

## **COPYRIGHT NOTICE**

This geotechnical log and its associated data (the Document) is licensed by the Cross River Rail Delivery Authority under the [Creative Commons Attribution 4.0 Licence](#) (CC BY 4.0). When reusing the Document, in whole or in part, please attribute as follows: "(c) *Cross River Rail Delivery Authority 2023, licensed under the CC BY 4.0 Licence, prepared by Soil Surveys*". This licence does not apply to logos or trademarks.

## **LIMITATION OF LIABILITY**

The CC BY 4.0 Licence contains a comprehensive Disclaimer of Warranties and Limitation of Liability. In addition, please note that this Document was prepared for the Cross River Rail Delivery Authority use only. Reuse of the Document by anyone for any other purpose could result in error and/or loss. You should obtain professional advice before making decisions based on the contents of the Document.

When reproducing any part of this Document, you must also reproduce this limitation of liability notice in addition to the italicised attribution statement above.

Retrieved from the Queensland Geotechnical Database <http://qgd.org.au/>



Easting: 502640    Northing: 6958083    RL: 24.11 m  
Logger: JI/CB    Operator: PD    Machine: MC450

Drilling Method		Depth	Graphic	Description	Weathering	Strength Estimated	Defect Spacing	Rec (%)	RQD	Samples and Remarks
TC	WB									
		0.10		CONCRETE						
		0.30		FILL Gravelly SAND (SP) Medium dense, fine to coarse grained, grey brown, fine to medium size gravel, moist.						
		0.60		FILL Gravelly CLAY (CI) Very stiff, medium plasticity, light grey and brown, fine to medium size gravel, moist.						
		1.0		NATURAL SILTSTONE and SANDSTONE (XW) Very weak, light grey and yellow brown.						
		1.90		Interbedded SILTSTONE (XW) and Silty CLAY (CI), Hard, medium plasticity, light grey and mottled orange and red.						SPT 30/140mm N=R
		2.0								
		3.0								
		4.0								
		5.0								SPT 15, 26, 30/140mm N=R
		6.0								
		7.0								
		7.20								
		7.56		SILTSTONE (XW-DW) Weak, grey and light brown	DW					SPT 25, 30/100mm N=R
		7.93		SILTSTONE, fine grained, light grey, cryptocrystalline, closely spaced fractures, fractures are orange stained.	SW					
		8.0		SANDSTONE, fine to medium grained, light grey mottled orange, granular, massive with medium to coarse gravel sized angular siltstone inclusions. Inclusions are sub-angular to sub-rounded from 8.47m and comprise quartz, siltstone, quartzite and mudstone. Trace limonite staining.	DW			100	27	7.67 m; V, 5°, C, L 7.70 m; 12°, P, S, O, Z 7.88 m; J, 15°, S, S, O, L
		9.0								
		9.50						100	67	
		10.0			SW			100	0	

Comments:  
1) Groundwater not observed. 2) ATV survey carried out. 3) Monitoring well installed to 25m on completion.

**Defects - 1.54m : F,60°,P,R,O,C**

Depth (m)	Type	Dip (Deg)	Planarity	Roughness	Aperture	Fill
	B - Bedding		C - Curvilinear	L - Slickensides	C - Closed	C - Clay
	C - Clay seam		D - Discontinuous	P - Polished	F - Filled	P - Iron Oxide
	F - Fault		P - Planar	R - Rough	N - Clean	K - Calcite
	H - Schistosity		S - Subplanar	S - Smooth	O - Open	L - Limonite
	J - Joint		T - Stepped	V - Very rough	S - Stain	Q - Quartz
	L - Cleavage		U - Undulating			S - Secondary mineral
	R - Fracture					U - Undersized mineral
	S - Shear zone					W - Weathered rock
	T - Contact					X - Carbonaceous
	V - Vein					Z - Clean
	Z - Decomposed Zone					
	DI - Drilling induced break					

**Weathering Grades**

RS - Residual Soil  
XW - Extremely weathered  
DW - Distinctly weathered  
SW - Slightly weathered  
FR - Fresh

**Rock Strength**

VW - Very weak  
W - Weak  
MS - Medium strong  
S - Strong  
VS - Very strong  
ES - Extremely strong

**Samples**

U50

SPT

Disturbed Sample

Approved: \_\_\_\_\_  
Date: \_\_\_\_\_

SOIL SURVEYS 00: LIBRARY 2012:05:G.LB Log SOIL SURVEY BOREHOLE LOG 111-12936 NEW.GPJ <DrawingFiles> 21/05/2012 14:34 8.30.002 Developed by Dajgeel



Drilling Method				Depth	Graphic	Description	Weathering	Strength Estimated	Defect Spacing	Rec (%)	RQD	Samples and Remarks
TC	WB	FR	NW/MLC									
				10.10		Interbedded SANDSTONE and MUDSTONE, fine to medium grained, light grey mottled orange, closely spaced fractures, with trace fine to medium size gravel inclusions. (continued)	SW			100	0	
				11.0		Interbedded SANDSTONE and MUDSTONE, fine grained, light grey, thinly bedded, moderately widely spaced fractures.				96	67	
				11.72								
				12.0		SANDSTONE, fine to medium grained, light grey mottled orange, granular, limonite staining, trace of thin mudstone beds, trace of organic laminations, widely spaced fractures.				100	74	
				12.90			DW					
				13.14		SANDSTONE, fine to medium grained, light grey mottled orange, granular, fragmented, with medium to coarse gravel sized sub-angular to sub-rounded siltstone inclusions.	SW					
				13.47			XW - DW			100	40	13.58 m; J, 10°, S, S, O, C
				14.0		MUDSTONE, fine grained, light grey with black organic laminae, closely spaced fractures.						
				14.00		SANDSTONE, medium to coarse grained, light grey mottled orange, granular, fragmented with limonite staining	SW - FR					
				15.0		Interlaminated SILTSTONE and MUDSTONE, fine grained, dark grey, with light grey bands, laminated, with thin laminations of fine grained sandstone from 15.17m, closely spaced fractures.				100	68	
				15.83								
				16.0		Interlaminated SILTSTONE and SANDSTONE, fine grained, dark grey, thinly laminated, with moderately widely spaced fractures, with 10-50mm clay bands at 17.54m, 18.10m and 18.48m.						
				17.0								15.20-18.40 m; DI, 5°, P, S, O, Z
				18.0								
				19.0			FR			100	71	18.80 m; J, 70°, S, S, O, Z
				20.0								

Comments:  
1) Groundwater not observed. 2) ATV survey carried out. 3) Monitoring well installed to 25m on completion.

**Defects - 1.54m : F, 60°, P, R, O, C**

Type	Dip (Deg)	Planarity	Roughness	Aperture	Fill
B - Bedding	C - Curvilinear	L - Slickensides	C - Closed	C - Clay	P - Iron Oxide
D - Discontinuous	P - Polished	F - Filled	N - Clean	K - Calcite	L - Limonite
H - Schistosity	J - Joint	T - Stepped	V - Very rough	S - Stain	S - Secondary mineral
R - Fracture	S - Shear zone	T - Contact	U - Undulating	U - Undifferentiated mineral	W - Weathered rock
V - Vein	Z - Decomposed Zone	DI - Drilling induced break			

**Weathering Grades**

RS - Residual Soil  
XW - Extremely weathered  
DW - Distinctly weathered  
SW - Slightly weathered  
FR - Fresh

**Rock Strength**

VW - Very weak  
W - Weak  
MS - Medium strong  
S - Strong  
VS - Very strong  
ES - Extremely strong

**Samples**

U50  
SPT  
Disturbed Sample

Approved: \_\_\_\_\_  
Date: \_\_\_\_\_

SOIL SURVEYS 00:LIBRARY 2012:05:G.LB Log SOIL SURVEY BOREHOLE LOG 111-12936 NEW.GPJ <<DrawingFiles>> 21/05/2012 14:34 8.30.002 Developed by Datigel



Drilling Method				Depth	Graphic	Description	Weathering	Strength Estimated	Defect Spacing	Rec (%)	RQD	Samples and Remarks
TC	WB	FR	NM/LC									
				20.40			SW - FR			100	71	
				20.75		SANDSTONE, fine to medium grained, grey, thinly laminated, with some siltstone laminations.						20.60 m; J, 61°, P, V, O, Z
				21.0		SILTSTONE, fine grained, dark grey, thinly laminated, moderately widely spaced fractures, with 10-30mm clay seams and some sandstone laminations at 20.80m, 22.05m, 22.13m, 22.37m, 24.84m, 22.87m and 22.90m.				100	89	
				22.0								19.40-24.53 m; DI, 5°, P, S, O, Z
				23.0								
				24.0								
				24.46			FR					
				24.60		SANDSTONE, fine to medium grained, light grey, granular, widely spaced fractures, very thinly bedded.				100	95	
				25.0								25.59 m; B, 8°, P, S, O, Z
				25.60								25.97 m; DI, 5°, T, R, O, Z
				26.0		CONGLOMERATE, coarse grained, grey, granular, massively bedded, widely spaced fractures, clast supported. Clasts comprise fine to coarse sized gravel, with trace cobbles of siltstone, mudstone, quartz and tuff.						26.53 m; DI, 10°, U, V, O, Z
				27.0								26.85 m; DI, 2°, S, R, O, Z
				28.0						100	100	27.60 m; DI, 5°, S, R, O, Z
				29.0								27.96 m; DI, 5°, S, R, O, Z
				29.0								28.21 m; J, 10°, P, R, O, Z
				29.0								28.54 m; DI, 10°, U, R, O, Z
				29.0								28.80 m; DI, 5°, S, R, O, W
				30.0						100	100	29.72 m; DI, 10°, U, R, O, Z

Comments:  
1) Groundwater not observed. 2) ATV survey carried out. 3) Monitoring well installed to 25m on completion.

**Defects - 1.54m : F, 60°, P, R, O, C**

Depth (m)	Type	Dip (Deg)	Planarity	Roughness	Aperture	Fill
	B - Bedding	C - Curvilinear	L - Slickensides	C - Closed	C - Clay	
	C - Clay seam	D - Discontinuous	P - Polished	F - Filled	F - Iron Oxide	
	F - Foliation	P - Planar	R - Rough	N - Clean	K - Calcite	
	H - Schistosity	S - Subplanar	S - Smooth	O - Open	L - Limonite	
	J - Joint	T - Stepped	V - Very rough	S - Stain	Q - Quartz	
	L - Cleavage	R - Fracture			S - Secondary mineral	
	S - Shear zone				U - Unidentified mineral	
	T - Contact				W - Weathered rock	
	V - Vein				X - Carbonaceous	
	Z - Decomposed Zone				Z - Clean	
	DI - Drilling induced break					

**Weathering Grades**

RS - Residual Soil
XW - Extremely weathered
DW - Distinctly weathered
SW - Slightly weathered
FR - Fresh
<b>Rock Strength</b>
VW - Very weak
W - Weak
MS - Medium strong
S - Strong
VS - Very strong
ES - Extremely strong

**Samples**

U50
SPT
Disturbed Sample

Approved: \_\_\_\_\_  
Date: \_\_\_\_\_

SOIL SURVEYS 00: LIBRARY 2012:05:G.LB Log SOIL SURVEY BOREHOLE LOG 111-12936 NEW.GPJ <<DrawingFiles>> 21/05/2012 14:34 8:30:00Z Developed by Dajgei



Easting: 502640    Northing: 6958083    RL: 24.11 m  
Logger: JI/CB    Operator: PD    Machine: MC450

Drilling Method				Depth	Graphic	Description	Weathering	Strength Estimated	Defect Spacing	Rec (%)	RQD	Samples and Remarks
TC	WB	RR	NM/LC									
				30.90	[Pattern]	SANDSTONE, fine to coarse grained, light grey, moderately widely spaced fractures, with bands of conglomerate and siltstone. (continued)	FR	[Pattern]	[Pattern]			30.03 m; Z, 15°, P, R, O, W
				31.63	[Pattern]	SANDSTONE, fine to medium grained, light grey, widely spaced fractures, massively bedded.				100	100	
				32.0	[Pattern]	CONGLOMERATE, coarse grained, grey, granular, massively bedded, widely spaced fractures, clast supported. Clasts comprise fine to coarse sized gravel, with trace cobble sized clasts of Siltstone, Mudstone and Sandstone, with quartzite band from 32.96m to 33.06m.						31.84 m; DI, 5°, C, V, O, Z
				33.0	[Pattern]							32.93 m; DI, 30°, S, S, O, Z 32.96 m; DI, 5°, S, R, O, Z 33.12 m; DI, 10°, U, R, O, Z 33.28 m; DI, 10°, U, S, O, Z
				34.0	[Pattern]					100	100	34.03 m; DI, 5°, S, R, O, Z
				35.0	[Pattern]	BOREHOLE BH 325 TERMINATED AT 35.00 m						
				36.0								
				37.0								
				38.0								
				39.0								
				40.0								

SOIL SURVEYS 00:LIBRARY 2012:05:G.LB Log SOIL SURVEY BOREHOLE LOG 111-12936 NEW.GPJ <<DrawingFiles>> 21/05/2012 14:34 8.30.002 Developed by Dajgei

Comments:  
1) Groundwater not observed. 2) ATV survey carried out.  
3) Monitoring well installed to 25m on completion.

**Defects - 1.54m : F,60°,P,R,O,C**

Type	Dip (Deg)	Planarity	Roughness	Aperture	Width
B - Bedding	C - Curvilinear	L - Slickensides	C - Closed	C - Clay	
D - Discontinuous	P - Polished	F - Filled	F - Iron Oxide	K - Calcite	
H - Schistosity	S - Subplanar	S - Smooth	O - Open	L - Limonite	
J - Joint	T - Stepped	V - Very rough	S - Stain	Q - Quartz	
L - Cleavage	R - Fracture	S - Secondary mineral	U - Unidentified mineral	W - Weathered rock	
S - Shear zone	T - Contact	Z - Carbonaceous	Z - Clean		
V - Vein	Z - Decomposed zone				
DI - Drilling induced break					

**Weathering Grades**

RS - Residual Soil  
XW - Extremely weathered  
DW - Distinctly weathered  
SW - Slightly weathered  
FR - Fresh

**Rock Strength**

VW - Very weak  
W - Weak  
MS - Medium strong  
S - Strong  
VS - Very strong  
ES - Extremely strong

**Samples**

U50 [Symbol]  
SPT [Symbol]  
Disturbed Sample [Symbol]

Approved: [Signature]  
Date: [Date]

Water First Noted [Symbol]    Water Steady Level [Symbol]



SOIL\_SURVEYS.00.LIBRARY.GLB.GriCtbl.DG.PHOTO.CORE.PHOTO.4.PER.PAGE.111-12936.NEW.GPJ <<DrawingFile>> 26/04/2012 14:47 8.2.856 Developed by Datgel



TITLE

AECOM  
Brisbane  
Cross River Rail  
Core Photo - BH 325

DRAWN	DT	DATE	26/04/2012
CHECKED	CB	DATE	26/04/2012
SCALE	Not To Scale		A4
PROJECT No	110-12936	FIGURE No	1/2





SOIL\_SURVEYS.00.LIBRARY.GLB.Grfctbl.DG.PHOTO.CORE.PHOTO.4.PER.PAGE.111-12936.NEW.GPJ <<DrawingFile>> 26/04/2012 14:47 8.2.856 Developed by Datgel



TITLE

AECOM  
Brisbane  
Cross River Rail  
Core Photo - BH 325

DRAWN	DT	DATE	26/04/2012
CHECKED	CB	DATE	26/04/2012
SCALE	Not To Scale		A4
PROJECT No	110-12936	FIGURE No	2/2



# COMPOSITE LOG

## BOREHOLE TELEVIEWER LOGS AND STRUCTURES



**Hole Name** CRR325  
**Field** Brisbane City  
**Log Date** 9th Mar,2012  
**Location** QLD

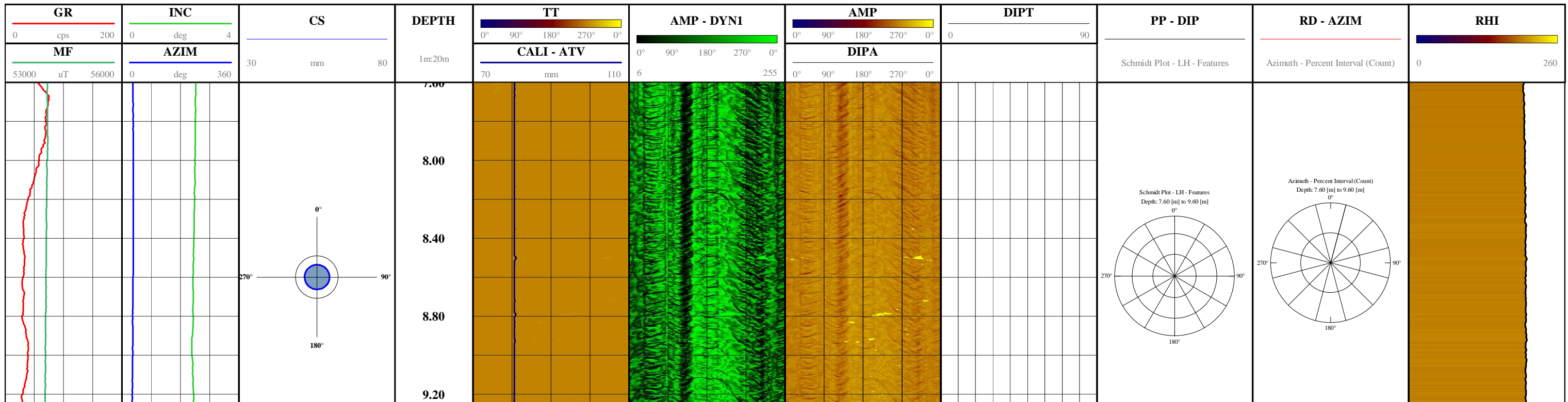
**Drill Depth** 40m  
**Bit Size** 76mm  
**Casing Type** PVC  
**Casing Depth** N/A

**Grid Name** N/A  
**Collar Easting** N/A  
**Collar Northing** N/A  
**Reduced Level** N/A

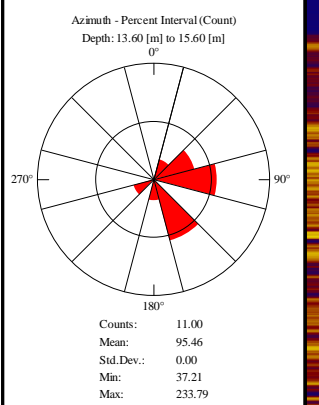
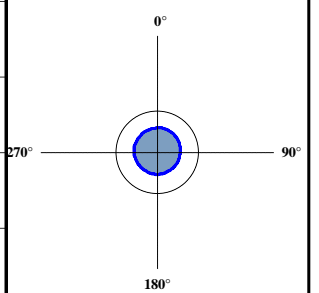
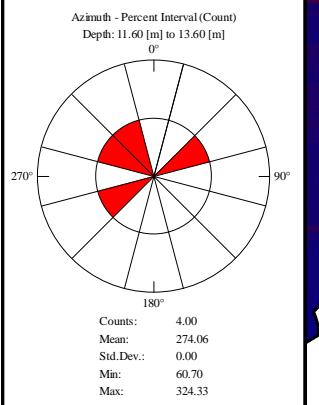
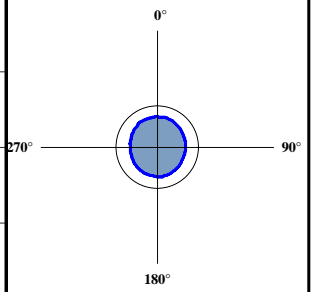
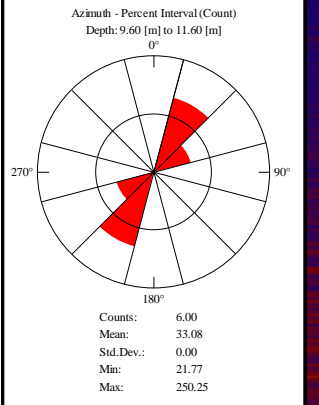
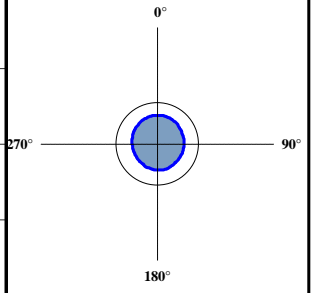
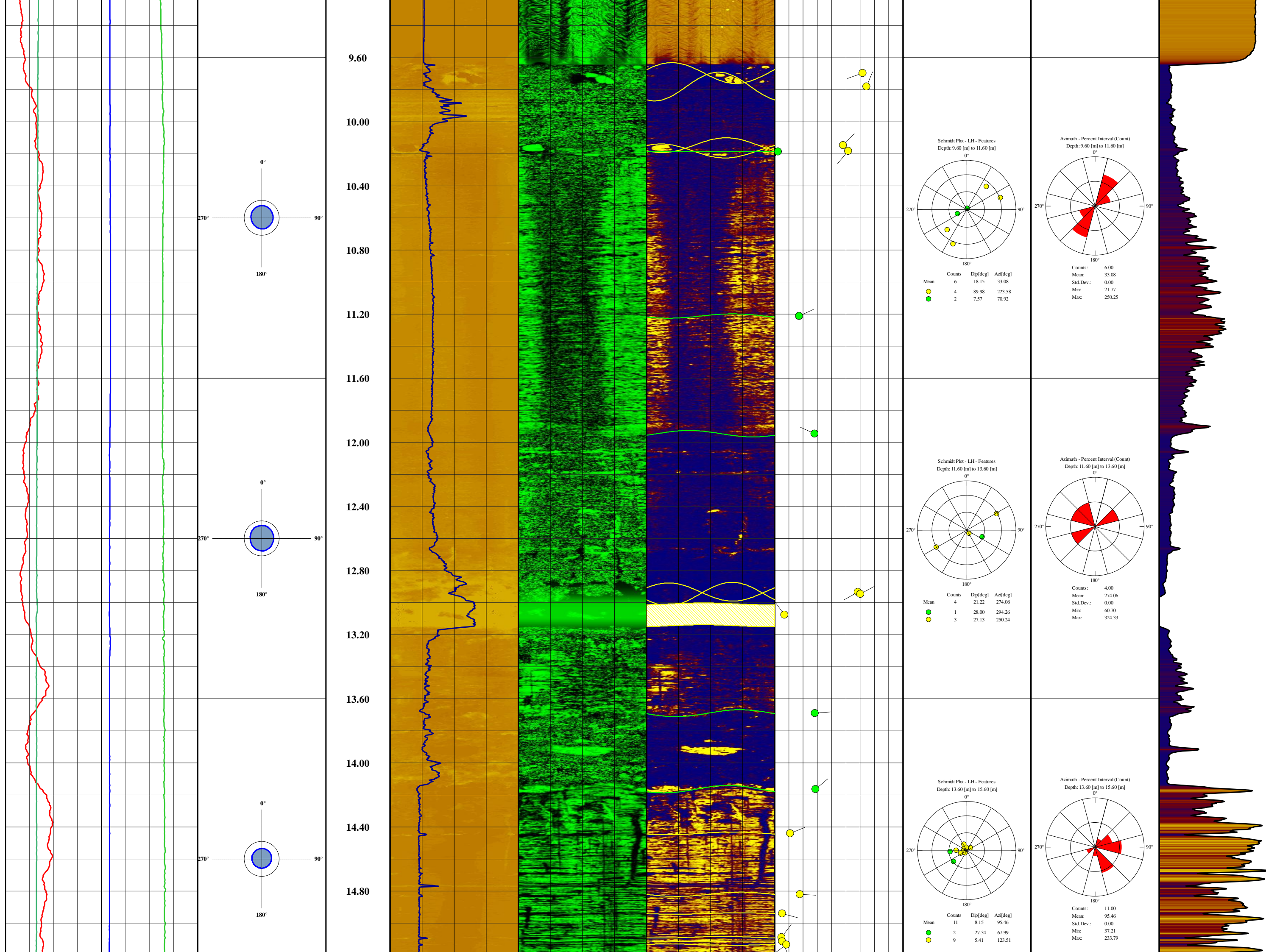
**Logging Unit** SV031  
**Engineer** J.Mackay  
**Client Represent** Julian Irons  
**Service Type** Televiewer

TELEVIEWER LOGS	STRUCTURAL LOGS	TADPOLES	COMMENTS
<p><b>MF</b> Mag Field  <b>GR</b> Gamma  <b>INC</b> Tool Inclination            (0 = Vertical Down)  <b>AZIM</b> Tool Azimuth    <b>TT</b> Travel Time Image  <b>AMP</b> Amplitude Image  <b>AMP - DYN1</b> Amplitude Image Dynamic 1</p>	<p><b>DIPA</b> Structures Apparent            (Sinusoid Presentation)  <b>DIPT</b> Structures True            (Tadpole Presentation)  <b>PP - DIP</b> Polar Projection Dip (Schmidt)  <b>RD - AZIM</b> Rose Diagram - Azimuth  <b>CS</b> Cross Section</p>	<p>● <b>Partially Open Fracture</b>            ● <b>Closed Fracture</b>            ● <b>Foliation/Banding/Bedding</b></p>	<p>Image data is presented oriented to True North.            Magnetic Declination = 10.97 deg            Cross Sections are plotted at 2m intervals: White : Tool Position, Light Blue : Nominal Hole Size and Blue : Actual Hole Size</p>
PROCESSED LOGS			
<b>CALI - ATV</b> Calliper Average from ATV	<b>RHI</b> Rock Hardness Index		

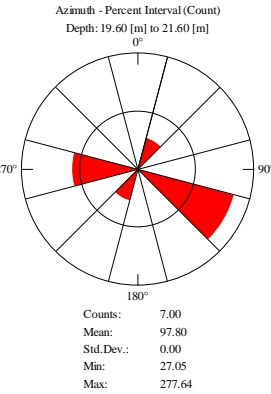
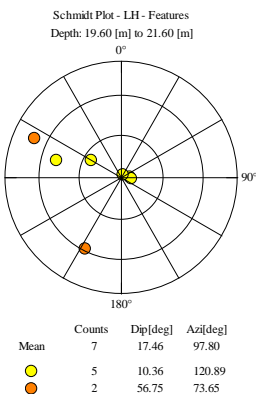
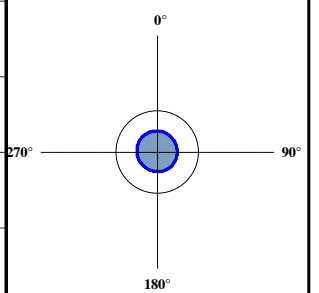
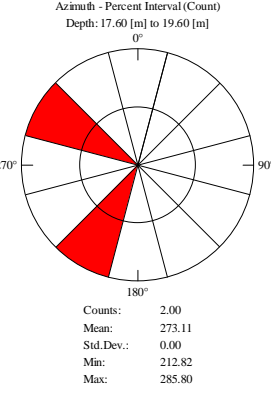
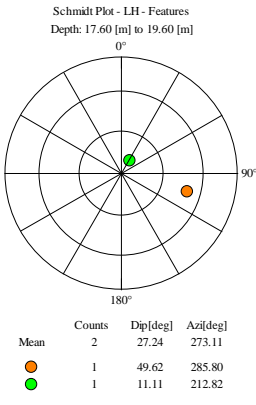
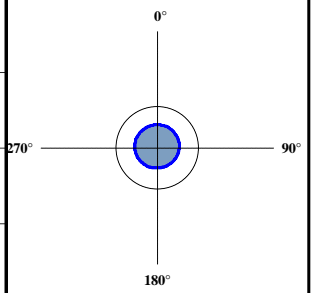
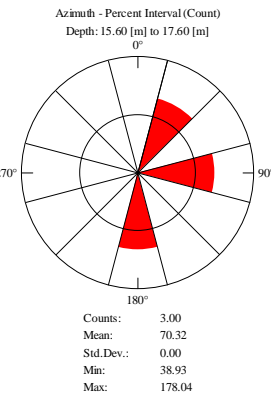
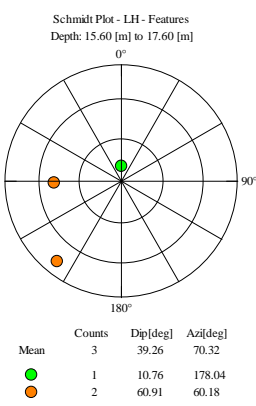
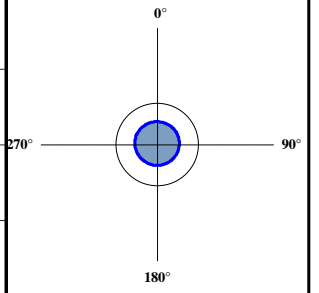
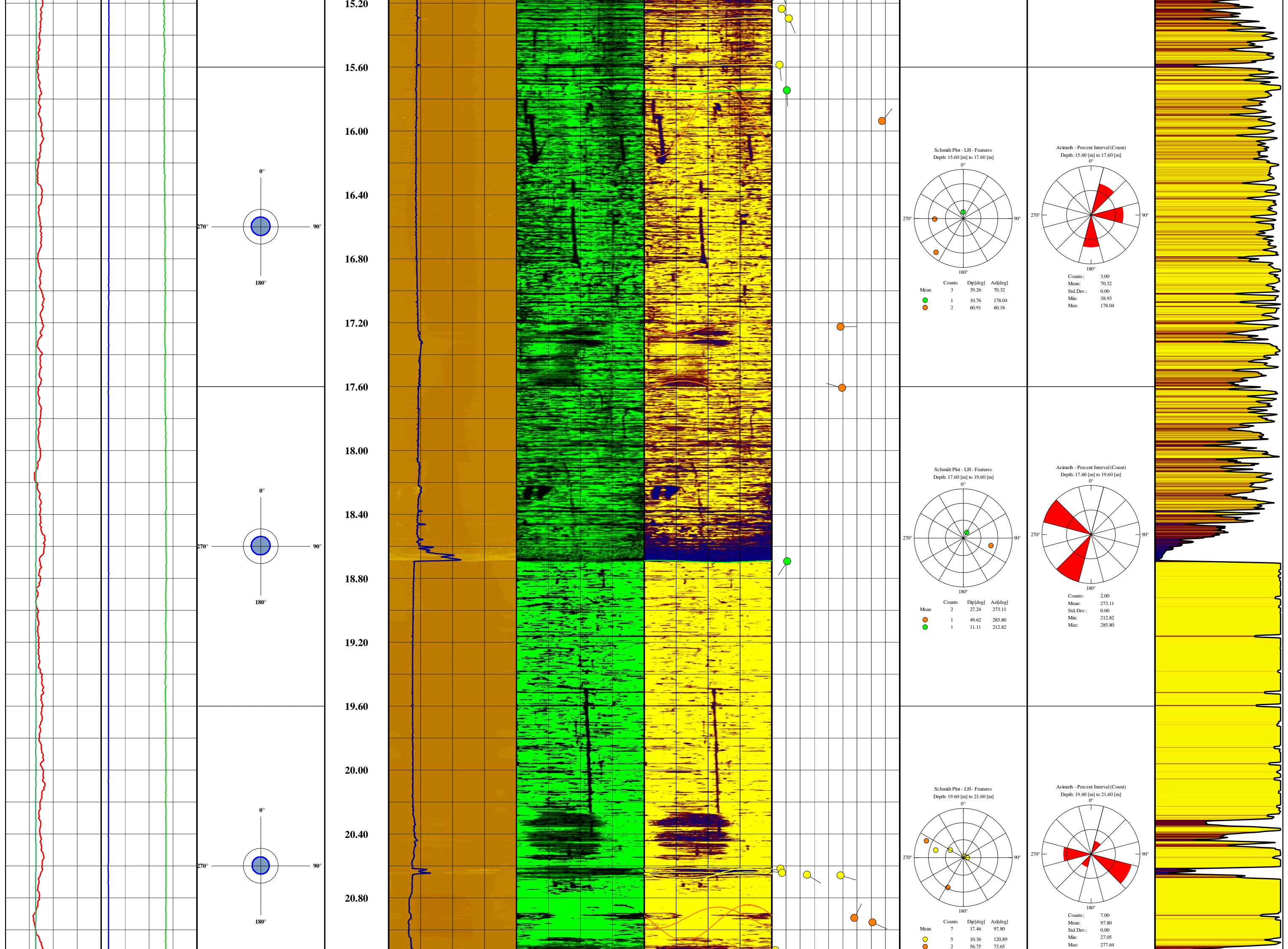
**IMPORTANT NOTE**  
 The following interpretations are opinions based upon inferences from borehole logs,  
 Surtron Technologies (Australia) Pty Ltd cannot and does not guarantee the correctness or accuracy of any interpretations.  
 Therefore Surtron Technologies (Australia) Pty Ltd shall not be liable or responsible for any loss, damage, cost or expense incurred or sustained by anyone resulting from any interpretations.



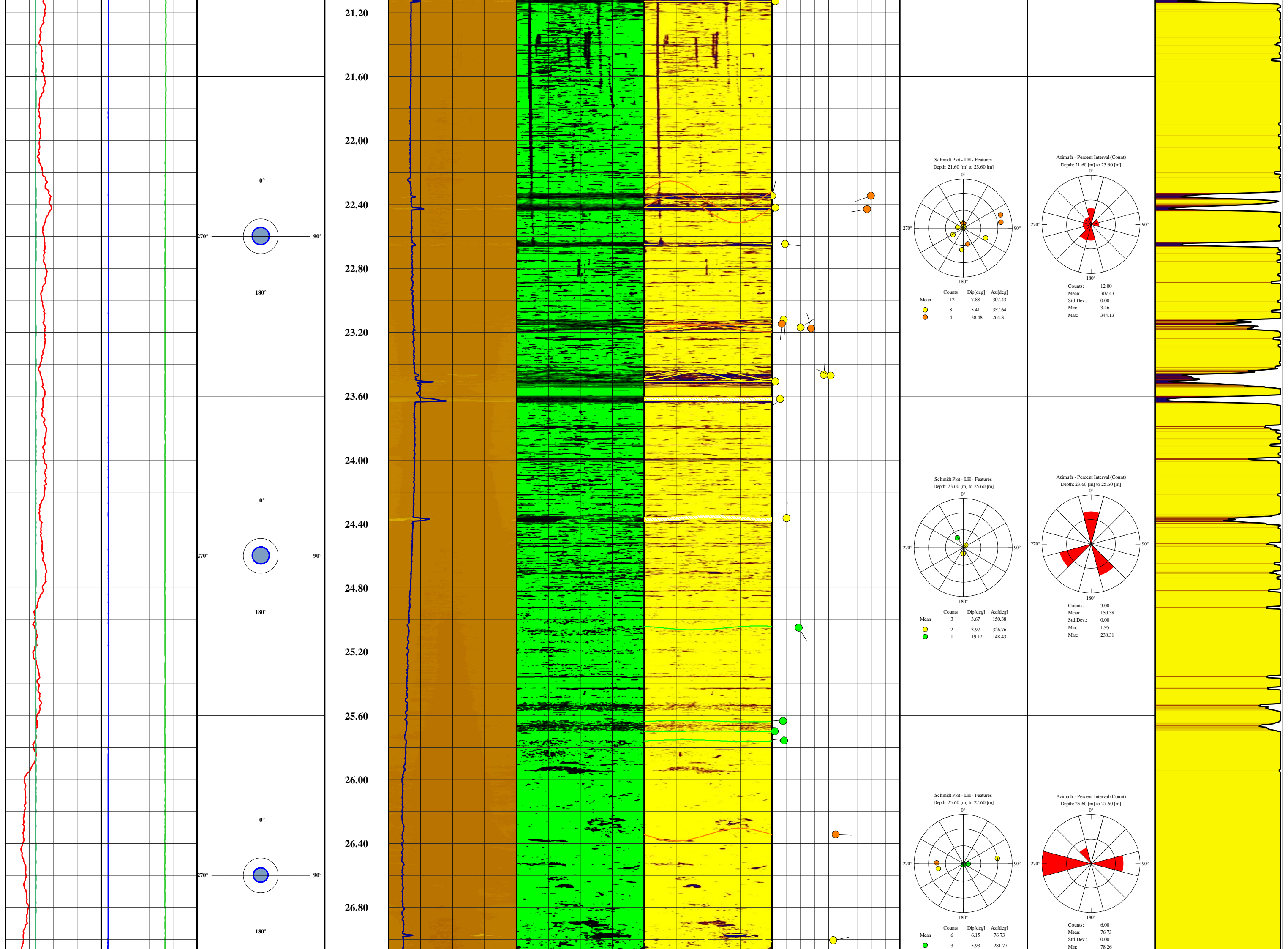




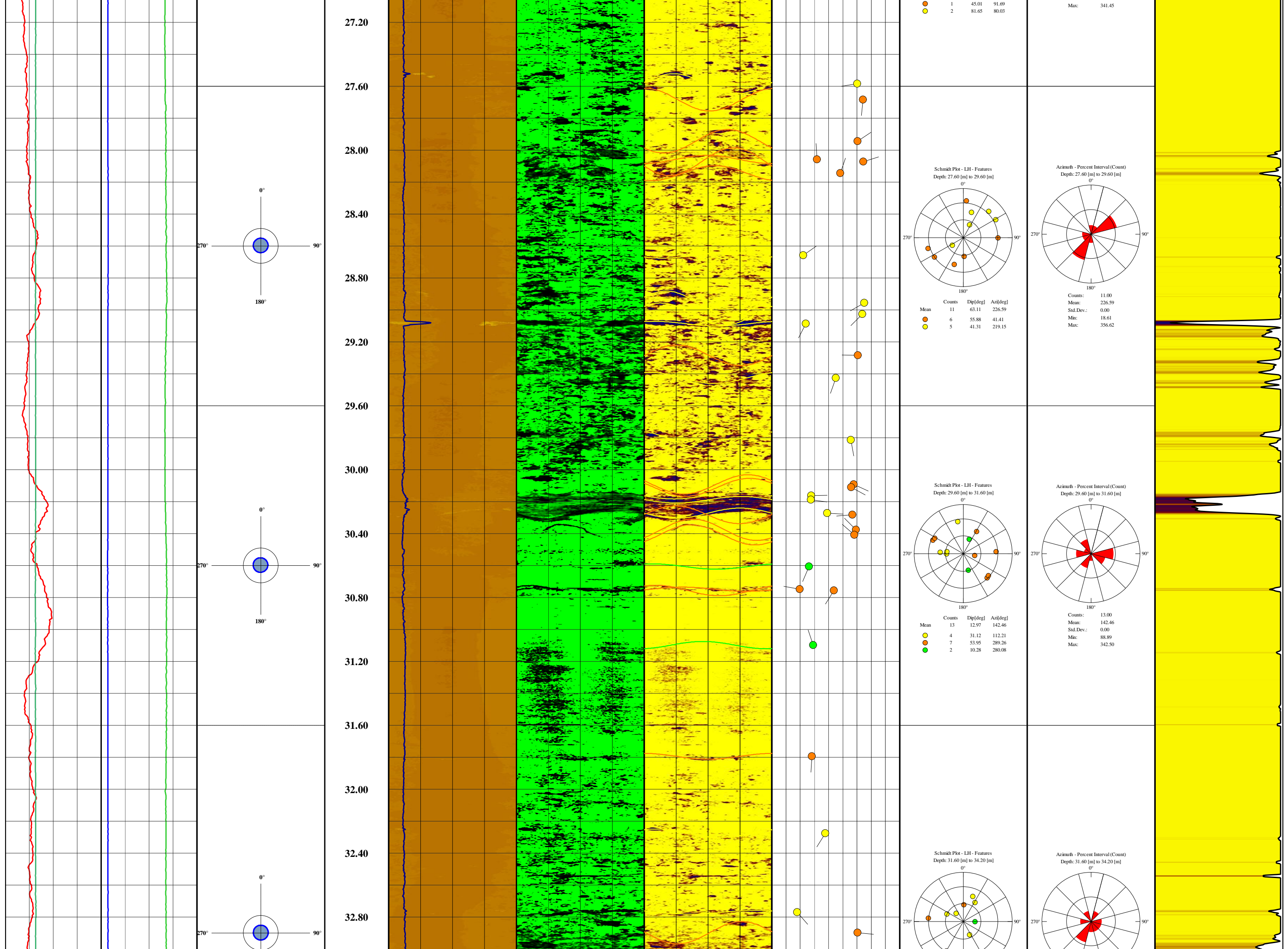






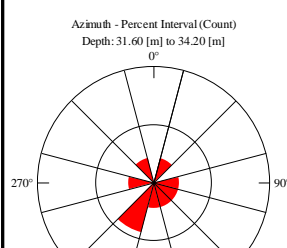
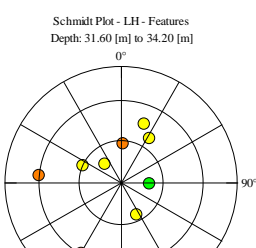
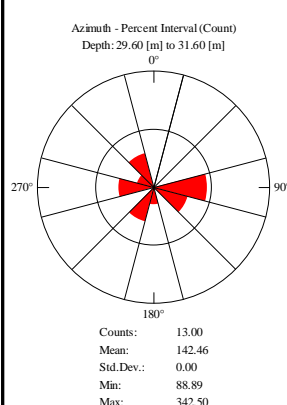
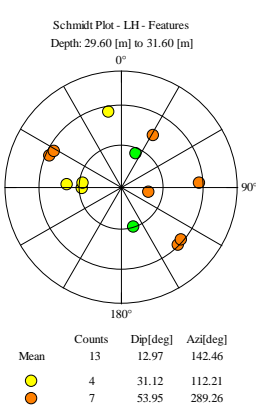
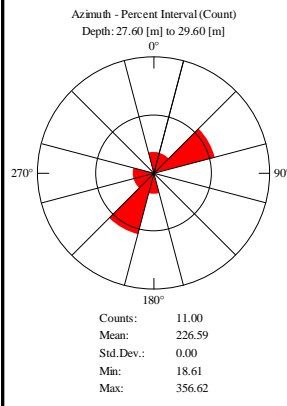
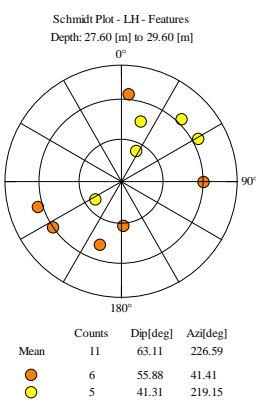


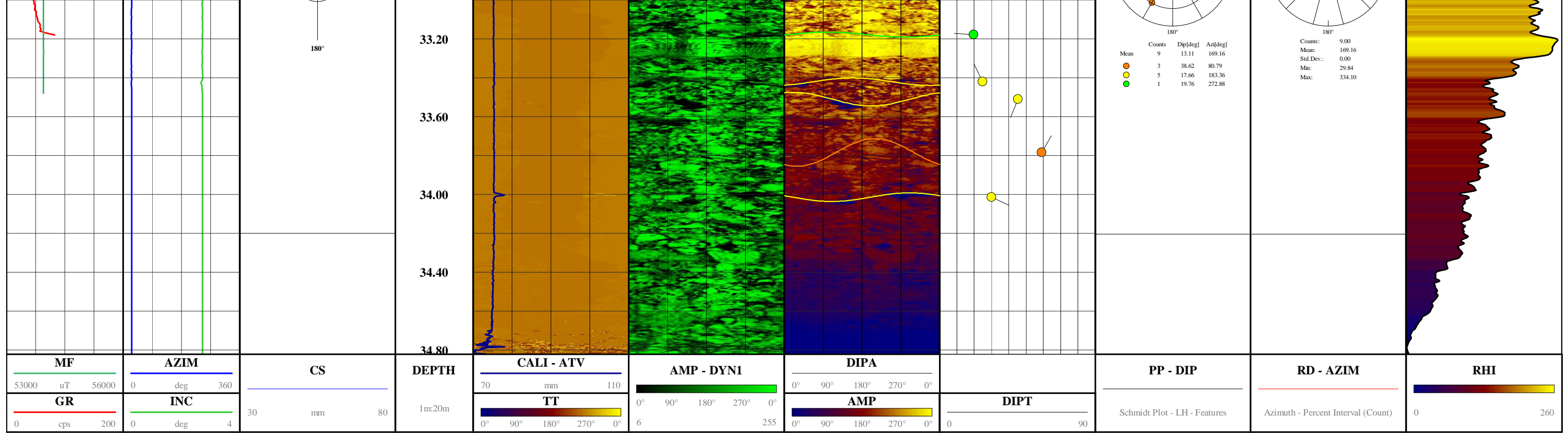




1 45.01 91.69  
2 81.65 80.03

Max: 341.45





## IN-SITU PACKER PERMEABILITY TEST RESULT

<b>PROJECT:</b>	<b>CRR</b>	<b>BH No.:</b>	<b>325</b>	Packer type:	Double
<b>PROJECT No.:</b>	<b>110-12936</b>	<b>Test No.:</b>	<b>1</b>	Packer pressure:	2000kPa
		<b>Date:</b>	<b>18/02/2012</b>	Gauge pressures measured in:	kPa
				Tested by:	CB

Vertical depth to:

Top of test section (m):	19.00
Base of test section (m):	20.50
Centre of test section(m):	19.75
Base of casing (m):	18.00
Ground water (m)	NR

Depth of centre of test section (m)	19.75
Length of test section (m):	1.50

Gauge Height above ground level	0.00
Hole Diameter in test section (mm)	75

1st period	Time (mins)	0	5	10	15	Average
Gauge Pressure 100	Flow reading	2321.5	2322.8	2322.9	2323.5	Flow (l/min)
	Water Take	0.00	1.30	0.10	0.60	0.133
2nd period	Time (mins)	0	5	10	15	Average
	Flow reading	2324.0	2324.1	2324.2	2324.3	Flow (l/min)
Gauge Pressure 200	Water Take	0.00	0.10	0.10	0.10	0.020
	Time (mins)	0	5	10	15	Average
Gauge Pressure 400	Flow reading	2328.0	**			1733.800
	Water Take	0.00	0.00	0.00	0.00	0.000
4th period	Time (mins)	0	5	10	15	Average
	Flow reading					Flow (l/min)
Gauge Pressure	Water Take	0.00	0.00	0.00	0.00	0.000
	Time (mins)	0	5	10	15	Average
Gauge Pressure	Flow reading					Flow (l/min)
	Water Take	0.00	0.00	0.00	0.00	0.000

Period	Flow (q) (l/min)	Gauge Press (kPa)	Gauge Press (m of water)	Friction Loss (m)*		Total Head (m)	Lugeon Value	Perm. (m/s)
				Basic	In extra rods			
1st	0.133	100.00	10.220	0.000	0.000	29.970	0.303	2.90E-08
2nd	0.020	200.00	20.440	0.000	0.000	40.190	0.034	3.24E-09
3rd	0.000	400.00	40.880	0.000	0.000	60.630	0.000	0.00E+00
4th	0.000	0.00	0.000	0.000	0.000	19.750	0.000	0.00E+00
5th	0.000	0.00	0.000	0.000	0.000	19.750	0.000	0.00E+00

\*Where friction loss is assumed to be negligible.

N.B. Pressure Conversion: 1 bar = 100 kPa = 14.503 psi

Note - Water leakage through casing at start of period 3 - test abandoned