WATER ANALYSIS

DEPARTMENT OF NORTHERN AUSTRALIA

WATER RESOURCES BRANCH

WR 4/1

Laboratory Register No. 77/1560

Date received in Laboratory 17.6.77

Bottle No	Time of sampling (hrs)	Date of sampling
ZL 61	1100	3.6.77

LOCATION AND DETAILS

TENNANT CREEK WEST RN 11559 IN 40/488 DDH13 DISCHARGE 0.6 lps

P/Dis AFTER 120 MINS RSP 318X SAMPLER:BLYTH

ANALYSIS - PHYSICAL

pH	7.8	Colour (Hazen units)	
Specific conductance (microsiemens/cm at 25°C)	1330	Turbidity (A.P.H.A. units)	
Total dissolved solids (mg/l - by evaporation at 180°C)	830	Suspended solids (mg/l)	

ANALYSIS - CHEMICAL (mg/l)

Total dissolved solids (by summation)	1063	Total alkalinity (as $CaCO_3$)	310
Sodium chloride (calc from chloride)	285	Total hardness (as $CaCO_3$)	356
Chloride, Cl	173	Sodium, Na	131
Sulphate, SO_4	82	Potassium, K	44
Nitrate, NO_3	49	Calcium, Ca	44
Bicarbonate, HCO_3	378	Magnesium, Mg	60
Carbonate, CO_3		Iron (total), Fe	<0.1
Fluoride, F	2.5	Silica, SiO_2	99

ANALYSIS - ADDITIONAL (mg/l)

WATER RESOURCES BRANCH
ALICE SPRINGS
12 JUL 1977
DEPT. OF N.T.

ANALYSED BY: J.ALCOCK DATE 28/6/77

REMARKS: The sample as analysed is chemically unsuitable for human consumption according to the 1971 World Health Organisation International Standards for Drinking-Water as the fluoride concentration exceeds the recommended limits of 0.6-0.8 mg/l F, based on the range of the annual average of maximum daily air temperatures

"Information of discussion on the analysis shown above, can be obtained by contacting the Senior Engineer, Water Quality, Water Resources Branch, Darwin".

Suitable for stock.

F. D. ATKINSON, Government Printer, Darwin.

WATER ANALYSIS

DEPARTMENT OF THE NORTHERN TERRITORY

WATER RESOURCES BRANCH

WR 4/1

Laboratory Register No.	Date received in Laboratory	
77/1559	17.6.77	
Bottle No	**Time of sampling (hrs)**	**Date of sampling**
ZG 74	1030	3/6/77

LOCATION AND DETAILS

TENNANT CREEK WEST RN 11559 IN 40/488 DISCHARGE 0.6 lps

AFTER 60 MINS P/Dis DDH13 RSP 318X SAMPLER:BLYTH

ANALYSIS - PHYSICAL

pH	7.7	Colour (Hazen units)	
Specific conductance (microsiemens/cm at 25°C)	1350	Turbidity (A.P.H.A. units)	
Total dissolved solids (mg/l - by evaporation at 180°C)	860	Suspended solids (mg/l)	

ANALYSIS - CHEMICAL (mg/l)

Total dissolved solids (by summation)	1078	Total alkalinity (as $CaCO_3$)	310
Sodium chloride (calc from chloride)	302	Total hardness (as $CaCO_3$)	365
Chloride, Cl	183	Sodium, Na	131
Sulphate, SO_4	82	Potassium, K	45
Nitrate, NO_3	50	Calcium, Ca	46
Bicarbonate, HCO_3	378	Magnesium, Mg	61
Carbonate, CO_3		Iron (total), Fe	<0.1
Fluoride, F	2.6	Silica, SiO_2	99

ANALYSIS - ADDITIONAL (mg/l)

WATER RESOURCES BRANCH
ALICE SPRINGS
1 JUL 1977
DEPT. OF N.T.

ANALYSED BY: J.ALCOCK DATE 28/6/77

REMARKS: The sample as analysed is chemically **unsuitable** for human consumption according to the 1971 World Health Organisation International Standards for Drinking Water as the fluoride concentration exceeds the recommended limits of 0.6-0.8 mg/l F, based on the range of the annual average of maximum daily air temperatures Suitable for stock.

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WATER ANALYSIS

DEPARTMENT OF THE NORTHERN TERRITORY

WATER RESOURCES BRANCH

WR 4/1

Laboratory Register No.	Date received in Laboratory	
77/1558	17.6.77	
Bottle No	**Time of sampling (hrs)**	**Date of sampling**
Z 32	1000	3.6.77 ✓

LOCATION AND DETAILS

TENNANT CREEK WEST RN 11559 IN 40/488 DISCHARGE 0.6 lps

AFTER 30 MINS P/Dis DDH13 RSP 318X SAMPLER:BLYTH

ANALYSIS - PHYSICAL

pH	7.7	Colour (Hazen units)	
Specific conductance (microsiemens/cm at 25°C)	1390	Turbidity (A.P.H.A. units)	
Total dissolved solids (mg/l - by evaporation at 180°C)	840	Suspended solids (mg/l)	

ANALYSIS - CHEMICAL (mg/l)

Total dissolved solids (by summation)	1102	Total alkalinity (as $CaCO_3$)	310
Sodium chloride (calc. from chloride)	323	Total hardness (as $CaCO_3$)	380
Chloride, Cl	196	Sodium, Na	133
Sulphate, SO_4	84	Potassium, K	48
Nitrate, NO_3	51	Calcium, Ca	47
Bicarbonate, HCO_3	378	Magnesium, Mg	64
Carbonate, CO_3		Iron (total), Fe	5.2
Fluoride, F	28	Silica, SiO_2	98

ANALYSIS - ADDITIONAL (mg/l)

WATER RESOURCES BRANCH
ALICE SPRINGS
12 JUL 1977
DEPT. OF N.T.

ANALYSED BY: J.ALCOCK DATE 28/6/77

REMARKS: The sample as analysed is chemically unsuitable for human consumption according to the 1971 World Health Organisation International Standards for Drinking-Water as the flucride concentration exceeds the recommended limits Of 0.6-0.8 mg/l F, based on the range of the annual average of maximum daily air temperatures Suitable for Stock.

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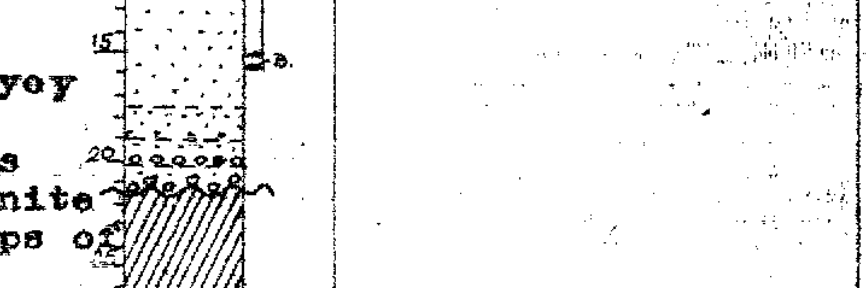
RN 11559.

GEOLOGICAL LOG OF DRILL HOLE

PROJECT [redacted] 3. PROTEROZOIC/ARCHAEAN? REMARKS STRATIGRAPHIC HOLE
HOLE N° D.D.H. 13 CO-ORDINATES 7.72S, 2.40W R.L. GROUND
LOCATION TENNANT CREEK ANGLE FROM HORIZONTAL VERTICAL DIRECTION

1:250,000

DESCRIPTION OF CORE	LOG	CORE RECOVERY %	SAMPLES
N.R. The hole is collared on a low calcrete rise			0-15.25m ROLLER BIT SAMPLE
Mainly coarse chips of white calcium carbonate (calcrete?)			
6-15.25m A. HORIZON Brown clayey sand, consisting of rounded quartz grains which are often limonite stained and many chips of carbonate.			
15.25-15.8m B. HORIZON Zone of intense iron enrichment. Small (less than 2x2mm) angular fragments of quartz constitute 15%. The lower boundary is marked by a fracture at 10 degrees to l.c.a.			15.25-83.35 CORE SAMPLE
15.8-21.3m WEATHERED LITHIC SANDSTONE (Protoquartzite) Several graded beds occur. 15.8-17.6m White, probably leached, very permeable and porous, fine to very fine, subrounded polymictic sandstone, with a matrix of white chemical cement. A mottled texture to 17m probably results from brecciation of the sandstone into fragments up to 50 x 50mm. 17.6-19.0m Size of the subangular quartz grains increase from coarse sandstone to very coarse pebbly sandstone (angular grains of 5x5x5mm)			



EOH.

REFERENCES
GS 76/14.

LOGGED BY J.P. Howard.
SHEET 1 OF 6 DRAWING N°

GEOLOGICAL LOG OF DRILL HOLE

PROJECT BMR 9. PROTEROZOIC/ARCHAEAN? REMARKS STRATIGRAPHIC HOLE.
HOLE N° BMR. 13. CO-ORDINATES 7.72S, 2.40W R.L. GROUND
LOCATION TRIMANT CREEK ANGLE FROM HORIZONTAL VERTICAL DIRECTION

1:250,000

DESCRIPTION OF CORE	LOG	CORE RECOVERY %	SAMPLES
15.8-21.3m continued 19.0-20.1m Pebbly coarse sandstone grading to sandy gravel at the base, where angular grains commonly measure 70x70x70mm. The quartz is translucent to white opaque. A few appear strained and broken. 19.53-20.1m Brown iron staining occurs within the coarser interval. The white clay matrix shows very fine sinews of red oxide. 20.1-21.3m This bed grades from very coarse sand at the top to angular pebbles of 30x30x30mm at the base. The matrix consists of smaller pebbles, very coarse sands and a clay cement.			Cambrian Recent or Lower Proterozoic
UNCONFORMITY			
21.3-23.3m WEATHERED MICACEOUS SCHIST Red white and orange clay give a mottled texture. The mica is mainly sericite.			
23.3-47.0m WEATHERED QUARTZ-MUSCOVITE-BIOTITE SCHIST Fine grained quartz has a granular texture. Some quartz veins occur parallel to schistosity.			Lower Proterozoic or Archaean

REFERENCES

LOGGED BY J.P. Heyard.

SHEET 2 OF 6 DRAWING N°

GEOLOGICAL LOG OF DRILL HOLE

PROJECT BMR 3 PROTEROZOIC/ARCHAEAN? REMARKS STRATIGRAPHIC HOLE.
HOLE N° DDH-13. CO-ORDINATES 7,725,2,400 R.L. GROUND
LOCATION TENTANT CREEK ANGLE FROM HORIZONTAL VERTICAL DIRECTION
1:250,000

DESCRIPTION OF CORE	LOG	CORE RECOVERY %	SAMPLES
47.0-56.8m **WEATHERED QUARTZ-FELDSPAR-BIOTITE SCHIST.** Fine grained biotite, quartz and white clay occur between bands dominated by biotite which are generally less than 10mm wide. Veins of quartz occur with feldspar and muscovite and vary in thickness from 2 to 300mm. They are of irregular outline but parallel banding and schistosity at 15 degrees to l.c.a. 56.1-56.2m Much less weathered schist. Schistosity varies between 20 degrees and 30 degrees to l.c.a.			
56.2-57.1m **YELLOW-GREEN CLAY** with coarse brown biotite Schistosity is distorted. (cf.-Quartz-amphibole-garnet gneiss of DDH 163(515-520).			
57.1-64.6m **WEATHERED QUARTZ-MUSCOVITE-BIOTITE SCHIST** Coarse flakes of muscovite predominate with irregular veins of quartz and biotite present. Tight folding occurs. Schistosity is generally at 15 degrees to l.c.a. 62.9m A thin vein of quartz and dark biotite. 63.0-63.1m A pair of tight folds have axes at 30 degrees to l.c.a.			

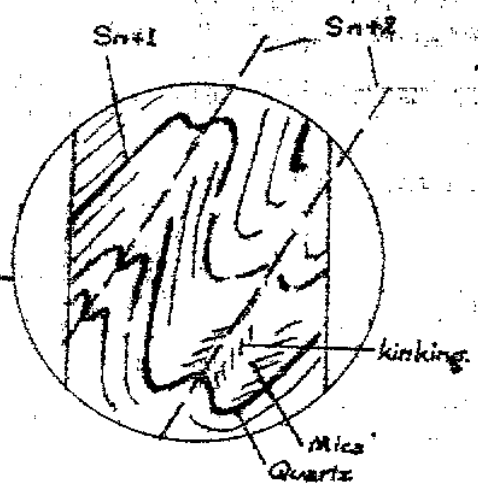
REFERENCES

LOGGED BY J.P. Havard
SHEET 3 OF 6 DRAWING N°

GEOLOGICAL LOG OF DRILL HOLE

PROJECT [illegible] 3 PROTEROZOIC/ARCHAEAN? REMARKS STRATIGRAPHIC HOLE.
HOLE N° [illegible] 19 CO-ORDINATES 7.72S, 2.40W R.L. GROUND
LOCATION [illegible] COUNTY ANGLE FROM HORIZONTAL VERTICAL DIRECTION

1:250,000

DESCRIPTION OF CORE	LOG	CORE RECOVERY %	SAMPLES
57.1-64.6m continued A kinking of the schistosity in the axial region may be the early development of an axial plane cleavage. Minor flexures at 63.4m suggest a dextral sense of movement, when looking west, assuming the schistosity dips north. (If these micro-folds reflect the macro-features, the rock cored may represent the southern limb of a recumbent anticline, the fold axis of which dips north.) Schistosity varies between 20 and 40 degrees to l.c.a.			
64.6-74.65m <u>WEATHERED QUARTZ - FELDSPAR-BIOTITE GARNET SCHIST.</u> Very similar to 47.0-54.1m above, but fine laminations are more apparent. 67.2-67.5m. A band 10mm wide contains several balls of red-brown garnet, generally 6x6x6mm. Schistosity bends around the garnets, implying that it is a pre-tectonic mineral. Some add evidence to the dextral sense of movement cited above.			67.2m. T.S.(no 86).

REFERENCES

LOGGED BY J.P. Howard

SHEET 4 OF 6 DRAWING N°

GEOLOGICAL LOG OF DRILL HOLE

PROJECT BMR PROTEROZOIC/ARCHAEAN? REMARKS STRATIGRAPHIC HOLE.
HOLE N° DDH 13 CO-ORDINATES 7.72S.2.40W R.L. GROUND
LOCATION TENNANT CREEK ANGLE FROM HORIZONTAL VERTICAL DIRECTION

1:250,000

DESCRIPTION OF CORE	LOG	CORE RECOVERY %	SAMPLES
64.6-74.65m continued			
Microfolds at 67.1m show a dextral sense of movement when looking west (assuming schistocity dips north.) 70.4-71.2m Quartz-feldspar veins generally parallel to the schistosity but sometimes cross-cutting. Minor folds occur at the boundary. 71.35m Segregation bands of quartz appear broken in a band of quartz and coarse muscovite. 72.05m Chlorite-garnet quartz schist. As for 67.2-67.5m above. 72.25-72.35m Chlorite-garnet-quartz schist as above. 72.4m Chlorite quartz schist. Folding appears adjacent to a quartz vein of 80mm width.			
74.65-82.85m BANDED QUARTZITE Thin (2mm) continuous bands of white quartz alternate at irregular intervals with grey bands containing small amounts of biotite. The grey bands include small, discontinuous bands and lenses of quartz (bandinage?) ?			

REFERENCES

LOGGED BY J.P. Howard.

SHEET 5 OF 6 DRAWING N°

GEOLOGICAL LOG OF DRILL HOLE

PROJECT BMR PROTEROZOIC/ARCHAEAN? REMARKS STRATIGRAPHIC HOLE.
HOLE N° BMR 13 CO-ORDINATES 7,723,2,467 R.L. GROUND
LOCATION TENNANT CREEK 1:250,000 ANGLE FROM HORIZONTAL VERTICAL DIRECTION

DESCRIPTION OF CORE	LOG	CORE RECOVERY %	SAMPLES
74.65-82.85m continued The rock is very hard and competent, approx. 6 fractures per meter 75.6-75.8m Chloritic Schist 75.9-76.0m Chloritic Schist 81.1-82.0m Highly shattered.			
82.85-83.35m <u>MICROGRANITE</u> Medium to coarse grained leucocratic quartz-feldspar-chlorite-pyrite microgranite. The upper contact is sharp at 30 degrees to l.c.a. 82.85-83.05m Dominantly large feldspar crystals. Some brecciation(?) infilled with chlorite and pyrite.(app. 1%) 83.05-83.35m Medium grain size. Approx. 1% pyrite. (E.O.H.)			

REFERENCES

LOGGED BY J.P. Howard.

SHEET 6 OF 6 DRAWING N°

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THE NORTHERN TERRITORY OF AUSTRALIA

RN011559

Control of Waters Ordinance

IN 40/488
RN 11559

Regulation [redacted]

FINAL STATEMENT OF BORE

metres

From	To	Description of Strata
0 -	15·8	Soil, sand.
15·8 -	21·3	Sandstone.
21·3 -	?	Weathered schist.

Complete strata logs to be supplied with Mines Branch Report.

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

1·9 km ~~Miles~~

(a) N NE S SE E NW W SW of (b) DDH2 [RN10927]

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

Additional information of interest about the bore—

Diamond drill hole.

Map No.: SE53-14
Grid ref: 157530

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 13

Name of Property—
TENNANT CREEK STATION

Description of Property—
PASTORAL

Name of Owner—
TENNANT CK. PASTORAL C.O.

Name of Contractor—
MINES BRANCH

Name of Driller—

Date of Commencement—

Date of Completion—
1976

Total Depth—
83m

Particulars of Casing—
5" diameter surface casing set in concrete block.

Particulars of Perforations or Screens—

Water	1st Supply	2nd Supply	3rd Supply
Struck at			
Standing Water Level	2·6 m 20-4-77		
Pumping Supply : G.P.H.			
Duration of Pump Test			
Water Level During Test			
Quality : Good, Fair or Bad			

Rota

Field inspection on 20-4-77

WATER ANALYSIS

DEPARTMENT OF NORTHERN AUSTRALIA

WATER RESOURCES BRANCH

WR 4/1

Laboratory Register No.	Date received in Laboratory
77/1560	17.6.77

Bottle No	Time of sampling (hrs)	Date of sampling
ZL 61	1100	3.6.77

LOCATION AND DETAILS TENNANT CREEK WEST RN 11559 IN 40/488 DDH13 DISCHARGE 0.6 lps

P/Dis AFTER 120 MINS RSP 318X SAMPLER:BLYTH

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Carbonate, CO_3		Iron (total), Fe	<0.1
Fluoride, F	2.5	Silica, SiO_2	99

ANALYSIS - ADDITIONAL (mg/l)

RECEIVED 7 JUL 1977

ANALYSED BY: J.ALCOCK DATE 28 / 6 / 77

REMARKS: The sample as analysed is chemically unsuitable for human consumption according to the 1971 World Health Organisation International Standards for Drinking-Water as the fluoride concentration exceeds the recommended limits of 0.6-0.8 mg/l F, based on the range of the annual average of maximum daily air temperatures

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Suitable for stock.

F. D. ATKINSON, Government Printer, Darwin.

WATER ANALYSIS

DEPARTMENT OF THE NORTHERN TERRITORY

WATER RESOURCES BRANCH

WR 4/1

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77/1559	17.6.77

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ZG 74	1030	3/6/77

LOCATION AND DETAILS TENNANT CREEK WEST RN 11559 IN 40/488 DISCHARGE 0.6 lps

AFTER 60 MINS P/Dis DDH13 RSP 318X SAMPLER:BLYTH

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WATER ANALYSIS

DEPARTMENT OF THE NORTHERN TERRITORY

WATER RESOURCES BRANCH

WR 4/1

Laboratory Register No. 77/1558

Date received in Laboratory 17.6.77

Bottle No	Time of sampling (hrs)	Date of sampling
Z. 32	1000	3.6.77

LOCATION AND DETAILS TENNANT CREEK WEST RN 11559 IN 40/488 DISCHARGE 0.6 lps

AFTER 30 MINS P/Dis DDH13 RSP 318X SAMPLER:BLYTH

ANALYSIS - PHYSICAL

pH	7.7	Colour (Hazen units)	
Specific conductance (microsiemens/cm at 25°C)	1390	Turbidity (A.P.H.A. units)	
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