RN 11557

GEOLOGICAL LOG OF DRILL HOLE

PROJECT BMR 3 PROTEROZOIC/ARCHEAN? REMARKS NORTHERN CONTACT
HOLE N° DDH 11 CO-ORDINATES 5355.25mW R.L. GROUND
LOCATION TENNANT CREEK 1:250,000 ANGLE FROM HORIZONTAL -60° DIRECTION 004° MAGNETIC

DESCRIPTION OF CORE	LOG	CORE RECOVERY %	SAMPLES
0–12m Red-brown clayey sand with angular & subrounded fragments of clear quartz & iron of various grain-size.			0–30.5m ROLLER BIT SAMPLE.
12–16m Fawn-brown clayey sand with angular & subrounded fragments of clear quartz & iron of various grainsize.			
16–18m Red clayey sand.			
18–30.5m Fine white specks of clay & grains of quartz in dark brown sand. The proportion of clay increases towards 30.5m.			
30.5–31.1m WEATHERED SCHIST. Highly weathered, iron enriched schists consist of parallel bands of biotite & white clay, almost parallel to l.c.a. Much limonite & red iron oxide occur, particularly on joints at 45° to l.c.a.			30.5–187.55m CORE SAMPLE.
31.1–42.35m CLAY. Green & white clay with brown degraded biotite. Fabric & texture are indistinct. Much of the core is very broken. Fractures occur at 45°& at low angles to l.c.a. & are stained with manganese.			
42.35			
~~42~~–43.5m DOLERITE BRECCIA. Angular fragments of hard, dark green dolerite, varying in size from 40x30x30mm to less than 10x10x10mm occur in a matrix of yellow-green & white clay. This probably represents a fault zone.		Poor	

REFERENCES

GS.76/14.

LOGGED BY J.P.Howard.

SHEET 1 OF 7 DRAWING N°

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HOLE No DDH 11 CO-ORDINATES R.L. GROUND
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DESCRIPTION OF CORE	LOG	CORE RECOVERY %	SAMPLES

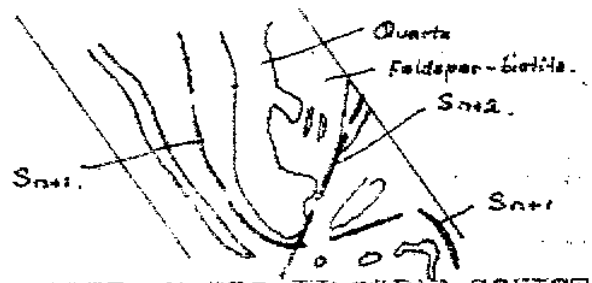
43.5–44.5m **CLAY.** Yellow-green & white clay.

44.5–47.6m **WEATHERED QUARTZ-BIOTITE GNEISS.** Biotite, quartz & white clay (after feldspar) have a gramular texture.

47.6–48.5m **WEATHERED BIOTITE SCHIST.** Finer grained texture with strong fabric element at 55° to l.c.a. The clay component is white at the top but green at the base of the interval.

48.5–50.5m **BIOTITE-QUARTZ-FELDSPAR SCHIST.** Black & white, coarsely banded schist. Weathering is mostly confined to fracture planes which are limonite stained. Biotite predominates in bands of biotite (50%), fine grained quartz (25%) & white, degraded feldspar (25%). These bands of between 5 & 100mm width, occur between continuous bands of quartz, which vary in width from 5 to 25mm. The schist is often tightly folded (e.g. 49.5-500m), as seen in the shape of the quartz bands. Fold axes cut the core at approx. 45° to l.c.a. The folds have an apparent half wavelength of less than 100mm.

49m Schistosity 55° l.c.a.



50.5–60m **BIOTITE-QUARTZ-FELDSPAR SCHIST.** Finely laminated (in contrast to 48.5–50.5m above) biotite (30%), quartz (50%) & feldspar (clay) (20%).
50.9–51.0m. The closure of the nose of a tight fold (similar to 48.5–50.5m above), suggests a fold ~~axis~~ which plunges up the plane of the schistosity at an angle of approx. 80° anti-clockwise from the upper point of the individual planes of schistosity.

E.O.H.

REFERENCES

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SHEET 2 OF 7 DRAWING No

GEOLOGICAL LOG OF DRILL HOLE

PROJECT BHR 3 PROTEROZOIC/ARCHEAN? REMARKS NORTHERN CONTACT
HOLE No DDH 11 CO-ORDINATES R.L. GROUND
LOCATION TENANT CREEK 1:250.00 ANGLE FROM HORIZONTAL -60° DIRECTION 004 MAGNETIC

DESCRIPTION OF CORE	LOG	CORE RECOVERY %	SAMPLES
51.15-51.25m. Porphyroblasts of white feldspar (up to 7x4mm) occur in a zone of schist enriched in phlogopite (bronze mica). The porphyroblasts may have been generated cataclastically; one suggests that, if the schistosity dips steeply North, the sense of the movement looking West has been dextral.			
Throughout the schist, occasional lenses & eyes of quartz occur, up 10x20mm. Schistosity bends around these eyes. 55.15-55.2m and 57.45-57.5m. Porphyroblasts of green & white feldspar & quartz, generally 5x5mm often contain biotite & aprear to p be broken. 58-59m. Bands of pink & white quartz & feldspar occur parallel to the schistosity. Bands are up to 150mm wide. Between them at 58.4m, feldspar porphyroblasts (5x5mm) appear broken.			
60-69.2m WEATHERED PORPHYRITIC BIOTITE QUARTZ-FELDSPAR GRANITE. Biotite (30%) quartz (40%) & feldspar (30%) White feldspar occurs as various sizes of irregularly shaped porphyroblasts, generally less than 5x5mm. Some zoning from light green or clear centres to a white (clay) rim is probably the result of weathering. Quartz is mainly fine grained & occurs in the groundmass with biotite. Minor muscovite is present. A vague foliation at approx. 50° to lea occurs. Approx. 63.5m a band of quartz-feldspar-biotite schist (5mm wide) parallels the foliation. 64-64.3m. A transparent quartz vein. 65.5m. As above. 67-69.2m. Very broken, weathered rock.			

REFERENCES

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SHEET 3 OF 7 DRAWING No

GEOLOGICAL LOG OF DRILL HOLE

PROJECT BMR 3 PROTEROZOIC/ARCHEAN? REMARKS NORTHERN CONTACT
HOLE No. DDH 11 CO-ORDINATES R.L. GROUND
LOCATION TENNANT CREEK 1:250,000 ANGLE FROM HORIZONTAL 60 DIRECTION 004 MAGNETIC

DESCRIPTION OF CORE	LOG	CORE RECOVERY %	SAMPLES
[illegible].4m PORPHYRITIC BIOTITE-QUARTZ-FELDSPAR GRANITE. Biotite (30%) quartz (40%) & feldspar (30%). A weak foliation occurs at 70° to l.c.a. Porphyroblasts of light green & white plagioclase feldspar (Carlsbad twinning & striations) & possibly potassium feldspar, vary in size from 2x2mm to 7x5mm & in shape from irregular to spherical. A black mineral present may be [illegible] pyroxone or amphibole. 71.9, 72.6, 73.0, 73.4 & 74.4m. A pink colour in the felspar is associated with thin (less than 2mm) veins of quartz & feldspar. Fractures parallel the vague foliation or l.c.a. *79.35-79.6, 84.8, 85.1, 97.0 Qtz enriched*			87.5m WRA. 76/TC/4674.
99-104m QUARTZ-FELDSPAR-BIOTITE FOLIATED GRANITE. White quartz (60%) & biotite (10%) make up the ground-mass for anhedral crystals of pink feldspar. The pink colour may be due to percolating waters or to the presence of potassium feldspar. The texture is slightly porphyritic (2x2mm). A stong foliation is present at 40° to l.c.a. 99.4-99.45m. Annealed breccia zone with matrix of chlorite & fragments of pink quartz-feldspar. 101.5-102.1m. Fault bounded interval of porphyritic biotite granite, 150mm zones above & below show brecciation & slight quartz veining. 100.75-100.95m, 101.1-101.15m, 103.05-103.15m. Zones relatively enriched in biotite. 103.7-103.9m. Two large, sub-hedral porphyroblasts of pinkish-white feldspar. 103.87-103.94m. Lit-par-lit type band of porphyritic biotite granite. The lower contact, with the pink foliated granite phase, is wavey, & leaves porphyroblasts in the porphyritic biotite granite undisturbed. This implies that the pink phase came after the biotite granite phase(?).			100m.WRA. 76/TC/4580.

REFERENCES

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SHEET 4 OF 7 DRAWING No

GEOLOGICAL LOG OF DRILL HOLE

PROJECT BMR 3 PROTEROZOIC/ARCHEAN? REMARKS NORTHERN CONTACT
HOLE Nº DDH 11 CO-ORDINATES R.L. GROUND
LOCATION TENNANT CREEK 1:250,000 ANGLE FROM HORIZONTAL 60° DIRECTION 004° MAGNETIC

DESCRIPTION OF CORE	LOG	CORE RECOVERY %	SAMPLES
104.0–154.6m **PORPHYRITIC BIOTITE–QUARTZ–FELDSPAR GRANITE.** Biotite (30%), feldspar (20%) & quartz (50%). The porphyroblasts of feldspar are generally a white to light-green colour & mostly of irregular outline. Quartz & biotite constitute the groundmass, the latter defining an indistinct foliation at approx. 45° to l.c.a. 108.9m, 110.1m, 113.1–113.75m fractures at 45°, 45° & 15° to l.c.a. respectively, are annealed with quartz & a light, yellow-green mineral (?chlorite). On each side of each fracture feldspars have been altered to a pink colour. At 113.5m a green feldspar crystal shows a rim, several mm wide of pink feldspar. 117.1m. Small fracture at 40° to l.c.a. annealed with quartz (?) chlorite. 119.75–120.75m. Parts of the interval are 85% quartz–overall 70%. Feldspar (15%) & biotite (15%) content is less than in the surrounding rock. The boundaries parallel foliation & seem to pass around feldspar crystals, as if the quartz enrichment occurred after the porphyroblasts formed. 121.3m. Quartz –? chlorite annealed fracture at 20° to l.c.a. Feldspars are pink in a 5mm alteration zone on each side. 121.4–121.5m. As for 119.75–120.25m above. 125.9–126.2m. Enriched in quartz. 127.85–128.2m. Finer grained granite; porphyroblasts only 2x2mm. 128.7–128.9m. As above. 137.8–138.4m. Enriched in quartz. 138.4–138.8m. **GARNET PEGMATITE** Several large (20x20mm) subhedral to euhedral crystals of red-brown translucent garnet occur with 20x20mm crystals of plagioclase feldspar in quartz. Some garnets appear fractured & replaced by quartz. The upper contact is at 35° to lea, the lower at 25° to l.c.a.			122.0m Thin Section (no 78) 122.0m T.E.A. 76/TC/4719.

REFERENCES

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SHEET 5 OF 7 DRAWING Nº

GEOLOGICAL LOG OF DRILL HOLE

PROJECT BMR 3 PROTEROZOIC/ARCHEAN? REMARKS NORTHERN CONTACT
HOLE N° DDH 11 CO-ORDINATES R.L. GROUND
LOCATION TENNANT CREEK 1:250,000 ANGLE FROM HORIZONTAL 60° DIRECTION 004 MAGNETIC

DESCRIPTION OF CORE	LOG	CORE RECOVERY %	SAMPLES
104.0–154.6m. 139.3–139.7m. GARNET PEGMATITE As above. 140.45–140.65m. Dark coloured, finely laminated quartz –? chlorite schist. 140.7–141.0m. GARNET PEGMATITE. Dominantly quartz & feldspar with several large crystals of garnet. It is strongly foliated & contains porphyroblasts of feldspar. 142.0–142.8m. Thin (less than 30mm) pegmatitte veins. One contains a large (18x12mm) crystal, which shows feldspar cleavage & morphology but the hardness of quartz, silicified feldspar? 142.6–142.8m. Quartz-biotite schist. 142.8–143.6m. Quartz-feldspar-biotite porphyry. Quartz (70%), feldspar (10%) & biotite (20%). Only vague foliation. 144.0–144.05m. Quartz –? biotite schist. Low fisibity. Black, elongate minerals occur on fracture planes. 145.75–146.15m. GARNET PEGMATITE. Several large crystals of brown-red garnet, often with hexagonal form. Minor pyrite is present. 146.35–148.0m. As for 142.8–143.6m above. 148.5 & 152.7m. Quartz veins at 40° & 50° to l.c.a. respectively. 153.4–153.6m. Quartz-biotite schist. 154.1–154.6m. Quartz-biotite schist with two quartz-feldspar bands, 30mm wide.			145.8m Thin section (no.79) 145.8 m WRA. 76/TC/4681 145.8 m TEA. 76/TC/4718.
154.6–187.55m (E.O.H.) QUARTZ-FELDSPAR-BIOTITE FOLIATED GRANITE. The rock has a gneissic texture & varies in colour from grey to pink. The pink variety is probably the same rock as was intersected in DDH 9 (& DDH's 3, 4,5,7 & 8). Foliation is much better defined (giving approx. 4 fractures per metre) than for Porphyritic Biotite Granite (approx. 2 fractures per metre) above. It occurs approx. 40° to l.c.a. & is defined by thin lenses			

REFERENCES

LOGGED BY V. E. HOLLOW

SHEET 6 OF 7 DRAWING N°

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PROJECT BMR 3 PROTEROZOIC/ARCHEAN? REMARKS NORTHERN CONTACT
HOLE N° DDH 11 CO-ORDINATES R.L. GROUND
LOCATION TENNANT CREEK 1:250,000 ANGLE FROM HORIZONTAL 60 DIRECTION 004 MAGNETIC

DESCRIPTION OF CORE	LOG	CORE RECOVERY %	SAMPLES
154.6–187.55m (cont.) **QUARTZ–FELDSPAR–BIOTITE–FOLIATED GRANITE.** of quartz & feldspar, although some feldspar is porphyroblastic (20x20mm). 154.6–155.9m. Grey granite. Quartz (65%), feldspar (20%) & biotite (15%). 155.9–158.7m. Pink colour is dominant, perhaps as a result of waters percolating in the fractures at 156.4m & 157.35–157.55m which have been annealed with quartz & chlorite. 161.2–161.6m. As above, but the fracture is annealed with light-green (?) chlorite. 162.8–168.9m. As above. Several fractures occur, annealed with quartz. The main broken zone occurs at 166.4–166.8m. 168.9–173.1m. As for 154.6–155.9m above. 173.1–178.8m. As for 155.9–158.7m above. The main fractures occur at 173.4m, 175.8m, 177.8m. 178.8–183.1m. As for 154.6–155.9m above. 183.1–187.55m (E.O.H.). As for 155.9–158.7m above. Fractures are commin & usually at steep angles to l.c.a.			170m.W.R.A.76/TC/4666. 171.6m. Thin section.(no.80) 187.5m T.S.(no 81). 187.5m W.R.A76/TC/4675.

REFERENCES

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SHEET 7 OF 7 DRAWING N°

N.T.A. 181

THE NORTHERN TERRITORY OF AUSTRALIA

IN 40/486
RN 11557

Control of Waters Ordinance

Regulation 8.

FINAL STATEMENT OF BORE

metres

From	To	Description of Strata
0	30.5	Clayey sand
30.5	?	Weathered schist

Complete strata logs to be supplied with Mines Branch Report.

Location of Bore (or supply sketch on back hereof)—

.....Miles

(*a*) N NE S SE E NW W SW of (*b*) .....

.....

(*a*) Circle appropriate direction.
(*b*) Use known point such as existing bore, homestead, outstation, etc.

Additional information of interest about the bore—

Drilled as an angle hole
Diamond drill hole

MAP No. SE53-14
GRID REF. 157533

Samples of strata and water supplies
have been*
will be*
left at the following trading place—

.....

T. J. VERHOEVEN
Signature

*Strike out which does not apply.

For office use only—

RECEIVED 5 MAY 1977

Name of Bore—
DDH 11

Name of Property—
TENNANT CREEK STATION

Description of Property—
PASTORAL

Name of Owner—
TENNANT CREEK PASTORAL CO.

Name of Contractor—
MINES BRANCH

Name of Driller—

Date of Commencement—

Date of Completion—
1976

Total Depth—
188m

Particulars of Casing—

Particulars of Perforations or Screens—

Water	1st Supply	2nd Supply	3rd Supply
Struck at			
Standing Water Level			
Pumping Supply : G.P.H.			
Duration of Pump Test			
Water Level During Test			
Quality : Good, Fair or Bad			

RN011557

Note