, clay	lim, gravels			Brown ferruginous (?) alluvial sands, white clay clear quartz grits and qtz basement rich coarse gravels, wet; poor sample recovery.	-
	46	48	Pg	Yw	fg		clay, qtz	lim			Yellow fine grained kaolinised qtz/feld granite (damp).	-
	48	50	Pg	Yw	fg		clay, qtz	lim			Yellow fine grained kaolinised qtz/feld granite (damp).	-
	50	52	Pqz	Wht, pk	fg-mg		qtz, feld				White to pink fine-medium grained quartzite (?) (wet) (B.O.C.O.).	-
	52	54	Pg	Wht, pk	fg-mg		qtz, feld		bio		White-pink fine-medium grained pegmatite/granite and white very fine grained qtz/feld/bio gneiss (wet).	-

TIE RC100 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC100	0	2	Qs	Rd	fg		sand	grit			Red aeolian sand and minor fine grained qtz-rich grits.	-
	2	4	Qs/Qa	Rd	fg-cg		clay	sand, gravel	$CaCO_3$		Red aeolian sand (2-3.5m), red calcrete contaminated alluvial sands and clays and minor medium-coarse grained qtz-rich gravels.	-
	4	6	Qc	Rd, buff	fg		clay, $CaCO_3$	sand, grit			Red aeolian sand (2-3.5m), red calcrete contaminated alluvial sands and clays and minor fine grained qtz-rich grits.	-
	6	8	Qc	Rd, buff	fg		clay, $CaCO_3$	sand, grit			Red and buff calcrete contaminated alluvial sands and clays and minor fine grained qtz-rich grits, cyclone cont.	-
	8	10	Qc	Buff, wht	fg		clay, $CaCO_3$	sand		mang	Buff carbonate contaminated alluvial clays and sands and trace white very fine grained porcellanite trace manganese dendrites.	-
	10	12	Qc	Buff	fg		clay, $CaCO_3$	sand		mang	Buff carbonate contaminated alluvial clays and sands and trace manganese dendrites, cyclone cont.	-
	12	14	Qc	Buff	fg-mg		clay, $CaCO_3$	sand	grits	mang	Buff carbonate contaminated alluvial clays and sands and trace medium grained qtz-rich grits trace manganese dendrites and trace $CaCO_3$ veins (damp).	-
	14	16	Qc	Buff	fg-mg		clay, $CaCO_3$	sand, grit		mang	Buff carbonate contaminated alluvial clays and sands and minor medium grained qtz-rich grits trace manganese dendrites (damp).	-
	16	18	Qc	Wht	fg-mg		clay, $CaCO_3$	sand	grits		Buff carbonate contaminated alluvial clays and sands and trace medium grained qtz-rich grits (damp).	-
	18	20	Qa	Brn	fg-mg		sand, clay, grit				Brown fine-medium grained alluvial grits, sands and clays (damp; poor sample return).	-
	20	22	Qa	Brn	fg-mg		sand, clay, grit				Brown fine-medium grained alluvial grits, sands and clays (wet; poor sample return).	-
	22	24	Qa	Brn	fg-mg		sand, clay, gravel				Brown fine-medium grained alluvial gravels, sands and clays (damp; poor sample return).	-
	24	26	Qa	Brn	fg-mg		sand, clay, grit				Brown fine-medium grained alluvial gravels, sands and clays (wet; poor sample return).	-
	26	28	Qa	Brn	fg-cg		sand, clay, gravel				Brown fine-coarse grained alluvial gravels, sands and clays (wet; poor sample return).	-

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	28	30	Qa	Brn	fg-cg		sand, clay, gravel				Brown fine-coarse grained alluvial gravels, sands and clays (wet; poor sample return).	-
	30	32	Qa	Brn	fg-cg		sand, clay, gravel				Brown fine-coarse grained alluvial gravels, sands and clays (wet; poor sample return).	-
	32	34	Qa	Brn, yw, wht	fg-cg		sand, clay, gravel				Brown, yellow and white fine-coarse grained alluvial gravels, sands and clays (wet, poor sample return).	-
	34	36	Qa	Brn, yw, wht	fg-cg		sand, clay, gravel				Brown, yellow and white fine-coarse grained alluvial gravels, sands and clays (wet, poor sample return).	-
	36	38	Qa/Pgn	Wht-rd	fg		qtz, clay	gravel			Minor brown, yellow and white fine-coarse grained alluvial gravels, sands and clays and white kaolin altered foliated qtz gneiss (wet; poor sample return).	-
	38	40	Pg	Wht, yw	fg		qtz, clay	feld			White and yellow fine grained kaolin altered qtz/feld granite (wet; poor sample return).	-
	40	42	Pg	Wht, yw	fg		qtz, clay	feld			White and yellow fine grained kaolin altered qtz/feld granite (wet; poor sample return).	-
	42	44	Pg	Wht, yw	fg		qtz, clay	feld			White and yellow fine grained kaolin altered qtz/feld granite (wet; poor sample return).	-
	44	45	Pg	Wht, yw	fg		qtz, clay	feld			White and yellow fine grained kaolin altered qtz/feld granite (wet; poor sample return).	-

TIE RC101 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC101	0	2	Qs	Rd	fg		sand				Red aeolian sand.	-
	2	4	Qs/Qa	Rd	fg-cg		clay	sand, gravel	CaCO3		Red aeolian sand (2-3.5m), red calcrete contaminated alluvial sands and clays and minor medium-coarse grained qtz-rich gravels.	-
	4	6	Qc	Rd, buff	fg		clay, CaCO3, gravel	sand			Red and buff calcrete contaminated alluvial sands and clays yellow fine grained qtz-rich grits (cyclone contaminated).	-
	6	8	Qa	Brn	fg-mg		clay, grit	sand			Brown fine-medium grained alluvial grits, sands and clays.	-
	8	10	Qc	Wht	fg-mg		clay, CaCO3	sand, grit		mang	White carbonate contaminated alluvial clays and sands and minor medium grained qtz-rich grits and trace manganese dendrites.	-
	10	12	Qc	Wht	fg-mg		clay, CaCO3	sand, grit			White carbonate contaminated alluvial clays and sands and minor medium grained qtz-rich grits (damp).	-
	12	14	Qa	Wht	fg-mg		clay	sand	grit		White alluvial clays and sands and trace medium grained qtz-rich grits (damp).	-
	14	16	Qa	Wht, brn	fg-mg		clay	sand	grit		White and brown alluvial clays and sands and trace medium grained qtz-rich grits (damp).	-
	16	18	Qa	Wht, brn	fg-mg		clay	sand	grit		White and brown alluvial clays and sands and trace medium grained qtz-rich grits (damp; no sample 17-18m).	-
	18	20	Qa	Wht, brn	fg-mg		clay	sand	grit		White and brown alluvial clays and sands and trace medium grained qtz-rich grits (wet, great drilling difficulty with clay; v. poor sample return, no composite sample taken).	-
	20	22	Qa/Pg	Wht, yw	vfg		clay, lim	qtz	gravel		Yellow and white very fine grained kaolin/limonite altered granite (?) (damp sample) and trace gravels.	-
	22	24	Pg	Wht, yw	fg		clay, lim	qtz			Yellow and white very fine grained kaolin/limonite altered granite (?) (damp sample).	-
	24	26	Pg	Wht, yw	fg		clay, lim	qtz			Yellow and white very fine grained kaolin/limonite altered granite (?) (damp sample).	-
	26	28	Pg	Wht, yw	fg		clay, lim	qtz			Yellow and white very fine grained kaolin/limonite altered granite (?) (damp sample).	-
	28	30	Pg	Wht, yw	fg		clay, lim	qtz, feld			Yellow and white very fine grained kaolin/limonite altered qtz/feld granite (?) (damp sample).	-

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	30	32	Pg	Wht, yw	fg		clay, lim	qtz, feld			Yellow and white very fine grained kaolin/limonite altered qtz/feld granite (?) (damp sample).	-
	32	34	Pg	Pk, yw	fg		clay, lim/Fe-ox	qtz, feld			Pink-yellow very fine grained kaolin/limonite/Fe-ox altered qtz/feld granite (?) (damp sample).	-
	34	36	Pg	Pk	fg		clay, Fe-ox	qtz, feld	ep		Pink-yellow very fine grained kaolin/limonite/Fe-ox altered qtz/feld granite (?) (damp sample) and trace epidote altered veins.	-
	36	38	Pg	Pk	fg		clay, Fe-ox	qtz, feld	ep	chl	Pink-yellow very fine grained kaolin/limonite/Fe-ox altered qtz/feld granite (?) (damp sample), trace epidote altered veins, chlorite and brecciated (?) fragments.	-
	38	40	Pg	Pk	fg		clay, Fe-ox	qtz, feld	ep	chl	Pink fine grained kaolin/Fe-ox altered qtz/feld granite (?) and trace epidote altered veins and chlorite.	-
	40	42	Pg	Off wht	fg		qtz, feld	clay			Off white fine grained weakly kaolin altered qtz/feld granite (minor cyclone cont.).	-
	42	44	Pg	Off wht	fg		qtz, feld	hbl, clay, lim	ep		Off white fine grained weakly kaolin altered qtz/feld granite (minor cyclone cont.) and minor epidote brecciated (?) veins (B.O.C.O.).	-
	44	46	Pg	Dk grn	fg		chl, qtz, feld				Dark green fine grained chlorite altered qtz/feld granite (minor cyclone cont.).	-
	46	48	Pg	Dk grn	fg		chl, qtz, feld			ep	Dark green fine grained chlorite altered qtz/feld granite and epidote veins (minor cyclone cont.).	-
	48	50	Pg	Dk grn	fg		chl, qtz, feld				Dark green fine grained chlorite altered qtz/feld granite and chlorite veins (minor cyclone cont.).	-
	50	51	Pg	Dk grn	fg		chl, qtz, feld				Dark green fine grained chlorite altered qtz/feld granite and chlorite veins (trace cyclone cont.).	-

TIE RC102 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC102	0	2	Qs	Rd	fg		sand				Red aeolian sand.	-
	2	4	Qs	Rd	fg		sand				Red aeolian sand (cyclone cont.).	-
	4	6	Qa	Rd	vfg		clay	sand			Red aeolian sand, red alluvial clay and trace sands (minor cyclone cont.).	-
	6	8	Qa	Rd	vfg		clay	sand			Red alluvial clay and trace sands (trace cyclone cont.).	-
	8	10	Qa	Buff	vfg		clay	sand	grits		Buff alluvial clay and trace sands, and trace medium grained ferricrete/qtz rich grits (minor cyclone cont.).	-
	10	12	Qa	Wht, buff	vfg		clay	sand	grits		Buff alluvial clay and trace sands, and white fine grained clay-rich sand and trace medium grained ferricrete/qtz-rich grits (minor cyclone cont.).	-
	12	14	Qa	Wht	vfg		clay	sand	grits		White fine grained clay-rich sand and trace medium grained ferricrete/qtz rich grits (trace cyclone cont.).	-
	14	16	Qa	Wht	vfg		clay	sand	grits		White fine grained clay-rich sand and trace medium grained ferricrete/qtz rich grits (trace cyclone cont.).	-
	16	18	Qa/Pd	Grn	fg		am, clay, chl	qtz			Dark green fine grained mass kaolin altered amphibole/chlorite dolerite (?) and minor white fine clay-rich sand (trace cyclone cont.), damp.	-
	18	20	Pd	Dk grn	fg		am, chl	qtz, feld			Dark green fine grained mass kaolin altered am/chl/qtz/feld dolerite (?) (trace cyclone cont.) (B.O.C.O.).	-
	20	22	Pd	Dk grn	fg		am, chl, lim	qtz, feld		ep	Dark green fine grained mass kaolin altered am/chl/qtz/feld dolerite (?), lim veins and epidote veins (trace cyclone cont.).	-
	22	24	Pd	Dk grn	fg		am, chl, lim	qtz, feld			Dark green fine grained mass kaolin altered am/chl/qtz/feld dolerite (?) and lim veins (trace cyclone cont.).	-
	24	26	Pd	Dk grn	fg		am, chl, lim	qtz, feld			Dark green fine grained mass kaolin altered am/chl/qtz/feld dolerite (?) and lim veins (trace cyclone cont.).	-
	26	28	Pd	Dk grn	fg		am, chl, lim	qtz, feld			Dark green fine grained mass kaolin altered am/chl/qtz/feld dolerite (?) and lim veins (trace cyclone cont.).	-
	28	30	Pd	Dk grn	fg		am, chl, lim	qtz, feld			Dark green fine grained mass kaolin altered am/chl/qtz/feld dolerite (?) and lim veins.	-
	30	32	Pd	Dk grn	fg		am, chl, lim	qtz, feld			Dark green fine grained mass kaolin altered am/chl/qtz/feld dolerite (?), lim veins and minor fresh dolerite (B.O.P.O.).	-
	32	33	Pd	Dk grn	fg		am, chl	qtz, feld	lim		Dark green fresh fine mass am/chl/qtz/feld dolerite (?) and trace lim veins.	-

TIE RC103 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC103	0	2	Qs/Qa	Rd	fg		sand, clay		grit		Red aeolian sand (0-1.5m), red alluvial sands and clays, and trace medium grained, qtz-rich grits (cyclone cont.).	-
	2	4	Qa	Rd, brn	fg		clay	sand	grit		Red and brown alluvial sands and clays and trace medium grained, qtz-rich grits (trace cyclone cont.), damp sample.	-
	4	6	Qa	Brn	fg		clay	sand	grit		Brown alluvial sands and clays and trace medium grained, qtz-rich grits, damp sample.	-
	6	8	Qa	Brn	fg		clay, grit				Brown alluvial clays and medium grained, qtz/feld-rich grits and pink fine grained qtz/fld granite, damp sample.	-
	8	9	Pg	Pk	fg		qtz, feld	lim			Brown-pink medium grained qtz/feld/lim altered granite.	-

TIE RC104 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC104	0	2	Qs/Qt	Rd	fg		sand	gravel			Red aeolian sand and coarse grained red ferruginous and silicrete talus.	-
	2	4	Pg	Yw	fg		clay	qtz, feld			Yellow fine grained massive kaolin altered qtz/feld granite (poor sample return).	-
	4	6	Pg	Yw	fg		clay	qtz, feld	bio		Yellow fine grained massive kaolin/lim altered qtz/feld/(bio) granite (poor sample return).	-
	6	8	Pg	Yw	fg		clay	qtz, feld, lim	bio		Yellow fine grained massive kaolin/lim altered qtz/feld/(bio) granite (poor sample return).	-
	8	10	Pg	Yw	fg		clay	qtz, feld, lim	bio	mang?	Yellow fine grained massive kaolin/lim altered qtz/feld/(bio) granite and rare manganese-ferruginous veins (poor sample return).	-
	10	12	Pg	Yw	fg		clay	qtz, feld, Fe-ox	bio		Yellow fine grained massive kaolin/lim altered qtz/feld/(bio) granite and minor ferruginous veins.	-
	12	14	Pg	Yw	fg		clay	qtz, feld, Fe-ox	bio		Yellow fine grained massive kaolin/lim altered qtz/feld/(bio) granite and minor ferruginous veins.	-
	14	16	Pg	Brn	fg		qtz, feld, hbl	Fe-ox	bio		Brown fine grained massive kaolin/lim altered qtz/feld/(bio) granite and minor ferruginous veins (B.O.C.O.).	-
	16	18	Pg	Brn	fg		qtz, feld, hbl	Fe-ox	bio, ep		Brown fine grained massive kaolin/lim altered qtz/feld/(bio) granite, ferruginous veins and trace epidote veins.	-
	18	20	Pg	Brn	fg		qtz, feld, hbl	Fe-ox	bio, ep		Brown fine grained massive kaolin/lim altered qtz/feld/(bio) granite, ferruginous veins, trace epidote veins, pale green fine grained veins-rock flour (?)/sediment (?)/dolerite.	-
	20	22	Pg	Pk, grn	fg		qtz, feld, hbl	chl	Fe-ox		Pink and green fine grained massive chlorite altered qtz/feld/hbl/ (bio) granite.	-
	22	24	Pg	Pk, grn	fg		qtz, feld, hbl	chl	Fe-ox		Pink and green fine grained massive chlorite altered qtz/feld/hbl/ (bio) granite.	-

TIE RC105 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC105	0	2	Pg	Pk	mg		qtz, feld	ep			Pink medium grained qtz/feld granite and epidote alteration.	-
	2	4	Pg	Pk	mg		qtz, feld	ep			Pink medium grained qtz/feld granite and epidote alteration.	-
	4	6	Pg	Pk, grn	mg		qtz, feld	ep	chl		Pink medium grained qtz/feld granite, epidote alteration and trace chlorite alteration (B.O.C.O.).	-
	6	8	Pg	Yw-brn	fg		qtz, feld, kao	lim, hbl			Yellow-brown fine grained kaol/lim altered qtz/feld/hbl granite.	-
	8	10	Pgn	Yw-brn	fg		qtz, feld, kao	lim, hbl	chl		Yellow-brown fine grained kaol/lim altered qtz/feld/hbl granitic gneiss (?) and trace chlorite veins.	-
	10	12	Pgn	Yw-brn	fg		qtz, feld	lim, hbl, chl			Yellow-brown fine grained lim altered qtz/feld/hbl granitic gneiss (?), trace chlorite veins and trace calcite veins.	-
	12	14	Pgn	Yw-brn	fg		qtz, feld	lim, hbl, chl	ep		Yellow-brown fine grained lim altered qtz/feld/hbl granitic gneiss (?) and trace epidote veins.	-
	14	16	Pgn	Grn, pk	fg		qtz, feld, hbl, chl	ep			Pink-green fine grained (lim alt) qtz/feld/hbl granite gneiss (?) and epidote veins, damp sample (B.O.P.O.).	-
	16	18	Pgn	Grn, pk	fg		qtz, feld, hbl, chl	ep			Pink-green fine grained (lim alt) qtz/feld/hbl granite gneiss (?) and epidote veins.	-

TIE RC106 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC106	0	2	Qs/J-K	Rd, brn	fg		sand, clay				Red aeolian sand (0-1.5m), brown contaminated sands and clays (Algebuckina?), minor cyclone cont.	-
	2	4	J-K	Buff, ple grn	fg		sand, clay				Brown contaminated sands and clays (Algebukina?).	-
	4	6	J-K	Pk, wht	fg		sand, clay				Pink and white contaminated sands and clays (Algebuckina?).	-
	6	8	J-K	Wht	fg		clay	grit			White clay and minor qtz grits (Algebuckina).	-
	8	10	J-K	Wht	fg		clay	grit			White clay and minor qtz grits (Algebuckina).	-
	10	12	J-K	Wht	fg		clay	grit			White clay and minor qtz grits (Algebuckina).	-
	12	14	J-K	Wht	fg		clay	grit			White clay and minor qtz grits (Algebuckina).	-
	14	16	J-K	Wht	fg		clay	sand			White clay and minor qtz sand (Algebuckina), damp sample.	-
	16	18	J-K	Wht	fg		clay	sand			White clay and minor qtz sand (Algebuckina), damp sample.	-
	18	20	Pgn	Wht, pk	fg		clay	qtz, feld		bio	White clay altered qtz/feld/(bio) granite (?) (damp).	-
	20	22	Pgn	Wht, pk	fg		clay	qtz, feld		bio	White clay altered qtz/feld/(bio) granitic gneiss (?) (damp).	-
	22	24	Pgn	Wht, pk	fg		clay	qtz, feld		bio	White clay altered qtz/feld/(bio) granitic gneiss (?) (damp).	-
	24	26	Pgn	Wht, pk	fg		clay	qtz, feld		bio	White clay altered qtz/feld/(bio) granitic gneiss (?).	-
	26	28	Pgn	Yw brn	fg		qtz, feld		bio		Yellow brown fine grained foliated qtz/feld/bio granitic gneiss, clay altered (B.O.C.O.).	-
	28	30	Pgn	Yw brn	fg		qtz, feld		bio		Yellow brown fine grained foliated qtz/feld/bio granitic gneiss, clay altered (trace cyclone cont.).	-
	30	32	Pgn	Pk	fg		qtz, feld		bio		Pink fine grained foliated qtz/feld/bio granitic gneiss, clay altered (trace cyclone cont.).	-
	32	34	Pgn	Pk	fg		qtz, feld		bio, ep		Pink fine grained foliated qtz/feld/bio granitic gneiss, clay altered (trace cyclone cont.).	-
	34	36	Pgn	Yw brn	fg		qtz, feld		bio		Yellow brown fine grained foliated qtz/feld/bio granitic gneiss, clay altered (trace cyclone cont.).	-
	36	38	Pgn	Yw brn	fg		qtz, feld	bio			Yellow brown fine grained foliated qtz/feld/bio granitic gneiss.	-
	38	40	Pgn	Yw brn	fg		qtz, feld	bio			Yellow brown fine grained foliated qtz/feld/bio granitic gneiss and pink, medium grained pegmatite veins.	-
	40	42	Pgn	Yw brn, wht	fg		qtz, feld	bio, hbl			Yellow brown fine grained foliated qtz/feld/bio granitic gneiss and white fresh fine grained qtz/feld/hbl gneiss (B.O.P.O.).	-

TIE RC107 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy abdt	maj	min	tr	rare	Description	Magnetic susceptibility
TIE RC107	0	2	Qa	Yw	fg		sand, clay	lim			Yellow fine grained limonite (?) sands and clays.	-
	2	4	Pg	Yw	fg		qtz, clay	lim			Yellow fine grained limonite (?) and clay altered bedrock (granite?).	-
	4	6	Pg	Yw	fg		qtz, clay	lim			Yellow fine grained limonite (?) and clay altered bedrock (granite?).	-
	6	8	Pg	Yw	fg		qtz, clay	feld, lim	bio		Yellow fine grained limonite (?) and clay altered bedrock (granite?).	-
	8	10	Pg	Brn	fg		qtz, clay	feld, lim, bio			Brown fine grained limonite (?) and clay altered bedrock (granite?).	-
	10	12	Pg	Dk brn	fg		qtz, clay, hm	feld, lim, bio	mus		Dark brown fine grained limonite (?), clay altered qtz/feld/bio granite (?) and Fe-ox/muscovite alteration.	-
	12	14	Pg	Yw	fg		qtz, clay	feld, lim	bio		Yellow fine grained limonite (?), clay altered qtz/feld/bio granite (?) and Fe-ox/muscovite alteration.	-
	14	16	Pg	Yw	fg		qtz, clay	feld, lim	bio		Yellow fine grained limonite (?) and clay altered qtz/feld/bio/mus granite?	-
	16	18	Pg	Yw	fg		qtz, clay	feld, lim	bio		Yellow fine grained limonite (?) and clay altered qtz/feld/bio/mus granite?	-
	18	20	Pg	Brn	fg		qtz, clay	feld, bio	mus, hm		Brown fine grained clay altered qtz/feld/bio granite (?) with Fe-ox/mus veins.	-
	20	22	Pgn	Off wht, blk	fg		qtz, clay	Fe-ox, mus			Grey-green clay and off white qtz/feld/mus granite (?). Black very fine grained Fe-ox veins or altered hbl gneiss.	-
	22	24	Pgn	Off wht, blk	fg		qtz, clay	Fe-ox, mus			Grey-green clay and off white qtz/feld/mus granite (?). Black very fine grained Fe-ox veins or altered hbl gneiss.	-
	24	26	Pgn	Off wht, blk	fg		qtz, clay	Fe-ox, mus, bio			Grey-green clay and off white qtz/feld/mus granite (?). Black very fine grained Fe-ox veins or altered hbl gneiss.	-
	26	28	Pgn	Off wht, blk	fg		qtz, clay	Fe-ox, mus, bio			Grey-green clay and off white qtz/feld/mus granite (?). Black very fine grained Fe-ox veins or altered hbl gneiss.	-
	28	30	Pgn	Off wht, blk	fg		qtz, clay	Fe-ox, mus, bio		ep	Grey-green clay and off white qtz/feld/mus granite (?). Black very fine grained Fe-ox veins or altered hbl gneiss and rare epidote veins.	-
	30	32	Pgn	Yw	fg		qtz, feld	bio, mus			Yellow fine grained qtz/feld/bio/mus gneiss and minor pink pegmatite veins.	-
	32	34	Pgn	Clr, blk	fg		qtz, feld	hbl, mag, bio			Clear and black fine grained qtz/feld/bio/hbl/mag gneiss.	-
	34	35	Pgn	Clr, blk	fg		qtz, feld	hbl, mag, bio	py		Clear and black fine grained qtz/feld/bio/hbl/mag gneiss. Minor disseminated pyrite.	-

TIE RC108 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC108	0	2	Qa	Rd	fg		sand, clay	qtz, feld	bio		Red alluvial sands and clays and white fine grained qtz/feld/bio gneiss (cyclone cont.).	-
	2	4	Pgn	Yw	fg		qtz, clay	feld, lim	bio		Yellow fine grained limonite (?) and clay altered qtz/feld/bio granitic gneiss (cyclone cont.).	-
	4	6	Pgn	Yw	fg		qtz, clay	feld, lim	bio		Yellow fine grained limonite (?) and clay altered qtz/feld/bio granitic gneiss.	-
	6	8	Pgn	Yw	fg		qtz, clay	feld, lim, Fe-ox	bio		Yellow fine grained limonite (?)/Fe-ox and clay altered qtz/feld/bio granitic gneiss.	-
	8	10	Pgn	Yw	fg		qtz, clay	feld, lim, Fe-ox	bio		Yellow fine grained limonite/Fe-ox and clay altered qtz/feld/bio granitic gneiss.	-
	10	12	Pgn	Yw	fg		qtz, clay	feld, lim, Fe-ox	bio,mus,ep		Yellow fine grained limonite/Fe-ox and clay altered qtz/feld/bio granitic gneiss and trace epidote altered veins.	-
	12	14	Pgn	Yw, blk	fg		qtz, clay	feld, lim, Fe-ox, hbl?	bio,mus,ep		Yellow fine grained lim/Fe-ox and clay altered qtz/feld/bio/mus granitic gneiss. Black very fine grained hbl/qtz/ lim gneiss and trace epidote altered veins (B.O.C.O.).	-
	14	16	Pgn	Yw, blk	fg		qtz, clay	feld, lim, Fe-ox, hbl?	bio, mag, ep		Yellow fine grained lim/Fe-ox and clay altered qtz/feld/bio/mag granitic gneiss. Black very fine grained hbl/qtz/ lim gneiss and trace epidote altered veins (B.O.P.O.).	-
	16	18	Pgn	Off wht	fg		qtz, feld	bio, hbl,mag			Off white fine grained banded qtz/feld/bio/hbl/mag granitic gneiss.	-

TIE RC109 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC109	0	2	Qa/Pgn	Rd, wht	vfg-fg		qtz, bio, feld	sand, clay			Red alluvial sand and clay and white very fine grained, foliated qtz/feld/bio gneiss.	-
	2	4	Pgn	Yw, wht	vfg		qtz, bio, feld	lim, hbl			Yellow and white very fine grained, foliated qtz/feld/bio/hbl gneiss and trace limonite-siliceous veins?	-
	4	6	Pgn	Yw, wht	vfg		qtz, bio, feld	lim, hbl			Yellow and white very fine grained foliated qtz/feld/bio/hbl gneiss (B.O.C.O.).	-
	6	8	Pgn	Yw, wht	vfg		qtz, bio, feld	lim, hbl			Yellow-brown and white very fine grained, foliated qtz/feld/bio/hbl gneiss.	-
	8	10	Pgn	Yw, gy	vfg		qtz, bio, feld	lim, hbl			Yellow-brown weathered and grey, fresh, very fine grained foliated qtz/feld/bio/hbl gneiss.	-
	10	12	Pgn	Yw, gy	vfg		qtz, bio, feld	lim, hbl			Yellow-brown weathered and grey, fresh, very fine grained foliated qtz/feld/bio/hbl gneiss.	-

TIE RC110 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC110	0	2	Qa/Pgn	Rd, wht	vfg-fg		qtz, bio, feld	sand and clay			Red alluvial sand and clay and white very fine grained, foliated qtz/feld/bio gneiss.	-
	2	4	Pgn	Yw, wht	vfg-fg		qtz, bio, feld	lim			Yellow and white very fine grained, foliated qtz/feld/bio gneiss and trace pegmatite veins (?) (minor cyclone cont.).	-
	4	6	Pgn	Yw, wht	vfg-fg		qtz, bio, feld, clay	lim			Yellow and white very fine grained, foliated qtz/feld/bio gneiss and trace pegmatite veins (?), deeply weathered.	-
	6	8	Pgn	Yw, wht	vfg-fg		qtz, bio, feld, clay	lim			Yellow and white very fine grained, foliated qtz/feld/bio gneiss and trace pegmatite veins (?), deeply weathered.	-
	8	10	Pgn	Yw, gy	vfg		qtz, bio, feld	lim, hbl			Yellow-brown weathered and grey, fresh, very fine grained foliated qtz/feld/bio/hbl gneiss.	-
	10	12	Pgn	Yw, gy	vfg		qtz, bio, feld	lim, hbl			Yellow-brown weathered and grey, fresh, very fine grained foliated qtz/feld/bio/hbl gneiss with fresh pegmatite veins.	-

TIE RC111 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC111	0	2	Qa	Rd	fg		sand, clay	grit			Red alluvial sands, clays and minor medium grained qtz-rich grits (damp).	-
	2	4	Pgn	Wht	fg		qtz, clay	feld, lim, Fe-ox	bio, mus		Yellow fine grained limonite (?) and clay altered qtz/feld/bio granite gneiss (?) with trace Fe-ox veins.	-
	4	6	Pgn	Wht	fg		qtz, clay	feld, lim, Fe-ox	bio, mus		Yellow fine grained limonite (?) and clay altered qtz/feld/bio granite gneiss (?) with trace Fe-ox veins.	-
	6	8	Pgn	Wht	fg		qtz, clay	feld, lim, Fe-ox	bio, mus	mag,ep	Yellow fine grained limonite (?) and clay altered qtz/feld/bio granite gneiss (?) with trace Fe-ox veins and rare epidote veins.	-
	8	10	Pgn	Wht	fg		qtz, clay	feld, lim, Fe-ox	bio, mus	mag,ep	Yellow fine grained limonite (?) and clay altered qtz/feld/bio granite gneiss (?) with trace Fe-ox veins and rare epidote veins.	-
	10	12	Pgn	Wht	fg		qtz	feld, Fe-ox, clay	bio, mus	mag,ep	Yellow fine grained limonite (?) and clay altered qtz/feld/bio granite gneiss (?) with trace Fe-ox veins and rare epidote veins.	-
	12	14	Pgn	Wht	fg		qtz	feld, Fe-ox, clay	bio, mus	mag,ep	Yellow fine grained limonite (?) and clay altered qtz/feld/bio granite gneiss (?) with trace Fe-ox veins and rare epidote veins.	-
	14	16	Pgn	Wht	fg		qtz, feld	chl, bio, hbl	Fe-ox, mus	mag	White fine grained qtz/feld/bio/hbl granitic gneiss (?) and rare Fe-ox veins (B.O.C.O.).	-
	16	18	Pgn	Gy, pk	fg-mg		qtz, feld	chl, bio, hbl	mus	mag,ep	White fine grained qtz/feld/bio/hbl granitic gneiss (?) and rare Fe-ox veins (B.O.C.O.).	-
	18	20	Pgn	Blk, wht	fg-mg		qtz, feld	chl, bio, hbl	mus	mag,ep	Black fine grained qtz/feld/bio/hbl granitic gneiss (?), white medium grained qtz/feld pegmatite veins and rare epidote veins.	-
	20	22	Pgn	Blk, wht	fg-mg		qtz, feld	chl, bio, hbl	mus	mag	Black fine grained qtz/feld/bio/hbl granitic gneiss (?), white medium grained qtz/feld pegmatite veins and disseminated pyrite.	-
	22	24	Pgn	Blk, wht	fg-mg		qtz, feld	chl, bio, hbl	mus	mag	Black fine grained qtz/feld/bio/hbl granitic gneiss (?) and white medium grained qtz/feld pegmatite veins.	-

TIE RC112 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC112	0	2	Qa/Qc	Rd, or	fg		sand, clay	CaCO3,grit			Red and orange CaCO3 contaminated alluvial sands, clays and minor medium grained qtz-rich grits, damp sample.	-
	2	4	Qc	Rd, or	fg		sand, clay	CaCO3,grit			Red and orange CaCO3 contaminated alluvial sands, clays and minor medium grained qtz-rich grits.	-
	4	6	Qa	Rd, or	fg		sand, clay, Fe-ox	grit			Red and orange Fe-ox (?) contaminated alluvial sands, clays and minor medium grained qtz-rich grits.	-
	6	8	J-K	Wht, red, yw	fg		qtz, clay	Fe-ox			White, yellow and red fine grained contaminated sands and clays (indurated Algebuckina?).	-
	8	10	J-K	Wht, red, yw	fg		qtz, clay	Fe-ox			White, yellow and red fine grained contaminated sands and clays (indurated Algebuckina?).	-
	10	12	J-K	Wht, red, yw	fg		qtz, clay	Fe-ox			White, yellow and red fine grained contaminated sands and clays (indurated Algebuckina?).	-
	12	14	J-K	Buff	fg		qtz, clay	lim			Buff fine grained clay-rich sands.	-
	14	16	J-K	Buff	fg		qtz, clay	lim			Buff fine grained clay-rich sands.	-
	16	18	J-K	Buff	fg		qtz, clay	lim			Buff fine grained clay-rich sands and minor lim alteration.	-
	18	20	Pg	Wht	fg		clay	qtz, feld			Buff fine grained clay-altered qtz/feld granite/gneiss.	-
	20	22	Pg	Wht	fg		clay	qtz, feld			Buff fine grained clay-altered qtz/feld granite/gneiss, damp.	-
	22	24	Pg	Wht	fg		clay	qtz, feld			Buff fine grained clay-altered qtz/feld granite/gneiss, damp.	-
	24	26	Pg	Wht, yw	fg		clay	qtz, feld, lim	bio		Buff fine grained clay-altered qtz/feld/bio granite/gneiss, damp.	-
	26	28	Pg	Wht, yw	fg		clay	qtz, feld, lim	bio		Buff fine grained clay-altered qtz/feld/bio granite/gneiss, damp.	-
	28	30	Pg	Wht, yw	fg		clay	qtz, feld, lim			Buff fine grained clay-altered qtz/feld granite/gneiss, damp.	-
	30	32	Pg	Wht, yw	fg		clay, qtz, feld	lim			Buff fine grained clay-altered qtz/feld granite/gneiss, damp.	-
	32	34	Pg	Wht, yw	fg		clay, qtz, feld	lim			Buff fine grained clay-altered qtz/feld granite/gneiss, damp.	-
	34	36	Pg	Wht, yw	fg		clay	qtz, feld, lim	ep		Buff fine grained clay-altered qtz/feld granite/gneiss and minor pale green epidote,	-

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
											damp.	
	36	38	Pg	Wht, yw	fg		clay	qtz, feld, lim	bio, ep		Buff fine grained clay-altered qtz/feld granite/gneiss, damp.	-
	38	40	Pg	Ple grn	fg		clay	qtz, feld, lim	bio, ep		Buff fine grained clay-altered qtz/feld granite/gneiss, very damp (B.O.C.O.).	-
	40	42	Pg	Ple grn	fg		clay	qtz, feld, lim	bio, ep		Pale green fine grained clay-altered qtz/feld/bio granite/gneiss, very damp sample; very poor sample return, no composite sample.	-
	42	44	Pg	Ple grn	fg		clay	qtz, feld, lim	bio, ep		Pale green fine grained clay-altered qtz/feld/bio granite/gneiss, very damp sample.	-
	44	46	Pg	Ple grn	fg		clay	qtz, feld, lim	bio, ep		Pale green fine grained clay-altered qtz/feld/bio granite/gneiss, very damp sample; very poor sample return.	-
	46	48	Pg	Ple grn	fg		clay	qtz, feld, lim	bio, ep		Pale green fine grained clay-altered qtz/feld/bio granite/gneiss, wet sample.	-
	48	50	Pg	Ple grn	fg		clay	qtz, feld, lim	bio, ep		Pale green fine grained clay-altered qtz/feld/bio granite/gneiss, wet sample; very poor sample return.	-
	50	52	Pg	Ple grn	fg		clay	qtz, feld, lim	bio, ep		Pale green fine grained clay-altered qtz/feld/bio granite/gneiss, wet sample; very poor sample return.	-
	52	54	Pg	Ple grn	fg		clay	qtz, feld, lim	bio, ep		Pale green fine grained clay-altered qtz/feld/bio granite/gneiss, wet sample; very poor sample return.	-
	54	56	Pg?	Ple grn	fg		clay	qtz, feld, lim	bio, ep		No sample return, probably pale green fine grained clay-altered qtz/feld/bio granite/gneiss.	-
	56	58	Pg	Grn	fg		qtz, feld, chl	bio			Green fine grained chl-altered qtz/feld/bio granite/gneiss, wet sample; very poor sample return.	-
	58	60	Pg	Grn	fg		qtz, feld, chl	bio			Green fine grained chl-altered qtz/feld/bio granite/gneiss, wet sample; very poor sample return.	-
	60	62	Pg	Grn	fg		qtz, feld, chl	bio			Green fine grained chl-altered qtz/feld/bio granite/gneiss, wet sample; very poor sample return.	-
	62	64	Pg?	Grn	fg		qtz, feld, chl	bio			No sample return, probably pale green fine grained clay-altered qtz/feld/bio granite/gneiss.	-
	64	66	Pg	Grn	fg		qtz, feld, chl	bio			Green fine grained chl-altered qtz/feld/bio granite/gneiss and green chlorite veins/shears and minor brecciation, wet sample.	-

TIE RC113 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC113	0	2	Qs	Rd	fg		sand				Red aeolian sand (cyclone cont.).	-
	2	4	Qc	Rd, or	fg		sand, clay	Fe-ox, gravel			Red and orange Fe-ox contaminated alluvial sands, clays and minor medium grained qtz-rich gravels.	-
	4	6	J-K	Rd, wht	fg		sand, clay	Fe-ox			Red and white Fe-ox contaminated alluvial sands and clays (Algebuckina).	-
	6	8	J-K	Rd, wht	fg		sand, clay	Fe-ox			Red and white Fe-ox contaminated alluvial sands and clays (Algebuckina).	-
	8	10	J-K	Rd, wht	fg		sand, clay	Fe-ox			Red and white Fe-ox contaminated alluvial sands and clays (Algebuckina).	-
	10	12	J-K	Rd, wht	fg		sand, clay	Fe-ox			Red and white Fe-ox contaminated alluvial sands and clays (Algebuckina).	-
	12	14	J-K	Rd, wht	fg		sand, clay	Fe-ox			Red and white Fe-ox contaminated alluvial sands and clays (Algebuckina).	-
	14	16	Pg	Rd, yw	fg		clay	Fe-ox	qtz	ep	Red and yellow fine grained kaolin/Fe-ox altered basement and green epidote veins.	-
	16	18	Pg	Yw-grn	fg		clay	Fe-ox	qtz	ep	Yellow-green fine grained kaolin/Fe-ox altered basement and green epidote veins.	-
	18	20	Pg	Yw	fg		clay	Fe-ox, qtz	bio		Yellow fine grained kaolin/Fe-ox altered qtz/feld/bio gneiss?	-
	20	22	Pg	Yw	fg		clay	Fe-ox, qtz	bio		Yellow fine grained kaolin/Fe-ox altered qtz/feld/bio gneiss (?) (damp).	-
	22	24	Pg	Yw	fg		qtz	clay, Fe-ox	bio		Yellow fine grained kaolin/Fe-ox altered qtz/feld/bio gneiss (?) (damp).	-
	24	26	Pg	Yw	fg		qtz, feld	clay, Fe-ox	bio, hbl		Yellow fine grained kaolin/Fe-ox altered qtz/feld/bio gneiss (B.O.C.O.).	-
	26	28	Pg	Yw, clr	fg		qtz, feld	Fe-ox	bio, hbl		Yellow and clear fine grained Fe-ox altered qtz/feld/bio/hbl gneiss.	-
	28	31	Pg	Yw, clr	fg		qtz, feld	Fe-ox	bio, hbl	ep	Clear and yellow fine grained Fe-ox altered qtz/feld/bio/hbl gneiss and trace epidote altered pegmatite veins.	-

TIE RC114 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC114	0	2	Qs/Qa	Rd, or	fg		sand, clay	Fe-ox, gravel			Red aeolian sand, red and orange Fe-ox contaminated alluvial sands, clays and minor medium grained qtz-rich gravels.	-
	2	4	Qa/Pg	Rd, yw	mg		qtz	sand, clay			Red and orange Fe-ox contaminated alluvial sands, clays and yellow medium grained qtz/feld granite?	-
	4	6	Pg	Yw-grn	mg		qtz, clay	feld	bio, ep		Yellow-green medium grained qtz/feld/bio granite (?) and trace epidote alteration, damp sample.	-
	6	8	Pg	Yw-grn	mg		qtz, clay	feld	bio, ep		Yellow-green medium grained qtz/feld/bio granite (?) and trace epidote alteration, damp sample.	-
	8	10	Pgn	Yw-grn	fg		qtz, clay	feld	bio		Yellow-green fine grained qtz/feld/bio gneiss (?) (damp).	-
	10	12	Pgn	Yw-grn	fg		qtz, clay	feld	bio		Yellow-green fine grained qtz/feld/bio gneiss (?) (damp).	-
	12	14	Pgn	Yw	fg		qtz, clay	feld	bio		Yellow fine grained qtz/feld/bio gneiss (?) (damp).	-
	14	16	Pgn	Yw	fg		qtz, clay	feld, mus	bio		Yellow fine grained qtz/feld/bio gneiss (?) (damp).	-
	16	18	Pgn	Yw	fg		qtz, clay	feld, mus	bio		Yellow fine grained qtz/feld/bio gneiss (?) (damp).	-
	18	20	Pgn	Yw	fg		qtz, clay	feld, mus	bio		Yellow fine grained qtz/feld/bio gneiss (?) (damp).	-
	20	22	Pgn	Yw	fg		qtz, clay	feld, mus	bio		Yellow fine grained qtz/feld/bio gneiss (?) (damp).	-
	22	24	Pgn	Yw	fg		qtz, clay	feld, mus	bio		Yellow fine grained qtz/feld/bio gneiss (?) (B.O.C.O.).	-
	24	26	Pgn	Yw	fg		qtz, feld	clay	bio		Yellow fine grained qtz/feld/mus/bio gneiss?	-
	26	28	Pgn	Yw, wht	fg		qtz, feld	bio, hbl	lim	py	Yellow fine grained qtz/feld/mus/bio gneiss (?) with trace disseminated pyrites (B.O.P.O.).	-
	28	30	Pgn/pg	Gy	fg-mg		qtz, feld	bio, hbl			White fine grained qtz/feld/mus/bio gneiss (?) and pale pink medium grained granite.	-

TIE RC115 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TIE RC115	0	2	Qa	Rd, or	fg		sand, clay				Red and orange Fe-ox contaminated alluvial sands and clays (trace cyclone cont.).	-
	2	4	Qa/Pg	Rd, wht	fg		sand, clay	qtz, clay			Red and orange Fe-ox contaminated alluvial sands, clays and white fine grained kaolin altered qtz/feld gneiss?	-
	4	6	Pg	Ple grn	mg		qtz clay	feld			White to pale green medium grained kaolin altered qtz/feld granite?	-
	6	8	Pg	Ple grn	mg		qtz clay	feld			White to pale green medium grained kaolin altered qtz/feld granite?	-
	8	10	Pg	Ple grn	mg		qtz clay	feld			White to pale green medium grained kaolin altered qtz/feld granite?	-
	10	12	Pg	Ple grn	mg		qtz clay	feld			White to pale green medium grained kaolin altered qtz/feld granite?	-
	12	14	Pg	Ple grn	mg		qtz clay	feld			White to pale green medium grained kaolin altered qtz/feld granite (?) (damp).	-
	14	16	Pg	Grn-brn	mg		qtz clay	feld			Green-brown medium grained kaolin altered qtz/feld granite (?) (damp).	-
	16	18	Pg	Pk	mg		qtz, feld	clay	ep		Pink medium grained kaolin altered qtz/feld granite and trace epidote veins, damp sample (B.O.C.O.).	-
	18	20	Pg	Pk	mg		qtz, feld	clay	ep		Pink medium grained kaolin altered qtz/feld granite and trace epidote veins.	-
	20	22	Pg	Pk	mg		qtz, feld		ep, chl		Pink medium grained kaolin altered qtz/feld granite and trace epidote/chlorite veins.	-
	22	24	Pgn	Yw-brn	fg		qtz, feld	bio, mus, Fe-ox			Yellow-brown fine grained Fe-ox altered qtz/feld/bio gneiss.	-
	24	26	Pgn/Pg	Yw-brn	fg		qtz, feld	bio, mus, Fe-ox			Yellow-brown fine grained Fe-ox altered qtz/feld/bio gneiss and pink medium grained qtz/feld granite.	-
	26	28	Pgn	Yw-brn, blk	fg		qtz, feld, hbl	bio, mus, Fe-ox			Yellow-brown fine grained Fe-ox altered qtz/feld/bio gneiss and black fine grained foliated qtz/feld/hbl gneiss. Trace pink medium grained qtz/feld pegmatite veins (B.O.P.O.).	-
	28	30	Pgn	Yw-brn, blk	fg		qtz, feld, hbl	bio, mus, Fe-ox			Yellow-brown fine grained Fe-ox altered qtz/feld/bio gneiss and black fine grained foliated qtz/feld/hbl gneiss.	-

TRE RC01 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TRE RC01	0	2	Qs	Rd	fg		sand, clay	qtz, feld, pisol			Red semi-consolidated alluvial sand and clay and minor coarse grained alluvial grits.	0.56
	2	4	Qs	Rd	fg		sand, clay				Red semi-consolidated (contaminated) alluvial sand and clay.	0.21
	4	6	Qs	Rd	fg		sand, clay				Red semi-consolidated (contaminated) alluvial sand and clay.	0.24
	6	8	Taq	Buf	fg		sand, clay				Buff silica contaminated sands and clays.	0.18
	8	10	Taq	Buf	fg		sand, clay				Buff silica contaminated sands and clays.	0.68
	10	12	Taq	Buf	mg		sand, clay				Buff silica contaminated sands and clays.	0.32
	12	14	Taq	Buf	mg		sand, clay				Buff silica contaminated sands and clays.	0.19
	14	16	Taq	Buf	fg		sand, clay				Buff silica contaminated sands and clays.	0.58
	16	18	Taq	Wht	vfg	clay		sand			Buff silica contaminated clay and minor fine grained well rounded sand.	0.53
	18	20	Taq	Wht	vfg	clay		sand			Buff silica contaminated clay and minor fine grained well rounded sand.	0.28
	20	22	Taq	Wht	vfg	clay		sand			Buff silica contaminated clay and minor fine grained well rounded sand.	0.06
	22	24	Taq	Wht	vfg	clay		sand			Buff silica contaminated clay and minor fine grained well rounded sand.	0.19
	24	26	Taq	Wht	vfg	clay		sand			Buff silica contaminated clay and minor fine grained well rounded sand.	0.22
	26	28	Taq	Wht	vfg	clay		sand			Buff silica contaminated clay and minor fine grained well rounded sand.	0.44
	28	30	Taq	Wht	vfg	clay		sand			Buff silica contaminated clay and minor fine grained well rounded sand.	0.37
	30	32	Taq	Wht	vfg	clay		sand			Buff silica contaminated clay and minor fine grained well rounded sand.	0.29
	32	34	Taq	Wht	vfg	clay		sand			Buff silica contaminated clay and minor fine grained well rounded sand, wet sample.	0.29
	34	36	Taq	Wht	vfg	clay		sand			Buff silica contaminated clay and minor fine grained well rounded sand, damp sample.	1.40
	36	38	Tpk	Wht	vfg	clay		qtz			White very fine grained kaolin and minor medium grained angular qtz.	0.35
	38	40	Tpk	Wht	vfg	clay		qtz			White very fine grained kaolin and minor medium grained angular qtz.	0.33

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy abdt	maj	min	tr	rare	Description	Magnetic susceptibility
	40	42	Tpk	Wht	vfg	clay		qtz			White very fine grained kaolin and minor medium grained angular qtz.	0.41
	42	44	Tpk	Wht	vfg	clay		qtz			White very fine grained kaolin and minor medium grained angular qtz.	0.33
	44	46	Tpk	Wht	vfg	clay		qtz			White very fine grained kaolin and minor medium grained angular qtz.	0.48
	46	48	Tpk	Wht	vfg	clay		qtz	lim		White very fine grained kaolin and minor medium grained angular qtz and trace lim alteration.	0.70
	48	50	Tpf	Wht, yw	vfg	clay		qtz, lim			White/yellow very fine grained kaolin and minor medium grained angular qtz with minor lim alteration.	0.76
	50	52	Tpf	Wht, yw	vfg	clay		qtz, lim, Fe-ox			White/yellow very fine grained kaolin and minor medium grained angular qtz with minor lim/Fe-ox alteration.	0.73
	52	54	Pgn	Brn	fg	clay		qtz, bio			Brown clay and yellow fine grained clay altered qtz/bio gneiss.	0.71
	54	56	Pgn	Brn	fg	clay		qtz, bio			Brown clay and yellow fine grained clay altered qtz/bio gneiss.	0.98
	56	58	Pgn	Yw	fg		qtz, bio	feld, clay			Yellow fine grained clay altered qtz/bio gneiss.	1.60
	58	60	Pgn	Yw	fg		qtz, bio	feld			Yellow fine grained clay altered qtz/bio gneiss.	1.59
	60	62	Pgn	Yw	fg		qtz, bio	feld			Yellow fine grained clay altered qtz/bio gneiss.	4.30
	62	64	Pgn	Yw	fg		qtz, bio	feld	mag		Yellow fine grained clay altered qtz/bio gneiss.	9.54
	64	66	Pgn	Yw	fg		qtz, bio	feld, mag	gn		Yellow fine grained clay altered qtz/bio gneiss.	17.30

TRE RC02 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy abdt	maj	min	tr	rare	Description	Magnetic susceptibility
TRE RC02	0	2	Qa	Rd	fg		sand, clay				Red aeolian sand and clay.	0.42
	2	4	Qs	Rd	fg		sand, clay	qtz, feld, pisol			Red semi-consolidated alluvial sand and clay and minor coarse grained alluvial grits.	0.44
	4	6	Qs	Rd	fg		sand, clay				Red semi-consolidated contaminated alluvial sand and clay.	0.57
	6	8	Qs	Rd	fg		sand, clay				Red semi-consolidated contaminated alluvial sand and clay.	0.5
	8	10	Qs	Rd	fg		sand, clay				Red semi-consolidated contaminated alluvial sand and clay, damp.	0.3
	10	12	Taq	Buff	fg		sand, clay				Buff silica contaminated sands and clays.	0.95

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	12	14	Taq	Yw	fg		sand, clay	lim			Yellow fine grained lim indurated clays and grit.	0.21
	14	16	Taq	Buff	fg		sand, clay				Buff silica contaminated sands and clays.	0.11
	16	18	Taq	Buff	fg		sand, clay				Buff silica contaminated sands and clays.	0.19
	18	20	Taq/Tap	Buff	fg		sand, clay				Buff silica contaminated sands and clays, and vitreous porcellanite.	0.2
	20	22	Tap/Taq	Wht	vfg		sand, clay	qtz			Porcellanite, white kaolin and minor angular qtz (damp).	0.12
	22	24	Taq	Wht	fg		clay	qtz			White kaolin and minor angular qtz (damp).	0.1
	24	26	Taq	Wht	fg		clay, qtz				White kaolin and well rounded-angular medium grained qtz (damp).	0.09
	26	28	Taq	Wht	fg		clay, qtz				White kaolin and well rounded-angular medium grained qtz (damp).	0.02
	28	30	Taq	Wht	fg		clay, qtz				White kaolin and well rounded-angular fine grained qtz.	0.12
	30	32	Taq	Wht	fg		clay, qtz				White kaolin and well rounded-angular medium grained qtz (damp).	0.07
	32	34	Taq	Wht	fg		clay, qtz				White kaolin and well rounded-angular medium grained qtz (damp).	0.24
	34	36	Taq	Wht	fg		clay, qtz				White kaolin and well rounded-angular fine grained qtz.	0.07
	36	38	Taq	Wht	fg		clay, qtz				White kaolin and well rounded-angular medium grained qtz (damp).	0.35
	38	40	Taq	Wht	fg		clay, qtz				White kaolin and well rounded-angular fine grained qtz.	0.45
	40	42	Taq	Wht	fg		clay, qtz				White kaolin and well rounded-angular fine grained qtz.	0.65
	42	44	Taq	Wht	fg		clay, qtz				White kaolin and well rounded-angular fine grained qtz.	0.12
	44	46	Taq	Wht	fg		clay, qtz				White kaolin and well rounded-angular fine grained qtz.	0.17
	46	48	Taq	Wht	fg		clay, qtz				White kaolin and well rounded-angular fine grained qtz.	0.15
	48	50	Taq	Wht	fg		clay, qtz				White kaolin and well rounded-angular fine grained qtz.	0.22
	50	52	Taq	Buff, pk	fg		clay, qtz				Buff and pink indurated clays and well rouned-angular fine grained qtz/clay beds.	0.25
	52	54	Taq	Wht	fg		clay	qtz			White kaolin and minor well rounded-angular fine grained qtz.	0.55
	54	56	Taq	Buff, pk	fg		clay	qtz			Buff and pink indurated clays and minor well rounded-angular fine grained qtz/clay beds.	0.25

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	56	58	Taq	Buff, pk	fg		clay	qtz	Fe-ox		Buff and pink indurated (Fe-ox) clays and minor well rouned-angular fine grained qtz/clay beds.	0.22
	58	60	Taq	Buff, pk	fg		clay	qtz	Fe-ox		Buff and pink indurated (Fe-ox) clays and minor well rouned-angular fine grained qtz/clay beds.	0.25
	60	62	Taq	Wht	fg		clay	qtz	Fe-ox		White indurated (Fe-ox) clays and minor well rouned-angular fine grained qtz/clay beds.	0.71
	62	64	Taq	Wht	fg		clay	qtz			White indurated clays and minor well rouned-angular fine grained qtz/clay beds.	0.54
	64	66	Taq	Wht	fg		clay	qtz	lim		White indurated (lim) clays and minor well rouned-angular fine grained qtz/clay beds.	0.41
	66	68	Taq	Wht	fg		clay	qtz	lim		White indurated (lim) clays and minor well rouned-angular fine grained qtz/clay beds.	0.44
	68	70	Taq	Wht	fg		clay	qtz			White indurated clays and minor well rouned-angular fine grained qtz/clay beds.	0.13
	70	72	Taq	Wht	fg		clay	qtz			White indurated clays and minor well rouned-angular fine grained qtz/clay beds.	0.81
	72	74	Taq	Wht	fg		clay	qtz, lim			White indurated (lim) clays and minor well rouned-angular fine grained qtz/clay beds.	0.82
	74	76	Taq	Wht	fg		clay	qtz,	lim		White indurated clays and minor well rouned-angular fine grained qtz/clay beds.	0.25
	76	78	Taq	Wht	fg		clay	qtz			White indurated clays and minor well rouned-angular fine grained qtz/clay beds.	0.89
	78	80	Taq	Wht, yw	fg		clay	qtz, lim			White indurated (lim) clays and minor well rouned-angular fine grained qtz/clay beds.	0.52
	80	82	Taq	Wht	fg		clay	qtz			White indurated clays and minor well rouned and angular fine grained qtz/clay beds.	0.63
	82	84	Taq	Wht	fg		clay	qtz, lim	Fe-Ox		White indurated (lim) clays and minor well rouned-angular fine grained qtz/clay beds.	0.15
	84	86	Taq	Wht	fg		clay, lim	qtz, Fe-ox	mang		White indurated (lim) clays and minor well rouned-angular fine grained qtz/clay beds and chert bands.	0.38
	86	88	Taq	Wht	fg		clay	qtz, lim	Fe-Ox		White indurated (lim) clays and minor well rouned-angular fine grained qtz/clay beds.	0.09
	88	90	Taq	Wht	fg		clay	qtz, lim	Fe-Ox		White lim/Fe-ox clays and minor well rouned-angular fine grained qtz/clay beds.	0.3
	90	92	Taq	Buff, pk	vfg		clay		qtz		Buff and pink indurated clays and trace well rounded-angular fine grained qtz/clay beds.	0.21
	92	94	Taq	Buff, pk	vfg		clay		qtz, lim		Buff and pink indurated clays and trace well rounded-angular fine grained qtz/clay beds and trace lim alteration.	0.29
	94	96	Taq	Buff, pk	vfg		clay		qtz, lim		Buff and pink indurated clays and trace well rounded-angular fine grained qtz/clay beds and	0.28

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
											trace lim alteration.	
	96	98	Taq	Brn	vfg		clay	qtz, ser			Brown sericitic clays and trace well rounded-angular fine grained qtz/clay beds (B.O.C.O.).	0.15
	98	100	Taq	Brn	vfg		clay	qtz, ser			Brown sericitic clays and trace well rounded-angular fine grained qtz/clay beds.	0.19
	100	102	Taq	Brn	vfg		clay	qtz, ser			Brown sericitic clays and trace well rounded-angular fine grained qtz/clay beds.	0.17
	102	104	Taq	Brn	vfg		clay	qtz, ser			Brown sericitic clays and trace well rounded-angular fine grained qtz/clay beds.	0.24
	104	106	Taq	Buff	vfg		clay	qtz, ser			Brown sericitic clays and trace well rounded-angular fine grained qtz/clay beds.	0.21
	106	108	Taq	Buff	vfg		clay	qtz, ser			Brown sericitic clays and trace well rounded-angular fine grained qtz/clay beds.	0.27
	108	110	Taq	Buff	vfg		clay	qtz, ser			Brown sericitic clays and trace well rounded-angular fine grained qtz/clay beds.	0.27
	110	111	Taq	Buff	vfg		clay	qtz, ser			Brown sericitic clays and trace well rounded-angular fine grained qtz/clay beds.	0.26

TRE RC03 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TRE RC03	0	2	Qa	Rd	fg		qtz				Red semi-consolidated sand and gravels, minor	0.36
	2	4	Tak	Rd, wht	vfg	clay	silica, Fe-ox				Red and white very fine grained silicified Fe-ox altered clays.	0.22
	4	6	Tak	Rd, wht	vfg	clay	silica, Fe-ox				Red and white very fine grained silicified Fe-ox altered clays.	0.09
	6	8	Tak	Rd, wht	vfg	clay	silica, Fe-ox				Red and white very fine grained silicified Fe-ox altered clays.	0.1
	8	10	Tak	Rd, wht, yw	vfg	clay	silica, Fe-ox, lim				Red, yellow and white very fine grained silicified Fe-ox/lim altered clays.	0.12
	10	12	Tak	Rd, wht, yw	vfg	clay	silica, Fe-ox, lim				Red, yellow and white very fine grained silicified Fe-ox/lim altered clays.	0.29
	12	14	Tak	Rd, wht, yw	vfg	clay	silica, Fe-ox, lim				Red, yellow and white very fine grained silicified Fe-ox/lim altered clays.	0.14
	14	16	Tak	Pk	vfg	clay		sand			Pink very fine grained claystone with minor very	0.04
	16	18	Tak	Pk	vfg	clay		sand			Pink very fine grained claystone with minor very	0.02

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	18	20	Tak	Yw	vfg	clay		sand			Yellow very fine grained claystone with minor	0.02
	20	22	Tak	Rd, wht, yw	vfg	clay	Fe-ox, lim				Red, yellow and white very fine grained Fe-ox/lim altered claystone.	0.03
	22	24	Tak	Ppl	vfg	clay	Fe-ox				Purple very fine grained Fe-ox altered	0.02
	24	26	Tak	Buff, yw	vfg	clay	Fe-ox, lim				Buff and yellow very fine grained Fe-ox altered claystone.	0.03
	26	28	Tak	Buff, yw	vfg	clay	Fe-ox, lim				Buff and yellow very fine grained Fe-ox altered claystone.	0.04
	28	30	Tak	Buff, yw	vfg	clay	Fe-ox, lim				Buff and yellow very fine grained Fe-ox altered claystone.	0.06
	30	32	Tak	Buff, yw	vfg	clay	Fe-ox, lim				Buff and yellow very fine grained Fe-ox altered claystone.	0.37
	32	34	Taq	Buff, yw	vfg	clay	Fe-ox, lim	qtz			Buff and yellow very fine grained Fe-ox altered claystone and minor quartz grits.	0.23
	34	36	Taq	Buff, yw	fg	clay	Fe-ox, lim	qtz			Buff and yellow fine grained Fe-ox altered clay-rich sandstone and minor quartz grits.	0.08
	36	38	Tak	Buff, yw	vfg	clay	Fe-ox, lim				Buff and yellow very fine grained Fe-ox altered claystone and minor quartz grits.	0.23
	38	40	Tak	Buff, yw	vfg	clay	Fe-ox, lim				Buff and yellow very fine grained Fe-ox altered claystone and minor quartz grits.	0.1
	40	42	Tak	Wht	vfg	clay					White very fine grained claystone.	0.09
	42	44	Tak	Wht	vfg	clay					White very fine grained claystone.	0.07
	44	46	Tak	Wht	vfg	clay					White very fine grained claystone.	0.1
	46	48	Tak	Wht	vfg	clay					White very fine grained claystone.	0.13
	48	50	Tak	Wht	vfg	clay			qtz		White very fine grained claystone and trace qtz	0.38
	50	52	Tak	Wht	vfg	clay			qtz		White very fine grained claystone and trace qtz	0.32
	52	54	Tak	Wht	vfg	clay					White very fine grained claystone.	0.26
	54	56	Tak	Wht	vfg	clay					White very fine grained claystone.	0.07
	56	58	Tak	Wht	vfg	clay					White very fine grained claystone.	0.22
	58	60	Tak	Wht	vfg	clay					White very fine grained claystone.	0.1
	60	62	Taq	Wht	fg		clay, qtz				White fine grained massive clay-rich sandstone.	0.11
	62	64	Taq	Wht	fg		clay, qtz		lim		White fine grained massive clay-rich sandstone	0.41
	64	66	Taq	Wht	fg		clay, qtz				White fine grained massive clay-rich sandstone	0.29
	66	68	Taq	Wht	fg		clay, qtz				White fine grained massive clay-rich sandstone.	0.32
	68	70	Taq	Buff, yw	fg		clay, qtz		lim		Buff and yellow fine grained massive clay-rich sandstone.	0.11

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	70	72	Taq	Buff, yw	fg		clay, qtz		lim		Buff and yellow fine grained massive clay-rich sandstone and trace qtz grits.	0.16
	72	74	Taq	Buff, yw	fg		clay, qtz		lim, Fe-ox		Buff and yellow fine grained massive clay-rich sandstone.	0.13
	74	76	Taq	Buff, yw	fg		clay, qtz		lim		Buff and yellow fine grained massive clay-rich sandstone and trace qtz gits.	0.37
	76	78	Taq	Buff, yw	fg		clay, qtz		lim, Fe-ox		Buff and yellow fine grained massive clay-rich sandstone.	0.35
	78	80	Taq	Buff, yw	fg		clay, qtz		lim		Buff and yellow fine grained massive clay-rich sandstone and trace qtz gits.	0.23
	80	82	Taq	Buff, yw	fg		clay, qtz		lim		Buff and yellow fine grained massive clay-rich sandstone and minor qtz gits.	0.29
	82	84	Taq	Buff, yw	fg		clay, qtz		lim		Buff and yellow fine grained massive clay-rich sandstone and minor qtz gits.	0.25
	84	86	Taq	Buff, yw	fg		clay, qtz		lim, Fe-ox		Buff and yellow fine grained massive clay-rich sandstone.	0.14
	86	88	Taq	Buff, yw	fg		clay, qtz		lim, Fe-ox		Buff and yellow fine grained massive clay-rich sandstone.	0.35
	88	90	Taq	Buff, yw	fg		clay, qtz		lim		Buff and yellow fine grained massive clay-rich sandstone and minor qtz gits.	0.44
	90	92	Taq	Buff, yw	fg		clay, qtz		lim		Buff and yellow fine grained massive clay-rich sandstone and minor qtz gits.	0.29
	92	94	Taq	Buff, yw	fg		clay, qtz		lim		Buff and yellow fine grained massive clay-rich sandstone and minor qtz gits.	0.28
	94	96	Taq	Buff, yw	fg		clay, qtz		lim		Buff and yellow fine grained massive clay-rich sandstone.	0.37
	96	98	Taq	Buff, yw	fg		clay, qtz		lim		Buff and yellow fine grained massive clay-rich sandstone.	0.24
	98	100	Taq	Buff, yw	fg		clay, qtz		lim		Buff and yellow fine grained massive clay-rich sandstone.	0.41
	100	102	Taq	Buff, yw	fg		clay, qtz		lim, Fe-ox		Buff and yellow fine grained massive clay-rich sandstone and Fe-ox alteration.	0.64

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	102	104	Taq	Buff, yw	fg		clay, qtz		lim		Buff and yellow fine grained massive clay-rich sandstone.	0.17
	104	106	Taq	Buff, yw	fg		clay, qtz		lim		Buff and yellow fine grained massive clay-rich sandstone.	0.22
	106	108	Taq	Buff, yw	fg		clay, qtz		lim		Buff and yellow fine grained massive clay-rich sandstone.	0.23
	108	110	Taq	Buff, yw	fg		clay, qtz		lim		Buff and yellow fine grained massive clay-rich sandstone.	0.31

TRE RC04 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TRE RC04	0	2	Kmb	Ppl	vfg	clay					Purple very fine grained laminated to banded shale (Bulldog Shale).	0.02
	2	4	Kmb	Ppl, yw	vfg	clay		qtz			Purple and yellow very fine grained laminated to banded shale and minor very fine grained sandstone (Bulldog Shale).	0.11
	4	6	Kmb	Ppl, wht	vfg	clay					Purple and white very fine grained banded shale (Bulldog Shale).	0.05
	6	8	Kmb	Ppl, yw	vfg	clay		qtz			Purple and yellow very fine grained laminated to banded shale and minor very fine grained sandstone (Bulldog Shale).	0.17
	8	10	J-K	Ppl	fg		clay, qtz				Purple fine grained banded clay-rich sandstone and minor sitlstone layers (Algebuckina?).	0.17
	10	12	J-K	Ppl, wht	fg		clay, qtz				Purple and white fine grained banded clay-rich sandstone, minor sitlstone layers and minor qtz gravels (Algebuckina).	0.16
	12	14	J-K	Yw	fg		clay, qtz	lim			Yellow fine grained banded clay-rich sandstone, minor sitlstone layers and trace qtz gravels (Algebuckina).	0.38
	14	16	J-K	Buff	fg		clay, qtz				Buff fine grained banded clay-rich sandstone, minor sitlstone layers and trace qtz gravels (Algebuckina).	0.1
	16	18	J-K	Buff	fg		clay, qtz				Buff fine grained banded clay-rich sandstone, minor sitlstone layers and trace qtz grits (Algebuckina).	0.36
	18	20	J-K	Buff	fg		clay, qtz				Buff fine grained banded clay-rich sandstone, minor sitlstone layers and minor clear qtz grits (Algebuckina).	0.16
	20	22	J-K	Buff	fg		clay, qtz				Buff fine grained banded clay-rich sandstone, minor sitlstone layers and minor clear qtz grits (Algebuckina).	0.21

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	22	24	J-K	Buff	fg		clay, qtz				Buff fine grained banded clay-rich sandstone, minor sitlstone layers and minor clear qtz grits (Algebuckina).	0.19
	24	26	J-K	Buff	fg		clay, qtz				Buff fine grained banded clay-rich sandstone, minor sitlstone layers and minor clear qtz grits (Algebuckina).	0.22
	26	28	J-K	Buff	fg		clay, qtz				Buff fine grained banded clay-rich sandstone, minor sitlstone layers and minor clear qtz grits (Algebuckina).	0.28
	28	30	J-K	Buff	fg		clay, qtz				Buff fine grained banded clay-rich sandstone, minor sitlstone layers and minor clear qtz grits (Algebuckina).	0.22
	30	32	J-K	Buff	fg		clay, qtz				Buff fine grained banded clay-rich sandstone, minor sitlstone layers and minor clear qtz grits (Algebuckina).	0.26
	32	34	J-K	Buff	fg		clay, qtz				Buff fine grained banded clay-rich sandstone, minor sitlstone layers and minor clear qtz grits (Algebuckina).	0.22
	34	36	J-K	Buff	fg		clay, qtz				Buff fine grained banded clay-rich sandstone, minor sitlstone layers and minor clear qtz grits (Algebuckina).	0.12
	36	38	J-K	Buff	fg		clay, qtz				Buff fine grained banded clay-rich sandstone, minor sitlstone layers and minor clear qtz grits (Algebuckina).	0.15
	38	40	J-K	Buff	fg		clay, qtz				Buff fine grained banded clay-rich sandstone, minor sitlstone layers and minor clear qtz grits (Algebuckina).	0.23
	40	42	J-K	Buff, pk	fg		clay, qtz	Fe-ox			Buff and pink fine grained banded sitlstone, minor clay-rich sandstone layers and minor clear qtz/white feldspar (?) grits (Algebuckina).	0.23
	42	44	J-K	Buff, pk	fg		clay, qtz	Fe-ox			Buff and pink fine grained banded sitlstone, minor clay-rich sandstone layers and minor clear qtz/white feldspar (?) grits (Algebuckina).	0.3
	44	46	J-K	Buff, yw	fg		clay, qtz		lim		Buff fine grained banded clay-rich (limonite altered) sandstone, minor sitlstone layers and trace qtz grits.	0.57
	46	48	J-K	Buff, yw	fg		clay, qtz				Buff fine grained banded clay-rich (limonite altered) sandstone, minor sitlstone layers and trace qtz grits.	0.88
	48	50	J-K	Buff, yw	fg		clay, qtz				Buff fine grained banded clay-rich (limonite altered) sandstone, minor sitlstone layers and trace qtz grits.	0.33
	50	52	J-K	Buff	fg		clay, qtz				Buff and pink fine grained banded sitlstone, minor clay-rich sandstone layers and minor clear qtz/white feldspar (?) grits.	0.25
	52	54	J-K	Buff	fg		clay, qtz				Buff and pink fine grained banded sitlstone, minor clay-rich sandstone layers and minor clear qtz/white feldspar (?) grits.	1.56
	54	56	J-K	Buff, yw	fg		clay, qtz				Buff fine grained banded clay-rich (limonite altered) sandstone, minor sitlstone layers and trace qtz grits.	0.32

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	56	58	J-K	Buff	fg		clay, qtz				Buff fine grained banded clay-rich sandstone and minor sitlstone layers (Algebuckina).	0.47
	58	60	J-K	Buff	fg		clay, qtz				Buff fine grained banded clay-rich sandstone and minor sitlstone layers (Algebuckina).	0.63
	60	62	J-K	Buff	fg		clay, qtz				Buff fine grained banded sitlstone.	0.46
	62	64	J-K	Buff, yw	fg		clay, qtz		lim		Buff and yellow fine grained banded clay-rich (lim-altered) sandstone and sitlstone layers.	0.21
	64	66	J-K	Buff	fg		clay, qtz				Buff fine grained banded clay-rich (lim-altered) sandstone and sitlstone layers.	0.21
	66	68	J-K	Buff	fg		clay, qtz				Buff fine grained banded clay-rich (lim-altered) sandstone and sitlstone layers.	0.19
	68	70	J-K	Buff	fg		clay, qtz				Buff fine grained banded clay-rich (lim-altered) sandstone and sitlstone layers.	0.61
	70	72	J-K	Buff	fg		clay, qtz				Buff fine grained banded clay-rich (lim-altered) sandstone.	0.23
	72	74	J-K	Buff, brn	fg		clay, qtz				Buff fine grained banded clay-rich (lim-altered) sandstone and brown very fine grained siltstone.	0.3
	74	76	J-K	Buff	fg		clay, qtz				Buff fine grained banded clay-rich (lim-altered) sandstone and trace qtz grits.	0.54
	76	78	J-K	Buff, yw	fg		clay, qtz		lim		Buff and yellow fine grained banded clay-rich (lim-altered) sandstone and sitlstone layers.	0.21
	78	80	J-K	Buff, yw	fg		clay, qtz		lim		Buff and yellow fine grained banded clay-rich (lim-altered) sandstone.	0.36
	80	82	J-K	Buff	fg		clay, qtz				Buff fine grained banded clay-rich (lim-altered) sandstone.	0.4
	82	84	J-K	Buff	fg		clay, qtz				Buff fine grained banded clay-rich (lim-altered) sandstone and trace qtz grits.	0.29
	84	86	J-K	Buff, yw	fg		clay, qtz		lim		Buff fine grained banded clay-rich (lim-altered) sandstone and trace qtz grits.	0.51
	86	88	J-K	Yw	fg		clay, qtz	lim			Buff fine grained banded clay-rich lim-altered sandstone and minor qtz grits.	0.64
	88	90	J-K	Yw	fg		clay, qtz	lim			Buff fine grained banded clay-rich lim-altered sandstone and minor qtz grits.	0.33
	90	92	J-K	Yw	fg		clay, qtz	lim			Buff fine grained banded clay-rich lim-altered sandstone and qtz gravels.	0.35
	92	94	J-K	Yw	fg		clay, qtz	lim			Buff fine grained banded clay-rich lim-altered sandstone and minor qtz grits.	0.69
	94	96	J-K	Yw	fg		clay, qtz	lim			Buff fine grained banded clay-rich lim-altered sandstone and qtz/feld gravels.	0.62

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	96	98	J-K	Yw	fg		clay, qtz, lim				Buff fine grained banded clay-rich lim-altered sandstone and qtz/feld/gneiss gravels.	0.39
	98	100	Pgn	Brn	fg		clay	qtz, feld			Brown clay/limonite heavily altered basement.	0.47
	100	102	Pgn	Brn	fg		clay	qtz, feld, lim	chl?		Brown clay/limonite heavily altered qtz/feld/chl basement.	0.56
	102	104	Pgn	Brn	fg		clay	qtz, feld, lim	chl?		Brown clay/limonite heavily altered qtz/feld/chl basement (B.O.P.O.).	0.43
	104	106	Pgn	Brn	fg		clay	qtz, feld, lim	chl		Brown clay/limonite altered qtz/feld/chl gneiss.	0.48
	106	108	Pgn	Brn	fg		clay	qtz, feld, lim	chl		Brown clay/limonite altered qtz/feld/chl gneiss.	0.49
	108	110	Pgn	Brn	fg		clay	qtz, feld, lim	chl		Brown clay/limonite altered qtz/feld/chl gneiss.	0.52

TRE RC05 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TRE RC05	0	2	J-K	Yw	fg		clay, qtz	lim			Yellow fine grained, indurated, banded clay-rich sandstone and minor coarse grained alluvium (Algebuckina).	0.3
	2	4	J-K	Yw	fg		clay, qtz	lim			Yellow fine grained, indurated, banded clay-rich sandstone and minor clear qtz grits (Algebuckina).	0.15
	4	6	J-K	Yw	fg		clay, qtz	lim			Yellow fine grained, indurated, banded clay-rich sandstone and minor clear qtz grits (Algebuckina).	0.33
	6	8	J-K	Yw	fg		clay, qtz	lim			Yellow fine grained, indurated, banded clay-rich sandstone (Algebuckina).	0.29
	8	10	J-K	Yw	fg		clay, qtz	lim			Yellow fine grained banded clay-rich sandstone and minor clear qtz grits (Algebuckina).	0.19
	10	12	J-K	Yw	fg		clay, qtz	lim			Yellow fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.27
	12	14	J-K	Yw	fg		clay, qtz	lim			Yellow fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.12
	14	16	J-K	Yw	fg		clay, qtz	lim			Yellow fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.35
	16	18	J-K	Yw	fg		clay, qtz	lim			Yellow fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.18

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	18	20	J-K	Yw	fg		clay, qtz	lim			Yellow fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.2
	20	22	J-K	Yw	fg		clay, qtz	lim			Yellow fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.11
	22	24	J-K	Yw, pk	fg		clay, qtz	lim, Fe-ox			Yellow fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.19
	24	26	J-K	Rd	fg		clay, qtz	lim, Fe-ox			Yellow fine grained banded clay-rich sandstone and minor clear qtz grits (Algebuckina).	0.12
	26	28	J-K	Rd	fg		clay, qtz	lim, Fe-ox			Yellow fine grained banded clay-rich sandstone and minor clear qtz grits (Algebuckina).	0.18
	28	30	J-K	Yw	fg		clay, qtz	lim			Yellow fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.57
	30	32	J-K	Yw	fg		clay, qtz	lim			Yellow fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.1
	32	34	J-K	Yw	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.23
	34	36	J-K	Yw	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.15
	36	38	J-K	Yw	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.08
	38	40	J-K	Yw	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.32
	40	42	J-K	Yw	fg		clay, qtz	lim			Yellow/creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.3
	42	44	J-K	Yw	fg		clay, qtz	lim			Yellow/creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.43
	44	46	J-K	Yw	fg		clay, qtz	lim			Yellow/creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.31
	46	48	J-K	Yw	fg		clay, qtz	lim			Yellow/creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.61
	48	50	J-K	Yw	fg		clay, qtz	lim			Yellow/creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	1.23
	50	52	J-K	Yw	fg		clay, qtz	lim			Yellow/creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.14

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	52	54	J-K	Yw	fg		clay, qtz	lim			Yellow/creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.36
	54	56	J-K	Yw	fg		clay, qtz	lim			Yellow/creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.4
	56	58	J-K	Yw	fg	lim	clay, qtz				Yellow-red/buff fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.41
	58	60	J-K	Yw	fg		clay, qtz	lim			Yellow/creme fine grained banded clay-rich sandstone and trace clear qtz grits. (Algebuckina).	0.23
	60	62	Pgn	Buff	fg		clay	qtz	bio?, chl, feld		Creme fine grained banded clay-rich sandstone, trace clear qtz grits (Algebuckina) and basement fragments?	0.56
	62	64	Pgn	Buff	fg		clay	qtz	bio?, chl, feld		Creme fine grained banded clay-rich sandstone, trace clear qtz grits (Algebuckina) and basement fragments?	0.56
	64	66	Pgn	Buff	fg		clay	qtz	bio?, chl, feld		Creme fine grained banded clay-rich sandstone, trace clear qtz grits (Algebuckina) and basement fragments?	0.61
	66	68	Pgn	Buff	fg		clay	qtz	bio?, chl, feld		Creme fine grained banded clay-rich sandstone, trace clear qtz grits (Algebuckina) and basement fragments?	1.23
	68	70	Pgn	Buff	fg		clay	feld, qtz, bio			Creme fine grained banded clay-rich sandstone, trace clear qtz grits (Algebuckina) and basement fragments?	0.53
	70	72	Pgn	Buff	cg		qtz, feld	bio?, hbl			Clear qtz grits (Algebuckina?) and basement fragments.	0.46
	72	74	Pgn	Buff	cg		feld, bio, qtz				Feldspar/biotite/qtz granite fragments (B.O.P.O.).	1.1
	74	76	Pgn	Buff	cg		feld, bio, qtz				Feldspar/biotite/qtz granite fragments.	2.13

TRE RC06 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TRE RC06	0	2	Pgn	Rd, buff	mg-cg		qtz, feld	bio, hbl			Weathered qtz/garnet/feldspar basement and basement clasts.	0.38
	2	4	Pgn	Rd, buff	mg-cg		qtz, feld	bio, hbl			Weathered qtz/garnet/feldspar basement and basement clasts.	0.64
	4	6	Pgn	Buff	cg		feld, qtz, bio	am?			Qtz/feldspar/biotite granite fragments.	1.21
	6	8	Pgn	Buff	cg		feld, qtz, bio	am?			Qtz/feldspar/biotite granite fragments.	1.76
	8	10	Pgn	Buff	cg		feld, qtz, bio	am?			Qtz/feldspar/biotite granite fragments.	1.78
	10	12	Pgn	Buff	cg		feld, qtz, bio	am?			Qtz/feldspar/biotite granite fragments.	1.66
	12	14	Pgn	Buff	cg		feld, qtz, bio	am?			Qtz/feldspar/biotite granite fragments.	2.88

TRE RC07 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TRE RC07	0	2	J-K	Yw	fg		clay, qtz, ch	lim			Yellow fine grained, indurated, banded clay/shale and chert.	0.43
	2	4	J-K	Yw, pk, buff	fg		clay, qtz, ch	lim			Yellow fine grained, indurated, banded clay/shale and chert.	0.22
	4	6	J-K	Yw, pk, buff	fg		clay, qtz, ch	lim			Yellow fine grained, indurated, banded clay/shale and chert.	0.21
	6	8	J-K	buff	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.23
	8	10	J-K	Buff, yw	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.17
	10	12	J-K	Buff	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.14
	12	14	J-K	Buff	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.13
	14	16	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.14
	16	18	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.17
	18	20	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.14
	20	22	J-K	Buff, pk	fg		clay,				Creme fine grained banded clay-rich sandstone and	0.25

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
							qtz				trace clear qtz grits (Algebuckina).	
	22	24	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.24
	24	26	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.36
	26	28	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.33
	28	30	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.25
	30	32	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.09
	32	34	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.13
	34	36	J-K	Buff, pk	fg		clay	qtz			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.09
	36	38	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina), becoming wet.	0.14
	38	40	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina), wet.	0.06
	40	42	J-K	Buff, pk	fg		clay, qtz				Creme/purple fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.12
	42	44	J-K	Buff, pk	fg		clay, qtz				Creme/purple fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.1
	44	46	J-K	Buff, pk	fg		clay, qtz				Creme/purple fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.12
	46	48	J-K	Buff, pk	fg		clay, qtz				Creme/purple fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.46
	48	50	J-K	Buff, yw	fg		clay			qtz	Yellow/buff clay-fine grained sandy silts.	0.02
	50	52	J-K	Buff	fg		clay				Buff clay-fine grained sandy silts.	0.03
	52	54	J-K	Buff, yw	fg		clay				Yellow/buff clay-fine grained sandy silts.	0.13
	54	56	J-K	Buff, pk	fg		clay, qtz				Creme/purple fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.1
	56	58	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.26
	58	60	J-K	Buff, yw	fg		clay, qtz				Yellow fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.34
	60	62	J-K	Buff, yw	fg		clay			qtz	Yellow/buff clay-fine grained sandy silts.	0.19
	62	64	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.14
	64	66	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.51
	66	68	J-K	Buff, pk	fg		clay,				Creme fine grained banded clay-rich sandstone and	0.49

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
							qtz				trace clear qtz grits (Algebuckina).	
	68	70	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.16
	70	72	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.62
	72	74	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.5
	74	76	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.42
	76	78	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.49
	78	80	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.48
	80	82	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.35
	82	84	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.77
	84	86	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.73
	86	88	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.53
	88	90	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.85
	90	92	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.43
	92	94	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.34
	94	96	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.05
	96	98	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.39
	98	100	J-K	Buff, pk	fg		clay				Mottled dark brown/buff clay- possibly saprolite?	0.27
	100	102	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.42
	102	104	J-K	Buff, pk	fg		clay, qtz		feld?		Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.44
	104	106	J-K	Buff, pk	fg		clay				Mottled dark brown/buff clay- possibly saprolite?	0.33
	106	108	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.62
	108	110	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone, trace clear qtz grits (Algebuckina) and ferruginous iron stone/ferricrete.	1.34

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	110	111	J-K	Buff, pk	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	1.75

TRE RC08 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TRE RC08	0	2	J-K	Pk, yw	fg		clay, qtz	lim			Fine grained banded clay-rich sandstone and trace qtz (Algebuckina).	0.29
	2	4	J-K	Pk, yw	fg		clay, qtz	lim			Fine grained banded clay-rich sandstone and trace qtz (Algebuckina).	0.3
	4	6	J-K	Buff	fg		clay, qtz	lim			Creme fine grained clay-rich siltstone/sandstone.	0.03
	6	8	J-K	Pk, yw	fg		clay, qtz	lim			Fine grained banded clay-rich sandstone and trace qtz (Algebuckina).	0.18
	8	10	J-K	Rd, yw	fg		clay, qtz	lim			Fine grained banded clay-rich sandstone and trace qtz (Algebuckina).	0.16
	10	12	J-K	Rd, yw	fg		clay, qtz	lim			Fine grained banded clay-rich sandstone and trace qtz (Algebuckina).	0.21
	12	14	J-K	Buff	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace qtz (Algebuckina).	0.08
	14	16	J-K	Buff	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace qtz (Algebuckina).	0.11
	16	18	J-K	Buff	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace qtz grits (Algebuckina).	0.4
	18	20	J-K	Buff, dk rd	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace qtz grits (Algebuckina). Ferruginous horizon.	0.37
	20	22	J-K	Buff	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace qtz grits (Algebuckina).	0.14
	22	24	J-K	Buff	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace qtz grits (Algebuckina).	0.28
	24	26	J-K	Buff	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and clear qtz grits (Algebuckina).	0.29
	26	28	J-K	Buff	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.22
	28	30	J-K	Buff	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.14
	30	32	J-K	Buff, Yw	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.05
	32	34	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.05

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	34	36	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.03
	36	38	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.05
	38	40	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.05
	40	42	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.1
	42	44	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.22
	44	46	J-K	Buff	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.24
	46	48	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.24
	48	50	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.3
	50	52	J-K	Buff	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.32
	52	54	J-K	Buff	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.31
	54	56	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.14
	56	58	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.19
	58	60	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.19
	60	62	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.25
	62	64	J-K	Buff	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.13
	64	66	J-K	Buff	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.08
	66	68	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.21
	68	70	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.22
	70	72	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.16
	72	74	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.57
	74	76	J-K	Yw	fg		clay, qtz	lim			Yellow fine grained banded clay-rich sandstone and clear qtz grits (Algebuckina).	0.36

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	76	78	J-K	Yw	fg		clay, qtz	lim			Yellow fine grained banded clay-rich sandstone and clear qtz grits (Algebuckina).	0.24
	78	80	J-K	Yw	fg		clay, qtz	lim			Yellow fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.39
	80	82	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.24
	82	84	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.1
	84	86	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.05
	86	88	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.48
	88	90	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.56
	90	92	J-K	Buff	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.32
	92	94	J-K	Buff	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.53
	94	96	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.01
	96	98	J-K	Buff	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.08
	98	100	J-K	Buff	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.28
	100	102	J-K	Buff	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.29
	102	104	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.52
	104	106	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.43

TRE RC09 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TRE RC09	0	2	J-K	Rd	fg		clay, qtz				Qtz-rich sandstone wth larger clasts of qtz (Algebuckina).	0.26
	2	4	J-K	Rd	fg		clay, qtz				Qtz-rich sandstone wth larger clasts of qtz (Algebuckina).	0.2
	4	6	J-K	Rd, buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.41
	6	8	J-K	Rd, buff	fg		clay, qtz				Creme fine grained clay-rich siltstone/sandstone.	0.12
	8	10	J-K	Rd, buff	fg		clay, qtz				Creme fine grained clay-rich siltstone/sandstone.	0.09
	10	12	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.19
	12	14	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.09
	14	16	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.13
	16	18	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.12
	18	20	J-K	Rd, buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.15
	20	22	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.06
	22	24	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.05
	24	26	J-K	Buff, yw	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.03
	26	28	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.09
	28	30	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.11
	30	32	J-K	Buff, yw	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.11
	32	34	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.25
	34	36	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.23

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	36	38	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.19
	38	40	J-K	Buff, rd	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.05
	40	42	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.06
	42	44	J-K	Buff, rd	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.05
	44	46	J-K	Buff, rd	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.05
	46	48	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.05
	48	50	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.17
	50	52	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.09
	52	54	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.08
	54	56	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.15
	56	58	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.13
	58	60	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.14
	60	62	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.26
	62	64	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.13
	64	66	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.3
	66	68	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.29
	68	70	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.36
	70	72	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.24

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	72	74	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.2
	74	76	J-K	Buff, yw	fg		clay, qtz				Yellow fine grained banded clay-rich sandstone and clear qtz grits (Algebuckina).	0.68
	76	78	J-K	Buff, yw, brn	fg		clay, qtz				Yellow fine grained banded clay-rich sandstone and clear qtz grits (Algebuckina).	0.6
	78	80	J-K	Yw	fg		clay, qtz				Yellow fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.24
	80	82	J-K	Buff	fg		clay, qtz				Yellow fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.25
	82	84	J-K	Buff	-		qtz				Weathered granite.	0.31
	84	86	J-K	Buff	-		qtz, feld				Weathered granite.	0.52
	86	88	J-K	Buff	-		qtz, feld				Weathered granite.	0.76
	88	90	J-K	Buff	-		qtz, feld	bio, am			Medium-coarse grained granite (Kulgera Suite).	1.26
	90	91	J-K	Buff	-		qtz, feld	bio, am			Medium-coarse grained granite (Kulgera Suite).	1.89

TRE RC10 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TRE RC10	0	2	J-K	Yw	fg		clay, qtz, ch	lim			Yellow fine grained indurated banded clay/shale and chert.	0.22
	2	4	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.35
	4	6	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.38
	6	8	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.08
	8	10	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.04
	10	12	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.27

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	12	14	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.45
	14	16	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.47
	16	18	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.04
	18	20	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone (Algebuckina).	0.01
	20	22	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone (Algebuckina).	0.14
	22	24	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone (Algebuckina).	0.09
	24	26	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.17
	26	28	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.24
	28	30	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.24
	30	32	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.24
	32	34	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.06
	34	36	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.12
	36	38	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.06
	38	40	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0
	40	42	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.11
	42	44	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.09
	44	46	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.14
	46	48	J-K	Buf, rd	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.03

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	48	50	J-K	Buf, rd	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.16
	50	52	J-K	Buf, rd	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.14
	52	54	J-K	Buf, rd	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.12
	54	56	J-K	Buf, rd	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.14
	56	58	J-K	Buf, rd	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.19
	58	60	J-K	Buf, rd	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.32
	60	62	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.25
	62	64	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.03
	64	66	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.16
	66	68	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.15
	68	70	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.13
	70	72	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and clear qtz grits (Algebuckina).	0.71
	72	74	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and clear qtz grits (Algebuckina).	0.27
	74	76	J-K	Buff	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.37
	76	78	J-K	Buff	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.15
	78	80	J-K	Buff	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.44
	80	82	J-K	Buff	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.22
	82	84	J-K	Buff	fg		clay, qtz	lim			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.13

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	84	86	j-K	Yw	fg		sand, clay, qtz	lim	Fe-ox		Yellow/orange fine grained clay-rich sandstone and trace clear qtz grits. Weathered basement?	0.33
	86	88	j-K	Yw	fg		sand, clay, qtz	lim	Fe-ox		Yellow/orange fine grained clay-rich sandstone, trace clear qtz grits and ferruginous horizon. Weathered basement?	0.17
	88	90	J-K	Dk grn	fg		clay, qtz	lim	Fe-ox		Yellow/orange fine grained clay-rich sandstone, trace clear qtz grits and ferruginous horizon.	0.26
	90	92	J-K	Dk grn	fg		clay, qtz	feld			Dark green fine grained clay-rich sandstone, trace clear qtz grits and feldspar grains.	0.16
	92	94	J-K	Dk grn	fg		clay, qtz	bio, feld, mus	ep		Dark. green fine grained clay, trace clear qtz grits and feldspar grains. Larger clasts of biotite/muscovite are foliated-weathered amphibolite (?) and granite.	0.1
	94	96	J-K	Dk grn	fg		clay, qtz	bio, feld, mus	ep		Dark. green fine grained clay, trace clear qtz grits and feldspar grains. Larger clasts of biotite/muscovite are foliated-weathered amphibolite (?) and granite.	0.12
	96	98	J-K	ple green	fg		clay, qtz	feld, ep, bio			Green fine grained clay, clear qtz grits, felspar grains, larger granite clasts, biotite/muscovite foliation-weathered amphibolite/ epidote altered granite.	0.09
	98	99	-	-	-		feld, qtz				Granite.	0.14

TRE RC11 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TRE RC11	0	2	J-K	Pk, yw	fg		clay, qtz	lim			Fine grained banded clay-rich sandstone and trace qtz (Algebuckina).	0.16
	2	4	J-K	Rd	fg		clay, qtz	lim			Qtz-rich sandstone wth larger clasts of qtz (Algebuckina).	0.13
	4	6	J-K	Buff, rd	fg		clay, qtz				Fine grained banded clay-rich sandstone and trace qtz (Algebuckina).	0.12
	6	8	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone, trace clear qtz grits (Algebuckina) and granite clasts.	0.14

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	8	10	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.1
	10	12	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.08
	12	14	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.07
	14	16	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.14
	16	18	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.19
	18	20	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.12
	20	22	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.08
	22	24	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.07
	24	26	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.05
	26	28	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.04
	28	30	J-K	Buff, pk	fg		clay, qtz				Creme/purple fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.1
	30	32	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.3
	32	34	J-K	Buff, rd	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.09
	34	36	J-K	Buff, rd	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.07
	36	38	J-K	Buff, rd	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.09
	38	40	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.09
	40	42	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.13
	42	44	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.13

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	44	46	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.26
	48	50	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.25
	50	52	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.2
	52	54	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.15
	54	56	J-K	Buff, yw	fg		clay, qtz	lim?			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.17
	56	58	Pgn	-	-		clay, qtz, feld				Saprolite-deeply weathered basement.	0.16
	58	60	Pgn	-	-		clay, qtz, feld				Saprolite-deeply weathered basement.	0.41
	60	62	Pgn	-	-		clay, qtz, feld	bio, mus			Banded biotite/feldspar/qtz gniess.	0.81
	62	64	Pgn	-	-		clay, qtz, feld	bio, mus			Banded biotite/feldspar/qtz gniess.	0.57
	64	66	Pgn	-	-		bio, feld, qtz	mus	chl?		Banded biotite/feldspar/qtz gniess. Possible Fe alteration in large feldspar phenocrysts.	0.21
	66	68	Pgn	-	-		bio, feld, qtz	mus	chl?		Banded biotite/feldspar/qtz gniess. Possible Fe alteration in large feldspar phenocrysts.	0.64

TRE RC12 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TRE RC12	0	2	J-K	Rd	fg		qtz				Qtz-rich sandstone wth larger clasts of qtz (Algebuckina).	0.3
	2	4	J-K	Buff, rd	fg		clay, qtz				Fine grained banded clay-rich sandstone and trace qtz (Algebuckina).	0.1
	4	6	J-K	Buff, yw	fg		clay, qtz	lim?			Fine grained banded clay-rich sandstone and trace qtz (Algebuckina).	0.06
	6	8	J-K	Buff, rd	fg		clay, qtz				Fine grained banded clay-rich sandstone and trace qtz (Algebuckina).	0.13

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	8	10	J-K	Buff, rd	fg		clay, qtz				Fine grained banded clay-rich sandstone and trace qtz (Algebuckina).	0.12
	10	12	J-K	Buff, yw	fg		clay, qtz				Fine grained banded clay-rich sandstone and trace qtz (Algebuckina).	0.03
	12	14	J-K	Buff, rd	fg		clay, qtz				Fine grained banded clay-rich sandstone and trace qtz (Algebuckina).	0.22
	14	16	J-K	Rd	fg		qtz				Fine grained banded clay-rich sandstone and trace qtz (Algebuckina).	0.13
	16	18	J-K	Buff, rd	fg		clay, qtz				Fine grained banded clay-rich sandstone and trace qtz (Algebuckina).	0.08
	18	20	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace qtz (Algebuckina).	0.06
	20	22	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace qtz (Algebuckina).	0.05
	22	24	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace qtz (Algebuckina).	0.09
	24	26	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace qtz (Algebuckina).	0.09
	26	28	J-K	Buff	fg		clay, qtz				Creme fine grained banded clay-rich sandstone and trace qtz (Algebuckina).	0.11
	28	30	J-K	Buff, yw	fg		clay, qtz	lim?			Creme fine grained banded clay-rich sandstone and trace qtz (Algebuckina).	0.12
	30	32	J-K	Buff, yw	fg		clay, qtz	lim?			Creme fine grained banded clay-rich sandstone and trace qtz (Algebuckina).	0.11
	32	34	J-K	Buff, yw	fg		clay, qtz	lim?			Creme fine grained banded clay-rich sandstone and trace qtz (Algebuckina).	0.13
	34	36	J-K	Buff, yw	fg		clay, qtz	lim?			Creme fine grained banded clay-rich sandstone and trace qtz (Algebuckina).	0.16
	36	38	Pgn	-	-		clay, qtz, feld	bio, mus			Weathered biotite/feldspar/qtz gniess.	0.12
	38	40	Pgn	-	-		clay, qtz, feld	bio, mus			Weathered biotite/feldspar/qtz gniess.	0.26
	40	42	Pgn	-	-		clay, qtz, feld				Saprolite-deeply weathered basement.	0.15
	42	44	Pgn	-	-		clay, qtz, feld		weathered ep		Saprolite-deeply weathered basement.	0.12

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	44	46	Pgn	-	-		clay, qtz, feld	bio, mus	weathered ep		Weathered biotite/feldspar/qtz gniess.	0.18
	46	48	Pgn	-	-		bio, mus, feld	qtz	weathered ep		Weathered biotite/feldspar/qtz gniess with large pink/red feldspar phenocrysts.	0.15
	48	50	Pgn	-	-		bio, mus, feld	qtz			Weathered biotite/feldspar/qtz gniess with large pink/red feldspar phenocrysts.	2.05

TRE RC13 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
TRE RC13	0	2	J-K	Buff, yw	fg		clay, qtz	lim?			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.12
	2	4	J-K	Buff, yw	fg		clay, qtz	lim?			Creme fine grained banded clay-rich sandstone and trace clear qtz grits (Algebuckina).	0.12
	4	6	Pgn	Buff	-		qtz, feld	lim?			Weathered basement.	0.24
	6	8	Pgn	Buff	-		qtz, feld	bio			Weathered basement.	1.65
	8	10	Pgn	Blk	-		qtz, feld, bio				Weathered, foliated biotite gneiss.	3.61
	10	12	Pgn	Buff	-		qtz, feld, bio				Qtz/feldspar/biotite granite.	2.26
	12	14	Pgn	Blk	-		qtz, feld, bio				Foliated biotite/feldspar/qtz gneiss.	3.32
	14	15	Pgn	Buff	-		qtz, feld, bio				Qtz/feldspar/biotite granite.	2.31

ALC RC01 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
ALC RC01	0	2	Qs/Qc	Rd/Wht	fg		sand, CaCO3				Red aeolian sand (0-1m), white calcareous alluvial sands and clays.	2.32
	2	4	Qc	Wht	vfg		clay, CaCO3	sand			White calcareous clays with minor qtz sand.	0.34
	4	6	Qc/Tpn	Wht	vfg		clay, CaCO4	sand,qtz	ep, mang		White calcareous clays with minor qtz sand, while kaolinised basement and minor epidote alteration.	0.04
	6	8	Pgn	Yw/wht	fg		qtz, feld	bio,lim	ep, clay		White, weakly kaolinised qtz/feld/bio granite gneiss (?), limonite alteration and minor green epidote alteration.	0.16
	8	10	Pgn	Yw/wht	fg		qtz, feld	bio,lim	ep, clay		White, weakly kaolinised qtz/feld/bio granite gneiss (?), limonite alteration and minor green epidote alteration.	0.38
	10	12	Pgn	Yw/wht + pnk	fg		qtz, feld	bio, lim, red clay	ep, clay		White, weakly kaolinised qtz/feld/bio granite gneiss (?), limonite and minor green epidote alteration (10-11m) and red clay gneiss alteration (11-12m).	0.14
	12	14	Pgn	Brn	fg		qtz, feld	bio, lim, red clay			Brown fine grained qtz/feld/bio gneiss with limonite and red clay alteration.	0.73
	14	16	Pgn	Brn	fg		qtz, feld	bio, lim			Brown fine grained qtz/feld/bio gneiss with limonite and red clay alteration.	11
	16	18	Pgn	Brn	fg		qtz, feld	bio, lim			Brown fine grained qtz/feld/bio gneiss with limonite alteration.	3.85
	18	20	Pgn	Brn	fg		qtz, feld	bio, lim	mang		Brown fine grained qtz/feld/bio gneiss with limonite alteration. Trace manganese veins.	3.51
	20	22	Pgn	Ppl/grn/brn	fg		qtz, feld	bio, chl, lim	hbl		Fresh, brown fine grained qtz/feld/bio gneiss with some limonite alteration.	7.03
	22	24	Pgn	Ple Grn	fg		qtz, feld	bio, chl, hbl	lim		Fresh wht qtz/feld/bio/chl/hbl gneiss and minor limonite altered veins.	15.5

ALC RC02 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
ALC RC02	0	2	Qa	Rd brn	fg-mg		qtz, clay				Red brown clayey sand with calcrete fragments	1.83
	2	4	Taq	Rd brn	fg-mg		qtz, clay	silcrete, calcrete			Red brown partially silicified clayey sand.	2.38
	4	6	Taq	Rd brn	fg-mg		qtz, clay				Red brown partially silicified clayey sand. Rare kaolin fragments.	2.22
	6	8	Taq	Rd brn	fg-mg		qtz	clay, ferricrete			Red brown ferricreted sandstone. Rare bedrock fragments (qtz, biot).	2.55
	8	10	Taq	Ple brn	fg-cg		qtz, silcrete		ferricrete		Pale brown silicified sandstone.	1.5
	10	12	Taq	Off wht	fg		clay, silcrete				Offwhite silicified claystone and fine sandstone with Mn staining.	0.48
	12	14	Taq	Off wht,brn	fg-mg		clay, qtz, silcrete				Offwhite to pale br. silicified sandstone, minor offwhite claystone. Greenish clay 12-13m.	0.08
	14	16	Tpk	Ple grn	fg-mg		qtz, clay				Pale green clayey partly silicified sand (altered epidote?). Damp from 15m.	0.12
	16	18	Tpk	Ple grn	fg-mg		qtz, clay				Pale green clayey partly silicified sand (altered epidote?).	0.11
	18	20	Tpk	Ple grn	fg-mg		qtz, clay				Pale green clayey partly silicified sand with epidote fragments.	0.1
	20	22	Tpn	Ple grn-brn	mg		qtz, bio, clay		lim		Pale green & brown clayey limonitic quartz/biotite fragments.	0.13
	22	24	Tpn	Brn	mg		qtz, bio	clay	lim		Pale green & brown clayey limonitic quartz/biotite fragments.	0.25
	24	26	Pgn	Ple brn	mg		qtz, feld	bio	lim		Pale brown limonitic gneiss.	0.54
	26	28	Pgn	Brn/gy	mg		qtz, feld	bio	lim		Brown to pale grey limonitic gneiss.	0.42
	28	30	Pgn	Brn/gy	mg		qtz, feld, bio		lim		Brown to pale grey limonitic gneiss.	1.04
	30	32	Pgn	Brn/gy	mg		qtz, feld, bio		lim		Brown to pale grey limonitic gneiss. Fresh and grey, 31-32m.	5.55
	32	34	Pgn	Gy	mg		qtz, feld, bio				Grey gneiss, foliated, fresh, quartz layering.	13.6
	34	36	Pgn	Gy	mg		qtz, feld, bio				Grey gneiss, foliated, fresh, quartz layering.	7.69

ALC RC03 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
ALC RC03	0	2	Qs	Rd	fg		sand				Red aeolian sand.	2.63
	2	4	Qs/Qc	Rd	fg		sand, CaCO3	clay			Red aeolian sand (0-1m); red calcareous alluvial sands and clays.	1.87
	4	6	Qc	Buff	fg		sand, CaCO3	clay, feld			Buff calcareous alluvial sands and trace white medium grained kaolinised granite fragments.	0.92
	6	8	Qc	Buff	fg		sand, CaCO3	clay			Buff calcrete/alluvial sands.	0.67
	8	10	Qc	Buff	fg		sand, CaCO3	clay			Buff calcrete/alluvial sands and minor fine grained kaolin granite fragments and rare porcellanite.	0.81
	10	12	Qc/Pgg	Buff/gy	vfg		qtz, bio, kao				Buff/white kaolin altered bedrock (?) and grey very fine grained qtz/bio/kaol microgabbro (?).	0.12
	12	14	Pgg/pgn	Gy/wht	vfg		qtz, bio, kao				Grey, very fine qtz/bio/kaol microgabbro dyke (?) and buff/white kaolin altered gneiss (?). Epidote alteration in part.	0.15
	14	16	Pgn	Ple grn	fg		kao, ep	qtz, bio			Ple green fine grained foliated kaolin/epidote altered granitic gneiss.	0.15
	16	18	Pgn	Ple grn	fg		kao, ep	qtz, bio			Ple green fine grained foliated kaolin/epidote altered granitic gneiss.	0.12
	18	20	Pgn	Yw	fg		qtz, feld	lim	bio		Yellow qtz/feld/ (bio) gneiss with lim (?) staining.	0.13
	20	22	Pgn	Yw	fg		qtz, feld	lim, ep, kao	bio		Yellow qtz/feld/ (bio) gneiss with lim (?) staining and pale green kaolin/epidote alteration.	0.15
	22	24	Pg	Pk-grn	fg		qtz, feld, kao				Pink-green fine grained equigranular kaolin altered qtz/feld granite.	0.12
	24	26	Pgn	Ple grn	fg		kao, ep	qtz, bio	mang		Pale green fine grained foliated kaolin/epidote altered granite/gneiss (?) and trace manganese veins.	0.12
	26	28	Pgn	Ple grn	fg		kao, ep	qtz, bio	mang		Pale green fine grained foliated kaolin/epidote altered granite/gneiss (?) and trace manganese veins.	0.09
	28	30	Pgn	Dk grn	fg		qtz, feld	bio, chl, hbl	Fe-ox		Fresh white qtz/feld/bio/chl/hbl gneiss and trace red Fe-ox after magnetite (?) (B.O.C.O.).	0.25
	30	32	Pgn	Dk grn	fg		qtz, feld	bio, chl, hbl	Fe-ox		Fresh white qtz/feld/bio/chl/hbl gneiss, trace red Fe-ox after magnetite (?) and minor chlorite veins.	0.19
	32	34	Pgn	Dk grn	fg		qtz, feld	bio, chl, hbl	Fe-ox		Fresh white qtz/feld/bio/chl/hbl gneiss, trace red Fe-ox after magnetite (?) and minor chlorite veins.	0.19

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
	34	36	Pgn	Dk grn	fg		qtz, feld	bio, chl, hbl	Fe-ox		Fresh white qtz/feld/bio/chl/hbl gneiss, trace red Fe-ox after magnetite (?), minor lim veins, grey quartzite bands and pink quartz/feld pegmatite veins.	2.68
	36	38	Pgn	Yw	fg		qtz, feld	bio, chl, hbl	lim		Fresh white qtz/feld/bio/chl/hbl gneiss and trace red Fe-ox after magnetite (?), minor chlorite veins, grey quartzite bands and pink quartz/feld pegmatite veins.	0.94
	38	40	Pgn	Yw	fg		qtz, feld	bio, chl, hbl			Fresh wht qtz/feld/bio/chl/hbl gneiss, minor grey quartzite bands and pink qtz/feld pegmatite veins.	0.71
	40	42	Pgn	Yw	fg		qtz, feld	bio, chl, hbl			Fresh wht qtz/feld/bio/chl/hbl gneiss and pink qtz/feld pegmatite veins.	0.9
	42	44	Pgn	Yw	fg		qtz, feld	bio, chl, hbl			Fresh wht qtz/feld/bio/chl/hbl gneiss and pink qtz/feld pegmatite veins.	2.97
	44	45	Pgn	Grn	fg		qtz, chl, hbl	bio, feld			Fresh wht qtz/feld/bio/chl/hbl gneiss, pink qtz/feld pegmatite veins and pale green alteration halos around calcareous veinlets.	4.28

ALC RC04 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
ALC RC04	0	2	Qa	Rd brn	fg-mg		qtz	clay			Red brown aeolian sand (0-1m) and red brown clayey sand (1-2m).	2.07
	2	4	Pgn	Gy-br	fg-mg		qtz	bio, hbl?			Greyish brown limonitic gneiss.	2.11
	4	6	Pgn	Gy-br	fg-mg		qtz	bio, hbl?			Greyish brown limonitic gneiss. Rare carbonate veins.	5.57
	6	8	Pgn	Gy-br	mg		qtz	bio, hbl?			Brown & grey limonitic gneiss. Slightly fresher.	6.37
	8	10	Pgn	Gy-br	mg		qtz, bio				Brown & grey slightly limonitic gneiss.	14.9
	10	12	Pgn	Gy-br	mg		qtz, bio	hbl			Brown & grey limonitic gneiss with patchy pink plagioclase alteration.	10.9
	12	14	Pgn	Gy-br	mg		qtz, bio	hbl			Brown & grey limonitic gneiss with patchy pink plagioclase alteration. Less limonite, more mafics.	13.2
	14	15	Pgn	Gy-br	mg		qtz, bio	hbl			Grey gneiss. Fresh, rare pink plagioclase alteration.	9.86

ALC RC05 Drillhole Summary

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
ALC RC05	0	2	Qs	Rd	fg		sand				Red aeolian sand.	1.56
	2	4	Qs/Qc	Rd	fg		sand, CaCO3	clay			Red aeolian sand (2-3m) and red calcareous alluvial sands and clays.	1.34
	4	6	Qc	Rd	fg		sand, CaCO3	clay			Red calcareous alluvial sands and clays.	1.18
	6	8	Qc	Rd	fg		clay, sand				Red alluvial sands and clays.	1.29
	8	10	Qc/Pgn	Rd/gy	fg		clay, sand	qtz, feld	bio		Red alluvial sands and clays and grey fine grained qtz/feld/bio gneiss.	4.09
	10	12	Pgn	Gy	fg		qtz, feld	bio			Grey fine grained qtz/feld/bio gneiss.	3.52
	12	14	Pgn	Gy	fg		qtz, feld	bio, hbl			Grey fine grained qtz/feld/bio gneiss (B.O.C.O.).	7.97
	14	16	Pgn	Gy	fg		qtz, feld	bio, hbl, chl	Fe ox?		Grey fine grained qtz/feld/bio gneiss, pink/red Fe altered gneiss and minor quartz/calcareous veinlets.	6.6
	16	18	Pgn	Gy	fg		qtz, feld	bio, hbl, chl			Grey fine grained qtz/feld/bio gneiss, pink/red Fe altered gneiss and minor quartz/calcareous veinlets.	6.86
	18	20	Pgn	Ple grn	fg		qtz, feld	bio, hbl, chl			Grey fine grained qtz/feld/bio gneiss, pink/red Fe altered gneiss and minor quartz/calcareous veinlets (B.O.P.O.).	6.79
	20	22	Pgn	Ple grn	fg		qtz, feld	bio, hbl, chl	calc		Grey fine grained qtz/feld/bio gneiss, pink/red Fe altered (forms halos to veins) gneiss and minor quartz/calcareous veinlets.	8.71
	22	24	Pgn	Ple grn	fg		qtz, feld	bio, hbl, chl	calc		Grey fine grained qtz/feld/bio gneiss, pink/red Fe altered (forms halos to veins) gneiss and minor quartz/calcareous veinlets.	4.61

ALC RC06 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
ALC RC06	0	2	Qa	Rd brn	fg-mg		calcrete, qtz				Pale brown calcrete with Mn staining (0-1m Red brown aeolian sand)	2.09
	2	4	Pgn	Ple brn	mg		calcrete, qtz	feld, bio			Pale brown granitic gneiss with pink feldspar alteration and abundant calcrete fagments.	1.18
	4	6	Pgn	Gy	mg		qtz, bio	feld, bio			Grey weakly foliated gneiss with abundant mafic fragments.	0.83
	6	8	Pgn	Gy	mg		qtz	feld, bio			Grey and dark brown quartzite with abundant gneissic (?) fragments and some limonite.	4.58
	8	10	Pgn	Gy/brn	mg		qtz	feld, bio			Grey and brown gneissic granite with minor limonite veins.	3.79
	10	12	Pgn	Gy	mg		qtz, feld, bio				Grey gneiss, rare pink feldspar and chlorite (?) alteration. Limonitic 10-11m, otherwise fairly fresh.	5.54
	12	14	Pgn	Gy	mg		qtz, feld, bio	hbl?			-	8.13
	14	15	Pgn	Gy	mg		qtz, feld, bio	hbl?			-	7.86

ALC RC07 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
ALC RC07	0	2	Qs	Rd	fg-mg		sand				Red aeolian sand (cyclone contamination).	1.43
	2	4	Qs	Rd	fg-mg		sand		organics		Red aeolian sand with trace black organic (tar?) fragments.	1.29
	4	6	Qs/Qc	Rd	fg		clay	sand, CaCO3			Red aeolian sand (4-4.5m), and minor red calcrete alluvial sands and clays and trace qtz rich coarse grained gravels.	1.08
	6	8	Qc	Buff	fg		clay, CaCO3	sand	mang		Buff calcrete alluvial clays and sands and trace manganese veins.	0.62
	8	10	Qc	Buff	fg-mg		clay, CaCO3	sand			Buff calcareous alluvial clay and medium grained sand, minor coarse grits.	2.57
	10	12	Qc	Buff + or	fg-mg		clay, CaCO3	sand			Buff/orange calcrete alluvial clays and medium grained sands and minor coarse grained grits.	0.51
	12	14	Qu	Buff	fg-vcg		clay, CaCO3	sand			Buff calcrete-rich alluvial clays and sands and coarse gravels (very coarse red laterite frags >1cm).	0.93
	14	16	Qu	Rd + yw	fg-vcg		clay, gravel	Fe-lim clay, sand			Red/yellow alluvial clays and sands and coarse gravels (some >1cm).	0.27
	16	18	Qu	Rd + yw	fg-vcg		Fe-lim clay, gravel	sand			Red/yellow alluvial clays and sands and coarse gravels (some >1cm).	0.75
	18	20	Qu	Red + ple grn	fg-vcg		Fe-lim clay, gravel	sand			Red/yellow alluvial clays and sands and coarse gravels (some >1cm).	1.1
	20	22	Pgn	Off wht	fg		qtz, feld	bio, lim	hbl, chl		Off wht fine, foliated qtz/feld/ (bio/chl/hbl/mag) gneiss with lim alteration.	4.12
	22	24	Pgn	Off wht	fg		qtz, feld	bio, lim	hbl, chl		Off wht fine, foliated qtz/feld/ (bio/ chl/ hbl/ mag) gneiss with lim alteration.	4.96
	24	26	Pgn	Off wht	fg		qtz, feld	bio, hbl	lim, chl		Off wht fine, foliated qtz/feld/ (bio/ chl/hbl/ mag) gneiss with lim alteration (B.O.C.O.).	9.94
	26	28	Pgn	Off wht	fg		qtz, feld	bio, hbl	lim, chl		Off wht fine, foliated qtz/feld/ (bio/ chl/ hbl/ mag) gneiss with lim alteration.	7.28
	28	30	Pgn	Ple grn	fg		qtz, feld, hbl	bio, chl		lim	Off wht fine, foliated qtz/feld/ (bio/ chl/ hbl/ mag) gneiss with lim alteration and chl filled fractures (B.O.P.O.).	9.36

ALC RC08 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
ALC RC08	0	2	Qa	Red br	f-c		qtz	clay			Red brown clayey sand. Rare soft, black carbonaceous (?) frags (0-1 m red brown, aeolian).	1.28
	2	4		Red br	f-c		qtz, clay				Red brown clayey sand with minor rounded ferricrete and quartz gravel.	1.05
	4	6	Pgn	Brn-gy	f-m		qtz, bio, feld				Brown to grey granite (?) gneissic with red feldspar alteration.	3.52
	6	8		Brn-gy	f-m		qtz, feld	bio			Brown to grey limonitic gneisssic granite with rare red feldspar alteration.	14.6
	8	10		Brn-gy	f-m		qtz, feld	bio			Brown to grey limonitic granite gneiss.	8.23
	10	12		Brn-gy	f-m		qtz, feld	bio			Brown to grey limonitic granite gneiss with pink feldspar and chlorite (?) alteration.	6.5
	12	14		Brn-gy	f-m		qtz, feld	bio, hbl			Brown to grey limonitic gneiss with pink feldspar and chlorite (?) alteration.	7.12
	14	16		Brn-gy	f-m		qtz, feld	biot, hbl			Brown to grey limonitic gneiss with pink feldspar and chlorite (?) alteration. Damp at 15m.	4.51
	16	18		Brn-gy	f-m		qtz, hbl	bio, feld		ol?	Dark grey gneiss, slightly limonitic with rare very pale green olivine (?).	16.6
	18	20		Brn-gy	f-m		qtz, hbl	bio, feld			Dark grey gneiss, slightly limonitic with rare very pale green olivine (?).	8.6
	20	22		Brn-gy	f-m		qtz, hbl	bio, feld			Dark grey, limonitic gneiss but less mafics than above.	8
	22	24		Brn-gy	f-m		qtz, feld	bio, hbl		ol?	Dark grey gneiss, limonitic with rare very pale green olivine (?) and disseminated sulphides.	3.04
	24	26		Brn-gy	f-m		qtz, feld, hbl	bio		cpy	Grey gneiss with pink feldspar, chlorite alteration and rare disseminated sulphides. Fresh surface.	19.2
	26	28		Grey	f-m		qtz, feld	bio, hbl, mt		cpy	Grey gneiss with pink feldspar, chlorite alteration and rare disseminated sulphides. Fresh surface.	20
	28	30		Grey	f-m		qtz, feld	bio, hbl			Grey gneiss with pink feldspar, chlorite alteration and rare disseminated sulphides. Fresh surface.	10.9
	30	32		Grey	f-m		qtz, feld	bio, hbl			Grey gneiss with pink feldspar, chlorite alteration and rare disseminated sulphides. Fresh surface.	10.3
	32	33		Grey	f-m		qtz, feld	bio, hbl			Grey gneiss with pink feldspar, chlorite alteration and rare disseminated sulphides. Fresh surface.	9.37

ALC RC09 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
ALC RC09	0	2	Qs	Rd	fg-mg		sand				Red aeolian sand.	1.24
	2	4	Qs/Qc	Rd	fg		clay	sand, CaCO3			Red aeolian sand (2-3m), red clay and minor red calcareous alluvial sands and clays with trace qtz rich coarse grained gravels.	0.88
	4	6	Qc	Rd	fg		sand, CaCO3	clay			Red calcareous alluvial sands and clays and minor qtz rich coarse grained gravels.	2.12
	6	8	Qc	Buff	fg		clay, CaCO3	sand			Buff calcareous alluvial clays and sands.	0.38
	8	10	Qc	Buff	fg-mg		clay, CaCO3	sand	mang		Buff calcareous alluvial clays and medium grained sands, minor coarse grained grits and trace manganese dendrites.	0.21
	10	12	Qc	Buff	fg-mg		clay, CaCO3	sand	mang		Buff calcareous alluvial clays and medium grained sands, minor coarse grained grits and trace manganese dendrites.	0.44
	12	14	Qc/Pg	Buff, ple grn	fg		sand, CaCO3, clay	mang	ep?		Buff calcareous alluvial clays and medium grained sands, minor coarse grained grits and trace manganese dendrites.	0.1
	14	16	Pg	Buff, ple grn	fg		clay	mang	ep?		Buff and pale green kaolin/epidote/fe-ox altered bedrock and minor manganese dendrites.	0.11
	16	18	Pg	ple grn	vfg		epid, clay	qtz, feld			Pale green very fine grained epidote/kaolin altered bedrock + minor pink fine grained pegmatite veins.	0.13
	18	20	Pg	ple grn	vfg		epid, clay				Pale green very fine grained epidote/kaolin altered bedrock.	0.14
	20	22	Pg	ple grn	vfg		epid, clay	qtz, feld	Fe-ox		Pale green very fine grained epidote/kaolin altered bedrock, minor pink fine grained pegmatite veins and Fe-ox alteration.	0.12
	22	24	Pg	yell brn	fg		lim, clay	qtz, feld			Yellow-brown fine grained lim/kaol altered granite (?) and minor pink fine grained pegmatite veins.	0.11
	24	26	Pg	yell brn	fg		lim, clay	qtz, feld	ep		Yellow/brown fine grained lim/kaol altered granite (?).	0.11
	26	28	Pg	yell brn	fg		qtz, feld, lim	hbl/bio/ clay			Yellow/brown fine grained lim/kaol altered qtz/feld/bio/hbl granite (?).	0.24
	28	30	Pg	yell brn	fg		qtz, feld, lim	bio/clay	ep		Yellow/brown fine grained lim/kaol altered qtz/feld/bio/hbl granite (?), minor gneissic xenoliths and trace limonite/epidote veins.	0.42
	30	32	Pg	brn, grn	fg		qtz, feld, lim	chl/bio/ clay	ep		Brown/green fine grained lim/kaol altered qtz/feld/(bio) granite (?) and lim/chl/(epidote) veins, often brecciated (fault breccia).	0.49
	32	34	Pg	brn, grn	fg		qtz, feld	chl/bio/ clay	lim/ep		Brown/green fine grained lim/kaol altered qtz/feld/(bio) granite (?) and lim/chl/(epidote) veins,	0.4

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
											often brecciated (fault breccia).	
	34	36	Pg/Pdt	dk grn	mg		amp, chl, qtz	feld			Brecciated granite (?) and dark green massive equigranular amphibole, chl/ qtz/feld dolerite dyke (Alcurra dykes?), wet sample.	9.42
	36	38	Pdt	dk grn	mg		amp, chl, qtz	feld			Brecciated granite (?) and dark green massive equigranular amphibole, chl/ qtz/feld dolerite dyke (Alcurra dykes?), wet sample.	12.8
	38	40	Pdt	grn	fg		clay, amp, chl, qtz				Brecciated granite (?) and dark green massive equigranular amphibole, chl/ qtz/feld dolerite dyke (Alcurra dykes?), cyclone contamination.	7.61
	40	42	Pg	brn, pnk	fg		qtz, feld, chl	clay	bio		Brown/pink fine grained chl/kao altered qtz/feld/ (bio) granite (?), chl altered veins, often brecciated (fault breccia).	1.01
	42	44	Pgn	brn, pnk, grn	fg		qtz, feld, chl	clay	bio		Brown/pink fine grained chl/kao altered qtz/feld/ (bio) granite (?), chl altered veins, often brecciated (fault breccia).	0.6
	44	46	Pgn	brn, pnk, grn	fg		qtz, feld, chl	lim/clay	bio		Brown/pink fine grained chl/kao altered qtz/feld/ (bio) granite (?), chl altered veins, often brecciated (fault breccia). Trace limonite and pegmatite veins also evident.	0.63
	46	48	Pgn	brn, pnk, grn	fg		qtz, feld, chl	lim/clay	bio		Brn/pnk and green fine chl/kaol alterated qtz/feld/hbl/ (bio) granite gneiss? Chlorite alteration and veins often brecciated (fault breccia) with trace limonite and pegmatite veins.	11.3
	48	50	Pgn	brn, pnk, grn	fg		qtz, feld, chl	lim/clay	bio		Brn/pnk and green fine chl/kaol alterated qtz/feld/hbl/ (bio) granite gneiss? Chlorite alteration and veins often brecciated (fault breccia) with trace limonite and pegmatite veins.	6.85
	50	52	Pgn	brn, pnk, grn	fg		qtz, feld, chl	lim/clay	bio,Ca CO3		Brn/pnk and green fine chl/kaol alterated qtz/feld/hbl/ (bio) granite gneiss? Chlorite alteration and veins often brecciated (fault breccia) with trace limonite and pegmatite veins.	8.54
	52	54	Pgn	Grn, brn	fg		chl, qtz, clay	feld, hbl, bio	lim, CaCO3		Green and brown fine grained chlorite/clay altered qtz/feld/hbl gneiss and chl/CaCO3 veins.	12.2
	54	56	Pgn	Grn, brn	fg		chl, qtz, clay	feld, hbl, bio	lim, CaCO3	py	Green and brown fine grained chlorite/clay altered qtz/feld/hbl gneiss and chl/CaCO3/pyrite veins.	10.5
	56	58	Pgn	Grn, brn	fg		chl, qtz, clay	feld, hbl, bio	lim, CaCO3		Green and brown fine grained chlorite/clay altered qtz/feld/hbl gneiss and chl/CaCO3 veins.	6.21
	58	60	Pg/Pdt	Grn, brn, blk	fg + vfg		chl, qtz, clay	feld, hbl, bio	lim/CaC O3		Green and brown fine grained chlorite/clay altered qtz/feld/hbl gneiss and chl/CaCO3 veins, and black very fine chilled margin to dolerite.	9.3

ALC RC10 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
ALC RC10	0	2	Qa	Rd brn	fg-mg		qtz, clay			feld	Red brown silty sand, 5% coarse sand and rare coarse euhedral (?) feld.	1.42
	2	4	Qa	Rd brn	fg-mg		qtz, calcrete				Red brown silty sand (2-3m), pale brown calcrete (3-4m) and trace quartz gravel.	0.97
	4	6	Qc	Ple or	fg-mg		qtz, calcrete	feld, bio			Pale orange calcrete with abundant quartz/feldspar/biotite fragments.	0.79
	6	8	Qc	Ple or	fg-mg		qtz	feld, bio		mus	Pale orange silty sand with minor qtz/feld/biot/ferricrete fragments and qtz gravel.	1.25
	8	10	Qc	Or	fg-mg		qtz,clay				Orange clayey sand with quartz gravel. Much cyclone contamination.	0.98
	10	12	Qc	Brn-wht	mg-cg		qtz,clay		feld	ferricrete	Pale brown to off-white calcreted medium to coarse grained sand. Rare ferricrete.	0.67
	12	14	Qc	Brn-wht	fg-mg		calcrete				Pale brown to off white calcrete. Rare limonite and gravel.	0.12
	14	16	Qc	Brn	mg-cg		qtz, feld		bio		Brown qtz/feld/biot limonitic granitic gravel with minor fine grained mafic fragments.	0.64
	16	18	Qc	Brn	mg-cg		qtz, feld		bio		Brown qtz/feld/biot limonitic granitic gravel with minor fine grained mafic fragments - dolerite (?) increasing with depth.	0.59
	18	20	Qc	Brn	mg-cg		qtz, feld		bio		Brown qtz/feld/biot limonitic granitic gravel with minor fine grained mafic fragments.	0.6
	20	22	Qc	Brn	mg-cg		qtz, feld		bio		Brown qtz/feld/biot limonitic granitic gravel with minor fine grained mafic fragments.	1.75
	22	24	Pgn	Gy-brn	mg-cg		qtz, feld	bio			Grey to pale brown gneiss, variably mafic and limonitic.	0.14
	24	26	Pgn	Gy-brn	fg-cg		qtz, feld	bio, hbl?			Grey to pale brown gneiss with distinct layering, limonite and pink feldspar alteration.	0.4
	26	28	Pgn	Gy-brn	fg-cg		qtz, feld	bio, hbl?			Grey to pale brown gneiss with distinct layering, limonite and pink feldspar alteration.	0.4
	28	30	Pgn	Gy	fg-cg		qtz, feld, bio	hbl?, px			Grey, limonitic dolerite.	4.25
	30	32	Pgn	Gy-brn	mg-cg		qtz, feld	bio			Grey to pale brown limonitic gneiss with pink feldspar alteration.	4.81
	32	34	Pgn	Gy-brn	mg-cg		qtz, feld	bio, hbl?			Grey to pale brown layered gneiss with pink feldspar alteration and rare limonite.	6.64
	34	36	Pgn	Gy-brn	mg-cg		qtz, feld	bio, hbl?			Grey to pale brown layered gneiss with pink feldspar and chlorite alteration and rare limonite. Trace epidote alteration 34-36m.	4.29

ALC RC11 Drillhole Log

Drillhole name	Depth from	Depth to	Rock type	Colour	Grainsize	Mineralogy					Description	Magnetic susceptibility
						abdt	maj	min	tr	rare		
ALC RC11	0	2	Qs	Rd	fg-mg		sand				Red aeolian sand (cyclone contamination).	1.36
	2	4	Qs/Qc	Rd	fg		clay	sand, CaCO3			Red aeolian sand (2-3m), red clay, minor red calcareous alluvial sands and clays with traces of qtz-rich coarse grained gravels.	0.97
	4	6	Qc/Pgn	Rd/blk	vfg		clay, qtz, hbl, feld	sand, CaCO3			Minor red calcareous alluvial sands and clays and trace qtz-rich coarse grained gravels and black, very fine grained quartz/bio/hbl/feld mafic gneiss (?).	1.78
	6	8	Pgn	Brn	fg		qtz, feld, bio	hbl			Brown fine grained qtz, feld, bio, hbl gneiss.	7.94
	8	10	Pgn	Brn	fg		qtz, feld, bio	hbl			Brown fine grained qtz, feld, bio, hbl gneiss.	12.9
	10	12	Pgn	Brn	fg		qtz, feld, bio	hbl	chl, lim		Brown fine grained qtz, feld, bio, hbl gneiss with trace chlorite alteration (?)	15.8
	12	14	Pgn	Brn	fg		qtz, feld, bio	hbl	chl, lim		Brown fine grained qtz, feld, bio, hbl gneiss with trace chlorite alteration (?)	10.7
	14	16	Pgn	Gy	vfg		qtz, feld, bio	hbl	chl, lim		Brown fine grained qtz, feld, bio, hbl gneiss with trace chlorite alteration (?), minor pink pegmatite veins and trace limonite veins.	4.99
	16	18	Pgn	Gy	vfg		qtz, feld, bio	hbl	chl, lim		Grey very fine grained qtz, feld, bio, hbl gneiss with trace chlorite alteration (?), minor pink pegmatite veins and trace limonite veins.	5.97
	18	20	Pgn	Gy	vfg		qtz, feld, bio	hbl	chl, lim		Grey very fine grained qtz, feld, bio, hbl gneiss with trace chlorite alteration (?), minor pink pegmatite veins and trace limonite veins.	3.54
	20	22	Pgn	Gy + pk	vfg		qtz, feld, bio	hbl	chl, lim		Grey very fine grained qtz, feld, bio, hbl gneiss with trace chlorite alteration (?), minor pink pegmatite veins and trace limonite veins.	5.59
	22	24	Pgn	Dk grn + pk	vfg		qtz, feld, hbl	bio, chl	lim		Dark green very fine grained qtz, feld, bio, hbl gneiss with trace chlorite alteration (?), minor pink pegmatite veins.	6.86
	24	26	Pgn	Dk grn	vfg		qtz, feld, hbl	bio, chl	lim		Dark green very fine grained qtz, feld, bio, hbl gneiss with trace chlorite veins.	6.83
	26	28	Pgn	Dk grn	vfg		hbl, bio, red mineral	qtz, feld, chl			Dark green very fine grained qtz, feld, bio, hbl gneiss with trace chlorite veins and an unknown red mineral.	4.82
	28	30	Pgn	Dk grn	vfg		hbl, bio, red mineral	qtz, feld, chl			Dark green very fine grained qtz, feld, bio, hbl gneiss with trace chlorite veins and an unknown red mineral.	22.1

2. GEOCHEMISTRY

Summary of drillhole samples collected for geochemical analysis

Sample no.	Collected by	Sample depth from (m)	Sample depth to (m)	Drillhole no.	Drillhole name
472188	GUM, J.C.	0	2	185164	TIE RC1
472189	GUM, J.C.	2	8	185164	TIE RC1
472190	GUM, J.C.	8	10	185164	TIE RC1
472191	GUM, J.C.	0	2	185165	TIE RC2
472192	GUM, J.C.	2	10	185165	TIE RC2
472193	GUM, J.C.	10	20	185165	TIE RC2
472194	GUM, J.C.	20	32	185165	TIE RC2
472195	GUM, J.C.	32	42	185165	TIE RC2
472196	GUM, J.C.	42	44	185165	TIE RC2
472197	GUM, J.C.	0	10	185166	TIE RC3
472198	GUM, J.C.	10	16	185166	TIE RC3
472199	GUM, J.C.	16	24	185166	TIE RC3
472200	GUM, J.C.	24	32	185166	TIE RC3
472201	GUM, J.C.	32	44	185166	TIE RC3
472202	GUM, J.C.	44	46	185166	TIE RC3
472203	GUM, J.C.	0	10	185167	TIE RC4
472204	GUM, J.C.	10	20	185167	TIE RC4
472205	GUM, J.C.	20	24	185167	TIE RC4
472206	GUM, J.C.	24	34	185167	TIE RC4
472207	GUM, J.C.	34	38	185167	TIE RC4
472208	GUM, J.C.	38	46	185167	TIE RC4
472209	GUM, J.C.	46	50	185167	TIE RC4
472210	GUM, J.C.	50	52	185167	TIE RC4
472211	GUM, J.C.	0	10	185168	TIE RC5
472212	GUM, J.C.	10	20	185168	TIE RC5
472213	GUM, J.C.	20	28	185168	TIE RC5
472214	GUM, J.C.	28	32	185168	TIE RC5
472215	GUM, J.C.	32	34	185168	TIE RC5
472216	GUM, J.C.	0	10	185169	TIE RC6
472217	GUM, J.C.	10	20	185169	TIE RC6
472218	GUM, J.C.	20	26	185169	TIE RC6
472219	GUM, J.C.	26	32	185169	TIE RC6
472220	GUM, J.C.	32	34	185169	TIE RC6
472221	GUM, J.C.	0	10	185170	TIE RC7
472222	GUM, J.C.	10	20	185170	TIE RC7
472223	GUM, J.C.	20	24	185170	TIE RC7
472224	GUM, J.C.	24	36	185170	TIE RC7
472225	GUM, J.C.	36	46	185170	TIE RC7
472226	GUM, J.C.	46	48	185170	TIE RC7
472227	GUM, J.C.	0	6	185171	TIE RC8
472228	GUM, J.C.	6	14	185171	TIE RC8
472229	GUM, J.C.	14	22	185171	TIE RC8
472230	GUM, J.C.	22	24	185171	TIE RC8
472231	GUM, J.C.	0	10	185172	TIE RC9
472232	GUM, J.C.	10	18	185172	TIE RC9
472233	GUM, J.C.	18	28	185172	TIE RC9
472234	GUM, J.C.	28	36	185172	TIE RC9
472235	GUM, J.C.	36	38	185172	TIE RC9
472236	GUM, J.C.	0	10	185173	TIE RC10
472237	GUM, J.C.	10	18	185173	TIE RC10
472238	GUM, J.C.	18	28	185173	TIE RC10
472239	GUM, J.C.	28	30	185173	TIE RC10
472240	GUM, J.C.	30	34	185173	TIE RC10
472241	GUM, J.C.	34	36	185173	TIE RC10
472242	GUM, J.C.	0	8	185174	TIE RC11
472243	GUM, J.C.	8	16	185174	TIE RC11
472244	GUM, J.C.	16	24	185174	TIE RC11

Sample no.	Collected by	Sample depth from (m)	Sample depth to (m)	Drillhole no.	Drillhole name
472245	GUM, J.C.	24	28	185174	TIE RC11
472246	GUM, J.C.	0	10	185175	TIE RC12
472247	GUM, J.C.	10	18	185175	TIE RC12
472248	GUM, J.C.	18	24	185175	TIE RC12
472249	GUM, J.C.	24	32	185175	TIE RC12
472250	GUM, J.C.	32	42	185175	TIE RC12
472251	GUM, J.C.	42	44	185175	TIE RC12
472252	GUM, J.C.	0	8	185176	TIE RC13
472253	GUM, J.C.	8	16	185176	TIE RC13
472254	GUM, J.C.	16	26	185176	TIE RC13
472255	GUM, J.C.	26	38	185176	TIE RC13
472256	GUM, J.C.	38	40	185176	TIE RC13
472257	GUM, J.C.	0	8	185177	TIE RC14
472258	GUM, J.C.	8	16	185177	TIE RC14
472259	GUM, J.C.	16	24	185177	TIE RC14
472260	GUM, J.C.	24	30	185177	TIE RC14
472261	GUM, J.C.	30	32	185177	TIE RC14
472262	GUM, J.C.	28	30	185174	TIE RC11
472263	GUM, J.C.	0	8	185178	TIE RC15
472264	GUM, J.C.	8	10	185178	TIE RC15
472265	GUM, J.C.	0	8	185179	TIE RC16
472266	GUM, J.C.	8	16	185179	TIE RC16
472267	GUM, J.C.	16	18	185179	TIE RC16
472268	GUM, J.C.	0	6	185180	TIE RC17
472269	GUM, J.C.	6	14	185180	TIE RC17
472270	GUM, J.C.	14	22	185180	TIE RC17
472271	GUM, J.C.	22	28	185180	TIE RC17
472272	GUM, J.C.	28	30	185180	TIE RC17
472273	GUM, J.C.	0	10	185181	TIE RC18
472274	GUM, J.C.	10	18	185181	TIE RC18
472275	GUM, J.C.	18	20	185181	TIE RC18
472276	GUM, J.C.	0	2	185182	TIE RC19
472277	GUM, J.C.	2	10	185182	TIE RC19
472278	GUM, J.C.	10	20	185182	TIE RC19
472279	GUM, J.C.	20	30	185182	TIE RC19
472280	GUM, J.C.	30	38	185182	TIE RC19
472281	GUM, J.C.	38	40	185182	TIE RC19
472282	GUM, J.C.	0	6	185244	TRE RC1
472283	GUM, J.C.	6	16	185244	TRE RC1
472284	GUM, J.C.	16	26	185244	TRE RC1
472285	GUM, J.C.	26	36	185244	TRE RC1
472286	GUM, J.C.	36	46	185244	TRE RC1
472287	GUM, J.C.	46	56	185244	TRE RC1
472288	GUM, J.C.	56	64	185244	TRE RC1
472289	GUM, J.C.	64	66	185244	TRE RC1
472290	GUM, J.C.	0	10	185245	TRE RC2
472291	GUM, J.C.	10	20	185245	TRE RC2
472292	GUM, J.C.	20	30	185245	TRE RC2
472293	GUM, J.C.	30	40	185245	TRE RC2
472294	GUM, J.C.	40	50	185245	TRE RC2
472295	GUM, J.C.	50	60	185245	TRE RC2
472296	GUM, J.C.	60	70	185245	TRE RC2
472297	GUM, J.C.	70	80	185245	TRE RC2
472298	GUM, J.C.	80	90	185245	TRE RC2
472299	GUM, J.C.	90	100	185245	TRE RC2
472300	GUM, J.C.	100	111	185245	TRE RC2
472301	GUM, J.C.	0	10	185183	TIE RC20
472302	GUM, J.C.	10	20	185183	TIE RC20
472303	GUM, J.C.	20	28	185183	TIE RC20

Sample no.	Collected by	Sample depth from (m)	Sample depth to (m)	Drillhole no.	Drillhole name
472304	GUM, J.C.	28	30	185183	TIE RC20
472305	GUM, J.C.	30	40	185183	TIE RC20
472306	GUM, J.C.	40	50	185183	TIE RC20
472307	GUM, J.C.	50	60	185183	TIE RC20
472308	GUM, J.C.	60	70	185183	TIE RC20
472309	GUM, J.C.	70	80	185183	TIE RC20
472310	GUM, J.C.	80	90	185183	TIE RC20
472311	GUM, J.C.	90	100	185183	TIE RC20
472312	GUM, J.C.	100	108	185183	TIE RC20
472313	GUM, J.C.	108	110	185183	TIE RC20
472314	GUM, J.C.	0	10	185246	TRE RC3
472315	GUM, J.C.	10	20	185246	TRE RC3
472316	GUM, J.C.	20	30	185246	TRE RC3
472317	GUM, J.C.	30	40	185246	TRE RC3
472318	GUM, J.C.	40	50	185246	TRE RC3
472319	GUM, J.C.	50	60	185246	TRE RC3
472320	GUM, J.C.	60	70	185246	TRE RC3
472321	GUM, J.C.	70	80	185246	TRE RC3
472322	GUM, J.C.	80	90	185246	TRE RC3
472323	GUM, J.C.	90	100	185246	TRE RC3
472324	GUM, J.C.	100	110	185246	TRE RC3
472325	GUM, J.C.	0	6	185184	TIE RC21
472326	GUM, J.C.	6	16	185184	TIE RC21
472327	GUM, J.C.	16	24	185184	TIE RC21
472328	GUM, J.C.	24	34	185184	TIE RC21
472329	GUM, J.C.	34	40	185184	TIE RC21
472330	GUM, J.C.	40	46	185184	TIE RC21
472331	GUM, J.C.	46	48	185184	TIE RC21
472332	GUM, J.C.	0	10	185185	TIE RC22
472333	GUM, J.C.	10	16	185185	TIE RC22
472334	GUM, J.C.	16	22	185185	TIE RC22
472335	GUM, J.C.	22	32	185185	TIE RC22
472336	GUM, J.C.	32	42	185185	TIE RC22
472337	GUM, J.C.	42	44	185185	TIE RC22
472338	GUM, J.C.	0	6	185186	TIE RC23
472339	GUM, J.C.	6	16	185186	TIE RC23
472340	GUM, J.C.	16	26	185186	TIE RC23
472341	GUM, J.C.	26	36	185186	TIE RC23
472342	GUM, J.C.	36	46	185186	TIE RC23
472343	GUM, J.C.	46	56	185186	TIE RC23
472344	GUM, J.C.	56	58	185186	TIE RC23
472345	GUM, J.C.	58	68	185186	TIE RC23
472346	GUM, J.C.	68	78	185186	TIE RC23
472347	GUM, J.C.	78	88	185186	TIE RC23
472348	GUM, J.C.	88	92	185186	TIE RC23
472349	GUM, J.C.	92	94	185186	TIE RC23
472350	GUM, J.C.	0	8	185187	TIE RC24
472351	GUM, J.C.	8	18	185187	TIE RC24
472352	GUM, J.C.	18	28	185187	TIE RC24
472353	GUM, J.C.	28	38	185187	TIE RC24
472354	GUM, J.C.	38	48	185187	TIE RC24
472355	GUM, J.C.	48	58	185187	TIE RC24
472356	GUM, J.C.	58	68	185187	TIE RC24
472357	GUM, J.C.	68	72	185187	TIE RC24
472358	GUM, J.C.	72	82	185187	TIE RC24
472359	GUM, J.C.	82	92	185187	TIE RC24
472360	GUM, J.C.	92	102	185187	TIE RC24
472361	GUM, J.C.	102	104	185187	TIE RC24
472362	GUM, J.C.	0	2	185188	TIE RC25

Sample no.	Collected by	Sample depth from (m)	Sample depth to (m)	Drillhole no.	Drillhole name
472363	GUM, J.C.	2	10	185188	TIE RC25
472364	GUM, J.C.	10	16	185188	TIE RC25
472365	GUM, J.C.	16	18	185188	TIE RC25
472366	GUM, J.C.	0	2	185189	TIE RC26
472367	GUM, J.C.	2	12	185189	TIE RC26
472368	GUM, J.C.	12	18	185189	TIE RC26
472369	GUM, J.C.	18	28	185189	TIE RC26
472370	GUM, J.C.	28	30	185189	TIE RC26
472371	GUM, J.C.	0	8	185190	TIE RC27
472372	GUM, J.C.	8	14	185190	TIE RC27
472373	GUM, J.C.	14	16	185190	TIE RC27
472374	GUM, J.C.	16	22	185190	TIE RC27
472375	GUM, J.C.	22	24	185190	TIE RC27
472376	GUM, J.C.	0	8	185247	TRE RC4
472377	GUM, J.C.	8	18	185247	TRE RC4
472378	GUM, J.C.	18	28	185247	TRE RC4
472379	GUM, J.C.	28	38	185247	TRE RC4
472380	GUM, J.C.	38	48	185247	TRE RC4
472381	GUM, J.C.	48	58	185247	TRE RC4
472382	GUM, J.C.	58	68	185247	TRE RC4
472383	GUM, J.C.	68	78	185247	TRE RC4
472384	GUM, J.C.	78	88	185247	TRE RC4
472385	GUM, J.C.	88	98	185247	TRE RC4
472386	GUM, J.C.	98	108	185247	TRE RC4
472387	GUM, J.C.	108	110	185247	TRE RC4
472388	GUM, J.C.	0	10	185248	TRE RC5
472389	GUM, J.C.	10	20	185248	TRE RC5
472390	GUM, J.C.	20	30	185248	TRE RC5
472391	GUM, J.C.	30	40	185248	TRE RC5
472392	GUM, J.C.	40	50	185248	TRE RC5
472393	GUM, J.C.	50	60	185248	TRE RC5
472394	GUM, J.C.	60	68	185248	TRE RC5
472395	GUM, J.C.	68	74	185248	TRE RC5
472396	GUM, J.C.	74	76	185248	TRE RC5
472397	GUM, J.C.	0	6	185249	TRE RC6
472398	GUM, J.C.	6	12	185249	TRE RC6
472399	GUM, J.C.	12	14	185249	TRE RC6
472400	GUM, J.C.	0	10	185250	TRE RC7
472401	GUM, J.C.	10	20	185250	TRE RC7
472402	GUM, J.C.	20	30	185250	TRE RC7
472403	GUM, J.C.	30	40	185250	TRE RC7
472404	GUM, J.C.	40	50	185250	TRE RC7
472405	GUM, J.C.	50	60	185250	TRE RC7
472406	GUM, J.C.	60	70	185250	TRE RC7
472407	GUM, J.C.	70	80	185250	TRE RC7
472408	GUM, J.C.	80	90	185250	TRE RC7
472409	GUM, J.C.	90	100	185250	TRE RC7
472410	GUM, J.C.	100	111	185250	TRE RC7
472411	GUM, J.C.	0	10	185251	TRE RC8
472412	GUM, J.C.	10	20	185251	TRE RC8
472413	GUM, J.C.	20	30	185251	TRE RC8
472414	GUM, J.C.	30	40	185251	TRE RC8
472415	GUM, J.C.	40	50	185251	TRE RC8
472416	GUM, J.C.	50	60	185251	TRE RC8
472417	GUM, J.C.	60	70	185251	TRE RC8
472418	GUM, J.C.	70	80	185251	TRE RC8
472419	GUM, J.C.	80	90	185251	TRE RC8
472420	GUM, J.C.	90	100	185251	TRE RC8
472421	GUM, J.C.	100	106	185251	TRE RC8

Sample no.	Collected by	Sample depth from (m)	Sample depth to (m)	Drillhole no.	Drillhole name
472422	GUM, J.C.	0	10	185252	TRE RC9
472423	GUM, J.C.	10	20	185252	TRE RC9
472424	GUM, J.C.	20	30	185252	TRE RC9
472425	GUM, J.C.	30	40	185252	TRE RC9
472426	GUM, J.C.	40	50	185252	TRE RC9
472427	GUM, J.C.	50	60	185252	TRE RC9
472428	GUM, J.C.	60	70	185252	TRE RC9
472429	GUM, J.C.	70	82	185252	TRE RC9
472430	GUM, J.C.	82	90	185252	TRE RC9
472431	GUM, J.C.	90	91	185252	TRE RC9
472432	GUM, J.C.	0	10	185253	TRE RC10
472433	GUM, J.C.	10	20	185253	TRE RC10
472434	GUM, J.C.	20	30	185253	TRE RC10
472435	GUM, J.C.	30	40	185253	TRE RC10
472436	GUM, J.C.	40	50	185253	TRE RC10
472437	GUM, J.C.	50	60	185253	TRE RC10
472438	GUM, J.C.	60	66	185253	TRE RC10
472439	GUM, J.C.	66	74	185253	TRE RC10
472440	GUM, J.C.	74	84	185253	TRE RC10
472441	GUM, J.C.	84	90	185253	TRE RC10
472442	GUM, J.C.	90	96	185253	TRE RC10
472443	GUM, J.C.	96	98	185253	TRE RC10
472444	GUM, J.C.	98	99	185253	TRE RC10
472445	GUM, J.C.	0	10	185254	TRE RC11
472446	GUM, J.C.	10	20	185254	TRE RC11
472447	GUM, J.C.	20	30	185254	TRE RC11
472448	GUM, J.C.	30	40	185254	TRE RC11
472449	GUM, J.C.	40	50	185254	TRE RC11
472450	GUM, J.C.	50	56	185254	TRE RC11
472451	GUM, J.C.	56	60	185254	TRE RC11
472452	GUM, J.C.	60	66	185254	TRE RC11
472453	GUM, J.C.	66	68	185254	TRE RC11
472454	GUM, J.C.	0	10	185255	TRE RC12
472455	GUM, J.C.	10	20	185255	TRE RC12
472456	GUM, J.C.	20	30	185255	TRE RC12
472457	GUM, J.C.	30	36	185255	TRE RC12
472458	GUM, J.C.	36	40	185255	TRE RC12
472459	GUM, J.C.	40	44	185255	TRE RC12
472460	GUM, J.C.	44	48	185255	TRE RC12
472461	GUM, J.C.	48	50	185255	TRE RC12
472462	GUM, J.C.	0	4	185256	TRE RC13
472463	GUM, J.C.	4	8	185256	TRE RC13
472464	GUM, J.C.	8	10	185256	TRE RC13
472465	GUM, J.C.	10	12	185256	TRE RC13
472466	GUM, J.C.	12	14	185256	TRE RC13
472467	GUM, J.C.	14	15	185256	TRE RC13
472468	GUM, J.C.	0	10	185191	TIE RC28
472469	GUM, J.C.	10	20	185191	TIE RC28
472470	GUM, J.C.	20	30	185191	TIE RC28
472471	GUM, J.C.	30	40	185191	TIE RC28
472472	GUM, J.C.	40	50	185191	TIE RC28
472473	GUM, J.C.	50	60	185191	TIE RC28
472474	GUM, J.C.	60	70	185191	TIE RC28
472475	GUM, J.C.	70	78	185191	TIE RC28
472476	GUM, J.C.	78	86	185191	TIE RC28
472477	GUM, J.C.	86	90	185191	TIE RC28
472478	GUM, J.C.	90	94	185191	TIE RC28
472479	GUM, J.C.	94	98	185191	TIE RC28
472480	GUM, J.C.	98	100	185191	TIE RC28

Sample no.	Collected by	Sample depth from (m)	Sample depth to (m)	Drillhole no.	Drillhole name
472481	GUM, J.C.	100	102	185191	TIE RC28
472482	GUM, J.C.	0	4	185192	TIE RC29
472483	GUM, J.C.	4	8	185192	TIE RC29
472484	GUM, J.C.	8	12	185192	TIE RC29
472485	GUM, J.C.	12	13	185192	TIE RC29
472486	GUM, J.C.	0	2	185193	TIE RC30
472487	GUM, J.C.	2	6	185193	TIE RC30
472488	GUM, J.C.	6	8	185193	TIE RC30
472489	GUM, J.C.	8	9	185193	TIE RC30
472490	GUM, J.C.	0	6	185194	TIE RC31
472491	GUM, J.C.	6	8	185194	TIE RC31
472492	GUM, J.C.	8	10	185194	TIE RC31
472493	GUM, J.C.	0	4	185195	TIE RC32
472494	GUM, J.C.	4	10	185195	TIE RC32
472495	GUM, J.C.	10	12	185195	TIE RC32
472496	GUM, J.C.	0	10	185196	TIE RC33
472497	GUM, J.C.	10	20	185196	TIE RC33
472498	GUM, J.C.	20	30	185196	TIE RC33
472499	GUM, J.C.	30	36	185196	TIE RC33
472500	GUM, J.C.	36	42	185196	TIE RC33
472501	GUM, J.C.	42	44	185196	TIE RC33
472502	GUM, J.C.	44	48	185196	TIE RC33
472503	GUM, J.C.	48	49	185196	TIE RC33
472504	GUM, J.C.	0	2	185197	TIE RC34
472505	GUM, J.C.	2	10	185197	TIE RC34
472506	GUM, J.C.	10	12	185197	TIE RC34
472507	GUM, J.C.	12	22	185197	TIE RC34
472508	GUM, J.C.	22	24	185197	TIE RC34
472509	GUM, J.C.	24	28	185197	TIE RC34
472510	GUM, J.C.	28	30	185197	TIE RC34
472511	GUM, J.C.	30	31	185197	TIE RC34
472512	GUM, J.C.	0	2	185198	TIE RC35
472513	GUM, J.C.	2	4	185198	TIE RC35
472514	GUM, J.C.	4	14	185198	TIE RC35
472515	GUM, J.C.	14	18	185198	TIE RC35
472516	GUM, J.C.	18	19	185198	TIE RC35
472517	GUM, J.C.	0	2	185199	TIE RC36
472518	GUM, J.C.	2	4	185199	TIE RC36
472519	GUM, J.C.	4	6	185199	TIE RC36
472520	GUM, J.C.	0	4	185200	TIE RC37
472521	GUM, J.C.	4	12	185200	TIE RC37
472522	GUM, J.C.	12	14	185200	TIE RC37
472523	GUM, J.C.	14	16	185200	TIE RC37
472524	GUM, J.C.	16	18	185200	TIE RC37
472525	GUM, J.C.	0	4	185201	TIE RC38
472526	GUM, J.C.	4	10	185201	TIE RC38
472527	GUM, J.C.	10	11	185201	TIE RC38
472528	GUM, J.C.	0	16	185202	TIE RC39
472529	GUM, J.C.	16	20	185202	TIE RC39
472530	GUM, J.C.	20	22	185202	TIE RC39
472531	GUM, J.C.	22	24	185202	TIE RC39
472532	GUM, J.C.	0	4	185203	TIE RC40
472533	GUM, J.C.	4	6	185203	TIE RC40
472534	GUM, J.C.	6	8	185203	TIE RC40
472535	GUM, J.C.	8	10	185203	TIE RC40
472536	GUM, J.C.	0	2	185204	TIE RC41
472537	GUM, J.C.	2	12	185204	TIE RC41
472538	GUM, J.C.	12	16	185204	TIE RC41
472539	GUM, J.C.	16	20	185204	TIE RC41

Sample no.	Collected by	Sample depth from (m)	Sample depth to (m)	Drillhole no.	Drillhole name
472540	GUM, J.C.	20	22	185204	TIE RC41
472541	GUM, J.C.	22	30	185204	TIE RC41
472542	GUM, J.C.	30	31	185204	TIE RC41
472543	GUM, J.C.	0	10	185205	TIE RC42
472544	GUM, J.C.	10	12	185205	TIE RC42
472545	GUM, J.C.	12	22	185205	TIE RC42
472546	GUM, J.C.	22	23	185205	TIE RC42
472547	GUM, J.C.	0	10	185206	TIE RC43
472548	GUM, J.C.	10	20	185206	TIE RC43
472549	GUM, J.C.	20	26	185206	TIE RC43
472550	GUM, J.C.	26	36	185206	TIE RC43
472551	GUM, J.C.	36	40	185206	TIE RC43
472552	GUM, J.C.	40	46	185206	TIE RC43
472553	GUM, J.C.	46	48	185206	TIE RC43
472554	GUM, J.C.	48	50	185206	TIE RC43
472555	GUM, J.C.	50	52	185206	TIE RC43
472556	GUM, J.C.	0	8	185207	TIE RC44
472557	GUM, J.C.	8	14	185207	TIE RC44
472558	GUM, J.C.	14	16	185207	TIE RC44
472559	GUM, J.C.	0	10	185208	TIE RC45
472560	GUM, J.C.	10	16	185208	TIE RC45
472561	GUM, J.C.	16	28	185208	TIE RC45
472562	GUM, J.C.	28	34	185208	TIE RC45
472563	GUM, J.C.	34	36	185208	TIE RC45
472564	GUM, J.C.	36	40	185208	TIE RC45
472565	GUM, J.C.	40	42	185208	TIE RC45
472566	GUM, J.C.	42	43	185208	TIE RC45
472567	GUM, J.C.	0	2	185209	TIE RC46
472568	GUM, J.C.	2	8	185209	TIE RC46
472569	GUM, J.C.	8	12	185209	TIE RC46
472570	GUM, J.C.	12	14	185209	TIE RC46
472571	GUM, J.C.	14	20	185209	TIE RC46
472572	GUM, J.C.	20	22	185209	TIE RC46
472573	GUM, J.C.	22	24	185209	TIE RC46
472574	GUM, J.C.	24	26	185209	TIE RC46
472575	GUM, J.C.	26	32	185209	TIE RC46
472576	GUM, J.C.	32	34	185209	TIE RC46
472577	GUM, J.C.	0	6	185210	TIE RC47
472578	GUM, J.C.	6	8	185210	TIE RC47
472579	GUM, J.C.	8	10	185210	TIE RC47
472580	GUM, J.C.	10	12	185210	TIE RC47
472581	GUM, J.C.	12	16	185210	TIE RC47
472582	GUM, J.C.	16	17	185210	TIE RC47
472583	GUM, J.C.	0	6	185211	TIE RC48
472584	GUM, J.C.	6	12	185211	TIE RC48
472585	GUM, J.C.	12	24	185211	TIE RC48
472586	GUM, J.C.	24	26	185211	TIE RC48
472587	GUM, J.C.	26	28	185211	TIE RC48
472588	GUM, J.C.	0	10	185212	TIE RC49
472589	GUM, J.C.	10	22	185212	TIE RC49
472590	GUM, J.C.	22	24	185212	TIE RC49
472591	GUM, J.C.	24	26	185212	TIE RC49
472592	GUM, J.C.	26	36	185212	TIE RC49
472593	GUM, J.C.	36	38	185212	TIE RC49
472594	GUM, J.C.	38	39	185212	TIE RC49
472595	GUM, J.C.	0	4	185213	TIE RC50
472596	GUM, J.C.	4	12	185213	TIE RC50
472597	GUM, J.C.	12	13	185213	TIE RC50
472598	GUM, J.C.	0	2	185214	TIE RC51

Sample no.	Collected by	Sample depth from (m)	Sample depth to (m)	Drillhole no.	Drillhole name
472599	GUM, J.C.	2	6	185214	TIE RC51
472600	GUM, J.C.	6	10	185214	TIE RC51
472601	GUM, J.C.	10	12	185214	TIE RC51
472602	GUM, J.C.	12	13	185214	TIE RC51
472603	GUM, J.C.	0	2	185215	TIE RC52
472604	GUM, J.C.	2	6	185215	TIE RC52
472605	GUM, J.C.	6	8	185215	TIE RC52
472606	GUM, J.C.	8	16	185215	TIE RC52
472607	GUM, J.C.	16	18	185215	TIE RC52
472608	GUM, J.C.	0	2	185216	TIE RC53
472609	GUM, J.C.	2	4	185216	TIE RC53
472610	GUM, J.C.	4	6	185216	TIE RC53
472611	GUM, J.C.	0	4	185217	TIE RC54
472612	GUM, J.C.	4	8	185217	TIE RC54
472613	GUM, J.C.	8	10	185217	TIE RC54
472614	GUM, J.C.	10	22	185217	TIE RC54
472615	GUM, J.C.	22	26	185217	TIE RC54
472616	GUM, J.C.	26	28	185217	TIE RC54
472617	GUM, J.C.	0	12	185218	TIE RC55
472618	GUM, J.C.	12	14	185218	TIE RC55
472619	GUM, J.C.	14	16	185218	TIE RC55
472620	GUM, J.C.	16	20	185218	TIE RC55
472621	GUM, J.C.	20	30	185218	TIE RC55
472622	GUM, J.C.	30	34	185218	TIE RC55
472623	GUM, J.C.	34	38	185218	TIE RC55
472624	GUM, J.C.	38	44	185218	TIE RC55
472625	GUM, J.C.	44	46	185218	TIE RC55
472626	GUM, J.C.	46	48	185218	TIE RC55
472627	GUM, J.C.	0	2	185219	TIE RC56
472628	GUM, J.C.	2	4	185219	TIE RC56
472629	GUM, J.C.	4	6	185219	TIE RC56
472630	GUM, J.C.	0	6	185220	TIE RC57
472631	GUM, J.C.	6	8	185220	TIE RC57
472632	GUM, J.C.	0	6	185221	TIE RC58
472633	GUM, J.C.	6	8	185221	TIE RC58
472634	GUM, J.C.	8	12	185221	TIE RC58
472635	GUM, J.C.	12	14	185221	TIE RC58
472636	GUM, J.C.	0	10	185222	TIE RC59
472637	GUM, J.C.	10	20	185222	TIE RC59
472638	GUM, J.C.	20	26	185222	TIE RC59
472639	GUM, J.C.	26	28	185222	TIE RC59
472640	GUM, J.C.	28	29	185222	TIE RC59
472641	GUM, J.C.	0	6	185223	TIE RC60
472642	GUM, J.C.	6	16	185223	TIE RC60
472643	GUM, J.C.	16	26	185223	TIE RC60
472644	GUM, J.C.	26	32	185223	TIE RC60
472645	GUM, J.C.	32	34	185223	TIE RC60
472646	GUM, J.C.	0	10	185224	TIE RC61
472647	GUM, J.C.	10	20	185224	TIE RC61
472648	GUM, J.C.	20	28	185224	TIE RC61
472649	GUM, J.C.	28	30	185224	TIE RC61
472650	GUM, J.C.	0	8	185225	TIE RC62
472651	GUM, J.C.	8	10	185225	TIE RC62
472652	GUM, J.C.	0	4	185226	TIE RC63
472653	GUM, J.C.	4	14	185226	TIE RC63
472654	GUM, J.C.	14	20	185226	TIE RC63
472655	GUM, J.C.	20	22	185226	TIE RC63
472656	GUM, J.C.	0	4	185227	TIE RC64
472657	GUM, J.C.	4	14	185227	TIE RC64

Sample no.	Collected by	Sample depth from (m)	Sample depth to (m)	Drillhole no.	Drillhole name
472658	GUM, J.C.	14	22	185227	TIE RC64
472659	GUM, J.C.	22	32	185227	TIE RC64
472660	GUM, J.C.	32	42	185227	TIE RC64
472661	GUM, J.C.	42	46	185227	TIE RC64
472662	GUM, J.C.	46	48	185227	TIE RC64
472663	GUM, J.C.	0	10	185228	TIE RC65
472664	GUM, J.C.	10	16	185228	TIE RC65
472665	GUM, J.C.	16	26	185228	TIE RC65
472666	GUM, J.C.	26	36	185228	TIE RC65
472667	GUM, J.C.	36	40	185228	TIE RC65
472668	GUM, J.C.	40	42	185228	TIE RC65
472669	GUM, J.C.	0	10	185229	TIE RC66
472670	GUM, J.C.	10	20	185229	TIE RC66
472671	GUM, J.C.	20	30	185229	TIE RC66
472672	GUM, J.C.	30	40	185229	TIE RC66
472673	GUM, J.C.	40	46	185229	TIE RC66
472674	GUM, J.C.	46	52	185229	TIE RC66
472675	GUM, J.C.	52	58	185229	TIE RC66
472676	GUM, J.C.	58	60	185229	TIE RC66
472677	GUM, J.C.	0	6	185230	TIE RC67
472678	GUM, J.C.	6	14	185230	TIE RC67
472679	GUM, J.C.	14	20	185230	TIE RC67
472680	GUM, J.C.	20	26	185230	TIE RC67
472681	GUM, J.C.	26	32	185230	TIE RC67
472682	GUM, J.C.	32	34	185230	TIE RC67
472683	GUM, J.C.	0	2	185231	TIE RC68
472684	GUM, J.C.	2	6	185231	TIE RC68
472685	GUM, J.C.	6	8	185231	TIE RC68
472686	GUM, J.C.	8	18	185231	TIE RC68
472687	GUM, J.C.	18	26	185231	TIE RC68
472688	GUM, J.C.	26	32	185231	TIE RC68
472689	GUM, J.C.	32	33	185231	TIE RC68
472690	GUM, J.C.	0	8	185232	TIE RC69
472691	GUM, J.C.	8	10	185232	TIE RC69
472692	GUM, J.C.	0	8	185233	TIE RC70
472693	GUM, J.C.	8	14	185233	TIE RC70
472694	GUM, J.C.	14	16	185233	TIE RC70
472695	GUM, J.C.	0	6	185234	TIE RC71
472696	GUM, J.C.	6	12	185234	TIE RC71
472697	GUM, J.C.	12	18	185234	TIE RC71
472698	GUM, J.C.	18	26	185234	TIE RC71
472699	GUM, J.C.	26	28	185234	TIE RC71
472700	GUM, J.C.	0	10	185235	TIE RC72
472701	GUM, J.C.	10	18	185235	TIE RC72
472702	GUM, J.C.	18	20	185235	TIE RC72
472703	GUM, J.C.	0	10	185236	TIE RC73
472704	GUM, J.C.	10	18	185236	TIE RC73
472705	GUM, J.C.	18	20	185236	TIE RC73
472706	GUM, J.C.	20	28	185236	TIE RC73
472707	GUM, J.C.	28	30	185236	TIE RC73
472708	GUM, J.C.	0	8	185237	TIE RC74
472709	GUM, J.C.	8	9	185237	TIE RC74
472710	GUM, J.C.	0	10	185238	TIE RC75
472711	GUM, J.C.	10	12	185238	TIE RC75
472712	GUM, J.C.	0	2	185239	TIE RC76
472713	GUM, J.C.	2	10	185239	TIE RC76
472714	GUM, J.C.	10	16	185239	TIE RC76
472715	GUM, J.C.	16	22	185239	TIE RC76
472716	GUM, J.C.	22	26	185239	TIE RC76

Sample no.	Collected by	Sample depth from (m)	Sample depth to (m)	Drillhole no.	Drillhole name
472717	GUM, J.C.	26	28	185239	TIE RC76
472718	GUM, J.C.	0	2	185240	TIE RC77
472719	GUM, J.C.	2	6	185240	TIE RC77
472720	GUM, J.C.	6	7	185240	TIE RC77
472721	GUM, J.C.	0	2	185241	TIE RC78
472722	GUM, J.C.	2	10	185241	TIE RC78
472723	GUM, J.C.	10	12	185241	TIE RC78
472724	GUM, J.C.	0	2	185242	TIE RC79
472725	GUM, J.C.	2	8	185242	TIE RC79
472726	GUM, J.C.	8	16	185242	TIE RC79
472727	GUM, J.C.	16	20	185242	TIE RC79
472728	GUM, J.C.	20	22	185242	TIE RC79
472729	GUM, J.C.	22	28	185242	TIE RC79
472730	GUM, J.C.	28	30	185242	TIE RC79
472731	GUM, J.C.	0	4	185243	TIE RC80
472732	GUM, J.C.	4	10	185243	TIE RC80
472733	GUM, J.C.	10	18	185243	TIE RC80
472734	GUM, J.C.	18	28	185243	TIE RC80
472735	GUM, J.C.	28	34	185243	TIE RC80
472736	GUM, J.C.	34	40	185243	TIE RC80
472737	GUM, J.C.	40	42	185243	TIE RC80
472748	GUM, J.C.	0	6	186146	TIE RC81
472749	GUM, J.C.	6	14	186146	TIE RC81
472750	GUM, J.C.	14	16	186146	TIE RC81
472751	GUM, J.C.	16	24	186146	TIE RC81
472752	GUM, J.C.	24	30	186146	TIE RC81
472753	GUM, J.C.	30	36	186146	TIE RC81
472754	GUM, J.C.	36	44	186146	TIE RC81
472755	GUM, J.C.	44	45	186146	TIE RC81
472756	GUM, J.C.	0	2	186147	TIE RC82
472757	GUM, J.C.	2	8	186147	TIE RC82
472758	GUM, J.C.	8	14	186147	TIE RC82
472759	GUM, J.C.	14	16	186147	TIE RC82
472760	GUM, J.C.	16	22	186147	TIE RC82
472761	GUM, J.C.	22	26	186147	TIE RC82
472762	GUM, J.C.	26	32	186147	TIE RC82
472763	GUM, J.C.	32	38	186147	TIE RC82
472764	GUM, J.C.	38	39	186147	TIE RC82
472765	GUM, J.C.	0	2	186148	TIE RC83
472766	GUM, J.C.	6	8	186148	TIE RC83
472767	GUM, J.C.	8	16	186148	TIE RC83
472768	GUM, J.C.	16	24	186148	TIE RC83
472769	GUM, J.C.	24	30	186148	TIE RC83
472770	GUM, J.C.	30	34	186148	TIE RC83
472771	GUM, J.C.	34	36	186148	TIE RC83
472772	GUM, J.C.	0	2	186149	TIE RC84
472773	GUM, J.C.	4	8	186149	TIE RC84
472774	GUM, J.C.	8	16	186149	TIE RC84
472775	GUM, J.C.	16	24	186149	TIE RC84
472776	GUM, J.C.	24	32	186149	TIE RC84
472777	GUM, J.C.	32	40	186149	TIE RC84
472778	GUM, J.C.	40	42	186149	TIE RC84
472779	GUM, J.C.	0	2	186150	TIE RC85
472780	GUM, J.C.	2	10	186150	TIE RC85
472781	GUM, J.C.	10	18	186150	TIE RC85
472782	GUM, J.C.	18	24	186150	TIE RC85
472783	GUM, J.C.	24	28	186150	TIE RC85
472784	GUM, J.C.	28	30	186150	TIE RC85
472785	GUM, J.C.	0	10	186151	TIE RC86

Sample no.	Collected by	Sample depth from (m)	Sample depth to (m)	Drillhole no.	Drillhole name
472786	GUM, J.C.	10	18	186151	TIE RC86
472787	GUM, J.C.	18	24	186151	TIE RC86
472788	GUM, J.C.	24	30	186151	TIE RC86
472789	GUM, J.C.	30	32	186151	TIE RC86
472790	GUM, J.C.	32	34	186151	TIE RC86
472791	GUM, J.C.	34	36	186151	TIE RC86
472792	GUM, J.C.	0	6	186135	ALC RC1
472793	GUM, J.C.	6	10	186135	ALC RC1
472794	GUM, J.C.	10	12	186135	ALC RC1
472795	GUM, J.C.	12	20	186135	ALC RC1
472796	GUM, J.C.	20	22	186135	ALC RC1
472797	GUM, J.C.	22	24	186135	ALC RC1
472798	GUM, J.C.	0	2	186136	ALC RC2
472799	GUM, J.C.	2	10	186136	ALC RC2
472800	GUM, J.C.	10	14	186136	ALC RC2
472801	GUM, J.C.	14	20	186136	ALC RC2
472802	GUM, J.C.	20	24	186136	ALC RC2
472803	GUM, J.C.	24	30	186136	ALC RC2
472804	GUM, J.C.	30	34	186136	ALC RC2
472805	GUM, J.C.	34	36	186136	ALC RC2
472806	GUM, J.C.	0	4	186137	ALC RC3
472807	GUM, J.C.	4	10	186137	ALC RC3
472808	GUM, J.C.	10	14	186137	ALC RC3
472809	GUM, J.C.	14	18	186137	ALC RC3
472810	GUM, J.C.	18	22	186137	ALC RC3
472811	GUM, J.C.	22	28	186137	ALC RC3
472812	GUM, J.C.	28	36	186137	ALC RC3
472813	GUM, J.C.	36	38	186137	ALC RC3
472814	GUM, J.C.	38	44	186137	ALC RC3
472815	GUM, J.C.	44	45	186137	ALC RC3
472816	GUM, J.C.	0	2	186138	ALC RC4
472817	GUM, J.C.	2	8	186138	ALC RC4
472818	GUM, J.C.	8	14	186138	ALC RC4
472819	GUM, J.C.	14	15	186138	ALC RC4
472820	GUM, J.C.	0	4	186139	ALC RC5
472821	GUM, J.C.	4	10	186139	ALC RC5
472822	GUM, J.C.	10	16	186139	ALC RC5
472823	GUM, J.C.	16	22	186139	ALC RC5
472824	GUM, J.C.	22	24	186139	ALC RC5
472825	GUM, J.C.	0	4	186152	TIE RC87
472826	GUM, J.C.	4	8	186152	TIE RC87
472827	GUM, J.C.	8	14	186152	TIE RC87
472828	GUM, J.C.	14	20	186152	TIE RC87
472829	GUM, J.C.	20	24	186152	TIE RC87
472830	GUM, J.C.	24	32	186152	TIE RC87
472831	GUM, J.C.	32	34	186152	TIE RC87
472832	GUM, J.C.	34	40	186152	TIE RC87
472833	GUM, J.C.	40	46	186152	TIE RC87
472834	GUM, J.C.	46	52	186152	TIE RC87
472835	GUM, J.C.	52	56	186152	TIE RC87
472836	GUM, J.C.	56	62	186152	TIE RC87
472837	GUM, J.C.	62	63	186152	TIE RC87
472838	GUM, J.C.	28	30	186152	TIE RC87
472839	GUM, J.C.	0	4	186153	TIE RC88
472840	GUM, J.C.	4	12	186153	TIE RC88
472841	GUM, J.C.	12	20	186153	TIE RC88
472842	GUM, J.C.	20	26	186153	TIE RC88
472843	GUM, J.C.	26	34	186153	TIE RC88
472844	GUM, J.C.	34	36	186153	TIE RC88

Sample no.	Collected by	Sample depth from (m)	Sample depth to (m)	Drillhole no.	Drillhole name
472845	GUM, J.C.	36	40	186153	TIE RC88
472846	GUM, J.C.	40	42	186153	TIE RC88
472847	GUM, J.C.	0	2	186140	ALC RC6
472848	GUM, J.C.	2	6	186140	ALC RC6
472849	GUM, J.C.	6	10	186140	ALC RC6
472850	GUM, J.C.	10	14	186140	ALC RC6
472851	GUM, J.C.	14	15	186140	ALC RC6
472852	GUM, J.C.	0	6	186141	ALC RC7
472853	GUM, J.C.	6	14	186141	ALC RC7
472854	GUM, J.C.	14	20	186141	ALC RC7
472855	GUM, J.C.	20	28	186141	ALC RC7
472856	GUM, J.C.	28	30	186141	ALC RC7
472857	GUM, J.C.	0	4	186142	ALC RC8
472858	GUM, J.C.	4	10	186142	ALC RC8
472859	GUM, J.C.	10	16	186142	ALC RC8
472860	GUM, J.C.	16	22	186142	ALC RC8
472861	GUM, J.C.	22	24	186142	ALC RC8
472862	GUM, J.C.	24	28	186142	ALC RC8
472863	GUM, J.C.	28	32	186142	ALC RC8
472864	GUM, J.C.	32	33	186142	ALC RC8
472865	GUM, J.C.	0	4	186143	ALC RC9
472866	GUM, J.C.	4	10	186143	ALC RC9
472867	GUM, J.C.	10	14	186143	ALC RC9
472868	GUM, J.C.	14	22	186143	ALC RC9
472869	GUM, J.C.	22	28	186143	ALC RC9
472870	GUM, J.C.	28	34	186143	ALC RC9
472871	GUM, J.C.	34	40	186143	ALC RC9
472872	GUM, J.C.	40	46	186143	ALC RC9
472873	GUM, J.C.	46	54	186143	ALC RC9
472874	GUM, J.C.	54	58	186143	ALC RC9
472875	GUM, J.C.	58	60	186143	ALC RC9
472876	GUM, J.C.	0	4	186144	ALC RC10
472877	GUM, J.C.	4	14	186144	ALC RC10
472878	GUM, J.C.	14	22	186144	ALC RC10
472879	GUM, J.C.	22	28	186144	ALC RC10
472880	GUM, J.C.	28	30	186144	ALC RC10
472881	GUM, J.C.	30	34	186144	ALC RC10
472882	GUM, J.C.	34	36	186144	ALC RC10
472883	GUM, J.C.	0	4	186145	ALC RC11
472884	GUM, J.C.	4	8	186145	ALC RC11
472885	GUM, J.C.	8	14	186145	ALC RC11
472886	GUM, J.C.	14	20	186145	ALC RC11
472887	GUM, J.C.	20	28	186145	ALC RC11
472888	GUM, J.C.	28	30	186145	ALC RC11
472889	GUM, J.C.	0	2	186154	TIE RC89
472890	GUM, J.C.	2	10	186154	TIE RC89
472891	GUM, J.C.	10	16	186154	TIE RC89
472892	GUM, J.C.	16	22	186154	TIE RC89
472893	GUM, J.C.	22	30	186154	TIE RC89
472894	GUM, J.C.	30	34	186154	TIE RC89
472895	GUM, J.C.	34	36	186154	TIE RC89
472896	GUM, J.C.	0	4	186155	TIE RC90
472897	GUM, J.C.	4	12	186155	TIE RC90
472898	GUM, J.C.	12	18	186155	TIE RC90
472899	GUM, J.C.	18	24	186155	TIE RC90
472900	GUM, J.C.	24	34	186155	TIE RC90
472901	GUM, J.C.	34	36	186155	TIE RC90
472902	GUM, J.C.	0	4	186156	TIE RC91
472903	GUM, J.C.	4	10	186156	TIE RC91

Sample no.	Collected by	Sample depth from (m)	Sample depth to (m)	Drillhole no.	Drillhole name
472904	GUM, J.C.	10	16	186156	TIE RC91
472905	GUM, J.C.	16	24	186156	TIE RC91
472906	GUM, J.C.	24	32	186156	TIE RC91
472907	GUM, J.C.	32	36	186156	TIE RC91
472908	GUM, J.C.	38	44	186156	TIE RC91
472909	GUM, J.C.	44	50	186156	TIE RC91
472910	GUM, J.C.	50	58	186156	TIE RC91
472911	GUM, J.C.	58	60	186156	TIE RC91
472912	GUM, J.C.	0	4	186157	TIE RC92
472913	GUM, J.C.	4	10	186157	TIE RC92
472914	GUM, J.C.	10	18	186157	TIE RC92
472915	GUM, J.C.	18	26	186157	TIE RC92
472916	GUM, J.C.	26	34	186157	TIE RC92
472917	GUM, J.C.	34	42	186157	TIE RC92
472918	GUM, J.C.	42	44	186157	TIE RC92
472919	GUM, J.C.	44	45	186157	TIE RC92
472920	GUM, J.C.	0	4	186158	TIE RC93
472921	GUM, J.C.	4	12	186158	TIE RC93
472922	GUM, J.C.	12	18	186158	TIE RC93
472923	GUM, J.C.	18	22	186158	TIE RC93
472924	GUM, J.C.	22	28	186158	TIE RC93
472925	GUM, J.C.	28	30	186158	TIE RC93
472926	GUM, J.C.	0	4	186242	TIE RC94
472927	GUM, J.C.	4	8	186242	TIE RC94
472928	GUM, J.C.	8	16	186242	TIE RC94
472929	GUM, J.C.	16	26	186242	TIE RC94
472930	GUM, J.C.	26	32	186242	TIE RC94
472931	GUM, J.C.	32	40	186242	TIE RC94
472932	GUM, J.C.	40	44	186242	TIE RC94
472933	GUM, J.C.	44	45	186242	TIE RC94
472934	GUM, J.C.	0	4	186243	TIE RC95
472935	GUM, J.C.	4	12	186243	TIE RC95
472936	GUM, J.C.	12	20	186243	TIE RC95
472937	GUM, J.C.	20	26	186243	TIE RC95
479823	GUM, J.C.	26	34	186243	TIE RC95
479824	GUM, J.C.	34	36	186243	TIE RC95
479825	GUM, J.C.	36	40	186243	TIE RC95
479826	GUM, J.C.	40	42	186243	TIE RC95
479827	GUM, J.C.	0	4	186244	TIE RC96
479828	GUM, J.C.	4	12	186244	TIE RC96
479829	GUM, J.C.	12	18	186244	TIE RC96
479830	GUM, J.C.	18	28	186244	TIE RC96
479831	GUM, J.C.	28	38	186244	TIE RC96
479832	GUM, J.C.	38	46	186244	TIE RC96
479833	GUM, J.C.	46	52	186244	TIE RC96
479834	GUM, J.C.	52	54	186244	TIE RC96
479835	GUM, J.C.	0	4	186245	TIE RC97
479836	GUM, J.C.	4	14	186245	TIE RC97
479837	GUM, J.C.	14	22	186245	TIE RC97
479838	GUM, J.C.	22	32	186245	TIE RC97
479839	GUM, J.C.	32	38	186245	TIE RC97
479840	GUM, J.C.	38	44	186245	TIE RC97
479841	GUM, J.C.	44	50	186245	TIE RC97
479842	GUM, J.C.	50	51	186245	TIE RC97
479843	GUM, J.C.	0	4	186246	TIE RC98
479844	GUM, J.C.	4	10	186246	TIE RC98
479845	GUM, J.C.	10	20	186246	TIE RC98
479846	GUM, J.C.	20	30	186246	TIE RC98
479847	GUM, J.C.	30	34	186246	TIE RC98

Sample no.	Collected by	Sample depth from (m)	Sample depth to (m)	Drillhole no.	Drillhole name
479848	GUM, J.C.	34	42	186246	TIE RC98
479849	GUM, J.C.	42	46	186246	TIE RC98
479850	GUM, J.C.	46	48	186246	TIE RC98
479851	GUM, J.C.	0	4	186247	TIE RC99
479852	GUM, J.C.	4	14	186247	TIE RC99
479853	GUM, J.C.	14	22	186247	TIE RC99
479854	GUM, J.C.	26	34	186247	TIE RC99
479855	GUM, J.C.	34	42	186247	TIE RC99
479856	GUM, J.C.	42	46	186247	TIE RC99
479857	GUM, J.C.	46	52	186247	TIE RC99
479858	GUM, J.C.	52	54	186247	TIE RC99
479859	GUM, J.C.	0	4	186248	TIE RC100
479860	GUM, J.C.	4	14	186248	TIE RC100
479861	GUM, J.C.	14	24	186248	TIE RC100
479862	GUM, J.C.	24	30	186248	TIE RC100
479863	GUM, J.C.	30	36	186248	TIE RC100
479864	GUM, J.C.	36	44	186248	TIE RC100
479865	GUM, J.C.	44	45	186248	TIE RC100
479866	GUM, J.C.	0	4	186249	TIE RC101
479867	GUM, J.C.	4	10	186249	TIE RC101
479868	GUM, J.C.	10	18	186249	TIE RC101
479869	GUM, J.C.	20	30	186249	TIE RC101
479870	GUM, J.C.	30	40	186249	TIE RC101
479871	GUM, J.C.	40	50	186249	TIE RC101
479872	GUM, J.C.	50	51	186249	TIE RC101
479873	GUM, J.C.	0	6	186250	TIE RC102
479874	GUM, J.C.	6	12	186250	TIE RC102
479875	GUM, J.C.	12	16	186250	TIE RC102
479876	GUM, J.C.	16	26	186250	TIE RC102
479877	GUM, J.C.	26	32	186250	TIE RC102
479878	GUM, J.C.	32	33	186250	TIE RC102
479879	GUM, J.C.	0	2	186251	TIE RC103
479880	GUM, J.C.	2	8	186251	TIE RC103
479881	GUM, J.C.	8	9	186251	TIE RC103
479882	GUM, J.C.	0	4	186252	TIE RC104
479883	GUM, J.C.	4	10	186252	TIE RC104
479884	GUM, J.C.	10	18	186252	TIE RC104
479885	GUM, J.C.	18	22	186252	TIE RC104
479886	GUM, J.C.	22	24	186252	TIE RC104
479887	GUM, J.C.	0	6	186253	TIE RC105
479888	GUM, J.C.	6	14	186253	TIE RC105
479889	GUM, J.C.	14	16	186253	TIE RC105
479890	GUM, J.C.	16	18	186253	TIE RC105
479891	GUM, J.C.	0	2	186254	TIE RC106
479892	GUM, J.C.	2	10	186254	TIE RC106
479893	GUM, J.C.	10	18	186254	TIE RC106
479894	GUM, J.C.	18	26	186254	TIE RC106
479895	GUM, J.C.	26	32	186254	TIE RC106
479896	GUM, J.C.	32	40	186254	TIE RC106
479897	GUM, J.C.	40	42	186254	TIE RC106
479898	GUM, J.C.	0	10	186255	TIE RC107
479899	GUM, J.C.	10	12	186255	TIE RC107
479900	GUM, J.C.	12	20	186255	TIE RC107
479901	GUM, J.C.	20	28	186255	TIE RC107
479902	GUM, J.C.	28	34	186255	TIE RC107
479903	GUM, J.C.	34	35	186255	TIE RC107
479904	GUM, J.C.	0	2	186256	TIE RC108
479905	GUM, J.C.	2	10	186256	TIE RC108
479906	GUM, J.C.	10	16	186256	TIE RC108

Sample no.	Collected by	Sample depth from (m)	Sample depth to (m)	Drillhole no.	Drillhole name
479907	GUM, J.C.	16	18	186256	TIE RC108
479908	GUM, J.C.	0	8	186257	TIE RC109
479909	GUM, J.C.	8	10	186257	TIE RC109
479910	GUM, J.C.	10	12	186257	TIE RC109
479911	GUM, J.C.	0	2	186258	TIE RC110
479912	GUM, J.C.	2	10	186258	TIE RC110
479913	GUM, J.C.	10	12	186258	TIE RC110
479914	GUM, J.C.	0	2	186259	TIE RC111
479915	GUM, J.C.	2	10	186259	TIE RC111
479916	GUM, J.C.	10	18	186259	TIE RC111
479917	GUM, J.C.	18	22	186259	TIE RC111
479918	GUM, J.C.	22	24	186259	TIE RC111
479919	GUM, J.C.	0	4	186260	TIE RC112
479920	GUM, J.C.	4	6	186260	TIE RC112
479921	GUM, J.C.	6	14	186260	TIE RC112
479922	GUM, J.C.	14	18	186260	TIE RC112
479923	GUM, J.C.	18	28	186260	TIE RC112
479924	GUM, J.C.	28	38	186260	TIE RC112
479925	GUM, J.C.	38	48	186260	TIE RC112
479926	GUM, J.C.	48	58	186260	TIE RC112
479927	GUM, J.C.	64	65	186260	TIE RC112
479928	GUM, J.C.	0	4	186261	TIE RC113
479929	GUM, J.C.	4	10	186261	TIE RC113
479930	GUM, J.C.	10	14	186261	TIE RC113
479931	GUM, J.C.	14	22	186261	TIE RC113
479932	GUM, J.C.	22	28	186261	TIE RC113
479933	GUM, J.C.	28	30	186261	TIE RC113
479934	GUM, J.C.	30	31	186261	TIE RC113
479935	GUM, J.C.	0	2	186262	TIE RC114
479936	GUM, J.C.	2	8	186262	TIE RC114
479937	GUM, J.C.	8	16	186262	TIE RC114
479938	GUM, J.C.	16	24	186262	TIE RC114
479940	GUM, J.C.	24	28	186262	TIE RC114
479941	GUM, J.C.	28	30	186262	TIE RC114
479942	GUM, J.C.	0	2	186263	TIE RC115
479943	GUM, J.C.	2	8	186263	TIE RC115
479944	GUM, J.C.	8	16	186263	TIE RC115
479945	GUM, J.C.	16	20	186263	TIE RC115
479946	GUM, J.C.	20	28	186263	TIE RC115
479947	GUM, J.C.	28	30	186263	TIE RC115

Geochemical analysis of composite samples R472188-R472593 (not consecutive)

Element	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Ag	As	Ca	Co	Cr	Cu	Fe	Mn	Ni	P	Pb
Unit	ppb	ppb	ppb	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Method	FA3	FA3	FA3	FA3	FA3	FA3	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E
Detection limit	1	1	5	5	1	1	1	3	10	2	2	2	100	5	2	5	5
R472188	<1	--	<5	--	<1	--	<1	<3	66000	7	29	7	25100	185	9	110	20
R472189	<1	--	<5	--	<1	--	<1	<3	14600	8	8	8	32200	460	3	950	30
R472191	<1	--	<5	--	<1	--	<1	6	7900	9	27	8	27000	290	11	145	35
R472192	<1	<1	<5	<5	1	2	<1	<3	14300	10	36	10	34600	340	11	165	35
R472193	<1	--	<5	--	<1	--	<1	<3	13100	9	34	16	33600	380	10	300	30
R472194	<1	--	<5	--	<1	--	<1	4	28200	8	27	11	35200	280	7	370	25
R472195	<1	--	<5	--	<1	--	<1	<3	15600	8	28	19	32000	350	10	250	20
R472197	<1	--	<5	--	<1	--	<1	4	14700	10	39	11	30600	240	14	165	20
R472198	<1	--	<5	--	<1	--	<1	<3	38200	11	24	5	20100	135	9	240	25
R472199	<1	--	<5	--	<1	--	<1	4	26000	8	5	<2	6300	55	<2	550	30
R472200	<1	--	<5	--	<1	--	<1	4	1900	8	10	9	16400	65	2	950	25
R472201	<1	--	<5	--	<1	--	<1	<3	11300	12	6	20	26100	310	3	1700	30
R472203	<1	--	<5	--	<1	--	<1	<3	16300	10	26	11	30400	260	12	160	25
R472204	<1	--	<5	--	<1	--	<1	4	26600	9	22	12	30200	270	11	220	25
R472205	<1	--	<5	--	<1	--	<1	<3	26200	9	19	11	34900	240	8	290	25
R472206	<1	--	<5	--	<1	--	<1	6	8750	10	5	5	8750	65	2	1500	35
R472207	<1	--	<5	--	<1	--	<1	4	1950	10	5	4	12200	85	<2	1800	30
R472208	<1	--	<5	--	<1	--	<1	<3	900	10	5	7	22400	290	<2	500	30
R472209	<1	--	<5	--	<1	--	<1	<3	7600	11	6	8	27000	390	2	1150	30
R472211	<1	--	<5	--	<1	--	<1	4	14900	8	23	8	27900	250	11	150	25
R472212	<1	--	<5	--	<1	--	<1	<3	22800	9	22	12	29300	270	10	170	20
R472213	<1	--	<5	--	1	--	<1	<3	5650	11	22	15	40000	310	10	400	25
R472214	1	--	<5	--	2	--	<1	<3	20200	13	7	21	42500	700	4	1700	25

Element	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Ag	As	Ca	Co	Cr	Cu	Fe	Mn	Ni	P	Pb
R472216	<1	--	<5	--	<1	--	<1	4	6750	9	22	7	30400	290	10	145	25
R472217	<1	<1	<5	<5	3	1	<1	<3	21900	10	25	13	31300	310	12	240	25
R472218	<1	--	<5	--	1	--	<1	<3	23500	9	21	18	30500	290	12	650	25
R472219	<1	--	<5	--	<1	--	<1	4	4100	9	7	8	14700	135	3	1150	30
R472221	<1	--	<5	--	<1	--	<1	4	12600	10	27	9	28600	290	13	135	25
R472222	<1	--	<5	--	<1	--	<1	<3	31600	7	18	9	22000	220	8	130	20
R472223	<1	--	<5	--	<1	--	<1	<3	16600	11	28	17	32700	350	13	230	25
R472224	<1	--	<5	--	<1	--	<1	<3	1250	3	8	4	6350	65	<2	260	25
R472225	<1	--	<5	--	2	--	<1	<3	13800	9	12	30	32800	390	7	410	20
R472227	<1	--	<5	--	1	--	<1	<3	15800	8	17	15	23400	240	10	90	20
R472228	<1	--	<5	--	1	--	<1	<3	3550	9	27	14	31500	240	13	125	20
R472229	<1	<1	<5	<5	1	<1	<1	4	43000	12	11	29	40500	750	9	650	10
R472231	<1	--	<5	--	1	--	<1	<3	14300	8	22	9	28100	250	12	125	25
R472232	<1	--	<5	--	<1	--	<1	<3	52400	9	24	13	27400	280	12	160	20
R472233	<1	--	<5	--	1	--	<1	<3	44000	10	24	14	31000	380	11	240	20
R472234	<1	--	<5	--	<1	--	<1	<3	9750	14	40	14	48400	370	14	380	20
R472236	<1	--	<5	--	<1	--	<1	<3	23800	10	24	10	28300	270	11	140	25
R472237	<1	--	<5	--	<1	--	<1	<3	23400	10	28	14	36300	320	14	170	25
R472238	<1	--	<5	--	1	--	<1	<3	8200	14	8	41	34300	180	9	850	20
R472240	<1	--	<5	--	<1	--	<1	<3	11900	13	6	<2	34900	420	4	2000	15
R472242	<1	--	<5	--	<1	--	<1	<3	20500	10	7	2	23600	65	3	800	25
R472243	<1	--	<5	--	<1	--	<1	<3	5400	12	5	5	25300	260	<2	2150	30
R472244	<1	--	<5	--	1	--	<1	4	13100	12	5	11	35100	600	7	1400	35
R472245	<1	--	<5	--	<1	--	<1	<3	14800	17	4	11	42800	1500	7	2200	30
R472246	<1	--	<5	--	<1	--	<1	<3	29000	10	32	16	31200	250	18	180	20
R472247	<1	--	<5	--	<1	--	<1	4	9350	9	31	13	30500	185	13	130	20
R472248	<1	--	<5	--	<1	--	<1	4	900	8	14	13	13200	75	6	190	35
R472249	<1	--	<5	--	<1	--	<1	<3	12100	8	10	24	24900	230	10	260	30
R472250	<1	--	<5	--	<1	--	<1	<3	21400	18	13	46	25700	360	21	180	25
R472252	<1	--	<5	--	<1	--	<1	6	14700	9	28	15	31300	230	16	165	25
R472253	<1	--	<5	--	<1	--	<1	4	12000	10	37	17	32500	200	16	160	25
R472254	<1	--	<5	--	<1	--	<1	<3	1950	8	25	11	21000	120	12	145	35
R472255	<1	--	<5	--	2	--	<1	<3	14700	24	16	110	22400	185	30	420	35

Element	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Ag	As	Ca	Co	Cr	Cu	Fe	Mn	Ni	P	Pb
R472257	<1	--	<5	--	1	--	<1	4	10700	10	28	43	41500	270	17	140	20
R472258	<1	--	<5	--	<1	--	<1	<3	8450	5	17	23	21200	190	8	260	70
R472259	<1	--	<5	--	<1	--	<1	6	7950	7	14	36	22500	280	13	220	45
R472260	<1	--	<5	--	<1	--	<1	<3	9250	6	9	21	21100	250	10	140	35
R472263	<1	--	<5	--	1	--	<1	4	42400	19	24	64	51100	1200	16	1400	25
R472265	<1	--	<5	--	<1	--	<1	<3	19600	10	21	56	32700	280	14	310	50
R472266	<1	--	<5	--	<1	--	<1	4	21700	14	6	43	38400	750	6	1500	35
R472268	<1	--	<5	--	<1	--	<1	6	25200	10	21	11	27800	165	14	150	25
R472269	<1	--	<5	--	<1	--	<1	<3	23100	24	9	17	44500	390	21	1150	20
R472270	<1	--	<5	--	<1	--	<1	4	10400	27	5	15	47800	700	18	1900	20
R472271	<1	--	<5	--	<1	--	<1	<3	8450	19	5	<2	45300	850	7	1950	15
R472273	<1	--	<5	--	<1	--	1	6	6200	9	6	14	26000	550	6	240	40
R472274	<1	--	<5	--	<1	--	<1	<3	5000	14	5	25	38700	550	10	430	25
R472276	<1	--	<5	--	<1	--	<1	8	12200	13	34	15	39400	370	22	230	20
R472277	<1	--	<5	--	<1	--	<1	4	2600	7	48	15	26300	115	8	135	35
R472278	<1	--	<5	--	<1	--	<1	<3	1450	9	37	18	20100	260	15	250	30
R472279	<1	--	<5	--	<1	--	<1	<3	6600	14	22	28	32900	460	20	250	25
R472280	<1	<1	<5	<5	<1	<1	<1	4	11800	12	27	27	31000	480	23	480	35
R472282	<1	--	<5	--	<1	--	<1	6	5050	13	39	14	35000	220	25	185	25
R472283	<1	--	<5	--	<1	--	<1	<3	500	11	16	3	7600	80	8	45	25
R472284	<1	--	<5	--	<1	--	<1	<3	330	7	13	23	7900	70	10	110	45
R472285	<1	--	<5	--	<1	--	<1	<3	490	7	30	4	11900	110	10	165	45
R472286	<1	--	<5	--	<1	--	<1	4	1600	13	21	<2	8400	75	4	650	55
R472287	<1	<1	<5	<5	<1	<1	1	4	2400	15	14	26	27900	310	6	500	35
R472288	<1	--	<5	--	<1	--	1	<3	14100	21	20	24	47100	850	12	1300	35
R472290	<1	--	<5	--	<1	--	<1	8	2000	14	52	16	44500	340	24	210	25
R472291	2	--	<5	--	<1	--	<1	6	12200	28	31	9	9600	155	16	140	55
R472292	<1	--	<5	--	<1	--	<1	<3	600	12	19	<2	10900	165	7	65	25
R472293	<1	--	<5	--	<1	--	<1	<3	370	8	12	5	7950	105	9	120	25
R472294	<1	<1	<5	<5	3	<1	<1	<3	700	8	12	6	6900	100	9	120	25
R472295	<1	--	<5	--	1	--	<1	<3	280	8	12	5	11800	145	10	90	20
R472296	<1	--	<5	--	<1	--	<1	<3	350	7	12	7	8000	80	9	100	20
R472297	<1	--	<5	--	1	--	<1	<3	290	7	12	9	8650	90	9	105	20
R472298	<1	--	<5	--	2	--	<1	<3	550	9	25	55	15200	90	12	185	35

Element	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Ag	As	Ca	Co	Cr	Cu	Fe	Mn	Ni	P	Pb
R472299	1	--	<5	--	2	--	<1	4	1050	13	51	85	14500	90	20	180	35
R472300	1	--	<5	--	<1	--	<1	<3	750	20	22	37	9200	100	36	260	35
R472301	<1	--	<5	--	<1	--	<1	14	4950	11	48	<2	55200	65	3	240	30
R472302	<1	<1	<5	<5	<1	<1	<1	8	600	12	29	5	32200	135	8	430	30
R472303	<1	--	<5	--	<1	--	<1	<3	470	10	14	2	10900	100	10	350	25
R472304	<1	--	<5	--	<1	--	<1	4	400	8	35	23	60100	125	10	850	20
R472305	<1	--	<5	--	<1	--	<1	<3	390	10	14	2	9150	85	11	280	25
R472306	<1	--	<5	--	<1	--	<1	<3	210	8	6	2	9200	110	5	260	15
R472307	<1	--	<5	--	<1	--	<1	4	460	17	14	3	13000	85	6	430	35
R472308	<1	--	<5	--	<1	--	<1	<3	950	16	12	5	10700	95	8	380	35
R472309	<1	--	<5	--	<1	--	<1	<3	1100	19	13	9	9200	95	9	400	30
R472310	<1	--	<5	--	<1	--	<1	4	750	13	9	11	8250	70	8	300	30
R472311	<1	--	<5	--	<1	--	<1	<3	470	13	11	6	11000	115	8	300	30
R472312	<1	--	<5	--	<1	--	<1	<3	380	17	8	12	10400	175	7	135	25
R472314	<1	--	<5	--	<1	--	<1	6	3250	11	35	16	42100	115	10	115	10
R472315	<1	--	<5	--	<1	--	<1	10	1100	5	23	5	45600	20	3	250	15
R472316	<1	--	<5	--	1	--	<1	8	1200	5	24	5	32300	25	2	440	20
R472317	<1	--	<5	--	<1	--	<1	6	600	27	33	3	44600	440	20	650	40
R472318	<1	--	<5	--	<1	--	<1	4	380	13	17	<2	4800	60	11	260	25
R472319	<1	--	<5	--	<1	--	<1	6	480	12	25	<2	5900	50	16	250	30
R472320	<1	--	<5	--	<1	--	<1	<3	270	8	14	4	8750	100	9	185	20
R472321	<1	--	<5	--	<1	--	<1	<3	210	6	8	3	4850	55	6	80	15
R472322	<1	--	<5	--	<1	--	<1	<3	260	7	15	8	10000	80	7	120	20
R472323	<1	--	<5	--	2	--	<1	<3	220	6	12	13	11600	80	5	80	15
R472324	<1	--	<5	--	<1	--	<1	<3	650	5	11	14	9500	60	5	80	20
R472325	<1	--	<5	--	<1	--	<1	<3	5550	8	17	9	21300	180	12	155	25
R472326	<1	--	<5	--	<1	--	<1	<3	7800	5	12	7	13300	110	7	125	45
R472327	<1	--	<5	--	<1	--	<1	4	1600	5	7	8	8800	90	5	175	35
R472328	<1	--	<5	--	<1	--	<1	<3	2800	13	12	14	18700	250	17	120	30
R472329	1	<1	<5	<5	<1	<1	<1	<3	4500	13	10	21	22100	370	12	400	40
R472330	<1	--	<5	--	<1	--	<1	<3	10500	15	13	68	37300	600	10	1550	40
R472332	<1	--	<5	--	<1	--	<1	4	2500	15	39	8	37500	200	18	180	25
R472333	<1	--	<5	--	<1	--	<1	6	1800	14	27	8	24200	135	10	500	45
R472334	<1	--	<5	--	<1	--	<1	6	9650	19	11	13	19300	450	7	1550	35

Element	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Ag	As	Ca	Co	Cr	Cu	Fe	Mn	Ni	P	Pb
R472335	<1	--	<5	--	<1	--	<1	<3	17900	24	15	19	50500	800	16	1800	35
R472336	<1	--	<5	--	<1	--	<1	6	21600	23	38	23	48900	1100	22	2250	30
R472338	<1	<1	<5	<5	<1	<1	<1	4	2400	9	29	5	23200	135	13	135	15
R472339	<1	--	<5	--	2	--	<1	<3	800	13	36	<2	6900	115	16	220	35
R472340	<1	--	<5	--	<1	--	<1	<3	500	10	33	3	7700	125	16	240	45
R472341	<1	1	<5	<5	2	1	<1	4	550	11	41	3	8700	95	25	140	40
R472342	<1	--	<5	--	<1	--	<1	<3	480	10	45	2	9100	115	20	135	40
R472343	<1	--	<5	--	1	--	<1	<3	550	9	42	13	12000	100	21	460	40
R472344	<1	--	<5	--	1	--	<1	6	490	8	35	33	16400	175	21	900	35
R472345	<1	--	<5	--	1	--	<1	<3	600	15	58	33	31400	330	47	310	30
R472346	<1	--	<5	--	<1	--	<1	<3	650	18	39	35	44600	500	38	260	25
R472347	<1	--	<5	--	<1	--	<1	<3	1700	20	39	36	41500	550	23	280	30
R472348	<1	--	<5	--	<1	--	<1	<3	7650	18	42	21	35100	750	23	490	30
R472350	<1	--	<5	--	<1	--	<1	10	3850	13	46	3	54000	180	8	130	20
R472351	<1	--	<5	--	<1	--	<1	10	800	11	36	2	40000	70	8	140	35
R472352	<1	--	<5	--	1	--	<1	8	650	10	20	<2	19200	150	12	220	40
R472353	<1	--	<5	--	<1	--	<1	4	650	9	13	<2	8700	105	11	130	40
R472354	<1	--	<5	--	1	--	<1	<3	410	11	16	<2	4600	50	15	150	25
R472355	<1	--	<5	--	<1	--	<1	4	330	13	25	4	9850	195	11	350	50
R472356	<1	--	<5	--	<1	--	<1	4	370	13	21	7	11900	230	9	390	35
R472357	<1	--	<5	--	<1	--	<1	<3	260	7	10	5	10600	170	5	240	25
R472358	<1	--	<5	--	<1	--	<1	4	500	12	20	9	8050	165	9	480	40
R472359	<1	--	<5	--	<1	--	<1	4	480	12	13	5	9400	210	5	450	30
R472360	<1	--	<5	--	<1	--	<1	<3	5850	19	7	22	36100	650	6	1150	25
R472362	<1	--	<5	--	2	--	<1	4	6000	20	44	34	47000	700	23	155	25
R472363	<1	1	<5	<5	3	2	<1	4	27000	35	37	12	44400	1650	38	370	15
R472364	<1	--	<5	--	3	--	<1	4	20200	24	26	27	34700	1350	27	60	20
R472366	<1	--	<5	--	1	--	<1	<3	21400	21	11	9	24100	2350	11	195	25
R472367	<1	--	<5	--	2	--	<1	<3	6850	39	27	9	42600	2700	33	220	25
R472368	<1	--	<5	--	3	--	<1	<3	9500	45	49	<2	54800	3300	53	310	20
R472369	2	--	<5	--	1	--	<1	4	7100	11	28	56	27600	950	17	180	20
R472371	<1	--	<5	--	1	--	<1	4	3850	7	9	17	21300	135	7	210	25
R472372	<1	--	<5	--	<1	--	<1	<3	11200	14	5	31	29300	650	6	75	20
R472373	<1	--	<5	--	1	--	<1	<3	24700	22	9	54	44500	1250	16	400	25

Element	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Ag	As	Ca	Co	Cr	Cu	Fe	Mn	Ni	P	Pb
R472374	<1	1	<5	<5	4	3	<1	<3	30200	24	19	86	54000	1400	20	1250	15
R472376	<1	--	<5	--	<1	--	<1	8	16700	7	23	10	27400	85	4	500	15
R472377	<1	--	<5	--	<1	--	<1	6	750	9	17	3	24600	120	4	330	25
R472378	<1	--	<5	--	<1	--	<1	<3	240	6	6	<2	6150	95	4	145	20
R472379	<1	--	<5	--	<1	--	<1	4	320	8	8	<2	7550	95	6	130	30
R472380	<1	<1	<5	<5	<1	<1	<1	<3	200	5	6	<2	9250	70	3	80	15
R472381	<1	--	<5	--	<1	--	<1	4	390	9	14	<2	8050	60	6	140	30
R472382	<1	--	<5	--	3	--	<1	<3	350	9	14	9	9350	80	8	220	40
R472383	<1	--	<5	--	3	--	<1	<3	310	7	8	19	5950	40	8	200	60
R472384	<1	--	<5	--	2	--	<1	<3	210	5	6	12	9500	70	6	185	30
R472385	<1	--	<5	--	1	--	<1	<3	330	9	8	41	21800	125	17	550	30
R472386	<1	--	<5	--	4	--	<1	4	410	21	7	40	33600	460	17	290	35
R472388	<1	--	<5	--	<1	--	<1	4	2900	6	11	<2	30400	135	3	75	15
R472389	<1	--	<5	--	<1	--	<1	<3	480	8	9	<2	10400	80	6	250	30
R472390	<1	--	<5	--	<1	--	<1	4	190	4	4	3	21700	90	3	125	15
R472391	<1	--	<5	--	<1	--	<1	<3	310	6	5	2	10900	85	2	230	30
R472392	<1	--	<5	--	<1	--	<1	4	340	8	3	4	10100	75	3	380	30
R472393	<1	--	<5	--	<1	--	<1	4	420	8	3	11	16800	95	3	750	30
R472394	<1	--	<5	--	<1	--	<1	<3	480	12	4	15	34200	500	4	500	30
R472395	<1	--	<5	--	<1	--	<1	6	2900	13	3	13	34900	650	4	650	30
R472397	<1	<1	<5	<5	<1	<1	<1	10	12700	8	3	9	22200	310	3	650	30
R472398	<1	--	<5	--	<1	--	<1	4	7750	10	4	9	25000	460	4	290	30
R472400	<1	--	<5	--	1	--	<1	8	4500	9	22	9	27700	175	11	180	20
R472401	<1	--	<5	--	<1	--	<1	<3	310	5	6	5	5550	75	5	105	20
R472402	<1	--	<5	--	<1	--	<1	4	410	9	11	<2	10400	115	9	155	25
R472403	<1	--	<5	--	<1	--	<1	<3	280	7	9	2	8350	95	7	80	20
R472404	<1	--	<5	--	<1	--	<1	<3	330	9	15	6	5000	45	8	140	30
R472405	<1	--	<5	--	<1	--	1	<3	390	10	21	10	8550	65	10	170	30
R472406	<1	--	<5	--	<1	--	1	6	370	12	14	5	7750	70	9	195	35
R472407	<1	--	<5	--	<1	--	<1	4	230	6	5	6	8350	80	5	200	25
R472408	<1	--	<5	--	<1	--	<1	<3	175	7	4	10	10500	105	5	145	30
R472409	<1	--	<5	--	<1	--	<1	<3	340	19	9	21	7950	115	10	270	35
R472410	<1	--	<5	--	<1	--	<1	<3	460	11	16	37	14600	105	14	210	35
R472411	<1	--	<5	--	<1	--	<1	4	6550	8	19	3	16000	105	6	90	20

Element	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Ag	As	Ca	Co	Cr	Cu	Fe	Mn	Ni	P	Pb
R472412	<1	--	<5	--	<1	--	<1	4	320	9	14	<2	20400	105	7	110	25
R472413	<1	--	<5	--	<1	--	<1	<3	180	5	7	2	7300	65	5	55	15
R472414	<1	--	<5	--	<1	--	<1	<3	460	11	17	3	9900	75	12	135	30
R472415	<1	--	<5	--	1	--	<1	<3	160	6	7	3	7900	80	4	115	20
R472416	<1	<1	<5	<5	<1	<1	<1	<3	175	5	7	5	8250	70	4	105	20
R472417	<1	--	<5	--	<1	--	<1	<3	380	10	10	10	11200	90	8	195	30
R472418	<1	--	<5	--	<1	--	<1	4	260	22	5	12	8550	125	12	185	30
R472419	<1	--	<5	--	<1	--	<1	<3	420	12	9	11	7200	70	12	300	40
R472420	1	--	<5	--	<1	--	<1	<3	390	11	7	12	5650	55	10	290	35
R472421	<1	--	<5	--	<1	--	<1	<3	290	6	4	18	6250	50	7	135	30
R472422	<1	--	<5	--	<1	--	<1	<3	750	10	14	2	10000	100	10	155	25
R472423	<1	--	<5	--	<1	--	<1	<3	110	5	4	<2	3500	55	4	50	15
R472424	<1	--	<5	--	<1	--	<1	<3	120	7	7	<2	3850	45	6	85	25
R472425	<1	--	<5	--	<1	--	<1	<3	130	7	9	<2	5850	65	5	85	25
R472426	<1	--	<5	--	<1	--	<1	<3	250	9	16	<2	4250	45	7	145	30
R472427	<1	--	<5	--	<1	--	<1	<3	180	7	6	2	4250	50	3	180	40
R472428	<1	--	<5	--	<1	--	<1	<3	280	10	6	4	6200	70	6	210	35
R472429	<1	--	<5	--	<1	--	1	<3	310	6	3	5	6250	55	5	210	40
R472430	<1	--	<5	--	<1	--	1	<3	500	8	<2	9	7100	155	6	280	60
R472432	<1	--	<5	--	<1	--	<1	6	7550	10	21	<2	16300	80	11	160	20
R472433	<1	--	<5	--	<1	--	<1	<3	310	10	15	<2	4750	65	10	165	25
R472434	<1	--	<5	--	<1	--	<1	<3	150	5	6	6	4500	50	5	105	20
R472435	<1	--	<5	--	<1	--	<1	<3	230	9	13	<2	3400	40	7	130	25
R472436	<1	--	<5	--	<1	--	<1	<3	190	8	12	<2	4050	40	6	105	25
R472437	<1	--	<5	--	<1	--	<1	4	185	7	8	4	5600	45	5	170	30
R472438	<1	--	<5	--	<1	--	<1	<3	460	14	26	11	5700	50	14	260	35
R472439	1	--	<5	--	<1	--	<1	<3	450	13	12	20	6900	145	14	155	40
R472440	7	6	<5	<5	<1	<1	<1	<3	360	7	9	24	7050	85	8	80	25
R472441	3	4	<5	<5	<1	1	<1	4	550	33	20	105	29500	220	60	175	30
R472442	2	--	<5	--	<1	--	<1	<3	800	25	14	73	29700	440	51	45	20
R472443	2	--	<5	--	2	--	<1	<3	1950	33	40	120	42000	700	65	290	25
R472445	<1	<1	<5	<5	<1	<1	<1	<3	1200	10	11	3	8600	105	14	95	25
R472446	<1	--	<5	--	<1	--	<1	<3	280	7	11	<2	4400	60	6	85	20
R472447	<1	1	<5	<5	1	<1	1	<3	260	11	14	<2	4200	60	7	115	25

Element	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Ag	As	Ca	Co	Cr	Cu	Fe	Mn	Ni	P	Pb
R472448	<1	--	<5	--	<1	--	<1	4	195	9	10	3	4700	55	5	115	20
R472449	<1	--	<5	--	<1	--	<1	<3	320	10	17	3	5850	70	8	240	55
R472450	<1	--	<5	--	2	--	<1	<3	440	3	7	9	7700	70	31	100	35
R472451	<1	--	<5	--	5	--	2	14	700	30	14	38	41100	470	60	800	80
R472452	2	--	<5	--	<1	--	4	8	3050	62	39	56	56500	3900	140	850	35
R472454	<1	--	<5	--	<1	--	<1	4	8000	9	11	3	11100	70	7	65	25
R472455	<1	--	<5	--	<1	--	<1	<3	550	12	12	<2	6450	65	5	100	35
R472456	<1	--	<5	--	<1	--	<1	4	550	9	18	9	4800	45	11	195	40
R472457	1	--	<5	--	1	--	<1	<3	600	65	24	23	16100	60	7	140	20
R472458	<1	--	<5	--	2	--	1	<3	1000	15	16	81	36800	290	17	320	35
R472459	<1	--	<5	--	2	--	1	<3	4100	23	88	160	75700	410	44	700	25
R472460	4	6	<5	<5	4	4	<1	<3	6550	91	290	500	87700	1800	140	500	15
R472462	<1	--	<5	--	2	--	<1	4	2750	16	17	55	51600	130	10	240	25
R472463	<1	--	<5	--	1	--	1	4	9450	24	6	58	41000	900	11	500	25
R472464	1	--	<5	--	2	--	<1	<3	35200	34	14	48	57700	1100	22	1400	15
R472465	<1	--	<5	--	<1	--	<1	<3	16800	13	6	24	27800	550	9	550	30
R472466	<1	--	<5	--	2	--	1	<3	33300	28	10	48	52400	1100	17	1150	20
R472468	<1	--	<5	--	<1	--	<1	<3	3800	8	11	3	6450	65	8	80	20
R472469	<1	--	<5	--	<1	--	<1	<3	500	8	10	<2	5000	60	6	70	15
R472470	<1	--	<5	--	<1	--	<1	<3	300	6	9	4	5800	50	5	85	25
R472471	<1	--	<5	--	<1	--	1	4	280	9	8	4	4750	50	4	115	30
R472472	<1	--	<5	--	<1	--	<1	<3	600	13	14	9	5600	50	8	410	40
R472473	1	--	<5	--	<1	--	<1	4	550	12	11	18	6250	55	7	550	40
R472474	1	--	<5	--	<1	--	<1	<3	470	14	14	39	5200	55	10	220	40
R472475	1	--	<5	--	<1	--	<1	<3	500	14	10	52	9850	60	21	150	35
R472476	30	32	<5	<5	<1	<1	1	<3	440	19	12	105	10300	70	19	160	40
R472477	2	2	<5	<5	<1	<1	<1	4	750	17	12	42	8350	65	29	185	35
R472478	1	--	<5	--	<1	--	<1	<3	1800	62	21	45	10100	75	105	195	35
R472479	1	--	<5	--	<1	--	<1	<3	400	11	11	16	7600	65	16	90	20
R472480	1	--	<5	--	1	--	<1	<3	3050	44	14	21	12000	290	21	230	20
R472482	<1	--	<5	--	<1	--	<1	<3	9100	18	25	17	30600	310	23	135	15
R472483	1	--	<5	--	<1	--	<1	<3	30500	50	22	5	40300	850	115	550	10
R472484	1	--	<5	--	<1	--	<1	<3	32700	22	35	5	43000	950	31	550	10
R472486	<1	--	<5	--	<1	--	<1	<3	31500	7	3	3	16900	250	4	310	15

Element	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Ag	As	Ca	Co	Cr	Cu	Fe	Mn	Ni	P	Pb
R472487	<1	--	<5	--	<1	--	<1	<3	32400	11	5	6	26600	500	4	800	15
R472488	<1	--	<5	--	<1	--	<1	<3	35100	19	16	16	45000	750	13	750	15
R472490	2	--	<5	--	<1	--	<1	<3	19400	15	26	65	32900	850	25	130	30
R472491	<1	--	<5	--	<1	--	1	4	15600	10	7	7	28400	440	9	600	35
R472493	2	--	<5	--	2	--	<1	<3	52600	19	30	100	43900	900	15	650	15
R472494	2	--	<5	--	2	--	<1	<3	41300	26	19	79	52800	1000	16	750	10
R472496	<1	--	<5	--	<1	--	<1	4	6650	4	5	8	7450	65	3	155	35
R472497	<1	--	<5	--	<1	--	<1	<3	800	4	3	11	10300	50	4	160	25
R472498	<1	--	<5	--	<1	--	1	4	1350	12	4	44	30700	240	13	330	30
R472499	<1	--	<5	--	<1	--	<1	<3	4350	8	4	16	24300	180	12	380	25
R472500	<1	--	<5	--	<1	--	<1	<3	9250	12	11	24	41000	370	14	1600	35
R472501	<1	--	<5	--	<1	--	<1	<3	13300	13	4	8	31400	410	8	2300	30
R472502	<1	--	<5	--	<1	--	<1	<3	12800	22	43	4	39300	1250	48	3000	30
R472504	<1	--	<5	--	<1	--	<1	4	7600	10	18	12	32200	360	13	350	30
R472505	<1	--	<5	--	<1	--	<1	<3	7200	9	15	12	30700	290	11	280	30
R472506	<1	--	<5	--	<1	--	<1	<3	7650	14	11	19	44200	300	12	950	40
R472507	<1	--	<5	--	<1	--	<1	4	5700	10	4	7	26100	230	6	1400	35
R472508	<1	--	<5	--	<1	--	<1	<3	7050	15	3	13	29800	320	18	1450	40
R472509	<1	--	<5	--	<1	--	<1	<3	12700	19	3	9	40000	1000	13	1300	45
R472510	<1	--	<5	--	<1	--	<1	<3	15300	12	3	10	39600	900	4	1350	40
R472512	<1	--	<5	--	<1	--	<1	4	9450	10	22	14	33600	320	11	125	25
R472513	<1	--	<5	--	1	--	<1	<3	36100	7	7	13	25700	240	6	200	20
R472514	<1	--	<5	--	<1	--	<1	4	11800	8	2	5	26700	370	3	700	25
R472515	3	4	<5	<5	15	16	<1	<3	52200	41	66	180	85800	1400	50	750	15
R472517	<1	<1	<5	<5	<1	<1	<1	<3	19600	7	5	7	25900	500	4	460	25
R472518	<1	--	<5	--	<1	--	<1	<3	31800	8	4	17	27000	700	4	750	20
R472520	<1	--	<5	--	2	--	<1	<3	86300	13	8	8	33600	550	8	900	25
R472521	<1	--	<5	--	<1	--	<1	<3	19700	20	3	11	43800	850	8	1850	35
R472522	<1	--	<5	--	<1	--	<1	<3	20400	17	3	15	45800	850	8	1950	30
R472523	<1	--	<5	--	<1	--	<1	4	21600	18	3	11	47800	950	6	1850	30
R472525	<1	--	<5	--	<1	--	<1	<3	21100	17	9	11	51300	900	8	1400	35
R472526	<1	--	<5	--	<1	--	<1	<3	27000	18	3	11	48400	950	6	1850	30
R472528	<1	--	<5	--	<1	--	<1	4	8350	15	9	16	39000	250	3	1150	50
R472529	<1	--	<5	--	<1	--	<1	<3	1900	6	3	17	23700	95	<2	900	45

Element	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Ag	As	Ca	Co	Cr	Cu	Fe	Mn	Ni	P	Pb
R472530	<1	--	<5	--	<1	--	<1	<3	13200	24	6	25	44400	500	15	1950	30
R472532	<1	--	<5	--	<1	--	<1	4	5250	7	11	11	26400	220	8	280	40
R472533	<1	--	<5	--	<1	--	<1	4	5900	7	4	9	22500	260	4	550	40
R472534	<1	--	<5	--	<1	--	<1	<3	5200	6	2	9	24000	320	3	600	40
R472536	<1	--	<5	--	<1	--	<1	<3	10800	10	22	15	34100	380	15	155	25
R472537	<1	--	<5	--	<1	--	<1	<3	24900	9	5	29	28600	370	9	145	35
R472538	8	9	<5	<5	<1	1	<1	6	8750	12	3	30	29200	280	12	230	35
R472539	1	--	<5	--	<1	--	<1	<3	8750	21	3	18	31400	900	13	950	40
R472540	<1	--	<5	--	<1	--	<1	<3	14800	11	3	17	35700	800	5	1000	35
R472541	<1	<1	<5	<5	<1	<1	<1	<3	13600	10	3	17	31700	750	4	950	30
R472543	<1	<1	<5	<5	7	6	<1	<3	47000	29	27	165	56100	650	30	290	15
R472544	1	2	<5	<5	13	15	2	8	77600	105	38	350	100000	2550	57	1250	5
R472545	12	11	<5	<5	25	28	<1	6	52800	59	46	360	112000	1700	51	1500	10
R472547	<1	--	<5	--	<1	--	<1	<3	34500	10	21	17	28400	270	13	130	25
R472548	<1	--	<5	--	<1	--	<1	<3	18500	10	22	28	32800	350	14	230	25
R472549	<1	--	<5	--	<1	--	<1	<3	950	4	8	33	15100	195	10	125	55
R472550	<1	--	<5	--	<1	--	<1	<3	400	2	3	15	7600	65	3	55	45
R472551	<1	--	<5	--	<1	--	<1	<3	2050	7	11	31	11400	550	9	75	35
R472552	49	46	<5	<5	7	7	<1	<3	51800	57	550	110	78000	1550	190	370	15
R472554	2	--	<5	--	2	--	<1	4	16000	15	97	220	32500	850	46	700	30
R472556	<1	--	<5	--	<1	--	<1	6	14100	13	20	9	57400	370	8	650	25
R472557	<1	--	<5	--	<1	--	<1	4	24000	16	13	13	42900	1000	7	2000	30
R472559	<1	--	<5	--	<1	--	<1	8	18000	5	8	15	13200	105	4	240	35
R472560	<1	--	<5	--	<1	--	<1	8	650	7	9	24	21200	140	3	270	25
R472561	<1	--	<5	--	<1	--	<1	6	2800	16	65	29	37900	150	26	290	25
R472562	<1	--	<5	--	<1	--	<1	4	6300	9	8	23	14600	170	7	330	25
R472563	<1	--	<5	--	<1	--	<1	6	4100	5	4	20	11900	80	4	480	30
R472564	<1	--	<5	--	<1	--	<1	<3	15600	11	12	29	20900	210	7	400	25
R472565	<1	--	<5	--	<1	--	<1	4	17000	13	10	30	28100	410	13	650	20
R472567	<1	--	<5	--	<1	--	<1	6	24600	11	20	15	33500	320	14	270	25
R472568	<1	--	<5	--	3	--	<1	6	90800	18	20	49	44800	145	23	650	15
R472569	<1	1	<5	<5	6	5	1	8	24200	31	37	140	93100	550	36	1250	15
R472571	2	4	5	<5	6	6	<1	6	53700	31	80	120	61600	1000	47	1050	15
R472572	3	3	5	<5	9	6	<1	6	57500	30	76	88	60900	1100	46	1100	10

Element	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Ag	As	Ca	Co	Cr	Cu	Fe	Mn	Ni	P	Pb
R472573	1	3	<5	<5	7	7	<1	<3	45100	26	74	76	54100	950	42	950	10
R472574	2	3	<5	<5	5	4	<1	4	36000	21	36	60	43200	800	31	800	10
R472575	2	3	5	<5	9	7	<1	<3	63200	33	89	91	68300	1150	46	1300	10
R472577	<1	--	<5	--	<1	--	<1	6	25200	24	47	61	43600	650	34	2400	45
R472578	<1	--	<5	--	2	--	<1	8	26700	23	70	95	44900	850	33	2100	45
R472579	<1	1	<5	<5	7	7	<1	4	41000	19	210	27	40800	900	57	600	15
R472580	<1	<1	<5	<5	6	5	<1	6	34500	31	92	15	43600	900	31	550	15
R472581	<1	--	<5	--	3	--	<1	<3	26900	24	36	9	28900	550	18	280	15
R472583	<1	--	<5	--	3	--	<1	10	25200	12	19	20	34800	270	16	155	20
R472584	2	2	<5	<5	7	6	<1	<3	32300	39	78	66	72100	430	60	380	15
R472585	<1	<1	<5	<5	<1	<1	<1	4	13200	8	8	32	27300	550	10	320	30
R472586	2	--	<5	--	1	--	<1	<3	20200	8	14	10	23100	390	14	370	25
R472588	<1	--	<5	--	3	--	<1	4	44000	10	24	21	38000	240	15	150	20
R472589	<1	--	<5	--	<1	--	<1	4	3000	12	25	22	30200	140	23	80	20
R472590	<1	--	<5	--	1	--	<1	4	9200	22	61	32	65300	155	45	150	20
R472591	<1	--	<5	--	<1	--	<1	6	5350	15	37	14	44600	150	24	70	20
R472592	<1	<1	<5	<5	<1	<1	<1	8	5750	13	41	8	30400	110	26	340	20
R472593	<1	--	<5	--	<1	--	<1	6	20800	15	23	5	33500	300	29	410	25

Elements	S	Ti	V	Zn	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Method	IC3E	IC3E	IC3E	IC3E	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M
Detection limit	50	10	2	2	0.1	0.1	0.5	0.1	0.1	0.05	0.5	0.1	0.5	0.5	0.2	0.02	0.1	0.02
R472188	350	3150	58	22	0.2	<0.1	40.5	1.8	10	<0.05	26.5	1.3	<0.5	<0.5	<0.2	9.5	0.6	1
R472189	200	3650	44	54	0.2	0.1	110	1.9	19	0.1	50	2.5	<0.5	1	<0.2	13	0.8	2.4
R472191	100	4450	59	30	0.2	<0.1	31.5	1.7	12	0.05	18.5	1	<0.5	1	<0.2	9	0.6	0.72
R472192	500	4400	78	37	0.2	<0.1	47	2	15.5	0.05	27	1.1	<0.5	1	<0.2	12.5	0.6	1.4
R472193	200	3400	75	38	0.2	<0.1	61	2.4	14.5	<0.05	30.5	0.9	<0.5	<0.5	<0.2	14.5	0.6	2.4
R472194	400	3250	68	37	0.1	0.1	72	2	14.5	0.05	36.5	1.3	<0.5	1	<0.2	14	0.6	2
R472195	100	1600	51	63	<0.1	<0.1	47.5	2.4	14	<0.05	25	1.4	<0.5	1	<0.2	5	0.6	1.15
R472197	450	4150	79	36	0.2	<0.1	46.5	2	15.5	0.05	26.5	0.8	<0.5	0.5	<0.2	9	0.5	1.4
R472198	300	6650	77	18	0.1	0.1	96	1.2	17.5	0.05	49.5	1.3	<0.5	1.5	<0.2	17	0.3	2.3
R472199	150	6150	65	8	<0.1	0.1	220	0.6	22.5	0.1	82	0.7	<0.5	1	<0.2	31	0.3	2.2

Elements	S	Ti	V	Zn	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U
R472200	150	5800	66	29	<0.1	0.1	290	1.3	21.5	0.1	105	2.1	<0.5	1.5	<0.2	18.5	0.5	3.7
R472201	1350	6000	75	91	<0.1	0.2	200	2.4	22	0.1	82	1.9	<0.5	2.5	<0.2	14	0.9	4.5
R472203	450	4100	72	34	0.2	<0.1	54	2.1	15.5	0.05	29	0.9	<0.5	1	<0.2	10.5	0.5	1.15
R472204	150	3650	67	35	0.2	0.1	60	2	15.5	0.05	33	0.8	<0.5	1	<0.2	14.5	0.5	1.85
R472205	350	4350	66	32	0.1	<0.1	84	1.5	15.5	0.05	39.5	1.3	<0.5	0.5	<0.2	13.5	0.4	1.55
R472206	200	7450	62	20	<0.1	0.2	260	0.4	23.5	0.1	125	1.1	<0.5	<0.5	<0.2	17.5	0.2	2.1
R472207	250	7000	84	35	<0.1	0.1	340	1.5	24.5	0.1	160	1.3	<0.5	1	<0.2	19.5	1	5
R472208	150	6050	40	57	<0.1	0.1	150	5.5	22.5	0.1	60	1.2	<0.5	1	<0.2	12.5	1.1	4.6
R472209	500	6000	56	61	<0.1	0.2	185	2.7	22.5	0.1	81	1.7	<0.5	1	<0.2	14	0.8	4
R472211	700	4000	68	31	0.1	<0.1	44	2.1	15	<0.05	25.5	0.9	<0.5	1	<0.2	8.5	0.6	1
R472212	150	3900	66	33	0.2	0.1	58	2.2	16	0.05	31	0.9	<0.5	0.5	<0.2	10.5	0.5	2
R472213	650	4150	81	39	0.1	0.1	78	2.2	18	0.05	39	1.5	<0.5	1	<0.2	9.5	0.5	1.95
R472214	150	5600	71	73	<0.1	0.2	115	1.6	21	0.1	55	1.4	<0.5	1	<0.2	6.5	0.6	1.3
R472216	250	4350	69	31	0.1	<0.1	40.5	2	14.5	<0.05	22.5	1	<0.5	0.5	<0.2	9.5	0.6	1
R472217	150	4000	77	37	0.2	<0.1	59	2.1	16.5	0.05	30.5	0.9	<0.5	1	<0.2	11	0.5	1.6
R472218	450	3700	77	36	0.1	0.1	105	1.9	18	0.05	49	1.1	<0.5	1	<0.2	12	0.5	2.7
R472219	450	5450	48	21	0.1	0.1	250	3.2	21.5	0.1	105	1.7	<0.5	1	<0.2	16.5	0.7	4.2
R472221	400	4250	74	34	0.1	<0.1	48	2	14.5	<0.05	26	2	<0.5	0.5	<0.2	10.5	0.5	0.93
R472222	100	2900	54	26	0.1	<0.1	44.5	1.6	13	<0.05	25	1	<0.5	0.5	<0.2	8.5	0.5	1.15
R472223	150	4300	75	41	<0.1	0.1	62	1.6	15.5	<0.05	32.5	1.2	<0.5	0.5	<0.2	9	0.4	1.15
R472224	300	1550	44	5	0.1	<0.1	72	0.7	16	<0.05	43	0.8	<0.5	0.5	<0.2	8.5	0.2	0.62
R472225	100	2350	85	40	<0.1	0.1	53	7	19	<0.05	24.5	1.4	<0.5	0.5	<0.2	10	1	1.2
R472227	300	3350	57	26	0.1	<0.1	30	1.7	10.5	<0.05	18	1.4	<0.5	0.5	<0.2	8.5	0.6	0.77
R472228	650	3400	70	32	0.2	<0.1	39	1.9	14.5	0.05	22.5	1.5	<0.5	0.5	<0.2	8.5	0.4	1.15
R472229	200	2650	98	57	0.1	0.3	39	2.6	18	0.05	23.5	1.4	<0.5	0.5	<0.2	6	0.3	0.8
R472231	300	3450	60	30	0.1	<0.1	36.5	2.1	14	<0.05	22	1	<0.5	<0.5	<0.2	8	0.6	0.73
R472232	200	3450	66	35	0.1	<0.1	60	1.9	13.5	<0.05	35	0.6	<0.5	<0.5	<0.2	10.5	0.4	1.3
R472233	150	4150	83	36	<0.1	0.1	64	1.3	14.5	<0.05	35	0.8	<0.5	<0.5	<0.2	10.5	0.4	1.1
R472234	200	6100	135	40	<0.1	<0.1	56	0.8	15	0.05	30	1.3	<0.5	<0.5	<0.2	10	0.3	0.58
R472236	550	3900	66	29	0.1	<0.1	44	2	14.5	<0.05	28	0.7	<0.5	<0.5	<0.2	9.5	0.5	1.15
R472237	250	3450	77	34	0.2	<0.1	52	2.6	17	0.05	28.5	0.7	<0.5	0.5	<0.2	10.5	0.4	1.65
R472238	<50	4950	56	68	0.1	0.1	98	1.3	18	0.05	45.5	0.9	<0.5	0.5	<0.2	8	0.5	2.5
R472240	<50	5600	65	32	<0.1	0.1	115	0.9	20	0.05	51	1.2	<0.5	0.5	<0.2	8.5	0.4	1.75
R472242	1650	7100	64	15	0.2	0.1	175	0.6	22.5	0.1	89	1.6	<0.5	1	<0.2	17.5	0.4	2.5

Elements	S	Ti	V	Zn	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U
R472243	2750	8350	77	50	0.5	0.2	210	8.5	24	0.1	82	2.3	<0.5	<0.5	<0.2	20	1	5.5
R472244	100	4350	52	83	0.3	0.3	115	6	18.5	0.1	51	1.9	<0.5	1	0.3	11	0.6	4.5
R472245	50	6350	65	110	0.2	0.3	145	7.5	21.5	0.1	67	2	<0.5	0.5	<0.2	12	0.7	3
R472246	500	3850	78	41	0.2	0.1	58	2.4	14.5	0.05	30.5	0.9	<0.5	<0.5	<0.2	11.5	0.4	3.4
R472247	350	4950	83	30	0.2	0.1	40	1.7	13.5	0.05	23	1.4	<0.5	0.5	<0.2	11.5	0.3	2.5
R472248	400	4950	69	19	0.2	<0.1	88	4	26.5	<0.05	48	1.5	<0.5	<0.5	<0.2	13	0.3	2.8
R472249	300	2000	67	50	0.1	<0.1	88	8.5	16	<0.05	37.5	1	<0.5	<0.5	<0.2	17	0.8	1.85
R472250	650	2500	65	63	<0.1	<0.1	36.5	6.5	17.5	0.05	19	1.5	<0.5	3.5	<0.2	10.5	0.7	6
R472252	350	3800	73	38	0.2	0.1	51	2.3	14	<0.05	28	0.9	<0.5	0.5	<0.2	12	0.4	2.2
R472253	450	4250	87	36	0.2	0.1	49.5	2.3	15.5	0.05	26	1	<0.5	1	<0.2	11.5	0.4	2.9
R472254	250	3250	71	20	0.3	0.1	49.5	1.6	25	<0.05	31	0.7	<0.5	<0.5	<0.2	6.5	0.3	3.2
R472255	400	3650	145	51	0.5	0.1	84	3.2	21.5	0.1	32.5	2.1	<0.5	4	<0.2	7.5	0.6	10
R472257	1200	3500	96	41	0.2	0.1	32	5.5	17	0.05	16.5	0.6	<0.5	1	<0.2	12.5	0.6	1.9
R472258	250	1300	32	23	0.1	<0.1	280	4.5	17	<0.05	150	0.4	<0.5	1	<0.2	30.5	1.1	6.5
R472259	200	1600	35	42	<0.1	<0.1	125	4.1	12.5	<0.05	68	0.6	<0.5	<0.5	<0.2	21.5	1.1	3.7
R472260	50	1600	33	34	<0.1	<0.1	64	3.1	14	<0.05	33.5	0.8	<0.5	<0.5	<0.2	14.5	0.8	2.7
R472263	50	5650	125	105	0.2	0.2	68	3.9	20.5	0.1	31	1.2	<0.5	<0.5	<0.2	5	0.5	1.65
R472265	650	4100	84	37	0.2	0.2	72	2.6	15	0.05	38	0.9	<0.5	0.5	<0.2	11	0.5	1.9
R472266	50	5600	78	77	0.1	0.2	150	3.9	20	0.05	73	1.7	<0.5	0.5	<0.2	9	0.7	1.9
R472268	550	3800	70	29	0.2	<0.1	59	2.3	14	<0.05	30.5	1.1	<0.5	<0.5	<0.2	11	0.5	1.85
R472269	150	6250	91	75	0.1	0.1	130	1.9	18	0.1	61	0.9	<0.5	<0.5	<0.2	8.5	0.6	1.55
R472270	<50	7750	89	88	0.1	0.1	155	2	21.5	0.1	69	1.4	<0.5	0.5	<0.2	7	0.5	1.55
R472271	<50	7450	81	64	<0.1	0.1	125	1.1	20	0.1	58	1.1	<0.5	<0.5	<0.2	6	0.4	1.45
R472273	600	3050	43	40	0.1	0.1	160	5.5	18	0.05	73	1.8	<0.5	<0.5	<0.2	30.5	1	2
R472274	150	5400	70	77	0.1	0.1	190	4.4	18	0.1	87	1.8	<0.5	<0.5	<0.2	17.5	0.9	3.8
R472276	1150	6100	90	50	0.2	0.1	55	2.6	16.5	0.05	29	1.1	<0.5	0.5	<0.2	8.5	0.4	1.3
R472277	200	3000	105	21	0.2	<0.1	31.5	1.9	18	0.05	19.5	0.9	<0.5	1.5	<0.2	15.5	0.5	1.55
R472278	250	2950	57	49	0.2	<0.1	185	10	17.5	<0.05	77	0.5	<0.5	<0.5	<0.2	26	1.4	2.4
R472279	200	3250	74	77	0.1	<0.1	115	7	18	0.05	56	0.5	<0.5	<0.5	<0.2	10.5	0.9	2.2
R472280	100	3650	56	67	0.2	<0.1	105	6	17.5	0.05	52	0.6	<0.5	<0.5	<0.2	23	0.9	4.8
R472282	250	5600	91	34	0.3	0.1	46.5	2.3	17.5	0.05	20.5	1	<0.5	<0.5	<0.2	10	0.3	1.05
R472283	150	8100	30	11	0.1	<0.1	16.5	0.4	19	<0.05	12.5	1	<0.5	<0.5	<0.2	3.5	<0.1	0.51
R472284	100	4650	36	12	<0.1	0.1	29	0.2	12.5	<0.05	18.5	0.9	<0.5	<0.5	<0.2	6	<0.1	0.51
R472285	150	4000	45	14	0.1	<0.1	59	0.4	15	<0.05	40	3.4	<0.5	<0.5	<0.2	13	<0.1	0.78

Elements	S	Ti	V	Zn	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U
R472286	250	10100	91	8	0.9	0.2	210	0.7	30	0.1	115	2.1	<0.5	<0.5	<0.2	39.5	0.2	2.5
R472287	200	8700	100	62	0.5	0.2	180	7	24	0.15	75	2.6	<0.5	0.5	<0.2	19	1.2	7
R472288	100	7500	89	135	0.4	0.2	160	7	22	0.1	73	3.7	<0.5	1	<0.2	15.5	0.9	3.4
R472290	100	5200	115	38	0.3	0.1	53	2.8	19	0.05	28.5	1.7	<0.5	<0.5	<0.2	9.5	0.4	1.05
R472291	200	24400	63	18	0.2	0.2	50	0.5	30.5	0.05	34	3	<0.5	<0.5	<0.2	5	0.2	0.73
R472292	300	9400	56	7	<0.1	0.2	19.5	0.3	11	0.05	13.5	1	<0.5	<0.5	<0.2	7	<0.1	0.48
R472293	450	4850	38	12	0.1	1.2	60	0.2	9	0.15	33.5	0.7	<0.5	<0.5	<0.2	8.5	<0.1	0.45
R472294	1550	5200	45	10	0.1	<0.1	50	0.2	11	0.05	29.5	0.9	<0.5	<0.5	<0.2	9	<0.1	0.57
R472295	1050	5100	48	10	<0.1	<0.1	27	0.1	10	<0.05	19.5	1.6	<0.5	<0.5	<0.2	8.5	<0.1	0.5
R472296	1500	4000	34	8	0.1	<0.1	30	0.6	12	0.05	20	1.1	<0.5	<0.5	<0.2	8.5	<0.1	0.77
R472297	600	4600	39	8	0.1	<0.1	21	0.5	12	0.05	15	1.1	<0.5	1.5	<0.2	10.5	<0.1	1
R472298	1400	5350	88	13	0.2	0.7	45	1.1	20	0.15	26	1.8	<0.5	5	<0.2	14	<0.1	3.1
R472299	200	5850	105	46	0.4	0.4	58	3.4	24.5	0.1	30.5	2.1	<0.5	1	0.4	23.5	0.2	4.7
R472300	150	7100	86	100	0.5	0.4	100	4.1	25.5	0.05	51	2.5	<0.5	0.5	0.2	23	0.4	4
R472301	400	7700	210	15	0.5	0.1	50	0.6	26	0.1	21.5	2.7	<0.5	1	0.3	8	0.1	0.91
R472302	250	7300	70	23	0.1	0.1	110	0.3	15.5	0.05	48.5	2.1	<0.5	<0.5	<0.2	19	<0.1	0.99
R472303	400	6350	43	17	<0.1	<0.1	79	0.2	14.5	<0.05	35.5	1.1	<0.5	<0.5	<0.2	11.5	<0.1	0.73
R472304	3350	4450	82	35	<0.1	<0.1	125	0.2	14	0.1	50	3.4	<0.5	<0.5	<0.2	11.5	<0.1	0.82
R472305	250	6350	38	13	0.2	<0.1	66	0.5	14.5	<0.05	30	1.3	<0.5	<0.5	<0.2	12.5	<0.1	0.68
R472306	1000	5000	24	7	<0.1	<0.1	42	0.1	8.5	<0.05	19.5	0.9	<0.5	<0.5	<0.2	8.5	<0.1	0.54
R472307	950	12700	96	14	0.2	0.1	99	0.3	27	0.1	50	1.9	<0.5	<0.5	<0.2	15.5	<0.1	1.05
R472308	200	11500	88	23	0.2	0.1	110	0.4	25	0.1	49	0.7	<0.5	<0.5	<0.2	17	0.1	1.15
R472309	100	14000	78	27	0.2	0.2	140	0.7	22.5	0.1	58	1	<0.5	<0.5	<0.2	20	0.2	2.2
R472310	100	8350	56	33	0.2	0.1	82	0.8	20.5	0.1	38	0.9	<0.5	<0.5	<0.2	14.5	0.3	2.7
R472311	<50	8400	63	32	0.1	<0.1	97	1	19	0.05	40.5	0.5	<0.5	<0.5	<0.2	13.5	0.5	2.7
R472312	<50	5100	76	35	0.1	2.2	41	1.5	13.5	0.25	21	0.9	<0.5	<0.5	<0.2	9.5	0.7	2
R472314	550	5450	170	22	0.4	<0.1	24.5	2.3	21	0.05	12	1.1	<0.5	1.5	<0.2	7	0.3	1.1
R472315	1700	2800	115	18	0.3	<0.1	37	1.3	13	0.05	26.5	1.6	<0.5	<0.5	<0.2	7	0.2	0.51
R472316	3450	3350	130	25	0.4	<0.1	67	1.7	15	0.05	40.5	2.1	<0.5	0.5	<0.2	9.5	0.2	0.67
R472317	2600	11200	135	96	0.2	0.1	105	1.3	17	0.1	46	1.8	<0.5	<0.5	<0.2	15.5	0.1	0.83
R472318	300	6150	54	20	0.1	<0.1	98	0.7	16	0.05	43.5	1	<0.5	<0.5	<0.2	12.5	<0.1	0.69
R472319	200	7250	75	17	0.2	<0.1	98	1.5	20	0.05	46	1.8	<0.5	<0.5	<0.2	15.5	0.1	0.97
R472320	100	4900	45	9	<0.1	<0.1	52	0.9	11	<0.05	24	0.9	<0.5	<0.5	<0.2	8	<0.1	0.7
R472321	200	3900	35	7	<0.1	<0.1	32.5	0.8	8	<0.05	17.5	1	<0.5	<0.5	<0.2	8.5	0.1	0.73

Elements	S	Ti	V	Zn	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U
R472322	100	4650	54	10	0.1	<0.1	39.5	0.9	11	<0.05	19.5	0.9	<0.5	<0.5	<0.2	10.5	0.1	0.94
R472323	100	3250	47	13	<0.1	<0.1	24	0.3	7.5	<0.05	12	0.9	<0.5	<0.5	<0.2	5.5	<0.1	0.82
R472324	100	3250	44	26	0.2	<0.1	28.5	0.4	6.5	<0.05	14.5	0.9	<0.5	<0.5	<0.2	7.5	<0.1	1.15
R472325	300	2900	50	36	0.1	<0.1	52	2.3	14	<0.05	25.5	1.3	<0.5	<0.5	<0.2	10	0.7	1.15
R472326	200	1550	32	16	<0.1	<0.1	92	2.2	15	<0.05	42	0.8	<0.5	<0.5	<0.2	29	0.8	1.2
R472327	200	1650	26	24	<0.1	<0.1	170	2.7	16.5	<0.05	94	0.6	<0.5	<0.5	<0.2	46.5	0.8	1.75
R472328	50	1850	36	62	<0.1	<0.1	100	3.1	15	<0.05	45.5	1	<0.5	<0.5	<0.2	33.5	0.7	1.25
R472329	<50	2400	37	40	0.2	0.1	125	3.1	15.5	<0.05	59	0.7	<0.5	<0.5	<0.2	44.5	0.8	1.4
R472330	<50	3450	69	61	0.6	0.2	160	2.9	20	0.05	67	0.9	<0.5	<0.5	<0.2	52	0.6	2
R472332	300	8800	105	31	0.2	<0.1	50	2	15.5	0.05	30.5	2.3	<0.5	<0.5	<0.2	15	0.4	1.5
R472333	2100	9550	105	27	0.1	0.1	155	0.7	23	0.1	94	2.3	<0.5	0.5	<0.2	11.5	0.1	2.2
R472334	950	9600	74	80	<0.1	0.2	550	3.2	26	0.1	195	1.8	<0.5	0.5	<0.2	18.5	1.2	3.9
R472335	250	8850	110	150	<0.1	0.2	190	1.2	22	0.15	80	3.3	<0.5	<0.5	<0.2	14.5	0.7	2.9
R472336	500	7900	100	115	<0.1	0.3	195	1.2	22	0.1	87	4.9	<0.5	<0.5	<0.2	15.5	0.7	1.35
R472338	200	5150	66	24	0.3	<0.1	32	1.4	18.5	<0.05	17.5	1.9	<0.5	<0.5	<0.2	10	0.3	0.92
R472339	<50	8950	52	18	0.4	<0.1	90	0.4	20	0.05	48	2	<0.5	<0.5	0.2	15.5	<0.1	0.84
R472340	50	6400	59	14	0.3	<0.1	110	0.2	21.5	0.05	58	1.7	<0.5	<0.5	<0.2	25	<0.1	0.97
R472341	250	7300	77	17	0.3	0.1	36	0.3	28	0.1	32	2.1	<0.5	<0.5	<0.2	24.5	<0.1	1.1
R472342	600	6550	100	13	0.2	0.1	52	0.4	25.5	0.05	34	19.5	<0.5	<0.5	<0.2	32.5	<0.1	1.05
R472343	600	5950	97	21	0.3	0.1	170	0.9	25.5	0.05	85	3.2	<0.5	<0.5	<0.2	33.5	0.1	1.55
R472344	300	4850	125	33	0.1	<0.1	350	1.2	21.5	0.05	155	1.3	<0.5	<0.5	<0.2	23	0.2	2.7
R472345	200	3950	84	83	0.2	0.1	125	4	21	0.05	49.5	3	<0.5	<0.5	<0.2	15	0.8	2
R472346	100	4000	74	105	0.2	0.1	85	6	20	0.1	36	2.1	<0.5	<0.5	<0.2	12	1	2.2
R472347	100	4150	71	105	0.4	0.2	73	5	19	0.1	33.5	2.2	<0.5	2	0.3	9	1.2	3.8
R472348	<50	2750	54	95	0.1	0.2	42	4.2	16	0.05	24	1.8	<0.5	1.5	<0.2	10	0.9	1.25
R472350	350	8300	175	43	0.4	0.2	45	1.2	19	0.1	27.5	3.5	<0.5	1.5	0.2	11	0.2	1.2
R472351	150	8300	135	13	0.3	0.1	51	0.4	20	0.1	28	1.8	<0.5	1	0.2	14	<0.1	0.95
R472352	500	6850	98	14	0.3	0.2	96	0.2	21	0.05	55	1.6	<0.5	0.5	<0.2	23.5	<0.1	1.15
R472353	1750	5700	63	13	0.2	<0.1	50	0.2	15	0.1	46	1.5	<0.5	<0.5	<0.2	20	<0.1	0.8
R472354	200	7400	57	13	0.3	0.2	71	0.5	27.5	0.05	48.5	1.2	<0.5	<0.5	<0.2	32.5	<0.1	2
R472355	350	9400	78	16	0.2	0.1	240	0.4	21	0.05	125	1.4	<0.5	0.5	<0.2	55	<0.1	3.2
R472356	1200	8150	68	23	0.1	0.1	220	0.3	15.5	0.05	110	0.9	<0.5	0.5	<0.2	49	<0.1	2.7
R472357	400	4350	55	13	<0.1	<0.1	105	0.2	9.5	<0.05	55	1	<0.5	<0.5	<0.2	20.5	<0.1	1.35
R472358	750	7850	68	31	0.1	0.1	180	0.4	17.5	0.05	91	2	<0.5	<0.5	<0.2	33	0.1	2.3

Elements	S	Ti	V	Zn	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U
R472359	800	9450	60	20	0.1	0.1	210	0.4	15	0.05	110	1.4	<0.5	0.5	<0.2	34	0.2	2.2
R472360	200	8500	83	93	0.2	0.2	150	5	20	0.1	63	1.7	<0.5	1	<0.2	12.5	0.9	5.5
R472362	400	3950	130	82	0.5	<0.1	125	7.5	15.5	0.05	42.5	1.4	<0.5	<0.5	<0.2	7.5	0.8	2
R472363	50	3500	115	115	0.8	0.2	64	9	18.5	0.05	60	0.6	<0.5	1	<0.2	7	0.7	2.5
R472364	<50	3250	79	95	0.2	0.2	33.5	7	17.5	0.05	18	0.6	<0.5	<0.5	<0.2	4.9	0.6	2
R472366	100	2300	46	53	0.1	0.2	200	7	17	0.05	81	0.6	<0.5	0.5	<0.2	26.5	1.5	3.7
R472367	50	3000	87	120	0.5	0.2	135	8.5	20	0.05	65	0.7	<0.5	0.5	<0.2	25.5	0.8	4.6
R472368	50	3350	125	145	0.8	0.2	62	8	19.5	0.1	35	1	<0.5	0.5	<0.2	10.5	0.7	4.3
R472369	<50	2300	37	76	0.2	0.2	75	6.5	14	0.05	39	1	<0.5	<0.5	<0.2	17.5	0.5	3.2
R472371	300	2800	62	37	0.2	<0.1	65	2.2	16.5	<0.05	35.5	1.1	<0.5	<0.5	<0.2	11	0.3	1.6
R472372	100	2900	64	76	<0.1	<0.1	54	6	16	<0.05	29	0.7	<0.5	<0.5	<0.2	7	0.6	2.1
R472373	<50	3950	105	115	0.2	0.2	60	6	19	0.05	36	0.9	<0.5	0.5	<0.2	9.5	0.5	2.7
R472374	<50	5400	150	105	0.1	0.2	46	3.7	19	0.05	25.5	5	<0.5	<0.5	<0.2	5	0.3	2.3
R472376	5400	4150	125	18	0.3	0.1	135	1.9	14.5	0.05	61	2.7	<0.5	<0.5	<0.2	7	0.2	1.15
R472377	1600	6700	75	14	0.2	0.1	79	1.2	14	0.05	42.5	2.2	<0.5	<0.5	<0.2	17.5	0.1	1.55
R472378	200	3950	30	6	0.1	<0.1	44.5	0.2	9	<0.05	23.5	0.6	<0.5	<0.5	<0.2	10	<0.1	0.74
R472379	200	5200	46	9	0.2	0.2	52	0.4	13.5	0.05	30	1.1	<0.5	<0.5	<0.2	12	0.2	1.05
R472380	150	3300	25	5	<0.1	<0.1	22	0.2	9	<0.05	14	1.2	<0.5	<0.5	<0.2	8.5	<0.1	0.98
R472381	250	5850	62	11	0.1	0.1	63	0.9	18	0.05	35.5	2.9	<0.5	<0.5	<0.2	11	<0.1	0.92
R472382	100	6250	76	14	0.2	0.1	110	1.3	24.5	0.05	51	1.3	<0.5	<0.5	<0.2	15.5	<0.1	1.4
R472383	200	4300	68	22	0.2	0.1	105	1.2	23	0.05	67	1.5	<0.5	<0.5	<0.2	18	0.1	2.3
R472384	200	2900	38	20	<0.1	<0.1	53	1	18	<0.05	34	1.6	<0.5	<0.5	<0.2	13.5	0.2	1.5
R472385	100	3200	43	79	<0.1	<0.1	110	2.7	16.5	<0.05	46	1.1	<0.5	0.5	<0.2	17.5	0.6	4.8
R472386	<50	3950	78	130	<0.1	0.2	86	4.4	19	0.05	40.5	0.5	<0.5	1	<0.2	17.5	1.1	6.5
R472388	300	4050	50	9	0.1	<0.1	24.5	0.2	8	<0.05	16	0.8	<0.5	<0.5	<0.2	11	<0.1	0.59
R472389	150	5250	39	15	<0.1	0.1	55	0.2	12.5	<0.05	35.5	8	<0.5	<0.5	<0.2	12	<0.1	0.7
R472390	100	2100	18	7	<0.1	<0.1	26.5	0.2	6	<0.05	18	1.3	<0.5	<0.5	<0.2	5.5	<0.1	0.42
R472391	150	3950	21	9	0.2	0.2	71	0.4	13.5	<0.05	44.5	2.7	<0.5	0.5	<0.2	14.5	0.2	0.8
R472392	100	4950	40	18	0.2	0.1	125	1.1	16	<0.05	62	1.3	<0.5	0.5	<0.2	19	0.3	0.93
R472393	150	4800	44	34	0.2	0.1	100	3.1	16	0.1	42.5	1	<0.5	1	<0.2	16	0.6	1.65
R472394	100	4850	39	82	0.4	0.2	150	7.5	20.5	0.1	67	1	<0.5	1	<0.2	18	1	3.9
R472395	50	4800	36	78	0.4	0.1	170	5.5	18	0.05	82	0.9	<0.5	0.5	<0.2	25.5	1	5
R472397	350	3250	36	38	0.1	0.1	390	4.5	18.5	0.05	175	1.6	<0.5	1.5	<0.2	47.5	1.2	2.3
R472398	<50	3450	30	51	<0.1	0.1	165	3.3	17.5	0.05	75	2	<0.5	1	<0.2	23	1	2.6

Elements	S	Ti	V	Zn	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U
R472400	850	4150	75	26	0.4	0.1	50	1.1	10	<0.05	26.5	1.4	<0.5	2	<0.2	9	0.2	0.71
R472401	100	3100	20	7	0.2	<0.1	54	0.3	6.5	<0.05	25	0.5	<0.5	0.5	<0.2	9	<0.1	0.51
R472402	100	5200	39	10	0.1	<0.1	67	0.5	10.5	<0.05	35	0.9	<0.5	<0.5	<0.2	12	<0.1	0.76
R472403	150	4000	28	7	0.2	<0.1	32.5	0.6	9.5	<0.05	20	0.7	<0.5	<0.5	<0.2	11.5	<0.1	0.87
R472404	200	5050	46	10	0.2	0.1	59	1	16	0.05	34	0.7	<0.5	<0.5	<0.2	11.5	<0.1	0.87
R472405	300	5800	74	12	0.2	0.1	83	1.6	19.5	0.05	45	0.9	<0.5	<0.5	<0.2	15	<0.1	1.3
R472406	200	7150	74	13	0.2	0.2	115	1.4	18.5	0.05	60	1.2	<0.5	<0.5	<0.2	23	0.2	2.2
R472407	100	3150	37	9	<0.1	<0.1	98	1.2	11	<0.05	57	0.8	<0.5	<0.5	<0.2	15	0.3	1.45
R472408	100	3850	35	10	<0.1	<0.1	65	0.9	8	<0.05	37.5	0.8	<0.5	<0.5	<0.2	17.5	0.3	2.8
R472409	50	6200	57	16	<0.1	0.2	90	1.4	15	0.05	50	1.2	<0.5	<0.5	<0.2	25.5	0.5	5.5
R472410	100	5100	59	32	0.1	0.2	68	1.7	15	<0.05	38	1.4	<0.5	2.5	<0.2	19.5	0.5	7.5
R472411	250	4600	58	12	0.2	<0.1	27.5	0.9	11.5	<0.05	18.5	1.3	<0.5	<0.5	<0.2	10.5	<0.1	0.85
R472412	100	5350	38	12	0.1	<0.1	35.5	0.3	10.5	<0.05	23	0.5	<0.5	<0.5	<0.2	15	<0.1	0.89
R472413	100	3050	25	5	<0.1	<0.1	19	0.3	6.5	<0.05	14	0.5	<0.5	<0.5	<0.2	7.5	<0.1	0.51
R472414	150	6100	64	13	0.2	0.1	65	1.1	17.5	<0.05	38.5	1.3	<0.5	<0.5	<0.2	12	<0.1	1.05
R472415	300	3450	52	4	<0.1	<0.1	60	<0.1	6.5	<0.05	27	0.6	<0.5	<0.5	<0.2	6	<0.1	0.35
R472416	100	2800	46	6	<0.1	<0.1	56	0.3	6.5	<0.05	28	0.6	<0.5	<0.5	<0.2	6	<0.1	0.49
R472417	150	5450	57	14	0.1	0.1	93	1.8	18.5	0.05	53	1.1	<0.5	<0.5	<0.2	18.5	0.3	2.7
R472418	100	5450	44	31	<0.1	0.1	85	1.4	11	<0.05	43	1.2	<0.5	<0.5	<0.2	20	0.5	3.1
R472419	100	6000	51	39	0.2	0.2	105	1.8	19.5	0.05	54	1.4	<0.5	<0.5	<0.2	22	0.5	4.3
R472420	50	5150	36	44	0.1	0.2	96	2	18	0.05	55	0.9	<0.5	<0.5	<0.2	17	0.6	4.8
R472421	<50	2400	23	39	0.2	0.2	58	2.8	12	<0.05	28	1.9	<0.5	<0.5	<0.2	16.5	0.5	4
R472422	600	5250	46	14	0.1	0.1	58	0.7	12	<0.05	33.5	0.8	<0.5	<0.5	<0.2	11.5	<0.1	0.85
R472423	150	2800	16	4	<0.1	<0.1	18	0.2	5	<0.05	11.5	0.4	<0.5	<0.5	<0.2	6.5	<0.1	0.5
R472424	850	3950	28	5	0.1	<0.1	41.5	0.4	10.5	<0.05	24.5	0.4	<0.5	<0.5	<0.2	9.5	<0.1	0.63
R472425	1000	4050	35	5	<0.1	<0.1	33	0.2	8.5	<0.05	21.5	0.5	<0.5	<0.5	<0.2	8	<0.1	0.41
R472426	650	5600	54	8	0.2	<0.1	73	0.9	14.5	<0.05	41.5	0.7	<0.5	<0.5	<0.2	14.5	<0.1	1.2
R472427	800	4000	48	5	<0.1	<0.1	105	0.2	10	<0.05	42	0.8	<0.5	<0.5	<0.2	10.5	<0.1	0.71
R472428	650	5750	56	15	0.1	<0.1	91	0.4	14.5	<0.05	42.5	1.5	<0.5	<0.5	<0.2	18	<0.1	1.5
R472429	300	3000	20	15	0.5	0.1	99	1.3	14.5	<0.05	60	3.5	<0.5	<0.5	<0.2	32	0.3	2.9
R472430	100	2800	19	44	0.2	0.1	240	4.2	20.5	0.05	110	2.3	<0.5	1	<0.2	67	1.2	12
R472432	400	5950	79	15	0.2	0.1	72	0.7	13.5	<0.05	39	1.1	<0.5	<0.5	<0.2	13	<0.1	1.05
R472433	200	6100	45	10	0.2	0.1	91	0.6	15.5	<0.05	47.5	0.7	<0.5	<0.5	<0.2	16	<0.1	1.25
R472434	1650	2850	20	4	<0.1	<0.1	55	0.4	7.5	<0.05	31.5	0.3	<0.5	<0.5	<0.2	8.5	<0.1	0.79

Elements	S	Ti	V	Zn	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U
R472435	400	5300	34	10	<0.1	0.1	61	0.5	13	<0.05	42	0.4	<0.5	<0.5	<0.2	14	<0.1	1.25
R472436	600	4450	47	5	<0.1	<0.1	57	0.4	10	<0.05	30.5	0.5	<0.5	<0.5	<0.2	13	<0.1	0.92
R472437	100	3800	57	6	<0.1	<0.1	115	0.3	10	<0.05	52	0.6	<0.5	<0.5	<0.2	11	<0.1	0.92
R472438	50	7600	82	27	0.3	0.2	125	1.1	25	0.1	57	1.2	<0.5	<0.5	<0.2	29	<0.1	3.2
R472439	200	5000	58	38	0.4	0.1	180	2	21	0.05	52	2.6	<0.5	<0.5	<0.2	21.5	0.2	6
R472440	150	1850	24	33	0.3	<0.1	65	3.2	13	<0.05	30	1.5	<0.5	<0.5	<0.2	15	0.3	4.8
R472441	<50	2700	66	210	0.5	0.1	125	9	18	<0.05	52	3.3	<0.5	1	<0.2	11.5	0.8	11
R472442	<50	2850	55	350	0.2	0.2	22	19.5	15	<0.05	10.5	1.1	<0.5	0.5	<0.2	3.5	1.2	3.9
R472443	50	3800	90	400	0.4	0.2	37.5	18.5	16.5	0.05	17	1.5	<0.5	1	<0.2	6	1.3	7.5
R472445	150	3950	27	34	0.1	<0.1	40	1.3	11	<0.05	26	0.4	<0.5	<0.5	<0.2	11.5	0.1	1.35
R472446	150	4450	27	7	<0.1	<0.1	36	0.5	9.5	<0.05	22.5	0.3	<0.5	<0.5	<0.2	11	<0.1	0.73
R472447	450	6750	54	6	0.2	0.1	54	0.3	11.5	0.05	32	0.4	<0.5	2	<0.2	12	0.1	0.49
R472448	500	5150	46	5	0.1	<0.1	54	0.3	8	<0.05	31.5	0.5	<0.5	0.5	<0.2	10.5	0.1	0.63
R472449	200	6000	47	13	0.2	0.1	150	0.9	15.5	0.05	84	1.8	<0.5	0.5	<0.2	36.5	0.2	1.55
R472450	<50	850	19	26	0.2	<0.1	92	3.4	19.5	<0.05	50	0.7	<0.5	<0.5	<0.2	21	0.4	2.1
R472451	100	2800	52	230	0.4	0.3	700	32.5	29	0.05	390	2.5	<0.5	2	<0.2	24.5	4.1	7
R472452	50	3950	58	550	1	0.4	600	21	26.5	0.1	270	1	<0.5	4	4.3	54	2.8	21
R472454	700	5300	34	10	0.2	<0.1	29	0.4	14	<0.05	23.5	1.1	<0.5	<0.5	<0.2	9.5	<0.1	0.74
R472455	300	7600	36	4	0.2	0.1	74	0.3	14	<0.05	50	1.9	<0.5	<0.5	<0.2	11.5	<0.1	0.78
R472456	250	5450	51	15	0.9	0.2	105	1.2	21	<0.05	50	1.9	<0.5	<0.5	<0.2	18	0.1	2.2
R472457	100	4200	74	16	0.5	<0.1	50	2.3	19	0.05	23	1.2	<0.5	<0.5	<0.2	19	0.5	4.9
R472458	<50	3650	71	77	0.6	0.1	65	12.5	20	0.05	26.5	0.6	<0.5	<0.5	<0.2	13.5	0.9	6
R472459	<50	4250	81	155	0.3	0.2	96	9	20	0.05	46	0.9	<0.5	<0.5	<0.2	16.5	0.7	6
R472460	<50	3450	66	410	0.2	0.2	44	17.5	16	0.05	23.5	0.7	<0.5	<0.5	<0.2	9	1.6	2.5
R472462	1400	8750	220	40	0.3	0.2	16.5	4.6	25	0.1	11.5	9	<0.5	<0.5	<0.2	10.5	0.4	4.5
R472463	400	3900	91	75	0.2	0.1	120	12.5	19	0.1	55	2.5	<0.5	0.5	<0.2	17.5	1.1	10.5
R472464	100	5750	145	100	0.3	0.2	51	11.5	19	0.1	25	2.6	<0.5	0.5	<0.2	13.5	0.6	3
R472465	50	2350	63	50	0.1	0.1	29.5	7.5	16.5	<0.05	16.5	3.3	<0.5	<0.5	<0.2	20	0.7	2.8
R472466	50	4900	140	98	0.2	0.2	45.5	14	20	0.05	22	3.2	<0.5	<0.5	<0.2	14	0.8	3.4
R472468	350	4250	60	9	0.1	<0.1	34	0.4	11.5	<0.05	21	0.9	<0.5	<0.5	<0.2	14	<0.1	0.64
R472469	200	4500	47	4	0.2	<0.1	32.5	0.5	11	<0.05	21	0.7	<0.5	<0.5	<0.2	13	<0.1	0.74
R472470	550	3600	40	4	<0.1	<0.1	36.5	0.2	11.5	<0.05	25	1.1	<0.5	<0.5	<0.2	11.5	<0.1	0.67
R472471	900	5450	38	5	<0.1	0.1	53	0.3	11	0.05	36	3.4	<0.5	<0.5	<0.2	21	<0.1	1.6
R472472	300	7600	71	18	0.4	0.2	135	1.3	29	0.1	74	2.2	<0.5	<0.5	<0.2	25.5	0.1	3

Elements	S	Ti	V	Zn	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U
R472473	200	6550	63	15	0.5	0.2	150	2	24	0.1	72	2.1	<0.5	<0.5	<0.2	23.5	0.2	4.6
R472474	100	7150	67	48	0.5	0.2	98	2.3	23	0.1	51	1.9	<0.5	<0.5	<0.2	21.5	0.4	11
R472475	150	5800	75	120	0.5	0.4	79	3.6	22	0.05	45.5	3.6	<0.5	1	<0.2	17.5	0.5	8.5
R472476	100	6100	66	120	0.3	0.3	99	2.8	17.5	0.05	50	2.8	<0.5	3.5	<0.2	20	0.6	12.5
R472477	350	5750	72	135	0.6	0.3	120	5.5	24.5	0.05	59	2.3	<0.5	2	<0.2	20.5	0.5	10.5
R472478	3650	5250	87	450	0.5	0.8	120	4.6	23.5	0.05	65	4.5	<0.5	6	<0.2	20.5	2.4	12.5
R472479	250	2500	32	54	0.3	0.1	48	2.2	10.5	<0.05	26	1.9	<0.5	<0.5	<0.2	11	0.4	4.5
R472480	100	3800	69	105	<0.1	0.2	56	3.6	15.5	0.05	24	1.9	<0.5	<0.5	<0.2	9	1.2	6
R472482	250	3650	77	59	<0.1	0.1	37.5	2.3	12	<0.05	20	1.2	<0.5	<0.5	<0.2	8.5	0.4	1.4
R472483	650	3500	105	120	<0.1	0.1	68	3.4	15.5	0.05	35	0.9	<0.5	<0.5	<0.2	9.5	0.6	1.5
R472484	<50	3550	105	68	<0.1	0.1	43	2.8	17.5	0.05	22.5	1.4	<0.5	<0.5	<0.2	4.1	0.5	0.98
R472486	50	1650	28	20	<0.1	<0.1	23	2.6	13.5	<0.05	12.5	0.7	<0.5	<0.5	<0.2	2.5	0.2	0.94
R472487	<50	2900	43	32	0.1	0.1	34	4	16	0.05	18	0.7	<0.5	<0.5	<0.2	3	0.3	1.15
R472488	<50	3900	92	49	<0.1	0.2	49	4.7	18	0.05	26	0.9	<0.5	<0.5	<0.2	3.6	0.4	0.94
R472490	150	3250	61	61	<0.1	0.1	98	5.5	17	0.05	47.5	0.9	<0.5	<0.5	<0.2	21	0.6	1.5
R472491	<50	2100	47	53	<0.1	0.1	260	3.8	17	<0.05	135	0.9	<0.5	<0.5	<0.2	58	0.7	1.35
R472493	500	3750	105	86	0.1	0.1	67	2.7	17	0.05	36.5	3.8	<0.5	<0.5	0.5	12	0.4	0.79
R472494	100	4400	135	76	0.1	0.1	44	4	18.5	0.05	22	1.4	<0.5	<0.5	0.3	4	0.4	0.82
R472496	1100	1550	29	14	0.1	<0.1	84	2.6	17	<0.05	44	0.5	<0.5	<0.5	<0.2	64	0.6	2.1
R472497	100	1450	30	21	<0.1	<0.1	220	3.5	18.5	<0.05	105	0.3	<0.5	<0.5	<0.2	45	0.8	4.2
R472498	50	3300	59	84	0.1	0.1	310	4.6	19	<0.05	160	0.4	<0.5	0.5	<0.2	41.5	0.9	11.5
R472499	<50	1300	26	55	<0.1	<0.1	95	4.8	15.5	<0.05	53	0.4	<0.5	<0.5	<0.2	14	0.7	2.7
R472500	<50	3450	56	90	0.3	0.2	195	4.5	21	0.05	98	0.8	<0.5	1	0.3	24.5	1	3.7
R472501	50	4400	65	72	0.2	0.2	220	4.3	21	0.05	110	0.9	<0.5	<0.5	0.3	19.5	1	3.1
R472502	50	4800	86	88	0.2	0.5	270	5.5	23	0.1	130	1.1	<0.5	1	0.2	26	1.1	3.3
R472504	1350	3800	67	54	0.4	0.1	95	3.2	18	0.05	43.5	1.4	<0.5	1	<0.2	15	0.8	2.2
R472505	1250	3400	58	46	0.2	0.1	125	3.6	16	0.05	56	1.2	<0.5	1	0.2	12.5	0.9	2.4
R472506	350	4250	70	76	0.2	0.2	490	5.5	23.5	0.15	185	2.4	<0.5	1	<0.2	16	1.3	6.5
R472507	150	4450	37	57	0.1	0.3	300	3.6	20.5	0.1	145	2.1	<0.5	1	<0.2	18	1.3	8
R472508	50	4400	46	93	<0.1	0.3	210	3	22	0.1	81	2.4	<0.5	1	<0.2	13	1.2	5.5
R472509	<50	4950	53	100	0.1	0.5	230	3.1	26	0.15	89	3.4	<0.5	1	<0.2	16.5	1.3	4.4
R472510	<50	5150	55	74	0.1	0.3	195	2.4	23	0.1	82	2.7	<0.5	0.5	<0.2	15	1	3.7
R472512	250	5000	77	32	0.2	0.1	44	2.5	14.5	<0.05	22.5	1.3	<0.5	<0.5	<0.2	14.5	0.5	1.4
R472513	800	2450	52	35	0.1	0.2	88	3.1	16.5	<0.05	41	1.1	<0.5	0.5	<0.2	12	0.7	2.1

Elements	S	Ti	V	Zn	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U
R472514	<50	2950	43	42	0.1	0.2	120	4.4	16.5	<0.05	61	1	<0.5	0.5	<0.2	11.5	0.8	2.6
R472515	250	13500	290	120	<0.1	0.3	76	1.9	22.5	0.1	40.5	1.3	<0.5	1	<0.2	6.5	0.4	1.1
R472517	650	2950	36	45	<0.1	0.1	79	1	19	0.05	40	0.9	<0.5	<0.5	<0.2	7.5	0.7	0.31
R472518	50	3150	42	71	0.1	0.2	91	0.8	18.5	0.1	47.5	0.8	<0.5	0.5	<0.2	9	0.6	0.27
R472520	2050	5100	61	56	<0.1	0.2	100	0.8	13	0.05	49	8.5	<0.5	<0.5	<0.2	4.8	0.4	2.1
R472521	100	6150	73	96	<0.1	0.2	150	0.8	19.5	0.1	68	1.6	<0.5	<0.5	<0.2	9	0.5	0.83
R472522	250	6550	75	110	<0.1	0.2	230	0.7	22	0.1	110	1.3	<0.5	<0.5	<0.2	16.5	0.7	0.63
R472523	400	6450	77	91	<0.1	0.3	200	0.6	25.5	0.1	86	1.7	<0.5	0.5	<0.2	7.5	0.8	0.55
R472525	250	6800	87	81	<0.1	0.2	155	1.3	21	0.1	73	1.6	<0.5	0.5	<0.2	8	0.6	0.7
R472526	250	7500	86	99	<0.1	0.2	195	1.2	21.5	0.1	96	1.7	<0.5	<0.5	<0.2	7	0.6	0.64
R472528	16100	11500	150	33	<0.1	0.2	250	0.4	28.5	0.1	100	1.7	<0.5	<0.5	<0.2	9	0.7	1.25
R472529	6000	4450	48	29	<0.1	0.1	195	1.1	19.5	0.05	78	2	<0.5	<0.5	<0.2	6.5	1.2	1.2
R472530	1000	6350	93	145	<0.1	0.2	135	2	20.5	0.1	65	2.4	<0.5	<0.5	<0.2	4.6	0.6	0.83
R472532	750	3000	49	41	<0.1	<0.1	125	2.5	16.5	<0.05	58	1.1	<0.5	<0.5	<0.2	21.5	0.9	1.6
R472533	450	2450	36	39	<0.1	<0.1	145	1.7	17	<0.05	79	1	<0.5	<0.5	<0.2	23.5	1.1	1.65
R472534	<50	2100	30	36	<0.1	<0.1	155	1.7	18	<0.05	92	0.8	<0.5	<0.5	<0.2	25	1	0.83
R472536	500	3350	68	46	0.2	0.1	69	3.1	17.5	0.05	40	0.7	<0.5	<0.5	<0.2	15.5	0.7	1.2
R472537	150	3100	44	73	0.1	0.2	165	3.6	18.5	0.1	81	0.9	<0.5	<0.5	<0.2	16	1.2	4.7
R472538	<50	3500	44	99	0.2	0.2	120	2.4	20	0.1	44.5	1.3	<0.5	<0.5	<0.2	13.5	1.1	4.1
R472539	<50	4000	51	105	0.2	0.2	100	2.8	17.5	0.1	41	1.9	<0.5	<0.5	<0.2	10.5	0.8	3.4
R472540	<50	4150	66	69	0.2	0.2	110	3.3	19.5	0.1	39	1.6	<0.5	<0.5	<0.2	13.5	0.8	2.8
R472541	<50	4000	51	58	0.2	0.2	110	2.7	18.5	0.1	44	1.5	<0.5	<0.5	<0.2	17.5	0.7	3
R472543	300	8450	150	110	0.2	0.5	72	2.4	18	0.1	40	0.8	<0.5	<0.5	<0.2	10	0.7	1.8
R472544	350	23900	320	250	<0.1	0.2	72	2.9	21.5	0.1	32	1.3	<0.5	<0.5	<0.2	3.4	0.5	1.6
R472545	50	29400	390	175	<0.1	0.3	64	1.9	25.5	0.15	29.5	1.6	<0.5	<0.5	<0.2	4	0.3	0.89
R472547	400	2800	71	38	0.2	0.1	68	2.4	15	<0.05	36	1.8	<0.5	<0.5	<0.2	12	0.6	1.5
R472548	300	2850	68	41	0.1	0.1	74	2.3	16	<0.05	45	0.9	<0.5	<0.5	<0.2	12	0.5	1.45
R472549	100	950	19	17	<0.1	<0.1	86	3	15	<0.05	52	1.3	<0.5	<0.5	<0.2	35.5	0.9	0.86
R472550	<50	490	9	18	<0.1	<0.1	43.5	1.4	14.5	<0.05	26.5	1.4	<0.5	<0.5	<0.2	29	1.1	0.5
R472551	<50	550	21	26	<0.1	<0.1	71	1.9	13.5	<0.05	42	1.7	<0.5	<0.5	<0.2	34.5	1.9	0.67
R472552	550	5700	230	160	<0.1	0.2	10	1.7	17.5	0.05	5.5	1	<0.5	<0.5	<0.2	1	0.2	0.66
R472554	300	2700	71	62	0.2	0.1	260	2.8	19.5	<0.05	135	2.8	<0.5	<0.5	<0.2	33.5	1.1	1.1
R472556	3150	6450	115	50	0.2	0.2	145	1.5	20	0.1	68	1.9	<0.5	0.5	<0.2	12.5	0.5	1.95
R472557	100	7200	79	100	<0.1	0.2	180	0.4	19	0.1	85	2.8	<0.5	1	0.3	6	0.6	0.62

Elements	S	Ti	V	Zn	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U
R472559	3800	3300	94	15	<0.1	<0.1	155	1.1	16	<0.05	82	0.8	<0.5	<0.5	0.4	27.5	0.9	1.05
R472560	750	4200	130	29	<0.1	<0.1	78	1.5	19.5	0.1	59	0.8	<0.5	<0.5	<0.2	15.5	0.9	0.58
R472561	150	5900	98	130	<0.1	0.2	175	2	22	0.15	61	0.7	<0.5	1	<0.2	8	0.9	0.94
R472562	400	3250	45	75	<0.1	<0.1	110	1.2	15.5	0.05	55	0.7	<0.5	0.5	<0.2	13	0.9	0.61
R472563	1000	1550	33	40	<0.1	<0.1	175	0.8	13	<0.05	85	0.6	<0.5	0.5	<0.2	34	0.9	0.65
R472564	150	3750	71	75	<0.1	<0.1	120	1.2	18.5	0.05	60	0.8	<0.5	0.5	<0.2	16.5	0.8	0.72
R472565	600	2900	62	71	<0.1	<0.1	70	0.9	16	0.05	34.5	1.1	<0.5	0.5	<0.2	4.4	0.7	0.25
R472567	1250	3850	99	60	0.1	<0.1	64	2.1	14.5	0.05	38.5	1	<0.5	0.5	<0.2	10.5	0.5	1.5
R472568	700	3650	140	82	<0.1	<0.1	240	1.5	15.5	0.1	155	0.6	<0.5	0.5	<0.2	2.5	0.3	2.6
R472569	300	6050	260	175	<0.1	0.1	250	1.8	23	0.2	92	0.8	<0.5	1	<0.2	2.9	0.7	1.6
R472571	100	6100	220	110	<0.1	0.2	64	1.1	18.5	0.1	29	0.9	<0.5	<0.5	<0.2	3.3	0.3	0.28
R472572	900	5850	220	98	<0.1	0.2	74	1	19.5	0.1	32.5	1.8	<0.5	<0.5	<0.2	3.2	0.3	0.38
R472573	950	5100	180	89	<0.1	<0.1	76	1.1	16	0.1	34.5	2.1	<0.5	<0.5	<0.2	6.5	0.3	0.41
R472574	1000	3950	140	70	<0.1	0.2	72	1.1	14	0.1	32.5	2.1	<0.5	<0.5	<0.2	4.6	0.3	0.39
R472575	1450	6200	250	105	<0.1	0.2	80	0.5	20.5	0.1	34	7.5	<0.5	<0.5	<0.2	2.1	0.2	0.29
R472577	150	6700	110	105	<0.1	<0.1	330	0.6	22	0.1	160	1.7	<0.5	<0.5	<0.2	9.5	0.6	0.38
R472578	50	6400	115	97	<0.1	0.2	260	0.6	21	0.15	120	1.8	<0.5	0.5	<0.2	9	0.7	0.42
R472579	150	2850	115	74	<0.1	0.2	78	0.3	14.5	0.1	37.5	1.8	<0.5	<0.5	<0.2	5.5	0.3	0.43
R472580	250	3750	100	88	<0.1	0.2	98	0.2	16	0.15	42.5	1.8	<0.5	<0.5	<0.2	3.5	0.1	0.43
R472581	200	2000	63	69	<0.1	0.1	61	0.2	14	0.05	29.5	1.9	<0.5	<0.5	<0.2	2.9	0.2	0.31
R472583	150	2950	87	40	<0.1	<0.1	50	1.6	12	<0.05	25.5	1	<0.5	<0.5	<0.2	8.5	0.6	0.95
R472584	50	3450	195	140	<0.1	<0.1	35.5	0.6	16	0.05	17	0.4	<0.5	<0.5	<0.2	1.9	0.2	0.72
R472585	<50	1950	31	63	<0.1	0.1	55	2.1	15	0.1	29	1.4	<0.5	<0.5	<0.2	16	0.7	1.4
R472586	100	1750	64	51	<0.1	<0.1	45.5	2.5	13.5	<0.05	26.5	0.8	<0.5	<0.5	<0.2	10	0.6	0.73
R472588	150	3400	99	46	<0.1	<0.1	50	1.2	14	<0.05	29.5	0.5	<0.5	<0.5	<0.2	9.5	0.5	0.75
R472589	<50	2950	73	71	<0.1	<0.1	56	1.2	15	<0.05	31.5	0.3	<0.5	<0.5	<0.2	12	0.6	0.47
R472590	150	5100	160	125	<0.1	<0.1	130	0.8	17.5	0.05	63	0.2	<0.5	<0.5	<0.2	6.5	0.3	0.88
R472591	<50	3400	115	94	<0.1	<0.1	43	0.7	15	<0.05	25	0.1	<0.5	<0.5	<0.2	5.5	0.4	0.56
R472592	<50	2400	73	81	<0.1	<0.1	67	0.9	14	<0.05	41	0.2	<0.5	<0.5	<0.2	19	0.6	0.84
R472593	150	2650	91	68	<0.1	0.3	73	1.6	15	<0.05	43	0.3	<0.5	<0.5	<0.2	14.5	0.5	0.6

Geochemical analysis of end-of-hole (EOH) samples R472190-R472594 (not consecutive)

Element	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Al2O3	CaO	Fe2O3	K2O	MgO	MnO	Na2O	P2O5	SiO2	TiO2	Cr	Sc
Units	ppb	ppb	ppb	ppb	ppb	ppb	%	%	%	%	%	%	%	%	%	%	ppm	ppm
Method	FA3	FA3	FA3	FA3	FA3	FA3	IC4	IC4	IC4	IC4	IC4	IC4	IC4	IC4	IC4	IC4	IC4	IC4
Detection Limit	1	1	5	5	1	1	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.005	20	5
R472190	<1	--	<5	--	<1	--	13.8	2.46	5	4.75	0.88	0.11	2.66	0.39	66.7	0.725	<20	15
R472196	2	--	<5	--	<1	--	13.4	2.23	4.12	2.79	1.06	0.06	3.2	0.08	70.3	0.255	40	15
R472202	<1	--	<5	--	<1	--	14.2	2.2	3.92	4.87	0.81	0.09	2.76	0.51	67	0.9	<20	20
R472210	<1	--	<5	--	<1	--	12.8	2.49	6.63	4.66	0.99	0.12	2.52	0.51	66.2	0.96	<20	15
R472215	<1	<1	<5	<5	<1	<1	13.6	3.48	7.3	4.2	0.99	0.13	2.53	0.6	62.7	1.13	30	20
R472220	<1	<1	<5	<5	<1	2	15.5	0.25	6	5.11	0.85	0.07	0.27	0.18	64.8	1.07	<20	40
R472226	<1	--	<5	--	<1	--	15.7	2.46	5.17	5.25	1.19	0.09	3.18	0.17	63.7	0.415	<20	5
R472230	<1	--	<5	--	<1	--	16.2	5.48	7.57	1.74	2.86	0.18	3.31	0.19	59.6	0.535	120	30
R472235	<1	--	<5	--	<1	--	7.78	0.9	6.72	2.61	0.22	0.04	1.1	0.06	77.1	0.75	50	5
R472239	<1	--	<5	--	<1	--	13.1	1.63	4.9	3.68	1.73	0.07	3.53	0.46	66.2	0.865	<20	15
R472241	<1	--	<5	--	<1	--	13.2	1.91	6.28	4.06	2.63	0.07	2.99	0.61	64	1.1	<20	20
R472251	<1	--	<5	--	<1	--	15.2	3.03	3.23	2.57	1.17	0.06	3.44	0.11	69.2	0.43	20	5
R472256	<1	--	<5	--	<1	--	15	2.12	2.83	3.91	0.85	0.05	3.17	0.09	69.7	0.27	<20	10
R472261	<1	--	<5	--	<1	--	13.5	1.54	3.5	4.16	0.31	0.04	2.82	0.03	72.3	0.155	20	<5
R472262	<1	--	<5	--	<1	--	13.6	2.95	7.5	4.41	1.09	0.19	2.73	0.66	64	1.06	<20	20
R472264	1	--	<5	--	<1	--	17.5	6.4	8.25	1.37	2.62	0.2	4.14	0.36	56.8	0.815	<20	30
R472267	<1	--	<5	--	<1	--	14.1	2.78	6.85	4.59	1.24	0.11	2.83	0.39	64.9	0.905	<20	15
R472272	<1	--	<5	--	1	--	14.1	1.4	9.17	3.06	7.44	0.21	2.02	0.38	54.5	1.17	130	25
R472275	<1	--	<5	--	<1	--	13.8	0.89	5.41	5.89	1.17	0.08	2.61	0.3	65.1	0.815	<20	20
R472281	<1	--	<5	--	<1	--	13.9	2.12	5.88	3.4	2.16	0.15	2.97	0.27	65.2	0.545	70	35
R472289	<1	<1	<5	<5	<1	<1	13.4	2.97	7.78	4.51	1.14	0.15	2.86	0.49	64.9	1.13	30	20
R472313	<1	--	<5	--	<1	--	15.7	0.2	2.59	4.64	0.59	0.03	0.19	0.08	69.7	1.19	50	20
R472331	1	--	<5	--	<1	--	14.5	1.76	5.83	4.91	1.59	0.1	2.66	0.37	65.2	0.555	50	15
R472337	<1	--	<5	--	<1	--	13.9	3.6	9.21	4.13	1.63	0.19	2.83	0.67	62.4	1.45	150	25
R472349	<1	--	<5	--	<1	--	13.4	0.81	2.89	5.38	0.5	0.19	2.5	0.04	71.4	0.155	30	10
R472361	<1	--	<5	--	<1	--	14.3	2.97	7.67	4.28	1.39	0.15	3.01	0.38	63.7	1.06	<20	20
R472365	<1	--	<5	--	2	--	15.2	3.19	6.38	1.74	2.49	0.15	2.12	0.1	63.8	0.49	70	25
R472370	<1	--	<5	--	<1	--	11.3	1.01	5.16	2.53	0.56	0.1	1.55	0.05	73.4	0.225	50	5
R472375	<1	--	<5	--	<1	--	15.3	3.96	5.8	1.34	1.57	0.14	3.56	0.24	65.9	0.535	20	20
R472387	<1	--	<5	--	<1	--	17.6	0.1	4.67	4.94	0.59	0.11	0.2	0.06	65.5	0.57	30	15

Element	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Al2O3	CaO	Fe2O3	K2O	MgO	MnO	Na2O	P2O5	SiO2	TiO2	Cr	Sc
R472396	<1	--	<5	--	<1	--	14.1	1.42	4.45	5.54	0.54	0.08	2.51	0.18	69.1	0.495	<20	5
R472399	<1	--	<5	--	<1	--	14	1.39	3.58	5.74	0.56	0.09	2.72	0.16	70	0.495	<20	<5
R472431	<1	--	<5	--	<1	--	14.3	0.15	2.67	5.92	0.21	0.06	0.64	0.07	70.7	0.41	<20	5
R472444	<1	--	<5	--	<1	--	13.3	0.15	4.9	4.95	0.89	0.08	0.44	0.04	69.8	0.345	20	10
R472453	<1	--	<5	--	<1	--	14.4	0.57	5.67	4.96	1.33	0.1	1.92	0.07	65.6	0.485	30	15
R472461	1	--	<5	--	1	--	13.7	1.88	7.17	2.6	1.85	0.75	3.23	0.17	63.8	0.45	140	15
R472467	<1	--	<5	--	<1	--	15.6	3.14	5.66	3.8	2.18	0.12	3.7	0.24	63.9	0.56	60	15
R472481	<1	--	<5	--	<1	--	15.7	1.5	8.04	3.02	1.92	0.23	3.52	0.21	59.6	0.61	80	20
R472485	3	2	<5	<5	<1	<1	15.6	4.23	6.94	3.71	2.42	0.13	2.15	0.09	61.5	0.57	90	15
R472489	2	--	<5	--	<1	--	18	5.72	7.63	1.75	2.74	0.15	3.52	0.25	58	0.74	90	20
R472492	2	--	<5	--	<1	--	16.3	4.81	6.59	2.08	2.66	0.17	3.35	0.15	61.6	0.555	210	20
R472495	2	--	<5	--	2	--	17.6	6.58	9.15	1.79	3.94	0.18	1.48	0.17	57.4	0.74	60	30
R472503	<1	--	<5	--	<1	--	13.2	1.71	6.77	5.99	2.15	0.56	2.17	0.98	60.2	0.99	110	30
R472511	<1	--	<5	--	<1	--	14.8	1.61	4.33	5.15	0.99	0.11	3.5	0.27	66.2	0.735	<20	15
R472516	4	5	5	5	16	19	12.7	8.76	15.6	0.74	6.12	0.28	2.37	0.21	48.9	2.46	120	50
R472519	1	--	<5	--	<1	--	15.1	5.32	6.19	3.15	1.93	0.17	4.28	0.28	60.2	0.76	<20	20
R472524	<1	--	<5	--	<1	--	14.2	2.86	6.91	4.85	1.28	0.14	3.07	0.46	63.6	1.09	<20	15
R472527	<1	--	<5	--	<1	--	13.9	3.65	7.52	4.68	1.45	0.15	2.95	0.46	62.6	1.29	<20	20
R472531	<1	--	<5	--	<1	--	15.4	2.29	8.16	3.37	1.79	0.15	3.81	0.57	59.8	1.45	20	20
R472535	<1	--	<5	--	<1	--	13.6	0.78	2.81	5.28	0.68	0.04	3.11	0.13	71.5	0.435	<20	5
R472542	<1	--	<5	--	<1	--	14.2	3.05	3.09	5.55	0.72	0.07	2.45	0.2	68	0.58	<20	15
R472546	8	9	<5	<5	24	23	12.7	9.36	16.7	0.73	4.69	0.23	2.51	0.36	47.7	3.53	80	45
R472553	2	1	<5	<5	6	4	13.5	1.95	10.3	2.1	3.55	0.39	1.63	0.18	51.3	0.63	1400	30
R472555	3	--	<5	--	<1	--	14.6	3.52	5.78	3.74	1.79	0.13	2.98	0.17	65	0.495	170	15
R472558	<1	--	<5	--	<1	--	14.1	3.51	7.48	4.35	1.17	0.16	2.82	0.52	63.4	1.12	20	20
R472566	<1	--	<5	--	<1	--	14.9	2.07	4.31	3.55	0.96	0.05	3.63	0.14	67.9	0.515	30	20
R472570	1	--	<5	--	3	--	18.3	6.48	11.4	1.41	2.86	0.1	3.64	0.29	51.4	0.95	80	35
R472576	4	--	<5	--	1	--	16	8.61	11.1	1.34	4.94	0.19	3.13	0.31	51.3	0.89	80	35
R472582	2	--	<5	--	1	--	14.2	6.02	8.03	1.41	3	0.14	3.76	0.16	62.1	0.59	80	35
R472587	7	8	<5	<5	<1	<1	13.9	3.02	5.18	2.91	1.7	0.1	3.18	0.08	68	0.42	50	15
R472594	<1	--	<5	--	<1	--	14.3	2.73	5.49	3.69	0.97	0.05	2.87	0.09	68	0.405	50	10

Element	V	Ba	Be	Hf	Nb	Rb	Sn	Sr	Ta	W	Zr	LOI	Ag	As	Co	Cu	Ni	Pb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
Method	IC4	IC4M	IC4M	IC4M	IC4M	IC4M	IC4M	IC4M	IC4M	IC4M	IC4M	GRAV7	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E

Element	V	Ba	Be	Hf	Nb	Rb	Sn	Sr	Ta	W	Zr	LOI	Ag	As	Co	Cu	Ni	Pb
Detection Limit	20	10	0.5	1	10	0.5	10	5	2	3	15	0.01	1	3	2	2	2	5
R472190	50	1250	1.5	11	30	190	<10	290	3	<3	350	1.53	<1	12	10	16	2	35
R472196	50	600	1	3	<10	120	<10	185	<2	<3	80	1.62	<1	4	8	28	13	20
R472202	60	1650	1.5	9	25	185	<10	330	3	<3	280	1.46	<1	10	20	17	9	30
R472210	70	1450	1.5	12	30	145	<10	290	3	<3	400	0.98	<1	8	15	16	3	30
R472215	80	1450	2	11	15	130	<10	310	<2	<3	380	1.49	<1	12	16	18	5	35
R472220	80	1800	1.5	11	35	340	<10	390	3	<3	410	5.83	<1	14	13	19	4	35
R472226	60	1100	1.5	12	<10	220	<10	370	<2	<3	360	1.38	<1	10	9	19	7	40
R472230	100	500	1.5	4	<10	77	<10	490	<2	<3	120	3.13	<1	6	17	39	36	20
R472235	120	1050	1	3	<10	75	<10	210	<2	<3	130	1.83	<1	12	10	11	8	25
R472239	60	950	2	11	30	120	<10	280	3	<3	340	3.74	<1	4	20	6	10	20
R472241	70	1350	1.5	10	30	110	<10	220	2	<3	400	2.57	<1	<3	17	15	5	25
R472251	40	600	2.5	2	<10	140	15	430	<2	<3	80	0.84	<1	10	11	19	12	25
R472256	50	750	2	2	<10	165	<10	270	<2	<3	70	1.8	<1	8	15	22	23	30
R472261	20	650	2.5	6	<10	160	<10	155	<2	<3	170	1.07	<1	8	5	9	10	30
R472262	70	1500	3.5	9	25	190	20	350	<2	<3	380	1.36	<1	4	16	13	5	35
R472264	120	310	2	4	<10	88	<10	750	<2	<3	150	1.01	<1	<3	16	64	5	25
R472267	80	1100	2.5	9	25	200	<10	310	2	<3	380	0.99	<1	8	14	23	6	25
R472272	120	700	3	7	20	125	<10	100	<2	<3	260	5.86	<1	<3	28	39	72	15
R472275	60	1050	3.5	10	30	220	<10	290	4	<3	320	2.26	<1	8	12	26	8	20
R472281	70	480	3.5	3	15	230	<10	180	<2	<3	100	2.16	<1	6	21	28	37	20
R472289	80	1150	3	9	35	185	<10	290	3	<3	370	0.74	<1	8	18	21	7	30
R472313	70	1050	2.5	14	25	175	<10	135	3	<3	550	5.53	<1	6	15	29	15	30
R472331	60	1050	2	9	15	185	<10	220	<2	<3	300	3.41	<1	10	13	65	9	30
R472337	110	1300	3	12	35	170	<10	310	3	<3	550	0.88	<1	12	26	32	12	40
R472349	<20	650	2	2	<10	220	<10	145	<2	<3	70	3	<1	8	9	8	16	40
R472361	80	1400	3	13	30	185	<10	360	2	<3	470	1.41	<1	4	18	23	6	30
R472365	90	410	3.5	3	<10	140	<10	200	<2	<3	110	2.86	<1	8	19	17	42	20
R472370	40	550	2.5	4	<10	105	<10	145	<2	<3	150	2.36	<1	4	9	49	16	25
R472375	80	430	2	3	<10	73	<10	390	<2	<3	110	1.96	<1	<3	13	35	11	20
R472387	70	900	3.5	5	10	250	<10	150	<2	<3	190	5.62	<1	<3	17	61	21	30
R472396	30	1050	2.5	8	10	210	<10	250	<2	<3	310	1.21	<1	10	10	13	5	30
R472399	30	900	2.5	6	20	280	<10	230	2	<3	280	0.65	<1	10	9	16	5	30
R472431	<20	700	4	8	20	350	<10	95	<2	4	300	3.63	<1	10	23	37	32	50
R472444	40	380	4.5	5	<10	270	<10	45	<2	<3	160	4.32	<1	10	27	53	65	40
R472453	50	850	8	6	10	270	<10	110	<2	<3	160	4.72	<1	6	25	16	110	40
R472461	70	1050	3.5	4	<10	170	<10	290	<2	<3	110	4.28	<1	6	44	175	84	55
R472467	90	700	2.5	4	<10	195	40	310	<2	<3	130	1.51	<1	4	15	33	12	30
R472481	100	1050	3.5	4	10	170	<10	270	<2	<3	130	5.42	<1	8	33	17	55	20
R472485	100	850	2.5	5	<10	150	<10	330	<2	<3	170	2.16	<1	6	19	54	33	20

Element	V	Ba	Be	Hf	Nb	Rb	Sn	Sr	Ta	W	Zr	LOI	Ag	As	Co	Cu	Ni	Pb
R472489	110	460	2	3	<10	105	<10	480	<2	<3	110	1.33	<1	4	18	6	13	15
R472492	100	650	1.5	5	<10	120	<10	400	<2	<3	140	2.02	<1	4	16	5	17	25
R472495	170	450	1.5	3	<10	99	<10	380	<2	<3	80	1.13	<1	10	25	66	24	15
R472503	80	2800	4	10	25	330	<10	370	3	<3	380	4.1	<1	8	32	3	76	30
R472511	40	1650	3	10	40	280	<10	290	7	<3	360	1.51	<1	4	11	12	3	40
R472516	340	140	1	4	10	40.5	<10	210	<2	<3	140	1.79	<1	8	52	260	76	30
R472519	80	1050	2.5	6	15	91	<10	330	<2	<3	200	2.01	<1	<3	17	31	9	25
R472524	80	1600	3	8	25	165	<10	340	<2	<3	320	1.51	<1	4	19	17	8	35
R472527	90	1550	3	13	30	175	<10	350	<2	<3	450	0.99	<1	14	21	18	8	35
R472531	110	1700	3.5	13	25	145	<10	470	<2	<3	550	3.63	<1	<3	30	30	24	25
R472535	30	1000	2	6	10	260	<10	220	<2	<3	230	1.24	<1	<3	6	9	3	40
R472542	40	1000	2.5	7	25	240	<10	480	6	<3	220	1.5	<1	4	8	35	3	40
R472546	390	220	2	6	20	45	<10	320	<2	<3	250	1.8	<1	6	56	360	53	15
R472553	120	1100	7.5	4	<10	110	<10	280	<2	<3	120	15.4	<1	<3	51	290	500	30
R472555	80	900	2.5	4	<10	160	<10	370	<2	<3	140	1.36	<1	4	16	74	46	20
R472558	80	1650	2.5	13	25	140	<10	410	<2	<3	500	1.3	<1	4	17	20	8	30
R472566	70	750	2.5	7	<10	150	<10	300	<2	<3	250	1.86	<1	8	12	18	13	20
R472570	190	500	3.5	3	<10	150	<10	750	<2	<3	150	3.2	<1	<3	31	90	43	20
R472576	200	380	2	4	<10	61	<10	550	<2	<3	180	2.05	<1	4	29	94	38	15
R472582	140	480	1.5	3	<10	34.5	<10	310	<2	<3	110	0.7	<1	4	20	38	35	20
R472587	70	550	1.5	5	<10	115	<10	180	<2	<3	140	1.42	<1	8	13	19	20	20
R472594	90	800	2.5	3	<10	150	<10	270	<2	<3	110	1.63	<1	<3	12	7	24	25

Element	S	Zn	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U	Dy	Er
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Method	IC3E	IC3E	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3R	IC3R
Detection Limit	50	2	0.1	0.1	0.5	0.1	0.1	0.05	0.5	0.1	0.5	0.5	0.2	0.02	0.1	0.02	0.02	0.05
R472190	<50	81	0.3	0.1	155	2.1	17	0.1	82	26	<0.5	3	<0.2	20	0.7	2.4	5.5	4.1
R472196	<50	61	0.2	<0.1	15	2.1	11.5	0.05	15	4	<0.5	1	<0.2	7	0.4	1	1.7	1.5
R472202	100	160	<0.1	0.1	72	2.2	18	0.1	70	6.5	<0.5	1.5	<0.2	13	0.6	2.3	5	3.7
R472210	1250	93	<0.1	0.1	160	1.3	17	0.1	88	7.5	<0.5	1	<0.2	14	0.5	1.8	5	3.5
R472215	1200	84	0.2	0.2	77	1.9	18.5	0.1	78	8.5	<0.5	1	<0.2	10.5	0.5	2.1	5	3.4
R472220	150	71	<0.1	<0.1	230	9.5	20	0.1	93	6	<0.5	1	<0.2	14	0.8	3.9	6.5	3.5
R472226	300	58	0.2	0.1	150	7	19.5	<0.05	165	10	<0.5	0.5	<0.2	56	0.8	3.7	3.5	1.8
R472230	100	85	<0.1	0.1	18	2.8	15.5	0.05	17.5	4.7	<0.5	<0.5	<0.2	3.9	0.2	0.6	1.5	1.15
R472235	100	25	<0.1	<0.1	13	0.4	9	<0.05	16.5	4	<0.5	<0.5	<0.2	7.5	0.2	0.29	0.65	0.45
R472239	<50	71	0.3	<0.1	45.5	1.8	16	0.05	34.5	4.9	<0.5	1	<0.2	12.5	0.4	3.9	3.6	2.8
R472241	800	46	0.1	0.1	76	0.9	18	0.1	71	6	<0.5	1.5	<0.2	10	0.4	1.65	5.5	3.8

Element	S	Zn	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U	Dy	Er
R472251	150	56	<0.1	<0.1	17	4.6	14	<0.05	18.5	2.7	<0.5	1	<0.2	7.5	0.6	7	1.2	0.8
R472256	150	76	<0.1	<0.1	20.5	3.7	14	<0.05	19	2.1	<0.5	1	<0.2	14	0.5	5.5	2.2	1.55
R472261	100	34	<0.1	<0.1	20.5	2.2	12	<0.05	23.5	5.5	<0.5	<0.5	<0.2	17.5	0.5	2.2	0.86	0.6
R472262	150	115	0.3	0.2	60	12.5	19.5	0.1	63	3.9	<0.5	1	<0.2	10	0.5	3.2	4.4	3
R472264	450	110	0.1	0.1	23.5	2.5	19.5	0.1	23	4	<0.5	0.5	<0.2	2.5	0.3	1.6	2.4	2
R472267	50	87	<0.1	<0.1	67	3.5	17.5	0.05	71	3.4	<0.5	0.5	<0.2	10.5	0.6	1.7	3.6	2.4
R472272	250	110	<0.1	<0.1	38.5	1	18.5	0.1	37.5	2.4	<0.5	1.5	<0.2	5	0.3	0.97	3	2.2
R472275	50	76	0.1	<0.1	68	4.8	18	0.1	85	3	<0.5	1	<0.2	15.5	0.8	2.9	5.5	4.6
R472281	50	115	0.1	<0.1	48.5	9	17.5	0.1	54	1.6	<0.5	0.5	<0.2	13	0.6	1.35	3.3	2.2
R472289	1100	91	0.4	0.1	77	5.5	20	0.1	79	5	<0.5	1.5	<0.2	17.5	0.6	3.1	4.8	3.2
R472313	<50	120	0.1	<0.1	45	3.9	21	0.05	46.5	2.1	<0.5	1.5	<0.2	15	0.7	4.4	4.9	3.4
R472331	<50	59	<0.1	<0.1	23.5	2.3	17.5	0.05	25	1	<0.5	<0.5	<0.2	14	0.6	1.9	2.2	1.25
R472337	1550	130	<0.1	0.2	220	1.9	22.5	0.1	105	4.6	<0.5	1.5	<0.2	18	0.6	1.6	6.5	4.3
R472349	50	54	<0.1	0.7	23.5	2.7	12.5	<0.05	25	6.5	<0.5	<0.5	<0.2	15.5	0.9	0.87	1.4	1.1
R472361	600	74	<0.1	<0.1	66	2.9	19.5	0.1	61	2.9	<0.5	1	<0.2	11.5	0.6	1.95	3.9	2.5
R472365	50	81	0.3	<0.1	24	7.5	16	0.05	27	1.3	<0.5	<0.5	<0.2	9.5	0.5	1.9	1.45	0.9
R472370	<50	63	<0.1	<0.1	51	7	16.5	<0.05	54	1.9	<0.5	<0.5	<0.2	29	0.4	4	2.5	1.2
R472375	50	58	<0.1	<0.1	25.5	3.8	16.5	<0.05	28.5	3.8	<0.5	0.5	<0.2	7.5	0.3	1.4	1.9	1.25
R472387	<50	110	<0.1	<0.1	44	4.1	18.5	<0.05	44.5	1.2	<0.5	1	<0.2	19.5	1.2	7	3	1.95
R472396	<50	54	0.2	<0.1	60	3.4	17.5	<0.05	66	4.1	<0.5	0.5	<0.2	22	0.9	2.1	2.8	1.65
R472399	<50	58	<0.1	<0.1	61	3.3	16.5	<0.05	62	3.3	<0.5	1	<0.2	20	0.9	1.95	3.6	2.4
R472431	100	195	0.2	0.1	100	7.5	20	0.05	98	5.5	<0.5	2	<0.2	57	2.3	15.5	9.5	5.5
R472444	100	340	0.3	0.4	24	10.5	15	<0.05	29.5	2.7	<0.5	0.5	<0.2	24	1.2	8	1.9	1.3
R472453	<50	410	0.1	<0.1	92	10	19	0.05	97	0.7	<0.5	3	<0.2	19.5	1.3	4.4	15	11
R472461	50	210	0.2	0.4	35	7.5	18.5	<0.05	37.5	1.2	<0.5	<0.5	<0.2	16.5	0.8	1.85	1.5	0.9
R472467	50	74	0.2	<0.1	36	12	18.5	0.05	36.5	3.1	<0.5	0.5	<0.2	18	0.8	2.7	1.75	1.05
R472481	150	270	<0.1	0.3	29	5	18	0.1	28	2.9	<0.5	0.5	<0.2	13	1.2	2.7	2.2	1.65
R472485	300	65	<0.1	<0.1	14.5	2.6	17	0.05	17.5	2	<0.5	<0.5	<0.2	3.5	0.5	1.25	0.8	0.55
R472489	50	54	<0.1	0.1	15	6	19.5	0.1	16.5	1.3	<0.5	0.5	<0.2	2	0.4	1.15	1.3	0.9
R472492	<50	95	0.1	0.1	59	4.7	18.5	0.05	67	1.6	<0.5	<0.5	<0.2	32.5	0.5	1.45	2.2	1.15
R472495	1550	85	0.2	0.1	22.5	5.5	19	0.05	23	1.6	<0.5	1	0.3	6	0.5	1.25	1.25	0.75
R472503	<50	105	0.1	0.2	150	8.5	22	0.1	180	1.1	<0.5	1	<0.2	32.5	1.2	9	7.5	4.4
R472511	<50	59	<0.1	<0.1	81	2.8	20.5	0.05	74	2.6	<0.5	1.5	<0.2	16.5	1	3.2	5.5	4
R472516	350	130	0.3	0.3	22.5	2	23	0.15	20.5	1.5	<0.5	2.5	<0.2	3.3	0.3	0.86	2.7	1.75
R472519	100	105	<0.1	0.2	50	0.5	18.5	0.1	43.5	1.2	<0.5	1.5	0.2	7	0.3	0.48	4.1	2.9
R472524	1150	115	<0.1	0.1	87	0.9	21	0.1	76	1.5	<0.5	1.5	<0.2	6.5	0.6	0.58	4.7	3.1
R472527	1350	110	<0.1	0.2	95	1.1	21.5	0.1	84	2.1	<0.5	1.5	<0.2	7	0.6	0.61	4.8	3
R472531	600	150	<0.1	<0.1	81	1.7	22	0.1	74	2.8	<0.5	1.5	<0.2	4.5	0.5	0.75	5	3.4
R472535	<50	35	<0.1	<0.1	52	1.6	16	<0.05	61	0.5	<0.5	<0.5	<0.2	28	0.8	0.88	1.05	0.55
R472542	<50	23	0.1	<0.1	54	1.8	18.5	0.1	38.5	1	<0.5	1	<0.2	12	0.8	2.7	4.2	3.4

Element	S	Zn	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U	Dy	Er
R472546	150	115	<0.1	0.1	31.5	1.6	24	0.15	28	1.6	<0.5	2.5	<0.2	3.9	0.2	0.96	3.5	2.3
R472553	100	125	<0.1	<0.1	97	2.4	17	<0.05	93	1.1	<0.5	<0.5	<0.2	26	0.6	1.7	2.1	1.15
R472555	350	65	0.1	<0.1	45	3.5	16	0.05	44.5	3.6	<0.5	<0.5	<0.2	16	0.6	1.1	2.1	1.35
R472558	850	93	<0.1	0.2	115	0.6	22	0.1	98	3.3	<0.5	2	<0.2	6.5	0.5	0.56	6.5	3.9
R472566	600	70	<0.1	<0.1	33	1.4	15.5	0.05	31	1	<0.5	1	<0.2	4	0.5	0.27	2.3	1.7
R472570	100	135	<0.1	<0.1	35	1.2	21.5	0.1	32	0.6	<0.5	1	<0.2	1.35	0.4	0.4	3.9	3
R472576	1200	105	<0.1	0.2	44.5	1.1	19.5	0.1	40	3.7	<0.5	1	<0.2	3.2	0.2	0.4	2.7	1.95
R472582	700	90	<0.1	<0.1	24.5	0.3	17.5	0.1	22.5	1.5	<0.5	1	<0.2	1.85	0.1	0.3	2.7	2
R472587	250	66	<0.1	<0.1	30	2.2	14.5	0.05	31	0.6	<0.5	<0.5	<0.2	12	0.4	0.97	1.45	0.95
R472594	200	79	<0.1	0.2	37	1.5	14.5	<0.05	39.5	0.3	<0.5	0.5	<0.2	10	0.5	0.43	1.4	0.8

Element	Gd	Ho	Lu	Nd	Pr	Sm	Tb	Tm	Yb
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Method	IC3R	IC3R	IC3R	IC3R	IC3R	IC3R	IC3R	IC3R	IC3R
Detection Limit	0.05	0.02	0.02	0.02	0.05	0.02	0.02	0.05	0.05
R472190	5.5	2.3	1.35	91	23.5	17	0.9	0.95	5.5
R472196	1.45	0.83	0.8	16	4.2	3.9	0.25	0.45	2.7
R472202	4.9	2	1.45	70	19.5	14	0.84	0.9	5.5
R472210	4.5	2	1.45	77	21.5	14.5	0.83	0.85	5.5
R472215	5	1.9	1.3	73	20	14.5	0.83	0.85	4.9
R472220	7	1.8	0.97	125	32.5	24	1.2	0.7	4.4
R472226	4.3	0.67	0.56	95	31	11.5	0.64	0.3	2.1
R472230	1.45	0.64	0.58	19	4.8	4.1	0.25	0.3	1.95
R472235	0.75	0.21	0.19	11.5	3.3	1.9	0.11	0.1	0.6
R472239	3.2	1.5	1.25	40.5	10.5	8.5	0.57	0.7	4.5
R472241	4.9	2.1	1.45	72	19	14	0.88	0.9	5.5
R472251	1.35	0.45	0.34	18	4.8	3.4	0.2	0.2	1.25
R472256	2.3	0.88	0.52	19.5	5	4.3	0.35	0.35	2
R472261	0.95	0.3	0.33	16	4.7	2.7	0.15	0.15	1.05
R472262	4.8	1.6	1.1	56	15	11.5	0.72	0.65	4.2
R472264	2.2	1.1	0.9	29.5	7	6.5	0.38	0.55	3.3
R472267	3.7	1.4	0.9	60	17	11	0.6	0.55	3.4
R472272	2.9	1.15	0.89	34.5	9.5	7	0.48	0.55	3.4
R472275	5	2.3	2.1	71	19	13.5	0.9	1.15	7.5
R472281	2.8	1.2	0.7	39.5	11.5	7.5	0.52	0.5	3
R472289	4.6	1.65	1.2	66	18.5	12.5	0.8	0.75	4.8

Element	Gd	Ho	Lu	Nd	Pr	Sm	Tb	Tm	Yb
R472313	4.7	1.9	1.3	47.5	12	11.5	0.81	0.8	5.5
R472331	2.5	0.81	0.39	27.5	6.5	6.5	0.4	0.25	1.55
R472337	7	2.2	1.75	105	28	20	1.1	1	6.5
R472349	1.45	0.53	0.6	18.5	5.5	3.5	0.23	0.3	2
R472361	3.8	1.25	0.91	57	16	10.5	0.66	0.55	3.7
R472365	1.5	0.5	0.29	19	5.5	3.7	0.26	0.2	1.25
R472370	3.2	0.67	0.32	44	12.5	8	0.46	0.25	1.5
R472375	1.95	0.64	0.5	25	7	4.7	0.3	0.3	2
R472387	3.2	1.05	0.64	37	10.5	7	0.5	0.45	2.7
R472396	2.8	0.84	0.54	45.5	13.5	7.5	0.48	0.35	2.2
R472399	3.3	1.25	0.83	49	14.5	9	0.59	0.6	3.6
R472431	10.5	3.4	1.6	98	24.5	23	1.7	1.2	7
R472444	2	0.63	0.52	23.5	6.5	4.8	0.31	0.3	1.95
R472453	13	6.5	3.5	110	24.5	26.5	2.3	2.6	15.5
R472461	1.5	0.45	0.4	25.5	8	4.4	0.26	0.2	1.3
R472467	2	0.53	0.42	26.5	7.5	4.8	0.3	0.25	1.6
R472481	2.2	0.9	0.75	25.5	7	5.5	0.36	0.4	2.6
R472485	1	0.28	0.28	12	3.3	2.1	0.13	0.15	0.85
R472489	1.3	0.47	0.33	14.5	3.9	3.1	0.21	0.2	1.3
R472492	3.1	0.53	0.31	47	13.5	7	0.41	0.2	1.4
R472495	1.6	0.39	0.26	19.5	5.5	3.6	0.22	0.15	1.1
R472503	8.5	2.2	1.1	135	38.5	23	1.35	0.8	5
R472511	5.5	1.9	1.6	73	21	14	0.91	0.95	6.5
R472516	2.5	1.1	0.7	26	6	6	0.38	0.5	2.6
R472519	3.9	1.8	1.4	52	12.5	11.5	0.62	0.85	4.5
R472524	4.6	1.8	1.3	78	20	14	0.75	0.9	4.5
R472527	4.9	1.8	1.25	80	20.5	14	0.76	0.8	4.3
R472531	5	1.95	1.4	80	19.5	14.5	0.84	0.9	5
R472535	1.2	0.3	0.28	31	9.5	3.9	0.18	0.15	0.8
R472542	3.6	1.95	1.65	49.5	12.5	10.5	0.62	1.15	5.5
R472546	3.3	1.45	0.91	36	8	9	0.54	0.65	3.3
R472553	2.5	0.51	0.37	60	19	7	0.37	0.25	1.3
R472555	2.3	0.72	0.6	34	9.5	6	0.33	0.35	2.1
R472558	6	2.2	1.4	98	24.5	18	1	1	5.5

Element	Gd	Ho	Lu	Nd	Pr	Sm	Tb	Tm	Yb
R472566	2	1	0.73	31	8	6	0.35	0.5	2.5
R472570	3.4	1.7	1.35	41	9	9	0.59	0.9	4.6
R472576	2.3	1.2	0.96	41	10	8	0.42	0.6	3.1
R472582	2.3	1.2	0.85	25	6	5.5	0.38	0.6	3
R472587	1.75	0.5	0.49	25	6.5	4.2	0.24	0.25	1.45
R472594	1.65	0.39	0.31	27	8	3.9	0.22	0.2	1.05

Geochemical analysis of composite samples R472595-R472736 (not consecutive)

Elements	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Ag	As	Ca	Co	Cr	Cu	Fe	Mn	Ni	P	Pb	S
Units	ppb	ppb	ppb	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Method	FA3	FA3	FA3	FA3	FA3	FA3	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E
Detection Limit	1	1	5	5	1	1	1	3	10	2	2	2	100	5	2	5	5	50
R472595	<1	--	<5	--	<1	--	<1	6	2000	6	15	5	17800	230	8	110	25	<50
R472596	2	--	<5	--	1	--	<1	<3	17100	9	25	2	28400	440	15	350	20	<50
R472598	2	1	<5	<5	<1	<1	<1	4	50100	8	10	7	27800	470	9	220	15	150
R472599	<1	--	<5	--	<1	--	<1	<3	48400	9	5	15	35600	850	4	410	15	<50
R472600	<1	--	<5	--	<1	--	<1	<3	38800	20	15	76	53400	950	24	800	20	<50
R472601	1	--	<5	--	4	--	<1	<3	25900	13	21	14	36700	650	15	900	20	<50
R472603	<1	--	<5	--	<1	--	<1	4	3650	12	27	13	31700	330	18	160	20	100
R472604	<1	--	<5	--	<1	--	<1	<3	37400	11	11	16	34000	550	15	600	25	100
R472605	1	--	<5	--	<1	--	<1	4	25500	15	8	51	38800	800	17	1150	25	<50
R472606	1	--	<5	--	1	--	<1	<3	36300	20	26	37	50800	1000	23	1100	20	<50
R472608	<1	--	<5	--	<1	--	<1	4	30400	6	5	10	19800	330	6	170	15	100
R472609	1	--	<5	--	2	--	<1	<3	36500	6	2	6	20300	360	3	270	15	<50
R472611	<1	--	<5	--	<1	--	<1	8	41600	9	20	10	28300	260	13	130	20	250
R472612	<1	<1	<5	<5	1	<1	<1	<3	28800	13	24	18	38500	480	16	250	20	450
R472613	3	--	<5	--	<1	--	<1	<3	54400	20	19	27	51000	950	19	800	15	100
R472614	1	--	<5	--	<1	--	<1	<3	42800	20	18	29	50200	1000	19	700	15	50
R472615	<1	--	<5	--	<1	--	<1	<3	44600	22	20	36	52100	1000	21	700	15	900
R472617	<1	--	<5	--	<1	--	<1	6	37300	14	24	10	37400	410	13	250	25	400
R472618	1	--	<5	--	2	--	<1	4	26000	15	18	10	48500	750	10	460	30	150
R472619	<1	--	<5	--	1	--	<1	<3	10900	18	23	17	52500	800	13	950	30	200
R472620	<1	--	<5	--	<1	--	<1	<3	9150	15	22	18	44700	650	13	800	30	150
R472621	<1	--	<5	--	<1	--	<1	6	9050	14	21	16	46800	600	12	500	25	100

Elements	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Ag	As	Ca	Co	Cr	Cu	Fe	Mn	Ni	P	Pb	S
R472622	2	--	<5	--	1	--	<1	4	8300	16	27	16	66900	650	11	330	30	450
R472623	<1	--	<5	--	<1	--	1	<3	25000	28	18	32	30400	490	37	600	20	400
R472624	<1	--	<5	--	3	--	<1	<3	31200	31	9	38	37800	470	45	330	20	450
R472625	3	--	<5	--	2	--	<1	<3	25400	27	19	57	33500	500	38	600	25	<50
R472627	<1	--	<5	--	1	--	<1	4	22100	9	9	16	27400	320	9	260	35	150
R472628	<1	--	<5	--	<1	--	<1	<3	23200	9	5	29	25400	360	6	700	40	<50
R472630	<1	--	<5	--	<1	--	<1	8	29200	17	9	15	44800	800	8	1550	30	900
R472632	<1	--	<5	--	<1	--	<1	4	28000	21	4	18	53900	1100	6	2100	35	<50
R472634	<1	--	<5	--	<1	--	<1	4	33600	25	4	21	64800	1250	7	2600	30	950
R472636	<1	<1	<5	<5	7	6	<1	4	18400	31	550	130	109000	280	300	380	35	1000
R472637	<1	<1	<5	<5	7	7	<1	<3	36100	53	650	175	93900	420	400	450	30	100
R472638	2	1	<5	<5	6	6	<1	<3	26200	165	750	200	122000	1400	650	700	15	<50
R472639	2	1	5	5	7	6	<1	<3	62200	54	550	110	74700	1650	400	390	10	650
R472641	<1	--	<5	--	<1	--	<1	<3	80700	11	19	8	31000	420	14	250	20	400
R472642	<1	--	<5	--	<1	--	<1	8	16000	19	41	14	76800	600	19	600	25	500
R472643	<1	--	<5	--	<1	--	<1	4	3350	6	7	19	14600	75	8	165	25	450
R472644	<1	--	<5	--	<1	--	<1	4	6600	9	3	8	17800	240	7	470	20	650
R472646	<1	--	<5	--	<1	--	<1	<3	28300	14	28	21	38100	450	18	125	20	300
R472647	<1	--	<5	--	<1	--	<1	<3	38700	19	28	35	49800	900	24	700	25	<50
R472648	<1	--	<5	--	<1	--	<1	4	49800	17	23	25	44100	700	20	750	15	<50
R472650	<1	--	<5	--	<1	--	<1	<3	24000	8	13	9	23400	350	10	390	25	<50
R472652	<1	--	<5	--	<1	--	<1	4	6000	10	24	11	32100	310	15	200	30	100
R472653	<1	--	<5	--	1	--	<1	6	36800	11	18	19	31600	420	12	320	25	100
R472654	2	2	<5	<5	3	3	<1	<3	32900	19	19	86	41600	900	15	1050	20	450
R472656	<1	--	<5	--	<1	--	<1	6	7750	11	19	8	25600	290	13	130	25	50
R472657	1	--	<5	--	<1	--	<1	4	29500	7	8	7	13000	200	7	75	15	150
R472658	<1	--	<5	--	<1	--	<1	4	6000	7	4	9	16500	110	<2	185	35	1500
R472659	2	--	<5	--	<1	--	<1	6	1050	9	5	34	35900	195	5	320	25	400
R472660	<1	--	<5	--	3	--	<1	4	3300	12	4	35	17800	220	11	220	25	350
R472661	<1	--	<5	--	<1	--	<1	<3	9500	9	<2	10	14000	280	6	390	25	50
R472663	<1	--	<5	--	<1	--	<1	<3	19200	9	18	10	21900	240	12	110	20	400
R472664	<1	--	<5	--	<1	--	<1	4	35400	9	13	16	34800	240	9	360	25	150
R472665	<1	--	<5	--	<1	--	<1	6	650	19	5	20	48000	550	9	750	40	100
R472666	<1	--	<5	--	<1	--	<1	8	4000	19	4	23	50300	550	13	950	35	50

Elements	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Ag	As	Ca	Co	Cr	Cu	Fe	Mn	Ni	P	Pb	S
R472667	<1	--	<5	--	<1	--	<1	<3	23400	25	3	12	51200	1200	8	2400	35	1350
R472669	<1	--	<5	--	<1	--	<1	<3	15000	8	15	7	19500	200	11	95	20	200
R472670	<1	--	<5	--	<1	--	<1	<3	43400	7	15	8	19700	220	10	90	20	250
R472671	<1	--	<5	--	<1	--	<1	4	26500	8	14	11	21300	300	10	260	20	100
R472672	<1	--	<5	--	<1	--	1	<3	16100	12	24	20	33000	430	15	460	20	150
R472673	<1	--	<5	--	<1	--	1	4	3850	11	7	8	12000	260	5	500	25	150
R472674	<1	--	<5	--	<1	--	1	6	3600	9	4	20	18900	100	5	850	30	250
R472675	<1	--	<5	--	<1	--	<1	4	14200	17	5	23	35000	490	14	1400	30	600
R472677	<1	--	<5	--	<1	--	<1	4	20800	9	19	9	22900	210	14	110	20	250
R472678	<1	--	<5	--	<1	--	<1	6	3550	10	19	12	24500	360	12	120	20	350
R472679	<1	--	<5	--	4	--	<1	<3	22600	9	18	18	31000	320	11	155	15	450
R472680	<1	--	<5	--	1	--	<1	<3	950	7	8	15	26600	240	8	95	30	200
R472681	<1	--	<5	--	<1	--	<1	<3	11500	17	83	20	47400	650	58	550	30	300
R472683	<1	--	<5	--	<1	--	<1	<3	24500	8	14	11	21900	310	11	90	20	100
R472684	<1	--	<5	--	2	--	<1	4	36800	9	17	19	23800	280	12	120	20	150
R472686	<1	--	<5	--	<1	--	<1	6	21100	11	11	6	24000	420	18	1150	15	100
R472687	<1	--	<5	--	<1	--	<1	4	4800	8	10	3	19700	340	7	450	15	<50
R472688	<1	--	<5	--	<1	--	<1	<3	10600	8	6	4	19500	360	5	380	15	<50
R472690	<1	--	<5	--	<1	--	<1	<3	17600	10	7	12	24800	500	7	550	25	100
R472692	1	--	<5	--	<1	--	<1	<3	26500	12	5	13	30200	500	6	550	20	100
R472693	<1	--	<5	--	<1	--	<1	<3	17800	9	3	20	23900	500	3	500	20	150
R472695	4	2	<5	<5	9	8	2	6	35700	65	49	330	96500	2200	81	1100	5	6700
R472696	6	7	<5	<5	12	13	1	6	46600	59	51	310	97500	2300	62	1150	<5	<50
R472697	5	5	<5	<5	15	15	1	4	51600	61	53	350	101000	2000	66	1200	5	50
R472698	10	9	<5	<5	18	16	1	4	54300	59	51	320	98200	2400	63	1200	5	450
R472700	<1	--	<5	--	<1	--	<1	<3	12300	12	3	15	28800	700	5	750	15	300
R472701	<1	2	<5	<5	1	<1	<1	<3	18300	10	3	27	27800	650	4	600	25	850
R472703	<1	--	<5	--	4	--	1	6	48100	30	330	79	46500	1250	180	600	20	8250
R472704	4	4	<5	<5	9	8	<1	<3	61500	40	310	210	64000	1250	180	470	10	2500
R472705	2	--	<5	--	<1	--	1	4	62600	48	10	250	89700	1150	39	650	10	3800
R472706	1	<1	<5	<5	8	6	<1	<3	52200	33	260	130	65900	1200	58	950	20	3450
R472708	2	2	<5	<5	4	4	<1	<3	50900	13	14	30	30800	650	12	550	25	300
R472710	<1	--	<5	--	<1	--	<1	6	9550	8	2	3	22700	490	2	500	30	<50
R472712	<1	--	<5	--	<1	--	1	4	46000	10	23	13	25500	210	15	90	15	350

Elements	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Ag	As	Ca	Co	Cr	Cu	Fe	Mn	Ni	P	Pb	S
R472713	<1	--	<5	--	2	--	<1	4	21600	13	30	63	26800	175	16	410	35	450
R472714	1	--	<5	--	<1	--	<1	<3	14300	15	12	86	24800	380	19	600	35	100
R472715	1	--	<5	--	2	--	<1	<3	20600	20	20	32	34900	950	22	800	30	<50
R472716	<1	--	<5	--	1	--	1	<3	36300	22	59	32	44400	1400	36	850	25	300
R472718	<1	--	<5	--	<1	--	<1	<3	21900	11	28	11	27300	330	16	100	15	150
R472719	2	2	5	10	12	13	<1	<3	61900	53	600	120	68700	1200	330	350	<5	450
R472721	2	2	<5	<5	12	11	1	6	21500	49	36	220	79200	1050	38	850	10	<50
R472722	5	5	<5	<5	24	25	1	<3	56700	65	43	360	103000	1450	52	1400	10	100
R472724	<1	--	<5	--	1	--	1	<3	29900	12	26	16	26900	290	12	125	15	350
R472725	<1	--	<5	--	1	--	<1	<3	39500	14	26	27	32100	420	13	280	20	600
R472726	<1	--	<5	--	3	--	<1	<3	7100	11	10	24	22500	360	13	280	25	50
R472727	<1	--	<5	--	1	--	<1	4	2200	7	6	3	15000	230	8	115	25	<50
R472729	<1	--	<5	--	2	--	<1	4	11500	15	68	16	25100	650	46	220	35	50
R472731	<1	--	<5	--	<1	--	<1	8	34400	12	22	10	27500	320	11	95	15	200
R472732	<1	--	<5	--	<1	--	<1	<3	84800	9	19	11	20200	260	8	195	15	250
R472733	<1	--	<5	--	2	--	<1	4	19200	16	34	27	43200	600	14	460	20	250
R472734	<1	--	<5	--	1	--	<1	4	26000	14	17	65	27300	165	18	310	20	100
R472735	<1	--	<5	--	<1	--	<1	4	11600	17	15	39	40300	350	17	750	20	<50
R472736	<1	--	<5	--	1	--	<1	<3	20000	16	10	39	33100	370	9	750	25	<50

Elements	Ti	V	Zn	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Method	IC3E	IC3E	IC3E	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M
Detection Limit	10	2	2	0.1	0.1	0.5	0.1	0.1	0.05	0.5	0.1	0.5	0.5	0.2	0.02	0.1	0.02
R472595	2900	40	25	0.2	<0.1	26.5	1.4	7.5	<0.05	16	0.5	<0.5	<0.5	<0.2	7	0.5	0.48
R472596	2000	73	46	0.2	<0.1	51	0.8	13.5	0.05	28.5	2.8	<0.5	0.5	<0.2	7.5	0.4	0.36
R472598	2050	55	41	0.2	<0.1	31	0.8	11.5	<0.05	17	0.7	<0.5	0.5	<0.2	3.1	0.2	0.24
R472599	2100	59	70	0.2	0.1	27	0.3	13	0.05	15	0.4	<0.5	0.5	<0.2	1.1	0.1	0.21
R472600	4000	150	85	0.2	0.2	55	0.6	17.5	0.05	29.5	0.3	<0.5	<0.5	<0.2	3.7	0.3	0.23
R472601	3500	89	62	0.2	0.1	70	1.4	14.5	0.05	38.5	0.2	<0.5	<0.5	<0.2	10.5	0.4	0.33
R472603	3800	76	37	0.2	<0.1	55	2.3	17	0.05	25.5	0.4	<0.5	<0.5	<0.2	9.5	0.5	0.67
R472604	3400	70	69	0.1	0.1	70	1.1	18	0.05	40.5	0.3	<0.5	0.5	<0.2	9.5	0.6	0.45
R472605	3850	88	74	0.1	0.1	105	0.9	15.5	0.05	58	<0.1	<0.5	<0.5	<0.2	13.5	0.6	0.35
R472606	4650	120	92	0.1	0.2	79	1.3	18.5	0.1	41	0.3	<0.5	<0.5	<0.2	7	0.4	0.34

Elements	Ti	V	Zn	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U
R472608	1650	34	30	<0.1	<0.1	35	0.6	11.5	<0.05	23.5	<0.1	<0.5	<0.5	<0.2	4.3	0.3	0.21
R472609	1350	30	33	<0.1	<0.1	31.5	0.4	11.5	<0.05	19	0.3	<0.5	<0.5	<0.2	1.35	0.2	0.14
R472611	3300	70	33	0.2	<0.1	63	2	16	0.05	39.5	0.4	<0.5	<0.5	<0.2	10.5	0.5	0.71
R472612	3800	90	49	0.1	<0.1	69	1.5	15	0.05	37.5	0.3	<0.5	<0.5	<0.2	9	0.4	0.89
R472613	4150	135	75	<0.1	0.2	51	0.7	16	0.05	25.5	0.1	<0.5	<0.5	<0.2	2.6	0.2	0.23
R472614	4300	135	75	<0.1	0.2	55	0.6	17.5	0.05	27.5	0.3	<0.5	<0.5	<0.2	2.4	0.2	0.14
R472615	4600	145	79	<0.1	0.1	52	0.6	17	0.05	26.5	3.9	<0.5	<0.5	<0.2	2.6	0.3	0.1
R472617	5150	90	45	0.1	<0.1	70	1.6	16.5	0.05	43	1.1	<0.5	1	<0.2	11.5	0.4	1.4
R472618	6650	110	53	<0.1	<0.1	80	1.1	17	0.05	42	0.5	<0.5	<0.5	<0.2	12	0.5	0.71
R472619	7250	115	72	0.1	0.1	110	1.2	20	0.05	54	0.6	<0.5	1	<0.2	12	0.4	0.86
R472620	5550	95	63	<0.1	<0.1	99	1.2	19.5	0.05	50	0.7	<0.5	1	<0.2	11.5	0.4	0.82
R472621	5550	105	56	<0.1	<0.1	85	1	16	0.05	42.5	0.6	<0.5	0.5	<0.2	14	0.4	0.72
R472622	6600	150	55	<0.1	0.1	85	0.9	18	0.05	44	1.9	<0.5	1	<0.2	15	0.3	0.63
R472623	7400	120	220	0.1	0.1	175	3.6	23	0.1	84	0.6	<0.5	3.5	<0.2	13.5	0.5	2.2
R472624	3150	125	195	<0.1	0.2	105	1.9	17	0.1	61	0.5	<0.5	<0.5	<0.2	19.5	0.4	1.05
R472625	3400	91	135	0.1	0.1	99	1.4	16.5	0.05	55	0.6	<0.5	<0.5	<0.2	22	0.5	0.94
R472627	3550	59	42	<0.1	<0.1	76	1.5	19	<0.05	44	0.5	<0.5	0.5	<0.2	39.5	0.8	0.84
R472628	2700	44	50	<0.1	<0.1	69	1.2	19	<0.05	41.5	1.4	<0.5	<0.5	<0.2	47.5	0.7	0.86
R472630	6800	89	77	<0.1	0.1	175	1.4	20	0.1	87	2.2	<0.5	1	<0.2	15.5	0.6	1.1
R472632	8250	110	110	<0.1	0.2	145	1	20.5	0.1	67	1	<0.5	1	<0.2	6	0.4	0.75
R472634	10600	135	120	<0.1	0.3	210	1.3	24.5	0.15	96	1.5	<0.5	1.5	<0.2	10	0.5	1.15
R472636	6500	270	140	<0.1	<0.1	110	1.8	19.5	0.05	56	1.3	<0.5	2	<0.2	2.1	0.2	4
R472637	6000	200	170	<0.1	0.1	96	1.7	18	0.05	62	0.2	<0.5	3	<0.2	1.5	0.3	1.95
R472638	6200	240	470	<0.1	0.3	27	2.2	18	0.05	13.5	<0.1	<0.5	0.5	<0.2	1.35	0.3	0.77
R472639	4800	220	87	<0.1	0.3	22.5	0.7	15.5	0.05	11.5	0.3	<0.5	<0.5	<0.2	1.25	0.3	0.37
R472641	4550	72	40	<0.1	<0.1	63	1	13	<0.05	36	0.7	<0.5	1.5	<0.2	8.5	0.3	1.4
R472642	10000	175	53	0.1	0.1	100	1.5	26.5	0.1	49.5	2.1	<0.5	2	<0.2	13	0.3	1.3
R472643	2300	31	30	<0.1	<0.1	115	0.5	18	<0.05	56	0.4	<0.5	1.5	<0.2	15	0.7	0.79
R472644	2200	21	48	<0.1	<0.1	195	0.4	17	<0.05	105	0.4	<0.5	1	<0.2	20	0.5	0.76
R472646	4100	100	51	<0.1	<0.1	62	1.2	14.5	<0.05	33.5	0.3	<0.5	<0.5	<0.2	10	0.3	0.66
R472647	4400	115	93	<0.1	0.1	48	0.7	18	0.05	24.5	0.6	<0.5	<0.5	<0.2	5	0.2	0.31
R472648	3550	95	78	<0.1	0.1	61	0.7	19	0.05	33.5	0.2	<0.5	<0.5	<0.2	13	0.2	0.21
R472650	2100	42	39	<0.1	<0.1	75	0.9	17	<0.05	45.5	0.2	<0.5	<0.5	<0.2	17	0.5	0.53
R472652	4450	69	46	0.1	<0.1	52	2.5	17.5	<0.05	29.5	0.4	<0.5	<0.5	<0.2	10	0.6	0.85

Elements	Ti	V	Zn	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U
R472653	4000	80	42	0.1	<0.1	59	3.4	15.5	<0.05	32	0.4	<0.5	0.5	<0.2	14	0.5	1.3
R472654	4600	125	70	<0.1	0.2	72	5.5	20	0.1	32.5	0.4	<0.5	<0.5	0.3	11	0.6	1.05
R472656	4750	64	29	0.1	<0.1	42	1.9	13	<0.05	23	0.6	<0.5	<0.5	<0.2	10.5	0.6	0.65
R472657	3250	59	20	<0.1	<0.1	31.5	0.7	17.5	0.05	18.5	0.4	<0.5	<0.5	<0.2	15.5	0.2	1.15
R472658	4550	93	13	<0.1	<0.1	89	1.2	21	0.1	39	0.4	<0.5	0.5	<0.2	19	0.3	1.7
R472659	4150	125	57	<0.1	<0.1	180	7	18.5	0.1	79	0.4	<0.5	1.5	<0.2	18	0.6	3.6
R472660	2300	59	88	<0.1	<0.1	83	2.9	13	<0.05	40	0.4	<0.5	1	<0.2	14.5	0.9	2.7
R472661	2000	28	71	<0.1	0.1	83	3.9	15.5	<0.05	39	0.7	<0.5	<0.5	<0.2	17.5	0.9	1.2
R472663	3550	62	29	0.2	<0.1	39.5	1.8	11.5	<0.05	22.5	0.5	<0.5	<0.5	<0.2	9	0.5	0.81
R472664	3950	72	33	0.2	<0.1	98	1.7	14	0.05	45.5	1	<0.5	1	<0.2	12.5	0.4	2.8
R472665	8600	91	93	0.2	0.1	270	4	25	0.1	105	1.2	<0.5	2.5	<0.2	23	0.9	4.9
R472666	9050	105	120	<0.1	0.2	220	1.7	24.5	0.15	100	1.9	<0.5	2	<0.2	28.5	0.8	7
R472667	9050	92	105	<0.1	0.2	170	1.1	21.5	0.1	79	2	<0.5	1.5	<0.2	17.5	0.7	2.5
R472669	3500	50	25	<0.1	<0.1	31	1.6	10	<0.05	16.5	0.4	<0.5	<0.5	<0.2	8	0.5	0.56
R472670	2950	52	26	0.1	<0.1	36	1.5	10.5	<0.05	20.5	0.7	<0.5	0.5	<0.2	8.5	0.4	1.4
R472671	3500	57	31	<0.1	<0.1	47	1.1	11	<0.05	24	0.5	<0.5	<0.5	<0.2	8.5	0.4	1.1
R472672	4250	93	38	<0.1	<0.1	63	1.1	13.5	<0.05	34	0.6	<0.5	<0.5	<0.2	10.5	0.4	0.84
R472673	5900	77	13	<0.1	0.1	210	0.5	20	0.05	94	0.9	<0.5	<0.5	<0.2	28	0.4	2.3
R472674	5350	100	32	<0.1	0.1	370	1.3	25.5	0.1	155	1.1	<0.5	4	<0.2	21	0.7	3.4
R472675	6550	83	120	<0.1	0.1	250	2.1	21	0.1	115	1.4	<0.5	2.5	<0.2	20.5	0.8	2.3
R472677	3550	65	27	0.1	<0.1	42.5	1.9	12	<0.05	23.5	0.5	<0.5	<0.5	<0.2	9	0.5	0.67
R472678	3600	86	30	0.1	<0.1	51	1.6	12	0.05	24.5	0.6	<0.5	<0.5	<0.2	9.5	0.5	1.05
R472679	3150	110	31	0.1	<0.1	57	1.5	15.5	0.05	31	0.6	<0.5	<0.5	<0.2	18	0.3	1.65
R472680	2250	61	43	<0.1	<0.1	86	3.6	18	0.05	37	0.4	<0.5	<0.5	<0.2	24	0.4	1.05
R472681	4050	98	96	<0.1	0.1	180	5.5	19.5	0.1	90	0.6	<0.5	0.5	<0.2	8.5	0.9	1.7
R472683	2900	60	23	0.1	<0.1	35.5	1.5	11	<0.05	21.5	0.3	<0.5	<0.5	<0.2	8.5	0.5	0.67
R472684	3150	74	34	0.1	<0.1	52	1.7	13	0.05	29	0.3	<0.5	<0.5	<0.2	10	0.4	1.55
R472686	3200	75	35	<0.1	0.1	135	0.9	17	0.05	65	0.3	<0.5	<0.5	<0.2	19	0.7	1.05
R472687	2300	45	36	<0.1	<0.1	110	1.1	15	<0.05	54	0.3	<0.5	<0.5	<0.2	21	0.7	0.69
R472688	2200	40	34	<0.1	<0.1	89	1.1	14.5	<0.05	46	0.3	<0.5	<0.5	<0.2	21	0.7	0.94
R472690	2950	57	60	<0.1	0.2	72	3.4	18	0.05	35	0.5	<0.5	<0.5	<0.2	13	0.6	0.74
R472692	3850	64	59	<0.1	0.1	86	3.6	18	0.05	43.5	0.5	<0.5	<0.5	<0.2	18.5	0.5	1.15
R472693	2900	41	54	<0.1	<0.1	70	2	18	0.05	35	0.5	<0.5	0.5	<0.2	14.5	0.5	0.85
R472695	23600	390	140	<0.1	0.1	61	1.5	22	0.1	26	0.6	<0.5	1.5	<0.2	4.2	0.4	4.7

Elements	Ti	V	Zn	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U
R472696	24300	430	140	<0.1	0.2	50	1	23.5	0.1	22	0.5	<0.5	1.5	<0.2	4	0.3	0.89
R472697	28200	450	135	<0.1	0.1	55	0.9	26	0.15	24.5	0.5	<0.5	2	<0.2	4.3	0.3	0.99
R472698	27100	430	130	<0.1	0.1	57	1	27	0.15	25.5	0.5	<0.5	2.5	<0.2	4.1	0.3	1.2
R472700	3550	61	50	<0.1	0.2	57	0.7	18.5	0.1	28	0.6	<0.5	<0.5	<0.2	11.5	0.5	0.52
R472701	3450	55	51	0.1	0.3	72	1	17.5	0.1	34	0.9	<0.5	0.5	0.5	11	0.5	0.56
R472703	3450	140	87	<0.1	0.2	68	2.7	17	0.1	33	0.6	<0.5	<0.5	<0.2	8.5	0.4	0.67
R472704	4150	260	82	<0.1	0.2	42	2.3	16.5	0.05	20	0.4	<0.5	1	<0.2	5	0.3	0.54
R472705	6600	440	92	<0.1	0.3	53	1.2	21	0.05	24.5	0.3	<0.5	1	<0.2	6	0.3	0.31
R472706	5350	240	99	<0.1	0.2	57	1.9	19.5	0.1	26	0.3	<0.5	1	<0.2	7	0.4	0.65
R472708	3100	105	61	<0.1	0.3	61	0.8	16	0.05	32	0.7	<0.5	<0.5	<0.2	14	0.5	0.55
R472710	3350	23	46	<0.1	<0.1	200	0.5	20	0.1	94	0.8	<0.5	1	<0.2	12.5	0.5	0.59
R472712	4100	81	29	0.1	<0.1	38	1.8	12	0.05	24.5	0.4	<0.5	0.5	<0.2	7.5	0.4	0.78
R472713	3750	90	145	0.4	0.1	200	1.4	20.5	0.15	99	1	<0.5	2.5	<0.2	15	0.9	2.4
R472714	2650	55	170	0.2	0.1	120	1.1	19	0.15	69	0.7	<0.5	1.5	<0.2	16	0.8	1.25
R472715	3900	77	120	0.1	0.3	91	0.7	21.5	0.1	52	1	<0.5	0.5	<0.2	12.5	0.5	0.61
R472716	4050	110	105	0.1	0.3	100	1.8	23	0.15	52	1.3	<0.5	1	<0.2	11.5	0.4	0.93
R472718	4600	75	32	0.2	<0.1	29.5	1.3	10	0.05	21	0.7	<0.5	<0.5	<0.2	6	0.4	0.49
R472719	4300	200	71	<0.1	0.1	13	0.3	14.5	0.05	7	0.5	<0.5	0.5	<0.2	0.85	<0.1	0.15
R472721	24400	310	97	0.1	0.2	51	1.1	21.5	0.1	26	1.2	<0.5	1	<0.2	5	0.3	0.75
R472722	32900	430	140	<0.1	0.2	49	0.7	24	0.1	23.5	1.7	<0.5	1	<0.2	3.3	0.2	0.71
R472724	4500	75	36	0.1	<0.1	38.5	1.8	12.5	<0.05	26	0.9	<0.5	0.5	<0.2	7.5	0.4	0.52
R472725	4850	100	42	<0.1	<0.1	53	1.4	14.5	0.05	31.5	0.7	<0.5	<0.5	<0.2	9	0.4	1.15
R472726	2750	50	60	<0.1	<0.1	260	1.9	20	0.05	130	0.6	<0.5	1	<0.2	18.5	1	1.2
R472727	1750	19	35	<0.1	<0.1	68	1.5	13.5	<0.05	39.5	0.4	<0.5	<0.5	<0.2	14	0.9	0.52
R472729	2550	51	47	<0.1	0.3	80	0.6	15	<0.05	46	0.5	<0.5	<0.5	<0.2	15	0.6	0.34
R472731	4800	74	33	0.1	<0.1	38	1.3	10.5	<0.05	25	0.6	<0.5	<0.5	<0.2	7	0.3	0.48
R472732	3600	66	27	<0.1	0.3	31.5	0.6	8.5	<0.05	18.5	0.4	<0.5	2.5	<0.2	4.6	0.2	1.45
R472733	5750	130	50	<0.1	0.1	59	0.9	16.5	0.05	31.5	0.6	<0.5	0.5	<0.2	7.5	0.3	0.75
R472734	3400	90	81	<0.1	<0.1	79	1.3	20	0.05	39.5	0.4	<0.5	<0.5	<0.2	7.5	1	0.53
R472735	3300	83	89	0.2	0.1	71	0.6	16.5	<0.05	38	0.4	<0.5	<0.5	<0.2	7.5	0.5	0.29
R472736	3600	81	54	<0.1	<0.1	79	0.5	18	0.05	44	0.5	<0.5	<0.5	<0.2	7	0.5	0.15

Geochemical analysis of end-of-hole (EOH) samples R472597-R472737 (not consecutive)

Elements	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Al2O3	CaO	Fe2O3	K2O	MgO	MnO	Na2O	P2O5	SiO2	TiO2	Cr	Sc
Units	ppb	ppb	ppb	ppb	ppb	ppb	%	%	%	%	%	%	%	%	%	%	ppm	ppm
Method	FA3	FA3	FA3	FA3	FA3	FA3	IC4	IC4	IC4	IC4	IC4	IC4	IC4	IC4	IC4	IC4	IC4	IC4
Detection Limit	1	1	5	5	1	1	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.005	20	5
R472597	8	7	<5	<5	4	5	13.9	4.58	6.91	1.73	2.14	0.14	3.08	0.11	64.8	0.56	40	15
R472602	<1	--	<5	--	<1	--	12.8	2.97	5	3.34	1.19	0.07	2.77	0.15	70.5	0.54	40	5
R472607	1	--	<5	--	<1	--	12.8	3.71	4.7	3.68	0.99	0.1	2.83	0.14	65.9	0.45	<20	10
R472610	<1	--	<5	--	<1	--	13.8	3.11	3.06	2.42	0.7	0.05	3.79	0.06	69.6	0.25	<20	<5
R472616	2	--	<5	--	<1	--	15.4	6.33	8.17	2.19	3.1	0.15	3.39	0.18	59.1	0.8	20	20
R472626	1	--	<5	--	<1	--	14.9	4.82	5.45	1.45	2	0.09	3.52	0.13	64	0.64	30	25
R472629	<1	--	<5	--	<1	--	15	2.04	3.72	5.79	0.76	0.05	3.43	0.17	68.2	0.455	<20	<5
R472631	<1	--	<5	--	<1	--	13.2	3.95	7.95	4.2	1.22	0.15	2.86	0.59	63.7	1.34	<20	15
R472633	2	--	<5	--	1	--	13.3	4.02	7.16	4.24	1.45	0.14	2.77	0.5	63.5	1.23	<20	15
R472635	<1	--	<5	--	<1	--	13.6	4.28	9.01	4.21	1.66	0.17	2.87	0.6	62	1.57	<20	15
R472640	2	<1	<5	5	6	7	13.7	8.95	12.2	0.54	11	0.19	1.92	0.1	45.7	0.85	800	30
R472645	<1	--	<5	--	<1	--	14.3	0.9	2.31	5.07	0.54	0.03	3.87	0.07	71.7	0.365	<20	<5
R472649	1	--	<5	--	<1	--	17.7	6.53	6.98	1.38	2.59	0.12	4.21	0.17	59.5	0.65	30	15
R472651	<1	<1	<5	<5	<1	1	14.3	3.06	5.11	3.65	2.25	0.11	3.36	0.2	65.4	0.855	80	10
R472655	4	--	<5	--	1	--	15.1	4.17	5.62	3.67	2.39	0.11	3.16	0.16	65	0.565	30	10
R472662	<1	--	<5	--	<1	--	13.3	1.14	2.88	5.5	0.4	0.05	2.61	0.07	72.3	0.34	<20	<5
R472668	<1	--	<5	--	<1	--	13.4	3.25	6.8	5.48	1.23	0.14	2.9	0.49	64.3	1.15	<20	15
R472676	<1	--	<5	--	<1	--	14	2.76	6.47	4.86	1.26	0.11	2.95	0.4	65.4	0.93	<20	10
R472682	<1	--	<5	--	<1	--	14.4	3.39	7.08	1.99	2.19	0.13	3.43	0.11	66	0.61	110	15
R472685	2	--	<5	--	3	--	11.3	6.96	4.23	2.06	5.5	0.03	0.93	0.03	53.1	0.52	20	5
R472689	<1	--	<5	--	<1	--	13.5	2.5	2.87	4.72	1.13	0.05	3.2	0.09	69.7	0.33	<20	5
R472691	<1	--	<5	--	<1	--	14.1	1.81	3.32	4.36	0.72	0.07	3.68	0.09	70.5	0.415	<20	5
R472694	<1	--	<5	--	1	--	14.9	3.51	5.52	3.23	1.23	0.12	4.08	0.22	67.1	0.665	<20	15
R472699	8	6	<5	<5	16	16	11.7	7.38	16.8	1.14	5.14	0.45	2.86	0.33	47.8	3.29	70	30
R472702	<1	--	<5	--	<1	--	14.6	2.19	3.6	4.42	0.79	0.08	3.72	0.11	68.8	0.51	<20	5
R472707	2	--	<5	--	<1	--	15.4	7.48	13.5	1.6	6.42	0.19	3.75	0.14	47.2	0.99	20	30
R472709	2	--	<5	--	2	--	16	5.3	6.75	3.05	2.78	0.13	3.42	0.23	60.9	0.705	30	15

Elements	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Al2O3	CaO	Fe2O3	K2O	MgO	MnO	Na2O	P2O5	SiO2	TiO2	Cr	Sc
R472711	<1	--	<5	--	<1	--	13.3	1.41	3.77	5.6	0.89	0.08	2.8	0.16	69.5	0.525	<20	5
R472717	3	--	<5	--	<1	--	14.8	3.48	5.96	1.89	2.83	0.2	3.93	0.17	63.5	0.56	40	15
R472720	4	2	<5	5	11	15	12.7	10.7	11.8	0.3	12.1	0.17	1.8	0.1	45.5	0.7	900	30
R472723	2	6	<5	<5	22	27	11.8	9.19	18.1	0.68	5.14	0.23	2.27	0.39	47.7	3.94	60	35
R472728	1	--	<5	--	1	--	12.3	0.58	7.74	2.91	2.3	0.09	2.68	0.11	63	0.625	330	15
R472730	<1	--	<5	--	<1	--	12.7	0.84	2.19	5.7	0.62	0.05	2.65	0.04	73.1	0.285	<20	<5
R472737	1	--	<5	--	<1	--	15.1	1.46	3.91	4.54	1.21	0.03	2.73	0.14	67.6	0.445	<20	5

Elements	V	Ba	Be	Hf	Nb	Rb	Sn	Sr	Ta	W	Zr	LOI	Ag	As	Co	Cu
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm
Method	IC4	IC4M	IC4M	IC4M	IC4M	IC4M	IC4M	IC4M	IC4M	IC4M	IC4M	GRAV7	IC3E	IC3E	IC3E	IC3E
Detection Limit	20	10	0.5	1	10	0.5	10	5	2	3	15	0.01	1	3	2	2
R472597	120	450	2	2	<10	75	<10	340	<2	<3	100	2.08	<1	8	18	3
R472602	70	750	1.5	4	<10	115	<10	350	<2	<3	160	0.55	<1	<3	12	6
R472607	<20	650	2	4	<10	135	<10	170	<2	<3	200	3.02	<1	<3	10	20
R472610	<20	600	1.5	2	<10	73	<10	230	<2	<3	110	1.05	<1	<3	6	3
R472616	140	650	1.5	4	<10	68	<10	330	<2	<3	170	0.87	<1	8	23	46
R472626	80	260	2.5	3	<10	55	<10	120	<2	<3	130	2.12	<1	4	41	36
R472629	20	1100	3	6	10	240	<10	260	<2	<3	270	1.27	<1	4	8	35
R472631	80	1250	3	10	25	140	<10	320	<2	<3	450	0.46	<1	8	21	27
R472633	80	1450	3	9	25	135	<10	380	<2	<3	440	2.24	<1	<3	19	26
R472635	110	1400	3	12	30	130	<10	380	<2	<3	550	0.61	<1	<3	24	25
R472640	210	260	1.5	2	<10	21.5	<10	190	<2	<3	80	5.54	<1	<3	50	125
R472645	<20	1350	2	5	<10	155	<10	220	<2	<3	270	0.78	<1	<3	5	7
R472649	90	320	2	2	<10	68	<10	420	<2	<3	110	0.86	1	<3	18	27
R472651	60	750	3.5	8	20	155	<10	240	2	<3	330	1.31	<1	4	15	22
R472655	90	700	3	3	<10	145	<10	400	<2	<3	160	0.93	<1	<3	15	24
R472662	20	1300	3.5	5	<10	200	<10	320	<2	<3	240	1.2	<1	4	13	6
R472668	60	1350	3.5	11	30	195	<10	280	<2	<3	500	1.03	<1	6	18	18
R472676	60	1200	3.5	12	25	195	<10	310	<2	<3	600	0.64	<1	4	19	22
R472682	60	290	3	4	15	155	<10	250	<2	<3	180	0.8	<1	4	16	<2
R472685	70	650	1.5	4	<10	79	<10	430	<2	<3	170	16.2	<1	4	8	28
R472689	30	800	2.5	3	<10	155	<10	270	<2	<3	160	2.41	<1	4	7	7

Elements	V	Ba	Be	Hf	Nb	Rb	Sn	Sr	Ta	W	Zr	LOI	Ag	As	Co	Cu
R472691	30	1000	2.5	5	10	175	<10	220	<2	<3	250	0.71	<1	4	7	4
R472694	50	900	3	4	10	99	<10	320	<2	<3	180	<0.01	<1	<3	11	<2
R472699	410	360	2	5	20	94	<10	175	<2	<3	210	3.49	<1	4	53	300
R472702	30	1300	2.5	6	10	165	<10	250	<2	<3	340	0.77	<1	<3	8	19
R472707	410	220	1.5	2	<10	86	<10	200	<2	<3	70	3.25	<1	<3	43	240
R472709	110	1100	2.5	5	<10	130	<10	490	<2	<3	240	0.76	<1	<3	18	58
R472711	<20	2100	2.5	9	15	155	<10	230	<2	<3	460	1.28	<1	4	8	5
R472717	70	650	3.5	4	10	72	<10	330	<2	<3	160	1.68	<1	6	16	46
R472720	200	390	1	1	<10	6	<10	220	<2	<3	50	2.91	<1	4	48	140
R472723	430	145	2	6	25	24	<10	220	<2	<3	260	0.08	<1	<3	58	400
R472728	110	1400	6.5	3	<10	210	<10	195	<2	<3	120	8.16	<1	<3	49	32
R472730	<20	950	1.5	4	<10	185	<10	155	<2	<3	160	1.47	<1	<3	4	17
R472737	40	1700	2	4	<10	135	<10	390	<2	<3	180	3.35	<1	4	10	52

ELEMENTS	Ni	Pb	S	Zn	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
SCHEME	IC3E	IC3E	IC3E	IC3E	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M
DETECTION LIMIT	2	5	50	2	0.1	0.1	0.5	0.1	0.1	0.05	0.5	0.1	0.5	0.5	0.2	0.02	0.1	0.02
R472597	19	15	<50	69	0.3	0.2	61	1.4	16.5	0.15	30	0.7	<0.5	3	<0.2	6	0.5	0.46
R472602	14	25	<50	55	0.1	<0.1	66	1.2	16	0.05	34.5	0.4	<0.5	1.5	<0.2	9.5	0.6	0.33
R472607	9	25	<50	55	<0.1	0.3	72	1.4	17	0.05	35.5	0.8	<0.5	1	<0.2	12	0.7	0.74
R472610	3	15	<50	27	<0.1	<0.1	34	0.4	14	<0.05	19.5	1	<0.5	<0.5	<0.2	1.15	0.4	0.11
R472616	18	15	1300	80	<0.1	0.2	62	0.8	20.5	0.1	29.5	0.7	<0.5	1	<0.2	2.4	0.4	0.13
R472626	29	15	1000	165	0.1	0.8	95	0.9	19.5	0.1	48.5	0.9	<0.5	1	<0.2	14	0.5	1.95
R472629	5	40	<50	43	<0.1	0.1	105	1.1	21.5	<0.05	57	1.4	<0.5	1	<0.2	42.5	1.1	1.1
R472631	8	35	1600	100	0.1	0.2	210	1.2	23.5	0.1	87	3.9	<0.5	2	<0.2	11	0.6	1.2
R472633	5	30	<50	95	<0.1	0.2	165	1.1	23	0.1	72	1	<0.5	1.5	<0.2	6	0.6	1
R472635	6	35	1650	120	<0.1	0.3	180	1	24.5	0.15	76	1.6	<0.5	1.5	<0.2	4.6	0.6	0.7
R472640	340	10	1450	82	<0.1	0.1	28.5	1	16.5	0.1	13.5	2.2	<0.5	0.5	<0.2	1.05	0.5	0.34
R472645	3	20	700	34	<0.1	<0.1	115	0.6	17.5	0.05	57	3.4	<0.5	0.5	<0.2	9	0.7	0.66
R472649	21	20	400	80	<0.1	0.2	48.5	0.9	23.5	0.1	21.5	2	<0.5	<0.5	<0.2	2.5	0.4	0.31
R472651	28	25	<50	72	<0.1	0.1	120	1.5	20.5	0.1	60	0.7	<0.5	0.5	<0.2	13.5	0.8	1.2
R472655	12	25	250	55	<0.1	0.2	63	4.8	18.5	0.1	29.5	0.9	<0.5	<0.5	<0.2	11	0.7	1.2
R472662	8	30	<50	50	<0.1	<0.1	110	4.1	16	<0.05	51	1	<0.5	<0.5	<0.2	15.5	0.9	1.4

ELEMENTS	Ni	Pb	S	Zn	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U
R472668	3	45	2550	110	<0.1	0.3	230	1.3	23.5	0.15	96	2.9	<0.5	1.5	<0.2	21	0.9	3.4
R472676	9	30	1450	110	<0.1	0.2	230	1.5	24	0.1	97	2	<0.5	1.5	<0.2	18.5	0.9	1.6
R472682	47	25	<50	105	<0.1	0.1	44	5.5	21	0.1	21	1.7	<0.5	<0.5	<0.2	10.5	0.8	1.05
R472685	9	25	300	20	0.1	0.1	73	1.5	15	<0.05	39	0.5	<0.5	<0.5	<0.2	12	0.5	2
R472689	5	20	<50	17	<0.1	<0.1	87	1.1	16	<0.05	39.5	0.3	<0.5	0.5	<0.2	17	0.7	1
R472691	4	25	<50	40	<0.1	0.1	89	3.3	18.5	0.05	44.5	0.9	<0.5	1	0.3	15	0.7	1.1
R472694	<2	25	<50	66	<0.1	0.2	74	1	20	0.1	32.5	0.9	<0.5	1	<0.2	6	0.5	0.67
R472699	51	5	50	160	<0.1	0.2	59	1.2	26.5	0.15	24.5	0.8	<0.5	1.5	<0.2	3.4	0.5	0.89
R472702	3	30	1850	39	<0.1	0.2	77	1.9	18.5	0.05	34.5	2.7	<0.5	<0.5	<0.2	11	0.7	1
R472707	43	20	2600	80	<0.1	0.1	35	0.9	20.5	0.05	15	0.4	<0.5	1	<0.2	1.75	0.4	0.36
R472709	14	25	500	66	<0.1	0.2	63	1.4	20.5	0.05	29.5	0.9	<0.5	<0.5	<0.2	5.5	0.6	0.41
R472711	<2	30	400	49	<0.1	0.2	220	0.4	22.5	0.1	99	1.5	<0.5	1	<0.2	9.5	0.6	0.46
R472717	15	25	1050	125	<0.1	0.2	130	1	22.5	0.1	57	1	<0.5	0.5	<0.2	11.5	0.4	1.4
R472720	340	10	650	63	<0.1	0.2	12.5	0.1	15	0.05	5.5	0.8	<0.5	<0.5	<0.2	0.47	0.2	0.31
R472723	55	10	100	135	0.1	0.3	70	0.8	28.5	0.15	29	1.6	<0.5	1.5	<0.2	3.8	0.3	0.97
R472728	165	25	300	290	<0.1	<0.1	63	2.2	18	0.1	30.5	0.7	<0.5	<0.5	<0.2	7	0.5	0.61
R472730	<2	25	<50	11	<0.1	<0.1	90	0.6	15	<0.05	42	0.4	<0.5	<0.5	<0.2	15	0.7	0.42
R472737	6	20	<50	29	<0.1	0.1	105	0.7	18	<0.05	55	1.3	<0.5	1	<0.2	12	0.6	0.34

ELEMENTS	Dy	Er	Eu	Gd	Ho	Lu	Nd	Pr	Sm	Tb	Tm	Yb
UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
SCHEME	IC3R	IC3R	IC3R	IC3R	IC3R	IC3R	IC3R	IC3R	IC3R	IC3R	IC3R	IC3R
DETECTION LIMIT	0.02	0.05	0.02	0.05	0.02	0.02	0.02	0.05	0.02	0.02	0.05	0.05
R472597	3.7	2.4	1.45	4.6	0.75	0.36	22.5	6.5	4.8	0.69	0.4	2.1
R472602	2	1	1.4	3.5	0.38	0.13	23	6.5	4.1	0.45	0.15	0.75
R472607	4.3	2.7	2.2	5.5	1.1	0.54	27	7.5	6	1.05	0.6	2.2
R472610	0.94	0.5	1.1	1.65	0.19	0.08	10.5	3.2	1.65	0.2	0.1	0.45
R472616	5.5	3.2	1.9	5.5	1.1	0.41	27	7	6	0.94	0.45	2.5
R472626	6.5	3.7	1.95	7	1.35	0.46	35.5	9.5	7	1.15	0.55	2.9
R472629	2.7	1.45	1.6	4.3	0.5	0.17	28	9	4.7	0.58	0.2	1
R472631	11.5	6.5	3.8	14.5	2.3	0.85	82	22.5	16.5	2.2	0.95	5.5
R472633	10.5	6.5	3.7	13	2.1	0.74	71	18.5	15	2	0.9	4.7
R472635	13.5	7.5	4.4	16.5	2.7	0.8	88	22	18.5	2.6	1	5
R472640	5	3.3	1.4	4.3	1.15	0.44	14.5	3.5	3.7	0.78	0.5	2.6

ELEMENTS	Dy	Er	Eu	Gd	Ho	Lu	Nd	Pr	Sm	Tb	Tm	Yb
R472645	6	3.6	2.6	8.5	1.2	0.36	42.5	12	8.5	1.2	0.5	2.4
R472649	4.4	2.9	1.15	4.6	0.95	0.41	20.5	5.5	4.8	0.76	0.45	2.4
R472651	4.9	3.5	1.3	5.5	1.05	0.5	38	11.5	6.5	0.86	0.55	2.9
R472655	4.1	2.5	1.75	5.5	0.85	0.38	25.5	7	5.5	0.76	0.4	2.3
R472662	3.3	1.85	2	5.5	0.66	0.24	34.5	10.5	6	0.68	0.25	1.45
R472668	12	7.5	4.3	16	2.5	0.86	93	25	18.5	2.4	1	5.5
R472676	13	7.5	3.7	16	2.7	0.9	95	25.5	19.5	2.6	1.1	6
R472682	2.8	1.65	1.1	3.5	0.6	0.19	17.5	4.8	3.8	0.56	0.2	1.15
R472685	3.5	1.9	1.5	4.8	0.73	0.24	28.5	8	5.5	0.69	0.3	1.5
R472689	3.8	2.1	1.6	5	0.76	0.27	30.5	9	5.5	0.78	0.3	1.65
R472691	3.7	2	1.9	5.5	0.69	0.26	30.5	9	6	0.75	0.25	1.45
R472694	6	3.7	2.1	7	1.25	0.46	31.5	8	7.5	1.1	0.55	2.9
R472699	7.5	4.1	2.8	8	1.45	0.45	30	7	8	1.35	0.55	2.9
R472702	4.5	2.7	2.4	6	0.94	0.38	29.5	8	6	0.87	0.4	2.3
R472707	2.8	1.75	1.15	3.4	0.58	0.22	16	4.1	3.7	0.52	0.25	1.3
R472709	3.5	2.1	2.2	5.5	0.71	0.27	26	7	5.5	0.73	0.3	1.7
R472711	10	5.5	4.4	13.5	2	0.62	87	24	17	2	0.75	3.9
R472717	8.5	4.8	2.9	10	1.65	0.63	54	14.5	11.5	1.6	0.7	3.9
R472720	2.8	1.85	1.05	2.8	0.62	0.23	7	1.7	2.2	0.44	0.25	1.35
R472723	9	5	3.1	9.5	1.8	0.51	37	8.5	10	1.6	0.7	3.4
R472728	3.3	1.7	1.65	4.7	0.62	0.19	24.5	6.5	4.9	0.66	0.25	1.1
R472730	3.4	1.45	1.7	5.5	0.58	0.16	32.5	9.5	6.5	0.75	0.2	1
R472737	2.8	1.35	2.5	5.5	0.51	0.17	35	10	6	0.65	0.2	1

Geochemical analysis of composite samples R472748-R479946 (not consecutive)

Elements	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Ag	Co	Cu	Ni	Pb	S	Zn
Units	ppb	ppb	ppb	ppb	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Method	FA3	FA3	FA3	FA3	FA3	FA3	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E	IC3E
Detection Limit	1	1	5	5	1	1	1	2	2	2	5	50	2
R472748	1	--	<5	--	<1	--	<1	6	8	10	25	350	21
R472749	1	--	<5	--	<1	--	<1	9	8	8	20	200	22
R472750	2	--	<5	--	<1	--	<1	<2	4	2	5	50	7

Elements	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Ag	Co	Cu	Ni	Pb	S	Zn
R472751	<1	--	<5	--	<1	--	<1	11	12	11	15	100	28
R472752	<1	--	<5	--	<1	--	<1	9	17	11	20	200	28
R472753	<1	--	<5	--	<1	--	1	9	51	11	35	100	57
R472754	<1	--	<5	--	<1	--	<1	14	42	19	25	100	89
R472756	<1	--	<5	--	<1	--	<1	11	10	15	15	<50	26
R472757	<1	--	<5	--	<1	--	<1	7	11	9	15	200	22
R472758	2	--	<5	--	<1	--	<1	9	17	12	15	100	33
R472759	<1	--	<5	--	1	--	<1	14	21	18	20	100	43
R472760	12	14	<5	<5	<1	<1	<1	13	18	13	20	100	39
R472761	<1	--	<5	--	<1	--	<1	11	33	13	20	100	42
R472762	<1	--	<5	--	<1	--	<1	11	23	11	25	<50	50
R472763	<1	--	<5	--	1	--	<1	11	15	7	25	<50	42
R472765	<1	--	<5	--	<1	--	<1	10	8	11	15	200	26
R472766	1	--	<5	--	<1	--	<1	<2	7	3	5	<50	7
R472767	<1	--	<5	--	<1	--	<1	9	19	15	15	200	35
R472768	<1	--	<5	--	<1	--	<1	9	14	11	15	100	28
R472769	<1	--	<5	--	<1	--	<1	11	32	16	20	<50	56
R472770	<1	--	<5	--	<1	--	<1	12	40	10	20	<50	54
R472772	<1	<1	<5	<5	<1	<1	1	10	8	13	20	100	25
R472773	<1	--	<5	--	<1	--	1	10	12	14	20	400	31
R472774	3	3	<5	<5	<1	<1	<1	8	11	11	20	150	27
R472775	1	--	<5	--	<1	--	<1	11	12	13	20	50	39
R472776	<1	--	<5	--	<1	--	<1	9	16	12	25	100	31
R472777	<1	--	<5	--	<1	--	<1	10	14	12	15	<50	26
R472778	<1	--	<5	--	<1	--	<1	11	8	11	10	100	5
R472779	<1	--	<5	--	<1	--	1	7	7	10	20	100	19
R472780	<1	--	<5	--	<1	--	1	8	8	10	25	100	25
R472781	<1	--	<5	--	<1	--	<1	8	11	10	20	250	28
R472782	<1	--	<5	--	<1	--	<1	7	4	5	20	<50	34
R472783	<1	--	<5	--	<1	--	1	6	<2	4	25	<50	33
R472785	<1	--	<5	--	<1	--	1	11	16	14	25	150	35
R472786	1	--	<5	--	<1	--	<1	8	20	3	20	<50	32
R472787	<1	--	<5	--	1	--	<1	9	49	5	30	<50	55
R472788	<1	--	<5	--	<1	--	<1	8	39	6	25	300	42
R472790	<1	--	<5	--	2	--	<1	11	14	10	30	200	44
R472792	13	11	<5	<5	12	10	<1	4	21	6	10	250	16
R472793	10	8	<5	<5	3	3	<1	19	80	21	15	<50	150
R472795	<1	--	<5	--	1	--	<1	21	115	14	15	<50	105

Elements	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Ag	Co	Cu	Ni	Pb	S	Zn
R472796	<1	--	<5	--	<1	--	<1	16	35	7	20	350	70
R472798	<1	--	<5	--	<1	--	<1	9	9	10	15	250	26
R472799	<1	<1	<5	<5	<1	<1	1	12	19	12	25	150	50
R472800	2	2	<5	<5	<1	--	<1	11	40	8	15	150	42
R472801	<1	--	<5	--	2	--	<1	29	125	35	10	300	170
R472802	<1	--	<5	--	2	--	<1	31	115	26	15	200	180
R472803	5	5	<5	<5	3	2	<1	30	71	17	15	<50	130
R472804	1	--	<5	--	4	--	<1	22	92	14	20	1100	82
R472806	<1	--	<5	--	<1	--	<1	11	10	10	20	100	31
R472807	1	1	<5	<5	7	7	<1	11	33	12	15	300	39
R472808	7	6	<5	<5	14	13	<1	21	74	25	10	50	91
R472809	1	--	<5	--	2	--	<1	25	77	35	15	50	200
R472810	<1	--	<5	--	<1	--	<1	8	29	9	25	<50	44
R472811	<1	--	<5	--	<1	--	<1	21	53	19	15	<50	69
R472812	2	--	<5	--	<1	--	<1	24	63	21	20	650	79
R472814	1	--	<5	--	<1	--	<1	12	28	8	20	100	52
R472816	1	2	<5	<5	<1	<1	<1	14	11	12	20	<50	31
R472817	<1	--	<5	--	2	--	<1	14	52	11	20	<50	52
R472818	2	--	<5	--	3	--	<1	19	42	19	20	200	71
R472820	<1	--	<5	--	<1	--	<1	12	6	10	15	100	28
R472821	<1	--	<5	--	2	--	<1	13	23	14	20	100	32
R472822	1	--	<5	--	3	--	<1	14	35	11	20	<50	44
R472823	<1	--	<5	--	2	--	<1	12	46	10	20	150	48
R472825	<1	--	<5	--	<1	--	<1	12	12	14	20	250	34
R472826	<1	--	<5	--	<1	--	<1	12	14	15	20	300	32
R472827	<1	--	<5	--	<1	--	<1	12	16	13	20	150	35
R472828	2	1	<5	<5	3	2	<1	20	30	19	20	100	61
R472829	<1	<1	<5	<5	3	2	<1	20	36	21	20	50	67
R472830	<1	--	<5	--	2	--	<1	26	40	31	10	50	105
R472831	<1	--	<5	--	2	--	<1	18	61	22	15	<50	86
R472832	<1	--	<5	--	<1	--	<1	20	76	29	10	<50	83
R472833	<1	--	<5	--	1	--	<1	17	41	22	15	<50	72
R472834	<1	--	<5	--	2	--	<1	16	53	25	15	<50	72
R472835	<1	--	<5	--	<1	--	<1	14	47	18	25	<50	61
R472836	2	--	<5	--	2	--	<1	20	41	27	25	150	63
R472839	<1	--	<5	--	<1	--	<1	10	11	12	20	100	28
R472840	<1	--	<5	--	<1	--	<1	9	10	10	25	200	28
R472841	<1	--	<5	--	<1	--	<1	7	9	7	25	100	27

Elements	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Ag	Co	Cu	Ni	Pb	S	Zn
R472842	<1	--	<5	--	4	--	<1	17	40	21	20	100	53
R472843	2	1	<5	<5	6	5	<1	18	70	21	20	<50	67
R472845	2	1	<5	<5	6	5	<1	23	73	100	15	50	61
R472847	1	--	<5	--	<1	--	<1	12	7	11	15	<50	27
R472848	1	--	<5	--	2	--	<1	15	46	17	15	100	38
R472849	<1	--	<5	--	2	--	<1	12	36	7	20	<50	45
R472850	1	2	<5	<5	<1	<1	<1	12	11	7	25	150	51
R472852	1	--	<5	--	<1	--	<1	12	10	12	20	250	28
R472853	2	1	<5	<5	5	4	<1	13	27	15	15	100	38
R472854	1	1	<5	<5	10	94	<1	21	45	20	20	100	63
R472855	2	1	<5	<5	6	4	<1	20	31	16	20	<50	63
R472857	1	--	<5	--	<1	--	<1	15	16	14	20	<50	32
R472858	1	<1	<5	<5	4	3	<1	33	135	32	15	200	89
R472859	2	1	<5	<5	5	4	<1	33	130	51	10	200	98
R472860	1	3	<5	5	9	13	<1	40	71	59	10	1250	96
R472861	1	1	10	5	7	10	<1	44	46	110	10	1000	115
R472862	3	2	5	<5	6	5	<1	35	250	30	10	1850	86
R472863	2	--	<5	--	4	--	<1	31	110	23	10	1050	100
R472865	<1	--	<5	--	<1	--	<1	13	12	13	20	100	33
R472866	1	--	<5	--	1	--	<1	15	19	15	25	350	44
R472867	3	--	<5	--	3	--	<1	13	26	19	15	300	47
R472868	<1	--	<5	--	2	--	1	24	47	30	15	150	100
R472869	<1	--	<5	--	1	--	<1	32	56	32	20	<50	130
R472870	1	--	<5	--	1	--	<1	26	85	64	20	50	110
R472871	1	--	<5	--	3	--	<1	71	160	370	30	2300	250
R472872	2	--	<5	--	<1	--	<1	18	29	21	10	150	54
R472873	<1	--	<5	--	1	--	<1	17	36	17	15	650	60
R472874	<1	--	<5	--	<1	--	<1	17	24	13	15	700	64
R472876	<1	--	<5	--	<1	--	<1	12	12	13	20	100	31
R472877	2	--	<5	--	1	--	1	15	27	22	20	250	46
R472878	<1	<1	<5	<5	3	<1	<1	17	32	23	20	50	46
R472879	<1	--	<5	--	1	--	<1	21	28	42	20	<50	84
R472881	1	--	<5	--	<1	--	<1	18	30	27	20	<50	69
R472883	<1	--	<5	--	<1	--	<1	12	13	13	20	250	35
R472884	1	--	<5	--	3	--	<1	19	40	24	15	200	65
R472885	1	--	<5	--	4	--	<1	25	81	28	15	<50	89
R472886	1	--	<5	--	<1	--	1	14	18	10	20	<50	52
R472887	2	--	<5	--	<1	--	<1	24	88	45	20	450	64

Elements	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Ag	Co	Cu	Ni	Pb	S	Zn
R472889	1	1	<5	5	5	7	<1	17	11	64	15	100	25
R472890	3	2	20	15	40	39	<1	72	80	450	10	200	56
R472891	4	3	30	25	44	43	<1	94	88	600	10	50	75
R472892	7	8	50	50	55	59	<1	120	60	750	5	50	93
R472893	4	5	55	55	76	75	<1	150	61	950	<5	150	100
R472894	3	2	30	35	72	65	<1	150	58	900	10	550	100
R472896	<1	--	<5	--	<1	--	<1	15	11	29	15	100	31
R472897	2	--	<5	--	<1	--	<1	12	17	21	20	350	34
R472898	2	--	<5	--	2	--	<1	14	28	21	20	350	42
R472899	<1	--	<5	--	<1	--	1	17	33	23	15	50	56
R472900	<1	--	<5	--	2	--	<1	21	32	32	20	300	81
R472902	<1	--	<5	--	<1	--	2	12	10	12	20	50	28
R472903	<1	--	<5	--	4	--	1	13	17	16	20	400	40
R472904	1	--	<5	--	2	--	<1	12	27	18	20	100	40
R472905	<1	--	<5	--	3	--	1	16	33	23	15	50	52
R472906	<1	--	<5	--	4	--	<1	16	27	18	20	250	52
R472907	<1	--	<5	--	3	--	1	17	29	18	15	200	41
R472908	1	--	<5	--	<1	--	<1	33	51	39	15	50	49
R472909	2	--	<5	--	3	--	<1	20	30	33	20	50	52
R472910	<1	<1	<5	<5	2	2	1	17	61	18	20	1200	45
R472912	<1	--	<5	--	<1	--	1	11	13	11	20	300	27
R472913	<1	--	<5	--	<1	--	1	13	13	13	20	350	32
R472914	1	--	<5	--	2	--	<1	12	26	15	20	150	37
R472915	<1	--	<5	--	<1	--	1	13	23	17	20	50	43
R472916	<1	--	<5	--	2	--	<1	12	24	16	25	550	45
R472917	<1	--	<5	--	<1	--	<1	12	22	8	25	250	73
R472918	<1	--	<5	--	1	--	<1	16	22	36	25	500	72
R472920	<1	--	<5	--	<1	--	<1	12	12	12	20	100	34
R472921	<1	--	<5	--	<1	--	<1	11	14	12	25	250	35
R472922	<1	--	<5	--	<1	--	1	13	16	10	25	150	49
R472923	<1	--	<5	--	1	--	<1	12	14	5	30	<50	64
R472924	<1	--	<5	--	<1	--	<1	12	16	5	30	300	53
R472926	<1	--	<5	--	<1	--	<1	10	10	9	20	250	26
R472927	<1	--	<5	--	<1	--	1	10	10	8	25	150	29
R472928	<1	--	<5	--	1	--	1	11	18	13	25	350	43
R472929	1	--	<5	--	2	--	<1	15	26	22	25	200	49
R472930	<1	--	<5	--	1	--	1	12	22	22	10	50	69
R472931	<1	--	<5	--	<1	--	1	12	11	14	5	<50	45

Elements	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Ag	Co	Cu	Ni	Pb	S	Zn
R472932	<1	1	<5	<5	<1	<1	<1	16	17	14	10	<50	38
R472934	<1	--	<5	--	1	--	1	10	11	10	20	100	27
R472935	1	--	<5	--	<1	--	<1	11	13	10	25	500	34
R472936	<1	--	<5	--	<1	--	1	9	16	10	20	150	34
R472937	<1	--	<5	--	2	--	2	10	19	11	30	400	32
R479823	1	--	<5	--	2	--	1	37	61	50	25	200	140
R479825	2	--	<5	--	3	--	<1	24	60	30	25	1500	105
R479827	<1	--	<5	--	<1	--	<1	14	14	11	25	650	36
R479828	1	--	<5	--	<1	--	<1	15	10	7	35	450	22
R479829	<1	--	<5	--	<1	--	<1	9	11	4	25	150	15
R479830	<1	--	<5	--	1	--	<1	6	10	2	25	100	11
R479831	<1	--	<5	--	<1	--	1	6	11	2	40	250	12
R479832	<1	--	<5	--	<1	--	<1	8	20	5	25	1500	32
R479833	<1	--	<5	--	<1	--	1	11	21	11	30	400	73
R479835	<1	--	<5	--	<1	--	1	10	12	12	20	200	30
R479836	<1	--	<5	--	<1	--	1	11	12	10	25	250	32
R479837	<1	--	<5	--	<1	--	1	18	23	14	35	350	39
R479838	2	--	<5	--	1	--	1	12	45	3	30	600	3
R479839	1	--	<5	--	<1	--	1	7	290	4	40	200	4
R479840	<1	--	<5	--	<1	--	2	13	800	11	35	150	6
R479841	<1	--	<5	--	<1	--	<1	8	32	2	30	500	48
R479843	<1	--	<5	--	<1	--	<1	7	14	11	25	<50	23
R479844	1	--	<5	--	<1	--	<1	7	11	9	25	300	28
R479845	<1	--	<5	--	1	--	<1	7	11	8	20	200	27
R479846	<1	--	<5	--	<1	--	<1	10	20	14	20	200	40
R479847	<1	--	<5	--	<1	--	<1	6	12	6	20	200	16
R479848	<1	--	<5	--	<1	--	<1	3	6	2	30	100	3
R479849	<1	--	<5	--	<1	--	<1	5	11	3	30	200	23
R479851	<1	--	<5	--	<1	--	<1	7	10	11	20	150	23
R479852	<1	--	<5	--	<1	--	<1	6	10	7	20	200	19
R479853	<1	--	<5	--	<1	--	<1	7	14	9	20	100	28
R479854	<1	<1	<5	<5	1	1	<1	13	24	16	25	200	46
R479855	<1	--	<5	--	<1	--	<1	9	13	8	25	50	26
R479856	<1	<1	<5	<5	<1	<1	<1	8	12	5	25	150	13
R479857	<1	--	<5	--	<1	--	<1	7	18	5	30	50	31
R479859	<1	--	<5	--	<1	--	<1	7	11	12	20	700	23
R479860	1	--	<5	--	<1	--	<1	6	11	9	20	400	24
R479861	<1	--	<5	--	<1	--	<1	6	12	7	20	200	21

Elements	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Ag	Co	Cu	Ni	Pb	S	Zn
R479862	<1	--	<5	--	<1	--	<1	7	24	8	25	350	22
R479863	<1	<1	<5	<5	3	3	<1	11	54	11	25	1000	29
R479864	<1	<1	<5	<5	2	3	<1	12	30	13	25	600	19
R479866	<1	--	<5	--	<1	--	<1	7	10	9	20	100	19
R479867	<1	--	<5	--	<1	--	<1	7	11	11	20	400	24
R479868	<1	--	<5	--	<1	--	<1	9	16	12	20	600	31
R479869	<1	--	<5	--	6	--	<1	9	68	12	30	950	33
R479870	<1	--	<5	--	4	--	<1	16	91	31	30	750	115
R479871	1	--	<5	--	5	--	<1	25	69	41	30	2200	81
R479873	<1	--	<5	--	<1	--	<1	9	18	16	20	350	38
R479874	1	--	<5	--	<1	--	<1	8	12	12	25	1350	28
R479875	<1	--	<5	--	2	--	<1	13	27	14	25	1400	28
R479876	1	2	<5	<5	11	10	<1	80	210	88	10	250	120
R479877	3	2	<5	<5	13	13	<1	53	200	67	<5	100	100
R479879	<1	--	<5	--	<1	--	<1	11	20	12	25	300	28
R479880	<1	--	<5	--	<1	--	<1	7	13	8	25	350	24
R479882	<1	--	<5	--	2	--	<1	16	21	16	20	150	45
R479883	<1	--	<5	--	2	--	<1	27	34	29	20	250	105
R479884	<1	--	<5	--	2	--	<1	28	25	26	20	50	86
R479885	<1	--	<5	--	2	--	<1	13	22	14	20	<50	45
R479887	<1	--	<5	--	4	--	<1	14	37	17	20	450	47
R479888	1	--	<5	--	3	--	<1	17	50	15	30	<50	60
R479889	2	4	<5	<5	4	3	<1	15	63	15	40	100	56
R479891	<1	--	<5	--	<1	--	<1	10	20	14	20	300	34
R479892	<1	--	<5	--	<1	--	<1	11	16	8	20	200	12
R479893	<1	--	<5	--	<1	--	<1	7	9	4	35	200	15
R479894	<1	--	<5	--	<1	--	<1	13	26	9	30	150	65
R479895	<1	--	<5	--	<1	--	<1	17	20	11	25	150	92
R479896	<1	--	<5	--	<1	--	<1	13	18	10	25	<50	69
R479898	2	--	<5	--	3	--	<1	33	110	49	20	850	86
R479900	<1	--	<5	--	3	--	<1	67	81	39	20	100	105
R479901	2	--	<5	--	3	--	<1	26	66	39	15	100	100
R479902	1	--	5	--	2	--	<1	27	83	35	20	300	100
R479904	2	--	<5	--	3	--	<1	16	39	28	20	550	64
R479905	<1	--	<5	--	2	--	<1	26	60	36	15	200	120
R479906	<1	--	<5	--	1	--	<1	24	35	65	20	50	97
R479908	<1	--	<5	--	<1	--	<1	18	54	16	50	200	105
R479909	<1	--	<5	--	<1	--	<1	21	58	15	60	300	105

Elements	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Ag	Co	Cu	Ni	Pb	S	Zn
R479911	1	--	<5	--	2	--	1	9	23	11	20	850	48
R479912	<1	--	<5	--	<1	--	<1	8	22	7	35	150	39
R479914	<1	--	<5	--	<1	--	<1	13	21	16	20	150	45
R479915	<1	--	<5	--	3	--	<1	26	91	46	20	150	92
R479916	1	--	<5	--	4	--	<1	26	78	46	15	50	86
R479917	3	--	<5	--	6	--	1	24	78	39	15	400	87
R479919	<1	--	<5	--	1	--	<1	9	18	12	20	350	31
R479920	<1	--	<5	--	1	--	<1	9	14	11	15	150	12
R479921	<1	--	<5	--	<1	--	<1	6	11	6	15	1100	8
R479922	<1	--	<5	--	<1	--	1	6	11	8	25	250	11
R479923	<1	<1	<5	<5	<1	1	<1	8	13	3	35	250	32
R479924	<1	--	<5	--	<1	--	<1	12	20	6	35	450	83
R479925	<1	--	<5	--	<1	--	<1	15	22	7	30	700	105
R479926	<1	<1	<5	<5	<1	<1	<1	21	31	10	30	300	130
R479928	<1	--	<5	--	<1	--	<1	11	18	11	15	250	28
R479929	1	1	<5	<5	2	2	<1	13	21	8	10	1950	9
R479930	<1	<1	<5	<5	5	4	<1	9	31	5	20	1750	8
R479931	<1	<1	<5	<5	2	2	<1	9	43	7	30	250	33
R479932	<1	--	<5	--	1	--	<1	11	50	8	25	200	50
R479933	<1	--	<5	--	2	--	1	11	55	8	25	200	53
R479935	<1	--	<5	--	1	--	<1	10	21	11	25	950	53
R479936	1	--	<5	--	<1	--	<1	7	19	5	25	650	56
R479937	<1	--	<5	--	<1	--	<1	9	29	6	25	900	80
R479938	<1	--	<5	--	<1	--	<1	9	16	4	30	300	61
R479940	<1	--	<5	--	<1	--	<1	11	17	6	25	550	79
R479942	1	--	<5	--	2	--	<1	11	26	16	25	1550	61
R479943	<1	--	<5	--	3	--	1	12	42	17	20	17900	81
R479944	<1	--	<5	--	3	--	1	23	60	30	15	2300	140
R479945	<1	--	<5	--	3	--	1	31	9	36	10	1750	120
R479946	<1	--	<5	--	3	--	<1	19	15	22	15	1700	85

Elements	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U	As
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Method	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M
Detection Limit	0.1	0.1	0.5	0.1	0.1	0.05	0.5	0.1	0.5	0.5	0.2	0.02	0.1	0.02	0.5
R472748	0.2	<0.1	35.5	2.2	16	<0.05	23	0.5	<0.5	<0.5	<0.2	9	0.6	0.75	3
R472749	0.1	<0.1	40	1.7	14.5	<0.05	22.5	0.6	<0.5	<0.5	<0.2	8.5	0.5	1.2	2.5

Elements	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U	As
R472750	<0.1	<0.1	14.5	0.4	5	<0.05	8	0.2	<0.5	<0.5	<0.2	2.7	0.1	3	0.5
R472751	<0.1	<0.1	42.5	1.2	14	<0.05	23.5	0.9	<0.5	<0.5	<0.2	8	0.4	0.85	2
R472752	0.1	<0.1	53	1.5	18.5	<0.05	29	0.7	<0.5	<0.5	<0.2	17	0.3	0.94	1
R472753	0.2	<0.1	125	7.5	19.5	<0.05	79	0.5	<0.5	1	<0.2	47	1.1	2.5	<0.5
R472754	<0.1	<0.1	66	5.5	22	<0.05	36	0.7	<0.5	<0.5	<0.2	23.5	1.1	1.4	<0.5
R472756	0.2	<0.1	38	2	14.5	<0.05	23.5	0.6	<0.5	<0.5	<0.2	11	0.4	0.54	2
R472757	<0.1	<0.1	37.5	0.9	11.5	<0.05	22.5	0.4	<0.5	<0.5	<0.2	6	0.3	1.05	1.5
R472758	0.2	<0.1	49	0.8	15	<0.05	26.5	0.4	<0.5	<0.5	<0.2	7.5	0.3	0.9	1
R472759	<0.1	<0.1	70	1	19.5	<0.05	36.5	0.5	<0.5	<0.5	<0.2	8.5	0.3	0.73	1
R472760	<0.1	<0.1	65	0.8	19	<0.05	35	0.5	<0.5	<0.5	<0.2	10.5	0.3	0.52	1.5
R472761	<0.1	<0.1	84	0.7	20	<0.05	43	0.5	<0.5	<0.5	<0.2	12.5	0.5	0.49	1
R472762	<0.1	<0.1	74	0.6	20.5	<0.05	41	0.3	<0.5	<0.5	<0.2	18.5	0.5	0.38	<0.5
R472763	<0.1	<0.1	62	0.7	19.5	<0.05	34.5	0.4	<0.5	<0.5	<0.2	18.5	0.5	0.33	<0.5
R472765	0.1	<0.1	34.5	1.5	13	<0.05	22	0.9	<0.5	<0.5	<0.2	7.5	0.3	0.51	3.5
R472766	<0.1	<0.1	9	0.3	3.8	<0.05	4.5	0.2	<0.5	0.5	<0.2	1.15	<0.1	2.4	<0.5
R472767	<0.1	<0.1	61	1	17	<0.05	32.5	0.4	<0.5	<0.5	<0.2	10	0.3	1.2	<0.5
R472768	<0.1	0.1	42.5	0.5	14	<0.05	24	0.5	<0.5	<0.5	<0.2	5.5	0.2	0.51	1
R472769	<0.1	<0.1	52	0.6	23	<0.05	31.5	0.4	<0.5	<0.5	<0.2	8.5	0.3	0.43	<0.5
R472770	<0.1	<0.1	67	0.5	23	<0.05	36.5	0.4	<0.5	<0.5	<0.2	9.5	0.3	0.4	<0.5
R472772	0.1	<0.1	35	1.9	14	<0.05	22	1.1	<0.5	<0.5	<0.2	9	0.4	0.53	3
R472773	0.2	<0.1	54	2	18	<0.05	32	0.7	<0.5	<0.5	<0.2	11	0.5	1	3.5
R472774	0.1	<0.1	52	1.6	15	<0.05	28	0.4	<0.5	<0.5	<0.2	10	0.4	1.35	1
R472775	<0.1	<0.1	52	1.1	17.5	<0.05	30	0.5	<0.5	<0.5	<0.2	9.5	0.4	0.57	1
R472776	<0.1	<0.1	58	1.3	16.5	<0.05	33.5	0.9	<0.5	<0.5	<0.2	10.5	0.5	0.68	0.5
R472777	<0.1	<0.1	39	0.6	16	<0.05	21	0.5	<0.5	<0.5	<0.2	6.5	0.3	0.43	0.5
R472778	<0.1	<0.1	9	0.1	20	0.05	5.5	0.8	<0.5	<0.5	<0.2	4.3	<0.1	0.44	1
R472779	0.1	<0.1	30.5	1.6	12	<0.05	25.5	0.5	<0.5	<0.5	<0.2	7.5	0.4	0.57	2
R472780	0.1	<0.1	44	2.1	14.5	<0.05	29	0.6	<0.5	<0.5	<0.2	10.5	0.6	0.82	1
R472781	0.1	<0.1	62	1.8	16.5	<0.05	33	0.6	<0.5	<0.5	<0.2	12.5	0.5	1.35	1
R472782	<0.1	<0.1	68	0.9	19.5	<0.05	35.5	0.4	<0.5	<0.5	<0.2	11.5	0.5	0.48	<0.5
R472783	<0.1	<0.1	73	0.8	19	<0.05	40.5	0.6	<0.5	<0.5	<0.2	14	0.7	0.45	<0.5
R472785	0.1	<0.1	44.5	1.7	21	<0.05	30	0.8	<0.5	<0.5	<0.2	11	0.5	0.84	2.5
R472786	<0.1	<0.1	85	0.7	19.5	<0.05	47	0.3	<0.5	<0.5	<0.2	11.5	0.4	0.42	0.5
R472787	<0.1	<0.1	200	0.5	23	<0.05	91	0.6	<0.5	<0.5	<0.2	15.5	0.8	0.45	<0.5

Elements	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U	As
R472788	<0.1	<0.1	165	0.4	20.5	<0.05	79	0.8	<0.5	<0.5	<0.2	15	0.8	0.39	<0.5
R472790	<0.1	<0.1	110	0.4	20	<0.05	59	0.5	<0.5	<0.5	<0.2	13	0.5	0.46	<0.5
R472792	<0.1	0.1	25.5	0.5	7	<0.05	16	0.5	<0.5	0.5	<0.2	2.2	0.1	1.1	0.5
R472793	<0.1	<0.1	68	0.9	25	0.05	32	0.5	<0.5	<0.5	<0.2	0.93	0.3	0.42	<0.5
R472795	<0.1	0.1	67	0.3	26.5	0.05	32.5	1.5	<0.5	<0.5	<0.2	0.9	0.3	0.22	<0.5
R472796	<0.1	<0.1	68	0.4	24.5	0.05	35.5	1.4	<0.5	<0.5	<0.2	2.3	0.4	0.19	<0.5
R472798	0.1	<0.1	35	1.7	14	<0.05	32	0.5	<0.5	<0.5	<0.2	6.5	0.4	0.56	2
R472799	0.1	<0.1	92	1.2	20	<0.05	47	0.6	<0.5	<0.5	<0.2	9.5	0.4	0.98	1.5
R472800	<0.1	<0.1	49	0.4	13	<0.05	26	0.6	<0.5	<0.5	<0.2	4	0.2	0.51	1
R472801	<0.1	<0.1	79	0.4	24.5	0.05	47	0.4	<0.5	<0.5	<0.2	1.7	0.3	0.34	<0.5
R472802	<0.1	<0.1	49.5	0.8	21.5	<0.05	30.5	0.3	<0.5	<0.5	<0.2	2.1	0.3	0.21	<0.5
R472803	<0.1	<0.1	50	0.4	22.5	0.05	30.5	0.3	<0.5	<0.5	<0.2	0.91	0.2	0.21	<0.5
R472804	<0.1	<0.1	51	0.3	22.5	0.05	30.5	0.3	<0.5	<0.5	0.2	1.2	0.2	0.13	<0.5
R472806	<0.1	<0.1	25	1	10.5	<0.05	21.5	0.4	<0.5	<0.5	<0.2	5.5	0.3	0.46	1.5
R472807	<0.1	<0.1	42	0.8	15	<0.05	26.5	0.4	<0.5	<0.5	<0.2	4.4	0.3	0.7	<0.5
R472808	<0.1	<0.1	31	0.6	12	<0.05	19.5	0.3	<0.5	<0.5	<0.2	0.96	<0.1	0.5	<0.5
R472809	<0.1	<0.1	93	0.3	22.5	0.05	58	0.3	<0.5	<0.5	<0.2	7.5	0.3	0.33	<0.5
R472810	<0.1	<0.1	82	0.4	15.5	<0.05	56	0.2	<0.5	<0.5	<0.2	20.5	0.7	0.4	<0.5
R472811	<0.1	<0.1	57	0.2	20	<0.05	37	0.3	<0.5	<0.5	<0.2	2.6	0.3	0.19	<0.5
R472812	<0.1	0.1	74	0.2	21.5	0.05	47	0.3	<0.5	<0.5	<0.2	2.4	0.3	0.24	<0.5
R472814	<0.1	<0.1	62	0.4	16.5	<0.05	41.5	0.3	<0.5	<0.5	<0.2	3.8	0.4	0.23	<0.5
R472816	<0.1	<0.1	38.5	1.1	13.5	<0.05	23.5	0.2	1	<0.5	<0.2	6.5	0.5	0.4	1
R472817	<0.1	<0.1	51	0.5	17.5	<0.05	31.5	0.7	<0.5	<0.5	<0.2	3.4	0.5	0.23	<0.5
R472818	<0.1	<0.1	42	0.2	22	0.05	24	0.5	<0.5	<0.5	<0.2	1.9	0.2	0.18	<0.5
R472820	<0.1	<0.1	24	1.1	10	<0.05	20	0.4	<0.5	<0.5	<0.2	7	0.4	0.41	1.5
R472821	<0.1	<0.1	43.5	1.3	17	<0.05	29.5	0.5	<0.5	<0.5	<0.2	8	0.4	0.61	2
R472822	<0.1	<0.1	44.5	0.3	17	<0.05	27.5	0.2	<0.5	<0.5	<0.2	4	0.4	0.18	<0.5
R472823	<0.1	<0.1	47.5	0.3	17	<0.05	31	0.4	<0.5	<0.5	<0.2	4.4	0.5	0.2	<0.5
R472825	0.1	<0.1	36.5	2.4	13	<0.05	28	0.6	<0.5	<0.5	<0.2	8	0.4	0.57	3
R472826	0.1	<0.1	41.5	1.5	15.5	<0.05	32	0.5	<0.5	<0.5	<0.2	8.5	0.4	0.88	2
R472827	<0.1	<0.1	39	1.1	16	<0.05	27.5	0.4	<0.5	<0.5	<0.2	8	0.4	0.59	1
R472828	<0.1	<0.1	50	0.8	19	<0.05	32.5	0.5	<0.5	<0.5	<0.2	8.5	0.4	0.44	0.5
R472829	<0.1	<0.1	50	0.8	19.5	<0.05	32	0.4	<0.5	<0.5	<0.2	6	0.4	0.35	0.5
R472830	<0.1	<0.1	70	0.6	17.5	<0.05	44.5	0.5	<0.5	<0.5	<0.2	20	0.7	0.38	<0.5

Elements	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U	As
R472831	<0.1	<0.1	67	0.6	16.5	<0.05	45.5	0.3	<0.5	<0.5	<0.2	55	0.7	0.37	<0.5
R472832	<0.1	<0.1	63	0.4	19	<0.05	38.5	0.5	<0.5	<0.5	<0.2	10.5	0.6	0.38	<0.5
R472833	<0.1	<0.1	66	0.4	17	<0.05	41	0.3	<0.5	<0.5	<0.2	11.5	0.5	0.35	<0.5
R472834	<0.1	<0.1	60	0.3	19	<0.05	37	0.3	<0.5	<0.5	<0.2	13.5	0.5	0.34	<0.5
R472835	<0.1	<0.1	59	0.4	18	<0.05	38.5	0.2	<0.5	<0.5	<0.2	11.5	0.5	0.26	<0.5
R472836	<0.1	0.1	60	0.4	17.5	<0.05	39.5	0.3	<0.5	<0.5	<0.2	15.5	0.6	0.28	<0.5
R472839	0.1	<0.1	37	2	14	<0.05	26	0.6	<0.5	<0.5	<0.2	9	0.5	0.6	2.5
R472840	<0.1	<0.1	43	1.8	13	<0.05	29	0.6	<0.5	<0.5	<0.2	10.5	0.6	0.87	2
R472841	<0.1	<0.1	37.5	1.2	12	<0.05	25.5	0.3	<0.5	<0.5	<0.2	8	0.5	1.6	1
R472842	<0.1	<0.1	52	1	18	0.05	33.5	0.4	<0.5	<0.5	<0.2	8	0.3	0.76	1
R472843	<0.1	<0.1	46.5	0.5	19	<0.05	28.5	0.3	<0.5	<0.5	<0.2	2.9	0.4	0.18	<0.5
R472845	<0.1	<0.1	38.5	1.2	18.5	0.05	23.5	0.3	<0.5	<0.5	<0.2	2	0.3	0.27	<0.5
R472847	<0.1	<0.1	23.5	1.1	10	<0.05	14.5	0.4	<0.5	<0.5	<0.2	6.5	0.3	0.45	1.5
R472848	<0.1	<0.1	33.5	0.4	14.5	<0.05	23.5	0.3	<0.5	<0.5	<0.2	2.4	0.3	0.37	<0.5
R472849	<0.1	<0.1	49	0.5	19	<0.05	33	0.4	<0.5	<0.5	<0.2	5	0.5	0.25	<0.5
R472850	<0.1	<0.1	42	0.3	18	<0.05	26.5	0.5	<0.5	<0.5	<0.2	2.2	0.4	0.18	<0.5
R472852	0.1	<0.1	31	1.4	12.5	<0.05	22	0.6	<0.5	<0.5	<0.2	8.5	0.4	0.49	2
R472853	<0.1	<0.1	38.5	0.7	15	<0.05	25	0.3	<0.5	<0.5	<0.2	5.5	0.3	0.53	0.5
R472854	0.1	<0.1	48.5	0.7	20.5	<0.05	31.5	0.9	<0.5	<0.5	<0.2	6	0.4	0.44	1
R472855	<0.1	<0.1	50	0.2	18.5	<0.05	31	0.4	<0.5	<0.5	<0.2	3.1	0.4	0.15	<0.5
R472857	0.1	<0.1	32.5	1.5	12.5	<0.05	22.5	0.5	<0.5	<0.5	<0.2	7	0.4	0.45	2
R472858	<0.1	<0.1	41.5	0.3	20.5	0.05	24.5	0.3	<0.5	<0.5	<0.2	1.1	0.1	0.15	0.5
R472859	<0.1	<0.1	35	<0.1	20	0.05	19.5	0.5	<0.5	<0.5	<0.2	0.33	<0.1	0.06	<0.5
R472860	<0.1	0.1	29.5	<0.1	19	0.05	16	0.5	<0.5	<0.5	<0.2	1	<0.1	0.13	<0.5
R472861	<0.1	0.1	36	0.1	17	0.1	18	0.3	<0.5	<0.5	<0.2	1.45	<0.1	0.2	<0.5
R472862	<0.1	<0.1	28	<0.1	20	0.05	15.5	0.5	<0.5	<0.5	<0.2	0.41	<0.1	0.08	<0.5
R472863	<0.1	<0.1	38.5	<0.1	21	0.1	20.5	0.3	<0.5	<0.5	<0.2	0.51	<0.1	0.07	<0.5
R472865	0.1	<0.1	31.5	1.6	12	<0.05	21	0.4	<0.5	<0.5	<0.2	7.5	0.4	0.48	2
R472866	0.1	<0.1	47.5	1.1	14.5	<0.05	34.5	0.6	<0.5	<0.5	<0.2	9	0.4	0.66	1.5
R472867	<0.1	<0.1	49	0.9	13	<0.05	33.5	0.4	<0.5	<0.5	<0.2	6.5	0.3	0.66	0.5
R472868	<0.1	<0.1	64	0.7	17	<0.05	43.5	0.5	<0.5	<0.5	<0.2	9.5	0.5	0.43	<0.5
R472869	<0.1	0.1	66	0.8	18.5	<0.05	43	0.5	<0.5	<0.5	<0.2	10	0.5	0.33	<0.5
R472870	<0.1	0.2	54	0.3	17	<0.05	32.5	0.3	<0.5	<0.5	<0.2	10	0.4	0.28	<0.5
R472871	<0.1	0.8	13.5	0.2	20.5	0.05	7.5	0.6	<0.5	<0.5	<0.2	1.15	<0.1	0.49	<0.5

Elements	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U	As
R472872	<0.1	<0.1	65	0.4	18.5	<0.05	42.5	0.2	<0.5	<0.5	<0.2	9	0.5	0.26	<0.5
R472873	<0.1	<0.1	65	0.4	18	0.05	41.5	0.3	<0.5	<0.5	<0.2	9	0.4	0.28	<0.5
R472874	<0.1	<0.1	58	0.5	17.5	0.05	38	0.3	<0.5	<0.5	<0.2	8.5	0.4	0.21	<0.5
R472876	0.1	<0.1	27.5	1.4	11.5	<0.05	21	0.7	<0.5	<0.5	<0.2	6.5	0.4	0.46	2
R472877	0.1	<0.1	53	1.2	16.5	<0.05	36.5	0.6	<0.5	<0.5	<0.2	9	0.4	0.77	2
R472878	<0.1	<0.1	47	0.7	17	<0.05	30	0.4	<0.5	<0.5	<0.2	7.5	0.4	0.4	1.5
R472879	<0.1	<0.1	60	0.9	18.5	<0.05	38.5	0.3	<0.5	<0.5	<0.2	7.5	0.6	0.26	<0.5
R472881	<0.1	<0.1	72	0.7	19.5	0.05	48	0.3	<0.5	<0.5	<0.2	4.5	0.6	0.17	<0.5
R472883	0.1	<0.1	33.5	1.5	12.5	<0.05	27	0.7	<0.5	<0.5	<0.2	6.5	0.5	0.43	2
R472884	<0.1	<0.1	73	0.7	18	0.05	46	0.5	<0.5	<0.5	<0.2	7.5	0.3	0.42	0.5
R472885	<0.1	<0.1	38.5	0.3	19.5	0.05	22.5	0.2	<0.5	<0.5	<0.2	2.1	0.2	0.14	<0.5
R472886	<0.1	<0.1	50	0.5	17.5	<0.05	32.5	0.3	<0.5	<0.5	<0.2	7	0.4	0.25	<0.5
R472887	<0.1	<0.1	64	0.6	18.5	<0.05	41	0.6	<0.5	<0.5	<0.2	7	0.4	0.23	<0.5
R472889	0.1	<0.1	15.5	0.8	6	<0.05	11	0.4	<0.5	<0.5	<0.2	4.7	0.3	0.4	1.5
R472890	0.1	<0.1	13.5	1.2	5	<0.05	8	0.4	<0.5	<0.5	<0.2	2.5	0.1	0.85	<0.5
R472891	0.1	<0.1	15.5	1.3	6	<0.05	9	0.2	<0.5	<0.5	<0.2	2.8	0.2	0.84	<0.5
R472892	0.1	<0.1	11	0.8	4.3	<0.05	6.5	0.2	<0.5	<0.5	<0.2	1.35	0.1	0.62	<0.5
R472893	<0.1	<0.1	10.5	0.7	5	<0.05	6.5	0.3	<0.5	<0.5	<0.2	1.05	<0.1	0.49	<0.5
R472894	<0.1	<0.1	10.5	0.7	5.5	<0.05	6	0.4	<0.5	<0.5	<0.2	1	<0.1	0.33	<0.5
R472896	0.1	<0.1	25	1.4	10	<0.05	17.5	0.5	<0.5	<0.5	<0.2	6.5	0.4	0.41	1.5
R472897	0.1	<0.1	40.5	1.5	14	<0.05	29.5	0.5	<0.5	<0.5	<0.2	7	0.3	0.73	1.5
R472898	<0.1	<0.1	43.5	1	14.5	<0.05	29	0.4	<0.5	<0.5	<0.2	7	0.3	0.57	1
R472899	<0.1	<0.1	50	0.7	17.5	<0.05	32	0.4	<0.5	<0.5	<0.2	7	0.3	0.4	0.5
R472900	<0.1	<0.1	66	0.3	18.5	<0.05	41	0.7	<0.5	<0.5	<0.2	5.5	0.4	0.25	<0.5
R472902	0.2	<0.1	26	1.4	10.5	<0.05	18.5	0.5	<0.5	<0.5	<0.2	6.5	0.4	0.43	2
R472903	0.2	<0.1	46.5	1.9	16.5	0.05	32	0.6	<0.5	<0.5	<0.2	8	0.4	0.66	2.5
R472904	0.1	<0.1	41.5	1.4	14.5	<0.05	27	0.4	<0.5	<0.5	<0.2	7	0.3	0.92	1
R472905	<0.1	<0.1	49.5	0.9	17	<0.05	31.5	0.5	<0.5	<0.5	<0.2	8	0.3	0.49	0.5
R472906	<0.1	<0.1	50	0.7	16	<0.05	33	0.5	<0.5	<0.5	<0.2	7.5	0.3	0.39	<0.5
R472907	<0.1	<0.1	56	0.6	17	<0.05	36	1.2	<0.5	<0.5	<0.2	6.5	0.3	0.36	<0.5
R472908	<0.1	<0.1	45	0.6	19	<0.05	28	0.6	<0.5	<0.5	<0.2	2.3	0.3	0.23	<0.5
R472909	<0.1	<0.1	53	0.8	17	<0.05	34	0.5	<0.5	<0.5	<0.2	4.8	0.4	0.14	<0.5
R472910	<0.1	<0.1	44	0.4	18	<0.05	24.5	0.5	<0.5	0.5	<0.2	2.7	0.3	0.4	<0.5
R472912	0.1	<0.1	34.5	1.5	12.5	<0.05	25	0.8	<0.5	<0.5	<0.2	7	0.4	0.46	2

Elements	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U	As
R472913	0.1	<0.1	47	1.8	16	<0.05	31.5	0.5	<0.5	<0.5	<0.2	8.5	0.4	0.59	2
R472914	0.1	<0.1	48.5	1.4	14.5	<0.05	32	0.4	<0.5	<0.5	<0.2	8.5	0.3	0.81	1
R472915	<0.1	<0.1	73	1	16.5	<0.05	50	0.4	<0.5	<0.5	<0.2	16	0.4	0.49	0.5
R472916	<0.1	<0.1	74	1.5	18.5	<0.05	48	0.5	<0.5	<0.5	<0.2	13	0.6	0.58	0.5
R472917	<0.1	<0.1	120	1.4	21.5	<0.05	75	0.9	<0.5	<0.5	<0.2	19	0.8	0.78	<0.5
R472918	<0.1	<0.1	59	1.9	19.5	<0.05	37	1.1	<0.5	<0.5	<0.2	12.5	0.6	1.35	<0.5
R472920	0.1	<0.1	41.5	1.7	13	<0.05	26.5	0.6	<0.5	<0.5	<0.2	8.5	0.4	0.57	2
R472921	0.1	<0.1	56	1.9	16.5	<0.05	36.5	0.6	<0.5	<0.5	<0.2	10.5	0.5	0.66	2
R472922	<0.1	<0.1	78	1.1	16.5	<0.05	48.5	0.7	<0.5	<0.5	<0.2	9	0.5	0.62	1
R472923	<0.1	<0.1	115	0.9	19	0.05	72	0.9	<0.5	<0.5	<0.2	9	0.6	0.28	<0.5
R472924	<0.1	<0.1	110	0.7	18	0.05	70	1	<0.5	<0.5	<0.2	8	0.6	0.2	<0.5
R472926	0.1	<0.1	34	1.6	11	<0.05	31	0.8	<0.5	<0.5	<0.2	7.5	0.4	0.47	2
R472927	0.1	<0.1	82	1.4	13.5	<0.05	55	0.6	<0.5	<0.5	<0.2	19.5	0.5	0.54	2
R472928	0.1	<0.1	64	1.7	16.5	<0.05	42.5	0.5	<0.5	<0.5	<0.2	9.5	0.4	1.15	1
R472929	0.1	<0.1	71	1.5	21.5	<0.05	44	0.5	<0.5	<0.5	<0.2	9	0.5	0.57	1
R472930	<0.1	<0.1	72	1.1	14.5	<0.05	51	0.8	<0.5	0.5	<0.2	5	0.5	0.5	0.5
R472931	<0.1	<0.1	35	0.6	12.5	<0.05	24	1.2	<0.5	0.5	<0.2	6	0.4	0.33	<0.5
R472932	<0.1	<0.1	45.5	0.5	14.5	<0.05	30.5	1	<0.5	0.5	<0.2	13.5	0.3	0.54	<0.5
R472934	0.1	<0.1	36	2.1	13.5	<0.05	25	0.7	<0.5	<0.5	<0.2	8.5	0.5	0.71	3.5
R472935	0.1	<0.1	72	2.5	17.5	<0.05	49	0.8	<0.5	<0.5	<0.2	14.5	0.5	1.65	3
R472936	0.1	<0.1	68	2.7	17.5	<0.05	44.5	0.6	<0.5	0.5	<0.2	14	0.5	1.25	1
R472937	0.1	<0.1	71	2.5	18	<0.05	46.5	1.5	<0.5	<0.5	<0.2	16.5	0.5	1.1	1
R479823	0.1	0.1	86	4.7	22.5	0.1	53	0.7	<0.5	0.5	<0.2	11.5	0.7	1.05	<0.5
R479825	<0.1	<0.1	65	4.1	21.5	<0.05	43	1.7	<0.5	<0.5	<0.2	17.5	0.7	1.9	<0.5
R479827	0.1	<0.1	54	2.2	16.5	<0.05	33	0.6	<0.5	<0.5	<0.2	8.5	0.5	0.66	2
R479828	0.1	<0.1	57	0.8	21	<0.05	45	0.8	<0.5	<0.5	<0.2	8.5	0.2	0.86	1
R479829	<0.1	<0.1	30	0.2	25.5	<0.05	28	0.6	<0.5	1	<0.2	9	<0.1	0.51	<0.5
R479830	<0.1	<0.1	36	0.4	24	<0.05	25.5	0.5	<0.5	0.5	<0.2	14	0.3	0.5	<0.5
R479831	<0.1	<0.1	56	0.7	21.5	<0.05	39.5	0.5	<0.5	1.5	<0.2	13	0.5	0.59	<0.5
R479832	<0.1	<0.1	160	2.1	19	<0.05	97	0.7	<0.5	1	<0.2	14	1.5	0.86	<0.5
R479833	<0.1	<0.1	110	2.2	17.5	<0.05	65	0.9	<0.5	<0.5	<0.2	18.5	1.2	0.74	<0.5
R479835	0.2	<0.1	39.5	2.3	14.5	<0.05	28.5	0.9	<0.5	<0.5	<0.2	7	0.5	0.68	2.5
R479836	0.1	<0.1	52	2.3	17.5	<0.05	37	0.8	<0.5	<0.5	<0.2	11	0.5	1.2	2
R479837	0.2	<0.1	93	2.6	31.5	0.05	61	1	<0.5	<0.5	<0.2	14	0.4	1.5	2

Elements	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U	As
R479838	0.1	<0.1	60	0.4	18.5	<0.05	46	0.6	<0.5	1	<0.2	11.5	0.1	0.96	1
R479839	<0.1	<0.1	105	1	20	0.15	63	0.6	<0.5	2.5	<0.2	23.5	0.7	3.1	<0.5
R479840	<0.1	<0.1	89	1.2	18	0.05	49.5	1.1	<0.5	6.5	<0.2	20	0.9	3.3	1
R479841	<0.1	<0.1	98	2.6	19	<0.05	60	0.9	<0.5	0.5	<0.2	14	0.7	3.3	<0.5
R479843	0.3	<0.1	145	4	49	0.1	96	1.5	<0.5	0.5	<0.2	19	0.6	2.3	3.5
R479844	0.1	<0.1	23.5	1.7	11	<0.05	16.5	0.6	<0.5	<0.5	<0.2	6	0.5	0.45	2
R479845	0.1	<0.1	43.5	1.7	13.5	<0.05	28.5	0.6	<0.5	<0.5	<0.2	8.5	0.4	1.4	1.5
R479846	0.1	<0.1	43	1.3	12.5	<0.05	28.5	0.4	<0.5	<0.5	<0.2	8.5	0.4	1.55	1
R479847	0.1	<0.1	58	1.2	16	<0.05	37.5	0.9	<0.5	<0.5	<0.2	9	0.4	1.1	1
R479848	<0.1	<0.1	19.5	0.5	9.5	<0.05	14.5	0.3	<0.5	<0.5	<0.2	4.2	0.3	0.28	1.5
R479849	<0.1	<0.1	56	2.1	13	<0.05	36.5	0.3	<0.5	<0.5	<0.2	20	0.9	0.62	<0.5
R479851	<0.1	<0.1	65	1.9	12.5	<0.05	44.5	0.8	<0.5	<0.5	<0.2	23.5	0.8	1.3	<0.5
R479852	<0.1	<0.1	29	1.3	10.5	<0.05	20	0.4	<0.5	<0.5	<0.2	6.5	0.4	1.4	1.5
R479853	<0.1	<0.1	33	0.9	11	<0.05	22	0.4	<0.5	<0.5	<0.2	6	0.4	0.77	1.5
R479854	0.1	<0.1	63	1	16.5	<0.05	40	0.8	<0.5	<0.5	<0.2	9	0.4	0.7	1
R479855	<0.1	<0.1	31.5	0.5	12	<0.05	21	0.4	<0.5	<0.5	<0.2	7	0.3	0.34	1
R479856	<0.1	<0.1	32	0.7	14.5	<0.05	22	0.6	<0.5	0.5	<0.2	8	0.4	0.5	2
R479857	<0.1	<0.1	100	1.6	18.5	<0.05	49	0.6	<0.5	<0.5	<0.2	6	0.9	1	<0.5
R479859	0.1	<0.1	30	1.9	11.5	<0.05	24.5	0.9	<0.5	<0.5	<0.2	6	0.4	0.69	2.5
R479860	0.1	<0.1	30	1.2	10.5	<0.05	21	0.5	<0.5	<0.5	<0.2	6	0.3	1.1	1
R479861	<0.1	<0.1	27.5	0.8	9.5	<0.05	19	0.5	<0.5	<0.5	<0.2	5.5	0.3	0.77	1.5
R479862	0.1	<0.1	26.5	0.9	12	<0.05	19	0.6	<0.5	0.5	<0.2	8	0.3	0.66	2
R479863	0.2	<0.1	28	1.7	17.5	0.05	21.5	1.1	<0.5	1.5	<0.2	17	0.3	1.45	3
R479864	0.2	<0.1	76	2.3	16	<0.05	47	1	<0.5	<0.5	<0.2	19.5	0.8	1.85	0.5
R479866	0.1	<0.1	24.5	1.4	9	<0.05	16.5	0.6	<0.5	<0.5	<0.2	7	0.4	0.61	1.5
R479867	0.1	<0.1	35.5	1.6	12	<0.05	23.5	0.5	<0.5	<0.5	<0.2	7.5	0.5	0.84	5
R479868	0.1	<0.1	42	1.5	14	<0.05	26.5	0.6	<0.5	<0.5	<0.2	8	0.3	0.83	2
R479869	0.2	<0.1	26.5	1.1	18.5	0.05	24	0.7	<0.5	<0.5	<0.2	15	0.4	1.65	2
R479870	0.1	<0.1	105	1.5	18.5	0.05	67	0.9	<0.5	1	<0.2	25.5	0.6	2.5	<0.5
R479871	0.1	0.2	97	1.4	18.5	0.1	49	0.9	<0.5	1.5	<0.2	19.5	1	5.5	<0.5
R479873	0.2	<0.1	31	1.8	12	<0.05	20.5	1.1	<0.5	<0.5	<0.2	7.5	0.3	1.05	3
R479874	0.1	<0.1	30	1.7	12	<0.05	20	1.4	<0.5	<0.5	<0.2	7	0.4	1.1	3.5
R479875	0.2	<0.1	47	2.1	17.5	<0.05	32	1.3	<0.5	<0.5	<0.2	11.5	0.3	1.8	11
R479876	<0.1	<0.1	29.5	3.2	24	0.1	16.5	0.9	<0.5	<0.5	<0.2	3.1	0.3	0.96	1

Elements	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U	As
R479877	<0.1	<0.1	21.5	1.9	23.5	0.1	11	0.8	<0.5	<0.5	<0.2	1.7	0.2	0.67	<0.5
R479879	0.1	<0.1	27	1.5	10.5	<0.05	18.5	1	<0.5	<0.5	<0.2	6.5	0.3	0.8	1.5
R479880	<0.1	<0.1	27	1.4	11	<0.05	19	0.8	<0.5	<0.5	<0.2	6.5	0.4	0.59	1
R479882	0.1	<0.1	86	1.6	14	<0.05	52	0.8	<0.5	<0.5	<0.2	13	0.5	1.75	2
R479883	<0.1	<0.1	62	1.7	16.5	<0.05	42	0.9	<0.5	<0.5	<0.2	13	0.6	1.85	<0.5
R479884	0.1	<0.1	52	1.9	18	<0.05	33	0.7	<0.5	<0.5	<0.2	13.5	0.6	0.84	<0.5
R479885	0.1	<0.1	56	1.5	18.5	<0.05	34.5	0.6	<0.5	<0.5	<0.2	14.5	0.5	1.1	<0.5
R479887	<0.1	<0.1	52	1.3	17.5	<0.05	33.5	0.4	<0.5	<0.5	<0.2	13	0.5	1.45	0.5
R479888	<0.1	0.2	56	1.6	18.5	<0.05	34	0.6	<0.5	<0.5	<0.2	16.5	0.5	0.91	<0.5
R479889	<0.1	<0.1	56	1.4	18.5	<0.05	34	0.7	<0.5	<0.5	<0.2	13.5	0.5	1.05	<0.5
R479891	0.2	<0.1	39.5	1.6	14.5	<0.05	27.5	0.5	<0.5	<0.5	<0.2	9.5	0.2	0.81	2.5
R479892	0.1	<0.1	33	0.7	16	<0.05	28	0.9	<0.5	<0.5	<0.2	7.5	<0.1	0.72	1
R479893	<0.1	<0.1	165	1.1	23.5	<0.05	110	0.7	<0.5	<0.5	<0.2	19	0.5	0.61	0.5
R479894	<0.1	<0.1	86	2.5	19.5	<0.05	47.5	0.6	<0.5	<0.5	<0.2	15	0.8	1.1	<0.5
R479895	<0.1	<0.1	76	2	19	<0.05	47.5	0.7	<0.5	<0.5	<0.2	14.5	0.7	1.15	<0.5
R479896	<0.1	<0.1	76	1.4	19	<0.05	50	0.7	<0.5	<0.5	<0.2	13.5	0.7	0.73	<0.5
R479898	0.1	<0.1	145	2.1	20	0.05	74	0.5	<0.5	<0.5	<0.2	4	0.4	0.86	1.5
R479900	0.1	<0.1	56	1.7	23	0.05	33.5	0.7	<0.5	<0.5	<0.2	5.5	0.5	0.41	<0.5
R479901	<0.1	<0.1	56	1.7	23	0.05	33.5	0.5	<0.5	<0.5	<0.2	3.7	0.4	0.31	<0.5
R479902	0.1	<0.1	90	1.9	22.5	0.05	57	1.3	<0.5	<0.5	<0.2	11.5	0.5	0.49	<0.5
R479904	0.2	<0.1	47	1.5	14	<0.05	42.5	0.6	<0.5	0.5	<0.2	4.5	0.3	1.3	3.5
R479905	<0.1	<0.1	80	1.2	20	0.05	54	0.6	<0.5	<0.5	<0.2	4.7	0.4	0.7	1
R479906	<0.1	0.1	53	1.4	18.5	0.05	32.5	0.8	<0.5	<0.5	<0.2	7.5	0.4	0.48	<0.5
R479908	<0.1	<0.1	210	1	24.5	<0.05	125	0.9	<0.5	<0.5	<0.2	4.1	0.7	0.45	0.5
R479909	<0.1	<0.1	220	0.8	26.5	0.05	135	1.3	<0.5	<0.5	<0.2	3.5	0.8	0.21	<0.5
R479911	0.2	<0.1	62	1.7	16	<0.05	41.5	0.7	<0.5	<0.5	<0.2	11.5	0.5	1.1	2
R479912	<0.1	<0.1	105	1.4	18	<0.05	77	0.9	<0.5	<0.5	<0.2	22	0.9	1.2	1
R479914	0.3	<0.1	46.5	2.1	15.5	<0.05	28.5	1.2	<0.5	<0.5	<0.2	9	0.4	0.89	3
R479915	0.2	<0.1	61	1.6	23	0.05	35.5	0.6	<0.5	<0.5	<0.2	3.8	0.4	0.4	<0.5
R479916	0.1	<0.1	69	1.6	24	0.05	39	0.7	<0.5	<0.5	<0.2	5.5	0.4	0.34	<0.5
R479917	0.1	0.1	53	1.5	23.5	0.05	29.5	0.8	<0.5	<0.5	<0.2	3.9	0.4	0.3	<0.5
R479919	0.3	<0.1	38	1.9	18	<0.05	29	0.8	<0.5	0.5	<0.2	11	0.3	1.25	3
R479920	0.2	<0.1	25.5	0.7	23	<0.05	17.5	1	<0.5	2	<0.2	14.5	0.2	1.5	3.5
R479921	0.1	<0.1	18	0.2	21.5	<0.05	18.5	0.6	<0.5	1	<0.2	10.5	<0.1	0.88	1

Elements	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th	Tl	U	As
R479922	0.1	<0.1	89	0.2	21.5	0.05	87	0.6	<0.5	0.5	<0.2	17.5	<0.1	0.89	0.5
R479923	<0.1	<0.1	165	1.2	27	<0.05	97	0.4	<0.5	0.5	<0.2	33	0.7	1.35	<0.5
R479924	0.1	<0.1	180	3.2	25.5	<0.05	105	0.5	<0.5	<0.5	<0.2	20	0.9	2.1	<0.5
R479925	<0.1	<0.1	100	4.3	21.5	<0.05	59	1	<0.5	<0.5	<0.2	17	0.9	1.85	<0.5
R479926	<0.1	<0.1	87	4	21	<0.05	56	1.2	<0.5	<0.5	<0.2	22.5	0.8	1.9	<0.5
R479928	0.2	<0.1	26.5	1.3	17.5	<0.05	19.5	0.8	<0.5	1	<0.2	9.5	0.2	0.81	2
R479929	0.2	<0.1	9	0.3	22.5	<0.05	9.5	0.8	<0.5	2	<0.2	8	<0.1	0.74	1.5
R479930	0.1	<0.1	28.5	0.9	21.5	0.05	26.5	0.7	<0.5	0.5	<0.2	14.5	0.2	0.7	2
R479931	0.1	<0.1	140	4.3	19	<0.05	93	0.5	<0.5	<0.5	<0.2	20	0.9	1.15	<0.5
R479932	0.1	<0.1	80	2.4	19	<0.05	50	0.7	<0.5	<0.5	<0.2	17.5	0.7	1.55	<0.5
R479933	0.2	<0.1	74	2.4	18.5	<0.05	46	0.8	<0.5	<0.5	<0.2	17.5	0.7	1.45	<0.5
R479935	0.2	<0.1	390	6	20	<0.05	195	0.4	<0.5	0.5	<0.2	16.5	0.9	1.4	3
R479936	<0.1	<0.1	450	7	18.5	<0.05	260	0.3	<0.5	0.5	<0.2	12.5	1	1.45	0.5
R479937	<0.1	<0.1	230	3.4	20	<0.05	160	0.4	<0.5	<0.5	<0.2	13	0.8	0.69	1
R479938	<0.1	<0.1	165	2.1	20.5	<0.05	105	0.6	<0.5	<0.5	<0.2	13.5	0.7	0.93	<0.5
R479940	<0.1	<0.1	135	1.7	20.5	<0.05	88	0.9	<0.5	<0.5	<0.2	13.5	0.6	0.72	<0.5
R479942	0.2	<0.1	86	2.5	18	0.05	56	0.5	<0.5	0.5	<0.2	11	0.5	1.2	2
R479943	<0.1	<0.1	195	0.9	19	<0.05	84	1.3	<0.5	0.5	<0.2	14.5	0.7	1.3	<0.5
R479944	<0.1	<0.1	165	2	19	<0.05	82	0.6	<0.5	<0.5	<0.2	9	0.9	1.5	<0.5
R479945	<0.1	<0.1	59	1.3	19.5	0.05	35	0.3	<0.5	<0.5	<0.2	12	0.5	0.55	<0.5
R479946	<0.1	<0.1	71	1.2	20	0.05	42.5	0.5	<0.5	<0.5	<0.2	12.5	0.5	0.51	<0.5

Geochemical analysis of end-of-hole (EOH) samples R472755-R479947 (not consecutive)

Elements	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Al2O3	CaO	Fe2O3	K2O	MgO	MnO	Na2O	P2O5	SiO2	TiO2
Units	ppb	ppb	ppb	ppb	ppb	ppb	%	%	%	%	%	%	%	%	%	%
Scheme	FA3	FA3	FA3	FA3	FA3	FA3	IC4	IC4	IC4	IC4	IC4	IC4	IC4	IC4	IC4	IC4
Detection limit	1	1	5	5	1	1	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.005
R472755	<1	--	<5	--	<1	--	13.7	2.41	4.3	3.65	0.77	0.06	3.07	0.06	71.2	0.275
R472764	3	--	<5	--	3	--	15.2	3.66	4.36	4.05	1.54	0.09	3.17	0.14	67.1	0.465

Elements	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Al2O3	CaO	Fe2O3	K2O	MgO	MnO	Na2O	P2O5	SiO2	TiO2
R472771	2	--	<5	--	3	--	18.4	7.43	8.55	1.5	3.5	0.15	3.74	0.33	55.3	0.765
R472784	<1	--	<5	--	<1	--	14.1	2.92	2.78	4.53	0.76	0.07	3.02	0.07	69.8	0.365
R472789	1	<1	<5	<5	2	2	14.2	3.97	4.78	4.55	4.77	0.1	2.71	0.18	63	0.415
R472791	2	--	5	--	1	--	14.9	2.61	2.93	4.75	0.95	0.06	3.19	0.08	69.2	0.32
R472794	3	--	<5	--	4	--	19.1	5.18	6.94	2.27	0.99	0.05	3.68	0.4	56.4	0.835
R472797	<1	--	<5	--	2	--	18.4	6.18	6.8	2.52	2.35	0.17	4.06	0.32	56.8	0.795
R472805	<1	--	<5	--	6	--	17.3	7.19	9.34	2.12	3.96	0.17	3.3	0.38	51.8	0.92
R472813	<1	--	<5	--	2	--	14.3	2.11	5.43	4.07	1.22	0.08	2.75	0.17	66.2	0.48
R472815	2	--	<5	--	6	--	16.5	4.78	8.78	2.03	3.48	0.16	3.45	0.28	55.9	0.71
R472819	2	--	<5	--	3	--	17.3	5.48	5.98	2.2	2.44	0.12	3.79	0.21	61.8	0.63
R472824	3	--	<5	--	4	--	14.4	3.42	5.16	3.71	2.41	0.1	3.19	0.14	63.7	0.53
R472837	<1	1	<5	<5	2	<1	15.4	5.33	4.16	3.58	1.94	0.11	2.91	0.15	62.8	0.545
R472838	3	--	<5	--	3	--	14.6	0.58	5.52	3.43	1.6	0.38	3.51	0.16	64.2	0.635
R472844	6	--	<5	--	5	--	15.6	3.84	6.25	3.08	2.11	0.1	3.15	0.21	62.9	0.67
R472846	4	--	<5	--	5	--	16.1	6.47	8.75	2.25	3.72	0.15	3.1	0.19	58.1	0.85
R472851	<1	--	<5	--	1	--	16.2	4.37	4.9	3.75	1.75	0.1	3.43	0.19	64.3	0.595
R472856	1	--	<5	--	4	--	15.6	4.88	6.14	3.43	2.56	0.12	3.14	0.21	63	0.595
R472864	<1	<1	<5	<5	5	4	17.4	7.12	8.74	1.23	3.7	0.18	3.86	0.35	55.6	0.91
R472875	1	--	<5	--	2	--	15.4	5.59	7.32	2.78	3.7	0.17	3.33	0.31	55.8	0.825
R472880	2	1	<5	<5	8	8	16	7.9	10.7	0.92	5.12	0.25	2.86	0.17	52.1	0.88
R472882	<1	--	<5	--	3	--	15.5	3.86	6.03	3.85	2.4	0.11	3.31	0.27	63.2	0.735
R472888	8	7	<5	--	2	--	15.3	10.2	12.9	0.98	7.84	0.21	2.66	0.17	47.7	0.93
R472895	5	3	30	35	59	58	5.25	3.19	19.4	0.42	26.4	0.26	0.82	0.08	42.3	0.285
R472901	1	<1	<5	<5	2	1	15.9	5.18	6.66	3.19	3.03	0.2	3.24	0.3	58.4	0.745
R472911	4	3	<5	<5	1	1	12.8	9.11	4.69	1.78	1.67	0.13	2.23	0.1	60.4	0.42
R472919	<1	--	<5	--	2	--	15.8	4.77	5.33	3.31	2.22	0.12	3.62	0.25	61.8	0.63
R472925	<1	--	<5	--	2	--	13.5	2.46	4.96	4.98	0.99	0.07	2.76	0.32	67.3	0.815
R472933	1	<1	<5	<5	<1	<1	12.2	1.16	2.32	3.77	0.32	0.03	3.48	0.02	75.8	0.145
R479824	2	--	<5	--	3	--	15.7	2.04	4.71	3.53	2.09	0.09	3.43	0.2	64.3	0.62
R479826	3	--	<5	--	3	--	15.4	2.63	5.44	3.01	2.26	0.11	3.49	0.23	64	0.645
R479834	<1	--	<5	--	<1	--	12.9	1.29	2.17	4.26	0.59	0.04	2.53	0.07	73.9	0.325
R479842	<1	--	<5	--	<1	--	15.3	2.04	3.4	4.82	0.81	0.09	3.7	0.16	68.1	0.38
R479850	1	--	<5	--	<1	--	13.8	0.75	1.59	5.85	0.69	0.02	2.67	0.05	72.9	0.18
R479858	2	--	<5	--	4	--	15.3	0.67	2.43	5.43	0.33	0.06	3.7	0.13	69	0.32
R479865	1	--	<5	--	3	--	14.8	0.23	1.43	5.89	0.26	0.02	1.76	0.04	71	0.235
R479872	<1	--	<5	--	1	--	14.5	1.78	2.28	4.68	0.89	0.04	3.47	0.13	70.1	0.31
R479878	2	3	<5	<5	15	15	13.5	10.1	14.1	0.58	5.05	0.23	2.66	0.22	48.9	2.34
R479881	<1	<1	<5	<5	<1	<1	12.1	0.89	2.39	5.26	0.51	0.04	2.34	0.24	72.8	0.425
R479886	1	--	<5	--	3	--	15.1	3.38	5.34	3.7	2.17	0.12	3.36	0.18	64.7	0.535
R479890	2	--	<5	--	4	--	14.5	4.26	5.31	3.71	2.15	0.11	2.84	0.16	64.8	0.535

Elements	Au	Au Dp1	Pt	Pt Dp1	Pd	Pd Dp1	Al2O3	CaO	Fe2O3	K2O	MgO	MnO	Na2O	P2O5	SiO2	TiO2
R479897	<1	--	<5	--	1	--	15.3	1.55	4.05	5.06	1.1	0.06	3.57	0.23	66.3	0.515
R479899	2	--	<5	--	5	--	16.7	4.47	9.26	1.59	2.1	0.56	3.55	0.14	54.9	0.725
R479903	2	--	<5	--	3	--	16.1	5.08	7.5	1.96	2.83	0.13	3.45	0.29	60.4	0.795
R479907	<1	--	<5	--	1	--	14.6	2.34	2.43	3.97	0.49	0.06	3.44	0.08	71.3	0.295
R479910	1	--	<5	--	<1	--	15.8	3.39	6.74	5.48	1.46	0.09	2.99	0.96	60	1.52
R479913	<1	<1	<5	<5	<1	<1	13.7	1.76	2.09	4.73	0.33	0.05	2.82	0.09	72.2	0.205
R479918	1	--	<5	--	1	--	15.9	6.29	8.08	1.87	3.88	0.15	3.43	0.23	58.3	0.695
R479927	<1	--	<5	--	<1	--	15	1.28	5.71	4.5	0.9	0.13	2.83	0.22	64.3	0.45
R479934	1	--	<5	--	4	--	14.7	2.96	4.13	4.42	1.33	0.07	3.01	0.12	67.7	0.395
R479941	<1	--	<5	--	<1	--	16	3.1	3.73	4.73	0.96	0.1	3.55	0.2	66.3	0.53
R479947	2	1	<5	<5	5	4	15	2.94	5.81	3.26	2.71	0.11	3.99	0.22	63.2	0.545

Elements	Cr	Sc	V	Ba	Be	Hf	Nb	Rb	Sn	Sr	Ta	W	Zr	Ag	Co	Cu
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Scheme	IC4	IC4	IC4	IC4M	IC4M	IC4M	IC4M	IC4M	IC4M	IC4M	IC4M	IC4M	IC4M	IC3E	IC3E	IC3E
Detection limit	20	5	20	10	0.5	1	10	0.5	10	5	2	3	15	1	2	2
R472755	<20	<5	60	750	1.5	4	<10	165	<10	210	<2	4	170	<1	7	<2
R472764	<20	10	70	1150	1.5	3	<10	115	<10	430	<2	<3	130	<1	12	22
R472771	30	20	160	700	1.5	3	<10	38.5	<10	800	<2	<3	130	<1	22	90
R472784	<20	5	30	1400	1.5	4	<10	125	<10	330	<2	4	190	<1	7	3
R472789	430	10	60	800	1	4	<10	140	<10	290	<2	<3	160	<1	18	36
R472791	<20	<5	40	950	1.5	3	<10	140	<10	320	<2	<3	140	<1	7	20
R472794	<20	20	130	1000	3	6	<10	58	<10	600	<2	<3	250	<1	26	76
R472797	<20	15	100	1100	1.5	5	<10	55	<10	650	<2	<3	270	<1	17	71
R472805	30	20	170	1000	1.5	3	<10	44.5	<10	600	<2	<3	180	<1	24	100
R472813	<20	10	70	1400	1.5	3	<10	80	<10	430	<2	<3	140	<1	15	31
R472815	20	20	130	750	1.5	3	<10	47	<10	350	<2	<3	150	<1	22	95
R472819	<20	20	100	550	2.5	4	<10	57	<10	500	<2	<3	190	<1	16	27
R472824	30	15	90	800	1.5	4	<10	96	<10	350	<2	<3	150	<1	15	19
R472837	50	10	70	850	1.5	4	<10	91	<10	430	<2	<3	160	<1	15	38
R472838	50	15	80	1650	1.5	4	<10	95	<10	240	<2	<3	160	<1	34	39
R472844	40	15	110	1150	2	7	<10	115	<10	440	<2	<3	290	<1	19	57
R472846	80	20	170	750	1.5	3	<10	49	<10	480	<2	<3	140	<1	24	48
R472851	<20	10	80	1000	1.5	4	<10	110	<10	500	<2	<3	170	<1	13	16
R472856	30	15	110	900	2	4	<10	98	<10	460	<2	<3	160	1	17	35
R472864	20	20	170	900	1.5	3	<10	10.5	<10	700	<2	<3	140	<1	22	39
R472875	170	20	120	900	2	4	<10	91	<10	470	<2	<3	170	<1	24	28
R472880	650	30	200	650	1.5	3	<10	24	10	350	<2	<3	120	<1	45	78
R472882	60	15	90	1050	2.5	5	<10	130	<10	370	<2	<3	210	<1	17	34
R472888	290	40	290	210	2	1	<10	22	<10	400	<2	<3	60	<1	40	210

Elements	Cr	Sc	V	Ba	Be	Hf	Nb	Rb	Sn	Sr	Ta	W	Zr	Ag	Co	Cu
R472895	50	15	80	165	0.5	<1	<10	11.5	<10	195	<2	<3	30	<1	130	58
R472901	50	15	110	1250	1.5	5	<10	81	<10	600	<2	<3	180	<1	19	38
R472911	20	15	60	550	1.5	2	<10	53	<10	270	<2	<3	110	<1	10	24
R472919	40	15	80	950	2.5	4	<10	110	<10	450	<2	<3	220	<1	15	24
R472925	<20	10	60	1200	1.5	10	10	140	<10	240	<2	<3	440	<1	12	12
R472933	<20	<5	<20	800	0.5	2	<10	92	<10	210	<2	<3	100	<1	6	11
R479824	30	10	90	900	3.5	5	<10	160	<10	390	<2	<3	180	<1	26	56
R479826	40	15	100	700	3	4	10	145	<10	330	<2	<3	160	<1	23	59
R479834	20	5	50	1050	2	4	<10	155	<10	240	<2	<3	180	<1	10	24
R479842	<20	10	30	1350	2.5	6	<10	160	<10	390	<2	<3	310	<1	6	21
R479850	<20	<5	<20	1100	1.5	3	<10	210	<10	310	<2	<3	140	<1	4	6
R479858	<20	<5	40	1500	2	3	<10	195	<10	550	<2	<3	150	<1	9	29
R479865	<20	5	30	1300	1.5	3	<10	220	<10	270	<2	<3	110	<1	19	50
R479872	<20	5	30	900	2.5	4	<10	195	<10	320	<2	<3	170	<1	12	10
R479878	50	35	350	100	1	3	<10	31	<10	210	<2	<3	140	<1	46	105
R479881	20	5	40	900	2	4	<10	170	<10	600	<2	<3	190	<1	11	9
R479886	30	15	90	850	2.5	4	<10	120	<10	380	<2	<3	140	<1	14	31
R479890	30	15	90	900	1.5	4	<10	130	<10	410	<2	<3	160	<1	14	51
R479897	<20	5	60	1400	3	7	<10	160	<10	360	<2	<3	380	<1	12	39
R479899	60	25	150	1250	7	3	<10	115	<10	750	<2	<3	120	<1	85	110
R479903	40	15	130	600	3	5	<10	100	<10	460	<2	<3	200	<1	23	100
R479907	<20	<5	<20	1200	1.5	4	<10	120	<10	290	<2	<3	180	<1	7	5
R479910	<20	5	110	4100	2.5	14	15	160	<10	900	<2	8	650	<1	22	59
R479913	<20	5	<20	1150	2	3	<10	155	<10	350	<2	3150	150	<1	600	22
R479918	100	20	150	500	2	4	<10	72	<10	500	<2	6	190	<1	25	51
R479927	<20	5	50	2050	3	3	<10	145	<10	410	<2	44	130	<1	20	8
R479934	30	10	60	1150	1.5	4	<10	145	<10	460	<2	42	190	<1	11	21
R479941	<20	5	40	1700	2	7	10	135	<10	500	<2	50	330	<1	10	21
R479947	40	15	90	850	2	5	<10	110	<10	340	<2	24	210	<1	17	29

Elements	Ni	Pb	S	Zn	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Scheme	IC3E	IC3E	IC3E	IC3E	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M	IC3M
Detection limit	2	5	50	2	0.1	0.1	0.5	0.1	0.1	0.05	0.5	0.1	0.5	0.5	0.2	0.02
R472755	6	35	<50	54	0.1	<0.1	195	4.2	16.5	<0.05	105	0.4	<0.5	<0.5	<0.2	135
R472764	7	25	300	48	<0.1	<0.1	49.5	0.4	15.5	<0.05	25.5	0.4	<0.5	<0.5	<0.2	8.5
R472771	16	15	1100	82	<0.1	<0.1	53	0.4	20.5	<0.05	24.5	0.6	<0.5	<0.5	<0.2	1.9
R472784	3	20	100	33	<0.1	<0.1	53	0.9	14.5	<0.05	30	0.5	<0.5	<0.5	<0.2	5.5
R472789	140	20	300	59	<0.1	0.1	67	2.9	14.5	<0.05	38	0.5	<0.5	<0.5	<0.2	9.5
R472791	4	30	250	33	<0.1	<0.1	71	0.6	14.5	<0.05	38.5	0.9	<0.5	<0.5	<0.2	21.5

Elements	Ni	Pb	S	Zn	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th
R472794	18	15	<50	130	<0.1	<0.1	77	0.6	22	0.1	36.5	0.5	<0.5	<0.5	<0.2	1.35
R472797	6	20	1300	87	<0.1	<0.1	66	0.2	20	0.05	32	2.1	<0.5	<0.5	<0.2	1.1
R472805	15	20	1300	91	0.2	<0.1	62	0.2	19.5	0.05	29.5	0.5	<0.5	<0.5	<0.2	1.2
R472813	11	15	150	60	<0.1	<0.1	56	0.3	15	<0.05	30.5	0.5	<0.5	<0.5	<0.2	2.9
R472815	12	5	500	105	<0.1	<0.1	65	0.1	20	0.05	33.5	0.5	<0.5	<0.5	<0.2	1.15
R472819	11	20	250	66	<0.1	<0.1	65	<0.1	20	<0.05	31.5	0.4	<0.5	<0.5	<0.2	1.9
R472824	10	15	150	67	<0.1	<0.1	60	0.2	15.5	<0.05	30.5	0.4	<0.5	<0.5	<0.2	8.5
R472837	17	15	300	47	<0.1	0.2	78	0.2	18.5	<0.05	41.5	0.3	<0.5	<0.5	<0.2	34.5
R472838	31	10	50	110	<0.1	<0.1	75	0.4	16	<0.05	32.5	0.4	<0.5	<0.5	<0.2	7
R472844	26	20	<50	61	<0.1	<0.1	94	1.2	18.5	0.05	55	0.3	<0.5	<0.5	<0.2	15.5
R472846	16	15	300	72	<0.1	<0.1	43.5	0.5	19	0.05	21.5	0.3	<0.5	<0.5	<0.2	1.5
R472851	6	25	200	54	<0.1	<0.1	57	0.2	18	<0.05	29	0.6	<0.5	<0.5	<0.2	1.35
R472856	13	20	150	59	<0.1	<0.1	63	0.2	17.5	<0.05	30.5	0.3	<0.5	<0.5	<0.2	3.9
R472864	17	15	400	81	<0.1	<0.1	52	<0.1	19.5	0.05	23.5	0.3	<0.5	<0.5	<0.2	0.22
R472875	56	15	800	85	<0.1	<0.1	84	0.6	17.5	0.05	42	0.4	<0.5	<0.5	<0.2	10
R472880	190	10	50	88	<0.1	0.2	40	0.2	16.5	0.05	20	0.3	<0.5	<0.5	<0.2	1.15
R472882	25	25	<50	70	<0.1	<0.1	110	1	19	0.05	57	0.4	<0.5	<0.5	<0.2	5.5
R472888	64	10	600	88	0.2	0.1	33.5	0.3	20	0.05	15	0.7	<0.5	0.5	<0.2	1.85
R472895	750	<5	700	93	<0.1	<0.1	14	0.7	6	<0.05	6.5	0.4	<0.5	<0.5	<0.2	1.35
R472901	27	15	800	105	<0.1	<0.1	71	0.2	17.5	<0.05	34.5	0.9	<0.5	<0.5	<0.2	4.1
R472911	9	35	500	63	<0.1	0.1	34	0.5	13	<0.05	16	0.5	<0.5	<0.5	<0.2	4.4
R472919	17	25	850	67	<0.1	<0.1	78	1	18	0.05	37	1.1	<0.5	<0.5	<0.2	15
R472925	4	25	300	49	<0.1	<0.1	135	1.5	16.5	0.05	64	1.4	<0.5	<0.5	<0.2	9.5
R472933	5	5	<50	23	<0.1	<0.1	51	0.4	11	<0.05	27.5	1	<0.5	<0.5	<0.2	14
R479824	37	30	1650	125	<0.1	<0.1	100	5	19	<0.05	53	0.9	<0.5	<0.5	<0.2	19.5
R479826	26	35	1450	105	<0.1	<0.1	74	3.9	20.5	0.05	37	1.7	<0.5	<0.5	<0.2	23
R479834	12	30	100	86	<0.1	<0.1	67	1.7	14.5	<0.05	35	0.7	<0.5	<0.5	<0.2	19
R479842	<2	40	300	54	0.4	<0.1	130	2.6	18	0.05	66	1	<0.5	<0.5	<0.2	21
R479850	2	25	150	17	<0.1	<0.1	76	2.2	12.5	<0.05	43	1	<0.5	<0.5	<0.2	29
R479858	5	30	100	40	<0.1	<0.1	150	2.6	16	<0.05	69	2.3	<0.5	<0.5	<0.2	35.5
R479865	12	30	450	19	0.1	<0.1	115	2.8	15	<0.05	61	1.2	<0.5	0.5	<0.2	25
R479872	12	20	1000	59	<0.1	0.1	68	1.7	15.5	<0.05	34	0.7	<0.5	<0.5	<0.2	18
R479878	42	5	50	76	<0.1	<0.1	31	1.2	24	0.1	13	0.9	<0.5	<0.5	<0.2	3.1
R479881	14	25	400	34	<0.1	<0.1	70	2	13.5	<0.05	37	1.2	<0.5	0.5	<0.2	24.5
R479886	10	20	<50	57	0.1	<0.1	65	1.7	18.5	0.05	30.5	0.9	<0.5	<0.5	<0.2	20.5
R479890	12	40	100	55	<0.1	<0.1	67	1.5	18.5	<0.05	32.5	0.9	<0.5	<0.5	<0.2	16
R479897	11	25	<50	51	<0.1	<0.1	170	1.4	20	<0.05	90	0.8	<0.5	<0.5	<0.2	23
R479899	43	25	200	110	<0.1	<0.1	99	2	22.5	0.05	41.5	0.8	<0.5	<0.5	<0.2	5.5
R479903	17	20	950	89	<0.1	<0.1	89	2.3	21.5	0.05	45	1.5	<0.5	<0.5	<0.2	15
R479907	3	25	100	45	<0.1	<0.1	68	1.5	16.5	<0.05	33.5	1.4	<0.5	<0.5	<0.2	10

Elements	Ni	Pb	S	Zn	Bi	Cd	Ce	Cs	Ga	In	La	Mo	Sb	Se	Te	Th
R479910	12	60	700	105	<0.1	<0.1	300	0.9	28	0.05	140	1.7	<0.5	<0.5	0.2	4.6
R479913	3	<5	200	20	<0.1	<0.1	68	0.5	13.5	<0.05	35	3.2	<0.5	0.5	<0.2	18.5
R479918	38	15	350	89	<0.1	0.1	59	1.9	22	0.05	26	0.8	<0.5	<0.5	<0.2	6
R479927	6	25	650	82	<0.1	0.1	88	1.5	18	<0.05	45	1.6	<0.5	<0.5	<0.2	27.5
R479934	8	25	400	44	<0.1	<0.1	83	1.4	17.5	<0.05	42	1.3	<0.5	0.5	<0.2	23
R479941	3	30	500	68	<0.1	<0.1	125	1.3	18.5	<0.05	60	1.2	<0.5	0.5	<0.2	13.5
R479947	13	20	550	85	<0.1	<0.1	90	0.9	19.5	0.05	42.5	0.8	<0.5	0.5	<0.2	13.5

Elements	Tl	U	As	Dy	Er	Eu	Gd	Ho	Lu	Nd	Pr	Sm	Tb	Tm	Yb	LOI
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%
Scheme	IC3M	IC3M	IC3M	IC3R	IC3R	IC3R	IC3R	IC3R	IC3R	IC3R	IC3R	IC3R	IC3R	IC3R	IC3R	GRAV7
Detection limit	0.1	0.02	0.5	0.02	0.05	0.02	0.05	0.02	0.02	0.02	0.05	0.02	0.02	0.05	0.05	0.01A
R472755	0.8	5	0.5	2.7	1.35	1.3	6.5	0.5	0.25	67	21	9	0.76	0.25	1.45	0.61
R472764	0.5	0.24	<0.5	2.6	1.35	1.65	3.9	0.56	0.23	21	5.5	4.8	0.54	0.25	1.45	0.58
R472771	0.2	0.15	<0.5	3.9	2	2	6	0.84	0.3	30	7	6.5	0.82	0.4	2	0.45
R472784	0.6	0.33	<0.5	1.6	0.75	2.1	2.8	0.32	0.12	19	5.5	4	0.36	0.15	0.7	1
R472789	0.7	0.67	<0.5	2.1	1.2	1.35	3.5	0.47	0.21	24	7	4.4	0.46	0.25	1.25	1.77
R472791	0.7	0.98	<0.5	1.8	0.95	1.45	3.1	0.36	0.19	24	7.5	4.2	0.39	0.2	1.05	1.11
R472794	0.3	0.32	0.5	6.5	3.3	2.9	10	1.4	0.48	42.5	10	10	1.25	0.6	3.1	4.02
R472797	0.3	0.15	<0.5	4.9	2.5	2.6	7.5	1.05	0.39	35	8.5	8	0.99	0.45	2.5	0.69
R472805	0.2	0.17	<0.5	4.4	2.3	2.4	7	0.96	0.37	33	8	7.5	0.9	0.45	2.3	2.83
R472813	0.4	0.25	<0.5	2.8	1.45	2.1	4.3	0.6	0.23	24	6.5	5.5	0.58	0.3	1.45	3.13
R472815	0.2	0.11	<0.5	3.9	2.1	1.8	6	0.85	0.34	31.5	8	6.5	0.8	0.4	2.2	4.2
R472819	0.3	0.11	<0.5	5.5	3.1	1.75	8	1.25	0.54	36.5	9	8	1.1	0.65	3.4	0.28
R472824	0.4	0.32	<0.5	3.4	1.8	1.6	5	0.73	0.32	26	7	5.5	0.68	0.35	2	3.23
R472837	0.5	0.35	<0.5	3.3	1.8	1.7	5.5	0.72	0.33	31.5	9	6	0.69	0.35	2	3.1
R472838	0.7	0.39	<0.5	4.4	2.4	2.4	6.5	0.97	0.42	34	8.5	8	0.9	0.5	2.6	5.59
R472844	0.5	0.32	<0.5	3.9	2	2.3	6	0.82	0.33	38.5	10.5	7.5	0.81	0.4	2.1	2.5
R472846	0.3	0.22	1	3.7	1.95	1.95	5.5	0.8	0.32	24	6	6	0.72	0.4	2	0.46
R472851	0.5	0.12	<0.5	3.7	1.95	2	5.5	0.79	0.32	28	7	6	0.76	0.35	2	0.45
R472856	0.4	0.23	<0.5	4.1	2.2	1.8	6	0.9	0.35	31.5	8	7	0.83	0.45	2.3	0.76
R472864	<0.1	0.04	<0.5	4.2	2.2	2.3	6.5	0.91	0.33	30.5	7	7	0.87	0.4	2.1	0.6
R472875	0.4	0.38	<0.5	5.5	2.7	2.3	7.5	1.1	0.42	40.5	10.5	8.5	1.05	0.5	2.7	5.08
R472880	0.1	0.26	1	3.9	2.1	1.5	5.5	0.88	0.33	22	5.5	5	0.77	0.4	2.1	3.46
R472882	0.6	0.18	<0.5	6	3.1	2.4	9	1.3	0.47	47.5	12.5	9.5	1.25	0.6	3	0.97
R472888	0.1	0.32	<0.5	4.6	2.6	1.35	5.5	1.05	0.46	20	4.7	4.9	0.83	0.55	3	1.17
R472895	<0.1	0.38	<0.5	1.15	0.6	0.62	1.85	0.24	0.09	8.5	2	2	0.24	0.1	0.6	1.27
R472901	0.4	0.24	<0.5	4.5	2.4	2.4	7	0.96	0.41	35	9	7.5	0.94	0.45	2.5	3.34
R472911	0.2	0.85	<0.5	4.3	2.5	1.25	5	1	0.42	19	4.7	4.9	0.8	0.5	2.6	7.05
R472919	0.5	0.81	<0.5	4.9	2.7	2.2	7.5	1.1	0.47	40	10.5	8.5	1.05	0.55	2.9	2.32

Elements	Tl	U	As	Dy	Er	Eu	Gd	Ho	Lu	Nd	Pr	Sm	Tb	Tm	Yb	LOI
R472925	0.7	0.32	<0.5	7.5	3.7	2.9	12.5	1.55	0.51	69	18	14	1.65	0.65	3.4	1.49
R472933	0.5	0.43	<0.5	2.3	1.3	1.15	4	0.51	0.26	22.5	6	4.4	0.5	0.25	1.45	0.71
R479824	0.8	2.2	<0.5	8	4.4	2.6	11	1.8	0.67	52	13	10.5	1.55	0.85	4.6	3.49
R479826	0.7	2.2	0.5	6	3.3	2	8.5	1.3	0.57	39	10	8	1.1	0.65	3.7	2.89
R479834	0.9	1	<0.5	2.6	1.2	2	4.9	0.52	0.17	30	8	6	0.6	0.2	1	1.5
R479842	0.8	1.5	<0.5	8	3.8	2.8	11.5	1.65	0.47	59	16	13	1.7	0.7	3.3	0.78
R479850	0.9	1.3	<0.5	0.8	0.45	1.5	2	0.16	0.09	24	8	3.6	0.23	0.1	0.5	1.15
R479858	1	1.2	0.5	7.5	3.7	3.9	14	1.6	0.52	75	20	14.5	1.7	0.65	3.2	2.07
R479865	1.2	3.1	0.5	5.5	2.9	2.6	9	1.2	0.5	49	13.5	10	1.2	0.55	3.1	3.46
R479872	0.8	2.1	<0.5	4	2.1	1.75	6	0.86	0.35	30	8	6	0.8	0.4	2.2	1.5
R479878	0.2	0.72	<0.5	6	2.9	2	7.5	1.3	0.46	22	4.7	6	1.1	0.55	2.9	2.59
R479881	0.7	1.25	1	2.7	1.3	2.1	5.5	0.53	0.21	34	9	7	0.65	0.25	1.25	2.25
R479886	0.5	1.55	<0.5	4.6	2.6	1.9	6.5	1.05	0.47	31.5	8	7	0.94	0.55	2.9	1.92
R479890	0.6	1.15	<0.5	4.1	2.2	1.9	6	0.88	0.39	32.5	8.5	7	0.86	0.45	2.4	2.13
R479897	0.7	0.77	<0.5	4.8	2.4	2.5	9	0.93	0.36	69	20	11.5	1.15	0.4	2.3	2.22
R479899	0.7	1.15	1	36.5	24.5	7.5	36.5	9.5	4.4	80	15.5	24.5	6	5	27	5.67
R479903	0.5	0.46	<0.5	4.7	2.4	1.8	8	1.05	0.4	38	10.5	7.5	0.97	0.5	2.7	1.41
R479907	0.5	0.39	0.5	2.5	1.05	2.2	5.5	0.51	0.16	29	8	6	0.61	0.2	1.05	0.46
R479910	0.9	0.23	<0.5	5.5	1.9	6.5	17.5	0.83	0.18	140	37	24.5	1.65	0.25	1.2	1.37
R479913	0.7	1.2	1	1.9	0.9	1.4	3.7	0.4	0.14	22	6.5	4.5	0.44	0.2	0.95	0.04
R479918	0.4	0.36	<0.5	5.5	3	1.8	7.5	1.35	0.57	31	7.5	7	1.05	0.7	3.8	1.12
R479927	0.7	1.05	<0.5	3.1	1.5	2.7	6	0.65	0.28	34	9.5	8	0.69	0.3	1.75	4.24
R479934	0.6	1	<0.5	3.7	1.85	2	6.5	0.83	0.31	34	9.5	7	0.81	0.4	2.1	1.26
R479941	0.6	0.68	<0.5	6	2.8	3.1	11	1.3	0.41	52	14	11.5	1.3	0.6	3	1.13
R479947	0.5	0.94	<0.5	4.6	2.4	2	8	1.05	0.44	39.5	10.5	8	0.96	0.55	2.9	2.36

3. PETROLOGICAL REPORTS

MINERALOGICAL REPORT No. 8102

by Alan C. Purvis, PhD

June 22, 2001

TO :	Mr Justin Gum P.I.R.S.A Geological Survey Section 101 Grenfell St ADELAIDE SA 5000
YOUR REFERENCE :	Order No. EX3053 Debit Code 03 316/0307/699
MATERIAL :	13 Drill Core samples, Tieyon Station area
IDENTIFICATION :	472 495 to 472 740
WORK REQUESTED :	Thin section preparation, description and report with comments and interpretations as specified.
SAMPLES & SECTIONS :	Returned to you with this report.
DIGITAL COPY :	Emailed to Justin Gum 22/6/01.

PONTIFEX & ASSOCIATES PTY. LTD.

SUMMARY COMMENTS

The thirteen samples described in this report include twelve from RC drilling and one outcrop sample. These samples are from the vicinity of Tieyon Station on the Abminga 1:250,00 sheet area in northern South Australia (133°30′ to 135°E, 26° to 27°S) and are described from thirteen normal thin sections and one polished section, largely of chips mounted in epoxy.

These samples consist of basement (metamorphosed) mafic and felsic igneous rocks as well as unmetamorphosed dolerites ranging from olivine to quartz-bearing. The following groups are identified: biotite amphibolites (with clinopyroxene in some chips); biotite-hypersthene tonalite gneiss (again with clinopyroxene in some samples); mixed granitoids: biotite tonalite, granodiorite, monzogranite and syenogranite, varying from gneissic to massive, and dolerites.

Biotite-amphibolite (TIERC 46 and 47)

These are heterogeneous and inequigranular mafic rocks dominated by olive-brown hornblende and plagioclase, with less abundant biotite, opaque oxide and apatite as well as rare zircon or monazite in TIERC 46. Clinopyroxene occurs in TIERC 47, and quartz occurs in one chip in TIERC 46, with less abundant mafic minerals than in the other chips.

Biotite-hypersthene tonalite gneiss (TIERC 32, 46 and 47)

This is the only lithology in TIERC 32 and accompanies more mafic chips in TIERC 46 and 47. These chips are again heterogeneous and inequigranular but have poikiloblastic orthopyroxene as well as weakly foliated biotite, opaque oxide, apatite and rare zircon. Minor clinopyroxene occurs in TIERC 47, just as it does in the mafic chips in the same sample. This suggests that the mafic and felsic chips may be related.

Other granitoids (TIERC 48, 49, 58 and 72

Biotite-tonalite gneiss in TIERC 48 has carbonate-clay-altered possible pyroxene and may belong to the biotite-hypersthene tonalite gneiss suite, but is poor in mafic silicates, as is the gneiss in TIERC 49. The gneiss in TIERC 49 has clay, without carbonate, possibly after pyroxene, and is accompanied by altered granodiorite. The granodiorite has low-temperature hydrothermal alteration, including sericite, epidote, chlorite, prehnite and pumpellyite, but no obvious evidence of former orthopyroxene. A large grain in this sample has been replaced by chlorite, however.

Monzogranite in TIERC 58 is rich in accessories, with aggregates of hornblende, biotite, magnetite, sphene, apatite and rare zircon as well as quartz, plagioclase and microcline. The abundances of sphene and apatite are particularly unusual, suggesting a granitoid enriched in incompatible elements (Ti, Zr, P, REE). These elements are less abundant in syenogranite in TIERC 72, although opaque oxide, sphene, apatite and zircon are present in a possibly minimum-melt granitoid.

Unmetamorphosed dolerites (TIERC 35, 42, 59, 71 and 77)

These samples have fresh, albitised or sericitised plagioclase as well as fresh or clay-altered clinopyroxene, partly leucoxenised magnetite and ilmenite, apatite and various other minerals. Fresh and altered olivine grains occur in TIERC 59 and 77, with very minor quartz and/or granophyre in TIERC 42, 59 and 71. Clays, biotite, amphibole, epidote, sericite, chlorite and carbonate occur sparingly as low-temperature hydrothermal minerals, with possibly iron-rich prehnite in TIERC 71. Titanomagnetite and ilmenite are the primary oxides, but cryptocrystalline opaque oxide is also evident in plagioclase and olivine, possibly formed during a weak post-intrusion heating event, and the olivine is also veined by secondary magnetite.

Metamorphism and petrogenesis

The tonalite gneisses and amphibolites suggest transitions from granulite into high amphibolite-facies metamorphism, but some of the other granitoids may have suffered only normal amphibolite-facies conditions, with late prehnite-pumpellyite-facies alteration affecting granitoids and some dolerite samples. The tonalites are heterogeneous and mafic basement samples seem to be related to tonalites in the same drillhole, but some of the other granitoids are possibly unrelated. The highly enriched monzogranite and leucocratic syenogranite may also be related, in an orogenic or post-orogenic suite similar to enriched granitoids in the Albany-Fraser Belt in Western Australia. Whether any of these granitoids could have similar potential to those of enriched granitoids in the Cloncurry Terrane of the Mount Isa Inlier is unclear at the moment.

The dolerites are similar to post-cratonisation dykes in the Yilgarn Block in Western Australia and in the Gawler Craton in South Australia and have similar opaque oxide assemblages. Similarly low-grade alteration is observed as well.

Sample TIE18 is calcrete, as suggested in your notes, with quartz, microcline and rare zircon.

INDIVIDUAL DESCRIPTIONS

RS 472495: **Weakly foliated biotite-hypersthene tonalite with opaque oxide,**
TIERC 32, 10-12m **apatite and rare zircon.**

The chips in this sample are granuloblastic and inequigranular but mostly coarse-grained, with quartz and plagioclase to 7mm in grainsize. Less abundant mafic minerals include biotite and orthopyroxene, with a weak anastomosing foliation defined by the biotite. Minor opaque oxide and accessory apatite are also present.

- The plagioclase has an irregular patchy zoning, with more sodic areas enclosing minor quartz and biotite, as well as more calcic areas, typically free of inclusions. Some grains have bent twin-planes. 50%
- The quartz has weak undulose extinction and subgrains, but is mostly anhedral and interstitial to rounded plagioclase and euhedral biotite. 25%
- The biotite occurs as flakes to 2mm long, usually in aggregates, where it is partly decussate, but is weakly foliated, especially where it occurs as more isolated flakes. 15%
- The orthopyroxene is granular or poikiloblastic and from 0.3 to 4mm in grainsize, commonly enclosing quartz and biotite, locally with opaque oxide. Rare grains, altered to pale green smectite, are present and may have been clinopyroxene, but no fresh material remains. 7-8%
- Anhedral opaque oxide grains occur to 0.5mm long. 2-3%
- There is accessory apatite to 0.3mm in grainsize and rare zircons to 0.1mm long, partly enclosed in biotite. Trace

The visually estimated mineralogy suggests a weakly foliated biotite-hypersthene tonalite.

RS 473516: TIERC 35, 18-19m

Weakly altered dolerite with minor amphibole and biotite and partly sericitised plagioclase, partly adjacent to veins with chlorite, amphibole, epidote, quartz, carbonate and clays.

Mineral	Vol %
Plagioclase	50%
Clinopyroxene	35%
Opaque oxide	5%
Amphibole	7-8%
Biotite	2-3%
Apatite	<1%

These chips are more mafic than those in the previous sample and represent largely unmetamorphosed dolerite with some areas of weak alteration and incipient metamorphism. The dolerite is heterogeneous and inequigranular, with areas in the same chip having plagioclase laths from 0.25 to 2mm long, accompanied by inequigranular clinopyroxene and opaque oxide. In some areas the plagioclase is fresh, but in others it has irregular partial or complete alteration to sericite. The pyroxene is also mostly fresh, possibly including pigeonite as well as augite, but is commonly rimmed by dark green amphibole and/or biotite. In some areas, especially adjacent to veins, the pyroxene is more completely altered, with pale amphibole replacing the cores, passing into darker amphibole in the rims. The disseminated opaque oxide, to 0.3mm in grainsize, is fresh and skeletal in habit. Small aggregates of apatite needles occur, probably in patches of late magmatic origin.

The veins mostly contain various proportions of chlorite, epidote, actinolite, calcite, quartz and albite, but later veins with clays, chlorite and epidote are also common.

RS 472546: **Altered coarse-grained dolerite with clay-amphibole-sericite alteration, separate magnetite and ilmenite grains, minor late magmatic quartz and granophyre, accessory apatite**

TIERC 42, 22-23m

Mineral	Vol %
Plagioclase	55%
Clinopyroxene	30%
Quartz etc	2-3%
Oxide	7-8%
Amphibole	2%
Clay	3%
Apatite	trace

This is again an altered dolerite, albeit much coarser than that in the previous sample, with clay and sericite alteration as well as amphibole and altered possible biotite. Abundant plagioclase varies from 0.4 to 4mm or more in grainsize, partly altered to sericite and brown clay (oxidised biotite or vermiculite?), partly along irregular fractures. The pyroxene also shows partial to complete alteration to clays, with colourless and dark red-brown varieties as seen in the plagioclase. The pyroxene is granular to prismatic, but mostly less than 1.5mm in grainsize and commonly in aggregates. Skeletal and platy crystals of opaque oxides are disseminated, possibly magnetite and ilmenite respectively, with platy crystals to 3mm long and skeletal opaque oxides to 1mm in grainsize. Small patches of late magmatic quartz and rare granophyre are disseminated, with minor apatite as needles to 1mm long, mostly in and adjacent to the quartz and granophyre. Apatite is also present as inclusions in patches of pale green secondary amphibole or with decussate fine-grained reddish-brown clay.

RS 472576: **Biotite amphibolites of mafic origin and quartzofeldspathic**
TIERC 46, 32-34m **gneiss (biotite-hypersthene tonalite gneiss) with monazite or zircon.**

Three of the chips in this sample are biotite amphibolites of mafic origin, the fourth chip being a quartzofeldspathic, probably granitoid gneiss with biotite and orthopyroxene.

Mineral	2 chips	1 chip
Plagioclase	55-60%	60-65%
Hornblende	30-40%	15%
Biotite	2-3%	5%
Oxide	3-5%	5%
Apatite	<1%	<1%
Monazite/zircon	trace	trace
Chlorite-quartz		10%
Quartz		2-3%

The mafic chips are heterogeneous and inequigranular with plagioclase from 0.4 and 2.5mm in grainsize, olive-brown hornblende to 3mm in grainsize and reddish brown biotite to 2mm. There is no foliation and the amphibole, as well as the less abundant biotite, is decussate and largely fresh. However, one of the three chips has patches of carbonate and clay as well as residual hornblende and disseminated biotite. The more altered chip also has two grains of quartz to 2mm long, weak clay alteration in the biotite and fractured disseminated opaque oxide. The oxide in the other chips is fresh. Minor apatite is disseminated and is generally granular, with rare monazite or zircon 0.1mm in grainsize. One chip has some oxide grains separated from plagioclase by quartz.

Mineral	Vol %
Plagioclase	55%
Quartz	30%
Orthopyroxene	5%
Biotite	5%
Hornblende	3%
oxide	2%
Zircon, apatite	trace

The quartzofeldspathic chip has comparatively loose aggregates, to 4 or 5mm long, of partly poikiloblastic orthopyroxene with biotite, opaque oxide and minor olive-green hornblende, as well as areas of lobate quartz and plagioclase to 3mm in grainsize. There is a weak foliation defined by biotite, and narrow fractures filled by chlorite occur parallel to the foliation. A single rounded zircon, 0.15-0.2mm long, was noted, and there is accessory fine-grained apatite. This seems to be a biotite-hypersthene tonalite gneiss.

RS 472582: **Mafic chips with hornblende, clinopyroxene and biotite, and felsic chips with quartz partly antiperthitic, plagioclase and mafic minerals (hornblende, biotite, clinopyroxene and orthopyroxene)**

TIERC 47, 16-17m

There is a similar mixture of mafic and felsic chips in this sample as seen in the previous sample, but with clinopyroxene as well as hornblende and biotite in the mafic chips, as clinopyroxene as well as orthopyroxene in the more felsic chips. One chip is a fragment of antiperthitic plagioclase, but similar grains also occur within felsic chips.

Mineral	Vol %
Plagioclase	45-50%
Hornblende	35%
Clinopyroxene	7-8%
Biotite	5%
Oxide	5%
Apatite	<1%

The mafic chips are inequigranular with hornblende and less abundant clinopyroxene with a granular or poikiloblastic habit and a grainsize of 0.2 to 4mm. Less abundant biotite is common and varied from 0.2 to 2mm in grainsize. There is also abundant granular plagioclase to 2mm in grainsize. Lobate opaque oxide occurs as masses to 4mm in diameter, and there is minor fine-grained apatite.

Quartz	10-30%
Plagioclase	60-75%
Orthopyroxene	2-4%
Clinopyroxene	3-5%
Hornblende	1-4%
Biotite	2-3%
Opaque oxide	1-3%
Apatite	<1%

The felsic chips are varied, some being fine-grained and others mostly coarse-grained. One chip has abundant plagioclase and quartz, generally less than 1.5mm in grainsize, with relatively less abundant mafic aggregates and grains. Brown hornblende, biotite, orthopyroxene and clinopyroxene are all present as well as opaque oxide and minor apatite. The plagioclase is largely free of exsolution but has myrmekitic intergrowths with quartz in some areas. Other chips contain or consist of coarse-grained antiperthitic plagioclase, as indicated above, or have partly antiperthitic plagioclase as well as quartz and mafic minerals. Pyroxenes are more abundant, relative to hornblende and biotite, than in the finer-grained chip, with clinopyroxene especially abundant in one chip. Another chip has an aggregate of opaque oxide rimmed by clays and carbonate, possibly derived from pyroxene or olivine. In one chip there is a reaction rim containing biotite and opaque oxide, separating orthopyroxene from plagioclase and quartz.

RS 472587: **Biotite-tonalite gneiss with mafic grains replaced by carbonate**
TIERC 48, 26-28m **and clay, carbonate-filled fractures and veins with carbonate and possible scapolite.**

Mineral	Vol %
Plagioclase	45%
Quartz	30%
Biotite	7-8%
Carbonate-clay	7-8%
Orthoclase?	5%
Oxide	5%
Apatite	<1%

Well-foliated quartzofeldspathic gneiss in this sample has biotite as the only fresh mafic mineral, but possible pyroxene or amphibole has been replaced by carbonate and clay, locally accompanied by lamellae of earthy hematite. Plagioclase and minor quartz form a granuloblastic aggregate with a grainsize of 0.2 to 1.5mm, generally with weakly clay-clouded plagioclase. Minor myrmekite is present and there is very minor orthoclase. The biotite is mostly less than 0.5mm in grainsize, but there are some flakes as much as 1.5mm long. Rounded aggregates of opaque oxide occur, to 1.5mm long, locally with lamellae or grains altered to leucoxene. Minor apatite is disseminated.

Some of the chips have fractures containing carbonate and clay, and one chip has a parallel arrangement of veins filled by carbonate and a uniaxial negative mineral, possibly scapolite, less probably a zeolite.

The visually estimated mineralogy suggests biotite-tonalite gneiss with minor K-spar.

RS 472594: **Altered biotite-tonalite gneiss (3 chips) and altered granodiorite**
TIERC 49, 38-39m **with sericite, epidote, prehnite, pumpellyite and chlorite.**

Mineral	Vol %
Plagioclase	60%
Quartz	30%
Biotite	5%
Oxide	2%
Clay	3%
Apatite	<1%

Three of the four chips in this sample are composed of foliated tonalite gneiss with a granuloblastic texture with plagioclase and quartz from 0.2 to 3mm in grainsize. Minor foliated biotite and clay aggregates, possibly after pyroxene, are disseminated, as well as minor opaque oxide and apatite. Some of the biotite has been altered to clays and chlorite, and sericite is present in some of the plagioclase. These chips appear to be more leucocratic than other gneisses in this suite. Minor opaque oxide and apatite are disseminated, some of the opaque oxide showing alteration to limonite and/or clay.

Mineral	Vol %
Plagioclase	45%
Quartz	25-30%
Orthoclase	10%
Chlorite	5%
Epidote	3%
Prehnite, pumpellyite	4%
Oxide	1%

The fourth chip is less deformed and is partly coarse-grained with albitised, sericite-clouded plagioclase and interstitial grains of orthoclase as well as abundant quartz. Minor myrmekite occurs between plagioclase and orthoclase. This chip has a grainsize of as much as 5mm but has no fresh mafic minerals. A large poikilitic grain has been replaced by chlorite ± illite. Lenses and patches composed variously of epidote, prehnite and colourless to green pumpellyite are common, especially in the plagioclase, but fractures in the quartz grains are abundant and contain epidote and/or prehnite. Veins filled by prehnite are also present, to 0.3mm wide. Accessory oxide, to 1.5mm in grainsize, is mostly fractured with veins of clay or prehnite. This seems to be an altered granodiorite.

RS 472635: **Heterogeneous, inequigranular monzogranite with mafic aggregates (hornblende-biotite-oxide-sphene-apatite) and minor zircon.**

TIERC 58, 12-14mm

Mineral	Vol %
Microcline	25-30%
Plagioclase	30%
Quartz	25%
Hornblende	7-8%
Biotite	4%
Opaque oxide	3%
Sphene	2%
Apatite	1%
Zircon	trace

This sample represents a massive, coarse-grained but inequigranular granitoid with scattered megacrysts of microcline and irregular mafic silicate-oxide aggregates. Irregular grains of microcline occur, to 15mm or more in diameter, as well as abundant plagioclase and quartz, mostly less than 5mm in grainsize. Much of the microcline and plagioclase is fresh, but some areas have sericitised plagioclase and reddish, iron-stained microcline. The mafic clots are dominated by green hornblende from 1 to 5mm in grainsize, partly poikilitic, but there is also biotite to 4mm in grainsize, partly euhedral and partly poikilitic. In some aggregates the biotite has been replaced by chlorite with vermiculite and epidote, and hornblende is also replaced by chlorite. Aggregates of opaque oxide and sphene (titanite) are also abundant and there is abundant fine-grained apatite, mostly in and adjacent to the mafic aggregates. Zircon crystals are not abundant but are as much as 0.4mm long. The visually estimated mineralogy indicates a monzogranite or adamellite rich in minor elements.

In some areas the plagioclase has been flooded by albite, epidote and minor chlorite, with irregular epidote veins that are partly sheared and fragmented.

RS 472640: TIERC 59, 28-29m — **Unmetamorphosed olivine dolerite with weak alteration to sericite, talc(?), serpentine, smectite and carbonate.**

This sample is composed of chips of unmetamorphosed dolerite, locally with weak alteration. In most of the chips there is minor olivine, but one chip has nearly all of the olivine altered to various phyllosilicate minerals (serpentine, smectites and talc).

- Plagioclase is abundant as unoriented euhedral laths to 4mm long, zoned and weakly clouded by microcrystalline opaque oxide. Weak alteration to sericite is seen in some areas, with sericite-clay alteration more abundant in the chip with altered olivine. 55%
- Granular, commonly subophitic clinopyroxene is abundant but mostly fine-grained (<1mm in grainsize), with weak alteration in the most altered chip. 25%
- Olivine occurs commonly, with a granular or poikilitic habit, as grains to 3mm in grainsize. These are veined by opaque oxide and green clay, even where the olivine is mostly fresh, but are altered to talc, serpentine and smectites in the most altered chip. Microcrystalline opaque oxide occurs as dendrites in the fresh olivine. 20%
- Very minor biotite is disseminated. 1%
- Rare patches of possibly late magmatic quartz occur, with rims of sericite and carbonate and inclusions of apatite. <1%

This seems to be an unmetamorphosed olivine dolerite.

RS 472738: TIERC 71, 27-28m | **Altered dolerite with albite, sericite, clays and veins of possibly iron-rich prehnite and clays.**

More highly altered dolerite is seen in this sample, with clay alteration and narrow veins.

- Plagioclase is abundant but is largely altered to sericite and albite (in two chips) or to albite with minor chlorite and sericite in the third chip. Laths 1-2mm long are abundant. 55%
- Abundant clinopyroxene is clouded or replaced by clay and occurs as subophitic grains to 3mm long, where prismatic, to 1mm where granular. Colourless, pale brown and green clays are present in the altered pyroxene sites. 35%
- Dendritic and bladed oxide crystals are common, with magnetite more abundant than platy ilmenite crystals. 7%
- Small areas of late magmatic quartz and granophyre are present, with elongate apatite crystals to 0.5mm long in and adjacent to the quartz-rich areas. 3%

In the more highly albitised chip there are veins of possibly iron-rich prehnite (with a low 2V), some of which also have areas of microcrystalline clay. Veins of green clay are more common in the other chips.

RS 472739: TIERC 71, 27-28m

Leucocratic syenogranite gneiss with biotite, magnetite, sphene, apatite and rare zircon. Weak sericite-epidote alteration.

Mineral	Vol %
Microcline	50%
Quartz	35%
Plagioclase	10%
Biotite	2-3%
Magnetite	1-2%
Sphene	1%
Apatite, zircon	trace

Chips of granuloblastic, leucocratic granitoid gneiss are seen in this sample. These chips have generally lobate grains of quartz, microcline and plagioclase, mostly from about 0.2 to 2mm in grainsize, but with poikilitic quartz as optically continuous grains to 7mm long. Myrmekite is common between the microcline and plagioclase and some of the plagioclase seems to be antiperthitic, or has inclusions of microcline. Exsolution in the microcline is rare and essentially occurs as films exsolved onto grain boundaries. In some areas the plagioclase has been clouded by sericite, but it is mostly fresh. Where biotite is most abundant, the plagioclase has more abundant sericite and rare aggregates of fine-grained prismatic epidote occur. The biotite is fine-grained and foliated but is partly altered to clay or chlorite. Minor magnetite is disseminated, rimmed or accompanied by sphene, with accessory apatite and rare rounded zircon less than 50µm in diameter.

RS 472720:	**Unmetamorphosed olivine dolerite with rare biotite, carbonate,**
TIERC 77, 6-7m	**amphibole and apatite.**

Chips of olivine dolerite, as seen in TIERC 59, are seen in this sample.

• Abundant plagioclase occurs as zoned laths 0.4 to 4mm long, irregularly dusted with microcrystalline or cryptocrystalline opaque oxide.	50%
• Clinopyroxene is also abundant as subophitic grains to 2mm in diameter.	30%
• Olivine is also disseminated, with a granular to poikilitic habit, as grains to 3mm in diameter. Veins of opaque oxide are present and there is a dusting of cryptocrystalline opaque oxide through the olivine.	15-20%
• Skeletal opaque oxide is disseminated to 1mm in grainsize.	3%
• Minor biotite and carbonate occur adjacent to some opaque oxide grains and there is also rare pale green amphibole.	<1%
• Small aggregates of apatite occur, enclosed in sodic plagioclase.	Trace

RS 472740: **Fragmental calcrete with angular fragments of quartz,**
TIE18 (outcrop) **microcline and opaque oxide and rare zircon.**

Field Note: *Calcrete*

Angular, unsorted chips of quartz occur in this sample, to 1.5mm long, with less abundant chips of microcline and rare fragments of opaque oxide, as seen in some granitoid samples in this suite. Rare zircon is present, about 0.1mm in diameter. Large pellets of clear fine-grained carbonate are also abundant, to 8mm in diameter, with irregular voids in some pellets. These are enclosed in heterogeneous limonite-stained fine-grained (micritic) carbonate with lenses of clear, microsparry carbonate. This matrix also encloses the quartz, microcline, opaque oxide and rare zircon grains. A complex concentric layering is present in the matrix, with some oolite-like bodies.

MINERALOGICAL REPORT No. 8116

by Alan C. Purvis, PhD

August 7th, 2001

TO :	Mr Justin Gum PIRSA Geological Survey Section 101 Grenfell St ADELAIDE SA 5000
YOUR REFERENCE:	Order No. EX3053 (part) Debit Code 03 316/0307/699
MATERIAL:	19 Drill Chip samples ABMINGA 1:250,000 TIEYON 1:100,000 Sheet Areas
IDENTIFICATION:	Drill holes TIE RC02 to RC21 RS Nos. 472196 to 472331
WORK REQUESTED:	Thin section preparation, description and report.
SAMPLES & SECTIONS:	Returned to you with this report.
DIGITAL COPY:	Emailed to Justin Gum 7/8/01.

PONTIFEX & ASSOCIATES PTY. LTD.

SUMMARY COMMENTS

Nineteen samples of drill chips from hole nos. TIERC02 to TIERC21, Tieyon 1:100,000 map-sheet area in the eastern Musgrave Inlier northern South Australia, are described in this report. The chips were mounted in epoxy and made into composite thin sections. This follows Pontifex Report 8102 (3/7/01) to Justin Gum, describing 13 drill chips from the same area, Hole nos. TIERC31 to 77 (not consecutive).

These samples are mostly granitoids and gneisses with the lithologies in each drillhole listed below (Table 1) and the mineralogy of individual granitoids and their classification, according to the Streckeisen Classification illustrated in Figs 1 and 2..

There is a suite of quartz diorite to quartz-rich tonalite including all of the gneissic samples, and a suite varying from quartz-rich granodiorite through monzogranite and syenogranite into quartz syenite and alkali feldspar quartz syenite or pegmatite. One sample has weathered dolerite with shear zones, one contains quartz-epidote rock and one has epidote-clay-rich zones of fault gouge, cutting syenogranite. Foliated to gneissic chips occur in TIERC07, 13, 15, 19, 20 and 21, with undeformed lithologies in these and the other drillholes. One sample of arkosic granule conglomerate is represented by the small core stub sample 472741 in hole number 20, 88-90m, with abundant zircon.

The PIRSA field notes provided subdivides these basement samples into Kulgera Suite Granitoids, Birksgate Gneiss, and Alcurra Dykes and a single sample of conglomerate apparently from the Jurassic Algebuckina Sandstone. The petrology indicates that representation of Birksgate Gneiss is less than suggested in the field notes, with more widespread undeformed granitoids, in drillholes TIERC06, 11, and 12, rather than gneissic lithologies. Undeformed granitoids also accompany gneisses in drillholes TIERC07 and 13, with gneiss also in TIERC19-20, possibly as xenoliths in quartz-rich monzogranite or syenogranite. The Birksgate Gneiss as represented in this suite varies from hornblende-biotite quartz diorite to quartz-rich tonalite composition, with only one sample containing K-spar. In contrast, the undeformed granitoids, apparently Kulgera Suite, vary from granodiorite to syenogranite and quartz syenite or pegmatite. Unusually, the least quartz-rich samples have the most abundant K-spar, whereas most granitoid suites vary from quartz-poor, K-spar-poor lithologies to quartz-rich, K-spar-rich types.

The dolerite in TIERC17 is weathered, and the original mineralogy in uncertain. The conglomerate in TIERC20 has abundant quartz and microcline of Kulgera Suite origin.

Table 1 : Lithologies in drill hole numbers TIERC02 to TIERC21, TIEYON 1:100,000 map sheet area, described in this Report 8116

Hole	Lithologies present
02	Monzogranite
03	Syenogranite
04	Quartz monzonite to syenogranite
05	Monzogranite
06	Quartz syenite or pegmatite
07	Weakly foliated quartz diorite and quartz syenite or pegmatite
08	Hornblende quartz diorite
10	28-30m: Biotite-poor monzogranite and quartz-epidote rock.
10	34-36m Quartz syenite and quartz-epidote rock
11	Quartz syenite/syenogranite/monzogranite/quartz monzonite? Zircon.
12	Biotite granodiorite
13	Hornblende quartz diorite gneiss, quartz-rich tonalite gneiss, quartz-rich syenogranite
15	Biotite-hornblende tonalite gneiss. Zircon.
17	Weathered dolerite, quartz-K-spar-chlorite with magnetite, apatite and zircon.
18	Quartz syenite or pegmatite
19	Biotite tonalite gneiss and quartz-rich monzogranite
20	88-90m Arkosic granule conglomerate
20	108-118m Syenogranite and biotite quartz diorite gneiss
21	Quartz syenite, epidote-clay gouge and biotite quartz diorite gneiss.

Table 1 : Lithologies in drill hole numbers TIE RC02 to TIE RC21, TIEYON 1:100,000 map sheet area, described in this Report 8116

Stratigraphic representation

The lithological units represented seem to be:

1. Kulgera Suite: TIERC02-06, 07 (quartz syenite/pegmatite), 10-12, 13 (quartz syenite/pegmatite), 18-21 (excluding TIERC20, 88-90m)
2. Birksgate Gneiss: TIERC7-8, 13-15, 19 (biotite tonalite gneiss), 20 (biotite quartz diorite gneiss)
3. Alcurra Dykes: TIERC17
4. Algebuckina Sandstone: TIERC20 (88-90m)

INDIVIDUAL DESCRIPTIONS

RS 472196 **TIERC02, 42-44m** — **Weakly deformed leucocratic monzogranite or adamellite with very minor biotite, hornblende and epidote.**

Field Note: *Granite, Kulgera Suite: 380216E, 7093538N*

There are eight chips in this sample, with an overall composition of a leucocratic monzogranite or adamellite, although the proportions of quartz, plagioclase and microcline vary considerably between the chips. The visually estimated mineralogy is based on all eight chips.

• Quartz is abundant as anhedral interstitial grains to 7mm long with undulose extinction and subgrains.	30-35%
• Plagioclase is also abundant and typically anhedral, with a weak elongation, and has weak but very irregular alteration to sericite.	35%
• Microcline is abundant in some chips, but rare or absent in others, as anhedral grains to 8mm long. Minor myrmekite occurs between plagioclase and microcline, mostly within the microcline grains.	30%
• Biotite and hornblende are very minor, with biotite to 0.5mm in grainsize and green hornblende to 1mm. Some of the biotite has been altered to clays with minor epidote and limonite.	2%
• There is minor muscovite as irregular flakes within plagioclase and microcline.	<1%
• Very fine-grained opaque oxide is disseminated.	<1%

RS472202 **Weakly deformed leucocratic syenogranite with biotite, altered**
TIERC03, 44-46m **sphene and apatite.**

Field Note: *Granite, Kulgera Suite, 381126E, 7091209N*

There are seven chips in this sample, with more abundant microcline and less abundant plagioclase compared with the previous sample, indicating a leucocratic syenogranite. Rare biotite is present but there is no hornblende.

- Quartz is abundant as anhedral grains to 8mm in diameter, interstitial to feldspar grains. Some of the grain boundaries are very irregular and this may suggest deformation and recrystallisation, 30-35%
- Plagioclase occurs as grains to 5mm long with irregular patches of sericite, especially adjacent to narrow fractures containing quartz or albite. 20%
- Microcline is more abundant and single grains of microcline may be as large as, or larger than, individual chips (to 10mm long). Fractures in some grains contain limonite. 45-50%
- Very minor biotite occurs as flakes from 0.5 to 3mm long. 1%
- Rare leucoxene has replaced sphene to 0.5mm in grainsize, accompanied by accessory fine-grained apatite. There are also limonite-lined fractures. <1%

RS472210
TIERC04, 50-52m

Biotite-hornblende quartz monzonite to monzogranite or adamellite with sphene, opaque oxide and apatite.

Field Note: *Granite. Kulgera Suite, 382306E, 7088783N*

These chips are poor in quartz and rich in mafic silicates (biotite and hornblende) compared with the previous samples, but in terms of quartz-plagioclase-K-spar proportions seem to lie on the border between quartz monzonite and monzogranite or adamellite.

- Quartz occurs as interstitial grains to 5mm long, locally with very ragged, sutured grain boundaries, suggesting weak deformation. 15-20%
- Plagioclase is abundant as subhedral grains to 6mm long, irregularly altered to sericite ± chlorite, partly adjacent to fractures filled by albite. Smaller euhedral or partly resorbed grains are enclosed in microcline, and some of these have been flooded by sericite. 30-35%
- Microcline is abundant as anhedral grains to 10mm long. Some chips are composed entirely of single grains of microcline. Inclusions of plagioclase are common and there is rare myrmekite against plagioclase and quartz. ~35%
- Biotite is common, as flakes to 3mm long, commonly enclosing opaque oxide and apatite. 10-15%
- There is also minor brownish green hornblende as prisms to 4mm long, transected by biotite flakes. 4%
- Accessory fine-grained sphene, opaque oxide and apatite are disseminated, 1-2%

RS472215
TIERC05, 32-34m

Coarse-grained leucocratic monzogranite or adamellite with rare biotite and hornblende-oxide-sphene-apatite aggregates.

Field Note: *Granite, Kulgera Suite, 383017E, 7086263N*

This seems to be a more quartz-rich monzogranite with very minor accessories (biotite, opaque oxide, hornblende, sphene and apatite).

- Quartz is abundant as anhedral grains to 10mm long, with smooth grain boundaries, or as small grains interstitial to feldspars. ~30%
- Plagioclase occurs as grains to at least 8mm long. Irregular patches of sericite and fine-grained decussate muscovite are present in some of these grains, with rare fine-grained epidote. Small rounded grains of plagioclase also occur as inclusions in microcline. ~30%
- Some of the microcline grains are over 10mm long and are weakly perthitic. Some of the smaller grains have been fractured and veined by carbonate. 35%
- Minor fine-grained biotite is disseminated. 1%
- Aggregates of hornblende, opaque oxide, sphene and apatite occur sparsely, so that the abundance in this thin section may not be representative. 2-3%

RS472220	**Chips largely composed of coarse-grained microcline with minor quartz, plagioclase, biotite, tourmaline, leucoxene after sphene and leached possible apatite: quartz syenite?**
TIERC06, 32-34m	

Field Note: *Gneiss, Birksgate Gneiss? 383331E, 7086603N*

These chips are almost all composed of microcline with minor quartz and plagioclase. Very minor biotite, hornblende and sphene are also present and some chips have leached or plucked areas of uncertain mineralogy.

- Small areas of fine-grained quartz are present, with smooth grain boundaries. 7-8%
- Minor partly sericitised plagioclase occurs as inclusions in microcline, to 3mm long.. 5%
- The microcline chips commonly consist of single crystals, some of which are over 10mm long, with limonite-sericite-altered exsolved plagioclase. 85%
- There is minor biotite and tourmaline. <1%
- Leucoxene has replaced euhedral sphene crystals to 2mm long and there are leached hexagonal crystals that may have been apatite. 1-2%

This may represent a pegmatite or may not be representative of the bulk mineralogy. It suggests a bulk composition of quartz-bearing syenite. The sphene seem to suggest Kulgera Suite.

RS472226	**Four chips of massive to weakly foliated biotite-hornblende**
TIERC07, 46-48m	**quartz diorite and two of quartz syenite or pegmatite.**

Field Note: *Gneiss, Birksgate Gneiss: 383840E, 7085267N*

These chips are not gneissic but are mostly quartz-poor and rich in mafic minerals (hornblende and biotite). The ratio of quartz to plagioclase indicates that most of the chips are composed of tonalite. Two chips are dominated by microcline, with less abundant plagioclase and quartz, but seem to represent a separate lithology. The tonalite is discussed first.

- There is irregularly disseminated quartz in the tonalite, locally 5mm in grainsize, interstitial to plagioclase and mafic silicates but undeformed or weakly deformed. 15-20%
- Plagioclase occurs as grains to 5mm long, commonly with small round inclusions of quartz. 60%
- In some chips the only mafic silicate is biotite as poorly oriented flakes to 1mm long, but in most of the chips it is accompanied by hornblende. In some chips there is a weak foliation defined by biotite and/or hornblende. ~10%
- Green hornblende occurs as anhedral grains to 2.5mm long, rarely oriented in a weak foliation. 8-10%
- Minor opaque oxide and apatite are disseminated 2%
- Patches of a bright yellow secondary mineral (zeolite?), locally with sericite, have replaced small grains in this lithology. <1%

The second lithology has microcline to 6mm or more in grainsize (65%) as well as 15-20% sericite-clouded plagioclase, 15% granular quartz to 4mm in grainsize and 2-3% muscovite, suggesting a quartz syenite or pegmatite.

RS472230 **Massive hornblende quartz diorite with rare biotite, minor**
TIERC08, 22-24m **microcline and rare apatite.**

Field Note: *Gneiss, Birksgate Gneiss: 382581E, 7082511N*

Most of these chips are poor in quartz, with plagioclase, hornblende and biotite suggesting a quartz diorite bulk composition.

- Some of the chips have quartz as interstitial, poikilitic grains to 5mm long, but others have less abundant quartz to 1.5mm in grainsize. 10-15%
- Plagioclase is the most abundant mineral as grains to 5mm long, mostly anhedral. In some chips the plagioclase is dusted with sericite, but it is mostly fresh. 60%
- Some chips have interstitial grains of microcline from 0.5 to 3mm in diameter ~7%
- Hornblende is common as unoriented but elongate grains to 4mm long, generally green in colour suggesting low titanium. 15-20%
- There is only rare biotite and traces of apatite. 2-3%

Two chips are quartz-rich with minor euhedral hornblende and plagioclase, bur these may be from veins.

RS472239	**Quartz-poor monzogranite with minor altered biotite,**
TIERC10, 28-30m	**magnetite, apatite and leucoxene after sphene, veined by epidote and accompanied by quartz-epidote rock.**

Field Note: *Granite. Kulgera Suite*

These chips vary in mineralogy, but seem to represent a relatively quartz-poor monzogranite with minor biotite, partly altered to clays such as vermiculite. One chip of quartz-epidote rock is present with 7-10% prismatic epidote to 1mm in grainsize, and one chip contains abundant fine-grained epidote as well as microcline and minor quartz. Fractures containing epidote also occur in at least one of the granitoid chips. The granitoid chips are rich in microcline, but seem to have enough plagioclase to represent monzogranite.

- Quartz occurs as anhedral, partly ragged grains to 4mm long, partly interstitial and partly in lenses to 6mm long. 25%
- Plagioclase occurs as anhedral grains, partly enclosed in microcline and commonly clouded by sericite and/or clinozoisite. It varies from 0.5 to 4mm in grainsize and is locally veined by epidote. 25-30%
- Microcline is abundant as grains to 8mm long, some chips containing large single grains of microcline. 40-45%
- There is minor altered biotite, largely decussate, to 1.5mm in grainsize. 2-3%
- Accessory apatite, magnetite and leucoxene (after sphene) are disseminated. ~1%

RS472241 **Altered biotite quartz syenite with magnetite and sphene, and one chip of quartz-epidote rock.**
TIERC10, 34-36m

Field Note: *Granite, Kulgera Suite: 388075E, 7087290N*

These chips are mostly poor in quartz and rich in microcline, suggesting a quartz syenite, but there is also a single chip of quartz-epidote rock.

- Quartz occurs as lobate grains from 0.2 to 2mm in diameter, largely interstitial to, or enclosed in feldspars. 15%
- Some chips have minor to abundant plagioclase from 0.5 to 5mm in grainsize, usually clouded by sericite and mostly anhedral. 25%
- Microcline is abundant, some chips being largely composed of single grains and aggregates to microcline to 12mm in grainsize. The microcline is weakly perthitic with exsolved sericite-clouded plagioclase and rare graphic quartz as well as small patches of myrmekite with sericite-clouded plagioclase. 50-55%
- The biotite, to 3mm in grainsize, has all been replaced by chlorite and leucoxene, with some chlorite possibly after hornblende. 5%
- Small aggregates of magnetite and sphene occur in some areas, usually with abundant altered biotite/ 1-2%

One chip has abundant prismatic epidote to 2mm in grainsize and about 30% inequigranular quartz. This is of metasomatic origin.

RS472262
TIERC11, 28-30m

Biotite-hornblende-opaque oxide-bearing granitoid transitional between syenogranite, monzogranite, quartz monzonite and quartz syenite with rare zircon/

Field Note: *Birksgate Gneiss: 389432E, 7089284N*

Relatively small chips of apparently undeformed granitoid are present in this sample. The bulk composition plots close to the boundaries between quartz syenite, quartz monzonite, syenogranite and monzogranite. The best approximation is monzogranite.

- Quartz occurs as anhedral or poikilitic grains to 5mm in diameter enclosing microcline. 20%
- The plagioclase is inequigranular, reaching 6mm or more in grainsize, some chips being largely composed of single crystals of plagioclase. Some of the smaller grains contain secondary sericite and/or epidote. 25%
- The largest chip, 8 x 6mm, is a single crystal of weakly perthitic microcline and other chips rich in microcline are also present. The exsolved plagioclase is usually clouded with sericite. 45-50%
- Biotite flakes to 1mm long occur, locally poikilitic and enclosing opaque oxide or altered grains.. 2%
- Very minor green hornblende is present <1%
- Opaque oxide is more abundant than usual, with minor apatite and sphene. Rare zircon occurs to 100µm in diameter. 2-3%

RS472251 **Quartz-rich biotite granodiorite with apatite and sphene.**

TIERC12, 42-44m

Field Note: *Birksgate Gneiss: 391203E, 7002246N*

These chips seem to represent a quartz-rich granodiorite, with some chips containing microcline and some without any K-spar. The only mafic silicate is biotite, but there is no obvious foliation.

- Quartz is abundant as irregular, partly poikilitic grains to 8mm long with a weak undulose extinction but no strong deformation, 35%
- Plagioclase is also abundant with anhedral grains, within polycrystalline chips, to 5mm in grainsize. There is also a large chip, 10mm long, composed of a single grain of plagioclase. Some of the larger grains contain small blocky inclusions of microcline and could be antiperthitic. Weak, irregular alteration to sericite is seen in some areas. 45-50%
- Microcline occurs in some of the chips, but is not abundant. It occurs as irregular grains or 3mm in diameter with minor myrmekite. 10%
- Biotite occurs to 2mm in diameter, with a yellow-brown colour, but there is no foliation. 7-8%
- Accessory apatite and sphene are present, and there is minor muscovite. <1%

RS472256 **Hornblende quartz diorite gneiss, quartz-rich biotite tonalite**
TIERC, 13, 38-40 **gneiss and quartz-rich syenogranite.**

Field Note: *Birksgate Gneiss: 390547E, 7093242N*

There are possible three lithologies in this sample: microcline-free gneisses with biotite and fresh to altered hornblende; microcline-free gneisses with biotite but no hornblende and microcline-bearing massive granitoids with biotite and muscovite. These correspond to hornblende-quartz diorite gneiss (three chips), quartz-rich tonalite gneiss (three chips) and quartz-rich syenogranite (four chips) with visually estimated mineralogies as shown below.

	Qtz Diorite 472256a	Tonalite 472256b	Syenogranite 4782256c
Quartz	11	41	35
Plagioclase	72	52	14
Microcline	0	0	48
Biotite	2	7	3
Hornblende	16	0	0
	100	100	100

The quartz diorite gneiss chips have fresh to smectite-altered hornblende with a maximum grainsize varying from 1 to 3mm between chips. These are strongly aligned in a foliation and are accompanied by generally elongate grains of plagioclase to 3mm long, with less abundant quartz and minor biotite. The biotite is also foliated.

The tonalite gneiss chips have similarly elongate quartz and plagioclase grains, with quartz to 3mm and plagioclase to 5mm. The biotite is mostly 0.5 to 1mm in grainsize and in most of the chips defines a foliation parallel to the elongation of the quartz and plagioclase. One chip has more poorly oriented biotite, however.

The syenogranite chips are inequigranular with quartz, microcline and plagioclase mostly less than 3mm in grainsize. The plagioclase and microcline are anhedral and partly amoeboid, with small round inclusions of quartz. The minor biotite is unoriented and altered to clays or chlorite. One chip seems to have a weak foliation but one is mostly microcline and quartz.

RS472264
TIERC15, 8-10m

Biotite-hornblende-tonalite gneiss with clinopyroxene, magnetite, apatite, rare sphene and trace zircon.

Field Note: *Birksgate Gneiss: 386362E, 7099452N*

Hornblende and biotite-bearing, weakly foliated chips occur in this sample. The visually estimated mineralogy indicates a tonalite gneiss.

- Quartz is irregularly disseminated with some quartz-rich chips and some quartz-poor chips. The quartz-rich chips have anhedral quartz grains to 6mm long as well as plagioclase and hornblende. 25%
- Plagioclase is abundant and mostly granular. Most of the plagioclase is less than 2mm in grainsize but there are rare grains 3-4mm long. Very weak sericite clouding is seen in some areas. 55%
- Biotite occurs as flakes from 0.4 to 2mm long, mostly defining a foliation, except where there is only very minor biotite. ~7%
- Hornblende is generally more abundant than biotite and is dark green with grains to 2.5mm long, commonly granular or amoeboid and less strongly foliated than the biotite. 8-9%
- One chip contains clinopyroxene that is optically continuous over fragments across 5mm, with individual patches to 3mm long 2%
- Accessory magnetite and apatite are disseminated, with rare rims of sphene on the magnetite. 4%
- A single zircon was seen, 50µm in diameter, enclosed in biotite. Trace

RS472272
TIERC17, 28-30m

Albite-sericite-chlorite-limonite-leucoxene-altered dolerite and altered quartzofeldspathic chips with quartz, K-spar (adularia?), two types of chlorite, leucoxene after sphene, apatite and rare zircon.

Field Note: *Dolerite, Alcurra Dyke Suite: 392975E, 7099364N*

Chips of weathered, altered and partly sheared dolerite are seen in this sample, as well as chips of weathered and altered quartzofeldspathic material.

The dolerites have sericite and/or albite replacing unoriented plagioclase laths to 1.5mm long, with interstitial chlorite ± smectite, oxidised or leucoxenised small opaque oxide grains and very small patches of quartz. One of the chips has a zone of shearing and comminution 2mm wide with sericite, chlorite and minor oxidised opaque oxide. Altered plagioclase makes up 60-65% of the areas with good textural preservation.

One of the quartzofeldspathic chips has abundant iron-stained K-spar to 5mm in diameter and quartz to 4mm, with at least some of the K-spar apparently adularia. Patches of chlorite and grains of sphene and/or opaque oxide, now altered to leucoxene, are also present in this chip. The other two chips have coarse quartz to 5mm in grainsize, patches of fine-grained decussate Al-rich chlorite possibly after plagioclase and Al-poor chlorite after biotite flakes to 1.5mm long. Leucoxene has replaced sphene in these chips and there is minor apatite as prisms to 0.4mm long. Each of these chips has minor zircon, with three grains 50-120µm in diameter identified in thin section. Two of these are euhedral and one is rounded.

RS472275	**Chips of microcline with minor quartz, altered plagioclase**
TIERC18, 18-20m	**(partly exsolved, partly myrmekitic), biotite and opaque oxide: pegmatite or quartz syenite.**

Field Note: *Granite, Kulgera Suite: 398933E, 7097987N*

These chips are mostly composed of microcline and may represent a pegmatite or a quartz syenite.

- Minor quartz occurs in aggregates to 4mm in grainsize and as roughly graphic inclusions in microcline. 6-7%
- Plagioclase occurs rarely as inclusions in microcline and also apparently along grain boundaries, where it may have formed by exsolution. It is mostly fine-grained but rarely reaches 3mm in grainsize. Clay and limonite clouding is common. Some grains are myrmekitic with quartz inclusions. 10%
- Some chips, to 12mm long, are largely single grains of fresh microcline, but others are polycrystalline with two microcline grains. 80-85%
- Minor biotite is present as flakes to 2mm long, partly kinked. 1.5-2%
- There is also minor fine-grained opaque oxide. <1%

RS472281 | **Fine-grained biotite tonalite gneiss and coarser massive quartz-rich monzogranite with biotite and muscovite.**

TIERC19, 38-40m

Field Note: *Kulgera Suite Gneiss: 399148E, 7095732N*

There are two lithologies in this sample, with four fine-grained, biotite-rich, microcline-free foliated chips and five more massive chips with minor to abundant microcline. One chip is massive but poor in microcline and may be transitional, but has been included with the more microcline-rich chips in the mineralogy.

The biotite-tonalite has a fine granular texture and a grainsize of less than 1mm in three of the chips. One chip has areas poor in biotite, with plagioclase and quartz to 2mm in grainsize. The grains are mostly anhedral but are more amoeboid in the less biotite-rich areas. There is about 25% quartz and 60% plagioclase. A foliation is defined by 10-15% mostly fine-grained biotite with 3% altered sphene (leucoxene) + opaque oxide + apatite.

The more massive chips vary in plagioclase, quartz and microcline contents but the bulk visually estimated mineralogy corresponds to a quartz-rich monzogranite or adamellite. The quartz and feldspar grains are 0.4 to 3mm in diameter with weak deformation in the quartz. Some sericite-clay alteration is seen in the plagioclase but the microcline is fresh. Minor decussate biotite is disseminated and there are rare patches of muscovite, possibly of subsolidus origin. These chips have ~40% quartz, 25% plagioclase, 25-30% microcline and 3% biotite.

RS472313 **Weathered fine-grained biotite diorite gneiss, quartz-microcline**
TIERC20, 108-110m **and microcline chips (syenogranite and pegmatite), together with possible arkose.**

Field Note: *Kulgera Suite Gneiss: 398695E, 7099643N*

There are again two lithologies in this sample. Two chips are composed of weathered biotite microdiorite gneiss, with one chip of quartz-microcline-rich rock and two chips, each composed of a single large grain of microcline. The gneiss chips have about 15% clay-altered schistose biotite as well as fresh to clay-altered plagioclase and 5-7% quartz, whereas the microcline-rich chip has ~20% quartz as well as granular microcline to 4mm in grainsize and 2-3% sericite-clouded plagioclase + myrmekite to 1mm in grainsize. Minor muscovite is present in this chip, as well as clays and limonite after biotite. A single rounded but well-zoned grain of zircon is present and is about 0.2mm long (200µm).

The single crystal microcline grains are as much as 13mm long and are weakly perthitic. They may be from a pegmatite. A single chip of possible arkose is also present, with quartz, microcline and clays after biotite.

RS472741 **Granule conglomerate with unsorted angular grains of quartz and microcline and disseminated abraded zircon grains in a kaolin-rich cement.**
TIERC20, 88-90m

Field Note: *Algebuckina Sandstone: 398695E, 7099643N*

This sample is a gritty sandstone or granule conglomerate with angular single crystal quartz grains and less abundant microcline to 5mm in grainsize as well as abundant smaller, unsorted, angular grains of quartz and microcline. There is minor sericite and detrital muscovite to 0.5mm in grainsize, with relatively rare abraded zircon grains from 0.1 to 0.4mm long, cemented by limonite-stained kaolin. Some of the kaolin may be after detrital biotite. There is about 20% microcline and 35% matrix as well as 45% quartz. There is more zircon in this sandstone than in the granitoid samples described for this report.

RS472331 **Weathered biotite quartz diorite gneiss and quartz syenite with**
TIERC21, 46-48m **abundant epidote-clay-rich fault gouge.**

Field Note: *Granite and gneiss, Kulgera Suite: 391323E, 7103213N*

There is a single chip of weathered quartz diorite gneiss in this sample, but most of the chips are rich in microcline, commonly with areas of fault-gouge or microbreccia rich in epidote and clays.

The quartz diorite gneiss has ~25% clay-leucoxene-altered foliated biotite, 5-7% late magmatic quartz and 2-3% oxidised opaque oxide as well as 65-70% sericite-clouded plagioclase. This has a grainsize of 0.2 to 1.25mm with biotite usually about 1mm in grainsize.

The other chips vary with abundant chlorite microcline in some chips, with sericite-clouded plagioclase and/or quartz in others. Single grains of microcline to 10mm in diameter make up the bulk of some chips. This lithology has 8-10% quartz, 25-30% clouded plagioclase and 55-60% microcline as well as minor largely clay ± epidote-altered biotite, fractured and oxidised opaque oxide grains to 1mm in diameter and minor apatite. Fragments to 1mm in diameter, composed of microcline and quartz, occur in areas, made up of epidote-clay rich fault gouge, that comprise 30-100% of some chips. This lithology is a quartz syenite, cut by faults.

MINERALOGICAL REPORT No. 8139
by Alan C. Purvis, PhD

October 15th, 2001

TO:	Mr Justin Gum PIRSA Geological Survey Section 101 Grenfell St ADELAIDE SA 5000
YOUR REFERENCE:	Order No. EX3053 (part) Debit Code 03 316/0307/699
MATERIAL:	32 Drill Chip samples ABMINGA 1:250,000 TIEYON 1:100,000 Sheet areas
IDENTIFICATION:	Drill holes TIE RC22 to RC57 RS Nos. 472337 to 472631 not consecutive 31 in all**.** Plus sample 472895 (out of sequence)
WORK REQUESTED:	Section preparation, description and report with comments and interpretations as specified.
SAMPLES & SECTIONS:	Returned to you with this report.
DIGITAL COPY:	Enclosed with hard copy of this report.
	<u>**PONTIFEX & ASSOCIATES PTY. LTD.**</u>

SUMMARY COMMENTS

Thirty two samples of RC drill cuttings are described in this report from 27 composite thin sections of chips mounted in epoxy, also 5 polished thin sections and one separate polished section to selectively examine opaque minerals. These samples are from the recent PIRSA drilling programme in the Abminga area, and this report follows two previous Pontifex Reports by Alan Purvis on RC chips from the same project, viz. No. 8102 dated 3/07/01 (13 samples), and No. 8116, 8/8/01 (19 samples).
The individual descriptions include the lithologic suites currently recognised, as suggested in the covering notes from Justin Gum. These lithologies and the representative drill hole numbers, are listed below:

1. **Kulgera Suite: TIERC 22, 23, 24, 28, 31, 33, 34, 35 (part), 37, 38, 39, 40, 56, 57**

Quartz monzonite and granitoids from granodiorite to syenogranite, commonly with biotite and hornblende, locally biotite-only, commonly with magnetite, sphene, apatite and zircon, massive or weakly foliated, altered in TIE RC 34-35 and 40, mylonitised in TIE RC 41.

2. **Birksgate Gneiss: TIERC 26, 50, 52, 53**

Very few gneisses are present, with metasediments in TIE RC 26 (containing sillimanite, magnetite and titanhematite) and granitoid gneisses in TIE RC 50, 52 and 53 (tonalite and quartz-rich gneisses without pyroxenes).

3. **Unnamed suite 'A' (Low-K granitoids): TIERC 25, 27, 29, 30, 31, 36,**

Quartz diorite, monzodiorite, tonalite and K-spar-poor granitoids without pyroxenes comprise a suite lacking any foliation, and therefore not gneissic, but not obviously of high metamorphic grade and lacking anhydrous minerals.

4. **Unnamed suite 'B' (High-grade metamorphics): TIERC 46, 47, 50, 54, 55, 89 (?)**

High-grade amphibolites and pyroxene-bearing possible granulites, commonly with antiperthitic plagioclase, this suite includes mafic compositions as well as diorite, quartz diorite, tonalite and quartz-rich quartzofeldspathic lithologies. The ultramafic gneiss in TIE RC 89 may belong to this suite as it has metamorphic orthopyroxene as well as olivine and hornblende.

5. Alcurra Dykes: TIERC 35

Clinopyroxene-plagioclase porphyritic basalt and dolerite is seen in TIERC 35.
Sample 472895, TIERC89, 34-36m was of particular interest because it is reported to have anomalous PGM geochemical values (Justin Gum pers. comm.). The petrography identifies these chips to represent an ultramafic gneiss, possibly as part of the un-named suite 'B' of high grade amphibolites listed below. They contain metamorphic orthopyroxene, as well as olivine and hornblende. Accessory opaque minerals seen in polished section are magnetite and spinel, with sparse extremely small grains of pyrite-pentlandite-chalcopyrite-pyrrhotite-mackinawite.
This lithology is interpreted as an amphibolite facies grade metamorphosed ultramafic, probably a troctolite or olivine norite, (which may be related to the Giles Complex). The presence of both Cu and Ni in the sulphides suggests a parental mafic magma (as the Cu/Ni ratio of magmatic sulphides generally increases with fractionation).
The following Table 1 lists all samples described in this report, showing lithologies identified in thin section, diagnostic minor mineral assemblages, and their allocation to the various suites mentioned above.

TABLE 1: SAMPLES DESCRIBED IN REPORT NO 8139

RS 472-	TIERC	Lithology	Notes	suite
337	22	Monzogranite	Hornblende-biotite-sphene-magnetite-ilmenite-hematite-apatite-zircon	Kulgera?
349	23	Syenogranite	Biotite-monazite	Kulgera
361	24	Syenogranite	Biotite-hornblende-magnetite-sphene-apatite-zircon	Kulgera
365	25	Tonalite	Biotite-hornblende-magnetite	A
370	26	Metasediments	Biotite-muscovite-sillimanite-magnetite-hematite	Birksgate
375	27	Tonalite	Hornblende-biotite-magnetite	A
481	28	Granodiorite	Biotite-hornblende-sphene-magnetite-apatite	Kulgera
485	29	Tonalite	Biotite-sphene-magnetite	A
		Quartz diorite	Biotite-hornblende-magnetite-apatite	A
		Quartz-epidote	Quartz and epidote,	A
489	30	Quartz diorite	Hornblende-orthopyroxene-magnetite-apatite	A
		Pegmatite	Plagioclase-quartz-biotite	A
		Diorite/gabbro	Hornblende-biotite-magnetite-apatite	A
493	31	Granodiorite	Biotite-magnetite-monazite	Kulgera
		Quartz diorite	Hornblende-biotite-magnetite	A
503	33	Pegmatite	Microcline-quartz-plagioclase-biotite	Kulgera
511	34	Granodiorite	Biotite-magnetite-sphene-apatite-zircon: with sericite-chlorite-epidote-leucoxene-fluorite.	Kulgera
742	35	Granitoid	Albite-sericite-chlorite-epidote-prehnite	Kulgera
		Dolerite	Pyroxene-plagioclase porphyritic	Alcurra
519	36	Quartz diorite	Hornblende-biotite-magnetite-apatite	A
		Monzodiorite	Hornblende-biotite-magnetite-apatite	A
		Granitoid	Hornblende-pyroxene-epidote-allanite	A
524	37	Syenogranite	Biotite-hornblende-magnetite-sphene-apatite-zircon-monazite	Kulgera
527	38	Syenogranite	Hornblende-biotite-magnetite-sphene-apatite-zircon	Kulgera
531	39	Quartz monzonite	Hornblende-biotite-magnetite-sphene-apatite-zircon	Kulgera
535	40	Syenogranite	Biotite-magnetite-apatite: chlorite-clay-albite-sericite altered	Kulgera

TABLE 1: *CONTINUED*

RS 472-	TIERC	Lithology	Notes	suite
542	41	Breccia	Mylonitic with quartz and microcline in epidote.	Kulgera?
555	43	Monzogranite	Biotite-hornblende-magnetite-sphene-apatite-zircon.	Kulgera
558	44	Monzogranite	Hornblende-biotite-magnetite-sphene-apatite-zircon	Kulgera
566	45	Monzogranite	Altered mafic minerals, magnetite, sphene and apatite.	Kulgera
743	46	Amphibolite	Biotite, brown hornblende, magnetite, apatite	B
		Granulite	Clinopyroxene-orthopyroxene-biotite-magnetite-pyrite-chalcopyrite,	B
579	47	Uncertain	Quartz-rich and quartzofeldspathic to mafic chips with antiperthitic plagioclase, hornblende, clinopyroxene, biotite and opaque oxide.	B
597	50	Tonalite	Biotite-magnetite-apatite-zircon (gneiss)	Birksgate
		Gabbro/diorite	Biotite-clinopyroxene-hornblende-magnetite-orthopyroxene-apatite	B
607	52	Granodiorite	Biotite-magnetite-apatite-zircon-monazite	Birksgate
610	53	Uncertain gneisses	Quartz-rich quartzofeldspathic gneisses with biotite, magnetite and apatite.	Birksgate
616	54	Diorite to tonalite gneiss	Biotite-clinopyroxene-magnetite-apatite	B
626	55	Quartz diorite gneiss	Biotite-hornblende-orthopyroxene-magnetite-apatite	B
629	56	Monzogranite	Biotite-magnetite-sphene-apatite-zircon	Kulgera
631	57	Syenogranite	Biotite-hornblende-magnetite-sphene-apatite-zircon	Kulgera
895	89	Ultramafic	Hornblende-orthopyroxene-olivine-magnetite-spinel with pyrite-pentlandite-chalcopyrite-pyrrhotite-mackinawite.	B?

The Streckeisen classification of the granitoid and gneissic samples, and of granitoids and gneisses previously described in Reports No. 8102 and 8116, is illustrated on Fig. 1, below. In the previous reports, the drill hole representation within the various rock suites appears to be as follows:

1. Kulgera Suite: TIERC 02-06, 07 (part) 10-11, 12 (part), 13 (part), 18, 58, 71 (gneissic variant).
2. Birksgate Gneiss (low-K gneissic granitoids): TIERC 13 (part), 15. 19, 20, 21, 48, 49
3. Low-K massive granitoids (no pyroxene): TIERC 07 (part), 08, 12 (part)
4. Orthopyroxene-bearing tonalite: TIERC 32

Only a few of the samples described in Report No. 8102 are granitoids, with more abundant dolerite samples than in the other reports. Most of the samples described in Report No 8116 are potassic massive granitoids with biotite-hornblende-magnetite-sphene-apatite-zircon assemblages or parts thereof. Some gneissic low-K granitoids also occur. Only one gneissic high-K granitoid was noted, in Report No 8102, drillhole TIERC 71.

INDIVIDUAL DESCRIPTIONS

RS472337
TIE RC 22, 42-44m

Massive monzogranite with biotite, hornblende, sphene, magnetite, ilmenite, titanhematite, apatite, zircon, partly limonitised pyrite and rare chalcopyrite.

Field Note: *Birksgate Gneiss*

Mineral	*Vol %*
Quartz	20-25%
Microcline	35-40%
Plagioclase	25-30%
Biotite	7%
Hornblende	2%
Sphene	3%
Oxide	1%
Apatite	<1%
Zircon	trace
Pyrite, limonite, chalcopyrite	<1%

This sample seems to be a massive monzogranite and has abundant microcline and plagioclase to 4mm in grainsize as well as abundant quartz to 3mm in grainsize. The plagioclase locally has small inclusions of microcline and some of the microcline has graphic inclusions of quartz. Flakes and aggregates of biotite are common and from 1 to 3mm in grainsize, with rounded grains of sphene to 2.5mm in diameter, commonly veined by limonite ± leucoxene. Minor dark green hornblende occurs, to 1mm in grainsize, with disseminated opaque oxide also to 1mm in diameter, rarely rimmed by secondary sphene. Apatite occurs commonly with the mafic silicates and oxide and there is rare zircon to 100 □m long. The oxide is mostly magnetite, fresh in some chips but with minor to abundant hematite (martite) in other chips. Rare small grains of ilmenite occur, with hematite as blebs parallel to (0001), rarely composite with titanhematite, with ilmenite as blebs parallel to (0001). Rare limonite after pyrite is also evident, with a large single grain of pyrite 0.7mm in diameter and smaller pyrite grains, some of which are composite with chalcopyrite.

RS 472349 **Massive microcline-rich syenogranite with minor altered**
TIE RC 23, 92-94m **plagioclase and rare monazite.**

Field Note: *Birksgate gneiss.*

Mineral	*Vol %*
Quartz	30%
Microcline	50%
Plagioclase	15%
Biotite	4%
Monazite	<1%
Limonite	<1%

The chips in this sample are also massive but are mostly richer in microcline than those in the previous sample, with less abundant plagioclase and mafic silicates. Most of the chips are dominated by amoeboid grains of microcline to 3 or 4mm in diameter, varying between chips. Quartz occurs as anhedral grains to 4mm in diameter and there is usually minor plagioclase to 2mm in grainsize, generally clouded by sericite and limonite. Some chips have plagioclase to 3mm in grainsize as the dominant or only feldspar, usually with a dusting of sericite, locally enclosing minor microcline. Patches of myrmekite to 1mm long occur in some areas, along microcline-plagioclase grain boundaries. The microcline-rich chips have minor biotite, altered to clays and as much as 1mm long, with larger biotite flakes in some of the plagioclase-rich chips. Rare monazite is disseminated, to 0.25mm in grainsize, locally rimmed by limonite, mostly in microcline-rich chips. The plagioclase-rich chips contain limonite-lined fractures with limonite possibly after pyrite. The visually estimated mineralogy suggests a biotite-poor syenogranite.

RS 472361 **Massive syenogranite with biotite-hornblende-magnetite-**
TIE RC 24, 102-104m **sphene-apatite-zircon aggregates.**

Field Note: *Birksgate Gneiss*

Mineral	*Vol %*
Quartz	30%
Microcline	45%
Plagioclase	20%
Biotite	4%
Magnetite	1%
Sphene	<1%
Apatite	<1%
Zircon	trace

Massive, relatively coarse-grained granitoid is present in this sample, with abundant microcline as well as quartz, plagioclase and mafic clots. Large patches of myrmekite are present, to 1mm long, along microcline-plagioclase grain boundaries. The microcline is coarse-grained and possibly over 6mm in grainsize, as some chips contain large single grains of microcline. The plagioclase is also locally at least 6mm in grainsize, with one chip largely composed of a single grain of plagioclase, clouded by sericite. The mafic clots are characterised by decussate biotite as thick plates to 2mm long. Very minor brownish-green hornblende occurs, to 1mm in grainsize, and there is minor magnetite to 1mm or more in grainsize, rarely rimmed by sphene. Separate grains of sphene are rare, but apatite is common and there are rare grains of zircon to 0.2mm long. This seems to be a syenogranite but is possibly richer in plagioclase and in mafic silicates compared with the previous sample.

RS 472365 **Quartz-rich leucocratic tonalite with biotite, hornblende and**
TIE RC25, 16-18m **opaque oxide.**

Field Note: *Birksgate gneiss.*

Mineral	*Vol %*
Quartz	40%
Plagioclase	55%
Biotite	4%
Hornblende	1%
Magnetite	1%

Inequigranular, heterogeneous, quartz-rich to plagioclase-rich chips are seen in this sample, with plagioclase to 8mm in grainsize and quartz to 6mm. Some of the plagioclase is subhedral but many grains are amoeboid and may have been partly resorbed. The quartz is anhedral, with very small rounded grains in some areas, as well as larger lobate grains. Minor biotite, to 0.8mm in grainsize, occurs in several chips and one chip has two grains of green hornblende to 0.8mm long. Another chip has abundant green hornblende with interstitial clays, commonly leached or plucked from the thin section. Minor quartz and opaque oxide occur in this chip with minor opaque oxide to 0.5mm in grainsize in the other chips. This sample lacks K-spar and seems to be a relatively leucocratic tonalite.

RS 472370
TIE RC 26, 28-30m

Heterogeneous metasediment(s) with quartz, plagioclase, microcline, biotite, muscovite, sillimanite, partly oxidised magnetite and titanhematite.

Field Note: *Birksgate Gneiss*

The various chips in this sample are mineralogically varied and may represent more than one lithology, with at least part of this sample representing metasediments.

- One chip has abundant quartz as lobate grains to over 10mm long, with 25% plagioclase to 2.5mm in grainsize and 10% microcline to 1mm. Irregular, lobate masses of largely oxidised magnetite (2-3%) occur to 2.5mm in diameter and there is one flake each of muscovite and biotite. This may represent a quartzofeldspathic band in a metasedimentary unit rather than a quartz-rich granitoid. — One chip 20 x 7mm
- Other chips have quartz, again over 10mm in grainsize, with 30% sericite-limonite-clouded plagioclase, flakes of muscovite or biotite to 1.5mm long and rare aggregates of largely oxidised magnetite. In one chip the plagioclase has been partly altered to clays and another chip has clay, possibly after plagioclase, but with no fresh material. One chip has rare sillimanite. — Four chips to 12mm in diameter
- Two chips have abundant fibrolitic to fine prismatic sillimanite, as well as abundant biotite, minor quartz and large irregular masses of opaque oxide. The oxide is magnetite, largely altered to martite. — Two chips to 7mm in diameter
- One chip is largely oxide with lamellae rich in granular spinel along grain boundaries. On one side of the spinel-rich band the oxide is magnetite with rare lamellae of ilmenite and lamellae of hematite, *variety* martite, with magnetite also hosting the spinel grains. The remainder in hematite with exsolved lenses and blebs of ilmenite. Inclusions of quartz, rimmed by sericite, are disseminated and one inclusion is largely sericite. — One chip 10 x 4mm

This seems to represent a heterogeneous metasediment, with quartzofeldspathic, pelitic and oxide components (magnetite, titanhematite and spinel).

RS 472375	**Quartz-rich tonalite or trondhjemite with minor hornblende**
TIE RC 27, 22-24m	**and biotite, similar to that in TIE RC 25.**

Field Note: *Granitoid, Kulgera Suite*

There are quartz-rich chips with quartz to 10mm or more in grainsize in this sample, as well as plagioclase-rich chips with less abundant, smaller quartz grains. Some of the quartz-rich chips have plagioclase as lobate grains to 4 or 5mm long, but in the plagioclase-rich chips both quartz and plagioclase are mostly less than 2mm in grainsize. Very minor green hornblende occurs in some chips, and other chips have minor biotite to 0.5mm in grainsize, locally with rare muscovite. Minor oxide is disseminated. The overall composition is uncertain, but there could be 40% quartz and 55-60% plagioclase as well as minor hornblende, biotite and opaque oxide. This suggests a quartz-rich tonalite or trondhjemite, depending on the composition of the plagioclase. A similar lithology is seen in TIE RC 25.

RC 472481 **TIE RC 28, 100-102m**

Massive to foliated biotite-hornblende granodiorite with largely altered sphene, minor apatite and opaque oxide: cut by carbonate veins and zeolite veins.

Field Note: *Birksgate Gneiss*

These chips again represent a largely massive granitoid with weak to strong alteration, possibly due to deep weathering.

- Quartz is abundant as amoeboid interstitial grains to 5mm in diameter, with weak undulose extinction. Some of the chips are poor in quartz as grains mostly less than 2mm in diameter. 30%
- Plagioclase is also abundant and varies from relatively fresh to highly altered, with abundant sericite in the altered grains. Most grains are less than 2mm in diameter. 50%
- Generally minor microcline occurs as anhedral grains from 0.5 to 5mm long. 10%
- Biotite is the main mafic silicate in some chips, as flakes to 2mm long. The biotite is mostly decussate, but one chip has a weak foliation defined by roughly parallel biotite flakes. In some chips the biotite is fresh, but it is largely altered to chlorite and lamellar leucoxene. 5%
- Several chips in this sample have green hornblende as well as or instead of biotite. The hornblende occurs as poikilitic grains to 4mm long. Chips with fresh biotite also have fresh hornblende, but the others have hornblende partly or completely replaced by clay, locally with minor epidote or carbonate. 4%
- One chip has leucoxene after coarse-grained sphene, some contain very minor fresh sphene and others have minor opaque oxide. Minor apatite occurs with the sphene and opaque oxide. 1%

The more weathered chips have fractures filled by possibly supergene carbonate. One chip has zeolite veins, possibly with stilbite. The visually estimated mineralogy suggests a hornblende-biotite granodiorite with some foliated chips.

RS 472485
TIE RC 29, 12-13m

Four chips of foliated tonalite or trondhjemite, one chip of foliated biotite-hornblende-quartz diorite, all with chlorite--epidote-altered biotite and sericite-clouded plagioclase, and one chip of quartz-epidote rock.

Field Note: *Birksgate Gneiss*

Relatively small chips are represented in this thin section, with three different lithologies.

1. (Four chips): The most abundant lithology is an altered foliated granitoid with abundant biotite, largely altered to chlorite and leucoxene, with abundant plagioclase and quartz, and minor opaque oxide. Some of the biotite, to 2mm in grainsize, has epidote parallel to the cleavage or as crosscutting prisms, and the plagioclase, from 1 to 3mm in grainsize, varies from relatively fresh to totally flooded by sericite. One chip has relatively fresh biotite, however. Minor epidote is present in some of the more altered plagioclase grains. Some of the chips have minor microcline to 2mm in grainsize, with myrmekite to 1mm in grainsize in one of the chips. Opaque oxides occur, to 1mm or more in grainsize, partly altered to iron-rich chlorite. One of these chips has very minor green hornblende and one has a vein of supergene carbonate. With about 30% quartz, 55% plagioclase, 5% microcline, 7-8% biotite, 2% sphene or leucoxene and minor opaque oxide, this would seem to be a foliated tonalite or trondhjemite.

2. (One chip): Quartz is less abundant in a foliated chip with most grains less than 1mm in diameter. These include fresh to sericite-clouded plagioclase and mostly chlorite-leucoxene-epidote-altered biotite, defining a foliation. All of the pale green hornblende in this chip, as poikilitic grains in an area 5mm in diameter, is in optical continuity. Minor opaque oxide, to 1mm in grainsize, is veined by chlorite and there is minor disseminated apatite. This chip has 65% plagioclase 15% quartz, 10% altered biotite, 7-8%hornblende. 2-3% oxide and <1% apatite and is possibly a foliated quartz diorite.

3. (One chip): A further chip has large areas of quartz and aggregates of granular to prismatic epidote to 1mm in grainsize. Quartz and epidote are roughly equal in abundance, and this is a quartz-epidote rock of uncertain origin, possibly from a vein.

RS 472489 | **Biotite quartz diorite chips with opaque oxide and hornblende or orthopyroxene, plagioclase-rich pegmatites and a single chip of hornblende-rich diorite or gabbro.**
TIE RC 30, 8-9m

Field Note: *Birksgate Gneiss*

There are again several lithologies in this sample.

1. (Three chips): The most abundant lithology is a granular, plagioclase-rich quartz diorite with most grains less than 1.5mm in diameter, but some interstitial quartz grains to 4mm long. This lithology is dominated by largely fresh plagioclase, but has minor quartz and disseminated decussate biotite to 0.5mm in diameter. One chip has a patch containing very thin plates of biotite to 3mm long and two small poikilitic grains of green hornblende. Minor opaque oxide is disseminated, to 1mm in grainsize, with accessory apatite to 0.5mm. This lithology has ~80% plagioclase 10-15% quartz, 5% biotite, 2% oxide, <1% hornblende and <1% apatite.

2. (One chip): There is a single slightly coarser chip with plagioclase to 3mm in grainsize, quartz to 4mm and very minor biotite. Lenses of opaque oxide occur, to 2mm long, with minor apatite and a small grain of orthopyroxene is present, rimmed by clay. This has about 15% quartz and 2-3% accessories as well as 80-85% plagioclase and is also a quartz diorite.

3. (Two chips): Chips containing very coarse plagioclase, to 15mm or more in grainsize, are present and contain parts of quartz grains, as much as 7mm in grainsize, as well a rare altered biotite. These chips may represent pegmatites.

4. (One chip): Green hornblende is abundant (~40%) in one chip, as compact and poikilitic grains to 2mm in diameter with abundant (55%) plagioclase to 1.5mm in grainsize. Minor magnetite and apatite are disseminated, with minor biotite. This suggests a mafic diorite or gabbro.

RS 472493 **Three chips of altered biotite granodiorite, with possible**
TIE RC 31, 8-10m **monazite, and three small chips of hornblende quartz diorite or tonalite, with minor oxide and biotite.**

Field Note: *Birksgate Gneiss*

There are two lithologies in this sample. The two largest chips are massive or weakly deformed granitoids with plagioclase to 3mm in grainsize, less abundant microcline to 5mm in grainsize and areas of inequigranular quartz, largely composed of grains with very irregular boundaries and undulose extinction. Minor components are fresh to clay-altered biotite and opaque oxide, partly altered to clays and limonite. Two grains of possible monazite occur, one highly fractured with a leached core. Part of a third chip is present, with coarse quartz and less abundant plagioclase than in the other chips, but no K-spar. These chips have 30% quartz, 45-50% plagioclase, 20% microcline and 2-3% biotite + opaque oxide and seems to be a granodiorite.

The other, smaller chips contain disseminated green hornblende as well as plagioclase and quartz, with a grainsize of 0.2 to 2mm. The proportions of the main minerals vary between chips, so that it is uncertain whether they constitute a quartz diorite or a tonalite. Minor opaque oxide and biotite are present in this lithology. The quartz content of the various chips varies from 10 to 25%, with 5-10% hornblende and 2-3% biotite + opaque oxide.

RS 472503 **Microcline-rich pegmatite of roughly quartz syenite composition**
TIE RC 33, 48-49m **with minor biotite.**

Field Note: *Granite, Kulgera Suite*

The chips in this sample are small compared to their grainsize, one chip being largely composed of a single crystal of microcrystalline at least 15mm long. Others contain parts of several grains of microcline, with or without various proportions of plagioclase and quartz. The plagioclase is commonly altered with sericite clouding and occurs as laths to 3mm long. Rims of clear plagioclase may have been exsolved from adjacent microcline grains, and patches of myrmekite to 1mm in diameter occur locally. There is only minor quartz, partly as rounded inclusions in microcline and partly as interstitial grains to 5mm long. Very minor biotite occurs as flakes to 3mm long. There are also some limonite-lined fractures.
This sample seems to represent a microcline-rich pegmatite, with 10-15% quartz, 75% microcline, 10-15% plagioclase and 1% biotite.

RS 472511 **Altered granodiorite with sericite, epidote, chlorite, leucoxene**
TIE RC 34, 30-31m **and fluorite.**

Field Note: *Granite, Kulgera Suite*

Mineral	*Vol %*
Quartz	25%
Plagioclase	45%
Microcline	15-20%
Ex-biotite	7-8%
Oxide	1-2%
Sphene	1-2%
Apatite	<1%
Zircon	trace

Heterogeneous and inequigranular chips are seen in this sample. Most are dominated by quartz and plagioclase as anhedral or subhedral grains to 6mm in grainsize, but there is also common to abundant microcline, mostly less than 7mm in grainsize, but rarely 12mm or more in chips largely composed of single grains of perthitic microcline. The plagioclase is commonly albitised and sericitised, locally with minor epidote (in saussuritic alteration). There are also small inclusions of microcline in some of the plagioclase grains, possibly formed by replacement. Biotite flakes, to 2mm long, have been replaced by chlorite ± smectite, with disseminated leucoxene and with either epidote or fluorite in some grains. The fluorite occurs in lamellae parallel to the cleavage in the chlorite. Grains of opaque oxide occur, to 1mm in diameter, and seem to have been oxidised. There are also leucoxene pseudomorphs of sphene grains and crystals, generally about 1mm long. Fresh sphene occurs locally and there is minor apatite, as well as rare zircon grains to 0.15mm long. Narrow veins contain clouded albite as well as quartz and/or epidote.
The visually estimated mineralogy suggests a granodiorite.

RS 472742
TIE RC 35, 14-16m

Altered granitoid with albite, sericite, chlorite, epidote and prehnite and plagioclase-clinopyroxene porphyritic basalt to dolerite with partly sericitised plagioclase and uralitised pyroxene, representing a passage from chilled margin to less chilled core in a mafic dyke.

Field Note: *Dolerite, Alcurra Dykes*

Two of the chips in this sample represent the granitic country rock into which the dolerites have intruded. The remainder are fine to medium-grained mafic rocks from the dyke, classified as basalt and dolerite.
The granitoid chips have grains from 1 to 7mm long, with quartz, albite to sericite-altered plagioclase and less abundant microcline. The plagioclase also has disseminated prismatic epidote and has been cut by veins of epidote. There are also masses of prehnite with clays and chlorite, probably derived from biotite.
The dyke material is porphyritic and has glomeroporphyritic aggregates to 4mm log, composed of fresh or sericite-clouded plagioclase and fresh or uralitised clinopyroxene. The phenocrysts are mostly less than 1mm long, with most of the pyroxene less than 0.5mm in grainsize. The groundmasses have fresh to sericite-clouded plagioclase from 0.1mm long in the fine-grained basaltic chips to 1mm long in he more doleritic chips. These laths are much thinner than those occurring as phenocrysts, however. Fresh or uralitised clinopyroxene and abundant opaque oxide are also present, with similar variation in grainsize to that shown by the plagioclase. Most of the groundmass pyroxene is 0.05 to 0.3mm in grainsize, but some elongate grains occur to 0.5mm long. Veins of actinolite and chlorite occur in two chips.
These chips represent variation from the chilled margin of the dyke into a less chilled, more central zone in the dyke.

RS 472519 **Leucocratic quartz diorite and hornblende-quartz monzodiorite**
TIE RC 36, 4-6m **with two more quartz-rich chips containing plagioclase and perthitic orthoclase. Chips of calcrete are also present.**

Field Note: *Birksgate Gneiss*

Most of the chips in this sample are quartz-poor and relatively fine-grained, with grains from 0.2 to 2mm in diameter. There is also a relatively leucocratic, slightly coarser-grained chip with plagioclase to 3mm in grainsize, two quartz-rich chips one of which contains microcline and several chips of apparently supergene carbonate (calcrete).

Mineral	*Vol %*
Quartz	10-15%
Plagioclase	65-70%
Orthoclase	10%
Hornblende	7-8%
Biotite	2%
Oxide	1%
Apatite	<1%

The quartz-poor chips have abundant plagioclase as well as granular to prismatic brownish green hornblende, minor biotite, disseminated opaque oxide and apatite. The hornblende is unoriented and mostly fresh, with minor partly clay-altered biotite. The slightly coarser chip has relatively little hornblende (1-2%) but more abundant fine-grained opaque oxide than some of the other chips. The quartz is mostly fine-grained and interstitial and is accompanied by minor perthitic orthoclase in some of these chips. These seem to represent quartz diorite and quartz monzodiorite.

One of the more quartzofeldspathic chips has quartz and plagioclase to 4mm in grainsize as well as opaque oxide lenses, apatite, biotite, rare hornblende and pyroxene veined by limonite and clay. There is rare perthitic orthoclase in this chip. The other chip has dominant perthitic orthoclase to 3mm in grainsize with myrmekite to 1mm in grainsize and relatively minor quartz. There is only rare plagioclase in this chip. Epidote, allanite and clay-altered opaque oxide are also present.

The calcrete chips contain lamellae of microsparry carbonate with patches of colloform brown clays, possibly halloysite or kaolin.

RS 472524
TIE RC 37, 16-18m

Altered inequigranular biotite-hornblende-syenogranite or monzogranite with magnetite, sphene, apatite and zircon ± monazite. Chlorite-epidote-sericite alteration and carbonate-fluorite veins are noted.

Field Note: *Granite, Kulgera Suite*

Mineral	*Vol %*
Quartz	25%
Microcline	45%
Plagioclase	15-20%
Ex-biotite	7%
Hornblende	4%
Magnetite	2%
Sphene	<1%
Apatite	<1%
Zircon, monazite	trace

These chips are again heterogeneous and inequigranular, with the largest grains partly at least as large as a single chip – i.e. possibly over 10mm long. Most of the largest grains are weakly perthitic microcline, but there are also large grains of quartz, mostly anhedral and interstitial to feldspars. Plagioclase is less abundant than microcline, is clouded with abundant sericite and mostly less than 5mm in grainsize. There is rare myrmekite, but this is unusually coarse, to 3mm in grainsize, with sericite-clouded plagioclase. Some of the chips have abundant altered biotite, now chlorite and leucoxene ± epidote, to 4mm long, with less abundant brownish green hornblende to 2mm in grainsize. These minerals occur in mafic clots with magnetite (to 1mm in grainsize), locally rimmed by sphene, apatite and rare grains of zircon and/or monazite (to 0.1mm grainsize). Veins of carbonate and rare fluorite are present.

Because of the large grainsize of the coarser components, the visually estimated mineralogy is possibly not representative, but a syenogranite or monzogranite is suggested.

RS 472527 **Hornblende-biotite syenogranite to monzogranite with**
TIE RC 38, 10-11m **magnetite, sphene, apatite and large zircon crystals.**

Field Note: *Granite, Kulgera Suite*

Mineral	*Vol %*
Quartz	20-25%
Microcline	45%
Plagioclase	20%
Hornblende	5%
Biotite	4%
Magnetite	2%
Sphene	2%
Apatite	<1%
Zircon	trace

This is a similarly inequigranular and heterogeneous granitoid to that in the previous sample. It has large grains of microcline, some possibly 10mm or more in diameter, and larger plagioclase grains, as much as 8mm in grainsize. The plagioclase is on the whole fresher than that in the previous sample, but there are small patches with dense sericite, locally with clinozoisite and/or carbonate, representing late-stage fluid accumulations. Myrmekite is also common, in patches to 2mm long, with weakly sericitised plagioclase. The microcline commonly has rounded inclusions of quartz and anhedral inclusions of plagioclase. Quartz is not as abundant as in the previous sample but occurs as interstitial grains to 7mm in diameter. Mafic clots are common, as in the previous sample, but are relatively richer in hornblende. These aggregates contain biotite to 4mm in grainsize and brownish-green hornblende to 3mm. Magnetite, locally rimmed by sphene, is common, with separate grains of sphene and abundant apatite, mostly in the mafic aggregates. Minor zircon is present as grains 0.05 to 0.4mm long, mostly in the mafic aggregates, which would suggest that this sample could be dated quite easily.
This is again possibly transitional from monzogranite to syenogranite and would be rich in high field strength elements.

RS 472531 **Hornblende-biotite-quartz monzonite with hornblende, altered**
TIE RC 39, 20-24m **biotite, magnetite, apatite, rare sphene and rare zircon.**

Field Note: *Granite, Kulgera Suite.*

Mineral	*Vol %*
Quartz	10%
K-spar	40%
Plagioclase	35%
Hornblende	7-8%
Ex-biotite	4%
Magnetite	3%
Sphene	1%
Apatite	<1%
Zircon	trace

These chips seem to be on the whole quartz-poor, but are heterogeneous and inequigranular. Some have abundant sericite-clouded plagioclase, to 4 to 5mm in grainsize in the various chips, but others have abundant K-spar, locally over 10mm in grainsize. Some of the K-spar is primary orthoclase or microcline, as in the previous two samples, but one chip has reddened homogeneous K-spar that may have been altered to adularia. Some of the K-spar has large inclusions of sericite-clouded plagioclase, but in other areas the K-spar and plagioclase are quite separate. Mafic clots are common and as much as 10mm or more in length. Green hornblende occurs as prisms to 4 or 5mm long, partly altered to clays, with less abundant chlorite-leucoxene pseudomorphs of biotite flakes, also as much as 4mm long. Magnetite and apatite are common in the mafic clots, but sphene is rare and there are few zircon grains, mostly less than 0.1mm long. Minor epidote occurs in some of the altered biotite flakes.

The small number of chips may mean that the visually estimated mineralogy is not representative, but a quartz monzonite is suggested.

RS 472535 **Altered leucocratic syenogranite with chlorite-clay-albite-sericite alteration.**
TIE RC 40, 8-10m

Field Note: *Granite, Kulgera Suite*

Mineral	*Vol %*
Quartz	20-25%
Microcline	60%
Plagioclase	15%
Ex-biotite	2%
Magnetite	1%
Apatite	trace

Some of the chips in this sample contain or consist of fragments of large grains of microcline, suggesting grains over 10mm long. These commonly have inclusions of quartz and albite-sericite-altered plagioclase, but there are also chips with aggregates of similarly altered plagioclase, to 2mm in diameter, as well as quartz and microcline. Large masses of myrmekite, to 2mm in diameter, occur adjacent to the plagioclase in several chips in this sample. Two chips have sericite-clouded plagioclase to 4mm in diameter set in a mass of quartz. The quartz occurs as ragged grains to 5mm long, but quartz is not abundant in the other chips in this sample. Clay-chlorite-altered biotite is disseminated, as well as minor opaque oxide, partly as euhedral crystals, and granular apatite. There are also some limonite-lined fractures. The visually estimated mineralogy suggests that this is a syenogranite, but may not be representative.

RS 472542 **Mylonitic breccias with quartz and microcline in foliated epidote and a chip of plagioclase-quartz-microcline, containing chlorite-epidote patches and epidote veins.**
TIE RC 41, 30-31m

Field Note: *Granite, Kulgera Suite*

Most of the chips in this sample are mylonitic breccias with unsorted fragments to 8mm in diameter in a matrix of foliated fibrous to prismatic epidote. The fragments contain or consist of microcline and/or quartz, with some microcline to 8mm in grainsize. Rare plagioclase and myrmekite are also present. One chip has abundant albite-clay-altered plagioclase as well as quartz and minor microcline, with grains 0.5 to 1.5mm in diameter. This chip has patches of chlorite ± smectite, usually with prismatic epidote, and veins of fibrous to prismatic epidote. The original bulk mineralogy is uncertain, but a monzogranite or syenogranite is suspected.

RS 472555 **Biotite-hornblende monzogranite transitional to granodiorite**
TIE RC 43, 50-52m **with very minor magnetite, sphene, apatite and zircon.**

Field Note: *Birksgate Gneiss*

Mineral	*Vol %*
Quartz	25%
Plagioclase	40-45%
Microcline	25%
Biotite	2%
Hornblende	4%
Magnetite	1%
Sphene	<1%
Apatite, zircon	trace

The chips in this sample are relatively fine-grained and massive, with some microcline to 4mm in grainsize and some quartz to 5mm. Most of the minerals are finer-grained, with plagioclase to 2.5mm in grainsize, locally altered to sericite, commonly with patches or veins of microcline. This suggests some replacement of plagioclase by microcline, possibly in the magmatic stage. Various proportions of biotite and brownish-green hornblende, less than 2mm in grainsize, occur in the various chips, usually with minor magnetite and sphene. Apatite is uncommon compared with other granitoids in this area, but a single grain of zircon was seen, 0.1mm long.

RS 472558 **Hornblende-biotite monzogranite to syenogranite with**
TIE RC 44, 14-16m **magnetite, rare sphene, apatite and zircon.**

Field Note: *Birksgate Gneiss*

Mineral	*Vol %*
Quartz	20-25%
Plagioclase	25%
Microcline	40-45%
Hornblende	5%
Biotite	2%
Magnetite	2%
Apatite	<1%
Sphene	<1%
Zircon	trace

The granitoid in this sample has rounded or amoeboid grains and is rich in microcline. The microcline occurs as grains to 5mm long, commonly enclosing rounded grains of quartz, with large bodies of myrmekite to 2mm long. The plagioclase is mostly less than 3mm in grainsize and is weakly and irregularly altered to sericite. Quartz is not abundant, but occurs as amoeboid grains to 3mm long as well as forming inclusions in microcline and a component in the myrmekite. Mafic clots are dominated by green hornblende or by aggregates of magnetite, to 3mm long, with less abundant biotite to 1.5mm in grainsize. Most of the apatite in this sample occurs in and adjacent to the mafic clots, but some separate grains are present. Minor sphene is present, mostly as rims on magnetite, and rare zircon occurs to 80 µm long. Some of the plagioclase has veins of limonite and clay-limonite veins also occur in hornblende. This may be a monzogranite transitional to syenogranite.

RS 472566 **Altered monzogranite with chlorite and clays derived from**
TIE RC 45, 42-43m **biotite ± hornblende, altered magnetite and leucoxene after sphene.**

Field Note: *Granite/Mafic: Kulgera Suite*

Two of the chips in this sample are plagioclase-rich, with sericite-clouded plagioclase to 2mm in grainsize. These chips also have abundant chlorite-leucoxene-altered biotite with a weak foliation and clays probably after hornblende, as well as magnetite and apatite. Minor quartz is present, to 2mm in diameter, more abundantly in one chip than in the other. However, these chips seem to represent a quartz diorite component.

Mineral	***Vol %***
Quartz	30%
Plagioclase	35-40%
K-spar	20%
Mafic minerals	7-8%
Magnetite	3%
Sphene	1%
Apatite etc	trace

The other chips are richer in quartz and in K-spar, varying from untwinned but weakly perthitic orthoclase to microcline. The K-spar occurs as amoeboid grains to 5 or 6mm long, intergrown with similarly large quartz grains, to 7mm long, and smaller sericite-clouded plagioclase grains. Myrmekite is common as lenses 0.5 to 2mm long along plagioclase-K-spar grain boundaries. One chip has fresh biotite, but the minor biotite in the other chips has been altered to chlorite and leucoxene. Any hornblende has also been altered to clays, with clays also veining possible magnetite, accompanied by patches of leucoxene, possibly derived from sphene. Clay-filled fractures occur in some of the chips. This is possibly a monzogranite but the proportions of quartz, plagioclase and K-spar vary considerably between chips.

RS 472743 **Biotite amphibolite, mafic granulite with clinopyroxene ± orthopyroxene, locally with hornblende or biotite, and quartz-rich granulite with plagioclase, clinopyroxene and biotite. Rare pyrite and chalcopyrite are present.**

TIE RC 46, 28-30m

Field Note: *Birksgate Gneiss?*

There are two lithologies in this sample, one apparently of upper amphibolite facies and one of probable granulite facies.

Mineral	*Vol %*
Plagioclase	55-60%
Hornblende	35-40%
Biotite	3%
Oxide	2%
Apatite	<1%

Four of the chips are dominated by various proportions of plagioclase and greenish brown hornblende, and seem to represent high-grade amphibolites. The hornblende occurs as grains and prisms to 2mm long, but the maximum grainsize of the plagioclase varies from 1 to 2mm between chips. Aggregates of oxide occur to 3mm long and there is minor weakly foliated biotite to 2mm in grainsize. Minor apatite is disseminated. One chip of this type has rare fine-grained clinopyroxene and another has a lens flooded by carbonate and clay, the clay being possibly after pyroxene.

Mineral	*Vol %*
Plagioclase	60-65%
Quartz	0-2%
Clinopyroxene	20-30%
Orthopyroxene	0-10%
Hornblende	0-3%
Biotite	2-5%
Oxide, sulphide	1-2%
Apatite	trace

One of the other chips has a large quartz-rich area with quartz to 6mm in grainsize and smaller lobate grains of plagioclase. This passes into areas with granular and poikiloblastic clinopyroxene from 0.4 to 3mm in grainsize, enclosing plagioclase and quartz. A band rich in biotite and opaque oxide to 2mm in grainsize occurs along one margin of this chip.

The other two chips have abundant plagioclase to 4mm in grainsize with very minor interstitial quartz to 2mm in grainsize in one chip. The quartz-bearing chip has prisms of orthopyroxene to 3mm long as well as lenses of granular clinopyroxene, biotite and opaque oxide. The other chip has granular to poikiloblastic clinopyroxene to 4mm long in aggregates with coarse-grained biotite to 2mm in grainsize and minor magnetite. There is also minor greenish brown hornblende in this chip, identical in colour to that in the amphibolite chips. Both of these chips contain minor apatite. These chips may represent mafic granulites.

The oxide is mostly magnetite, locally with leucoxene replacing lamellae of ilmenite and with rare granular ilmenite partly altered to leucoxene. Small grains of sulphide occur, from 0.05 to 0.3mm in grainsize, mostly pyrite, locally with minor chalcopyrite composite with the pyrite or separate.

RS 472579
TIE RC 47, 8-10m

Quartz-rich and quartzofeldspathic areas with partly antiperthitic plagioclase, and mafic areas with hornblende, clinopyroxene, biotite and opaque oxide. These chips may include metasediments, granitoids and mafic lithologies or mafic clots from a granitoid.

Field Note: *Birksgate Gneiss*

One of the chips in this sample is similar to the quartz-rich chip in the previous sample. This chip has abundant quartz as lobate grains to 7mm long with 20-25% partly antiperthitic plagioclase. Minor biotite is disseminated with lenses containing biotite to 3mm long. Minor clinopyroxene is also disseminated and occurs in the biotite-rich lens. This chip, and that in the previous sample, may represent a metasediment, possibly metasandstone.

Another chip has quartz to 8mm in grainsize and partly antiperthitic plagioclase to 5mm in grainsize, weakly dusted with sericite. This chip also has a single grain of greenish brown hornblende 2mm long. Another quartzofeldspathic chip is present and is quite large. This chip has about 20% quartz to 2mm in grainsize as well as microcline to 5mm in grainsize and partly antiperthitic plagioclase to 2mm in grainsize. Rare oxides occur as well as irregular patches of clay. These quartzofeldspathic chips may represent granitoids.

Antiperthitic plagioclase to 3mm in grainsize occurs in the quartz-rich zones of another chip, which also contains more mafic areas. The mafic areas have abundant greenish-brown hornblende to 2mm in grainsize, poikiloblastic clinopyroxene to 4mm in grainsize and a mosaic of plagioclase grains lacking exsolved K-spar. Minor oxide occurs in the mafic areas in this sample an in other mafic chips, richer in hornblende and biotite and poorer in plagioclase and clinopyroxene. It is not certain whether these are composite chips with more than one lithology or whether they represent a granitoid with mafic clots or xenoliths.

RS 472597
TIE RC 50, 12-13m

Three quartzofeldspathic chips representing gneiss of tonalite or trondhjemite composition, with sericite-clay alteration and zeolite veins, and two chips of biotite-clinopyroxene-bearing foliated, metamorphosed gabbro or diorite, rich in opaque oxide, with very minor hornblende and orthopyroxene.

Field Note: *Birksgate Gneiss?*

The chips in this sample include quartzofeldspathic gneisses and more mafic chips without quartz, but with foliated biotite as well as granular clinopyroxene.

Mineral	*Vol %*
Quartz	40%
Plagioclase	50%
K-spar	5%
Biotite	3%
Oxide	2%
Apatite, zircon	trace

One of the quartz-rich chips has abundant quartz to 7mm in grainsize as well as abundant clouded plagioclase and minor fresh microcline to 3mm in grainsize. The plagioclase has abundant sericite and some patches of decussate fine-grained muscovite, and there is minor myrmekite between the plagioclase and K-spar. Clay-altered biotite and mostly fresh opaque oxide are present but are not abundant. This chip has narrow zeolite veins (possibly stilbite) and limonite-lined fractures.

Mineral	*Vol %*
Quartz	35%
Plagioclase	50-55%
K-spar	5%
Biotite	5%
Oxide	3%
Apatite, zircon	trace

The other two quartzofeldspathic chips also have abundant quartz, as lobate grains to 4mm long, as well as abundant clay-clouded plagioclase mostly less than 2mm in grainsize. Opaque-oxide is more abundant than in the coarser chip described above, locally as masses 2mm long. Fresh of chlorite-clay-leucoxene-altered biotite is also more abundant and defines a foliation in these chips. Rare K-spar is present, with myrmekite adjacent to the K-spar. Veins of zeolite are present, with possible laumontite as well as possible stilbite. The quartzofeldspathic chips have accessory apatite and rare zircon to 50 □m long. These c represent altered tonalite or trondhjemite gneisses.

Mineral	*Vol %*
Plagioclase	60%
Biotite	20%
Clinopyroxene	15%
Hornblende	<1%
Orthopyroxene	<1%
Oxide	5%
Apatite	<1%

The two more mafic chips have abundant plagioclase in a mosaic with grains 0.5 to 2mm in diameter, as well as foliated biotite and granular clinopyroxene. Both the biotite and clinopyroxene are inequigranular and have grains 0.2 to 2.5mm long, but the biotite is more strongly foliated than the clinopyroxene. Lenses of opaque oxide occur, to 1.5mm long and there is very minor greenish-brown hornblende. One chip has a grain of orthopyroxene, flooded by carbonate, and veins in the other chip may represent altered orthopyroxene. Accessory apatite is present. This may represent a gabbro or diorite.

RS 472607 **Gneisses of granodiorite to monzogranite composition with**
TIE RC52, 16-18m **biotite and minor to abundant opaque oxide.**

Field Note: *Granite, Kulgera Suite*

The chips in this sample are quartzofeldspathic and seem to be gneissic. One is very coarse-grained and has 40-45% quartz to 10mm in grainsize, largely poikilitic with 45-50% plagioclase and 10% microcline to 4 or 5mm in grainsize. The plagioclase has abundant sericite and there are patches of sericite and epidote in the microcline. There are no mafic minerals in this sample, but the overall texture seems to be gneissic,

Mineral	*Vol %*
Quartz	25-40%
Plagioclase	40-45%
K-spar	15-25%
Biotite	3-5%
Oxide	2-4%
Apatite	trace
Zircon, monazite	trace

The other chips have lobate quartz grains to 4 or 5mm long as well as various proportions of plagioclase and microcline or orthoclase, mostly less than 1.5mm in grainsize. There is also disseminated fresh to clay-chlorite-altered biotite about 1mm in grainsize, and two of the chips have abundant oxide in lenses to 4mm long. The quartz, biotite and opaque oxide lenses have a parallel orientation and seem to define a foliation. One chip has relatively poorly oriented biotite and has antiperthitic plagioclase, as well as more abundant quartz than the other chips, and more abundant myrmekite. A small aggregate of monazite is present in the same chip, with rare apatite and zircon in these quartzofeldspathic chips, to 50 □m in grainsize.

These chips represent gneisses of granodiorite to monzogranite composition, commonly with abundant opaque oxide.

RS 472610 **Quartz-rich, leucocratic, biotite or oxide-bearing gneisses**
TIE RC 53, 4-6m **possibly granitoids, silicified granitoids or metasediments.**

Field Note: *Granite, Kulgera Suite*

Mineral	*Vol %*
Quartz	40-55%
Plagioclase	35-40%
K-spar	5-20%
Ex-biotite	0-3%
Oxide	1-4%
Apatite	<1%

Quartz-rich, inequigranular and heterogeneous chips are seen in this sample. These have abundant quartz as lobate grains with maximum grainsizes varying between chips, from 6mm to over 12mm. One chip has abundant sericite-clinozoisite-clouded plagioclase to 5mm in grainsize, as rounded or subhedral grains, and very minor microcline. Minor chlorite-clay-epidote-altered biotite is present as well as clay-veined opaque oxide. A second chip, similar to this one, has more abundant quartz and crumpled clay-epidote-altered biotite. A similarly coarse-grained chip has more abundant microcline to 6mm or more in grainsize, locally containing carbonate, sericite and epidote. The other chips have abundant quartz, mostly fresh plagioclase and more abundant clay-altered biotite defining a foliation. There is only minor K-spar and myrmekite in these chips, with opaque oxide to 0.8mm in grainsize and minor apatite.

The individual chips vary from tonalite to monzogranite, but there may be fewer independent lithologies than chips. The most quartz-rich chips could be metasediments, but could represent silicified granitoids.

RS 472616
TIE RC 54, 26-28m

Variously fresh to altered, medium to coarse-grained, quartz-free to quartz-rich gneisses with biotite, clinopyroxene and opaque oxide (magnetite + ilmenite), suggesting diorite to tonalite compositions. Veins of prehnite and of zeolite are present in some chips and there is rare sulphide (pyrite > chalcopyrite).

Field Note: *Birksgate Gneiss*

Mineral	*Vol %*
Quartz	0-25%
Plagioclase	60-70%
Biotite	5-10%
Clinopyroxene	5-15%
Oxide	1-4%
Apatite	<1%

There is considerable variation in and between chips in this sample, in the degree of alteration, the grainsize and the abundance of quartz. Some of the chips have clay-clouded plagioclase, clay-prehnite-altered biotite, chlorite-smectite altered pyroxene and veins of prehnite or zeolite. Other chips have fresher plagioclase, biotite and clinopyroxene. The plagioclase is mostly less than 2mm in grainsize, but one chip has a zone with quartz to 6mm in grainsize and abundant quartz to 4mm in grainsize. The plagioclase in most of the chips is at least partly antiperthitic, with all of the coarse plagioclase being antiperthitic. In some areas there is minor myrmekite, even though no K-spar is evident. One of the more altered chips has 25% quartz as lobate grains to 4mm long, but the others lack quartz or have 5-20% quartz. Biotite flakes, to 2mm or more in length, define a foliation in this sample, with minor to common granular clinopyroxene as elongate grains to 2mm long and opaque oxide, mostly less than 1mm in grainsize. The coarsest chip has lenses of oxide to 3mm long. Some of the chips also contain green hornblende. Minor apatite is present. The oxide is mostly magnetite with narrow lamellae of ilmenite, but there are also rounded grains of ilmenite, mostly composite with magnetite, to 1mm long. Minor pyrite occurs, to 0.3mm in grainsize, rarely composite with chalcopyrite.
These chips seem to vary from diorite to tonalite in composition but may represent one or two lithologies such as quartz diorite.

RS 472626 **TIE RC 55, 46-48m**

Fresh and altered gneisses of quartz diorite composition with biotite, hornblende, orthopyroxene and opaque oxide in various proportions.

Field Note: *Birksgate Gneiss*

These chips have a fine-grained, plagioclase-rich mosaic with minor quartz and a varied mafic component containing various proportions of biotite, greenish brown hornblende and opaque oxide. Some chips have minor altered orthopyroxene and in some chips most of the hornblende and pyroxene have been altered to clay. There is mostly a strong foliation.

Mineral	*Vol %*
Plagioclase	75-80%
Quartz	5-10%
Biotite	3-7%
Hornblende	2-10%
Orthopyroxene	0-2%
Oxide	2-4%
Apatite	<1%

The quartz and plagioclase are mostly granoblastic (with planar grain boundaries) or granuloblastic (with amoeboid grains and lobate grain boundaries) and are mostly less than 1.5mm in grainsize. Minor to abundant biotite, from 0.2mm to as much as 6mm long, is present and mostly defines a foliation. There is also minor to abundant greenish brown hornblende from 0.2 to 2mm in grainsize, less foliated than the biotite, and rare orthopyroxene occurs as grains to 1mm long, rimmed by clay. Opaque oxide is common, partly veined by clay, as grains to 1mm long. There is also minor apatite. In some chips the hornblende is partly altered to clay and there are grains totally altered to clay and limonite, possibly hornblende and/or pyroxene.

These chips are probably quartz diorite in composition.

RS 472629 **Coarse-grained monzogranite with biotite-magnetite-sphene-apatite-zircon aggregates and one chip of calcrete.**
TIE RC 56, 4-6m

Field Note: *Granite, Kulgera Suite*

Mineral	*Vol %*
Quartz	25%
Microcline	45%
Plagioclase	20%
Biotite	6%
Magnetite	3%
Leucoxene	1%
Apatite	<1%
zircon	trace

Chips of coarse-grained massive granitoid are present in this sample. These contain abundant quartz and microcline, with some grains 10mm or more in length, as well as similarly coarse-grained plagioclase. The plagioclase has been irregularly clouded by sericite ± limonite and is commonly separated from adjacent microcline by myrmekite bodies to 1.5mm long. Biotite occurs as decussate flakes to 3mm long, disseminated or in loose mafic aggregates. Magnetite and leucoxene, after minor sphene, are the main components other than biotite, with magnetite to 2mm in grainsize. Apatite is abundant, however and there is minor zircon to 0.2mm in grainsize. The visually estimated mineralogy suggests a syenogranite transitional towards monzogranite.
One chip is composed of calcrete with angular chips of microcline.

RS 472631 **Biotite-hornblende syenogranite to monzogranite with**
TIE RC 57, 6-8m **magnetite, sphene, apatite and zircon in mafic clots.**

Field Note: *Granite, Kulgera Suite*

Mineral	*Vol %*
Quartz	20%
Microcline	40-45%
Plagioclase	20%
Biotite	7%
Hornblende	5%
Magnetite	3%
Sphene	2%
Apatite	1%
Zircon	trace

One of the chips in this sample is mostly composed of a single grain of microcline at lest 8mm long, with others largely composed of plagioclase to 5 or 6mm in diameter. The other chips are aggregates of microcline, plagioclase and generally minor quartz, locally 4mm in grainsize, as well as mafic minerals. Loosely aggregated mafic minerals form diffuse clots, as in other granitoids of this type, with poikilitic biotite to 4mm in grainsize and granular brownish green hornblende to 3mm in grainsize. Sphene occurs as separate grains to 2mm in diameter, commonly with small inclusions of opaque oxide, and as narrow rims on opaque oxide to 2mm in grainsize. Apatite is abundant in the mafic clots and there is also disseminated zircon to 0.3mm in grainsize, mostly in and adjacent to the mafic minerals. This again seems to be a syenogranite transitional to monzogranite.

RS 472895	**Hornblende-olivine-orthopyroxene-phlogopite-magnetite rock, with accessory spinel and sparse sulphides, partly in a mylonitic zone. Sulphides are pyrite, pyrrhotite, pentlandite, chalcopyrite and trace mackinawite. Accessory magnetite has exsolved ilmenite and spinel. Spinel grains are separate. Interpreted as an amphibolite facies metamorphosed ultramafic (which may be related to the Giles Complex).**
TIE RC 89, 34-36m	

Field Note: *PGE Anomalous ultramafic*

Mineral	*Vol %*
Hornblende	40%
Olivine	15-20%
Orthopyroxene	30%
Phlogopite	7-8%
Magnetite	4%
Spinel	1%
Sulphide	1%

Six chips are present in the thin section of this sample, but only three of these were preserved in the polished section. Most of the chips are similar, except for the largest chip, which contains a layer of mylonitised material as well as less deformed rock. In most of the chips the most abundant mineral is pale green hornblende as anhedral grains about 2mm long. However, one chip has more abundant pale yellow-brown phlogopite as flakes to 4mm long and another chip has more abundant orthopyroxene as anhedral, partly poikilitic grains to 4mm in diameter. The other chips have minor amounts of both phlogopite and orthopyroxene, and there is minor to abundant granular olivine, from 0.4 to 3mm in grainsize. Opaque oxide is disseminated as single grains and aggregates from 0.3 to 3mm in diameter and is partly composite with smaller grains of green spinel.

In the mylonite zone there are abundant fragments of hornblende and orthopyroxene in a microcrystalline matrix, generally in anastomosing lamellae, with small flakes of green phlogopite. Oxides are also disseminated and are partly fragmented, but are mostly relatively coarse. This zone passes into a relatively hornblende-rich zone with olivine, orthopyroxene and minor sulphide.

The oxide is mostly magnetite, with narrow lamellae of ilmenite, decorated by blebs of spinel, parallel to (111) and lamellae of spinel parallel to (100). Some spinel has also migrated to grain boundaries and separate spinel grains are evident. All of the sulphide seen in the polished section is in the chip with the mylonite zone. Some is very fine-grained and interstitial to fragmented silicate and oxide grains, with chalcopyrite, pyrite and possible pentlandite. Larger blebs of sulphide, to 0.6mm long, occur in the less deformed areas. These are variable, with pyrite, pyrrhotite, chalcopyrite and pentlandite in various proportions, rarely accompanied by mackinawite. The pyrrhotite usually contains lamellae of pentlandite and there is rare pentlandite with possible lamellae of chalcopyrite. Minor secondary fine-grained magnetite is present in the more pyrrhotite-rich sulphide aggregates.

Interpretation

This sample seems to represent a metamorphosed mafic or ultramafic rock with abundant hornblende as well as olivine, orthopyroxene and phlogopite. One chip has been partly mylonitised, but the overall assemblage, with magnetite containing exsolved ilmenite and spinel, suggests that this is a cumulate from a basaltic magma, rather than from an ultramafic magma, and may be broadly similar to some layers in intrusive masses belonging to the Giles Complex. The presence of both copper and nickel in the sulphides also suggests a mafic magma, as the Cu/Ni ratio of magmatic sulphides generally increases with fractionation. The assemblage is consistent with high amphibolite facies metamorphism, as there is neither clinopyroxene nor quartz with the orthopyroxene. The assemblage hornblende-orthopyroxene-spinel is equivalent to olivine + plagioclase:

$$NaAlSi_3O_8 + 2CaAl_2Si_2O_8 + 6Mg_2SiO_4 =$$

Plagioclase Olivine

$$NaCa_2Mg_4Al^{vi}Al^{iv}{}_2Si_6O_{22}(OH)_2 + 7MgSiO_3 + MgAl_2O_4$$

Hornblende Orthopyroxene Spinel

This suggests that the hornblende, orthopyroxene and spinel in this sample were derived from pre-existing olivine and plagioclase, with some excess olivine and possibly excess orthopyroxene. This, in turn, suggests a former troctolite, hypersthene troctolite or olivine norite. The estimated original mineralogy is highly dependent on the composition of the hornblende, but a mafic troctolite with 25-30% plagioclase and 55-60% olivine is suggested. The sulphides have been partly modified by metamorphism and mylonitisation.

MINERALOGICAL REPORT No. 8155
by Alan C. Purvis, PhD.

November 27th, 2001

TO:	Mr Justin Gum PIRSA Geological Survey Section 101 Grenfell Street ADELAIDE SA 5000
YOUR REFERENCE:	Order No. EX3053 (part) Debit Code 03 316/0307/699
MATERIAL:	34 Drill chip samples ABMINGA 1:250,000 TIEYON 1:100,000 Sheet Areas Drill Holes TIERC59 to TIERC 80 TRERC01 to TRERC13
WORK REQUESTED:	Section preparation, description and report with comments and interpretations as specified.
SAMPLES & SECTIONS:	Temporarily retained.
DIGITAL COPY:	Emailed to office 3/12/01.

PONTIFEX & ASSOCIATES PTY. LTD.

INTRODUCTION

This is the fourth sub-batch of samples (34 in this case) of RC drill chips petrographically described by Alan Purvis for Justin Gum, since early July 2001, from the Abminga/Tieyon drilling programme undertaken by PIRSA mid 2001. A number of samples are yet to be described. Since this is effectively a progress report, the previous report numbers and sample numbers are documented below "for the record".

Report No.	Date	No. of samples	Drill Hole Nos.	R. numbers (not necessarily consecutive)
8102	3/7/01	13	TIERC 32, 35, 42, 46 to 49, 58, 59, 71, 77	472495 to 472740
8116	7/8/01	19	TIERCO2 to RC21	472196 to 472331
8139	15/10/01	32	TIERC22 to RC57	472337 to 472631 plus 472895
8155 (this report)	27/11/01	34	TIERC59 to RC80 TRERC01 TO RC13	472645 to 472747

SUMMARY COMMENTS

As noted above, this report describes thirty-four samples from mostly shallow RC drilling in the Tieyon area in northern South Australia. Consistent with stratigraphy in this area as discussed with Justin Gum, the petrography of these samples indicates allocations to the following units :

6. **Kulgera Suite: TIERC 60, 62, 64, 65, 66, 69, 72, 75, 78: TRERC 1, 4, 5, 6, 9, 10 and 13.**

Quartz monzonite and granitoids from granodiorite to syenogranite, commonly with biotite and hornblende, locally biotite-only, commonly with magnetite, sphene, apatite and zircon, massive or weakly foliated, altered in TIE RC 34-35 and 40, mylonitised in TIE RC 41. The most typical Kulgera Suite granitoids are potassic (monzogranite and syenogranite) and have biotite ± hornblende and variable aggregates containing magnetite, sphene, apatite and zircon in various proportions. Quite large zircons, from 0.2 to 0.4mm long, occur in some samples. More granoblastic or granuloblastic potassic granitoids with unoriented biotite as well as magnetite, apatite and zircon also seem to belong to this suite, as they are essentially undeformed. Sparse microshears and zones of brittle deformation have affected some samples, however.

7. **Birksgate Gneiss: TIERC 72, 74, 80: TRERC 11 (?), 12**

Very few gneisses are present, with foliated granodiorite in TIE RC 72 and 74 (containing biotite and hornblende in mafic foliae) and unidentified granitoid gneiss in TIE RC 80. Garnet occurs in the gneiss in TRE RC 11, with mixed granitoid gneisses in TRE RC 12.

8. **Unnamed suite 'A' (Low-K granitoids): TIERC 62, 67, 76 and RS 472689**

Quartz diorite, monzodiorite, tonalite and K-spar-poor granitoids without pyroxenes comprise a suite lacking any foliation, and therefore not gneissic, but not obviously of high metamorphic grade and lacking anhydrous minerals.

9. **Unnamed suite 'B' (High-grade metamorphics): TIERC 63**

High-grade pyroxene-bearing (possibly granulite facies) granitoids are included in this suite, commonly with antiperthitic plagioclase. The sample in TIE R 63 has antiperthitic plagioclase and clinopyroxene, as well as hornblende and biotite.

10. Alcurra Dykes: TIERC 59, 69, 78

Clinopyroxene-plagioclase-rich dolerite is seen in these holes, partly weathered. Some have interstitial granophyre. There are no obvious members of the Giles Complex, as suggested in your notes, however.

11. Mafic metamorphic rocks: TIERC 73: RS 472689.

Metagabbro and biotite amphibolite are both included in this group. These lithologies are massive or foliated and belong to the metamorphic basement.

12. Sediments and supergene material: TIERC 80: TRERC02 (sandstone) and 04

Probable Algebuckina Sandstone is present in TRERC 02, but TIERC 80 (shallow sample) has calcrete and transported overburden, while TRERC 04 has probable silcrete.

A summary Streckeisen plot for samples from Reports number 8102, 8116, 8139 and 8155, on the Tieyon 1:100,000 sheet area, Abminga project, is shown after the tables below.

TABLE 1: SAMPLES FROM HOLES PREFIXED TIE-RC, REPORT NO. 8155

RS 472-	TIERC	Lithology	Notes	suite
744	59	Dolerite	Partly weathered	Alcurra
645	60	Granodiorite + monzogranite	Biotite-bearing with oxide, apatite, sphene and zircon.	Kulgera
649	61	Quartz diorite gneiss `	Clinopyroxene-biotite or hornblende-biotite with plagioclase, magnetite and apatite	Mafic
651	62	Granodiorite-monzogranite	With biotite, opaque oxide and apatite.	Kulgera
		Diorite	Hornblende-rich with biotite	Low-K
655	63	Pegmatite	Quartz-plagioclase	
		Granodiorite	Biotite-hornblende ± clinopyroxene-bearing with antiperthitic plagioclase.	High grade
662	64	Syenogranite	Leucocratic with opaque oxide, apatite, zircon	Kulgera
668	65	Syenogranite	Magnetite-sphene-apatite-zircon aggregates, also biotite and rare hornblende.	Kulgera
676	66	Quartz syenite	Biotite-magnetite-sphene-apatite-zircon aggregates and rare hornblende.	Kulgera
685	68	Dolerite,	Sericite-clay-altered (weathered)	Alcurra
682	67	Tonalite	Massive with biotite, oxide, apatite and zircon	Low-K
691	69	Syenogranite, quartz syenite	Minor biotite, magnetite, apatite and zircon	Kulgera
		Tonalite	Minor biotite and rare hornblende, some zircon	Low-K
694	70	Granodiorite	Hornblende-rich with biotite and clinopyroxene: rare zircon	Birksgate
702	72	Syenogranite	Biotite, sphene, magnetite and zircon.	Kulgera
		Granodiorite	Biotite-hornblende-bearing with magnetite and sphene, + rare zircon.	Birksgate
705	73	Metagabbro	Brown hornblende, clinopyroxene and sulphide: magnetite-rich.	Mafic
707	73	Metagabbro	Similar to 705, more plagioclase-rich.	Mafic
711	75	Syenogranite	Biotite-magnetite-sphene-apatite-zircon-rich	Kulgera
709	74	Granodiorite	Hornblende-biotite-clinopyroxene-rich with zircon in mafic lenses.	Birksgate
717	76	Granodiorite	Biotite-hornblende-bearing, rare oxide, sphene	Low-K
723	78	Dolerite	Minor granophyre	Alcurra
730	79	Syenogranite	Biotite and opaque oxide with rare zircon	Kulgera
745	80	Soil, calcrete	Quartz > plagioclase, microcline, rare tourmaline and opaque oxide.	
737	80	Gneiss	Quartzofeldspathic (granitoid): crumpled biotite, rare opaque oxide and zircon.	Birksgate

TABLE 2: SAMPLES FROM HOLES PREFIXED TRE-RC, REPORT NO. 8155

RS 472-	TRERC	Lithology	Notes	suite
289	01	Syenogranite	Biotite-hornblende-magnetite-sphene-apatite-zircon	Kulgera
746	02	Sandstone	quartz-rich with a kaolin matrix	Algebuckina
747	04	Silcrete?	Sparse quartz clasts in isotropic opal (?).	
387	04	Syenogranite	Weathered	Kulgera?
396	05	Syenogranite	Biotite-bearing, leucocratic	Kulgera
399	06	Monzogranite	Biotite-magnetite-apatite-zircon, leucoxene	Kulgera
431	09	Granitoid	Weathered, microcline-rich	Kulgera
444	10	Granodiorite	Massive, biotite-rich but weathered	Kulgera
453	11	Gneiss	Some microcline-rich, some with biotite, quartz and plagioclase, rare garnet.	Birksgate?
466	13	Monzogranite	Partly fragmented with chlorite, clays, epidote, prehnite and rare pumpellyite	Kulgera?
461	12	Gneiss and schist	Weathered quartz-biotite schist, weathered quartz-biotite-amphibole gneiss and tonalite gneiss.	Birksgate
689	Not	Listed	Biotite amphibolite and biotite granodiorite	Mafic, low-K

INDIVIDUAL DESCRIPTIONS

RS 472744:
TIE RC 59, 22-24m

Partly weathered but unmetamorphosed dolerite with clays partly after possible olivine or orthopyroxene, fresh or clay-limonite-altered clinopyroxene, mostly fresh orthopyroxene (with some leucoxene) and fresh plagioclase

Field Note: *Mafic, Giles Complex*

Mineral*	Vol %
Plagioclase	65%
Clinopyroxene	25%
Ex olivine?	7-8%
Oxide	2-3%
Biotite	<1%
Apatite	trace

This sample contains chips of fresh to weathered dolerite or fine-grained gabbro, with fresh plagioclase in all of the chips, but with fresh clinopyroxene in only a few chips. In the majority of the chips some or all of the pyroxene has been altered to clays, probably smectite, and limonite. Abundant plagioclase occurs as unoriented laths from 1 to 3mm long with strong simple zoning. Interstitial clinopyroxene, where fresh, occurs as grains about 1mm in diameter, with various proportions of limonite-stained smectite in many of the chips. Clays also seem to have replaced a mineral with irregular fractures, possibly olivine or orthopyroxene, but this is altered in all of the chips. Opaque oxide, to 1mm in grainsize, is common, but is mostly skeletal, as seen on dolerites. Exsolution lamellae of ilmenite can be seen in low angle incident light and in some chips the opaque oxide has been oxidised or altered to leucoxene. Very minor biotite occurs, partly adjacent to opaque oxide grains, and there is a trace of apatite as very small needles.
This sample seems to be more related to the Alcurra Dyke Swarm than to the Giles Complex.

RS 472645:
TIE RC 60, 32-34m

Fine to medium-grained, foliated and massive biotite granodiorite and monzogranite with chloritised biotite, opaque oxide, apatite zircon and rare fluorite: probably Kulgera Suite.

Field Note: *Birksgate Gneiss.*

Mineral	Vol %
Quartz	25-30%
Microcline	40-45%
Plagioclase	20-35%
Ex-biotite	1-3%
Opaque oxide	<1%
Apatite	<1%
Zircon, sphene	trace

Chips of relatively massive granitoid are present in this sample, with variation in grainsize and mineralogy between the chips. The maximum grainsize varies between chips from 1.5 to 5mm, with relatively more abundant microcline in the coarser chips. In some of the finer-grained chips there is a foliation defined by fresh or chloritised biotite, but in other chips the biotite is unoriented. The quartz and feldspars are anhedral or subhedral and mostly have lobate grain boundaries.

In the finer grained chips, sericite-clouded albitised plagioclase is more abundant than microcline, and there is more abundant biotite than in the coarser chips. In the coarser chips, microcline is more abundant than altered plagioclase, and there are lenses of myrmekite to 1.5mm long. Plagioclase has also exsolved on to microcline grain boundaries in all chips. The biotite is still fine-grained, however, and mostly altered to chlorite. Most of the chips have rare small rounded quartz grains, but most of the quartz is interstitial and as much as 7mm in grainsize in the coarser chips. Aggregates of opaque oxide and apatite occur throughout, rarely with rims of sphene on the oxide. Mostly rounded zircon grains occur, from 50 to 100 µm long. Rare fluorite occurs in altered bio
This seems to be more similar to Kulgera Suite granitoids than to Birksgate Gneiss.

RS 472649: **Biotite-clinopyroxene quartz diorite gneiss and biotite-hornblende quartz diorite gneiss, partly altered, with clays, sericite and prehnite.**
TIE RC61, 28-30m

Field Note: *Birksgate Gneiss*

Mineral	Vol %
Plagioclase	70-75%
Quartz	7-8%
Biotite	10%
Clinopyroxene	7-8%
Magnetite	3%
Apatite	<1%

These chips include gneissic quartz diorite with biotite and clinopyroxene, but are mostly foliated quartz diorite chips with biotite and hornblende, mostly lacking clinopyroxene. The chip that contains clinopyroxene has lenses of foliated fresh biotite to 2mm in grainsize and a single large, sparsely poikiloblastic grain of clinopyroxene about 5mm in diameter. Plagioclase is abundant as lobate grains to 3mm in diameter, with relatively rare quartz as interstitial amoeboid grains to 2mm long. Very minor greenish brown hornblende occurs, mostly as elongate but rounded grains to 2mm long. Opaque oxide is disseminated and there is very minor apatite.

Mineral	Vol %
Plagioclase	70-75%
Quartz	7-8%
Biotite	10%
Hornblende	7-8%
Clinopyroxene	0-1%
Oxide	2-3%
Apatite	<1%

Two of the other chips have lenses rich in fine-grained foliated biotite, mostly less than 0.8mm in grainsize, and areas richer in greenish brown hornblende to 2mm in grainsize. Plagioclase is abundant as grains to 2.5mm long, and there is minor quartz as in the clinopyroxene-rich chip. One of these chips has very minor clinopyroxene to 1mm in grainsize, but the other chip lacks clinopyroxene. There is magnetite, locally over 1mm in grainsize, as well as minor apatite. The remaining two chips are similar, without clinopyroxene, but with more alteration. Much or all of the plagioclase in these chips is clouded with abundant sericite and the biotite has been altered to clays, with lenses of prehnite parallel to the cleavage. One chip has a vein of prehnite from 0.2 to 0.8mm wide, and prehnite also occurs in fractures in quartz.

RS 472651: TIERC 62, 8-10m **Biotite granodiorite to monzogranite (Kulgera Suite?) and hornblende-rich diorite.**

Field Note: *Birksgate Gneiss*

This sample has hornblende-free, microcline-rich chips and hornblende-bearing or hornblende-rich chips without microcline.

Mineral	Vol %
Quartz	25-30%
Microcline	40-50%
Plagioclase	15-30%
Biotite	3-5%
Opaque oxide	1-3%
Apatite	<1%

The hornblende-free chips are inequigranular, and to some extent similar to those in RS 472645 (TIE RC 60), but have minor or abundant plagioclase to 4mm in grainsize throughout. Microcline is variable in abundance and grainsize, with grains less than 2mm long in some chips, and more abundant microcline to 5 or 10mm in grainsize in others. The more microcline-rich chips also have coarse-grained quartz as elongate grains to 10mm long. Minor to common biotite is poorly oriented but is mostly fresh, but one chip has resorbed biotite that has been altered to clay. Minor opaque oxide and apatite are present, as in RS 472645, but zircon is rare and less than 50 μm in grainsize.

Mineral	Vol %
Hornblende	40-80%
Plagioclase	15-55%
Biotite	2-3%
Oxide	1-2%
Apatite	<1%

One of the more hornblende-rich chips has abundant oriented grains of greenish brown hornblende to 2mm long, in diffuse lamellae 2-5mm wide, as well as abundant plagioclase to 2mm in grainsize. Minor biotite and clinopyroxene also occur, to 2mm in grainsize. Quartz is rare and largely interstitial to, or in symplectites with hornblende. Opaque oxide is also rare and there is only rare apatite. The other chip is dominated by poorly oriented hornblende to 2mm in grainsize, but also has very minor quartz, either interstitial to, or in symplectites with hornblende. Minor plagioclase occurs, to 1.5mm in grainsize, with very minor biotite and opaque oxide.

RS 472655: TIE RC 63, 20-22m

Pegmatite and varied biotite-clinopyroxene ± hornblende-bearing granodiorite with antiperthitic plagioclase.

Field Note: *Birksgate Gneiss*

Mineral	Vol %
Quartz	25-30%
Plagioclase	45-65%
K-spar	10-20%
Biotite	5-7%
Clinopyroxene	3-7%
Hornblende	0-5%
Oxide	2-3%
Apatite, zircon	<1%

Heterogeneous and inequigranular granitoids occur in this sample, including one chip that probably represents a pegmatite. The possible pegmatite has poikilitic grains of plagioclase, partly bounded by crystal faces, to 10mm in diameter, and coarse-grained quartz to 8mm in grainsize, intergrown with the plagioclase. A single grain of microcline is present, 5mm long. The plagioclase is weakly dusted with sericite. The other chips are mostly plagioclase-rich, with largely antiperthitic plagioclase to 3mm in diameter as well as less abundant, untwinned or weakly twinned K-spar (orthoclase to microcline) and quartz, both to 4mm in grainsize. Irregular mafic aggregates are scattered and contain biotite and/or clinopyroxene. The biotite is unoriented and mostly less than 1.5mm in grainsize. The pyroxene is poikilitic with optically continuous grains covering areas to 5mm in diameter, with included plagioclase and biotite. One chip also has poikilitic hornblende to 5mm in grainsize. Magnetite is disseminated as grains and aggregates to 1mm in diameter and there is very minor apatite. Rare zircon grains occur, less than 80 □m long. This may be related to the high-grade meta-igneous suite proposed in report No 8139.

RS 472662: TIE RC 64, 46-48m

Massive syenogranite with minor plagioclase, biotite, opaque oxide, apatite and zircon: Kulgera Suite.

Field Note: *Birksgate Gneiss*

Mineral	Vol %
Quartz	30%
Microcline	60%
Plagioclase	6-7%
Biotite	3-4%
Oxide	<1%7
Apatite, zircon	trace

This sample is not Birksgate Gneiss but is a massive microcline-rich syenogranite as seen in the Kulgera Suite. It has abundant microcline to 4 or 5mmin grainsize and quartz, partly interstitial and partly as poikilitic grains, to 8mm in grainsize. Very minor plagioclase, to 2mm in grainsize, is dusted with sericite, and the minor biotite in this sample is totally unoriented, as flakes to 0.8mm long, in places altered to clay. Some of the quartz and microcline grains have lobate boundaries as seen in allotriomorphic-granular (granitic) textures. Very minor fine-grained opaque oxide is present as well as rare apatite and zircon as euhedral crystals to 100 □m in diameter.

RS 472668: **Massive syenogranite with biotite-magnetite-sphene-apatite-**
TIE RC 65, 40-42m **zircon aggregates (± hornblende): Kulgera Suite.**

Field Note: *Birksgate Gneiss*

Mineral	Vol %
Quartz	30%
Microcline	40%
Plagioclase	15%
Biotite	7-8%
Hornblende	<1%
Magnetite	3%
Sphene	3%
Apatite	<1%
Zircon	trace

These chips represent a more mafic version of the syenogranite as seen in the previous sample, and represents Kulgera Suite, not Birksgate Gneiss. It has abundant microcline to 6mm in grainsize and abundant quartz. The quartz occurs partly as anhedral grains to 3mm in diameter and partly as poikilitic grains to at least 8mm in diameter, commonly enclosing microcline and plagioclase. Plagioclase is more abundant, compared with the previous sample, mostly as grains to 2mm in diameter, irregularly clouded with sericite. One chip has plagioclase to 6mm in grainsize, clouded by sericite. The mafic aggregates are irregular and heterogeneous, with inequigranular, unoriented flakes of biotite to 2.5mm in grainsize, irregularly disseminated opaque oxide to 1mm in grainsize and abundant sphene to 1.5mm in grainsize. Green hornblende is rare and mostly less than 1mm in grainsize. Apatite is also abundant in these aggregates, enclosed in magnetite, biotite and sphene. Irregular and euhedral crystals of zircon occur, from 0.1 to 0.5mm long.

RS 472676: **Massive coarse-grained quartz syenite with biotite-magnetite-**
TIE RC 66, 58-60m **sphene-apatite-zircon aggregates and minor green hornblende: Kulgera Suite.**

Field Note: *Kulgera Suite*

Mineral	Vol %
Quartz	15%
Microcline	60%
Plagioclase	15%
Biotite	5%
Hornblende	2%
Magnetite	2%
Sphene	1%
Apatite, zircon	<1%

There are some very weathered, clay and limonite-rich chips in this sample, representing fine-grained quartz-free lithologies, but the most abundant fresh chips are coarse-grained massive syenogranite that can be compared with the previous sample. The chips in this sample are rich in very coarse-grained microcline, locally as much as 10mm in grainsize, and have relatively minor quartz (to 4mm in grainsize) and plagioclase (to 2mm in grainsize). Myrmekite is common adjacent to the microcline grains and the plagioclase is dusted with sericite. There are fewer mafic aggregates than in the previous sample, but these contain biotite to 2mm in grainsize as well as minor hornblende, magnetite, sphene and apatite. Crystals of zircon, to 0.2mm long, are similar to those in the previous sample. This sample is comagmatic with RS 472668 and is also Kulgera Suite.

RS 472685: **Weathered dolerite (Alcurra?) and calcrete with quartz an microcline clasts.**
TIE RC 68, 6-8m

Field Note: *Algebuckina Sandstone*

This sample does not contain sandstone but has a mixture of calcrete and weathered dolerite. The calcrete has small angular clasts of quartz and microcline of granitoid origin, to 1.5mm in diameter, as well as scattered small clay aggregates, set in limonite-stained carbonate. Most of the chips are of dolerite, with sericite-altered plagioclase laths to 4mm long and clay-clouded clinopyroxene to 1.5mm in grainsize. Disseminated opaque oxide, to 0.5mm in grainsize, is largely fresh or oxidised, and there is rare interstitial late magmatic quartz. The dolerite had 60% plagioclase, 35% pyroxene and 5% opaque oxide.

RS 472682: **Massive fine-grained biotite tonalite with magnetite and apatite but only rare zircon.**
TIE RC 67, 32-34m

Field Note: *Birksgate Gneiss*

Mineral	Vol %
Quartz	20-25%
Plagioclase	70%
Biotite	5-6%
Oxide	1-2%
Apatite, zircon	tr

Chips of massive, quartz-poor biotite tonalite are seen in this sample, with unoriented biotite and a granular granitoid with anhedral grains of quartz and mostly fresh plagioclase. Most of the chips have grains less than 2mm in diameter, with granular plagioclase and interstitial, partly pyrrhotite quartz, but in one chip there is abundant plagioclase to 4mm in grainsize and relatively minor quartz as interstitial grains to 3mm long. Unoriented biotite flakes are mostly less than 1mm long, but the coarse-grained chip has chlorite-leucoxene-altered biotite to 2mm in grainsize. Most of the chips have only very minor or rare opaque oxide, mostly less than 0.4mm in grainsize, but one chip has abundant opaque oxide to 2.5mm in grainsize. Minor apatite is present, but zircon is rare as grains less than 30 □m long.

RS 472691: **Massive to foliated biotite syenogranite to quartz syenite and**
TIE RC 69, 8-10m **biotite tonalite with rare hornblende, all with zircon.**

Field Note: *Birksgate Gneiss*

Most of the chips in this sample are granuloblastic in texture and massive or weakly foliated, with microcline as the dominant or only feldspar. However, there are also chips in which plagioclase is the dominant or only feldspar. Both types of chip contain biotite and opaque oxide

Mineral	Vol %
Quartz	10-25%
Microcline	55-70%
Plagioclase	5-15%
Biotite	3-6%
Magnetite	1-3%
Apatite, zircon	trace

The microcline-rich chips have grains mostly less than 2mm in diameter, with different proportions of quartz and fresh or clay-clouded plagioclase in the different chips. Some of the chips have mostly fine-grained biotite with a weak foliation, altered to chlorite and clay, but others have mostly fresh, unoriented flakes of biotite to 1mm long. Minor opaque oxide occurs as anhedral grains to 1mm long, with minor apatite. Rounded to elongate grains of zircon are relatively common, but are small, mostly 50-100 μm long.

Mineral	Vol %
Quartz	20-35%
Plagioclase	60-75%
Microcline	0-1%
Biotite	2-3%
Hornblende	<1%
Oxide	2%
Apatite, zircon	trace

There are three plagioclase-rich chips, two of which have quartz to 3mm in grainsize and plagioclase to 2mm, with minor biotite, very minor hornblende and very minor opaque oxide. The third chip is quartz-rich, with quartz as interstitial grains to 5mm in diameter, enclosing partly sericite-clouded plagioclase grains to 3mm long. This chip also has a single grain of microcline, 1mm long, enclosed in plagioclase. Also present is minor opaque oxide to 1mm in grainsize and partly clay-altered biotite flakes. Disseminated accessory grains of zircon ± monazite occur to 0.2mm long.

The syenogranite seems to be Kulgera Suite and the tonalite belongs to the low temperature, K-poor granitoid suite.

RS 472694: **Foliated fine-grained hornblende-biotite granodiorite with**
TIE RC 70, 14-16m **antiperthitic plagioclase, with clinopyroxene in one chip and rare zircon, and a chip of biotite syenogranite.**

Field Note: *Birksgate Gneiss*

One of the chips in this sample is rich in microcline and may represent a pegmatite or a syenogranite, but the others are foliated and laminated and seem to represent gneisses of granodiorite composition. These chips have lenses rich in hornblende and biotite, locally with clinopyroxene, and quartzofeldspathic areas with plagioclase more abundant than microcline.

Mineral	Vol %
Quartz	25%
Plagioclase	45%
Microcline	15%
Hornblende	10%
Biotite	3%
Clinopyroxene	0-1%
Oxide	1-2%
Apatite, zircon	trace

The microcline-rich chip is not very coarse-grained but has abundant microcline to 3mm in grainsize, with less abundant quartz and clay-clouded plagioclase. Minor opaque oxide and altered biotite are present and suggest a link with syenogranites described above. The foliated chips are even finer-grained, however, with a maximum grainsize of 1.5 to 2mm, varying between chips. The coarser chips are poorer in hornblende and biotite than the finer-grained chips. The plagioclase is mostly antiperthitic, although the most abundant mafic mineral is hornblende, with rare clinopyroxene in one chip. There is also minor to common biotite. These minerals are relatively poorly oriented but occur largely in subparallel lamellae, defining a foliation. Grains and aggregates of opaque oxide also occur, to 2mm long, partly with narrow rims of sphene. Minor apatite is present, with rare zircon crystals to 0.15mm long, some of which are fractured.

RS 472702:
TIE RC 72, 18-20m

Areas of biotite and biotite-hornblende syenogranite, partly foliated, and foliated biotite or hornblende-rich granodiorite, both with magnetite, sphene and zircon.

Field Note: *Birksgate Gneiss*

Most of the chips in this sample are microcline-rich and weakly foliated or massive, with a granuloblastic texture in the quartzofeldspathic component. There is also a chip with sericite-clouded plagioclase more abundant than microcline. This chip has a strong foliation defined by altered biotite. Another chip has a plagioclase-rich lens, but this has hornblende and biotite with a relatively weak foliation.

Mineral	A	B
Quartz	25%	30%
Microcline	55-60%	15%
Plagioclase	10-15%	40-45%
Biotite	3-5%	5-8%
Hornblende	0-2%	2-5%
Oxide, sphene	1-3%	2-3%
Apatite, zircon	trace	trace

The microcline-rich areas (A) have abundant quartz and microcline to 3mm in grainsize, with some grains elongate parallel to the foliation defined by biotite and rare hornblende. In the composite chip hornblende is more abundant than biotite in the microcline-rich areas, but there is only a weak foliation. Most of the biotite in this domain has been altered to chlorite. Some of the biotite is poorly oriented, however, and there are suggestions of more than one generation of biotite. Plagioclase is minor and varies from fresh to sericite-clouded, with myrmekite in some areas. Opaque oxide is also disseminated with very minor sphene, most abundant in the hornblende-rich areas referred to above. Very minor apatite is disseminated with partly fractured zircon grains from 30 to 100 μm long. Th is a biotite syenogranite, partly foliated.

The plagioclase-rich chip (B) has layers with abundant fresh, partly antiperthitic plagioclase and layers with sericite-clouded plagioclase. The quartz and feldspars are mostly less than 2mm in grainsize, with microcline much less abundant than plagioclase. Biotite is common and well-foliated, but completely altered to chlorite, as indicated above. There is more abundant opaque oxide compared with the microcline-rich areas, partly rimmed by sphene or veined by chlorite. Apatite is rare but there are zoned zircon crystals to 100 μm long. The plagioclase-rich zone in the composite chip has abundant sericite-clouded plagioclase to 2mm long as well as partly chloritised hornblende and totally chloritised biotite. Very minor opaque oxide is present, with accessory sphene and apatite, but there are rounded and euhedral zircon grains to 0.15mm (150 μm) long. These areas seem to have the -rich granodiorite.

RS 472705: **High-grade metagabbro with clinopyroxene, opaque oxide and rare sulphide as well as brown hornblende and plagioclase.**
TIE RC 73, 18-20

Field Note: *Birksgate Gneiss*

Mineral	Vol %
Hornblende	50%
Plagioclase	40-45%
Opaque oxide	5%
Clinopyroxene	0-3%
Biotite	1%
Sulphide	<1%
Apatite	trace

Massive high-grade amphibolite is present in this sample, with partly altered clinopyroxene in some chips, as well as greenish brown hornblende, plagioclase, opaque oxide and rare sulphide. The main components are granular hornblende to 3mm in grainsize and partly sericitised plagioclase to 2mm. Irregular masses of opaque oxide occur to 2.5mm in grainsize, generally amoeboid in character. Elongate and equant poikiloblastic grains of clinopyroxene occur sparsely in some of the chips, to 4mm long, partly altered to carbonate. Very minor altered biotite is also disseminated, to 1mm in grainsize. Minor apatite is present and rare grains of partly oxidised sulphide occur to 0.5mm in diameter. This sample is probably a metagabbro and is of uncertain stratigraphic significance.

RS 472707: **High-grade amphibolite with opaque oxide and sulphide: retrograde sericite and prehnite are abundant, with chlorite after biotite.**
TIE RC 73, 28-30m

Field Note: *Birksgate Gneiss*

Mineral	Vol %
Hornblende	35-40%
Plagioclase	55-60%
Oxide	3-5%
Biotite	<1%
Sulphide	1%
Apatite	<1%

Like the previous sample, also from TIE RC 73, this is a high-grade metagabbro. This sample is mostly more plagioclase-rich and finer-grained, with few grains over 1.5mm in diameter. These chips also have more abundant opaque oxide and apatite, suggesting a more fractionated rock. One chip is virtually free of mafic minerals, with only very minor biotite and opaque oxide, but most have 35-40% greenish-brown hornblende as well as largely sericite-clouded plagioclase. One chip has small interstitial patches of prehnite and veins of prehnite and/or carbonate to 0.5mm wide. Minor sulphide is disseminated as grains from 0.2 to 0.8mm in diameter.

RS 472711: **Very coarse-grained massive syenogranite with altered biotite, magnetite, sphene, apatite and zircon.**
TIE RC 75, 10-12m

Field Note: *Granite, Kulgera Suite*

Mineral	Vol %
Quartz	25%
Microcline	60%
Plagioclase	6%
Biotite	3%
Magnetite	3%
Sphene	2%
Apatite	1%
Zircon	trace

Some of the chips in this sample contain or consist of fragmented coarse microcline, with abundant anastomosing veins of chlorite and rare chlorite-epidote aggregates. Others are largely composed of grains of microcline that are at least 8mm in diameter, with minor quartz and clay-clouded, partly exsolved plagioclase, partly primary in some chips. Rare coarse plagioclase occurs, to 5mm in grainsize, in one chip. The primary plagioclase, and that exsolved in the microcline, has been altered to sericite. Quartz, from 5mm to over 12mm in grainsize, is more abundant in other chips, and has undulose extinction and subgrains. Chlorite has replaced biotite flakes to 3mm long, and there are aggregates of opaque oxide and apatite to 5mm long, enclosing crystals of zircon to 0.2mm long. One chip has a grain of sphene 3mm long and one has a patch of green clay with a rectangular outline, but the original mineral is uncertain, but this patch could have replaced plagioclase.

RS 472709: **Foliated biotite-hornblende-clinopyroxene granodiorite with opaque oxide, apatite and zircon and a biotite diorite chip with abundant accessory apatite and zircon.**
TIE RC 74, 8-9m

Field Note: *Birksgate Gneiss*

Mineral	Vol %
Quartz	30%
Plagioclase	40%
Microcline	15-20%
Hornblende	7-8%
Biotite	5%
Clinopyroxene	2-3%
Magnetite	1-2%
Apatite	<1%
Sphene, zircon	trace

Most of the chips in this sample are laminated and foliated gneisses with lenses rich in mafic minerals (biotite and hornblende, ± clinopyroxene, and magnetite) as well as quartz and feldspar-rich areas with partly antiperthitic plagioclase. One chip is granular and decussate in texture with plagioclase and biotite, but very little quartz and no K-spar. Quartz is abundant in the foliated chips, with elongate grains to 7mm long, mostly parallel to the foliation. Plagioclase and less abundant microcline occur as grains to 2mm long, with minor sericite in the plagioclase. Lenses and layers rich in biotite and/or hornblende are common, with grains to 2mm long. Clinopyroxene is less abundant, but rare layers occur with hornblende and clinopyroxene to 2mm in grainsize. Oxides and apatite also occur in the mafic lenses, with minor sphene and grains of zircon to 0.25mm long.

The massive chip has 70% plagioclase and 25% biotite to 1.5mm in grainsize and very minor quartz. Very minor sphene and opaque oxide are disseminated, as well as unusually abundant accessory apatite and several grains of zircon to 0.15mm long.

RS 472717: **Largely massive biotite-hornblende-bearing possible granodiorite with some very coarse-grained chips and rare shear zones.**
TIE RC 76, 26-28

Field Note: *Birksgate Gneiss*

Mineral	Vol %
Quartz	25%
Plagioclase	45%
Microcline	20%
Ex biotite	4%
Hornblende	3%
Oxide	2%
Apatite, sphene	<1%

One of the chips in this sample is fragmented with comminuted plagioclase as fragments set in chlorite, as well as fractured grains of quartz and less fragmented plagioclase. Another chip is fractured, with chlorite-filled fractures, but is texturally more coherent than the comminuted chip. Most of the chips in this sample are coarse-grained or very coarse-grained, with microcline grains locally over 10mm long, with few or abundant inclusions of plagioclase. Grains of quartz and weakly sericitised, partly antiperthitic plagioclase are abundant and as much as 5 or 6mm long. In some areas there are foliae with chloritised biotite and fresh hornblende parallel to the foliation, as grains to 2mm long. Symplectites of hornblende and quartz also occur in some areas, enclosed in feldspar or quartz, with unoriented prisms of hornblende to 4mm long enclosing quartz, opaque oxide and plagioclase. Altered biotite flakes also occur, but are not abundant. Grains of opaque oxide are disseminated, from 0.1 to 1mm in diameter, with apatite to 0.5mm and rare sphene.
Some of the plagioclase has been cut by veins of albite, and later veins with various proportions of carbonate, clays and prehnite are also present, to 1mm wide.

RS 472 723: **Fresh dolerite with minor granophyre, rare hornblende and biotite, cut by veins of magnetite, clay and carbonate.**
TIE RC 78, 10-12m

Field Note: *Pyroxenite, Giles Complex*

Mineral	Vol %
Plagioclase	55%
Clinopyroxene	35%
Magnetite	5%
Ilmenite	3%
Granophyre	1%
Hornblende	<1%
Biotite	trace
Apatite	trace

The chips in this sample are composed of fresh dolerite with very minor interstitial granophyre, probably representing the Alcurra Dyke Swarm. Plagioclase is abundant and occurs as zoned, bladed crystals to 3mm long. Granular clinopyroxene is also abundant but mostly less than 1mm in grainsize. There is also abundant opaque oxide with dendrites of titanomagnetite to 2mm long and bladed dendrites of ilmenite to 1.5mm long. The interstitial granophyre is mostly less than 1mm in grainsize and encloses most of the minor apatite in the rock. Very minor greenish brown hornblende occurs adjacent to the pyroxene in places, with dark brown biotite adjacent to magnetite. Veins of probable magnetite occur in one chip, and there are fractures containing clays or carbonate.

RS 472730:
TIE RC 79, 28-30m

Possibly high-temperature syenogranite with various proportions of quartz, K-spar and plagioclase, minor altered biotite, oxides, accessory apatite and zircon. Possibly Kulgera Suite.

Field Note: *Birksgate Gneiss*

Mineral	Vol %
Quartz	30-35%
K-spar	45-60%
Plagioclase	15-25%
Ex-biotite	2%
Opaque oxide	2%
Apatite, zircon	<1%

These chips are inequigranular and heterogeneous, but are mostly rich in quartz and K-spar, with minor to abundant sericite-clouded plagioclase. Some chips have few grains over 2mm long, but others have grains of quartz and K-spar to 4mm in diameter. The K-spar has only incipient microcline twinning and thus differs from that seen in most samples of Kulgera Suite granitoids, but the texture is essentially granuloblastic. Very minor biotite is partly foliated, partly decussate, and altered to chlorite and leucoxene. Minor opaque oxide is commonly disseminated and occurs as rounded or lobate grains to 0.6mm in diameter. Rare apatite is present and rounded to subhedral zircon grains occur, partly attached to opaque oxide grains, from 40-80 □m long. The average
syenogranite.

RS 472745:
TIE RC 80, 8-10m

Calcrete and transported overburden, with clasts of quartz, K-spar, plagioclase, tourmaline and opaque oxide in carbonate or limonite-stained clays: two chips of limonite-clay altered and veined, fractured quartzofeldspathic gneiss occur with rare zircon.

Field Note: *Algebuckina Sandstone*

Most of these chips are cemented by supergene carbonate and seem to represent calcrete rather than sandstone. The clasts vary from unsorted to moderately sorted, with clasts composed of single crystal quartz grains and crystal fragments of K-spar to 3mm in diameter in some chips, and are mostly subrounded or rounded. Clasts of quartz, plagioclase, K-spar and rare tourmaline also occur, mostly less than 1.5mm in diameter. Two chips have more angular clasts, mostly single crystal quartz grains, to 3mm long, with relatively minor microcline and plagioclase, as well as grains of opaque oxide. These are cemented by decussate limonite-stained clays and may represent transported overburden.
Two chips of fractured and brecciated coarse-grained quartzofeldspathic material, possibly gneiss, are present with abundant probable K-spar, largely clouded by clays and limonite. Limonite-lined fractures are abundant in these chips. There are also patches and veins of limonite-stained clay and rare small rounded zircon grains to 100 □m long.

RS 473737: **TIE RC 80, 40-42m** — **Altered biotite-opaque oxide-bearing quartzofeldspathic gneiss with zones of brittle deformation and clay-filled fractures: Birksgate Gneiss.**

Field Note: *Granite, Kulgera Suite*

These chips are heterogeneous and inequigranular, but largely feldspathic or quartzofeldspathic. One chip has a broad band of fractured to fragmented material with clay clouding, in what appears to be a zone of fault gouge. There are also lenses and lamellae rich in granular quartz, with grains rarely as much as 6mm long, more commonly less than 2mm. Plagioclase and K-spar are also present, with plagioclase mostly more abundant than K-spar, and minor myrmekite. Highly crumpled, fresh to altered biotite is common, especially in the more plagioclase-rich areas. Opaque oxide is disseminated as grains 0.2 to 2mm long, with rare apatite and very rare small zircon grains. The feldspars are clouded by clays and there are clay-filled fractures.
This sample seems to represent Birksgate Gneiss, with abundant brittle deformation as well as crumpled biotite.

RS 472289: **TRE RC 01, 64-66** — **Biotite-hornblende syenogranite with magnetite-sphene-apatite-zircon aggregates: Kulgera Suite.**

Field Note: *Granite, Kulgera Suite*

Mineral	Vol %
Quartz	25%
Microcline	45-50%
Plagioclase	15-20%
Biotite	4%
Hornblende	1%
Magnetite	2%
Sphene	3%
Apatite, zircon	<1%

This sample is a typical member of the Kulgera Suite and is very different to that in the previous sample. It has abundant coarse microcline, to 10mm in grainsize and less abundant quartz and plagioclase to 6mm in grainsize. The mafic component includes biotite and less abundant hornblende, both to 2mm in grainsize, with aggregates of magnetite and coarse-grained sphene to 4mm long, mostly with minor to abundant apatite. Crystals of zircon occur, from 0.1 to 0.4mm long. Some of the sphene has been replaced by leucoxene and some of the plagioclase is clouded by sericite.

RS 472746: **TRE RC 02, 42-44m** — **Fine and very coarse-grained sandstone chips with angular single crystal quartz grains, leucoxenised opaque oxide, detrital muscovite and accessory zircon.**

Field Note: *Algebuckina Sandstone*

These chips represent unlithified sandstones with abundant largely angular single crystal quartz grains. In some chips the quartz is largely less than 0.25mm in grainsize, but in others there are abundant clasts to 2mm in diameter. The fine-grained chips are composed of fine-grained sandstone, with very coarse-grained sandstone in the others. Leucoxene has replaced detrital opaque oxide, and the coarser chips contain zircon grains about 100 µm long. Zircons in the fine-grained chips as much as 8 µm in grainsi also contain detrital muscovite to 0.5mm in grainsize. Interstitial kaolin is abundant, with minor porosity in some areas.

RS 472747: **TRE RC 04, 2-4m** — **Possible silcrete with irregularly disseminated, unsorted, rounded and agular single crystal quartz grains.**

Field Note: *Bulldog Shale?*

These chips have irregularly disseminated, unsorted, rounded to angular single crystal quartz grains from a few µm to 1mm in diameter. These are enclosed in a clay and leucoxene-bearing but largely isotropic host with no signs of bedding. This seems to represent silcrete rather than shale, as suggested in your notes.

RS 472 387: TRE RC 04, 108-110m — **Weathered microcline-rich granitoid, massive and undeformed: Kulgera Suite.**

Field Note: *Birksgate Gneiss*

These chips are partly weathered, but are partly rich in relatively coarse-grained microcline, locally over 8mm in grainsize. Rare fresh biotite is present as well as aggregates of shredded clays, probably vermiculite, derived from biotite. Clay-altered plagioclase is also present, but is rare. Minor leucoxene may have replaced sphene and quartz is also evident. Although magnetite-apatite-zircon aggregates are not evident, and limonite flooding and veining is common, this is probably a granitoid of the Kulgera Suite.

RS 472396: TRE RC 05, 74-76m — **Biotite syenogranite: Kulgera Suite (leucocratic).**

Field Note: *Granite, Kulgera Suite*

These chips contain abundant (60-65%) microcline to 10mm or more in grainsize, as well as 25% interstitial quartz, to 8mm, and 10% plagioclase, to 4mm in grainsize. The plagioclase is partly clouded by sericite and some grains also contain limonite-lined fractures. Myrmekite is present in some chips. Minor biotite and opaque oxide are present but this sample is poor in accessories compared with more mafic Kulgera Suite granitoids.

RS 472399: TRE RC 06, 12-14m — **Biotite monzogranite, Kulgera Suite, with magnetite, leucoxene after sphene, apatite and zircon.**

Mineral	Vol %
Quartz	20-25%
Microcline	45%
Plagioclase	25%
Biotite	4%
Magnetite	2%
Leucoxene	1%
Apatite, zircon	tr

Field Note: *Granite, Kulgera Suite*

This is a typical coarse-grained granitoid of the Kulgera Suite. It has abundant microcline to 15mm or so in grainsize and well as plagioclase to 7mm and interstitial quartz to 6mm in grainsize. Biotite is more abundant than in the previous sample and as much as 3mm in grainsize, locally with lamellae of limonite parallel to the cleavage. Grains of opaque oxide and magnetite-apatite aggregates are disseminated, locally with zircon crystals to 0.2mm long. Patches of leucoxene to 1mm in diameter may have replaced sphene. The plagioclase has irregular sericite-clouded areas and there are limonite-lined fractures. The composition seems to fall in the monzogranite field.

RS 472431: TRE RC 09, 90-91m — **Weathered Kulgera Suite granitoid with fresh quartz and microcline, clay ± opal after plagioclase, clays after biotite and leucoxene after sphene.**

Field Note: *Granite, Kulgera Suite*

This is a weathered but typical granitoid of the Kulgera Suite. It has abundant coarse-grained microcline and masses of isotropic clay (or opal?) and sericite representing former plagioclase. Quartz is also abundant, as are coherent and shredded clay pseudomorphs after biotite. A patch of possible myrmekite has opal replacing the quartz. Leucoxene has replaced coarse-grained sphene to 2mm in grainsize but opaque oxide, apatite and zircon were not seen. Hexagonal voids in altered sphene may represent former apatite, however.

RS 472444: **Weathered massive biotite granodiorite with opaque oxide,**
TRE RC 10, 66-68m **apatite and rare zircon: possibly Kulgera Suite.**

Field Note: *Granite, Kulgera Suite*

The single chip in this sample is a massive inequigranular granitoid with 30-35% quartz, 35-40% microcline and 25-30% largely clouded plagioclase to 4mm in grainsize. Minor biotite, altered to clays, occur as flakes to 0.8mm long. The plagioclase is clouded with sericite. There is also minor magnetite and rare apatite. Small grains of zircon are rare but are attached to magnetite grains. This seems to be a granodiorite but is probably Kulgera Suite.

RS 472453: **Heterogeneous and inequigranular chips, some rich in**
TRE RC 11, 66-68m **microcline, with less abundant quartz, plagioclase and biotite, some richer in quartz and plagioclase, and some with abundant biotite. One chip, rich in quartz and plagioclase, also has minor garnet: Birksgate Gneiss.**

Field Note: *Birksgate Gneiss*

Some of the chips in this sample are rich in decussate biotite to 2mm in grainsize, accompanied by rare muscovite. One chip has small lenses of decussate biotite, to 1mm in grainsize, cut by a limonite-lined fracture. Some of the chips have fine-grained quartzofeldspathic areas, mostly with microcline more abundant than either quartz or plagioclase. One chip is fine-grained, with foliated biotite and subequal amounts of quartz, microcline and plagioclase. This chip has most grains less than 0.8mm long, but has rare ribbon-like quartz grains to 3mm long, parallel to the foliation. The other chips have more equant grains to 2mm in diameter, with less quartz and more plagioclase in the most biotite-rich areas. The foliated chip has minor opaque oxide and rare fragments of garnet and could be sufficiently quartz-rich (35-40%) to suggest a metasandstone, but a granitoid (monzogranite) is also possible. There seem to be several lithologies in this sample, possibly with tectonic interlayering, including syenogranite, granodiorite and quartzofeldspathic gneiss containing garnet. Rare accessory zircon is present, mostly as rounded grains less than 50 μm in diameter.

RS 472461: **Weathered quartz-biotite schist and quartz-biotite-amphibole**
TRE RC 12, 48-50 **(?) gneiss, as well as weakly altered foliated tonalite chips with opaque oxide, apatite and zircon. Possibly Birksgate Gneiss.**

Field Note: *Birksgate Gneiss*

Some of these chips are weathered but others are relatively fresh. One of the weathered chips was a quartz-biotite schist with 40% granular quartz and 50% clay-limonite-leucoxene-altered biotite defining a contorted foliation. Disseminated plagioclase is also present. The grainsize in this chip is from 0.5 to 2mm. There are also less biotite-rich chips with 15% clay after biotite and 15-20% quartz. These are dominated by clays that may have replaced foliated amphibole grains, with very minor possible leucoxene, but there is some possibility of former plagioclase. The fresher chips are plagioclase-rich with plagioclase as equant and elongate grains to 2mm long, less abundant quartz to 1.5mm in grainsize and 5-7% clay-limonite-leucoxene-altered biotite as small, well-oriented flakes. One of these chips has rare microcline, but the overall composition is that of a tonalite, with 25-30% quartz and 60-65% plagioclase. Very minor opaque oxide is disseminated, altered to leucoxene, with accessory apatite and mostly euhedral zircon to 100 μm in grains

RS 472466: **Altered and partly brecciated monzogranite with chlorite,**
TRE RC 13, 12-14m **epidote, prehnite and possible pumpellyite.**

Field Note: *Birksgate Gneiss*

Mineral	Vol %
Quartz	30%
Microcline	40%
Plagioclase	25%
Ex-biotite	5%
Apatite, zircon	trace

These chips are granuloblastic or allotriomorphic-granular in texture and largely composed of amoeboid grains of microcline and quartz to 3mm in diameter. Less abundant plagioclase is pale yellow and clouded, with bent and fractured grains common, to 1.5mm in grainsize. Minor unoriented biotite has been altered to chlorite, locally with iron-rich pumpellyite or with epidote. Accessory apatite is present, as well as rare fractured zircon grains to 150 □m in diameter.

Several chips contain narrow zoned of fine fragmentation and wider zones of comminution are also evident. Fractured areas extend away from these comminuted zones. Some of the larger areas of comminution are cemented by clays, epidote and prehnite, with minor chlorite in some areas. Stylolite-like veins occur in some chips, with chlorite, epidote and leucoxene.

The visually estimated mineralogy suggests a partly brecciated monzogranite, possibly Kulgera Suite.

RS 472689 **Biotite amphibolite and biotite granodiorite.**

Field Note: *[Not listed]*

Two chips of biotite amphibolite occur in this sample as well as one chip of weakly foliated granodiorite. The amphibolite chips have abundant (20%) weakly foliated greenish brown biotite and slightly polygonised hornblende prisms (30-35%), both 1-2mm in grainsize, as well as disseminated interstitial grains of plagioclase (45%), mostly less than 1mm in grainsize. Small grains of opaque oxide are disseminated (2-3%), to 0.5mm in diameter, with rims of sphene on some grains, and sparsely disseminated separate grains of sphene. Rare apatite is also disseminated.
The granodiorite has quartz (35%) as anhedral grains to 4mm in grainsize, plagioclase to 2mm in grainsize (45-50%), with weak alteration to sericite, and fresh microcline to 3mm (15-20%). Very minor biotite (1-2%), to 1mm in grainsize, is accompanied by rare opaque oxide and sphene, with very rare apatite. No zircon was seen, however.

MINERALOGICAL REPORT No. 8180
by Ian R. Pontifex MSc.

February 12th, 2002

TO :	Mr Justin Gum Geological Survey Section PIRSA 101 Grenfell St ADELAIDE SA 5000
YOUR REFERENCE:	Order No. EX3053 (part) Debit Code 03 316/0307/699
MATERIAL:	36 Drill chip samples ABMINGA 1:250,000 TIEYON 1:100,000 Sheet areas Drill holes TIERC81 to 113
WORK REQUESTED:	Section preparation, description and report with comments and interpretations as specified.
SAMPLES & SECTIONS:	Temporarily retained.
DIGITAL COPY:	Emailed to Justin Gum 12/02/02.

PONTIFEX & ASSOCIATES PTY. LTD.

INTRODUCTION

This is the fifth sub-batch of samples (37 in this case) of RC drill chips petrographically described by Alan Purvis for Justin Gum, since July 2001, from the Abminga/Tieyon drilling programme undertaken by PIRSA earlier in 2001. These drill chips were mounted in epoxy and prepared as composite thin sections and composite polished thin sections for this report as requested. A number of samples are yet to be described to complete this program and since this is effectively a progress report, all report numbers and sample numbers are documented below "for the record".

Report No.	Date	No. of Samples	Drill Hole Nos.	R. numbers (not necessarily consecutive)
8102	3/7/01	13	TIERC 32, 35, 42, 46 to 49, 58, 59, 71, 77	472495 to 472740
8116	7/8/01	19	TIERCO2 to RC21	472196 to 472331
8139	15/10/01	32	TIERC22 to RC57	472337 to 472631 plus 472895
8155	27/11/01	34	TIERC59 to RC80 TRERC01 TO RC13	472645 to 472747
8180 (this report)	12/02/02	37	TIERC81 to RC113	482828 to 482834

SUMMARY COMMENTS

As noted above, this report petrographically describes thirty-seven samples from mostly shallow RC drilling in the Tieyon area in northern South Australia. The visually estimated mineralogies of all samples are listed in Table 1. Consistent with stratigraphy in this area as previously discussed with Justin Gum and discussed in previous reports, the petrography of these samples indicates allocations to the following units:

Lithological Groups

Two of the samples in this set contain or consist of dolerite and quartz dolerite, but most are granitoids. One group includes diorite, quartz diorite and tonalite, but most represent granodiorite, monzogranite and syenogranite, according to a Streckeisen classification diagram. One monzonite was seen and one sample has chips composed largely of phlogopite, with minor clinopyroxene and microcline. One sample was submitted as representing sandstone, but may represent transported overburden with soil-related clays and limonite.

Mafic Rocks: TIERC 90, 91 (58-60m), 92 and 102

Mylonitised possible mafic chips are a component of TIERC 90, with lenses of opaque oxide and altered mafic minerals. One chip in TIERC 91 (58-60m) is composed of scapolite, actinolite and minor sphene and may represent altered gabbro. Basalt in TIERC 92 and dolerite to quartz dolerite in TIERC 102 are apparently part of the Alcurra dyke swarm. The basalt (largely devitrified glass) may be from a small dyke or a chilled margin, whereas the dolerites are from a fractionated and possibly zoned intrusion. The dolerite is altered, with prehnite, actinolite, epidote and clays.

Granitoids, mostly gneissic, with antiperthitic plagioclase, but with hornblende and/or microcline rather than pyroxene and/or orthoclase: TIERC 91 (part), 103-112

Drillhole TIERC 91 has a wide variety of fine-grained and medium-grained lithologies, many with antiperthitic plagioclase, suggesting high amphibolite to granulite-facies cooling conditions or metamorphism. Some have pyroxenes, but some have only hornblende ± biotite and have microcline rather than orthoclase, suggesting final cooling at amphibolite facies temperature. Drillholes TIERC 103-112 have quartz diorite, granodiorite and monzogranite with antiperthitic plagioclase and hornblende, but no pyroxene (except in TIERC 105 and 107). Any K-spar present is microcline rather than orthoclase.

Granitoids, mostly gneissic, with antiperthitic plagioclase and orthoclase, mostly with pyroxenes as well as or instead of hornblende: TIERC 82-92, possibly 105, 107 (parts)

These samples are all characterised by antiperthitic plagioclase, with orthoclase or orthoclase transitional to microcline where K-spar is present. Some have two pyroxenes (orthopyroxene and clinopyroxene), but others have only clinopyroxene. TIERC 86 (24-26m) has a foliated micromonzonite that has biotite and microcline, and may represent a later intrusion than the pyroxene-bearing chips in the deeper sample from the same drillhole. These samples again include diorite, quartz diorite and granodiorite to monzogranite. A very varied set of lithologies in TIERC 91 suggests a strongly layered granulite-facies gneiss sequence in this drillhole. Sample TIERC86 also has phlogopite-rich chips with clinopyroxene and microcline. The pyroxene and/or orthoclase-bearing chips in TIERC 105 and 107 seem to be facies variants of more widespread microcline-hornblende-bearing gneisses, also with antiperthitic plagioclase.

Granitoids with garnet: TIERC 91

One chip from TIERC91 is an altered quartz diorite with poikilitic grains of garnet. It is not clear whether this is a metamorphosed altered granitoid or has a primary S-type character.

Granitoids with normal plagioclase, microcline and biotite ± hornblende (possible Kulgera Suite): TIERC 81, 86 (foliated micromonzonite), 92-93, 95-100, 102-104

These granitoids vary from granodiorite to syenogranite and include leucocratic granitoids, mostly with biotite and no hornblende, as well as biotite-hornblende granitoids. Microcline is common and locally much more abundant than plagioclase. Alteration, with sericite, chlorite, epidote, prehnite, pumpellyite or (rarely) laumontite is seen in several samples in this group. Brecciated chips occur in TIERC 104.

Granitoids with reddish feldspars: TIERC 87, 94, 101, 105

These granitoids are mostly quartz-rich and leucocratic, varying from monzogranite to syenogranite. One sample, from TIERC94, also contains diorite with reddish plagioclase. Some of the chips in TIERC 101 are brecciated and seem to pass into quartz-epidote rock.

Samples from TIERC 91, 92, 107 and 111 were prepared as polished thin sections. These show abundant magnetite, locally accompanied by fresh or leucoxenised ilmenite or by sphene, and locally with hematite. The hematite occurs partly as rims and partly as granular patches within the magnetite. In TIERC 92 anatase is seen replacing sphene. The only sulphides seen are accessory pyrite and chalcopyrite, except in the deeper sample from TIERC 111, where pyrite and chalcopyrite are rimmed by blue covellite ± chalcocite. The most abundant (albeit <1%) sulphide is in TIERC 107, where pyrite-chalcopyrite aggregates occur in epidote or sericite-rich alteration patches, parallel to the cleavage in biotite and in hornblende.

Table 1: Visually estimated mineralogies of selected samples, Report No. 8180

	RS482828	RS472764	RS472771	RS472784	RS482829	RS472789	RS472789	RS472791	RS472837	RS472837	RS482831	RS472846	RS472925
Plagioclase	40.0	36.0	58.8	33.2	30.3	0.0	47.3	70.0	32.0	73.0	66.5	42.6	16.7
Quartz	22.0	25.6	6.9	33.2	16.8	0.0	24.9	5.0	37.0	10.0	1.0	1.6	24.1
K-Spar	23.0	29.3	0.0	20.4	42.1	9.0	7.5		30.0		1.0	27.9	35.7
Biotite	9.5	3.7	14.2	8.7	7.7	82.5	7.5	12.5	1.0	10.0	7.0	3.6	3.9
Hornblende	1.0	0.0	0.5	1.0	0.0	0.0	2.5	2.5		4.0	10.0	0.0	8.8
Orthopyroxene		4.3	11.8	1.5	0.0	0.0	0.0	6.0				0.0	0.0
Clinopyroxene		0.0	4.9	0.0	0.0	8.5	7.5	4.0			12.0	19.7	0.0
Opaques	4.0	0.9	2.7	1.5	0.7	0.0	2.0			2.5	2.0	3.9	7.9
Apatite	0.5	0.3	0.2	0.5	0.3	0.0	1.0			0.5	0.5	0.7	1.6
Sphene		0	0	0	2.0	0.0	0.0					0.0	1.2
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 1: *CONTINUED*

	RS472933	RS479826	RS479834	RS479842	RS479850	RS479858	R479865	RS479872	RS479881	RS482832	RS479886	RS479897	RS479903
Plagioclase	29.9	48.4	23.3	34.2	35.0	24.8	17.8	21.7	10.2	10.0	34.7	51.5	59.2
Quartz	39.6	23.4	26.2	25.9	25.6	20.9	35.2	40.8	38.9	25.0	28.8	27.0	15.7
K-Spar	29.9	13.1	47.6	30.2	33.3	53.0	47.0	30.0	50.4	65.0	19.4	15.0	0.0
Biotite	0.7	9.1	2.9	7.0	5.6	1.3	0.0	7.5	0.6		4.7	3.0	10.9
Hornblende	0.0	3.4	0.0	0.3	0.0	0.0	0.0	0.0	0.0		10.0	2.0	9.8
Orthopyroxene	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Clinopyroxene	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0		1.8
Opaques	0.0	1.9	0.0	2.0	0.6	0.0	0.0	0.0	0.0		1.8		2.1
Apatite	0.0	0.6	0.0	0.3	0.0	0.0	0.0	0.0	0.0		0.6	0.5	0.6
Sphene	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	1.0	0.0
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

	RS479907	**RS479910**	**RS479913**	**RS482833**	**R479918**	**R479927**
Plagioclase	30.3	28.5	23.5	52.0	53.8	74.2
Quartz	41.5	22.6	30.0	8.4	6.9	0.8
K-Spar	24.5	32.6	40.1	0.0	0.0	5.9
Biotite	3.2	11.5	5.1	16.9	21.9	9.4
Hornblende	0.0	0.0	0.0	10.5	5.3	9.8
Orthopyroxene	0.0	0.0	0.0	0.0	0.0	0.0
Clinopyroxene	0.0	0.0	0.0	8.8	5.3	0.0
Opaques	0.5	4.7	1.4	2.7	5.9	0.0
Apatite	0.0	0.0	0.0	0.7	0.9	0.0
Sphene	0.0	0.0	0.0	0.0	0.0	0.0
	100.0	100.0	100.0	100.0	100.0	100.0

INDIVIDUAL DESCRIPTIONS

RS482828 **Biotite monzogranite with opaque oxide, rare hornblende,**
TIRE RC 81, 40-42m **apatite, monazite and zircon: weak sericite alteration is seen in the plagioclase.**

Field Note: *Granite*

There are several chips in this sample, varying considerably in mineralogy. An assessment of the overall mineralogy suggests 20-25% quartz, 40% plagioclase, 20-25% microcline, 10% biotite, 4% opaque oxide, 1% hornblende and <1% apatite. This is consistent with a monzogranite transitional towards granodiorite. The grainsize varies from 0.4 to 8mm, with quartz, microcline and plagioclase all possibly coarse-grained. The quartz is anhedral and interstitial to the other minerals, with the plagioclase most commonly subhedral. Very minor myrmekite occurs on microcline-plagioclase contacts. The biotite is decussate with flakes to 2mm long. Opaque oxide and apatite occur in aggregates to 1.5mm long. Rare small grains of zircon and monazite are noted, about 0.1mm in diameter. Minor sericite and fine-grained muscovite occur in the plagioclase, and the radioactive grains have clay rims, suggesting alteration within former areas of radiation damage. Very minor fine-grained green hornblende occurs in some chips, and narrow rims of titanite (sphene) occur on some of the oxide grains.

Interpretation
Probably Kulgera Suite with only rare sphene.

RS472764 **Biotite-orthopyroxene monzogranite with granulite-facies**
TIE RC 82, 38-39m **minerals: probably metamorphosed but not gneissic.**

Field Note: *Gneiss*

This sample again consists of inequigranular, heterogeneous chips. The visually estimated mineralogy includes 25% quartz, 35-40% plagioclase, 25-30% orthoclase (mostly in two or three chips), 4-5% orthopyroxene, 3-4% biotite and 1% opaque oxide. Most of the minerals are anhedral and may have been recrystallised, with some antiperthitic plagioclase, especially in the chip with the most abundant K-spar. The K-spar is orthoclase with minor bead perthite and contrasts with the microcline in the previous sample. The quartz and feldspars are mostly from 0.4 to 5mm in grainsize, but there are rare quartz grains to 7mm long. The biotite and orthopyroxene are mostly less than 1.5mm in grainsize, with opaque oxide from 0.5 to 1mm and fine-grained apatite. Minor myrmekite is present.

Interpretation

This sample seems to represent a granulite-facies metagranitoid, but is not foliated. In terms of composition it is a monzogranite, but most of the K-spar is in the largest chip.

RS472771 **Biotite-clinopyroxene-orthopyroxene quartz diorite gneiss of**
TIE RC 83, 34-36m **granulite-facies metamorphism with hornblende, oxide, apatite and rare zircon.**

Field Note: *Gneiss*

This is a quartz-poor, weakly foliated granulite of quartz diorite composition. The visually estimated mineralogy includes 7% quartz, 55-60% antiperthitic plagioclase, 10-15% orthopyroxene, 15% biotite, 2-3% opaque oxide, 5% clinopyroxene and <1% each of hornblende and apatite. The only K-spar is present as exsolved blocks in the plagioclase. Rare zircon is present, to 0.2mm in grainsize. The plagioclase is anhedral and mostly less than 4mm in grainsize, with biotite to 3mm in grainsize, commonly with a weak foliation. The pyroxene and hornblende are granular or poikilitic, mostly less than 2mm in grainsize, with opaque oxide also to 2mm in grainsize. All of the hornblende is in a small area within a single chip, and is olive-brown in colour. Apatite is also present as stubby prisms to 0.3mm long. Very minor chlorite has veined some of the orthopyroxene, but this sample is mostly fresh.

Interpretation
This is a granulite-facies gneiss of quartz diorite composition and is more mafic than that in the previous sample.

RS472784	**Biotite monzogranite gneiss with granulite-facies**
TIE RC 85, 28-30m	**metamorphism, minor hornblende, orthopyroxene, opaque oxide, apatite and zircon or monazite.**

Field Note: *Gneiss*

This is a more felsic granulite-facies gneiss with 30-35% each of quartz and plagioclase, 20% K-spar, varying from orthoclase to microcline, 8-10% biotite and 1-2% each of orthopyroxene, hornblende and opaque oxide. Minor apatite is present, as well as rare zircon or monazite to 0.2mm in grainsize. Most of the grains are less than 3mm in diameter and are anhedral, with weakly foliated biotite to 2mm in grainsize and mostly fine-grained pyroxene. Minor hornblende occurs, mostly in a single chip with biotite altered to clays, chlorite and prehnite. The opaque oxide is particularly fine-grained but is commonly composite with apatite. Minor myrmekite is present and some of the plagioclase is antiperthitic, with blocks of exsolved K-spar.

Interpretation
This is a granulite-facies gneiss of monzogranite composition, but has some microcline, suggesting cooling to lower temperatures than those seen in the previous granulite samples.

RS482829	**Schistose biotite-quartz-micromonzonite with minor sphene**
TIE RC 86, 24-26m	**(titanite).**

Field Note: *Gneiss*

This sample has a fine-grained schistose rock with a visually estimated mineralogy suggesting a quartz micromonzonite. There is approximately 15-20% quartz, 30% plagioclase, 40-45% microcline, 7-8% biotite and 2% titanite (sphene). Rare larger grains include microcline, to 2mm in grainsize and lenses of quartz to 2mm long, parallel to the foliation defined by fine-grained biotite. Most of the other grains are less than 0.5mm in size, although the sphene is mostly 0.3 to 0.6mm in grainsize, with some alteration to leucoxene. Minor apatite is disseminated, as well as fine-grained opaque oxide and rare zircon to 0.15mm in grainsize.

RS472789
TIE RC 86, 30-32m

Biotite-clinopyroxene-granodiorite gneiss with abundant opaque oxide and very minor hornblende, possibly containing phlogopite-clinopyroxene-K-spar aggregates as xenoliths.

Field Note: *Gneiss*

There are two lithologies in this thin section. One is ultramafic and represented by two chips, with 80-85% phlogopite and 5-10% each of K-spar and clinopyroxene. This lithology is mostly massive, with grains less than 1mm in grainsize, although some of the K-spar (orthoclase) is in lenses or veins. This may be classified as a glimmerite, but may have been affected by metasomatism on incorporation into a granitoid as a xenolith.
The other lithology is also represent by two chips but is quartzofeldspathic, with 25% quartz, 45-50% plagioclase, 7-8% each of K-spar, biotite and clinopyroxene, 2-3% hornblende, 2% opaque oxide and minor apatite. This chip is a high-grade granodiorite gneiss and has a weak foliation defined by biotite to 1.5mm in grainsize. Most of the grains are from 0.2 to 2mm in size, with some poikilitic quartz grains, and a largely allotriomorphic-granular texture. The pyroxene and hornblende are partly in lenses parallel to the foliation, but there are some poorly oriented biotite flakes, mostly nucleated on opaque oxide. The K-spar is orthoclase, and rare rounded zircon grains occur, to 0.1mm long.

Interpretation
Foliated biotite-clinopyroxene granodiorite gneiss is present in this sample with possibly xenoliths of phlogopite, clinopyroxene and K-spar ('glimmerite').

RS472791
TIE RC 86, 34-36m

Altered inequigranular granodiorite gneiss chips and a chip of biotite-pyroxene quartz diorite gneiss.

Field Note: *Gneiss*

There are apparently two lithologies in this thin section. One chip lacks K-spar but has foliated biotite and disseminated grains and lenses containing other mafic minerals (clinopyroxene, orthopyroxene and hornblende). The other chips have few mafic silicates, mostly altered, and minor to abundant microcline. The more felsic chips are varied, with abundant quartz to 7mm in grainsize in those chips with more abundant microcline and fewer mafic grains. Quartz in the less microcline-rich chips is mostly less than 5mm in grainsize, and there are more abundant mafic grains, mostly altered. Plagioclase is abundant throughout, but commonly clouded with abundant sericite, mostly less than 2mm in grainsize, but as much as 4mm in the most microcline-rich chip. The microcline is also as much as 4mm in grainsize in the same chip, where some grains contain muscovite, but is mostly about 0.5mm in grainsize in the less microcline-rich chips. The mafic minerals in these chips include foliated biotite, largely altered to clays and chlorite, and pyroxene, altered to carbonate and clay, or with rims of clay-clouded carbonate. Both orthopyroxene and clinopyroxene seem to have been present. One chip has fresh biotite and hornblende. Oxides are weakly disseminated through these chips and are mostly veined with chlorite. These chips are mostly granodiorite gneisses but may pass into monzogranite.
The most mafic chip has 70% plagioclase, 10-15% foliated biotite, 10% pyroxene, partly orthopyroxene and partly clinopyroxene, 5% quartz, 2-3% hornblende and minor granular apatite. The grains are mostly less than 1mm in size, with some biotite flakes to 1.5mm. This chip also has traces of opaque oxide and seems to represent a quartz diorite gneiss.

RS472837
TIE RC 87, 62-63m

Quartz-rich quartzofeldspathic chips and quartz-poor chips (hornblende-biotite quartz diorite) with chloritised biotite and veins with prehnite, epidote and clays.

Field Note: *Gneiss*

Three of the chips in this sample are quartz-rich, but the others are poor in quartz. The quartz-rich chips have quartz to 8mm in grainsize (35-40%) as well as orange-clouded feldspars (60-65%). The presence of minor myrmekite indicates that both plagioclase and K-spar are present in the feldspar aggregate. Minor clays and opaque oxide (<1%) are present as well as veins of prehnite.
The quartz-poor chips have abundant granular plagioclase to 2mm in grainsize, largely with albite-sericite-chlorite alteration, with a layer rich in granular orthoclase in one chip. Some chips have fresh granular or poikilitic hornblende, and most have poorly oriented chloritised biotite flakes about 1mm long. Minor quartz is disseminated, partly interstitial to the feldspar grains and partly in poorly defined lamellae. The quartz is mostly less than 2mm in grainsize. One chip has a shear zone rich in chloritised biotite, and in some chips hornblende has been partly altered to chlorite. One chip has wide veins with prehnite, epidote and minor chlorite, enclosing areas with quartz and massive clay probably derived from plagioclase. The visually estimated mineralogy indicates 10% quartz, 70-75% plagioclase, 10% biotite, 4% hornblende, 2% opaque oxide and 0.5% apatite, representing a quartz diorite.

Interpretation

These chips include quartz-rich quartzofeldspathic rocks and biotite-hornblende quartz diorite gneiss, with probable amphibolite-facies metamorphism and prehnite-pumpellyite facies alteration.

RS472846
TIE RC 88, 40-42m

Foliated biotite-augite-monzonite gneiss with minor retrograde pumpellyite.

Field Note: *Gneiss*

Three chips are present in this thin section and seem to represent a foliated biotite-clinopyroxene monzonite. The visually estimated mineralogy indicates 40-45% plagioclase, 25-30% orthoclase, 20% clinopyroxene, 3-5% each of biotite and opaque oxide, 1-2% quartz and <1% apatite. Minor myrmekite is present. The feldspars are mostly granular and less than 2mm in grainsize, with weakly perthitic orthoclase to 3mm in grainsize in one chip. The plagioclase commonly has antiperthitic zones, suggesting a granulite-facies metamorphic assemblage, although there is no orthopyroxene. The biotite is foliated, but the clinopyroxene is mostly granular, with biotite 0.5-2mm in grainsize and clinopyroxene to 3mm. The clinopyroxene is mostly in lenses parallel to the foliation, however. The opaque oxide is granular, but some is elongate parallel to the foliation as grains and lenses to 2mm long. Very minor quartz is also partly parallel to the foliation as grains to 1.5mm long. There is minor apatite. In one chip, the opaque oxide has a rim of pumpellyite crystals to 1mm long, together with yellow clay.

Interpretation

This is a granulite-facies gneiss composed of biotite-augite monzonite. The pumpellyite represents low temperature alteration, probably at 300°C or less.

RS472901
TIE RC 90, 34-36m

Two mylonitised possibly mafic chips, with lamellae of largely leucoxenised oxide, plagioclase fragments and chlorite lenses. Four chips of biotite-hornblende-diorite, partly fractured. Three chips of fine-grained K-spar-bearing lithologies: quartz monzodiorite, quartz monzonite and granodiorite, mostly with altered mafic silicates, partly fractured.

Field Note: *Dolerite*

There are nine chips in this thin section, with three different lithologies, none of which is dolerite.
Two of the chips may have been mafic, but are mylonitised with small mineral fragments in a foliated clay matrix. Lenses of leucoxenised fine-grained opaque oxide are present and parallel to the foliation defined by the interstitial clays. In one lens the opaque oxide is oxidised rather than leucoxenised. Fragments of plagioclase are abundant, partly in lamellae parallel to the foliation, and there are also small lenses of chlorite, apparently derived from mafic silicates. One chip has a band in which the foliation varies from being parallel to that outside the band, to being at about 50-60° to the external schistosity. This band seems to represent an earlier phase of deformation.
Four of the chips are rich in granular plagioclase, mostly less than 1.5mm in diameter, with various proportions of biotite, hornblende and clinopyroxene. In one of these chips the biotite has been kinked, but the other chips have largely fresh decussate or weakly foliated biotite. In two chips most of the hornblende and pyroxene have been altered to clay and carbonate. Some of these chips have minor quartz, but most would seem to correspond to diorites. Minor opaque oxide and apatite are present, and clay-filled fractures are common to abundant. The opaque oxide seems to have been partly oxidised, but only very minor leucoxene is evident.
The other three chips have abundant plagioclase, but also have various proportions of K-spar (mostly orthoclase) and quartz, suggesting quartz monzodiorite, quartz monzonite and granodiorite for the three chips. These chips are fine-grained, with grains mostly less than 1.5mm, and are weakly foliated. The quartz monzodiorite has abundant clay-filled fractures and clay-altered mafic silicates, but has 15% quartz and 10% orthoclase as well as weakly clay-clouded plagioclase and 20% altered mafic material. The quartz monzonite has subequal amounts of plagioclase and orthoclase, with minor biotite, opaque oxide and apatite as well as 15% quartz. Fractures are less abundant than in the quartz monzodiorite. The granodiorite has 20-25% quartz as well as plagioclase and minor (~10%) orthoclase. This chip has minor biotite and disseminated clay-clouded pyroxene grains, possibly clinopyroxene, as well as opaque oxide and apatite.

RS482830 | **One fragmented granitoid chip**
TIE RC 91, 52-54m | **Two weakly to strongly foliated biotite ± hornblende-bearing tonalite chips**
Five plagioclase-rich chips, possibly diorites, with altered biotite and pyroxene as well as minor opaque oxide, apatite, K-spar and myrmekite, and rare zircon.
Rare pyrite and chalcopyrite are present.

Field Note: *Gabbro?*

There are again several lithologies in this thin section. Most of the chips are quartz-free and plagioclase-rich, but there are two quartz-rich chips and one highly fragmented chip.
The fragmented chip is similar to the mylonitic chips in the previous sample, but is not foliated and is rich in plagioclase fragments. It also has less abundant fragments of quartz and opaque oxide in a clay-rich matrix. One fragment of clay-altered biotite is present, and there are clay and limonite-lined fractures and veins. This may represent a fragmented granitoid.
The quartz-rich chips are varied. One is foliated with lenses of ribbon-like quartz to 3mm long (35%), abundant weakly altered plagioclase and very minor clay-altered foliated biotite. The other has a weaker foliation, with unoriented lenses of quartz (~35%) as well as abundant granular plagioclase (~50%), weakly clouded by clays. Minor (7-8%) biotite, to 1.5mm in grainsize, is weakly foliated and is accompanied by granular green hornblende (~5%) and minor opaque oxide (2-3%). One chip has zircon 0.05mm in grainsize. These chips are both tonalites, however.
The five plagioclase-rich chips have abundant plagioclase to 3mm in grainsize and commonly have minor clay or chlorite-altered biotite (3-7%) about 1mm in grainsize. Poikilitic and granular possible pyroxene grains (10-15%) were as much as 5mm in grainsize but have been altered to chlorite and carbonate. Opaque oxide and apatite are widespread in small amounts. One chip has a patch of orthoclase 1.5mm long rimmed by myrmekite, and at least two of the chips contain zircon from 0.05 to 0.1mm in grainsize. Rare quartz also occurs, partly adjacent to the myrmekite and partly with parallel plates of altered biotite. These chips, which may represent diorites, are commonly intersected by clay-lined fractures and a related chip is present with very abundant clay-chlorite-filled fractures.
These chips were polished, showing that the main opaque oxide is magnetite, locally as much as 0.7mm in grainsize, with rims of hematite in the biotite-pyroxene diorite chips. Granular and low-temperature pyrite is seen in altered diorite, with fine-grained pyrite and rare chalcopyrite in the biotite-pyroxene diorite.

RS482831
TIE RC 91, 54-56m

Altered probable diorites (ten chips), formerly with biotite, hornblende, clinopyroxene, oxide and apatite, locally with quartz, rarely with zircon.
Biotite-bearing quartz monzonite (four chips) with myrmekite, opaque oxide and apatite.
Rare pyrite and chalcopyrite are present.

Field Note: *Gabbro?*

There are fourteen chips in this thin section. Ten of these are quartz-free or quartz-poor and plagioclase-rich, partly similar to the plagioclase-rich chips in the previous sample. Four chips have abundant plagioclase and orthoclase, with minor to abundant quartz and are generally rich in myrmekite.

The plagioclase-rich chips are mostly rich in weakly altered granular plagioclase to 3mm in grainsize. Two chips are richer in olive-green hornblende (5-15%) and biotite (5-10%), with the biotite partly defining a foliation. These chips have fine-grained plagioclase, mostly less than 1mm in grainsize. Largely altered clinopyroxene is also abundant (5-20%), with clays and/or carbonate replacing the pyroxene in most chips, but with minor residual clinopyroxene in at least one chip. The pyroxene is accompanied by clay-altered biotite (0-5%) in several chips, but rarely by hornblende. Oxides and apatite are common (1-3%) and one chip has rare zircon. Quartz is rare (mostly <2%) and mostly interstitial, but one chip has rare K-spar and a single patch of myrmekite. One chip, with 7-8% quartz and about 10-15% coarse-grained biotite, seems to be related to this suite. This chip is rich in plagioclase and has disseminated opaque oxide and apatite, and may represent a quartz diorite. Clay-filled fractures are common, but not as abundant as in the previous sample.

The quartzofeldspathic chips have 5-15% quartz as well as abundant granular feldspar, mostly less than 2mm in grainsize. The proportions of plagioclase and orthoclase vary, but on the whole plagioclase is slightly more abundant. Biotite, opaque oxide and apatite are common and myrmekite is widespread. One patch of myrmekite passes into a biotite-quartz symplectite with a similar origin to that of the myrmekite. These chips seem to represent quartz monzonites.

In reflected light the larger opaque oxide aggregates, to 1.5mm long, are seen to have magnetite and quite minor ilmenite. There is also very sparsely disseminated pyrite to 0.5mm as well as very fine-grained pyrite. Lenses of pyrite occur locally around aggregates of microplaty hematite, and rare chalcopyrite was seen in altered pyroxene.

RS472911
TIE RC 91, 58-60m

Gneissic chips, apparently varying from diorite to monzogranite, mostly with biotite, rarely with garnet, and a single scapolite-actinolite-sphene aggregate possibly derived from massive gabbro.

Field Note: *Gneiss*

There is a variety of chips in this thin section. Most are foliated and quartzofeldspathic, with 5 to 25% quartz, partly in ribbon-like lenses parallel to the foliation, and various proportions of mostly granular feldspar. Both plagioclase and orthoclase are present, with plagioclase mostly more abundant and locally antiperthitic, with weak alteration to clays in some areas. Foliated biotite occurs as a minor component in most of these chips, but may be altered to clays and/or chlorite in some areas. Opaque oxide and apatite are common accessories. One chip, with very coarse-grained quartz, to 8mm in grainsize, also has antiperthitic plagioclase and areas of recrystallised plagioclase containing disseminated epidote. These chips seem to vary from quartz diorite to monzogranite.
One chip with about 7-8% quartz has abundant clay-clouded plagioclase and very minor garnet as irregular grains to 3mm in diameter. This may represent a diorite, but is highly altered.
One chip seems to represent an altered massive gabbro. This chip is largely composed of granular scapolite, derived from plagioclase, with ~40% actinolite apparently derived from granular clinopyroxene and leucoxene after accessory sphene (titanite).
Opaque minerals include magnetite with rims of hematite and rare pyrite.

RS472919
TIE RC 92, 44-45m

Two chips of devitrified partly olivine porphyritic basalt with carbonate veins
Five chips of biotite-hornblende-magnetite-sphene-bearing granodiorite (Kulgera Suite?), rare pyrite, chalcopyrite.
One or two chips of altered clinopyroxene monzodiorite

Field Note: *Gneiss and dolerite*

Three of the chips in this sample represent a devitrified glassy lithology with textural evidence of dendritic crystallites preserved in the various minerals (clays, quartz, possible feldspars etc.) that are now present. Two chips have various clays ± limonite clearly replacing small hopper-shaped olivine phenocrysts, but the other has pseudomorphs of more elongate phenocrysts, possibly including plagioclase, and carbonate or clay-filled veins. These would be classified as altered basalt, but are chilled dykes, either from the margins of a larger dyke or from a small dyke that has been chilled throughout. The former presence of over 90% glass would mean that it would not be possible to call these chips 'dolerite'. One of the basalt chips has rare fine-grained pyrite and trace chalcopyrite. Microcrystalline chromite is present, partly in altered olivine and partly in the groundmass.
A further five chips are mostly massive and plagioclase-rich, with minor to abundant quartz, locally as much as 6mm in grainsize. The plagioclase is mostly less than 2mm in grainsize, however. Microcline occurs in several chips, as well as various mafic minerals. Biotite and green hornblende are the most abundant; mostly less than 2mm in grainsize, but opaque oxides and apatite are also disseminated. Coarse poikilitic grains of sphene (titanite) occur and are as much as 3mm in diameter. These may represent granodiorite and seem to belong to the Kulgera Suite. Large aggregates of opaque oxide include leucoxene after ilmenite as well as magnetite grains containing granular hematite. Where sphene is present, there is no ilmenite, but the magnetite has been rimmed with hematite and there are patches of anatase in the sphene. Rare pyrite and chalcopyrite are also present.
Rare plagioclase-rich chips, with partly uralitised poikilitic clinopyroxene and very minor K-spar, separated from the plagioclase by myrmekite, seem to represent a monzodiorite and may be related to the diorite chips in TIE RC 91. The feldspars are mostly about 2mm in grainsize. Rare pyrite is present

RS472925 **Biotite-hornblende syenogranite, possibly Kulgera Suite, with**
TIE RC 93, 28-30m **magnetite-sphene-apatite-zircon aggregates.**

Field Note: *Granite*

Massive but heterogeneous granite is present in this sample, with a visually estimated mineralogy averaging 25% quartz, 35% K-spar, 15% plagioclase, 8-10% each of hornblende and opaque oxide, 4% biotite and 1-2% each of apatite and sphene. Myrmekite is common on plagioclase-microcline boundaries. The texture is allotriomorphic-granular with most grains between 0.5 and 5mm in diameter. In most of the chips the biotite and hornblende are fresh, but there is one chip, very rich in hornblende, opaque oxide, apatite and sphene, with hornblende and minor biotite both largely altered to chlorite and carbonate. Another chip has hornblende largely altered to clays (probably smectite?). There is minor zircon, from 0.05 to 0.25mm in grainsize, mostly with the mafic minerals.

Interpretation
This is probably a weakly altered syenogranite from the Kulgera Suite.

RS472933 **Possibly recrystallised quartz-rich monzogranite (8 chips) and**
TIE RC 94, 44-45m **weathered biotite diorite gneiss (two chips).**

Field Note: *Granite*

Eight chips (all except two of these chips) are quartz-rich monzogranites with 40% quartz, about 30% each of plagioclase and K-spar, and <1% biotite. Most of the chips have an allotriomorphic-granular texture with plagioclase showing a pale brown clouding and a darker clouding in the K-spar, mostly or, mostly microcline. The grainsize varies from 0.2 to 3mm. One chip has areas of clear but etched plagioclase, and one has very minor clear microcline. Rare biotite is accompanied by very rare opaque oxide, and some of the chips have veins of fine-grained epidote. These may be gneissic, but there are so few accessories than a gneissic foliation is not observed.

The remaining two chips have 25-35% clay-limonite-leucoxene-altered foliated biotite and abundant anhedral plagioclase about 1mm in grainsize. One chip has more limonite-rich patches, possibly derived from hornblende, and veins rich in limonite are also present. These seem to represent foliated biotite diorites.

RS479826 **Heterogeneous and inequigranular granitoid chips with a bulk**
TIE RC 95, 40-42m **composition of hornblende-biotite-granodiorite, veined by**
epidote and clays or by laumontite.

Field Note: *Gneiss*

The eleven chips in this thin section are heterogeneous and inequigranular, possibly making up more than one lithology. However, the bulk estimated mineralogy has 20-25% quartz, 45-50% plagioclase, 10-15% microcline (mostly in two chips), 8-10% biotite, 3-4% hornblende, 2% opaque oxide and <1% apatite. This would make a granodiorite, if a single lithology is present. Some of the microcline and plagioclase is very coarse-grained, possibly over 10mm in grainsize, but most of the chips have quartz, plagioclase and microcline grains to 6 to 7mm long, as well as abundant smaller grains, especially in chips with biotite ± hornblende. The biotite is decussate and mostly less than 1.5mm in grainsize, with disseminated granular hornblende in some chips. Some of the biotite is altered to clays and epidote, with veins containing epidote in some chips. Minor opaque oxide and apatite are mostly fine-grained. One chip has irregular veins of laumontite, suggesting lower temperatures than usual (below 150°C).

RS479834
TIE RC 96, 52-54m

Heterogeneous and inequigranular chips with the bulk composition of leucocratic biotite syenogranite, transitional to monzogranite. One chip has a vein of possible adularia passing into a limonite-lined cavity.

Field Note: *Granite*

Nine inequigranular and heterogeneous chips are present in this sample, with some chips that contain or consist of large microcline grains, locally over 10mm long, as well as chips that are poor in microcline. The overall estimated composition lies in the syenogranite field, close to the border with the monzogranite field. The visually estimated mineralogy included 25-30% quartz, 45-50% microcline, 20-25% plagioclase and about 3% biotite. Some of the chips have clay-clouded plagioclase to 4mm in grainsize and coarse-grained quartz, but the least microcline-rich chip is granular and possibly gneissic, but not obviously foliated, with grains less than 2mm long. Some of the biotite has been altered to clays. An open cavity is present in one chip and is about 3mm long. This lies within a lens of possible adularia, with fine-grained colloform limonite between the adularia and the cavity.

RS479842
TIE RC 97, 50-51m

Weakly altered biotite monzogranite with opaque oxide, very minor hornblende and apatite. Weak sericite-clinozoisite-prehnite alteration.

Field Note: *Granite*

The eight chips in this thin section are again heterogeneous and inequigranular, with various proportions of quartz, plagioclase and microcline. The visually estimated mineralogy for the whole thin section includes 25% quartz, 35% plagioclase, 30% microcline, 7% biotite, 2% opaque oxide and <1% each of hornblende and apatite. This indicates an overall composition of biotite monzogranite, although individual chips may be poor in microcline, plagioclase or quartz. Green hornblende is present in only one chip, but biotite (partly altered to clays and chlorite) and opaque oxide are more widespread. The quartz and feldspar grains have a maximum length of about 8mm, but are mostly less than 4mm long. Myrmekite is common on plagioclase-microcline grain boundaries. The plagioclase is commonly clouded by sericite, rarely with patches containing clinozoisite, and small inclusions in the plagioclase seem to have been altered to prehnite. One chip has a vein of clay and prehnite.

RS479850
TIE RC 98, 46-48m

Weakly altered biotite monzogranite with some large plagioclase grains: sericite-chlorite alteration and veins with epidote and chlorite.

Field Note: *Granite*

These chips are very similar to those in the previous sample, but have less abundant, totally chloritised biotite. One chip is almost totally composed of a single large plagioclase lath, at least 12mm long, but others are richer in microcline and quartz. The visually estimated mineralogy of seven chips includes 25% quartz, 35% plagioclase, 30-35% microcline, 5-7% altered biotite and <1% opaque oxide. Most of the quartz and feldspar grains are less than 6mm long, apart from the large plagioclase grain referred to above. Sericite is common in the plagioclase and there are veins containing epidote and/or chlorite. The altered biotite is mostly less than 1mm in grainsize and unoriented.

RS479858 | **Altered biotite-bearing syenogranite with clays, muscovite and rare zircon, and a single chip of massive opaque oxide enclosing quartz fragments.**
TIE RC 99, 52-54m

Field Note: *Granite*

Seven heterogeneous and inequigranular chips are again present in this thin section, but include more abundant K-spar (microcline) and less abundant quartz compared with the previous samples. The overall visually estimated mineralogy indicates 20% quartz, 25% plagioclase, 50-55% K-spar and 1-2% clay-altered biotite and decussate muscovite. Some of the chips have a granular texture with anhedral grains mostly less than 3mm in diameter, but some chips contain or consist of microcline that may be locally over 15mm in grainsize, suggesting megacrysts or areas of microcline pegmatite. The plagioclase has a dusting of clay and sericite, with clay alteration in the biotite and small areas of decussate fine-grained muscovite. Rare zircon occurs, as a single euhedral crystal about 0.07mm in diameter.
One chip, composed of massive opaque oxide with inclusions of quartz less than 1mm long, was not included in the visually estimated mineralogy given above, and may not be a part of the granite represented by the other chips.

RS479865 | **Leucocratic syenogranite with clay-clouded plagioclase and rare zircon.**
TIE RC 100, 44-45m

Field Note: *Granite*

This sample has been broken up into a large number of small chips, between 1 and 8mm in diameter, commonly with one or two minerals in each chip. The bulk visually estimated mineralogy includes 35% quartz, 15-20% plagioclase and 45-50% microcline, indicating a syenogranite. The plagioclase is commonly fine-grained and clouded with clays. Quartz and microcline grains to 5mm in diameter are preserved in some of the chips, but the grainsize of these minerals is commonly larger than the size of the chips. Muscovite and clay-altered biotite are rare, with rare zircon about 0.1mm in grainsize.

RS479872 | **Quartz-rich monzogranite with reddish feldspars and chlorite-epidote-altered mafic minerals; brecciated granitoid with a matrix of epidote; epidote-flooded granite with minor chlorite and quartz-epidote rock.**
TIERC 101, 50-51m

Field Note: *Granite*

Some of these chips resemble the granitoid component in TIE RC 94 (RS472933), with pale brown, partly sericitised plagioclase and dark brown clouded K-spar. These chips contain mafic minerals altered to chlorite and/or epidote, and there are also breccias with fragments of quartz and feldspars in an epidote-rich matrix. A single large chip is composed of coarse-grained quartz-epidote rock, with another chip flooded by epidote with minor chlorite and residual granite-derived minerals (quartz and feldspars). The granitoid component seems to have about 40% quartz, 20-25% plagioclase, 30% orthoclase and 7-8% altered ferromagnesian minerals (chlorite and epidote). This is similar to the granite in TIE RC 94, and is a quartz-rich monzogranite although it has more abundant altered mafic minerals and less abundant plagioclase. Some of the plagioclase in this sample also contains chlorite as well as clay and limonite. There are also rare grains of opaque oxide, veined and flooded by chlorite.

RS479878
TIE RC 102, 32-33m

Quartz-poor to quartz-rich (granophyric) dolerites with fresh and altered plagioclase, pyroxene and opaque oxide. Various late magmatic and secondary minerals occur, with brown hornblende, actinolite, sericite, chlorite and biotite. Some chips have been veined and flooded by prehnite, with clays (smectite?), epidote and sphene.

Field Note: *Dolerite*

Most of the chips in this thin section represent fresh to metamorphosed and altered dolerite and quartz dolerite with 25-35% mafic silicates. The most granophyre-rich chip has fresh and altered pyroxene (~25%) as elongate prisms to 8mm long, partly altered to green amphibole and/of chlorite, with finer-grained pyroxene in the other chips. Much of the plagioclase in this chip has been altered to albite, with areas of quartz-rich granophyre (~15%) also containing albitised plagioclase, and long prisms of apatite. Oxide is relatively minor, however (~3%).
Fresher plagioclase occurs in other chips, with 30-35% granular to prismatic or subophitic to ophitic pyroxene, again partly altered to amphibole or to chlorite, aggregates of opaque oxide and patches of quartz-poor granophyre (2-5%). In many chips there are patches of limonite-stained clays or diffuse areas of actinolite within the pyroxene grains. The pyroxene is commonly pinkish and may be titanaugite. Some of these chips have plagioclase-rich areas flooded by sericite, and most have minor to abundant (3-7%) skeletal opaque oxide, partly intergrown with dark brown biotite. Brown and green amphibole aggregates occur in and adjacent to some of the opaque oxide masses and may include late magmatic and subsolidus minerals. Needles of apatite are present and may reach 1mm in length, especially in and adjacent to areas of granophyre.
Several chips occur that have been veined or flooded by prehnite, commonly with residual albitised plagioclase and fresh granular clinopyroxene. Patches of smectite occur in some chips and lenses of epidote occur in others, with oxides and or sphene.

RS479881
TIE RC 103, 8-9m

Weakly altered quartz-rich leucocratic syenogranite with rare altered possible zircon.

Field Note: *Granite*

This sample has relatively large chips of inequigranular, partly recrystallised quartz-rich syenogranite. The visually estimated mineralogy indicates about 40% quartz, 50% microcline and 10% plagioclase. Quartz and plagioclase occur as grains from 1 to 8mm in diameter, but the largest plagioclase grains are 2mm in diameter and are clouded with clay. In addition to relatively large anhedral grains of quartz and microcline, mostly over 2mm in diameter, there are possibly recrystallised areas of fine-grained microcline and/or clouded plagioclase, from 0.2 to 1mm in diameter. Some of the plagioclase may have been exsolved onto the margins of microcline grains, but the microcline-rich areas are more probably recrystallised. Minor fine-grained myrmekite is included with the fine-grained plagioclase in the visually estimated mineralogy. Rare clay-altered biotite occurs, partly in stylolite-like vein between quartz and feldspars, and there is rare opaque oxide. Rare apatite is present as well as altered possible zircon 0.05mm in grainsize.

RS482832
TIE RC 104, 16-18m

Fractured and veined leucocratic syenogranite with epidote, clays and limonite in fractures, and chips of syenogranite breccia in an epidote or clay-rich matrix.

Field Note: *Dolerite/granite*

There is no dolerite in this thin section. Two types of chip are present. One contains a relatively quartz-poor syenogranite with fractures filled by epidote, clays or limonite. The other is composed of breccias with granite-derived fragments in epidote and brown, isotropic clay.
The syenogranite has about 25% quartz, 10% plagioclase and 65% microcline as anhedral grains to 4mm long, some with a parallel elongation apparently defining a foliation. The plagioclase is clouded, as in the previous sample, and there is some disseminated chlorite and epidote. Fragments in the breccias are typically derived from the syenogranite, although some chips have only sparse, very small fragments. Other chips have aggregates to 5mm long, with quartz, microcline and minor plagioclase. The matrix varies from epidote to clay-rich and some chips are refragmented with epidote as fragments in a clay-rich matrix.

RS479886
TIE RC 104, 22-24m

Biotite-hornblende-monzogranite with altered biotite and some sericite in the plagioclase. Magnetite, apatite, sphene and small, altered grains are disseminated.

Field Note: *Granite*

Inequigranular, heterogeneous chips of relatively mafic monzogranite are present in this thin section. The visually estimated mineralogy indicates 25-30% quartz, 35% plagioclase, 20% microcline, 10% hornblende, 4-5% biotite, 2% opaque oxide and <1% apatite. The quartz and feldspars occur as grains less than 4mm in diameter. The mafic minerals are mostly in lenses and aggregates from 2 to 8mm long, with grains mostly less than 2mm long. The hornblende is brownish green and fresh, but the biotite is partly altered to clay and chlorite. Lenses of epidote, prehnite and possible pumpellyite occur in some of the altered biotite flakes, but the plagioclase has irregular patches of sericite. Lenses and aggregates of opaque oxide occur in the larger mafic lenses, generally together with apatite, but sphene is rare. Small elliptical altered grains may have included allanite or monazite.

RS479890
TIE RC 105, 16-18m

Altered and veined quartz-rich biotite-hornblende monzogranite with clouded feldspars
Inequigranular leucocratic, syenogranite with clouded plagioclase
Biotite-clinopyroxene-hornblende granodiorite with antiperthitic plagioclase, oxide, apatite and zircon.

Field Note: *Granite/Gneiss*

There are three types of granitoid in this thin section.
One type is quartz-rich and has pale, weakly clouded microcline as ragged and amoeboid grains, less abundant than darker, orange-brown-stained plagioclase. Hornblende and chlorite-epidote-leucoxene-altered biotite occur commonly in these chips, partly in elongate lamellae. Veins of chlorite and/or epidote are also common and there is very minor opaque oxide, mostly veined by chlorite. Chips flooded by clays and/or epidote may be related to this suite and locally carry fragmented quartz-rich lenses. This is a hornblende-biotite monzogranite.
The second type of granitoid is similar to that in TIE RC 94 and 101, with clouded feldspars and abundant quartz. However, in this thin section this type of granitoid has paler microcline and darker plagioclase, rather than paler plagioclase as in the previous samples referred to above. The quartz and microcline are partly coarse-grained, to 4mm in grainsize, but plagioclase over 2mm in grainsize is rare. Lenses and aggregates of fine-grained microcline and/or plagioclase are common, with minor myrmekite, as in TIE RC 103, in lenses and lamellae between the other grains. This is probably a syenogranite.
The third type (one chip) has abundant quartz and antiperthitic plagioclase to 4mm in grainsize. Relatively minor microcline occurs, with poorly developed twinning suggesting a transition from orthoclase. Lenses of mafic minerals, with an overall parallel orientation, include brownish-green hornblende, fresh to clay or chlorite-altered biotite and granular to poikilitic clinopyroxene. Minor opaque oxide occurs with the mafic silicates, and has narrow rims of sphene. Zircons are rare and small. This is a biotite-clinopyroxene-hornblende granodiorite.

RS479897
TIE RC 106, 40-42m

Weathered biotite granodiorite and fresh biotite-hornblende granodiorite with antiperthitic plagioclase.

Field Note: *Gneiss*

Fresh and weathered granitoid chips, without any foliation, are seen in this thin section. All of the chips are composed of slightly inequigranular granitoids with a maximum grainsize of between 3 and 5mm in the various chips. The more weathered chips seem to have only disseminated biotite, altered to chlorite, with minor magnetite and disseminated sphene, altered to leucoxene. Some of the sphene is coarse-grained, however, to 1.5mm in grainsize. The fresher chips have biotite, hornblende and opaque oxide disseminated and in small aggregates to 4mm in diameter, mostly less than 1mm in grainsize. Lenses of opaque oxide in the fresher chips are locally rimmed by sphene, and veins of limonite, after carbonate ± sulphide, are present. The fresher chips also have antiperthitic plagioclase and less abundant microcline, whereas the plagioclase in the weathered chips is rarely if ever antiperthitic and dusted with sericite. There is generally minor microcline in the weathered chips, so that the bulk composition is probably granodiorite throughout. The visually estimated mineralogy included 25-30% quartz, 50-55% plagioclase, 15% microcline, 3-5% biotite, 0-3% hornblende, 1% sphene and minor apatite.

RS479903 **Weakly foliated clinopyroxene-hornblende-biotite quartz diorite**
TIE RC 107, 34-35m **with epidote, sericite and minor sulphide (pyrite > chalcopyrite) in altered areas.**

Field Note: *Gneiss*

There is a weak foliation in some of these chips, defined by biotite. The overall composition indicates a quartz diorite with 15% quartz, 60% plagioclase, 10% each of hornblende and biotite and 2% each of oxide + sulphide and clinopyroxene. Minor apatite is disseminated. Most of the chips have granular antiperthitic plagioclase to 4mm in grainsize and minor interstitial quartz, including some grains as much as 4mm in diameter. There is a relatively quartz-rich chip with subhedral plagioclase and interstitial quartz to 6mm in grainsize. The plagioclase is also antiperthitic, but there is only minor biotite, without hornblende or orthopyroxene. Various proportions of biotite, hornblende and clinopyroxene occur in the various chips. As indicated above, the biotite, to 2mm in grainsize, defines a weak foliation. However, the hornblende is poorly oriented and the clinopyroxene is unoriented, both being granular and mostly less than 1mm in grainsize. Minor apatite is disseminated and opaque grains occur in most of the chips.
Some magnetite is present but there are also disseminated sulphides. One chip has a large patch of epidote containing pyrite and less abundant chalcopyrite, with a smaller aggregate of similar sulphide in sericitised plagioclase. Other sulphide patches are mostly pyrite, locally with minor to abundant chalcopyrite, partly with sericite and very minor epidote, partly in hornblende, partly altered to actinolite. In some areas there are grains of pyrite rimmed by magnetite ± chalcopyrite and lamellae of pyrite and chalcopyrite occur in lamellae of chlorite parallel to the cleavage planes in partly altered biotite. The pyrite is locally 0.5mm in grainsize with chalcopyrite to 0.2mm.

RS473907 **Massive quartz-rich biotite monzogranite with opaque oxide and**
TIE RC 108, 16-18m **rare possible monazite. One chip of massive opaque oxide with minor biotite and microcline.**

Field Note: *Gneiss*

The various chips in this sample seem to represent a leucocratic quartz-rich monzogranite. This granitoid is massive but has lobate grains of quartz and feldspars, including interstitial quartz to 6mm in grainsize as well as plagioclase and microcline to 4mm. The visually estimated mineralogy indicates about 40% quartz, 30% plagioclase, 25% microcline, 3% biotite and <1% opaque oxide. The plagioclase in some chips is antiperthitic, but in other chips is clouded by sericite and lacks exsolved microcline. There is abundant myrmekite between the plagioclase and the microcline. The biotite occurs as flakes from 0.2 to 1.5mm long, but there is no obvious foliation. Minor opaque oxide occurs as lobate grains to 0.5mm in diameter, with four grains of probable monazite from 0.1 to 0.3mm in diameter.
Not included in the visually estimated mineralogy is a single chip, largely composed of massive opaque oxide, with minor biotite and microcline. This may represent a segregation in the monzogranite described above, but the abundance of such segregations is uncertain.

RS479910 **Foliated (gneissic) fine-grained biotite monzogranite with**
TIE RC 109, 10-12m **abundant opaque oxide, minor apatite and rare zircon.**

Field Note: *Gneiss*

These chips represent fine-grained gneissic monzogranite with abundant foliated biotite and abundant disseminated opaque oxide. The visually estimated mineralogy indicates 20-25% quartz, 25-30% plagioclase, 30-35% microcline, 10-12% biotite and 5% opaque oxide. Most of the grains are less than 1.5mm long, with some quartz grains parallel to the foliation. The foliation is weak in some chips, but stronger in others, with biotite mostly less than 1mm in grainsize. Small lobate grains of opaque oxide are common, with <1% apatite and rare rounded or elongate zircon grains from 0.05 to 0.1mm long. Some of the plagioclase is fractured and veined by limonite.

RS479913 | **TIE RC 110, 10-12m**

Foliated biotite monzogranite and massive leucocratic monzogranite to syenogranite chips: minor apatite and zircon occur in the biotite-rich chips.

There is a mixture of weakly foliated and massive chips in this thin section. The more foliated chips are similar to those in the previous sample, but are coarser-grained, whereas the massive chips include variously quartz-rich, plagioclase-rich and microcline-rich chips that are coarse-grained and lack mafic minerals. The visually estimated mineralogy, averaged over all of the chips, indicates 30% quartz, 20-25% plagioclase, 40% microcline, 5% biotite and 1-2% opaque oxide. This indicates a microcline-rich monzogranite. The more foliated, biotite and opaque oxide-rich chips have most grains less than 2mm long, whereas the more massive chips have various proportions of plagioclase (partly antiperthitic), microcline and quartz to 6mm or more in grainsize. Lenses of myrmekite occur, to 2mm long in the massive chips, much smaller in the foliated chips. One of the chips has a passage from biotite-bearing foliated rock and leucocratic microcline-rich rock. Some of the plagioclase has clay and sericite alteration.

Apatite and zircon are most abundant in the biotite-rich chips, with zircon from 0.05 to 0.1mm long.

RS482833 | **TIE RC 111, 21-22m**

Foliated clinopyroxene-hornblende-biotite-quartz diorite with oxides and apatite: weakly altered with sericite, carbonate, epidote, pyrite and chalcopyrite.

Field Note: *Gneiss*

Weakly foliated quartz diorite is represented in this thin section by 11 chips. The bulk visually estimated mineralogy includes about 8% quartz, 50-55% plagioclase, 15-20% biotite, 10% hornblende, 8-10% clinopyroxene, 2-3% opaque grains and <1% apatite + sphene. Some of the plagioclase is antiperthitic with grains to 3mm in grainsize. Weakly foliated biotite and granular hornblende is mostly less than 2mm in grainsize, but there are poikilitic grains of clinopyroxene to 7mm long, locally rimmed or replaced by amphibole. The quartz is mostly interstitial as lobate grains less than 2mm long, but there are amphibole-quartz symplectites in some chips, possibly derived from pyroxene.
Opaque oxide and apatite are common, with rare sphene. Patches, composed variously of sericite, carbonate and epidote, occur in areas of plagioclase, with rare carbonate in altered pyroxene. The oxide is all magnetite with rims of hematite. There is also rare pyrite to 0.2mm and composite chalcopyrite-pyrite grains to 0.1mm in diameter.

RS479918 | **TIR RC 111, 22-24m**

Foliated clinopyroxene-hornblende-biotite-quartz diorite with very minor sulphide(pyrite > chalcopyrite, covellite)

Field Note: *Gneiss*

The chips in this thin section are broadly similar to those in the previous sample. The visually estimated mineralogy indicates about 7% quartz, 50-55% plagioclase, 20-25% biotite, 5-6% each of hornblende, clinopyroxene and opaque grains (mostly oxide), and 1% apatite. The quartz is irregularly disseminated, with about 50% in a quartz-rich layer in a single chip. The pyroxene is also irregularly disseminated, but is again partly poikilitic, but has been partly selectively plucked out during polishing. Most grains are less than 3mm long, with some antiperthitic plagioclase as well as foliated biotite, granular hornblende and opaque oxide and granular or poikilitic clinopyroxene. Some of the pyroxene has rims of amphibole, locally in symplectites with quartz. Most of the quartz is interstitial and anhedral, however. Granular apatite is common. Some of the pyroxene has been altered to clay, but there is no clear evidence of orthopyroxene in this thin section.
As in the previous sample the only opaque oxide is magnetite, to 1mm in grainsize. There is also rare fine-grained pyrite, locally composite with chalcopyrite. In some areas rims of blue covellite ± chalcocite occur around the pyrite and chalcopyrite grains.

RS479927 **Altered foliated biotite-hornblende-quartz diorite and altered**
TIE RC 112, 64-65 **biotite syenogranite, passing into fragmented chips and soil. Large grains of microcline and quartz are also present.**

Field Note: *Granite?*

Three of the chips in this sample represent variously biotite or hornblende-rich diorite, locally with minor interstitial K-spar and rarely with late magmatic quartz. These chips seem to average <1% quartz, 75% plagioclase, 5% microcline and 10% each of hornblende and biotite. This seems to represent a biotite and/or hornblende-rich quartz diorite, with a weak foliation and a grainsize of 0.5 to 2mm. The biotite has been altered to chlorite and/or smectite, and some of the hornblende has been replaced by chlorite, again with smectite in some areas. One chip has about 70% microcline and 20% quartz as well as sericitised plagioclase and chloritised biotite, represent syenogranite, mostly massive with grains to 3mm in diameter. The other chips are partly breccias with quartz, microcline and chloritised biotite in a clay-rich matrix, passing into clay-dominated probable soils. Chips that are composed of single grains of microcline and of quartz occur and are as much as 8mm in diameter, but are of uncertain origin.

RS482834 **Possibly transported overburden or weathered sandstone with**
TIE RC 113, 10-12m **quartz and minor microcline in a limonite or clay-rich matrix. One chip, with microcline > quartz in a hematite-rich matrix, seems to represent in-situ weathered granitoid as seen in the previous sample.**

Field Note: *Sandstone*

These chips have poorly sorted, angular and/or etched grains, mostly of quartz with less abundant microcline in some chips. These grains vary from 0.05mm to 1.5mm in diameter. The apparently detrital grains are enclosed in various proportions of limonite and clay, with irregular foliations in the clay. The clays may contain halloysite or dehydrated halloysite as well as or instead of kaolin, and seem to be possibly part of a soil profile. The poor sorting and angular or etched mature of the grains is also consistent with soil carrying transported overburden, although weathered Mesozoic or Cainozoic sandstone is also possible. One chip has abundant microcline and less abundant (15%) quartz in a hematite-rich matrix with areas of clay (halloysite or kaolin?), and seems to represent a weathered granitoid similar to chips seen in the previous sample.

MINERALOGICAL REPORT No. 8192

by Alan C. Purvis, PhD

March 5, 2002

TO:	Mr Justin Gum Geological Survey Section PIRSA 101 Grenfell Street ADELAIDE SA 5000
YOUR REFERENCE:	Order No. EX3053 (part) Debit Code 03 316/0307/699
MATERIAL:	27 Drill chip samples ABMINGA 1:250,000 TIEYON and ALCURRA 1:100,000 Sheet areas
IDENTIFICATION:	TIE13a to 27c, TIERC 89a and b, 113 to 115 ALCRC 01 to 11 and ALC 02a, 02b
WORK REQUESTED:	Section preparation, description and report with comments and interpretations as specified.
SAMPLES & SECTIONS:	Temporarily retained.
DIGITAL COPY:	Emailed to Justin Gum 7/03/02.

PONTIFEX & ASSOCIATES PTY. LTD.

SUMMARY COMMENTS

Sixteen samples of drill chips mounted in epoxy and of eleven rock pieces are described in this report from twenty-three normal thin sections and four polished thin sections. These samples are from the PIRSA 2001 shallow drilling program ABMINGA 1:250,000 Sheet Areas (Tieyon and Alcurra) at the eastern end of the Musgrave Block in far northern South Australia. This report is the last of several Pontifex Reports by this same author, Alan Purvis, which petrologically discuss numerous drill chip samples from this same program, and presented to PIRSA within the last half of 2001.

Sample representation is:

Drill chips	:	TIE RC 89a, 89b, 113, 114, 115 (5)
Drill chips	:	ALC RC 01 to 11 (13)
Rock	:	TIE 13a to 27c (7), ALC 02a, 02b (2)

LITHOLOGICAL GROUPS

Several lithological groups are recognised. Microcline-bearing granitoids with biotite-hornblende-magnetite-sphene aggregates (± clinopyroxene) and zircon may be from the Kulgera Suite and are similar to microcline-bearing granitoids described in the previous reports on this area. Various granulite-facies intrusive rocks occur in the ALC suite, with K-spar mostly represented by orthoclase, but there are also brecciated and veined granitoids in both TIE and ALC suites. Many of the granulite-facies dioritic rocks contain zircon and are plagioclase-rich, whereas less plagioclase-rich rocks may represent gabbro or even feldspathic pyroxenite. A group of ten largely unmetamorphosed dolerite and gabbro includes two unmetamorphosed gabbros TIE 27a and 27c, altered metagabbro TIE 27b and altered metadolerite TIE 27c. Two samples TIE RC 89a and b consist of calcrete. This group could be co-magmatic with Giles Complex.

A summary of these groups follows.

Microcline-bearing granitoids: TIE RC 113-114 (monzogranite) and 115 (granodiorite); ALC RC 10 (brecciated monzogranite)

These granitoids are massive or weakly foliated, with mafic clots in TIE RC 113-114 containing biotite and hornblende, with clinopyroxene in TIE RC 114. Clays in ALC RC 10 may have partly replaced clinopyroxene and this is the only microcline-bearing granitoid in the ALC suite.

Metamorphosed granitoids and other intrusive rocks with orthopyroxene and clinopyroxene, commonly with hornblende and/or biotite, locally with orthoclase. These possibly represent amphibolite facies grade rocks, superimposed on earlier pyroxene-dominated granulite facies: ALC RC 01, 02, 04, 06-08, 11.

These samples vary in composition from feldspathic pyroxenite to tonalite and granodiorite, with diorite, quartz diorite and tonalite more abundant than gabbro or pyroxenite. Two pyroxenes are commonly present, with normal or antiperthitic plagioclase and minor orthoclase in many samples. Biotite and hornblende also occur and some samples have chips rich in hornblende ± biotite rather than pyroxene. These associations suggest a later amphibolite-facies assemblage, superimposed on an earlier pyroxene-dominated granulite-facies assemblage. However, this is not certain as the hornblende is brown and probably contains titanium, as seen in granulite-facies amphiboles. Zircon is present in rocks from diorite to granodiorite.

Brecciated and veined granitoids: ALC RC 03, 05, 09 (58-60m); TIE 22b

These samples have considerable alteration with chlorite and clays after biotite and chlorite-smectite after possible pyroxene, as well as various combinations of prehnite, epidote and clays or chlorite, locally with pumpellyite (ALC RC 09, 58-60m), partly in veins. Similarly low-grade alteration occurs in ALC RC 02, with sericite, prehnite and pumpellyite in veins and patches.

Mostly unmetamorphosed dolerites and gabbros: ALC RC 09 (both samples); TIE 13a-b, 27a-c; ALC 02a-b; metadolerite in TIE RC 22c

Actinolite-albite-epidote metagabbro is identified in TIE 27b, but the other samples are mostly unmetamorphosed gabbro (TIE RC 27a, c) and olivine-bearing dolerite (ALC RC 09, TIE 13 and ALC 02). Metadolerite, again with an albite-actinolite-epidote-sphene assemblage, also occurs in TIE RC 22c, passing into an epidote-rich vein with quartz, carbonate and sphene. The gabbros in TIE RC 27 seem to lack olivine, whereas the dolerites have poikilitic grains of olivine, all highly clouded by opaque oxide. The plagioclase in the dolerites is also clouded by opaque oxide. This is not clearly the case in the gabbros, however.

It is possible that these mafic rocks, or at least the dolerites, could be comagmatic with the Giles Complex in the central and western Musgrave Inlier, but this is not clear. The metamorphism, where present, is of lower grade than that in the granitoids and gneisses and may represent a later event.

SULPHIDES AND OXIDES

Most of the amphibolite/granulite-facies rocks (ALC suite) contain accessory small grains of titanhematite ± magnetite, suggesting fO_2 between nickel-bunsenite and magnetite-hematite. Four samples made into polished thin sections, from ALC RC 01, 03 and 08, contain minor to rare partly low-temperature pyrite and sparse chalcopyrite, partly related to alteration. Chalcopyrite most abundant in the altered and veined chips in ALC RC 03.

INDIVIDUAL DESCRIPTIONS

RS 479933
TIE RC 113, 28-30m

Massive inequigranular biotite-hornblende monzogranite with rare opaque oxide, sphene, apatite and zircon. Partly altered with chlorite, epidote and clays.

The various chips in this sample represent a heterogeneous granitoid with sparsely scattered large mafic aggregates as well as areas rich in quartz and feldspars. These chips are mostly fresh, but chips may contain or consist of altered aggregates, with chlorite and epidote derived from mafic minerals and clay-clouded plagioclase. The bulk visually estimated mineralogy suggests 25-30% each of quartz, plagioclase and microcline as well as about 10% each of green hornblende and brown biotite. Very minor opaque oxide and apatite are also present. Most of the chips are heterogeneous and inequigranular with an allotriomorphic-granular texture.

The quartz and feldspar grains vary from 0.2 to 3mm in diameter and are mostly lobate. Small patches of microcline occur in some of the plagioclase grains but these seem to be due to replacement rather than exsolution. Irregularly disseminated green hornblende occurs partly as poikilitic grains to 6mm long, but is mostly finer-grained. The biotite occurs as decussate flakes to 3mm long but again is mostly finer-grained. Small grains of opaque oxide occur in some chips and there is also minor accessory apatite. Some chips contain very minor sphene and there are sparsely disseminated crystals of zircon from 50 to 100μm long. In some chips the mafic minerals have been altered to chlorite and granular to prismatic epidote, with epidote also replacing opaque oxide grains. Clay-clouded plagioclase also occurs in altered chips and in patches in otherwise fresh chips.

The rock is a biotite-hornblende monzogranite.

RS479941
TIE RC 114, 28-30m

Heterogeneous biotite-hornblende monzogranite with a large clinopyroxene-hornblende aggregate, minor opaque oxide and apatite and rare zircon.

Field Note: *Gneiss*

The chips in this sample represent a broadly similar granular monzogranite to that seen in the previous sample, with irregularly disseminated large mafic aggregates that in this sample contain coarse-grained clinopyroxene as well as hornblende and biotite. The bulk visually estimated mineralogy suggests 20% quartz. 20-25% plagioclase, 30-35% microcline, 5-7% biotite, 10% hornblende, 3-5% clinopyroxene (all in one chip), 2% opaque oxide and <1% apatite. This indicates less abundant plagioclase and quartz, but more abundant microcline, compared with the previous sample, with a similar total content of mafic minerals. Most of the chips are dominated by lobate, interlocking grains of quartz and feldspars from 0.2 to 3mm in diameter, with disseminated mafic minerals. Myrmekite is present in several chips and some of the plagioclase has inclusions of microcline, as also seen in the previous sample. The clinopyroxene-bearing chip has quartz and feldspars to 5mm, a large poikilitic grain of hornblende, possibly 10mm in diameter, and coarse clinopyroxene about 6mm in grainsize replaced by hornblende. In the other chips, the biotite is less than 2mm in grainsize but is not foliated. The hornblende is partly prismatic but poikilitic grains to 4mm in diameter occur in some chips. The opaque oxide is anhedral and locally rimmed by sphene. Rare grains occur that have been altered to carbonate and limonite, but have not been identified. Rounded and elongate zircon grains occur from 50-120μm long.

RS 479947
TIE RC 115, 28-30m

Altered, foliated biotite-hornblende granodiorite with sericite and chlorite; very minor fine-grained zircon is disseminated.

Field Note: *Gneiss*

This is an altered granodiorite that seems to be foliated with chloritised biotite and partly chloritised hornblende defining a foliation. The chips are again heterogeneous with quite different proportions of quartz, plagioclase, K-spar and mafic minerals in the various chips, but the bulk mineralogy indicates a former granodiorite. This includes 25% quartz, 40-45% plagioclase, 15% K-spar, 6% biotite, 8-10% hornblende, 3% opaque oxide and <1% apatite. In some chips the plagioclase has been clouded by sericite, but other chips have fresh plagioclase. The K-spar is fresh and transitional from orthoclase to microcline, with good microcline twinning in some areas but only weak twinning in others. Some chips are leucocratic but others have abundant mafic silicates, including poikilitic hornblende to 5mm in grainsize. Large lenses of opaque oxide, to 5mm long, occur in some chips, with only rare small grains of opaque oxide in other chips. Rare small zircon grains occur but are mostly about 50μm long.

RS472797
ALC RC 01, 22-24m

Weakly altered biotite-hornblende-two pyroxene granulite derived from quartz-bearing diorite with rare zircon ± monazite. Magnetite, titanhematite, pyrite and rare chalcopyrite are present.

Field Note: *Gneiss*

The chips in this thin section contain orthopyroxene, clinopyroxene and orthoclase and represent granulite-facies granitoid with a weak foliation, mostly defined by biotite. Minor to common brown hornblende is also present in some chips and some of the plagioclase is antiperthitic. The chips are rich in granular plagioclase (60-65%) with 4-5% each of quartz, orthoclase, biotite, hornblende and orthopyroxene. Clinopyroxene is more abundant (~10%), with 4% opaque oxide and <1% apatite. This indicates a quartz-bearing biotite-hornblende-two pyroxene diorite. The plagioclase is granular and from 0.4 to 4mm in granite, with rare quartz also to 4mm, but most of the other grains are less than 2mm long. The plagioclase is commonly antiperthitic but with very minor exsolved K-spar, and there is little or no plagioclase in the orthoclase. Some of the pyroxene grains are fractured and carry clay veins, with orthopyroxene in one chip totally altered to smectite. There are rare zircons to 100µm long and rare possible monazite 50µm in diameter. Clay-filled veins occur locally crosscutting the granulite.

The opaque oxide includes minor magnetite to 0.5mm as well as titanhematite to 1mm with two generations of exsolution lamellae. Very minor low-temperature pyrite occurs with rare chalcopyrite composite with the pyrite and separate.

RS 472805
ALC RC 02, 34-36m

Locally orthoclase-bearing biotite-hornblende-two pyroxene granulite derived from gabbro or diorite, and orthoclase and/or quartz-rich chips with sericitised plagioclase, representing a granitoid or pegmatite. Sericite, prehnite, pumpellyite and epidote are present.

Field Note: *Gneiss*

There are two lithologies in this thin section: one is quartz-free and represents a biotite-hornblende granulite derived from gabbro or diorite, but the other is coarse-grained and rich in orthoclase and/or quartz.

The quartz-free lithology is dominated by granular plagioclase to 2mm in grainsize, but one chip also has lenses of clear granular orthoclase to 2mm in diameter. Some of the plagioclase is antiperthitic but the orthoclase lacks exsolution of any kind. Biotite and hornblende are common, with the biotite as thin plates defining a foliation, but all of the biotite has been altered to chlorite and leucoxene. The hornblende is more granular and less foliated. Pyroxene is relatively minor, with very minor fresh clinopyroxene and patches of chlorite-smectite possibly derived from granular orthopyroxene. Opaque oxide is present in aggregates locally over 2mm long, with magnetite more abundant than ilmenite, as identified in low angle incident light (magnetite looks rougher than ilmenite). These chips seem to have 60% plagioclase, 15-20% hornblende, 10-15% altered biotite, 5% altered orthopyroxene, 2-3% clinopyroxene, 2-3% opaque oxide and <1% apatite. One chip has a large patch of pumpellyite, as crystals as much as 0.6mm long, with very minor epidote.

One of the quartz-rich chips has abundant granular orthoclase and less abundant sericite or prehnite-clouded plagioclase to 4mm in grainsize, locally separated by myrmekite. Anhedral quartz occurs, to 6mm in grainsize and there is a crosscutting carbonate vein. There is a second chip similar to this but has less abundant quartz and has patches of chlorite after unidentified mafic silicates. The third chip is richer in quartz and altered plagioclase, with much less abundant orthoclase. The overall composition would suggest a quartz-poor granitoid or pegmatite.

RS 472815
ALC RC 03, 44-45m

Altered and brecciated rocks with albite, chlorite, prehnite and clays: partly derived from quartz-diorite or quartz-gabbro and partly from more felsic lithologies with fractured zircon and/or monazite. Magnetite, leucoxene-limonite-altered titanhematite, pyrite and chalcopyrite are disseminated.

Field Note: *Dolerite*

Then chips in this sample are fractured, fragmented and partly brecciated, with some chips apparently showing a largely coherent fabric. All of the chips have abundant clear or clouded, apparently albitised plagioclase grains mostly less than 2mm in diameter. The more coherent chips have abundant chlorite, apparently after pyroxene, and abundant opaque oxide grains, mostly fractured, but also contain anhedral quartz grains to 2mm long. The more fragmented chips commonly have larger quartz grains, to 4mm long, and rare grains of zircon or monazite to 0.25mm in diameter, also fractured. Oxides, apatite and chlorite patches also occur in these chips. The oxides include magnetite and leucoxene-limonite pseudomorphs of titanhematite, with the leucoxene replicating the texture of former ilmenite lamellae. Veins of prehnite, with prismatic quartz and clay-rich lamellae, occur in these chips, and some have been flooded by prehnite, largely interstitial to fragments of plagioclase. One chip has about 65% prehnite. Quartz, chlorite, epidote and prehnite all host aggregates of fine-grained chalcopyrite, with rare pyrite in some areas. Partly composite with chalcopyrite.

The more coherent chips may represent quartz diorite or gabbro, but the more fragmented chips seem to represent more felsic lithologies, with more abundant quartz. The abundance of prehnite and chlorite makes interpretation difficult, however.

RS 472819 **Hornblende-orthopyroxene diorite and quartz diorite with**
ALC RC 04, 14-15m **minor orthoclase, opaque oxide, apatite and biotite.**

Field Note: *Gneiss*

Plagioclase-rich chips are again present in this thin section, with minor quartz and/or orthoclase in most chips and with a mafic assemblage that varies from orthopyroxene-rich to hornblende-rich. Only one chip has moderately abundant quartz and orthoclase (~10% each) as grains to 4mm long. The rest have mostly less than 5% quartz and 2-3% orthoclase and have plagioclase grains about 0.4 to 3mm in grainsize, partly antiperthitic. The mafic component varies from 5 to 15%, with hornblende making up 20-70% of this amount an as much as 2% opaque oxide. Where it is abundant the hornblende occurs as grains to 3mm long, but the orthopyroxene is fine-grained, with grains mostly less than 1mm long. Very minor apatite is disseminated and there is rare biotite to 0.5mm in grainsize.

These chips represent hornblende-orthopyroxene diorite to quartz diorite.

RS 472824 **Chlorite-sericite-clay-altered tonalite and granodiorite with**
ALC RC 05, 22-24m **patches of prehnite and veins of prehnite, calcite and chlorite.**

Quartz-rich chips are present in this thin section, with quartz as lobate grains to 4mm long. Clear and clay or sericite-clouded plagioclase is also abundant, with or without clear or clay-clouded orthoclase, also as lobate grains to 2 or 3mm long. Very minor biotite, to 2mm in grainsize, has all been replaced by chlorite and leucoxene, with more abundant chlorite-smectite pseudomorphs of granular probable pyroxene. Granular opaque oxide is also disseminated, to 1mm in diameter, with fractures filled by clays and chlorite. Patches of prehnite occur in some chips and there are veins of prehnite, carbonate and chlorite to 2mm wide. A single wide vein occurs in one chip, with anastomosing subparallel veins in a second chip, enclosing fragments of the host rock. The host rock is classified as tonalite passing into granodiorite, and may have had granulite facies metamorphism.

RS 472851 **Biotite-hornblende-orthopyroxene diorite and quartz diorite**
ALC RC 06, 14-15m **(granulite facies) with rare zircon.**

Field Note: *Gneiss*

These chips are plagioclase-rich and allotriomorphic-granular (or granuloblastic) in texture. There is typically about 8-10% quartz and rare K-spar. The mafic assemblage in most of the chips is orthopyroxene-biotite-oxide, with minor brown hornblende as an additional phase in some chips. However, one chip has the assemblage hornblende-biotite-oxide with rare, largely clay-altered orthopyroxene. One chip has a large area lacking mafic minerals, with possibly 15% quartz.

The plagioclase is typically less than 3mm in grainsize, with rare grains of quartz to 4mm long. The pyroxene and hornblende vary from granular to poikilitic or poikiloblastic, some orthopyroxene patches being optically continuous over areas as much as 4 or 5mm in diameter. Much of the orthopyroxene has been veined by smectite, and replacement by smectite and carbonate is seen, mostly in the hornblende-rich chip. The biotite occurs as unoriented flakes that are thinner in the hornblende-rich chip and are mostly less than 1.5mm long. A small bundle of parallel plates of biotite, enclosed in orthoclase, has replaced one grain of orthopyroxene. The oxide seems to be partly magnetite and partly titanhematite with large and small lamellae of ilmenite, as seen in low angle incident light. The total content of mafic minerals is probably about 12-13%. Minor apatite is disseminated and rare zircon was seen, about 100µm in grainsize.

This chip has granulite-facies diorite and quartz diorite.

RS 472856
ALC RC 07, 28-30m

Hornblende and orthopyroxene-bearing quartz diorite transitional to quartz monzodiorite with a fragmented chip veined by clays. Rare zircon is present.

Field Note: *Gneiss*

Plagioclase-rich chips are again present in this sample, although one of the chips represents a fragmented zone in this lithology, with abundant anastomosing clay-filled veins and fractures to 2mm wide. There seems to be about 10% quartz in the sample as a whole, averaged over all of the less fractured chips, suggesting about 70% plagioclase. There also seems to be about 7-8% disseminated orthoclase, with minor myrmekite on plagioclase-orthoclase grain boundaries. As in the previous sample the mafic assemblage varies from pyroxene-rich to hornblende-rich, with opaque oxides and apatite. Most of the pyroxene is orthopyroxene, with rare clinopyroxene only in one chip.

The quartz and feldspars are granuloblastic and less than 2mm in grainsize, with some antiperthitic plagioclase, but little or no exsolution in the orthoclase. Some of the orthopyroxene is poikiloblastic and optically continuous over areas 5mm or more in diameter. The hornblende and rare clinopyroxene are more granular but locally enclose apatite grains. The hornblende is coarser than the clinopyroxene but typically less than 1mm in grainsize, as is the sparsely disseminated biotite. The opaque oxide seems to include magnetite and ilmenite, but this is less clear than in the previous sample. The mafic content varies from 8-12% in the various chips. There is <1% apatite and rare zircon grains, about 100µm long, are present.

RS 482835
ALC RC 08, 24-26m

One chip of orthopyroxene tonalite with titanhematite, scapolite and rare chalcopyrite.
Two chips of orthopyroxene-clinopyroxene gabbro or diorite with titanhematite and rare sulphide (pyrite, chalcopyrite).
Two chips of plagioclase-hornblende-clinopyroxene-biotite-hematite metagabbro.

Field Note: *Gneiss*

One of the chips in this thin section is relatively quartz-rich with disseminated pyroxene and opaque oxide, two chips are quartz- poor to quartz-free with irregularly disseminated pyroxenes and opaque oxide, with two more chips having brown hornblende more abundant than pyroxenes, also with minor opaque oxide.

The quartz-rich chip has possibly over 20% quartz as grains to 4mm long as well as about 70% partly antiperthitic plagioclase to 3mm in grainsize. About 5-7% granular and poikiloblastic orthopyroxene is disseminated in subparallel lamellae as grains to 4 or 5mm long, with minor opaque oxide and apatite. The opaque oxide is mostly titanium-rich titanhematite with rare droplets of chalcopyrite and/or pyrite. A small patch of granular scapolite is present, with a very high birefringence, suggesting meionite [$Ca_3Al_6Si_6O_{24}$.$CaCO_3$]. Rare zircon occurs, about 0.3mm in grainsize, and there is rare fine-grained chalcopyrite.

The quartz-poor to quartz-free, pyroxene-rich chips have granuloblastic textures and grainsizes of 0.2 to 2.5mm. Irregular domains occur in both chips, with different pyroxene assemblages. Some areas have only clinopyroxene, some have only orthopyroxene and others have both pyroxene types. One chip has a single grain of quartz 2mm long as well as rare smaller grains. This chip also has areas of orthopyroxene-dominated pyroxene as well as mixed areas. The other lacks quartz and has a large area rich in clinopyroxene, with a smaller area rich in orthopyroxene. The plagioclase is partly antiperthitic but exsolution is more obvious in the quartz-bearing chip. One chip has rare calcium-rich scapolite. Lenses of opaque oxide are present in both chips, to 2.5mm long, and are mostly titanhematite with fewer ilmenite lamellae than in the oxide in the quartz-rich chips as described above, locally composite with ilmenite. Some of the ilmenite has been altered to leucoxene. Rare sulphides include both pyrite and chalcopyrite. These chips have 25-35% pyroxene and may include metagabbro as well as metamorphosed diorite.

The hornblende-rich chips have 35-40% greenish brown hornblende and abundant (45-50%) plagioclase to 1.5mm in grainsize, with less abundant clinopyroxene (10%), biotite (4%) and opaque oxide (3%). These chips are granoblastic and have hematite and magnetite as the main opaque oxides. The biotite is foliated and these chips seem to represent metagabbros.

RS 472864 **Two-pyroxene tonalite and quartz diorite gneisses and several chips of orthopyroxene-clinopyroxene to hornblende-rich metagabbro, with titanhematite in most chips.**
ALC RC 08, 32-33m

Field Note: *Gneiss*

This sample is similar to that described above from 24-26m in the same drillhole. It has a single quartz-rich chip as well as quartz-poor and quartz-free, pyroxene-bearing to pyroxene-rich chips. A single chip, with hornblende more abundant than pyroxene, occurs but has no biotite and has orthopyroxene as well as clinopyroxene.

The quartz-rich chip has 20-25% quartz as grains to 5mm or more in length as well as granuloblastic plagioclase to 3mm in grainsize. Lenses of pyroxene occur with subequal amounts of orthopyroxene and clinopyroxene about 1mm in grainsize and minor titanhematite. This seems to represent a tonalite. The only other chip with significant quartz has about 8-10% quartz and abundant granuloblastic plagioclase, both mostly less than 2mm in diameter. Minor orthopyroxene occurs in subparallel lamellae defining a weak foliation, together with minor opaque oxide, mostly titanhematite with abundant ilmenite lamellae, but there is also minor magnetite. Rare biotite occurs and is parallel to the orthopyroxene foliation. There is also minor apatite. This chip is a metamorphosed quartz diorite. Rare pyrite and chalcopyrite occur.

The other pyroxene-rich chips have abundant granuloblastic plagioclase mostly less than 2mm in grainsize and irregular aggregates of clinopyroxene and/or orthopyroxene to 8mm long, composed of grains to 4mm in diameter. Very minor brown hornblende occurs in some of these and one chip has a small area with hornblende, to 2mm in grainsize, more abundant than pyroxenes. The hornblende-rich chip is similar to the hornblende-rich parts of the pyroxene-rich chips and has abundant granular hornblende as well as minor orthopyroxene and clinopyroxene. There is about 50% plagioclase in this chip. Minor oxide is mostly titanhematite, but sulphides (pyrite, chalcopyrite) are rare. The total mafic silicate content is probably 30-45% in the different chips, suggesting metagabbros.

RS 482836
ALC RC 09, 36-38m

Altered olivine dolerite with albite, chlorite-smectite and secondary opaque oxide.

Field Note: *Dolerite*

Chips of altered dolerite are present in this sample. These have abundant apparently albitised, unoriented plagioclase laths to 2mm long as well as abundant fractured and clay-veined granular to subophitic clinopyroxene to 2.5mm in grainsize. Chlorite ± smectite has replaced irregular probable olivine grains to 3mm long, but the disseminated granular to skeletal opaque oxides are fresh. Fractures in the altered olivine contain opaque oxide and rims of opaque oxide also occur, with patches of limonite in some grains. There seems to have been about 10-15% olivine and 30% pyroxene in this sample, which is classified as altered olivine dolerite.

RS 472875
ALC RC 09, 58-60m

Altered olivine-bearing variolitic basalt and altered, veined and fractured granitoid gneisses with chlorite, carbonate, epidote and rare pumpellyite.

Field Note: *Dolerite*

There are four chips of altered variolitic basalt in this thin section as well as three chips of leucocratic granitoid with clay-filled fractures. The basalt seems to represent the chilled margin of the dolerite described from the previous thin section, but was partly glassy and cannot be classified as a dolerite.

The altered basalt has red earthy hematite-rich patches that represent hopper-shaped olivine crystals about 1mm long, as well as very clouded clay and leucoxene-rich areas that commonly have preserved a variolitic texture. The variolites are up to 2mm in diameter with altered radiating crystals that may have included pyroxene and plagioclase but are totally altered and highly clouded, so that the present-day mineralogy is uncertain. There are bands and veins in these chips with poor textural preservation and it seems possible that these were either glassy or have been sheared. Clay and carbonate-filled fractures are present. The presence of altered olivine seems to indicate a close link with the dolerite in the previous sample.

The quartzofeldspathic chips have a granuloblastic or allotriomorphic-granular texture with few grains over 2mm in diameter. The various chips have 15-25% quartz and various proportions of sericite-clouded plagioclase and mostly clear K-spar, apparently all orthoclase. Minor myrmekite is present and there is minor clay-leucoxene-altered biotite as well as oxidised and fractured opaque oxide grains. Minor apatite is disseminated and is locally quite coarse-grained (0.4mm). Fractures and veins are common with chlorite, carbonate and clay, locally enclosing fragments of granitoid. Some of the carbonate patches enclose fine-grained epidote and pumpellyite. These chips seem to represent altered quartz monzonite and monzogranite gneisses.

RS 472282 **Altered, fractured and partly brecciated biotite-hornblende**
ALC RC 10, 34-36m **monzogranite with minor possible clinopyroxene. Rare zircon is present.**

Field Note: *Gneiss*

Although these chips are gneissic, they are not like those in ALC RC 01-08, as the mafic mineralogy is dominated by hornblende and biotite. The hornblende is also green and not brownish as in the other ALC samples. Some of the chips are leucocratic, whereas others are rich in mafic aggregates, and in this they are more similar to chips described above from the Tieyon drilling. Some of the chips are granuloblastic with plagioclase, quartz and microcline to 3mm, but others are more inequigranular with grains to 6mm long. Mafic clots, locally over 10mm long, are largely confined to specific chips, with less abundant, mostly disseminated mafic minerals in the other chips. Some of the mafic aggregates are predominantly biotite, partly as poikilitic grains over 5mm in diameter, with minor opaque oxide and apatite, but others are mostly green hornblende as poikilitic grains to 7mm or more in diameter, with minor biotite. Opaque oxides and apatite occur through the hornblende as well as being present in the biotite. In one chip, large proportions of the mafic aggregate have been altered to mustard-coloured clays. It is not clear whether the altered material was biotite, hornblende or pyroxene. Some biotite has been altered to clays and leucoxene, and some hornblende has partial alteration to clays, but there is only very rare clay-clouded pyroxene in one chip and this seems to be clinopyroxene. As clinopyroxene was also seen in TIR RC 114, this allows correlation with the Tieyon drilling. Minor magnetite is present as well a leucoxene, possibly after sphene. Clay-filled fractures are abundant and some areas have been brecciated.

The proportions of quartz, plagioclase and microcline vary between chips, but the bulk composition suggests a biotite-hornblende monzogranite.

RS 472888 **Variously plagioclase-poor to plagioclase-rich chips with orthopyroxene, clinopyroxene, biotite, hornblende and opaque oxide: metamorphosed gabbros and feldspathic pyroxenites.**

ALC RC 11, 28-30m

Field Note: *Gneiss*

One of the chips in this sample is very rich in hornblende, but the others have more abundant pyroxene, including different proportions of orthopyroxene and clinopyroxene, as well as plagioclase, biotite and opaque oxide.

The hornblende-rich chip has abundant (65%) granular brownish green hornblende from 1 to 4mm in grainsize, with of interstitial poikiloblastic grains of plagioclase and clinopyroxene to 4mm in diameter. There seems to be about 15% each of plagioclase and clinopyroxene, with 5% granular oxide and minor apatite to 0.7mm in grainsize. Minor biotite is also present, mostly adjacent to a vein containing carbonate and scapolite. Another chip has 25% hornblende as well as granular clinopyroxene and orthopyroxene to 3mm in grainsize. Minor plagioclase and biotite are present in this chip, which is weakly foliated.

The other three chips have 25-60% granular plagioclase as well as various proportions of clinopyroxene and orthopyroxene, partly granular and partly poikiloblastic, with poikiloblastic grains that are optically continuous over areas as much as 10 x 4mm. The most plagioclase-rich chip has disseminated biotite and opaque oxide, but no hornblende, whereas the less plagioclase-rich chips have as much as 10% green hornblende to 2mm in diameter, as well as disseminated biotite, but no primary opaque oxide. The plagioclase generally occurs as a micromosaic with grains 0.5 to 1mm in diameter.

These chips seem to represent metamorphosed gabbros and feldspathic pyroxenites, at least partly of cumulus origin, with upper amphibolite to granulite facies metamorphism.

RS 479990 **Plagioclase-rich olivine-hypersthene dolerite with rare biotite.**

Tie 13a

Field Note: *[None supplied]*

Mineral	Vol %
Plagioclase	55-60%
Clinopyroxene	15-20%
Olivine	10-15%
Orthopyroxene	7-8%
Oxide	5%
Biotite	<1%
Apatite	trace

This sample is mafic and in thin section is seen to be an olivine dolerite. It has abundant fresh plagioclase as laths locally over 2mm long. There is abundant interstitial clinopyroxene and less abundant orthopyroxene, with a granular or subophitic habit and a grainsize of 0.4 to 1.5mm. Olivine is also disseminated with a granular or poikilitic habit and a grainsize of 0.5 to 1.5mm. The olivine has abundant fine-grained opaque oxide, possibly exsolved from the olivine during cooling. Less abundant opaque oxide is also present in the clinopyroxene, but the orthopyroxene seems to be free of opaque oxide. Parts of some of the plagioclase laths have a pale brown clouding, possibly due to sub-micron scale opaque oxides. Granular and skeletal opaque oxides are disseminated as well as small interstitial areas of feldspathic mesostasis, locally enclosing apatite. Rare biotite is present, partly in the mesostasis and partly nucleated on opaque oxide.

RS 479991 **Olivine-hypersthene dolerite with rare quartz and biotite:**

Tie 13b **weakly altered with sericite and smectite.**

Field Note: *[None supplied]*

Mineral	Vol %
Plagioclase	55-60%
Clinopyroxene	20%
Olivine	10%
Orthopyroxene	7-8%
Oxide	5%
Mesostasis	1%
Biotite	1%
Apatite	trace

This is a similar dolerite to that in the previous sample, but is partly coarser-grained. The abundant plagioclase is as much as 3mm in grainsize with pale brown iron-stained zones and rare sericite patches. One grain has an apparently fritted core enclosing abundant clinopyroxene. The clinopyroxene is more inequigranular than that in the previous sample, with abundant small grains about 0.2mm in diameter as well as larger, partly ophitic grains to 3mm. There is also minor coarse-grained orthopyroxene to 2mm in grainsize, paler than that in the previous sample. Iron-oxide-clouded olivine is present as poikilitic grains to 4mm in diameter, partly altered to brown smectite ± limonite. Very minor granular oxide is disseminated, with rare brown or green biotite. Small areas of largely feldspathic mesostasis occur, with apatite and rare quartz, partly in small aggregates of poorly defined granophyre.

RS 479949
Tie 22b

Breccia of quartzofeldspathic fragments, possibly derived from granodiorite gneiss, partly flooded by prehnite with secondary clays, sericite, chlorite and epidote. Large areas of quartz-epidote rock occur as well as epidote veins.

Field Note: *Breccia*

In hand-specimen this seems to be a breccia with fragmented pink and grey areas and irregular vein-like masses apparently rich in epidote. In thin section there are zones of breccia and areas of quartz-epidote rock. The breccia is partly fine-grained, with fragments mostly less than 1mm in diameter, but is mostly inequigranular with some larger fragments to 4 or 5mm in diameter, partly divided by stylolite-like veins. The fragments represent former granitoid or granitoid gneiss with clouded, sericite and iron-stained plagioclase, clear or weakly iron-stained microcline and quartz as the main components, mostly less than 4mm in grainsize. Chlorite and clays have replaced minor decussate to foliated biotite and rare patches of epidote occur. There are also rare patches of clays and epidote after possible pyroxene or amphibole grains to 3mm long. A large area of quartz-epidote rock, to 10mm wide, is present, with minor albite, chlorite and sphene. This passes into very narrow veins of microcrystalline epidote, mostly less than 1mm wide, cutting across the breccia. Parts of the breccia have been flooded by decussate fine-grained prehnite, possibly iron-rich, with minor chlorite. The original lithology is uncertain but a former granodiorite gneiss is suggested.

RS 479992
Tie 22c

Actinolite-albite-epidote-sphene-altered metadolerite with a coarse-grained vein of epidote containing sphene, quartz, rare actinolite and abundant partly to completely leached carbonate.

Field Note: *Vein*

This sample has a dark amphibole-rich lithology in contact with a partly porous aggregate apparently dominated by epidote. The host rock is an altered metadolerite with an original grainsize of about 2mm. Away from the vein there is common to abundant albite as well as epidote in former plagioclase sites, but closer to the vein the plagioclase sites contain only granular epidote. Abundant former pyroxene has been replaced by actinolite and there are abundant aggregates of opaque oxide and sphene, locally over 2mm long. These seem to have included abundant ilmenite as well as minor titanomagnetite. Adjacent to the vein there is no remnant opaque oxide and these aggregates are composed entirely of sphene.

There is a sharp contact against the vein. The main mineral in the vein is fibrous to prismatic epidote from 0.4 to 8mm in grainsize, with abundant sphene as euhedral crystals to 2mm long. Some interstitial patches contain coarse quartz and some contain partly leached carbonate, together with small prisms of epidote. The open voids would seem to represent totally leached carbonate.

RS 472811 **Weathered quartz gabbro or dolerite with minor amphibole and biotite.**
Tie 27a

Field Note: *Gabbro*

Mineral	Vol %
Plagioclase	50-55%
Pyroxene(s)	35-40%
Oxide	5%
Granophyre	2-3%
Hornblende	2%
Biotite	1%
Apatite	trace

This sample seems to represent a partly weathered mafic rock. In thin section there is abundant plagioclase to 4mm in grainsize, locally containing limonite-lined fractures. Aggregates of pyroxene are abundant, with a granular to prismatic or subophitic habit and a grainsize of 0.5 to 3mm. These aggregates seem to include minor orthopyroxene and well as clinopyroxene and are as much as 8mm in diameter. The pyroxene aggregates have limonite staining and veining. Large aggregates of opaque oxide are also disseminated, to 3mm in diameter. Some of these can be interpreted as titanomagnetite with exsolution lamellae of ilmenite, as seen in low angle incident light, but other, more elongate grains seem to be composed of primary ilmenite. Minor granophyre is present, to 2mm in grainsize, commonly enclosing accessory apatite. Some of the pyroxene aggregates are rimmed by green hornblende, with very dark brown to black biotite adjacent to some of the opaque oxide masses. Paler, brown to green biotite occurs in some of the granophyre patches.

This sample is a partly weathered and weakly altered quartz gabbro or coarse-grained quartz dolerite.

RS 482837 **Actinolite-epidote-albite-sphene-altered gabbro with a vein of epidote containing minor actinolite and sphene.**
Tie 27b

Field Note: *Gabbro*

This sample may have been originally similar to the gabbro or dolerite in the previous sample, albeit without any obvious granophyre, but has been totally altered. The pyroxene grains (55%) have been replaced by uralitic amphibole and the plagioclase (40-45%) has been replaced, partly by albite and partly by granular to prismatic epidote. There seems to have been less abundant oxide (2-3%) in this thin section, and this is largely altered to sphene, with residual opaque oxide that may be partly or totally ilmenite. A vein across the centre of the thin section contains abundant epidote as well as less abundant fine-prismatic actinolite. Rare euhedral crystals of sphene are also present in this vein, which is about 2mm wide.

RS 482838 **Gabbro or dolerite with minor granophyre, zoned brown to**
Tie 27c **green hornblende, biotite and altered olivine.**

Field Note: *Gabbro*

Mineral	Vol %
Plagioclase	55%
Pyroxene	35%
Opaque oxide	5%
Olivine	1%
Hornblende	2%
Biotite	1%
Granophyre	1%
Apatite	trace

This is a fresher sample than the previous two samples, and seems to be a gabbro or dolerite. It has abundant plagioclase to 2.5mm in grainsize, with rare grains enclosing pyroxene and opaque oxide. Granular pyroxene is abundant and as much as 2mm in grainsize. The pyroxene is apparently all clinopyroxene with a pale brown tinge suggesting minor titanium. Small patches of brown or green smectite are enclosed in some of the pyroxene aggregates. These patches seem to represent altered olivine. Partly skeletal opaque oxides are also scattered. Much of the oxide occurs as platy crystal or as lobate grains forming symplectites with some of the silicate minerals, and may be ilmenite, but there is possibly minor magnetite. Zoned brown to green hornblende rims some of the pyroxene grains and is intergrown with probable ilmenite. Very minor biotite is also present. Interstitial areas of feldspathic or quartzofeldspathic mesostasis occur and include granophyre patches about 0.5mm in diameter, commonly with minor apatite. Very minor sulphide is present.

RS 479950
Tie RC 89a

Polyphase calcrete with micrite and microsparry carbonate fragments in a carbonate cement and later carbonate-limonite cement. Clasts of quartz, actinolite, muscovite and shredded altered biotite are present.

Field Note: *Calcrete*

This sample is composed of calcrete of several generations with two types of early fragment and two generations of later material.

1. The earliest and simplest material consists of fragments of micritic carbonate to 7mm in diameter with no inclusions, locally ragged and veined by early matrix.
2. There are, however, some similarly large fragments of slightly coarser, micritic to microsparry carbonate. These have rare inclusions of quartz and partly shredded muscovite, less commonly with actinolite and shreds of altered biotite.
3. Both of the types of fragment, as described above, are cemented by areas of slightly coarser, more microsparry carbonate, locally with more abundant silicate clasts, although these are irregularly disseminated. The clasts make up as much as 25% of this cement and are dominated by quartz as angular chips and rounded grains to 2mm long. Also present are partly shredded muscovite and shredded possible vermiculite after biotite, as well as actinolite and possible K-spar. Very minor opaque oxide is also present.
4. The final cement has colloform banding defined by limonite-rich and limonite-poor bands in carbonate. This cement commonly has more abundant clasts than that described above, but varying from 5-40% between different areas. Quartz grains to 1.5mm are the main component with less abundant actinolite and opaque oxide. Small rosettes of clear carbonate in this zone seem to be authigenic.

RS 482839 **Tie RC 89b**

Calcrete with micrite fragments in a partly limonite-stained, more microsparry cement with abundant clasts (quartz, microcline, orthoclase, actinolite, opaque oxide and rare shredded altered biotite).

Field Note: *Calcrete*

This is a simpler calcrete sample compared with the previous sample. It has amoeboid and ellipsoidal masses of micritic carbonate to 10mm in diameter with irregular areas of largely limonite-stained carbonate cement with abundant terrigenous clasts. The micrite masses have small veins of microsparry carbonate but are free of inclusions. The cement has abundant rounded and angular clasts to 2mm in diameter. Quartz is abundant, but there is also common to abundant K-spar, with microcline and less abundant, finer-grained orthoclase. Very minor actinolite and disseminated minor opaque oxide are also present. Shredded altered biotite flakes occur mostly in irregular patches of limonite-poor microsparry carbonate that enclose abundant quartz, opaque oxide and K-spar and may represent fragments, but this is less clear in this sample compared with the previous sample. Veins of slightly coarser carbonate are also present and have open voids, and may represent the final stage of calcrete formation.

RS 482812 **Alc 02a**

Olivine-bearing dolerite similar to TIE 13a and 13b.

Field Note: *Dolerite*

Mineral	Vol %
Plagioclase	55%
Clinopyroxene	35%
Olivine	5%
Oxide	3%
Mesostasis	2%
Apatite	trace

This sample is similar to the dolerites described above as samples TIE 13a and 13b. There is abundant plagioclase with a maximum grainsize of between 2.5 and 3mm, as well as pyroxene, olivine and opaque oxide. The plagioclase has abundant microcrystalline opaque oxide, as seen in brown zones in the plagioclase in the samples referred to above. The pyroxene is granular or elongate, with undulose extinction in some areas and very minor opaque oxide. The olivine, to 1.5mm in grainsize, has more abundant microcrystalline opaque oxide, as also seen in TIE 13a and 13b. There is less abundant oxide, most of which seems to be titanomagnetite with ilmenite lamellae. Rare patches of feldspathic mesostasis occur, with rare quartz and minor apatite, and rare sulphide is evident in low angle incident light.

RS 482813 **Olivine-bearing dolerite with patches of mesostasis containing**
ALC 02b **rare quartz and sulphide.**

Field Note: *Dolerite*

Mineral	Vol %
Plagioclase	55%
Clinopyroxene	30-35%
Olivine	7-8%
Oxide	3%
Mesostasis	2%
Apatite	trace
Sulphide	trace

This is a similar dolerite to that in the previous sample and in samples TIE 13a and 13b. It has abundant plagioclase laths, locally over 3mm long, with a relatively uniform distribution of cryptocrystalline opaque oxide. There is also abundant granular to prismatic clinopyroxene with few fine-grained inclusions of opaque oxide, mostly less than 1mm in grainsize. Olivine grains to 2mm are slightly more abundant than in the previous sample and are clouded and veined by opaque oxide. Separate granular opaque oxide seems to be mostly titanomagnetite with some separate grains of ilmenite. There is also rare biotite in this sample as well as small patches of feldspathic mesostasis containing apatite needles as well as rare granophyre and sparse sulphides.