Queensland Government
Department of Main Roads

ENGINEERING BOREHOLE LOG

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/5-2009

BOREHOLE No BH029
SHEET 1 of 2
REFERENCE No H10598

PROJECT BRUCE HIGHWAY (COOROY - CURRA) SECTION A GEOTECHNICAL INVESTIGATION
LOCATION Cut 11 COORDINATES 485658.7 E; 7080945.2 N
PROJECT No FG5825 SURFACE R.L. 166.50m PLUNGE DATE STARTED 12/8/09 GRID DATUM MGA94
JOB No 128/10A/901 HEIGHT DATUM AHD BEARING DATE COMPLETED 12/8/09 DRILLER R & D Drilling

DEPTH (m)	R.L. (m)	AUGER / WASH BORING / CORE DRILLING	RQD ( )% CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC	WEATHERING	INTACT STRENGTH (EH VH H M L VL EL)	DEFECT SPACING (mm) (20 60 200 600 2000)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES	TESTS
0	166.50				**Clayey SILT (Residual)** Pale grey with mottled red ironstaining, moist, very stiff.									
				A	Rock fabric visible in parts; hard iron cemented bands throughout.							6,10,12 N=22		SPT
1	165.00			B	**SILTSTONE (XW - HW):** Generally exhibits the engineering properties of pale grey to mottled red, moist, hard clayey Silt.		XW-HW					9,19,27 N=46		SPT
2	164.40		(49)		Rock fabric visible throughout.							Is(50) = 0.12MPa		x
												Is(50) = 0.12MPa		o
			100 (79)		**SANDSTONE (MW):** Pale grey to light orange, fine to medium grained, indistinct bedding. Defects generally medium to wide spacing. Prominent defect sets dip at 10°. Defect surfaces are typically iron stained.		MW							
3														
			100 (77)		Becoming medium to coarse grained in parts; occasional fine grained gravel interbeds.							Is(50) = 0.21MPa		x
4	162.34											Is(50) = 0.18MPa		o
					SANDSTONE (HW): Pale grey, fine grained, poorly cemented.							Core loss		
5														
			61 (56)		**Detailed defect descriptions are shown on Form GEOT553/8 attached.**		HW					Is(50) = 0.17MPa		o
												Is(50) = 0.19MPa		x
6														
	159.95		67									Core loss		
			(100)		**SILTSTONE (HW):** Pale grey, fine grained. Defects generally medium to wide spacing.		HW					Is(50) = 0.24MPa		x
7	159.30		100 (51)		Prominent defect sets dip at 10°. Defect surfaces are typically iron stained.		MW					Is(50) = 0.22MPa		o
					SANDSTONE (MW): Pale to dark grey, fine to coarse grained, well graded, thinly bedded.							Is(50) = 0.05MPa		x
8	158.40											Is(50) = 0.07MPa		o
					Carbonaceous lenses and bands throughout.		MW					Is(50) = 0.18MPa		x
	157.57		100 (77)		**SILTSTONE (MW):** Pale grey, fine grained. Defects generally medium to wide spacing. Prominent defect sets dip at 10°.							Is(50) = 0.16MPa		o
9							MW							
					Defect surfaces are typically iron stained.							Is(50) = 0.31MPa		x
10	156.50		100									Is(50) = 0.31MPa		o

REMARKS **Detailed defect descriptions are shown on Form GEOT533/8 attached.** RAAX images taken of borehole.

LOGGED BY JA

QLD_DMR_LIB_01.GLB Log A_ENGINEERING BOREHOLE LOG W LITHOLOGY FG5825 BRUCE HWY COOROY-CURRA SECTION A BHS.GPJ DWG950012.GDW Datgel CPT Tool gINt Add-in 12/05/2010 10:30

Queensland Government
Department of Main Roads

ENGINEERING BOREHOLE LOG

FOR GEOTECHNICAL TERMS AND SYMBOLS REFER FORM F:GEOT 017/5-2009

BOREHOLE No BH029
SHEET 2 of 2
REFERENCE No H10598

PROJECT BRUCE HIGHWAY (COOROY - CURRA) SECTION A GEOTECHNICAL INVESTIGATION

LOCATION Cut 11 COORDINATES 485658.7 E; 7080945.2 N

PROJECT No FG5825 SURFACE R.L. 166.50m PLUNGE ____ DATE STARTED 12/8/09 GRID DATUM MGA94

JOB No 128/10A/901 HEIGHT DATUM AHD BEARING ____ DATE COMPLETED 12/8/09 DRILLER R & D Drilling

DEPTH (m)	R.L. (m)	AUGER / WASH BORING / CORE DRILLING	RQD ( )% CORE REC %	SAMPLE	MATERIAL DESCRIPTION	LITHOLOGY	USC	WEATHERING	INTACT STRENGTH (EH VH H M L VL EL)	DEFECT SPACING (mm) (20 60 200 600 2000)	GRAPHIC LOG	ADDITIONAL DATA AND TEST RESULTS	SAMPLES / TESTS
10	156.50				**SANDSTONE (MW):** Pale to dark grey, fine to coarse grained, well graded, thinly bedded. Carbonaceous lenses and bands throughout.								
11					Borehole terminated at 10m								
12													
13													
14													
15													
16													
17													
18													
19													
20													

REMARKS **Detailed defect descriptions are shown on Form GEOT533/8 attached.** RAAX images taken of borehole.

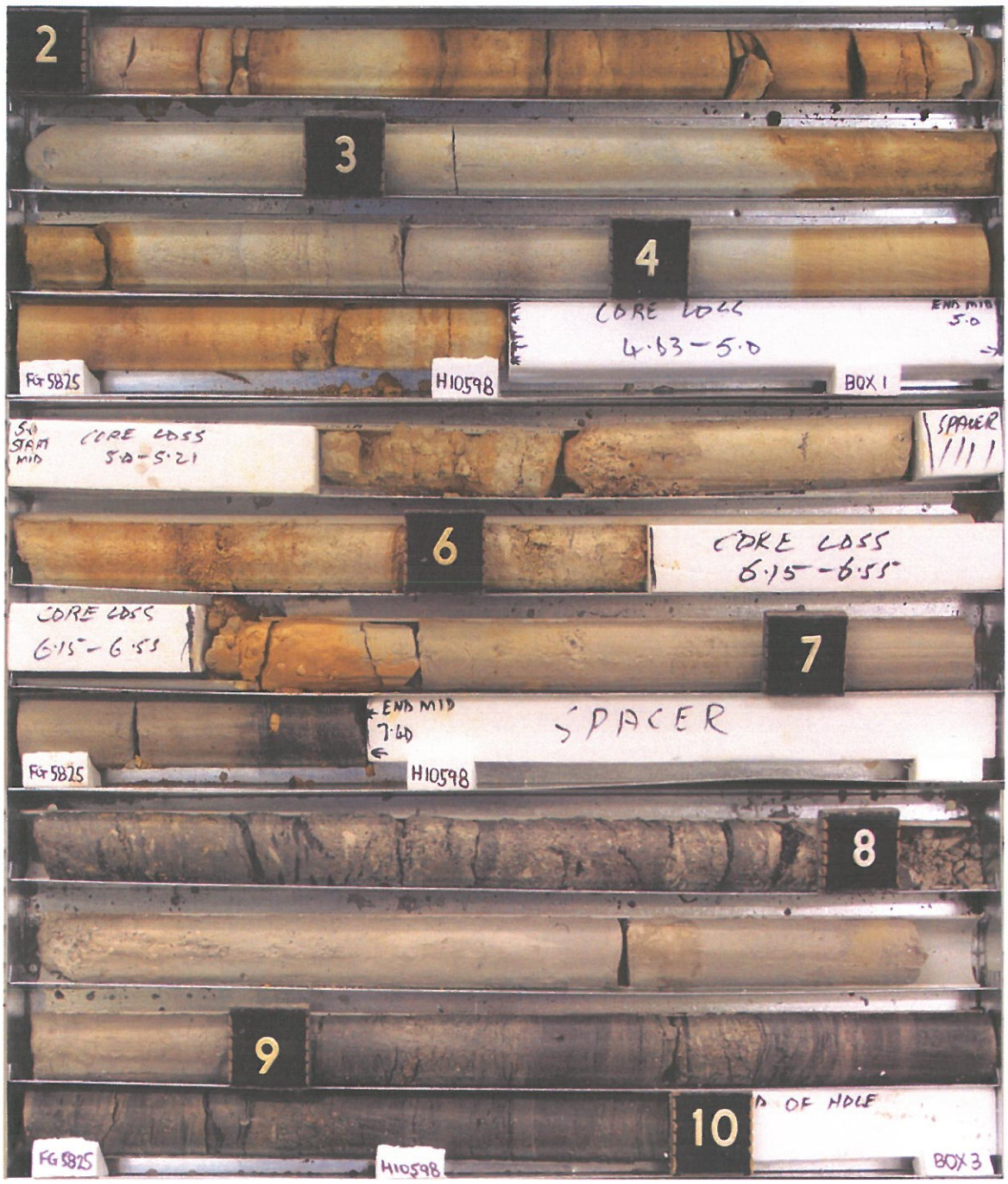
LOGGED BY JA

QLD_DMR_LIB_01.GLB Log A_ENGINEERING BOREHOLE LOG W LITHOLOGY FG5825 BRUCE HWY COOROY-CURRA SECTION A BHS.GPJ DWG95012.GDW Datgel CPT Tool gINt Add-In 12/05/2010 10:30

Project: **Bruce Highway Upgrade (Cooroy – Curra) Section A**

Borehole No: **BH29**

Start Depth: 2.00m
Finish Depth: 10.00m
Project No: FG5825
H No: 10598



0 100 200 300 400 500 600mm

SCALE 1:5

F:GEOT043/1

GEOTECHNICAL BRANCH LABORATORY
Materials Services - Brisbane
35 Butterfield Street, HERSTON Q 4006
Phone: (07) 3115 3035 Fax: (07) 3115 3011

Queensland Government
Department of Main Roads

DEFECT DESCRIPTIONS OF ENGINEERING BORELOGS

[CHARACTERISATION OF DEFECTS ARE IN ACCORDANCE WITH ISRM SUGGESTED METHODS (1981)]

BOREHOLE NO.:	BH29
SHEET:	1 of 2
REFERENCE NO.:	H10598

PROJECT: Bruce Highway (Cooroy – Curra) Section A Geotechnical Investigation

LOCATION: Cut 11

PROJECT NO.:	FG5825	**SURFACE R.L.:**	169.50	**DRILLER:**	R & D Drilling
JOB NO.:	128/10A/901	**DATUM:**	MGA94	**DATE DRILLED:**	12/08/09

DEPTH	DEFECT TYPE	DIP°	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
2.09	J	10°	Pl	S	T		Cn
2.14	J	10°	Pl	S	O	FeSt	
2.17	J	10°	Pl	S	O	FeSt	
2.18	J	10°	Pl	S	O	FeSt	
2.33	J	10°	Pl		C	FeSt	
2.41	J	10°	Pl	S	O	FeSt	
2.55	J	10°	Pl	S	O	FeSt	
2.57	J	20°	Pl	S	O	FeSt	
2.64	J	10°	Pl	SR	O	FeSt	
2.7	J	10°	Pl	S	O	FeSt	
3.08	J	10°	Pl	S	O		Cn
3.56	J	20°	Pl	S	O	FeSt	
3.97	J	10°	Pl	S	O	FeSt	
4.50	J	10°	Pl	S	O	FeSt	
4.59	J	10°	Pl	S	O	FeSt	
4.63	J	10°	Pl	R	O	FeSt	
5.84	J	10°	Pl	SR	O		Cn
6.07	J	10°	Pl	SR	O		Cn

Abbreviations

ROUGHNESS		WALL ALTERATIONS		TYPE		OTHER	
R	Rough	FeSt	Iron Stained	J	Joint	P	Partly
S	Smooth	W	Weathered	B	Bedding	QZ	Quartz Vein
SL	Slickensided			BP	Bedding Parting	Co	Coal Seam
				FP	Foliation Parting	In	Incipient
PLANARITY		**APERTURE**		SZ	Sheared Zone	Sl	Sand Infill
Pl	Planar	C	Closed	WS	Weathered Seam	H	Horizontal
St	Stepped	O	Open	CZ	Crushed Zone	V	Vertical
Un	Undulating	F	Filled	SM	Secondary Mineralisation	Cl	Clay Infill
Cu	Curved	T	Tight	BZ	Broken Zone	Cn	Clean
Ir	Irregular			HFZ	Highly Fractured Zone		
				Fr	Fracture		

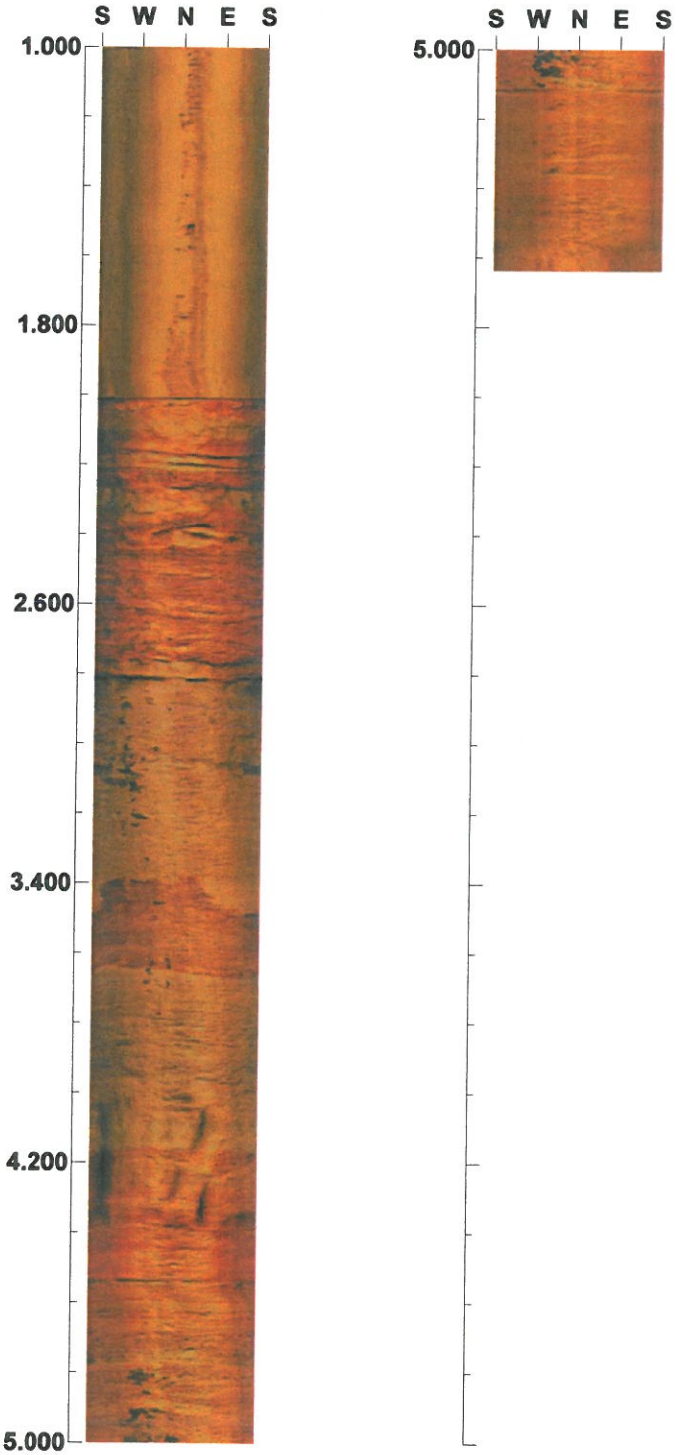
NOTE: This sheet should be read in conjunction with appropriate Engineering Borelog. Defect angles were measured with respect to horizontal plane.

BOREHOLE NO.:	BH29
SHEET:	2 of 2
REFERENCE NO.:	H10598

DEPTH	DEFECT TYPE	DIP°	PLANARITY	ROUGHNESS	APERTURE	WALL ALTERATION	OTHER
7.23	J	10°	Pl	SR	O		Cn
7.33	J	10°	Pl	S	O		Cn
7.46	J	20°	Ir	R	O		Cn
7.68	J	10°	Pl	SR	O		Cn
7.73	J	10°	Ir	R	T		Cl
7.8	J	30°	Ir		C		
7.72	J	10°	Pl	S	O		Cn
9.00	J	10°	Pl	R	O		Cn
9.27	J	20°	Ir	R	O		Cn
9.57	J	20°	Pl	R	T		Cn
9.64	J	10°	Pl	S	O		Cn
9.88	J	10°	Pl		C		Cn

Project name: BRUCE HIGHWAY UPGRADE
Bore hole No.: BH29 **Azimuth: 0** **Inclination: -90**

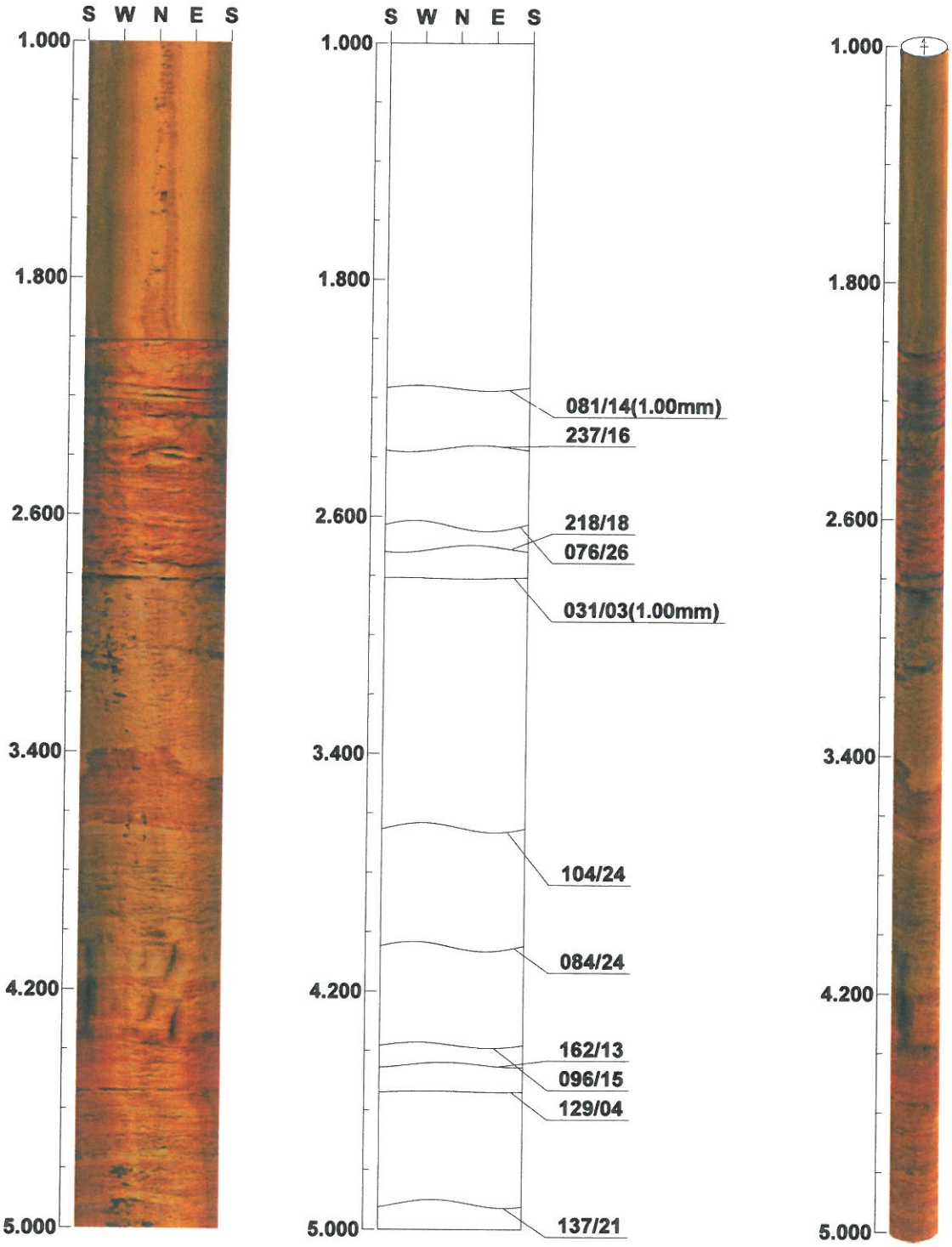
Depth range: 1.000 - 5.635 m



Scale: 1/20 **Aspect ratio: 200 %**

Project name: BRUCE HIGHWAY UPGRADE
Bore hole No.: BH29 **Azimuth: 0** **Inclination: -90**

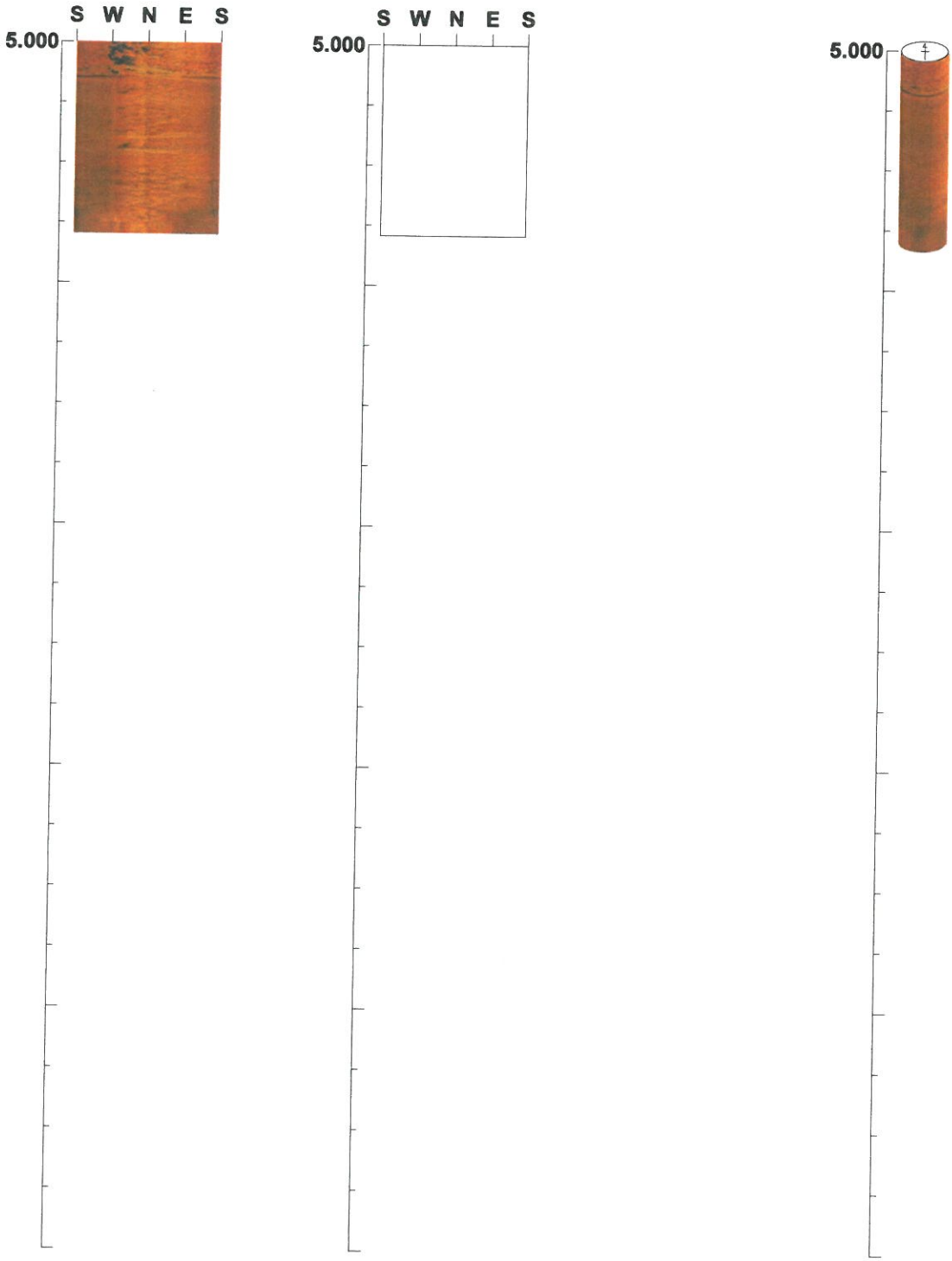
Depth range: 1.000 - 5.000 m



Scale: 1/20 **Aspect ratio: 200 %**

Project name: BRUCE HIGHWAY UPGRADE
Bore hole No.: BH29 **Azimuth: 0** **Inclination: -90**

Depth range: 5.000 - 5.635 m



Scale: 1/20 **Aspect ratio: 200 %**

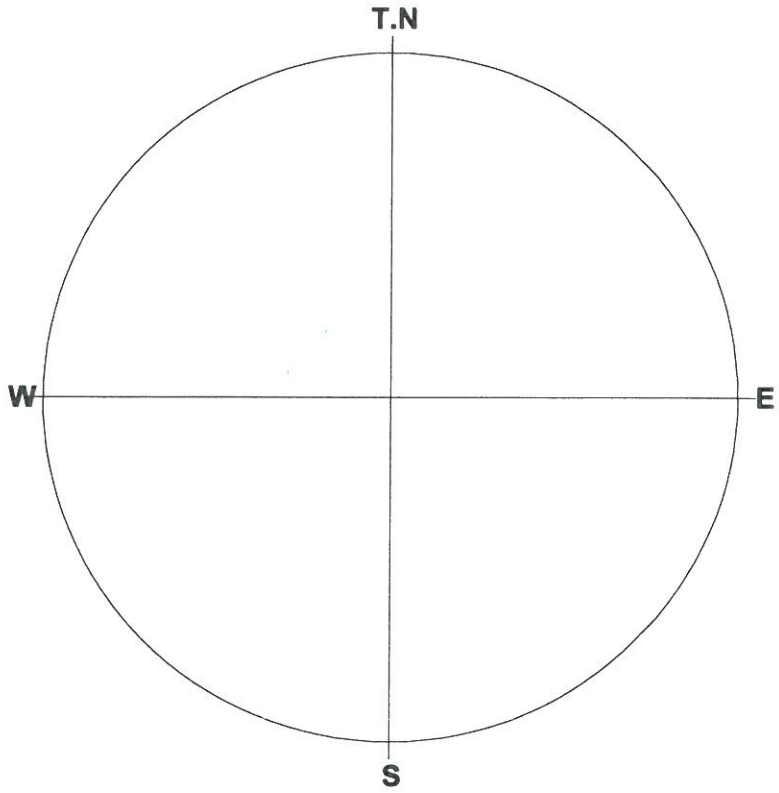
Tab. Table of Discontinuity (1 / 1)

File name: BH29.STR
[ ]

No.	Depth (m)	Dir/Dip	Sort	Aperture (mm)	Form	Condition	Remark
1	2.167	081/14	Parting	1.0	Planar	Weathered	Open
2	2.371	237/16	Joint	0.5	Planar	Weathered	Open
3	2.632	076/26	Parting	1.0	Planar	Weathered	Open
4	2.709	218/18	Joint	1.0	Planar	Weathered	Open
5	2.808	031/03	Joint	1.0	Planar	Weathered	Open
6	3.649	104/24	Bed/foliat	0.0	Planar	Rough	Tight
7	4.049	084/24	Parting	0.5	Planar	Weathered	Open
8	4.381	096/15	Parting	0.5	Planar	Weathered	Open
9	4.447	162/13	Parting	0.3	Planar	Weathered	Open
10	4.537	129/04	Joint	1.0	Planar	Weathered	Open/loose
11	4.914	137/21	Bed/foliat	0.0	Planar	Smooth	Tight

BH29.STR

<<BEDDING/FOLIATION>>



Number of Data : 2/11

<Legend>

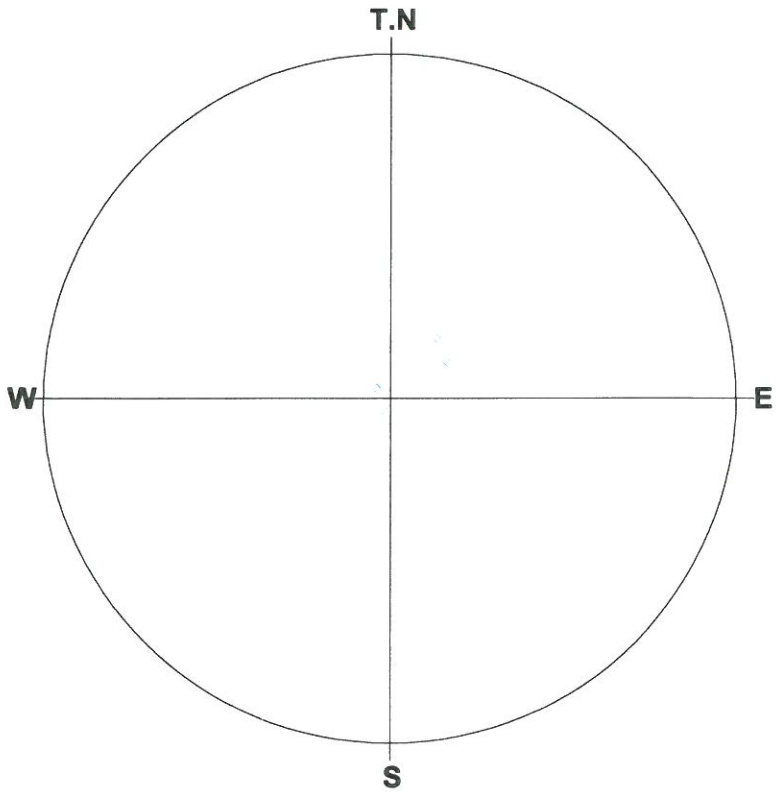
:Bed/foliat	--	2	:Boundary	--	0
:Joint	--	0			
:Parting	--	0			
:ShearZn	--	0			
:Fault	--	0			
:Vein	--	0			

Schmidt (L.H)

Depth : 2.167 - 4.914 m

BH29.STR

<<JOINT>>



Number of Data : 4/11

<Legend>

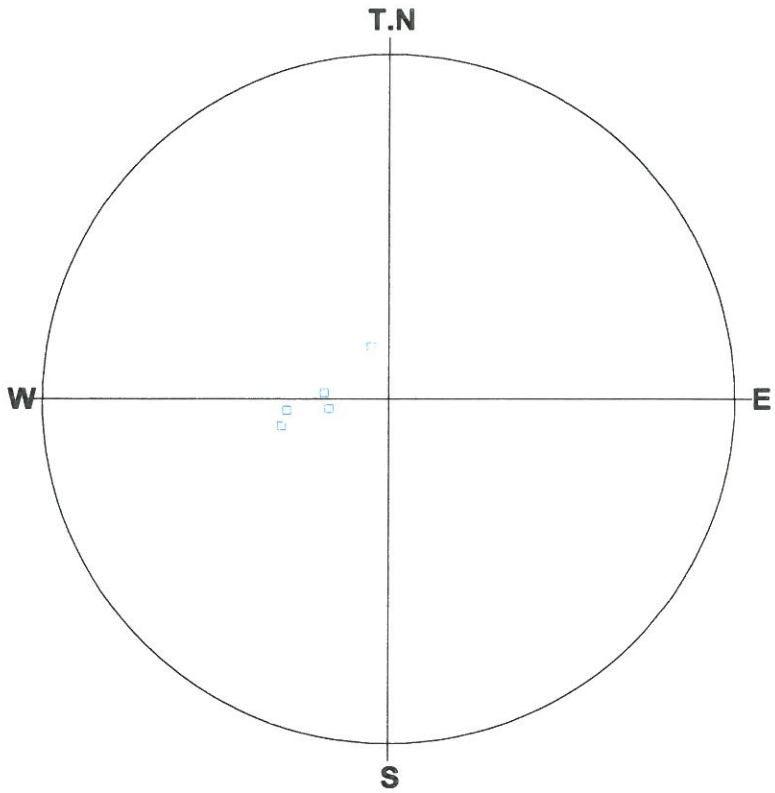
	:Bed/foliat	-- 0		:Boundary	-- 0
◇	:Joint	-- 4			
□	:Parting	-- 0			
△	:ShearZn	-- 0			
▽	:Fault	-- 0			
×	:Vein	-- 0			

Schmidt (L.H)

Depth : 2.167 - 4.914 m

BH29.STR

<<PARTING>>



Number of Data : 5/11

<Legend>

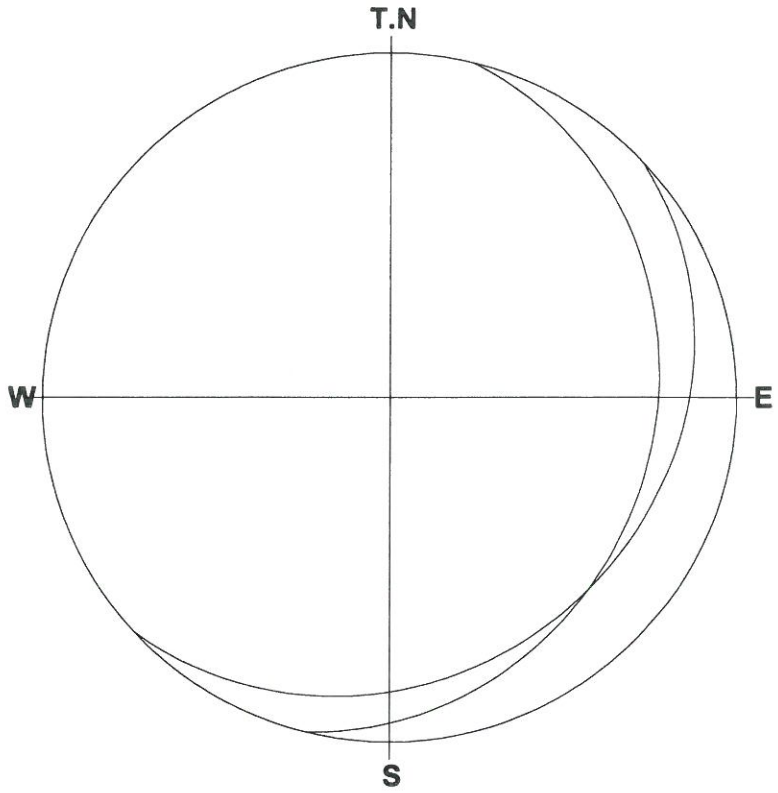
:Bed/foliat	-- 0	:Boundary	-- 0
:Joint	-- 0		
:Parting	-- 5		
:ShearZn	-- 0		
:Fault	-- 0		
:Vein	-- 0		

Schmidt (L.H)

Depth : 2.167 - 4.914 m

BH29.STR

<<BEDDING/FOLIATION>>



Number of Data:2/11

1 : 104/24(6)

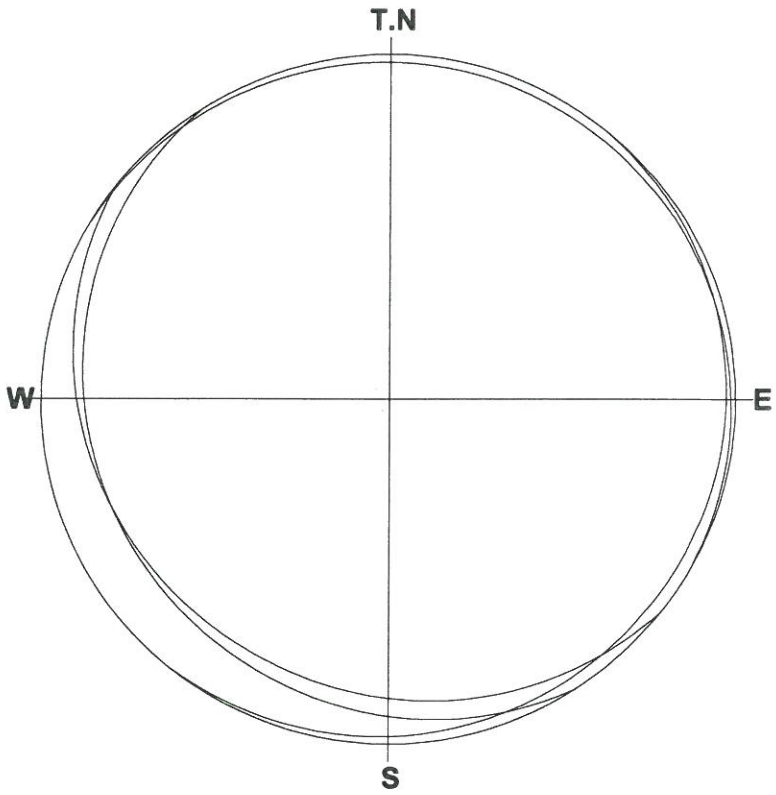
2 : 137/21(11)

Schmidt (L.H)

Depth : 2.167 - 4.914 m

BH29.STR

<<JOINT>>



Number of Data:4/11

1 : 237/16(2)

2 : 218/18(4)

3 : 031/03(5)

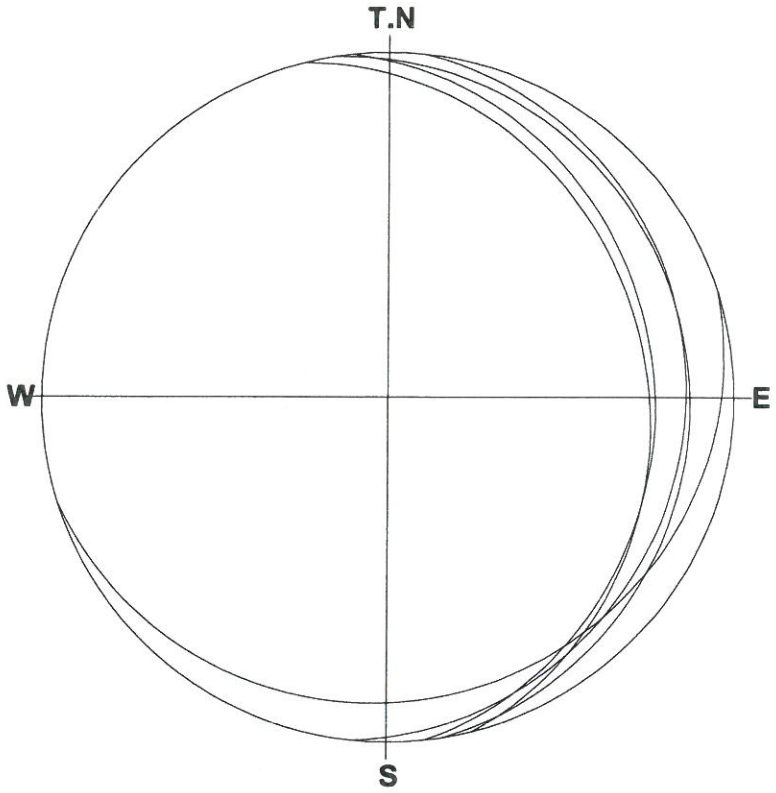
4 : 129/04(10)

Schmidt (L.H)

Depth : 2.167 - 4.914 m

BH29.STR

<<PARTING>>



Number of Data:5/11

1 : 081/14(1)

2 : 076/26(3)

3 : 084/24(7)

4 : 096/15(8)

5 : 162/13(9)

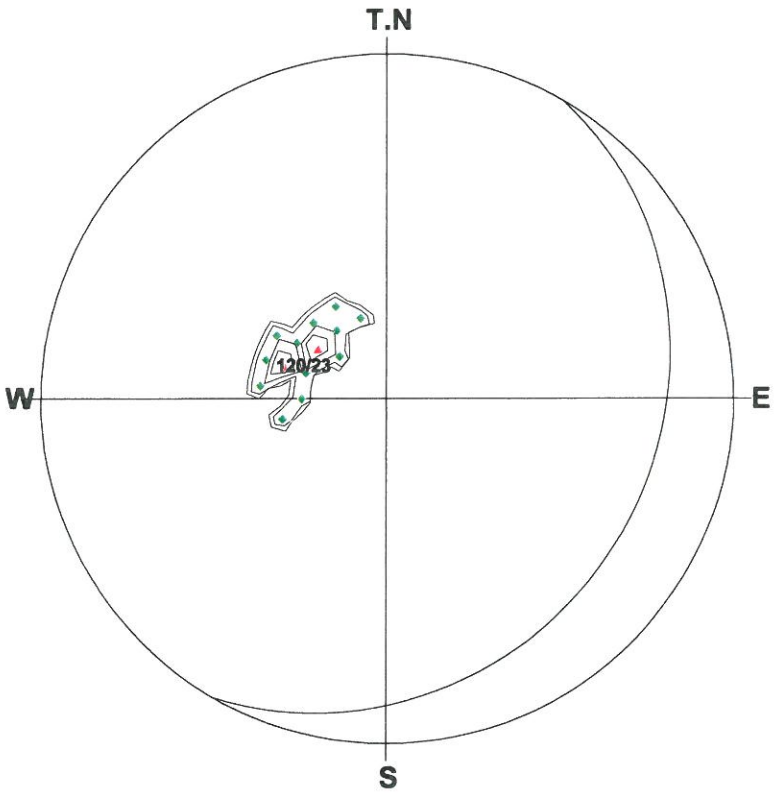
Schmidt (L.H)

Depth : 2.167 - 4.914 m

BH29.STR

<<BEDDING/FOLIATION>>

******** % Diagram ********



Number of Data : 2

<Legend> Sym. (%)	Contour Value (%)
▲ : 100	Contour 1 : 0 ☐
▼ : 80 - 100	Contour 2 : 20 ☐
■ : 60 - 80	Contour 3 : 40 ☐
◆ : 40 - 60	Contour 4 : 60 ☐
● : 20 - 40	Contour 5 : 80 ☐
: 0 - 20	Contour 6 : 100 ☐

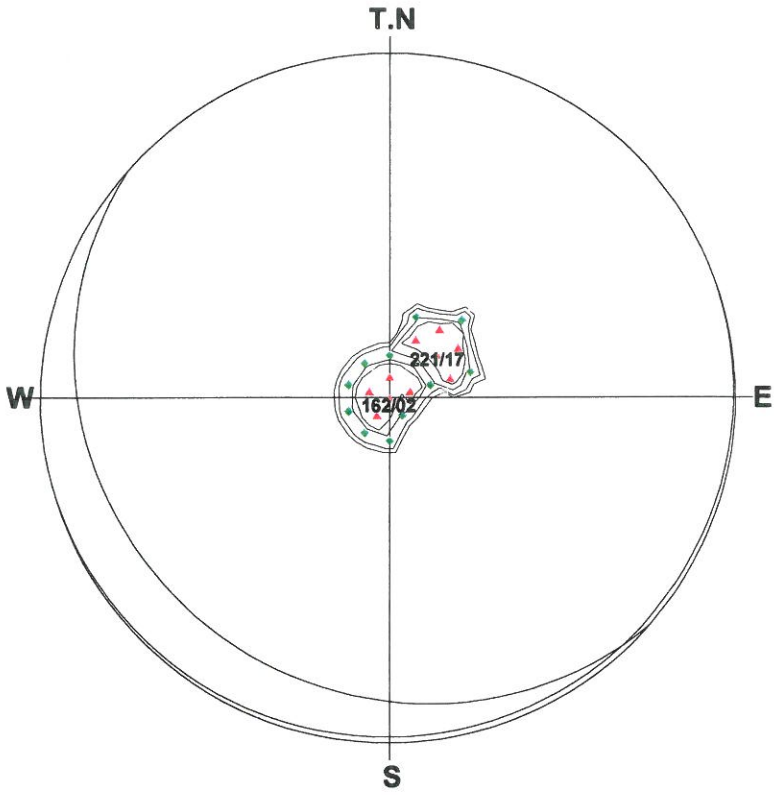
Schmidt (L.H)

Depth : 2.167 - 4.914 m

BH29.STR

<<JOINT>>

******** % Diagram ********



Number of Data : 4

<Legend> Sym. (%)	Contour Value (%)
▲ : 50	Contour 1 : 0 ☐
▼ : 40 - 50	Contour 2 : 10 ☐
■ : 30 - 40	Contour 3 : 20 ☐
◆ : 20 - 30	Contour 4 : 30 ☐
● : 10 - 20	Contour 5 : 40 ☐
: 0 - 10	Contour 6 : 50 ☐

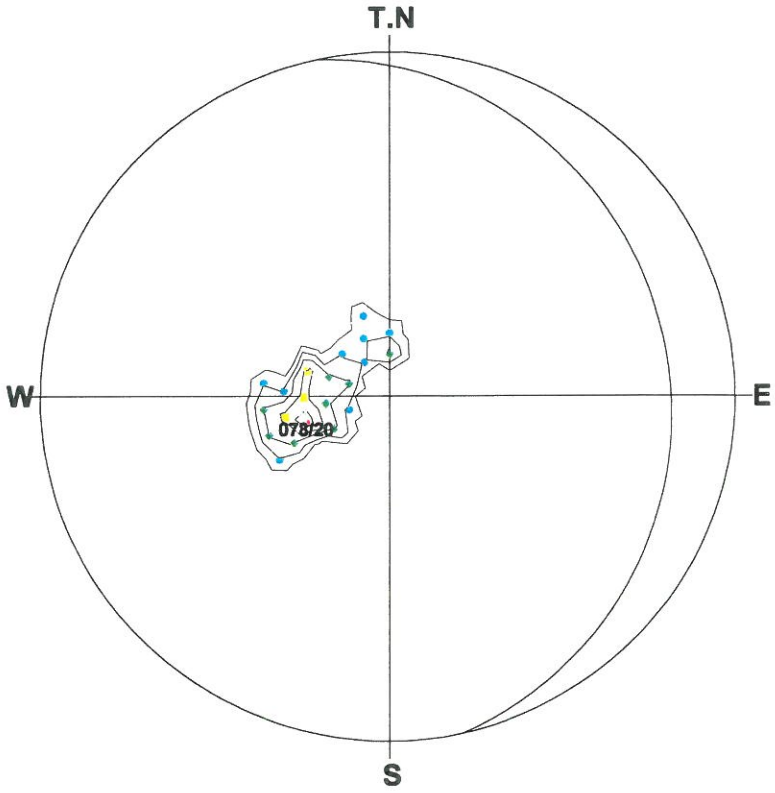
Schmidt (L.H)

Depth : 2.167 - 4.914 m

BH29.STR

<<PARTING>>

******** % Diagram ********



Number of Data : 5

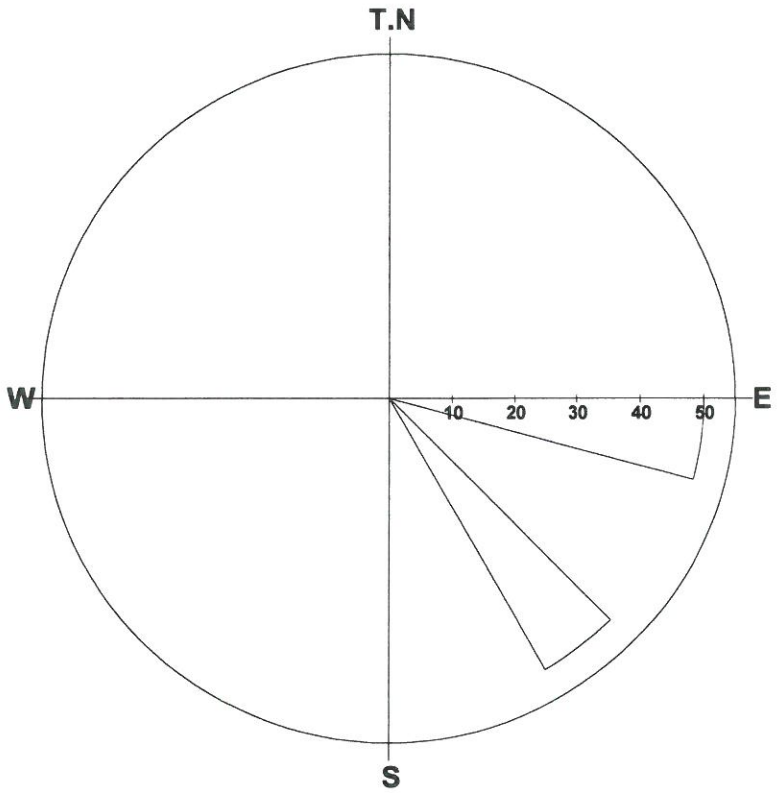
<Legend> Sym. (%)	Contour Value (%)
▲ : 80	Contour 1 : 0 ☐
▼ : 64 - 80	Contour 2 : 16 ☐
■ : 48 - 64	Contour 3 : 32 ☐
◆ : 32 - 48	Contour 4 : 48 ☐
● : 16 - 32	Contour 5 : 64 ☐
: 0 - 16	Contour 6 : 80 ☐

Schmidt (L.H)

Depth : 2.167 - 4.914 m

BH29.STR

<<BEDDING/FOLIATION>>



Number of Data : 2/11

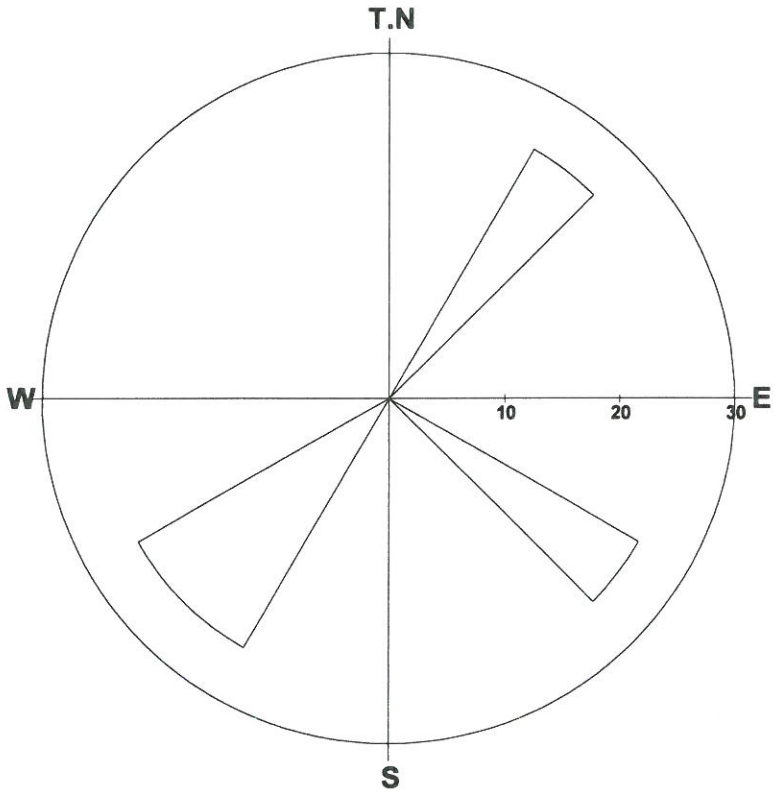
Max : 50.0% **Grouping Angle : 15 deg**

Dir	%	Dir	%	Dir	%
0-	0	135-	50	270-	0
15-	0	150-	0	285-	0
30-	0	165-	0	300-	0
45-	0	180-	0	315-	0
60-	0	195-	0	330-	0
75-	0	210-	0	345-	0
90-	50	225-	0		
105-	0	240-	0		
120-	0	255-	0		

Depth : 2.167 - 4.914 m

BH29.STR

<<JOINT>>



Number of Data : 4/11

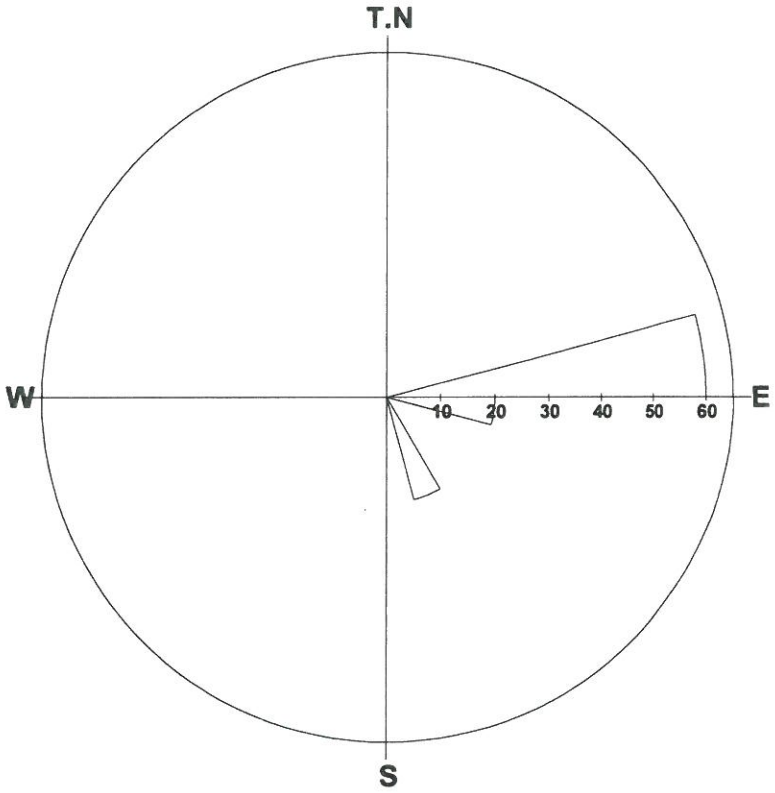
Max : 25.0% **Grouping Angle : 15 deg**

Dir	%	Dir	%	Dir	%
0-	0	135-	0	270-	0
15-	0	150-	0	285-	0
30-	25	165-	0	300-	0
45-	0	180-	0	315-	0
60-	0	195-	0	330-	0
75-	0	210-	25	345-	0
90-	0	225-	25		
105-	0	240-	0		
120-	25	255-	0		

Depth : 2.167 - 4.914 m

BH29.STR

<<PARTING>>



Number of Data : 5/11

Max : 60.0% **Grouping Angle : 15 deg**

Dir	%	Dir	%	Dir	%
0-	0	135-	0	270-	0
15-	0	150-	20	285-	0
30-	0	165-	0	300-	0
45-	0	180-	0	315-	0
60-	0	195-	0	330-	0
75-	60	210-	0	345-	0
90-	20	225-	0		
105-	0	240-	0		
120-	0	255-	0		

Depth : 2.167 - 4.914 m

Title: BH29.STR
Comment: JOINT
Depth: 2.167 - 4.914 m
Aperture: 0.0 - 1.0 mm

Sort: 1/ 7
Form: 8/ 8
Condition: 11/11
Remark: 11/11

2009/ 9/ 2

Elevation: 0.000m
Water Level: 5.120m

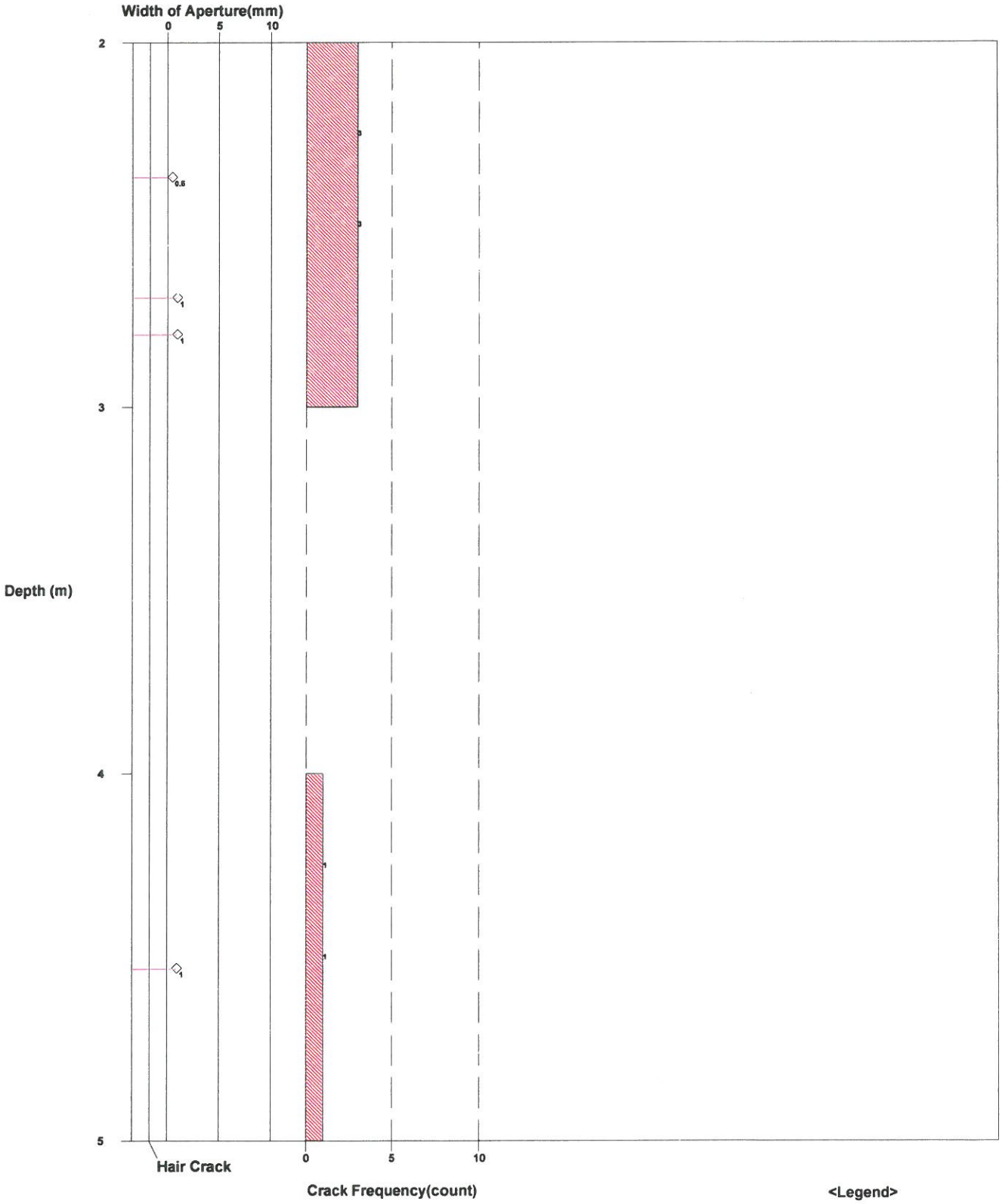


Fig. Rock Mass Condition Graph

Title: BH29.STR
Comment: PARTING
Depth: 2.167 - 4.914 m
Aperture: 0.0 - 1.0 mm

Sort: 1/ 7
Form: 8/ 8
Condition: 11/11
Remark: 11/11

2009/ 9/ 2

Elevation: 0.000m
Water Level: 5.120m

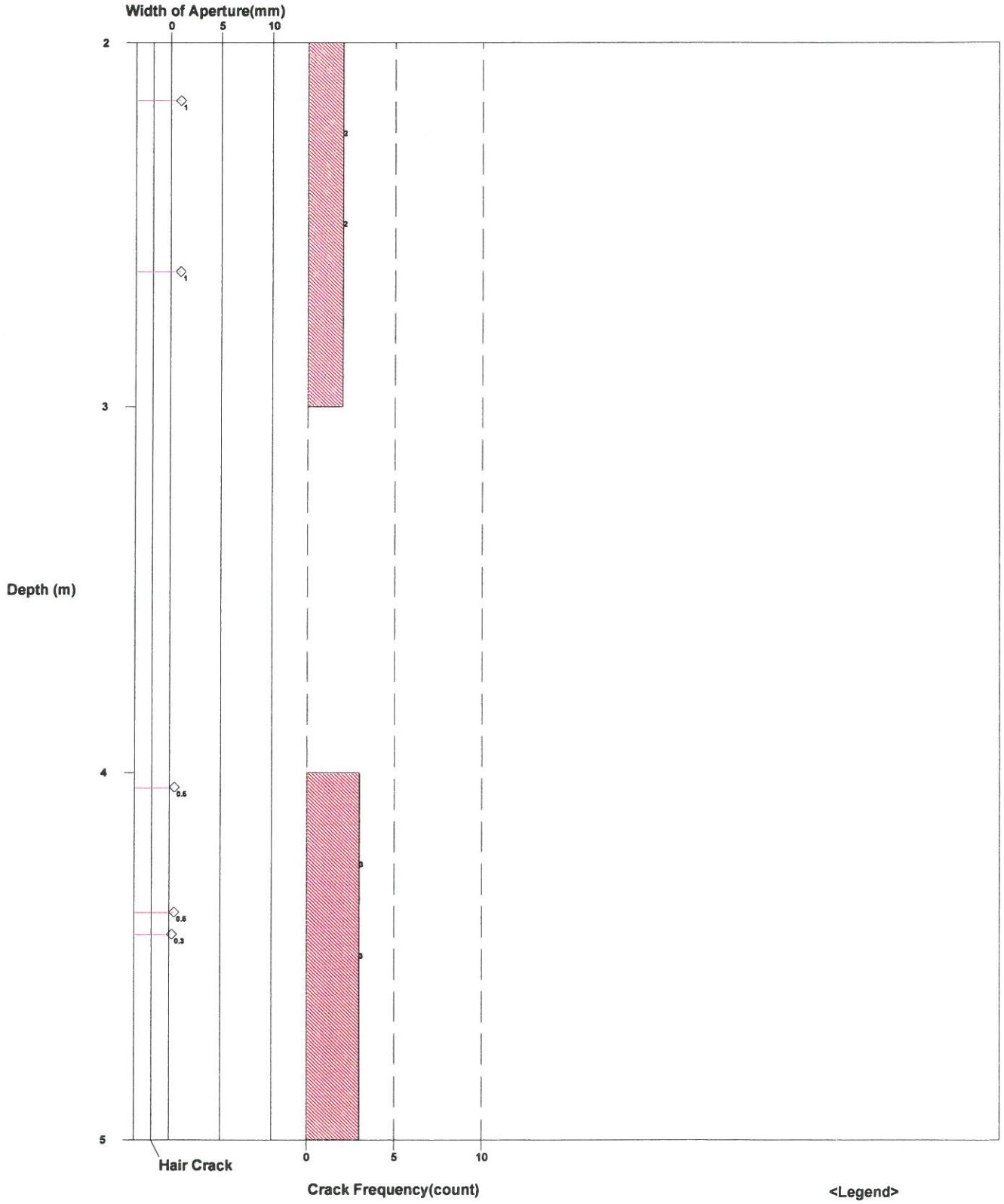
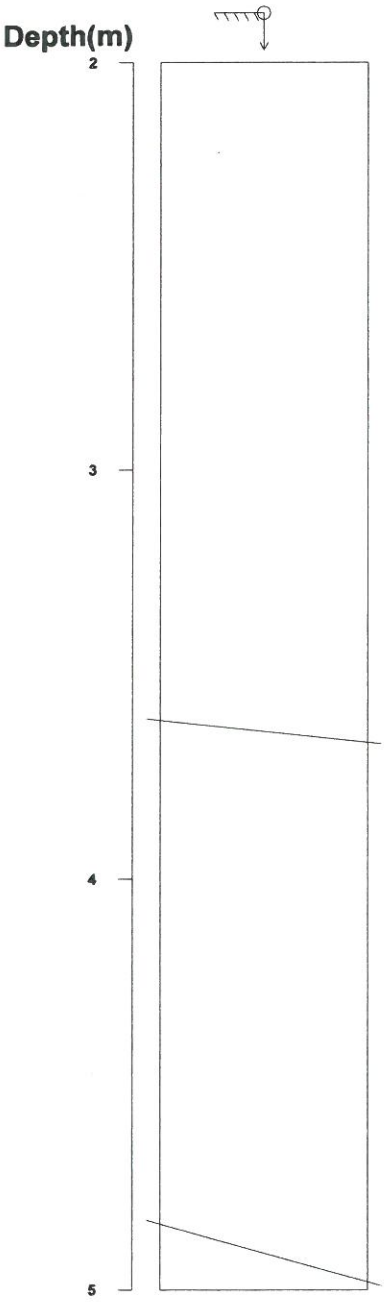


Fig. Rock Mass Condition Graph

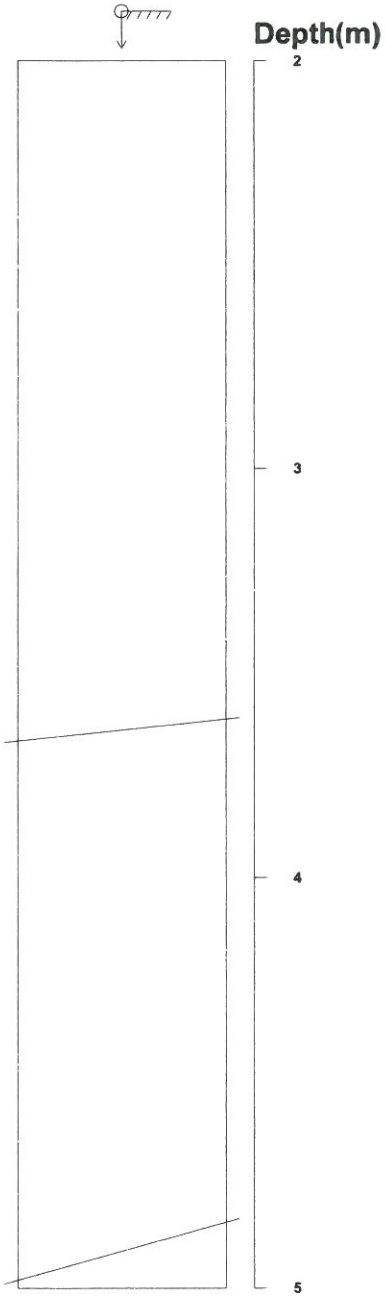
Title: BH29.STR
Comment: BEDDING/FOLIATION
Depth: 2.167 - 4.914 m
Aperture: 0.0 - 1.0 mm

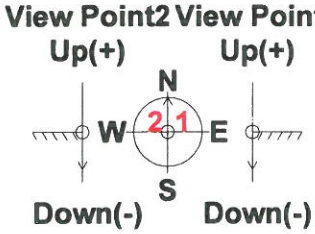
Sort: 1/ 7
Form: 8/ 8
Condition: 11/11
Remark: 11/11

View Point 2
Profile of Apparent Borehole



View Point 1
Profile of Apparent Borehole





Direction: 0 deg
Inclination: Vertical(Down)

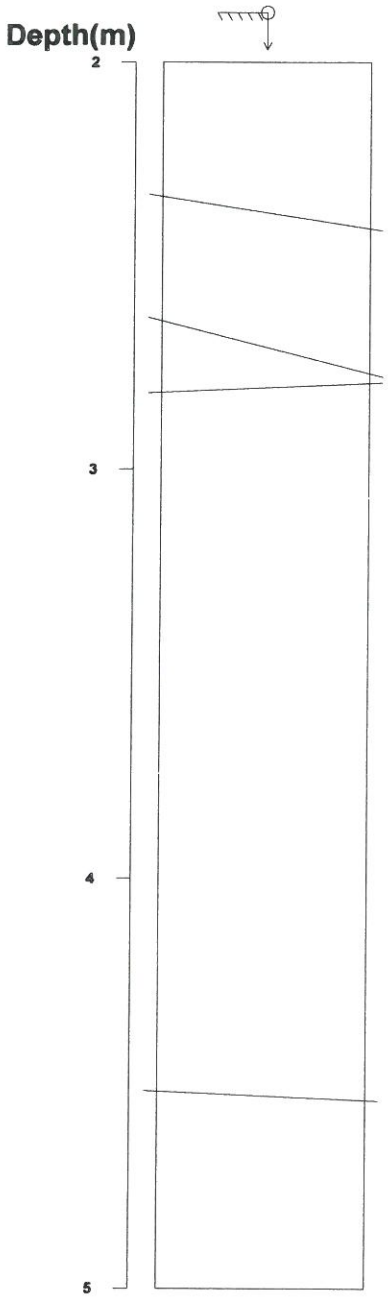
<Legend>
Entrance G.L
Bottom

Fig. Apparent Dip

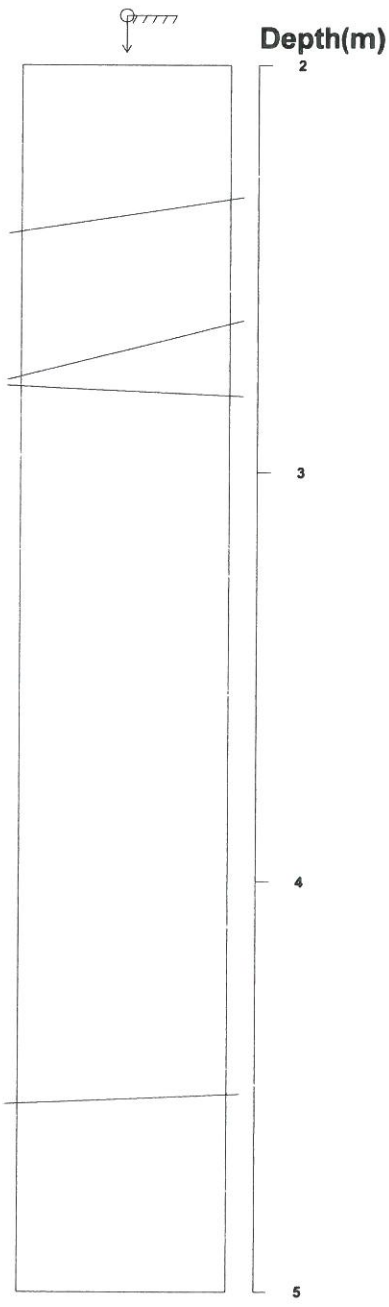
Title: BH29.STR
Comment: JOINT
Depth: 2.167 - 4.914 m
Aperture: 0.0 - 1.0 mm

Sort: 1/ 7
Form: 8/ 8
Condition: 11/11
Remark: 11/11

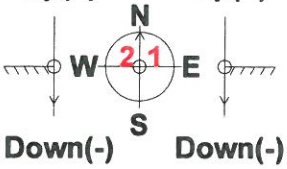
View Point 2
Profile of Apparent Borehole



View Point 1
Profile of Apparent Borehole



View Point2 View Point1
Up(+) Up(+)



Down(-) Down(-)

Direction: 0 deg
Inclination: Vertical(Down)

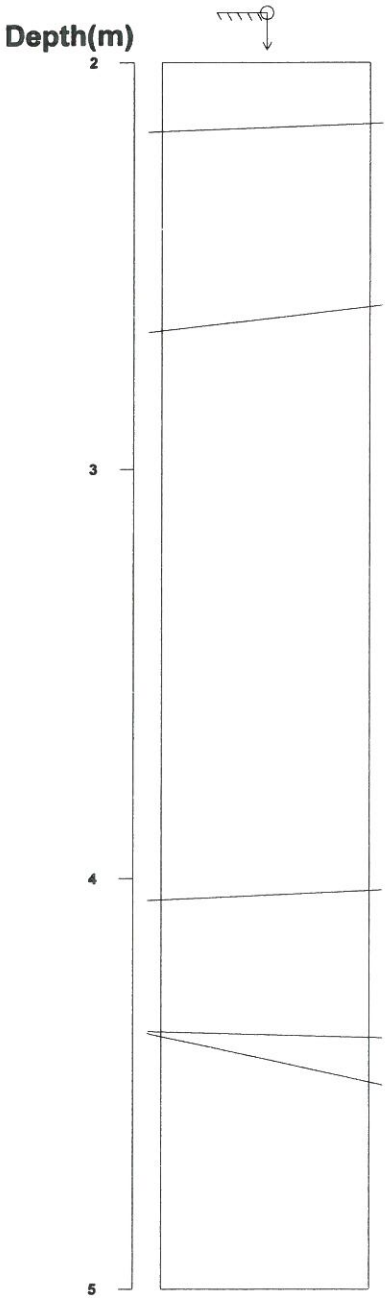
<Legend>
Entrance G.L
Bottom

Fig. Apparent Dip

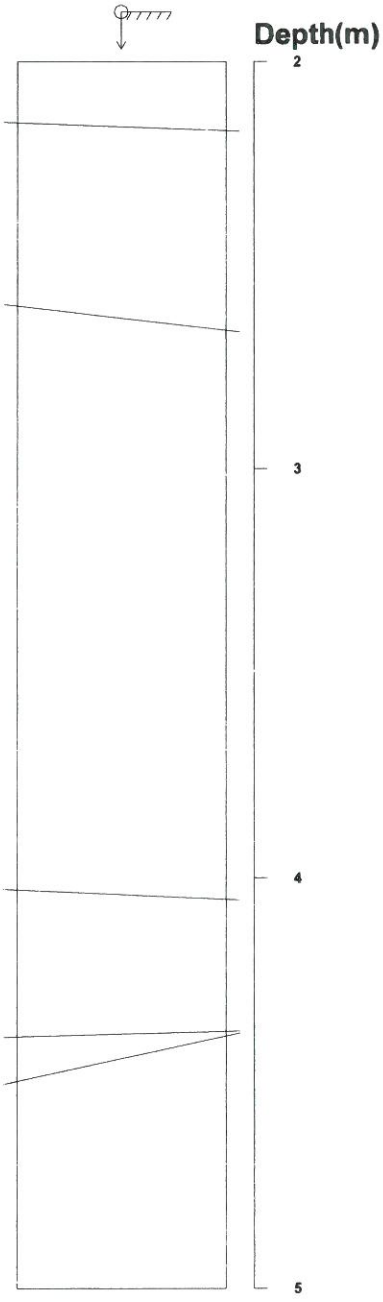
Title: BH29.STR
Comment: PARTING
Depth: 2.167 - 4.914 m
Aperture: 0.0 - 1.0 mm

Sort: 1/ 7
Form: 8/ 8
Condition: 11/11
Remark: 11/11

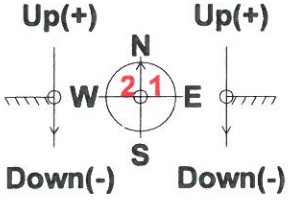
View Point 2
Profile of Apparent Borehole



View Point 1
Profile of Apparent Borehole



View Point2 View Point1



Direction: 0 deg
Inclination: Vertical(Down)

<Legend>
Entrance G.L
Bottom

Fig. Apparent Dip