BOREHOLE: BHL-06

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir		
Location:	Netherdale/Dalrymple Heights	Coords:	660091.8 m E 7661263.9 m N MGA2020-55	Sheet	1 of 16
Client:	Queensland Hydro	Surface RL:	156.8 m AHD		
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Date Started:	23/10/2023
		Mark V		Date Completed:	7/11/2023
		Inclination:	-68° Direction: 312°	Logged:	DD/AB

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/V	E	Groundwater not observed	0	156.77				ML	Sandy SILT: low plasticity, dark brown, sand is fine to coarse grained; with organic clay; root fibres near the surface.	M	F - St	ALLUVIAL SOIL
			1	1.50								
	E-H		2	155.38 / 2.25				SM	MIXTURE OF Silty SAND AND COBBLES: sand is fine to coarse grained, dark brown, with organic clay; trace fine to medium grained gravel. cobbles is to 75 mm.		MD - D	
									Continued as Cored Borehole			
			3									
			4									
			5									
			6									
			7									
			8									
			9									
			10									

Comments

Checked GEM

Date 19/10/2024

BOREHOLE: BHL-06

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir		
Location:	Netherdale/Dalrymple Heights	Coords:	660091.8 m E 7661263.9 m N MGA2020-55	Sheet	2 OF 16
Client:	Queensland Hydro	Surface RL:	156.8 m AHD	Date Started:	23/10/2023
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Date Completed:	7/11/2023
		Mark V		Logged:	DD/AB
		Inclination:	-68° Direction: 312°		

Drilling						Field Material Description				Defect Information	
METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH (MPa) ■ - UCS VL -2 L -5 M -20 H -60 VH -200 EH	DEFECT DESCRIPTION & Additional Observations (Core partings shown - refer to Detailed Defect Descriptions table for all logged features)	AVERAGE DEFECT SPACING (mm) 10 30 100 300 1000 3000
				0							
				1							
				2	2.25		Continuation from non-cored borehole				
HQ3	16/10/2024 02:00, VWP3	48	0	3	154.68 / 2.50		SM Silty SAND: fine to coarse grained, dark brown, with organic clay; trace fine to medium grained gravel; with cobbles to 75mm diameter (ALLUVIAL SOIL).				
					154.45		MIXTURE OF GM Silty Sandy GRAVEL AND COBBLES: gravel is fine to coarse, grey and dark grey, sand is fine to coarse grained; silt is low plasticity; Recovered as GRAVEL, medium to coarse grained. cobbles is to 75 mm, (ALLUVIAL SOIL).				
				4	3.75 / 153.29		NO CORE 2.25m (3.75-6.00)				
	16/10/2024, VWP1			5							
	100% Water Return			6	6.00 / 151.20		MIXTURE OF GM Sandy Silty GRAVEL AND COBBLES: gravel is fine to coarse, grey brown and dark grey, sand is fine to coarse grained; Recovered as GRAVEL, medium to coarse grained. cobbles is to 70 mm, (ALLUVIAL SOIL).				
	16/10/2024 01:00, VWP2	31	0		6.83 / 150.43		NO CORE 1.81m (6.83-8.64)				
				7							
				8	8.64 / 148.76		SM Silty SAND: fine to coarse grained, brown, silt is low plasticity; with medium to coarse grained gravel; (ALLUVIAL SOIL).				
		35	0	9	9.34 / 148.11		increasing gravel proportion NO CORE 0.66m (9.34-10.00)				
				10	10.00						

Comments

Checked GEM

Date 19/10/2024

BOREHOLE: BHL-06

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir		
		Coords:	660091.8 m E 7661263.9 m N MGA2020-55	Sheet	3 OF 16
Location:	Netherdale/Dalrymple Heights	Surface RL:	156.8 m AHD		
Client:	Queensland Hydro	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Date Started:	23/10/2023
Job No.:	PS138693	Mark V		Date Completed:	7/11/2023
		Inclination:	-68° Direction: 312°	Logged:	DD/AB

Drilling

METHOD	WATER	TCR	RQD
HQ3	50-100% Water Return	100	0
		90	90
		100	96
		87	77
		90	84
		100	97
		100	100

Field Material Description

DEPTH (metres)	DEPTH RL	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING
10	147.50	SW Gravelly SAND: fine to coarse grained, brown, pale brown and white, gravel is fine grained; relict granodiorite rock fabric and structure present (EXTREMELY WEATHERED MATERIAL).	
11	11.80		
12	145.83	GRANODIORITE: medium to coarse grained, pale grey, white and black, crystalline, massive.	SW
	12.68		
	144.95	NO CORE 0.07m (12.68-12.75)	
13		GRANODIORITE: medium to coarse grained, pale grey, white and black, crystalline, massive, pale orange alteration halo around some defects.	SW
14			
15			
	15.66		
	142.16	NO CORE 0.09m (15.66-15.75)	
16		GRANODIORITE: medium to coarse grained, pale grey, white and black, crystalline, massive.	SW
17			
	17.83		
	140.24	NO CORE 0.22m (17.83-18.05)	
18	18.05		
	140.03	GRANODIORITE: medium to coarse grained, pale grey, white and black, crystalline, massive.	SW
19			
20	20.00		

INFERRED STRENGTH (MPa) ■ - UCS: VL <2, L 2-5, M 5-20, H 20-60, VH 60-200, EH >200

Defect Information

DEFECT DESCRIPTION & Additional Observations (Core partings shown - refer to Detailed Defect Descriptions table for all logged features)
11.80-11.93: Jx3, 50 - 60°, VN, IR, RF
11.87-11.93: BC, IR, broken core, drilling induced
13.19-13.50: PLT(A) Is50 = 4.2MPa (M)
13.50: J, 60°, VN, IR, RF, <5 mm, GRAVEL, qu, <5 mm IN
13.57: J, 5°, SN, IR, RF
13.64: J, 70°, CN, IR, RF
14.73-15.20: J, 70°, clay CT, UN, RF, 2 mm, GRAVEL, qu, <5 mm IN
15.49: J, 15.58, 15°, CN, PR, RF
15.57: J, 20°, CN, PR, RF
16.06: J, 70°, VN, PR, SM
16.32: J, 10°, CN, UN, RF
17.33-17.62: PLT(A) Is50 = 6.9MPa (M); PLT(D) Is50 = 8.9MPa (M)
17.32: J, 10°, CN, UN, RF
17.81: J, 45°, Fe SN, PR, RF
19.00: J, 30°, CN, PR, RF

AVERAGE DEFECT SPACING (mm): 10, 30, 100, 300, 1000, 3000

Comments

Checked GEM

Date 19/10/2024

BOREHOLE: BHL-06

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir		
Location:	Netherdale/Dalrymple Heights	Coords:	660091.8 m E 7661263.9 m N MGA2020-55	Sheet	4 OF 16
Client:	Queensland Hydro	Surface RL:	156.8 m AHD		
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Date Started:	23/10/2023
		Mark V		Date Completed:	7/11/2023
		Inclination:	-68° Direction: 312°	Logged:	DD/AB

Drilling

METHOD	WATER	TCR	RQD
HQ3	50-100% Water Return	100	100
		100	100
		100	84
		100	91

Field Material Description

DEPTH (metres)	DEPTH RL	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING
20	138.22	GRANODIORITE: medium to coarse grained, pale grey, white and black, crystalline, massive.	SW
21			
22			FR
23			
	23.90		
24	134.61	Pale orange alteration halo around defects.	
	25.00		
25	133.59	No alteration halo around defects.	
26			
	26.48		
	132.12	Fine to medium grained, pink and black, moderately altered (micro-granodiorite).	
27		Medium to coarse grained, pale grey, white and black, minimal alteration.	
28			
	28.89		
29	29.05	Pink and black, moderately altered.	
	29.23	Pale grey, white and black, minimal alteration.	
	129.67	Fine to medium grained, pink and black, moderately altered (micro-granodiorite).	
	29.73		
	129.20	Medium to coarse grained, pale grey, white and black, minimal alteration.	
30	30.00		

INFERRED STRENGTH (MPa) ■ - UCS: VL 2, L 5, M 20, H 60, VH 200, EH

Defect Information

DEFECT DESCRIPTION & Additional Observations (Core partings shown - refer to Detailed Defect Descriptions table for all logged features)

21.22-21.32: J, 60°, VN, PR, SM
21.34: J, 60°, PR, SM
21.90: J, 20°, SN, ST, RF
22.78-23.00: PLT(A) Is50 = 9.0MPa (M); PLT(D) Is50 = 12MPa (M)
22.77-22.80: Jx2, 50°, SN, PR, RF
23.93: J, 40°, CN, PR, RF
23.96: J, 60°, CN, UN, RF
24.25: J, 5°, SN, PR, RF
24.28-24.35: Jx2, SN, IR, RF
24.40: J, 60°, SN, PR, RF
24.60: J, 5°, CN, PR, RF
24.64: J, 20°, CN, PR, RF
24.72: J, 30°, CN, ST, RF
24.80: J, 5 - 20°, SN, ST, RF
25.00-25.11: Jx3, 10°, SN, IR, RF
25.03-25.10: Jx4, 5 - 20°, CN, UN, RF, very closely spaced
25.74: J, 5 - 20°, CN, IR, RF
25.95: J, 60°, CN, UN, RF
26.15: J, 60°, CN, IR, RF
28.28: J, 60°, CN, PR, RF
28.43-28.79: PLT(A) Is50 = 5.9MPa (M); PLT(D) Is50 = 7.4MPa (M)
28.44: J, 20°, CN, IR, RF
28.78-28.84: Jx2, 5 - 15°, CN, CU, RF
29.48: J, 5°, CN, ST, RF
29.55: J, 40°, SN, PR, RF
29.68: J, 30°, CN, CU, RF
29.78: J, 60°, SN, PR, RF

AVERAGE DEFECT SPACING (mm): 10, 30, 100, 300, 1000, 3000

Comments

Checked GEM
Date 19/10/2024

BOREHOLE: BHL-06

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir		
Location:	Netherdale/Dalrymple Heights	Coords:	660091.8 m E 7661263.9 m N MGA2020-55	Sheet	5 OF 16
Client:	Queensland Hydro	Surface RL:	156.8 m AHD		
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Date Started:	23/10/2023
		Mark V		Date Completed:	7/11/2023
		Inclination:	-68° Direction: 312°	Logged:	DD/AB

Drilling

METHOD	WATER	TCR	RQD
HQ3	50-100% Water Return	100	100
		100	96
		100	94
		100	100

Field Material Description

DEPTH (metres)	DEPTH RL	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING
30	128.95	GRANODIORITE: medium to coarse grained, pale grey, white and black, crystalline, massive.	FR
	30.22		
	128.75	Pink, pale grey, black, slightly altered.	
	30.50		
	128.49	Pale grey, white and black, minimal alteration.	
31			
	31.33		
	127.72	Fine to medium grained, pink and black, moderately altered (micro-granodiorite).	
	31.76		
	127.32	Medium to coarse grained, pale grey, white and black, slightly altered, pale orange alteration halo around defects.	
32			
	32.25		
	126.87	Fine to medium grained, pale yellow, pale grey, black, moderately altered (micro-granodiorite), orange alteration halo around defects.	
	32.65		
	126.49	Medium to coarse grained, slightly altered, orange alteration halo around defects.	
33			
	33.48		
	125.72	Fine to medium grained, pink, pale grey, black, moderately altered (micro-granodiorite).	
34			
	34.23		
	125.03	Medium to coarse grained, slightly altered, orange alteration halo around defects.	
35			
36			
37			
38			
	38.62		
	120.96	Pale grey, white and black, minimal alteration, pale orange alteration halo around defects.	
39			
40	40.00		

Defect Information

DEFECT DESCRIPTION & Additional Observations (Core partings shown - refer to Detailed Defect Descriptions table for all logged features)

- 31.55: J, 40°, CN, RF
- 32.43: J, 10 - 30°, CN, ST, RF
- 33.97: J, 60°, CN, UN, RF
- 34.34: J, 40°, SN, ST, RF
- 34.56: J, 20°, SN, PR, RF
- 34.82: J, 40°, CN, PR, RF
- 34.93: J, 70°, CN, UN, RF
- 34.97: J, 55°, CN, PR, RF
- 35.16: J, 30°, CN, PR, RF
- 35.32: J, 30°, CN, PR, RF
- 35.55: J, 30°, SN, PR, RF
- 35.76: J, 20°, SN, PR, RF
- 36.10: J, 50°, CN, PR, RF
- 36.74: J, 50°, SN, PR, RF
- 36.76: J, 50°, CN, PR, RF
- 37.48: J, 40°, SN, PR, RF
- 37.53-37.81: PLT(A) Is50 = 8.9MPa (M)
- 37.53: J, 20°, CN, PR, RF
- 37.84: J, 5°, SN, ST, RF
- 37.90: J, 5°, SN, RF
- 38.22: J, 70°, CN, ST, RF
- 38.27: J, 10°, SN, ST, RF
- 38.51: J, 5°, CN, PR, RF
- 38.53-38.78: Jx3, 20°, CN, PR, RF
- 38.91: J, 50°, CN, PR, RF
- 39.10: J, 45°, CN, ST, RF
- 39.67: J, 50°, CN, UN, RF
- 39.76: J, 20°, CN, UN, RF

Comments

Checked GEM

Date 19/10/2024

BOREHOLE: BHL-06

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir		
		Coords:	660091.8 m E 7661263.9 m N MGA2020-55	Sheet	6 OF 16
Location:	Netherdale/Dalrymple Heights	Surface RL:	156.8 m AHD		
Client:	Queensland Hydro	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Date Started:	23/10/2023
Job No.:	PS138693	Mark V		Date Completed:	7/11/2023
		Inclination:	-68° Direction: 312°	Logged:	DD/AB

Drilling

METHOD	WATER	TCR	RQD
HQ3	50-100% Water Return	100	100
		100	100
		100	100
		100	100

Field Material Description

DEPTH (metres)	DEPTH RL	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH (MPa) ■ - UCS
40	119.68	GRANODIORITE: medium to coarse grained, pale grey, white and black, crystalline, massive.	FR	
41				
42		some mafic inclusions <30 mm, rare pyrite		
	42.95			
43	116.94	Fine to medium grained, pink, pale grey, black, moderately altered (micro-granodiorite), pale orange alteration halo around defects.		
	43.41			
	116.52	Medium to coarse grained, slightly altered.		
	43.80			
	116.16	Pale grey, white and black, minimal alteration.		
44	44.11			
	115.87	Pink, pale grey, black, slightly altered.		
	44.36			
	115.64	Pale grey, white and black, minimal alteration.		
45				
	45.67			
	114.42	Pale orange alteration halo around defects.		
46				
	46.18			
	113.95	No alteration halos.		
47				
	47.16			
	113.04	Pink, pale orange, black, slightly altered.		
48				
49				
	49.86			
50	50.00	Pale grey, white and black, minimal alteration.		

Defect Information

DEFECT DESCRIPTION & Additional Observations (Core partings shown - refer to Detailed Defect Descriptions table for all logged features)
41.02: J, 20°, CN, UN, RF
41.53: J, 50°, CN, UN, RF
43.10: J, 5°, CN, UN, RF
43.51: J, 40°, VN, UN
44.34: J, 10°, CN, ST, RF
45.90: J, 20°, CN, PR, RF
46.25: J, 10°, CN, PR, RF
46.97: J, 0 - 20°, CN, PR, RF
47.11: J, 20°, SN, UN, RF
47.32: J, 40°, CN, UN, RF
47.52: J, 5°, CN, PR, RF
47.67: J, 50°, VN, PR, RF
47.84: J, 50°, CN, PR, RF
48.13: J, 50°, VN, PR, RF
48.70-49.00: PLT(A) Is50 = 8.4MPa (M); PLT(D) Is50 = 7.8MPa (M)
48.73: J, 40°, SN, ST, RF
49.16: J, 45°, SN, PR, RF
49.72: J, 10°, SN, PR, RF

AVERAGE DEFECT SPACING (mm): 10, 30, 100, 300, 1000, 3000

Comments

Checked GEM

Date 19/10/2024

BOREHOLE: BHL-06

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir		
Location:	Netherdale/Dalrymple Heights	Coords:	660091.8 m E 7661263.9 m N MGA2020-55	Sheet	7 OF 16
Client:	Queensland Hydro	Surface RL:	156.8 m AHD	Date Started:	23/10/2023
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Date Completed:	7/11/2023
		Mark V		Logged:	DD/AB
		Inclination:	-68° Direction: 312°		

Drilling

METHOD	WATER	TCR	RQD
HQ3	50-100% Water Return	100	100
		100	98
		100	100
		100	100

Field Material Description

DEPTH (metres)	DEPTH RL	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING
50	110.41	GRANODIORITE: medium to coarse grained, pale grey, white and black, crystalline, massive.	FR
51	51.10 / 109.39	drilling grease on core Pale yellow and black, slightly altered.	
52	52.00 / 108.55	Fine to medium grained, pale orange, pink, black.	
	52.35 / 108.23	Moderately altered, pale orange alteration halos around defects.	
53	53.29 / 107.36	Medium to coarse grained, pale grey, white and black, minimal alteration.	
54			
55	55.72 / 105.10	Pink, pale grey, black, slightly altered.	
56	56.22 / 104.64	Pale grey, white and black, minimal alteration.	
57			
58			
59			
60	60.00		

INFERRED STRENGTH (MPa) ■ - UCS: VL -2, L -5, M -20, H -60, VH -200, EH

Defect Information

DEFECT DESCRIPTION & Additional Observations (Core partings shown - refer to Detailed Defect Descriptions table for all logged features)

- 50.43: J, 0 - 10°, CN, ST, RF
- 51.23: J, 5°, VN, ST, RF
- 51.50: J, 50°, SN, UN, RF
- 52.02: J, 10°, VN, PR, RF
- 52.32-52.84: Jx3, 10°, VN, UN, RF, 200-300 mm spacing
- 52.85: J, 30°, CN, PR, RF
- 53.27: J, 40°, CN, ST, RF
- 55.42: J, 60°, CN, PR, RF
- 56.13: J, 15°, CN, ST, RF
- 56.60: J, 60°, CN, PR, RF
- 56.86: J, 20°, CN, IR, RF
- 57.80: J, 35°, CN, ST, RF
- 58.87: J, 40°, CN, UN, RF
- 59.15: J, 10°, CN, ST, RF
- 59.54: J, 10°, VN, PR, RF
- 59.66-59.94: PLT(A) Is50 = 0.21MPa (W)
- 59.67: J, 20°, CN, PR, RF

AVERAGE DEFECT SPACING (mm): 10, 30, 100, 300, 1000, 3000

Comments

Checked GEM

Date 19/10/2024

BOREHOLE: BHL-06

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir		
		Coords:	660091.8 m E 7661263.9 m N MGA2020-55	Sheet	8 OF 16
Location:	Netherdale/Dalrymple Heights	Surface RL:	156.8 m AHD		
Client:	Queensland Hydro	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Date Started:	23/10/2023
		Mark V		Date Completed:	7/11/2023
Job No.:	PS138693	Inclination:	-68° Direction: 312°	Logged:	DD/AB

Drilling

METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL
HQ3	50-100% Water Return	100	100	60	101.14
		99 100	64	61	
				62	62.24
		100	73	63	99.06
				64	
				65	
				66	66.50
		100	100	67	95.11
				68	
				69	69.61
		100	100		92.23
				70	70.00

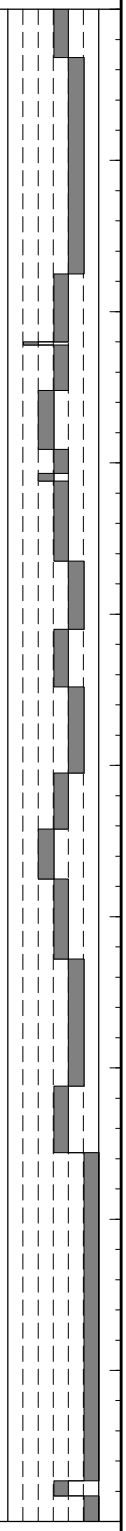
Field Material Description

GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH (MPa) ■ - UCS
	GRANODIORITE: medium to coarse grained, pale grey, white and black, crystalline, massive.	FR	
	Fine to medium grained, pink, pale orange, brown-grey and black, moderately altered (micro-granodiorite), orange alteration halo around defects.		
	Medium to coarse grained, pale grey, white and black, minimal alteration.		
	Fine to medium grained, pink, pale grey and black, moderately altered (micro-granodiorite).		

Defect Information

DEFECT DESCRIPTION & Additional Observations (Core partings shown - refer to Detailed Defect Descriptions table for all logged features)
60.10: J, 80°, CT, IR, RF
60.33: J, 60°, wh mi VN, UN, RF, 5 mm
60.85: J, 40°, VN, IR, RF
60.85: J, 35°, CN, PR, RF
61.17-61.58: Jx4, 60°, CT, PR, RF
61.75: J, 70°, VN, PR, RF
61.88: J, 40°, CN, IR, RF
62.20: J, 25°, CN, ST, RF
62.22: J, 20°, CN, ST, RF
62.36: J, 50°, CN, PR, RF
62.52: J, 60°, CN, UN, RF
62.55: J, 5°, CN, ST, RF
62.73: J, 70°, VN, PR, RF
62.79: J, 30°, VN, ST, RF
62.82: J, 0°, VN, IR, RF
62.85: J, 85°, VN, CU, RF
62.89: J, 70°, VN, IR, RF
62.91: J, 30°, VN, IR, RF
63.07: J, 60°, VN, PR, RF
63.12: J, 60°, VN, PR, RF
63.30: J, 10°, VN, CU, RF
63.50: J, 40°, CN, ST, RF
63.65: J, 30°, CN, IR, RF
64.10: J, 60°, SN, IR, RF
64.23: J, 50°, VN, IR, RF
64.41-64.90: PLT(A) Is50 = 8.2MPa (M)
64.40: J, 15°, CN, ST, RF
64.48: J, 75°, CN, UN, RF
64.83-64.92: Jx2, 50°, CN, PR, RF
65.05: J, 30°, CN, PR, RF
65.28: J, 60°, SN, PR, RF
65.42: J, 45°, qu and CLAY CT, IR, RF
65.46: J, 5°, CN, IR, RF
65.55: J, 50°, VN, RF
65.65: J, 50°, VN, UN, RF
65.75: J, 60°, VN, PR, RF
66.30: J, 30°, SN, CU, RF
67.11: J, 10°, CN, PR, RF
67.38: J, 50°, CN, ST, RF
67.56: J, 40°, CN, UN, RF
68.88: J, 30°, SN, PR, RF
69.75: J, 10 - 30°, SN, PR, RF
69.86: J, 10°, VN, UN, RF

AVERAGE DEFECT SPACING (mm)



Comments

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Date 19/10/2024

BOREHOLE: BHL-06

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir		
		Coords:	660091.8 m E 7661263.9 m N MGA2020-55	Sheet	9 OF 16
Location:	Netherdale/Dalrymple Heights	Surface RL:	156.8 m AHD		
Client:	Queensland Hydro	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Date Started:	23/10/2023
Job No.:	PS138693	Mark V		Date Completed:	7/11/2023
		Inclination:	-68° Direction: 312°	Logged:	DD/AB

Drilling

METHOD	WATER	TCR	RQD
HQ3	50-100% Water Return	100	100
		100	100
		100	99
		100	83

Field Material Description

DEPTH (metres)	DEPTH RL	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING
70	91.86	GRANODIORITE: fine to medium grained, pink, pale grey and black, crystalline, massive, moderately altered (micro-granodiorite).	FR
71	71.45 / 90.52	Medium to coarse grained, pale grey, white and black, minimal alteration.	
72			
73	73.00 / 89.08	Fine to medium grained, pink, pale grey and black, moderately altered (micro-granodiorite).	
	73.66 / 88.47	Medium to coarse grained, pale grey, white and black, minimal alteration.	
74			
75			
76			
77	77.21 / 77.34 / 85.06	Fine to medium grained, pink and black, moderately altered (micro-granodiorite). Medium to coarse grained, pale grey, grey and black, minimal alteration.	
78			
79			
80	80.00		

INFERRED STRENGTH (MPa) ■ - UCS: VL -2, L -5, M -20, H -60, VH -200, EH -200

Defect Information

DEFECT DESCRIPTION & Additional Observations (Core partings shown - refer to Detailed Defect Descriptions table for all logged features)

- 71.70: J, 20°, SN, PR
- 72.84-73.00: PLT(A) Is50 = 10MPa (M)
- 72.85: J, 20°, CN, PR, RF
- 73.50: J, 25°, CN, PR, RF
- 74.56-74.87: PLT(A) Is50 = 9.2MPa (M)
- 74.58: J, 5°, CN, IR, RF
- 74.87: J, 20°, CN, PR, RF
- 77.13: J, 55°, CN, ST, RF
- 77.43: J, 5°, CN, UN, RF
- 77.57: J, 25°, CN, ST, RF
- 78.05: J, 10°, CN, IR, RF
- 78.29: J, 20°, CN, PR, RF
- 78.68: J, 60°, CT, PR, RF
- 78.83-79.05: Jx4, 35°, CN, IR, RF
- 79.41: J, 10°, CT, PR, RF
- 79.44: J, 10°, CT, PR, RF
- 79.46: J, 10°, CT, PR, RF
- 79.41-79.52: J, 70°, CT, PR, RF
- 79.52: J, 10°, CT, PR, RF

AVERAGE DEFECT SPACING (mm): 10, 30, 100, 300, 1000, 3000

Comments

Checked GEM

Date 19/10/2024

BOREHOLE: BHL-06

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir		
		Coords:	660091.8 m E 7661263.9 m N MGA2020-55	Sheet	10 OF 16
Location:	Netherdale/Dalrymple Heights	Surface RL:	156.8 m AHD		
Client:	Queensland Hydro	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Date Started:	23/10/2023
Job No.:	PS138693	Mark V		Date Completed:	7/11/2023
		Inclination:	-68° Direction: 312°	Logged:	DD/AB

Drilling

METHOD	WATER	TCR	RQD
HQ3	50-100% Water Return	100	83
		100	100
		100	100
		100	96 81

Field Material Description

DEPTH (metres)	DEPTH RL	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING
80	82.59	GRANODIORITE: medium to coarse grained, pale grey, grey and black, crystalline, massive, minimal alteration.	FR
81	81.58 / 81.13	Fine to medium grained, grey and dark grey, highly altered.	
82	82.00 / 80.74	Medium to coarse grained, pale grey, pale yellow and black, minimal alteration.	
83			
84			
85			
86			
87			
88	88.23 / 74.96	Fine to coarse grained, pink, pale orange, pale grey, black, moderately altered, sections of micro-granodiorite.	
	88.77 / 74.46	Medium to coarse grained, pale grey, pale orange and black, slightly altered.	
89			
90	90.00		

INFERRED STRENGTH (MPa) ■ - UCS: VL -2, L -5, M -20, H -60, VH -200, EH

Defect Information

DEFECT DESCRIPTION & Additional Observations (Core partings shown - refer to Detailed Defect Descriptions table for all logged features)

80.00: J, 60°, VN, RF
80.00-80.24: J, 90°, VN, UN, RF
80.17: J, 25°, CN, IR, RF, possible DB
80.21: J, 25°, CN, IR, RF, possible DB
80.25: J, 70°, CN, IR, RF, possible DB, possible hJ
80.33: J, 75°, CN, IR, RF, possible DB, possible hJ
80.35: J, 30°, CN, UN, RF
80.69-80.77: J, 30°, VN, IR, RF
81.69-81.89: J, 45°, CN, ST, RF
82.23: J, 60°, SN, CU, RF
82.57: J, 30°, CN, PR, RF
83.59: J, 70°, CN, ST, RF
83.79: J, 30°, CN, PR, RF
85.19: J, 20°, VN, PR, RF
85.95: J, 10°, SN, IR, RF
86.00: J, 45°, VN, PR, RF
86.50: J, 40°, CN, PR, RF
87.30: J, 5°, CN, PR, RF
87.75: J, 60°, SN, PR, RF
87.81: J, 5°, CN, IR, RF
88.63: J, 5°, wh mi CT, PR, RF, 10 mm
88.70: J, 5°, VN, IR, RF
89.43: J, 50°, SN, PR, RF

AVERAGE DEFECT SPACING (mm): 10, 30, 100, 300, 1000, 3000

Comments

Checked GEM
Date 19/10/2024

PBPHES LIB_REV8.GLB Log IS AU CORED BOREHOLE 3 BHL-06_FINAL FOR ISSUE.GPJ <<DrawingFile>> 22/10/2024 16:59 10.03.00.09 Datgel Lab and In Situ Tool - DGD | Lib: WSP 5.07.2 2023-10-30 Prj: WSP 5.04.1 2023-06-14

BOREHOLE: BHL-06

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir		
Location:	Netherdale/Dalrymple Heights	Coords:	660091.8 m E 7661263.9 m N MGA2020-55	Sheet	11 OF 16
Client:	Queensland Hydro	Surface RL:	156.8 m AHD	Date Started:	23/10/2023
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Date Completed:	7/11/2023
		Mark V		Logged:	DD/AB
		Inclination:	-68° Direction: 312°		

Drilling						Field Material Description					Defect Information	
METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH (MPa) ■ - UCS		DEFECT DESCRIPTION & Additional Observations (Core partings shown - refer to Detailed Defect Descriptions table for all logged features)	AVERAGE DEFECT SPACING (mm)
HQ3	50-100% Water Return		81	90	73.32		GRANODIORITE: medium to coarse grained, pale grey, pale orange and black, crystalline, massive, slightly altered, orange alteration halo around some defects.	FR				
		100	100								90.46: J, 5°, CN, PR, RF	
				91							91.19: J, 15°, CN, ST, RF	
				92								
				93								
		100	100	94							94.04: J, 70°, SN, PR, RF	
											94.69: J, 5°, CN, IR, RF	
				95								
				96					■		96.06-96.38: PLT(A) Is50 = 6.4MPa (M); PLT(D) Is50 = 8.9MPa (M)	
											96.39: J, 10°, CN, PR, RF	
				97								
		100	100								97.24: J, 20°, CN, ST, RF	
				98								
											98.44: J, 60°, SN, PR, RF	
				99								
		100	98								99.29: J, 10°, CN, PR, RF	
				100	100.00							

Comments

Checked GEM

Date 19/10/2024

BOREHOLE: BHL-06

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir		
Location:	Netherdale/Dalrymple Heights	Coords:	660091.8 m E 7661263.9 m N MGA2020-55	Sheet	12 OF 16
Client:	Queensland Hydro	Surface RL:	156.8 m AHD		
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Date Started:	23/10/2023
		Mark V		Date Completed:	7/11/2023
		Inclination:	-68° Direction: 312°	Logged:	DD/AB

Drilling

METHOD	WATER	TCR	RQD
HQ3	50-100% Water Return	100	98
		100	100
		100	97
		100	100

Field Material Description

DEPTH (metres)	DEPTH RL	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING
100	64.05	GRANODIORITE: medium to coarse grained, pale grey, white and black, crystalline, massive, pale orange alteration halo around some defects.	FR
101	101.87 / 62.31	Pale grey, pale yellow and black, slightly altered.	
102	103.60 / 60.71	Fine to medium grained, pink and black, moderately altered.	
103	104.76 / 59.64	Medium to coarse grained, pale grey, pale yellow and black, slightly altered.	
104			
105			
106			
107			
108			
109	110.00		
110			

INFERRED STRENGTH (MPa) ■ - UCS: VL <2, L 2-5, M 5-20, H 20-60, VH 60-200, EH >200

Defect Information

DEFECT DESCRIPTION & Additional Observations (Core partings shown - refer to Detailed Defect Descriptions table for all logged features)

- 100.05: J, 5°, VN, PR, RF
- 100.27: J, 10°, CN, PR, RF
- 101.28: J, 30°, SN, PR, RF
- 101.56: J, 40°, SN, PR, RF
- 101.80-101.86: Jsx2/DB, CN, PR, RF
- 102.58: J, 30°, CN, PR, RF
- 103.60-104.00: PLT(A) Is50 = 6.0MPa (M); PLT(D) Is50 = 14MPa (M)
- 103.75: J, 45°, SN, ST, RF
- 104.82: J, 50°, CN, PR, RF
- 106.37: J, 5°, SN, PR, RF
- 106.59: J, 10°, VN, PR, RF
- 107.00: J, 30°, CN, RF
- 107.05: J, 30°, SN, PR, RF
- 107.94: J, 20°, SN, PR, RF
- 108.20: J, 40°, CN, PR, RF
- 108.30: J, 60°, SN, PR, RF
- 108.84: J, 40°, CN, PR, RF
- 109.42: J, 15°, CN, PR, RF
- 109.55: J, 15°, CN, PR, RF

AVERAGE DEFECT SPACING (mm): 10, 30, 100, 300, 1000, 3000

Comments

Checked GEM

Date 19/10/2024

BOREHOLE: BHL-06

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir		
Location:	Netherdale/Dalrymple Heights	Coords:	660091.8 m E 7661263.9 m N MGA2020-55	Sheet	13 OF 16
Client:	Queensland Hydro	Surface RL:	156.8 m AHD		
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Date Started:	23/10/2023
		Mark V		Date Completed:	7/11/2023
		Inclination:	-68° Direction: 312°	Logged:	DD/AB

Drilling

METHOD	WATER	TCR	RQD
HQ3	50-100% Water Return	100	100
		100	98
		100	95
		100	100

Field Material Description

DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH (MPa) ■ - UCS (VL -2, L -5, M -20, H -60, VH -200, EH)
110	54.78		GRANODIORITE: medium to coarse grained, pale grey, pale orange and black, crystalline, massive, pale orange alteration halo around some defects.	FR	
111					
112					
113					
114					
115					
116					
117					
118					
119					
120	120.00				

Defect Information

DEFECT DESCRIPTION & Additional Observations (Core partings shown - refer to Detailed Defect Descriptions table for all logged features)
110.30: J, 55°, SN, PR, RF
110.84: J, 30°, CN, PR, RF
111.77: J, 40°, SN, PR, RF
111.85: J/V, 55°, CT, PR, RF, <10 mm
112.32: J, 60°, SN, PR, RF
112.68-112.69: J, 10°, CN, IR, RF
113.38: J, 15°, SN, PR, RF
113.96: J, 5°, CN, PR, RF
114.58: J, 30°, IR
114.66: J/V, 55°, SN, PR, RF, <10 mm
114.74: J, 20°, SN, UN, RF, <10 mm
114.94: J, 45°, SN, PR
115.22: J, 25°, CN, PR, RF
115.74: J, 20°, SN, PR, RF
118.71: J, 10°, VN, IR, RF

AVERAGE DEFECT SPACING (mm): 10, 30, 100, 300, 1000, 3000

Comments

Checked GEM

Date 19/10/2024

BOREHOLE: BHL-06

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir	Sheet	14 OF 16
Location:	Netherdale/Dalrymple Heights	Coords:	660091.8 m E 7661263.9 m N MGA2020-55	Date Started:	23/10/2023
Client:	Queensland Hydro	Surface RL:	156.8 m AHD	Date Completed:	7/11/2023
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Logged:	DD/AB
		Mark V			
		Inclination:	-68° Direction: 312°		

Drilling

METHOD	WATER	TCR	RQD
HQ3	50-100% Water Return	100	97
		100	99
		100	99
		100	100

Field Material Description

DEPTH (metres)	DEPTH RL	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING
120	45.50	GRANODIORITE: medium to coarse grained, pale grey, pale orange and black, crystalline, massive, pale orange alteration halo around some defects.	FR
121.70	43.93	Grey, pale orange and black.	
127.00	39.01	Grey, pale brown orange and black.	
130	130.00		

INFERRED STRENGTH (MPa) ■ - UCS

Defect Information

DEFECT DESCRIPTION & Additional Observations (Core partings shown - refer to Detailed Defect Descriptions table for all logged features)

- 120.32: J, 25°, CN, UN, RF
- 120.36: J, 30°, CN, CU, RF
- 120.69-121.00: PLT(A) Is50 = 8.9MPa (M); PLT(D) Is50 = 13MPa (M)
- 121.24: J, 30°, CN, PR, RF
- 121.47: J, 10°, CN, UN
- 122.28: J, 60°, SN, UN, RF
- 122.55: J, 15°, SN, PR, RF
- 122.85: J, 50°, SN, UN, RF
- 123.12: J, 30°, SN, PR, RF
- 123.45: Jx2/V, 60°, CT, PR, RF, <35 mm
- 123.54: J, 20°, SN, CU
- 125.05: J, 45°, SN, PR
- 126.04: J, 40°, CN, PR, RF
- 127.96: J, 35°, SN, PR, RF, possible DB
- 128.38: J, 35°, CN, UN, RF, possible DB
- 129.42: J, 30°, CN, UN, RF

AVERAGE DEFECT SPACING (mm)

Comments

Checked GEM

Date 19/10/2024

BOREHOLE: BHL-06

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir	Sheet	15 OF 16
Location:	Netherdale/Dalrymple Heights	Coords:	660091.8 m E 7661263.9 m N MGA2020-55	Date Started:	23/10/2023
Client:	Queensland Hydro	Surface RL:	156.8 m AHD	Date Completed:	7/11/2023
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Logged:	DD/AB
		Mark V			
		Inclination:	-68° Direction: 312°		

Drilling

METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL
HQ3	50-100% Water Return	100	100	130	36.23
					130.30
					35.95
		100	100	131	
				132	
		100	100	133	
				134	
				135	
		100	100	136	
				137	
				138	
		100	97	139	
				140	140.00

Field Material Description

GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH (MPa) ■ - UCS (VL -2, L -5, M -20, H -60, VH -200, EH)
	GRANODIORITE: medium to coarse grained, grey, pale brown orange and black, crystalline, massive, pale orange alteration halo around some defects.	FR	
	Pale grey, pale orange and black.		■

Defect Information

DEFECT DESCRIPTION & Additional Observations (Core partings shown - refer to Detailed Defect Descriptions table for all logged features)	AVERAGE DEFECT SPACING (mm) (10, 30, 100, 300, 1000, 3000)
130.14: J, 20°, CN, IR, RF	
130.40: J, 20°, SN, PR, RF	
130.73: J, 30°, SN, PR, RF	
131.08: J, 50°, CT, PR, RF, <5 mm	
131.36: J, 10°, SN, PR, RF	
133.50: J, 90°, CN, UN, RF	
133.75: J, 5°, CN, PR, RF	
136.53: J, 45°, CN, PR, RF	
137.14: J, 5°, CN, PR, RF	
137.62: J, 5°, CN, PR, RF	
137.81: J, 30°, SN, PR, RF	
138.59: J, 10°, SN, PR, RF	
139.86: J, 50°, SN, PR, RF	

Comments

Checked GEM

Date 19/10/2024

BOREHOLE: BHL-06

		Position:	Lower Reservoir		
		Coords:	660091.8 m E 7661263.9 m N MGA2020-55	Sheet	16 OF 16
Project:	Pioneer-Burdekin PHES	Surface RL:	156.8 m AHD		
Location:	Netherdale/Dalrymple Heights	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Date Started:	23/10/2023
Client:	Queensland Hydro	Mark V		Date Completed:	7/11/2023
Job No.:	PS138693	Inclination:	-68° Direction: 312°	Logged:	DD/AB

Drilling						Field Material Description				Defect Information	
METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH (MPa) ■ - UCS VL -2 L -5 M -20 H -60 VH -200 EH	DEFECT DESCRIPTION & Additional Observations (Core partings shown - refer to Detailed Defect Descriptions table for all logged features)	AVERAGE DEFECT SPACING (mm) 10 30 100 300 1000 3000
HQ3	50-100% Water Return	100	97	140	26.96		GRANODIORITE: medium to coarse grained, pale grey, pale orange and black, crystalline, massive, pale orange alteration halo around some defects.	FR		139.93: J, 50°, SN, PR, RF 140.00-140.36: PLT(A) Is50 = 9.0MPa (M); PLT(D) Is50 = 6.6MPa (M) 140.38: J, 10°, SN, CU	
				141	141.10						
					25.94		Hole Terminated at 141.10 m Target depth. Vibrating Wire Piezometers Installed.				
				142							
				143							
				144							
				145							
				146							
				147							
				148							
				149							
				150							

Comments

Checked GEM

Date 19/10/2024

Pioneer-Burdekin Pumped Hydro Energy Scheme: Tranche 1 – BHL-06 Defects List

Refer to Explanatory Notes sheets for abbreviation definitions

PointID	Depth	Bottom	Fracture Set	Defect Number	Type	Type Suffix	Dip Minimum (degrees)	Dip Maximum (degrees)	Infilling Material	Aperture Observation	Planarity	Roughness	Aperture Measurement Sign	Aperture Measurement	Aperture	Spacing	Remark
BHL-06	11.80	11.93			J	x3	50	60		VN	IR	RF					
BHL-06	11.87	11.93			BC						IR						broken core, drilling induced
BHL-06	12.05				MB					CN	PR	RF					
BHL-06	12.75				MB					CN	PR	RF					
BHL-06	12.93				HB					CN	PR	SM					
BHL-06	13.00				HB					CN	PR	SM					
BHL-06	13.05				HB					CN	PR	SM					
BHL-06	13.20				HB					CN	PR	RF					
BHL-06	13.50				J		60			VN	IR	RF	<	5			GRAVEL, qu, <5 mm IN
BHL-06	13.57				J		5			SN	IR	RF					
BHL-06	13.64				J		70			CN	IR	RF					
BHL-06	13.87				HB					CN	PR	RF					
BHL-06	14.00				HB					CN	PR	SM					
BHL-06	14.05				HB					CN	PR	SM					
BHL-06	14.40				HB					CN	PR	RF					
BHL-06	14.73	15.20			J		70		clay	CT	UN	RF		2			GRAVEL, qu, <5 mm IN
BHL-06	14.95				HB					CN	PR	SM					
BHL-06	15.00				HB					CN	PR	SM					
BHL-06	15.05				HB					CN	PR	SM					
BHL-06	15.26				HB		15			CN	UN	RF					
BHL-06	15.49		15.58		J		15			CN	PR	RF					
BHL-06	15.57				J		20			CN	PR	RF					
BHL-06	15.74				DB					CN	PR	RF					
BHL-06	15.98				MB					CN	IR	SM					
BHL-06	16.06				J		70			VN	PR	SM					
BHL-06	16.18				HB					CN	PR	SM					
BHL-06	16.32				J		10			CN	UN	RF					
BHL-06	17.18				HB						PR	SM					
BHL-06	17.32				J		10			CN	UN	RF					
BHL-06	17.51				MB					CN	PR	SM					
BHL-06	17.81				J		45		Fe	SN	PR	RF					
BHL-06	18.00				MB					CN	PR	RF					
BHL-06	19.00				J		30			CN	PR	RF					
BHL-06	19.18	19.24			DB					CN	IR	RF					
BHL-06	20.00				HB					CN	PR	SM					
BHL-06	20.23				DB					CN	PR	SM					
BHL-06	20.72				DB					CN	PR	SM					
BHL-06	21.00				HB					CN	PR	SM					
BHL-06	21.05				DB					CN	PR	SM					
BHL-06	21.22	21.32			J		60			VN	PR	SM					
BHL-06	21.34				J		60				PR	SM					
BHL-06	21.90				J		20			SN	ST	RF					
BHL-06	22.00				HB					CN	PR	RF					
BHL-06	22.77	22.80			J	x2	50			SN	PR	RF					
BHL-06	23.00				MB					CN	PR	SM					
BHL-06	23.93				J		40			CN	PR	RF					
BHL-06	23.96				J		60			CN	UN	RF					
BHL-06	24.00				MB					CN	PR	SM					
BHL-06	24.05				DB												
BHL-06	24.16				hJ						PR						
BHL-06	24.25				J		5			SN	PR	RF					
BHL-06	24.28	24.35			J	x2				SN	IR	RF					
BHL-06	24.40				J		60			SN	PR	RF					
BHL-06	24.50				hJ		80										
BHL-06	24.60				J		5			CN	PR	RF					
BHL-06	24.64				J		20			CN	PR	RF					
BHL-06	24.72				J		30			CN	ST	RF					
BHL-06	24.80				J		5	20		SN	ST	RF					
BHL-06	24.85				hJ		80				IR						
BHL-06	25.00				MB												
BHL-06	25.00	25.11			J	x3	10			SN	IR	RF					
BHL-06	25.03	25.10			J	x4	5	20		CN	UN	RF				very closely	
BHL-06	25.20				hJ		50										
BHL-06	25.74				J		5	20		CN	IR	RF					
BHL-06	25.95				J		60			CN	UN	RF					
BHL-06	26.00				MB												
BHL-06	26.15				J		60			CN	IR	RF					
BHL-06	26.70				HB												
BHL-06	26.80				HB												
BHL-06	27.00				MB												
BHL-06	27.50				hJ						UN						
BHL-06	27.55				DB												
BHL-06	28.00				MB												
BHL-06	28.12				hJ		60				ST						
BHL-06	28.28				J		60			CN	PR	RF					
BHL-06	28.44				J		20			CN	IR	RF					
BHL-06	28.78	28.84			J	x2	5	15		CN	CU	RF					
BHL-06	29.00				MB												
BHL-06	29.31				hJ		50				IR						

Pioneer-Burdekin Pumped Hydro Energy Scheme: Tranche 1 – BHL-06 Defects List

Refer to Explanatory Notes sheets for abbreviation definitions

PointID	Depth	Bottom	Fracture Set	Defect Number	Type	Type Suffix	Dip Minimum (degrees)	Dip Maximum (degrees)	Infilling Material	Aperture Observation	Planarity	Roughness	Aperture Measurement Sign	Aperture Measurement	Aperture	Spacing	Remark
BHL-06	29.48				J		5			CN	ST	RF					
BHL-06	29.55				J		40			SN	PR	RF					
BHL-06	29.68				J		30			CN	CU	RF					
BHL-06	29.78				J		60			SN	PR	RF					
BHL-06	30.00				MB												
BHL-06	30.50				DB												
BHL-06	30.55				hJ		60				PR						
BHL-06	31.00				MB						PR						
BHL-06	31.55				J		40			CN		RF					
BHL-06	31.66				hJ		50				PR						
BHL-06	31.75	32.65			hJ		90				IR						
BHL-06	31.79	31.98			hJs	x6	40	50			PR						
BHL-06	32.00				MB												
BHL-06	32.10				hJ		40				UN						
BHL-06	32.15				hJ		60				PR						
BHL-06	32.28				hJ		90				UN						
BHL-06	32.43				J		10	30		CN	ST	RF					
BHL-06	32.56				HB					CN	ST	RF					
BHL-06	33.20				hJ						PR						
BHL-06	33.72				hJ						PR						
BHL-06	33.97				J		60			CN	UN	RF					
BHL-06	34.00				MB						PR						
BHL-06	34.34				J		40			SN	ST	RF					
BHL-06	34.48				hJ		70				ST						
BHL-06	34.50				hJ						ST						
BHL-06	34.56				J		20			SN	PR	RF					
BHL-06	34.68				hJ		60										
BHL-06	34.74				hJ		40				ST						
BHL-06	34.82				J		40			CN	PR	RF					
BHL-06	34.87				hJ		60				PR						
BHL-06	34.93				J		70			CN	UN	RF					
BHL-06	34.97				J		55			CN	PR	RF					
BHL-06	35.00				MB												
BHL-06	35.13				hJ		60				PR						
BHL-06	35.15	35.52			hJ		80				IR						
BHL-06	35.16				J		30			CN	PR	RF					
BHL-06	35.32				J		30			CN	PR	RF					
BHL-06	35.40				hJ						IR						
BHL-06	35.55				J		30			SN	PR	RF					
BHL-06	35.68				hJ						PR						
BHL-06	35.76				J		20			SN	PR	RF					
BHL-06	36.00				MB						PR						
BHL-06	36.10				J		50			CN	PR	RF					
BHL-06	36.15				hJ		85				ST						
BHL-06	36.30	36.85			hJs	x5	40				PR						
BHL-06	36.74				J		50			SN	PR	RF					
BHL-06	36.76				J		50			CN	PR	RF					
BHL-06	37.00				MB						PR						
BHL-06	37.10				hJ		80				IR						
BHL-06	37.25	37.41			hJ		50				IR						
BHL-06	37.48				J		40			SN	PR	RF					
BHL-06	37.53				J		20			CN	PR	RF					
BHL-06	37.75				hJ		85				IR						
BHL-06	37.84				J		5			SN	ST	RF					
BHL-06	37.90				J		5			SN		RF					
BHL-06	38.00				MB												
BHL-06	38.11				hJ		80				UN						
BHL-06	38.22				J		70			CN	ST	RF					
BHL-06	38.27				J		10			SN	ST	RF					
BHL-06	38.51				J		5			CN	PR	RF					
BHL-06	38.53	38.78			J	x3	20			CN	PR	RF					
BHL-06	38.91				J		50			CN	PR	RF					
BHL-06	39.00				MB												
BHL-06	39.10				hJ		70				PR						
BHL-06	39.10				J		45			CN	ST	RF					
BHL-06	39.18				hJ		70				ST						
BHL-06	39.24				hJ		35				UN						
BHL-06	39.28				hJ		85				ST						
BHL-06	39.33				HB												
BHL-06	39.53				hJ		75				CU						
BHL-06	39.67				J		50			CN	UN	RF					
BHL-06	39.76				J		20			CN	UN	RF					
BHL-06	40.00				MB												
BHL-06	41.00				DB												
BHL-06	41.02				J		20			CN	UN	RF					
BHL-06	41.33				hJ		60				PR						
BHL-06	41.53				J		50			CN	UN	RF					
BHL-06	42.00				MB												
BHL-06	42.08				HB												

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PointID	Depth	Bottom	Fracture Set	Defect Number	Type	Type Suffix	Dip Minimum (degrees)	Dip Maximum (degrees)	Infilling Material	Aperture Observation	Planarity	Roughness	Aperture Measurement Sign	Aperture Measurement	Aperture	Spacing	Remark
BHL-06	42.17				DB												
BHL-06	42.74				DB		30			CN	UN	RF					
BHL-06	43.00				MB												
BHL-06	43.10				J		5			CN	UN	RF					
BHL-06	43.25				hJ		50				PR						
BHL-06	43.51				J		40			VN	UN						
BHL-06	44.00				MB												
BHL-06	44.14				DB												
BHL-06	44.34				J		10			CN	ST	RF					
BHL-06	45.00				MB												
BHL-06	45.15				DB												
BHL-06	45.70				hJ						UN						
BHL-06	45.90				J		20			CN	PR	RF					
BHL-06	46.00				MB												
BHL-06	46.13				hJ		80				UN						
BHL-06	46.25				J		10			CN	PR	RF					
BHL-06	46.97				J		0	20		CN	PR	RF					
BHL-06	47.00				MB												
BHL-06	47.11				J		20			SN	UN	RF					
BHL-06	47.32				J		40			CN	UN	RF					
BHL-06	47.47				hJ		50				PR	RF					
BHL-06	47.52				J		5			CN	PR	RF					
BHL-06	47.67				J		50			VN	PR	RF					
BHL-06	47.70				DB		45										
BHL-06	47.84				J		50			CN	PR	RF					
BHL-06	47.95				hJ		60				UN						
BHL-06	48.00				MB												
BHL-06	48.13				J		50			VN	PR	RF					
BHL-06	48.15				hJ		60				UN						
BHL-06	48.73				J		40			SN	ST	RF					
BHL-06	48.88				hJ		60				UN						
BHL-06	49.00				MB												
BHL-06	49.16				J		45			SN	PR	RF					
BHL-06	49.40				hJ		50				IR						
BHL-06	49.44				hJ		30				ST						
BHL-06	49.57				hJ		80				IR						
BHL-06	49.72				J		10			SN	PR	RF					
BHL-06	49.80				hJ		5				PR						
BHL-06	49.82				hJ		5				PR						
BHL-06	50.00				MB												
BHL-06	50.43				J		0	10		CN	ST	RF					
BHL-06	50.89				hJ		50				UN						
BHL-06	51.00				MB												
BHL-06	51.15				DB												
BHL-06	51.23				J		5			VN	ST	RF					
BHL-06	51.50				J		50			SN	UN	RF					
BHL-06	52.00				MB												
BHL-06	52.02				J		10			VN	PR	RF					
BHL-06	52.32	52.84			J	x3	10			VN	UN	RF					200-300 mm spacing
BHL-06	52.85				J		30			CN	PR	RF					
BHL-06	53.00				MB												
BHL-06	53.27				J		40			CN	ST	RF					
BHL-06	54.00				MB												
BHL-06	55.00				MB												
BHL-06	55.42				J		60			CN	PR	RF					
BHL-06	56.00				MB												
BHL-06	56.13				J		15			CN	ST	RF					
BHL-06	56.60				J		60			CN	PR	RF					
BHL-06	56.62				hJ		60				PR						
BHL-06	56.86				J		20			CN	IR	RF					
BHL-06	57.00				MB												
BHL-06	57.12				DB												
BHL-06	57.80				J		35			CN	ST	RF					
BHL-06	57.93				HB												
BHL-06	58.00				MB												
BHL-06	58.01				HB												
BHL-06	58.87				J		40			CN	UN	RF					
BHL-06	59.00				MB												
BHL-06	59.15				J		10			CN	ST	RF					
BHL-06	59.54				J		10			VN	PR	RF					
BHL-06	59.67				J		20			CN	PR	RF					
BHL-06	60.00				MB												
BHL-06	60.10				J		80			CT	IR	RF					
BHL-06	60.33				J		60		wh mi	VN	UN	RF		5			
BHL-06	60.55				hJ		45				ST	RF					
BHL-06	60.81				hJ						PR						
BHL-06	60.85				J		40			VN	IR	RF					
BHL-06	60.85				J		35			CN	PR	RF					
BHL-06	61.17	61.58			J	x4	60			CT	PR	RF					

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PointID	Depth	Bottom	Fracture Set	Defect Number	Type	Type Suffix	Dip Minimum (degrees)	Dip Maximum (degrees)	Infilling Material	Aperture Observation	Planarity	Roughness	Aperture Measurement Sign	Aperture Measurement	Aperture	Spacing	Remark
BHL-06	61.47				hJ		60				ST						
BHL-06	61.75				J		70			VN	PR	RF					
BHL-06	61.88				J		40			CN	IR	RF					
BHL-06	62.00				MB												
BHL-06	62.20				J		25			CN	ST	RF					
BHL-06	62.22				J		20			CN	ST	RF					
BHL-06	62.25				hJ						IR						
BHL-06	62.32				hJ						CU						
BHL-06	62.36				J		50			CN	PR	RF					
BHL-06	62.52				J		60			CN	UN	RF					
BHL-06	62.53				hJ						PR						
BHL-06	62.55				J		5			CN	ST	RF					
BHL-06	62.67				hJ		60			IN	PR						
BHL-06	62.73				J		70			VN	PR	RF					
BHL-06	62.79				J		30			VN	ST	RF					
BHL-06	62.82				J		0			VN	IR	RF					
BHL-06	62.85				J		85			VN	CU	RF					
BHL-06	62.89				J		70			VN	IR	RF					
BHL-06	62.91				J		30			VN	IR	RF					
BHL-06	63.07				J		60			VN	PR	RF					
BHL-06	63.12				J		60			VN	PR	RF					
BHL-06	63.30				J		10			VN	CU	RF					
BHL-06	63.36				hJ		70				IR						
BHL-06	63.50				J		40			CN	ST	RF					
BHL-06	63.65				J		30			CN	IR	RF					
BHL-06	64.00				MB												
BHL-06	64.02				HB												
BHL-06	64.10				J		60			SN	IR	RF					
BHL-06	64.15				hJ		50				PR						
BHL-06	64.22				hJ		50				PR						
BHL-06	64.23				J		50			VN	IR	RF					
BHL-06	64.40				J		15			CN	ST	RF					
BHL-06	64.48				J		75			CN	UN	RF					
BHL-06	64.83	64.92			J	x2	50			CN	PR	RF					
BHL-06	65.00				MB												
BHL-06	65.05				J		30			CN	PR	RF					
BHL-06	65.16				hJ		70				PR						
BHL-06	65.28				J		60			SN	PR	RF					
BHL-06	65.35				hJ						ST						
BHL-06	65.42				J		45		qu and CLAY	CT	IR	RF					
BHL-06	65.46				J		5			CN	IR	RF					
BHL-06	65.50				hJ						UN						
BHL-06	65.55				J		50			VN		RF					
BHL-06	65.65				J		50			VN	UN	RF					
BHL-06	65.75				J		60			VN	PR	RF					
BHL-06	65.85				hJ		50				IR						
BHL-06	66.00				MB												
BHL-06	66.13				hJ		40				PR						
BHL-06	66.20				hJ						UN						
BHL-06	66.30				J		30			SN	CU	RF					
BHL-06	66.43				hJ		40				PR						
BHL-06	66.65				hJ		70				CU						
BHL-06	66.85				hJ		75				PR						
BHL-06	67.00				MB												
BHL-06	67.11				J		10			CN	PR	RF					
BHL-06	67.21				hJ		50				ST						
BHL-06	67.38				J		50			CN	ST	RF					
BHL-06	67.56				J		40			CN	UN	RF					
BHL-06	67.65				hJ		75				UN						
BHL-06	67.68				hJ		75				UN						
BHL-06	67.85				hJ		70				IR						
BHL-06	68.00				MB												
BHL-06	68.03	68.05			hJs	x2	70				UN						
BHL-06	68.88				J		30			SN	PR	RF					
BHL-06	69.00				MB												
BHL-06	69.05				hJ		65				UN						
BHL-06	69.10				DB												
BHL-06	69.75				J		10	30		SN	PR	RF					
BHL-06	69.86				J		10			VN	UN	RF					
BHL-06	70.00				MB												
BHL-06	70.07				HB												
BHL-06	71.00				MB												
BHL-06	71.07				HB		30			CN	IR						
BHL-06	71.70				J		20			SN	PR						
BHL-06	72.00				MB												
BHL-06	72.10				DB												
BHL-06	72.85				J		20			CN	PR	RF					
BHL-06	73.00				MB												
BHL-06	73.12				hJ		85				CU						

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PointID	Depth	Bottom	Fracture Set	Defect Number	Type	Type Suffix	Dip Minimum (degrees)	Dip Maximum (degrees)	Infilling Material	Aperture Observation	Planarity	Roughness	Aperture Measurement Sign	Aperture Measurement	Aperture	Spacing	Remark
BHL-06	73.33				hJ		80				PR						
BHL-06	73.50				J		25			CN	PR	RF					
BHL-06	73.60				hJ						CU						
BHL-06	74.00				MB												
BHL-06	74.25				hJ		50				PR						
BHL-06	74.40				hJ		50				IR						
BHL-06	74.58				J		5			CN	IR	RF					
BHL-06	74.87				J		20			CN	PR	RF					
BHL-06	75.00				MB												
BHL-06	75.10				DB												
BHL-06	75.40	75.90			hJs	x3	30				IR						
BHL-06	76.00				MB												
BHL-06	76.76	76.88			hJ		55				CU						
BHL-06	77.00				MB												
BHL-06	77.13				J		55			CN	ST	RF					
BHL-06	77.28				hJ		50				CU						
BHL-06	77.40				hJ		65			CN	PR						
BHL-06	77.43				J		5			CN	UN	RF					
BHL-06	77.57				J		25			CN	ST	RF					
BHL-06	77.67				hJ		50				PR						
BHL-06	77.72				DB												
BHL-06	77.75				hJ		30				CU						
BHL-06	77.76				DB												
BHL-06	78.05				J		10			CN	IR	RF					
BHL-06	78.29				J		20			CN	PR	RF					
BHL-06	78.47				hJ		10										
BHL-06	78.54				HB												
BHL-06	78.68				J		60			CT	PR	RF					
BHL-06	78.83	79.05			J	x4	35			CN	IR	RF					
BHL-06	79.00				MB												
BHL-06	79.30				hJ		85				IR						
BHL-06	79.40				hJ		30				CU						
BHL-06	79.41	79.52			J		70			CT	PR	RF					
BHL-06	79.41				J		10			CT	PR	RF					
BHL-06	79.44				J		10			CT	PR	RF					
BHL-06	79.46				J		10			CT	PR	RF					
BHL-06	79.52				J		10			CT	PR	RF					
BHL-06	79.70				hJ		70				UN						
BHL-06	80.00				J		60			VN		RF					
BHL-06	80.00	80.24			J		90			VN	UN	RF					
BHL-06	80.17				J		25			CN	IR	RF					possible DB
BHL-06	80.21				J		25			CN	IR	RF					possible DB
BHL-06	80.25				J		70			CN	IR	RF					possible DB, possible hJ
BHL-06	80.33				J		75			CN	IR	RF					possible DB, possible hJ
BHL-06	80.35				J		30			CN	UN	RF					
BHL-06	80.48				hJ		20				UN						
BHL-06	80.69	80.77			J		30			VN	IR	RF					
BHL-06	80.94				HB												
BHL-06	80.95				DB												
BHL-06	81.69	81.89			J		45			CN	ST	RF					
BHL-06	82.00				MB												
BHL-06	82.23				J		60			SN	CU	RF					
BHL-06	82.57				J		30			CN	PR	RF					
BHL-06	82.85				hJ						PR						
BHL-06	83.00				MB												
BHL-06	83.59				J		70			CN	ST	RF					
BHL-06	83.79				J		30			CN	PR	RF					
BHL-06	84.00				MB												
BHL-06	84.05				DB												
BHL-06	84.25				hJ		60				CU						
BHL-06	84.37				hJ		30				UN						
BHL-06	84.91	84.95			hJs	x2	30				PR						
BHL-06	85.00				MB						PR						
BHL-06	85.04				hJ		15				UN						
BHL-06	85.19				J		20			VN	PR	RF					
BHL-06	85.59				hJ						PR						
BHL-06	85.95				J		10			SN	IR	RF					
BHL-06	86.00				J		45			VN	PR	RF					
BHL-06	86.00				DB												
BHL-06	86.22				HB												
BHL-06	86.40				hJ		50				PR						
BHL-06	86.50				J		40			CN	PR	RF					
BHL-06	86.63	86.72			hJs	x2	60				PR						
BHL-06	87.00				MB												
BHL-06	87.05				DB												
BHL-06	87.06	87.25			hJs	x5	60				CU						
BHL-06	87.30				J		5			CN	PR	RF					
BHL-06	87.57				hJ		50				CU						
BHL-06	87.75				J		60			SN	PR	RF					

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PointID	Depth	Bottom	Fracture Set	Defect Number	Type	Type Suffix	Dip Minimum (degrees)	Dip Maximum (degrees)	Infilling Material	Aperture Observation	Planarity	Roughness	Aperture Measurement Sign	Aperture Measurement	Aperture	Spacing	Remark
BHL-06	87.81				J		5			CN	IR	RF					
BHL-06	88.00				MB												
BHL-06	88.07				DB												
BHL-06	88.36				V	/J	60		wh mi (ca?)	IN	PR						possible DB
BHL-06	88.63				J		5		wh mi	CT	PR	RF		10	OP		
BHL-06	88.70				J		5			VN	IR	RF					
BHL-06	88.80				hJ		60				PR						
BHL-06	89.00				MB												
BHL-06	89.12				DB												
BHL-06	89.17				hJ						PR						
BHL-06	89.43				J		50			SN	PR	RF					
BHL-06	89.45	89.50			DB	/CS?											
BHL-06	90.00				DB												
BHL-06	90.05				DB												
BHL-06	90.09				DB												
BHL-06	90.25				hJ		20				PR						
BHL-06	90.46				J		5			CN	PR	RF					
BHL-06	90.77				DB												
BHL-06	91.00				MB												
BHL-06	91.19				J		15			CN	ST	RF					
BHL-06	91.45				hJ		70				PR						
BHL-06	91.76				hJ		50				PR						
BHL-06	91.93				DB												
BHL-06	92.00				MB												
BHL-06	92.93				hJ		60				IR						
BHL-06	93.00				MB												
BHL-06	93.05				DB												
BHL-06	93.10				hJ		60				UN						
BHL-06	93.46				DB												
BHL-06	93.90				hJ		75			SN	PR						
BHL-06	94.00				MB												
BHL-06	94.04				J		70			SN	PR	RF					
BHL-06	94.10				HB												
BHL-06	94.20				hJ		50				CU						
BHL-06	94.55	94.62			hJs	x3	40				CU						
BHL-06	94.69				J		5			CN	IR	RF					
BHL-06	95.00				MB												
BHL-06	96.00				MB												
BHL-06	96.05				DB												
BHL-06	96.39				J		10			CN	PR	RF					
BHL-06	96.71				hJ		40				CU						
BHL-06	97.00				MB												
BHL-06	97.12				hJ						CU						
BHL-06	97.24				J		20			CN	ST	RF					
BHL-06	97.26				hJ						ST						
BHL-06	97.83				hJ		50				PR						
BHL-06	97.90				hJ		50				PR						
BHL-06	98.00				MB												
BHL-06	98.44				J		60			SN	PR	RF					
BHL-06	98.80				hJ		80				ST						
BHL-06	98.95				hJ						PR						
BHL-06	99.00				MB		20										
BHL-06	99.05				DB												
BHL-06	99.18	99.24			hJ		40				CU						
BHL-06	99.29				J		10			CN	PR	RF					
BHL-06	99.40				hJ		85				IR						
BHL-06	99.81				hJ		50				CU	RF					
BHL-06	100.00				MB												
BHL-06	100.05				J		5			VN	PR	RF					
BHL-06	100.27				J		10			CN	PR	RF					
BHL-06	100.50				hJ												
BHL-06	100.67				hJ						CU						
BHL-06	100.77				hJ		50				IR						
BHL-06	101.00				MB												
BHL-06	101.28				J		30			SN	PR	RF					
BHL-06	101.56				J		40			SN	PR	RF					
BHL-06	101.80	101.86			Js	x2/DB				CN	PR	RF					
BHL-06	102.00				MB												
BHL-06	102.03	102.92			hJs	x8	30	45			PR						
BHL-06	102.05				DB												
BHL-06	102.30				hJ		80				ST						
BHL-06	102.58				J		30			CN	PR	RF					
BHL-06	102.75				hJ		50				IR						
BHL-06	103.00				MB												
BHL-06	103.19				hJ		20				UN						
BHL-06	103.45				hJ						PR						
BHL-06	103.75				J		45			SN	ST	RF					
BHL-06	104.00				MB												
BHL-06	104.70				DB												

Pioneer-Burdekin Pumped Hydro Energy Scheme: Tranche 1 – BHL-06 Defects List

Refer to Explanatory Notes sheets for abbreviation definitions

PointID	Depth	Bottom	Fracture Set	Defect Number	Type	Type Suffix	Dip Minimum (degrees)	Dip Maximum (degrees)	Infilling Material	Aperture Observation	Planarity	Roughness	Aperture Measurement Sign	Aperture Measurement	Aperture	Spacing	Remark
BHL-06	104.82				J		50			CN	PR	RF					
BHL-06	105.00				hJ		90				PR						
BHL-06	105.00				MB												
BHL-06	105.01				DB												
BHL-06	105.45				hJ		20			SN	PR						
BHL-06	105.66				hJ		10				PR						
BHL-06	105.86				hJ		20				CU						
BHL-06	106.00				MB												
BHL-06	106.20				hJ		5				UN						
BHL-06	106.37				J		5			SN	PR	RF					
BHL-06	106.59				J		10			VN	PR	RF					
BHL-06	106.81				hJ		30				CU						
BHL-06	107.00				J		30			CN		RF					
BHL-06	107.05				J		30			SN	PR	RF					
BHL-06	107.15				hJ		40				CU						
BHL-06	107.40				hJ		75				UN						
BHL-06	107.94				J		20			SN	PR	RF					
BHL-06	108.00				MB												
BHL-06	108.10				DB												
BHL-06	108.20				J		40			CN	PR	RF					
BHL-06	108.30				J		60			SN	PR	RF					
BHL-06	108.50	108.63			hJs	x3	30				PR						60-70 mm spacing
BHL-06	108.84				J		40			CN	PR	RF					
BHL-06	109.00				MB												
BHL-06	109.10				hJ		80				IR						
BHL-06	109.42				J		15			CN	PR	RF					
BHL-06	109.44	109.57			hJs	x2	40			SN	PR	RF					140 mm spacing
BHL-06	109.55				J		15			CN	PR	RF					
BHL-06	109.65				hJ		40				PR						
BHL-06	110.00				MB												
BHL-06	110.30				J		55			SN	PR	RF					
BHL-06	110.76				DB												
BHL-06	110.84				J		30			CN	PR	RF					
BHL-06	111.00				MB												
BHL-06	111.10				DB												
BHL-06	111.41				hJ		25				ST						
BHL-06	111.50				hJ		45				PR						
BHL-06	111.57				hJ		20				PR						
BHL-06	111.77				J		40			SN	PR	RF					
BHL-06	111.85				J	/V	55			CT	PR	RF					<10 mm
BHL-06	111.89				hJ		55				PR	RF					
BHL-06	111.90				hJ		55				PR						
BHL-06	111.92				hJ		55				PR						
BHL-06	112.00				MB												
BHL-06	112.32				J		60			SN	PR	RF					
BHL-06	112.68	112.69			J		10			CN	IR	RF					
BHL-06	113.00				MB												
BHL-06	113.21				hJ		80				IR						
BHL-06	113.38				J		15			SN	PR	RF					
BHL-06	113.40				hJ						IR						
BHL-06	113.45				hJ		65				IR						
BHL-06	113.84	113.98			hJs	x3	60				UN						40-50 mm spacing
BHL-06	113.95				hJ		55				ST						
BHL-06	113.96				J		5			CN	PR	RF					
BHL-06	114.00				MB												
BHL-06	114.10				DB												
BHL-06	114.27				hJ		85				IR						
BHL-06	114.36				hJ		30				PR						
BHL-06	114.44				hJ		25				PR						
BHL-06	114.52				hJ		30			CN	PR						
BHL-06	114.58				J		30				IR						
BHL-06	114.66				J	/V	55			SN	PR	RF	<	10	OP		
BHL-06	114.74				J		20			SN	UN	RF	<	10	OP		
BHL-06	114.94				J		45			SN	PR						
BHL-06	115.00				MB												
BHL-06	115.12	115.26			hJs	x3	65				IR						40-90 mm spacing
BHL-06	115.22				J		25			CN	PR	RF					
BHL-06	115.41	115.58			hJs	x3	50				PR						20-250 mm spacing
BHL-06	115.74				J		20			SN	PR	RF					
BHL-06	117.00				MB												
BHL-06	117.10				DB												
BHL-06	117.30				hJ		60				IR						
BHL-06	117.34	117.36			hJs	x2	40				PR						40 mm spacing
BHL-06	118.00				MB												
BHL-06	118.38				hJ		70				UN						
BHL-06	118.71				J		10			VN	IR	RF					
BHL-06	118.72	118.81			hJs	x3	60				CU						10-30 mm spacing
BHL-06	118.76				hJ						CU						
BHL-06	118.77				hJ		60				CU						

Pioneer-Burdekin Pumped Hydro Energy Scheme: Tranche 1 – BHL-06 Defects List

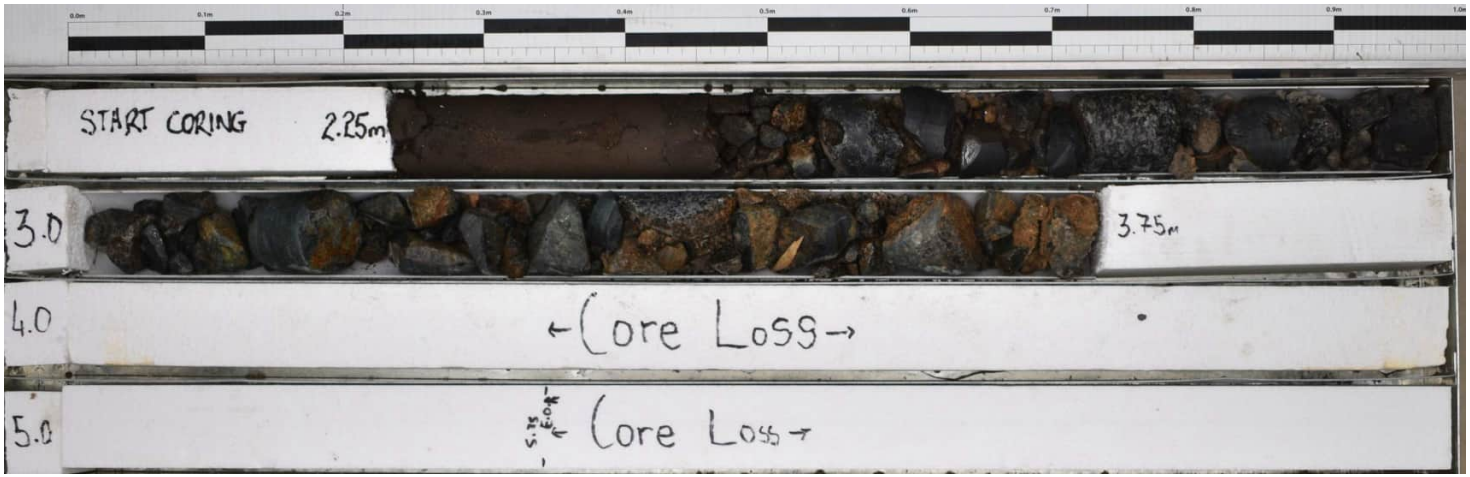
Refer to Explanatory Notes sheets for abbreviation definitions

PointID	Depth	Bottom	Fracture Set	Defect Number	Type	Type Suffix	Dip Minimum (degrees)	Dip Maximum (degrees)	Infilling Material	Aperture Observation	Planarity	Roughness	Aperture Measurement Sign	Aperture Measurement	Aperture	Spacing	Remark
BHL-06	118.90				hJ		80				UN						
BHL-06	119.00				MB												
BHL-06	119.10				DB												
BHL-06	120.32				J		25			CN	UN	RF					
BHL-06	120.36				J		30			CN	CU	RF					
BHL-06	120.58	120.70			hJs	x2	15			SN	UN	RF					120 mm spacing
BHL-06	120.95				hJ		60				UN						
BHL-06	121.00				MB												
BHL-06	121.24				J		30			CN	PR	RF					
BHL-06	121.47				J		10			CN	UN						
BHL-06	122.00				MB												
BHL-06	122.20				hJ		55				UN						
BHL-06	122.28				J		60			SN	UN	RF					
BHL-06	122.55				J		15			SN	PR	RF					
BHL-06	122.85				J		50			SN	UN	RF					
BHL-06	123.00				MB												
BHL-06	123.07				hJ		50				ST						
BHL-06	123.11	123.13			hJ		30				PR						
BHL-06	123.12				J		30			SN	PR	RF					
BHL-06	123.45				J	x2/V	60			CT	PR	RF	<	35			
BHL-06	123.54				J		20			SN	CU						
BHL-06	123.58				hJ		40				UN						
BHL-06	123.75				hJ		45				UN						
BHL-06	124.00				MB												
BHL-06	124.22				hJ		50				CU						
BHL-06	124.48				hJ		55				PR						
BHL-06	124.57				hJ		60				UN						
BHL-06	124.70				hJ		45				UN						
BHL-06	124.83				hJ		55				IR						
BHL-06	125.00				MB												
BHL-06	125.05				J		45			SN	PR						
BHL-06	125.08				hJ		55				IR						
BHL-06	126.00				MB												
BHL-06	126.04				J		40			CN	PR	RF					
BHL-06	126.10				DB												
BHL-06	127.00				MB												
BHL-06	127.20				hJ		50				PR						
BHL-06	127.45				hJ		70				UN						
BHL-06	127.70				hJ		60				UN						
BHL-06	127.96				J		35			SN	PR	RF					possible DB
BHL-06	128.00				MB												
BHL-06	128.38				J		35			CN	UN	RF					possible DB
BHL-06	128.60	128.72			hJs	x2	45				PR						100 mm spacing
BHL-06	129.00				MB												
BHL-06	129.11				DB												
BHL-06	129.15				hJ		50				UN						
BHL-06	129.25				hJ		65			SN	ST						
BHL-06	129.30				hJ		50				ST						
BHL-06	129.34				hJ		40				UN						
BHL-06	129.36				hJ		40			CN	PR						
BHL-06	129.42				J		30			CN	UN	RF					
BHL-06	129.50				hJ		35				PR						
BHL-06	129.80				hJ		85				IR						
BHL-06	129.89				hJ		30				PR						
BHL-06	130.00				MB												
BHL-06	130.14				J		20			CN	IR	RF					
BHL-06	130.20				hJ		20				PR						
BHL-06	130.21				hJ		85				IR						
BHL-06	130.22				hJ		85				IR						
BHL-06	130.23				hJ		55			SN	IR						
BHL-06	130.25				hJ		70				IR						
BHL-06	130.34				hJ		75				UN						
BHL-06	130.40				J		20			SN	PR	RF					
BHL-06	130.43				hJ		60				ST						
BHL-06	130.48				hJ		75				ST						
BHL-06	130.55				hJ		30				PR						
BHL-06	130.73				J		30			SN	PR	RF					
BHL-06	130.76				hJ		30				PR						
BHL-06	131.00				MB												
BHL-06	131.08				J		50			CT	PR	RF	<	5	OP		
BHL-06	131.36				J		10			SN	PR	RF					
BHL-06	132.00				MB												
BHL-06	132.10				DB												
BHL-06	132.78				hJ		20				PR						
BHL-06	133.00				MB												
BHL-06	133.50				J		90			CN	UN	RF					
BHL-06	133.75				J		5			CN	PR	RF					
BHL-06	134.00				MB												
BHL-06	136.00				MB												

Pioneer-Burdekin Pumped Hydro Energy Scheme: Tranche 1 – BHL-06 Defects List

Refer to Explanatory Notes sheets for abbreviation definitions

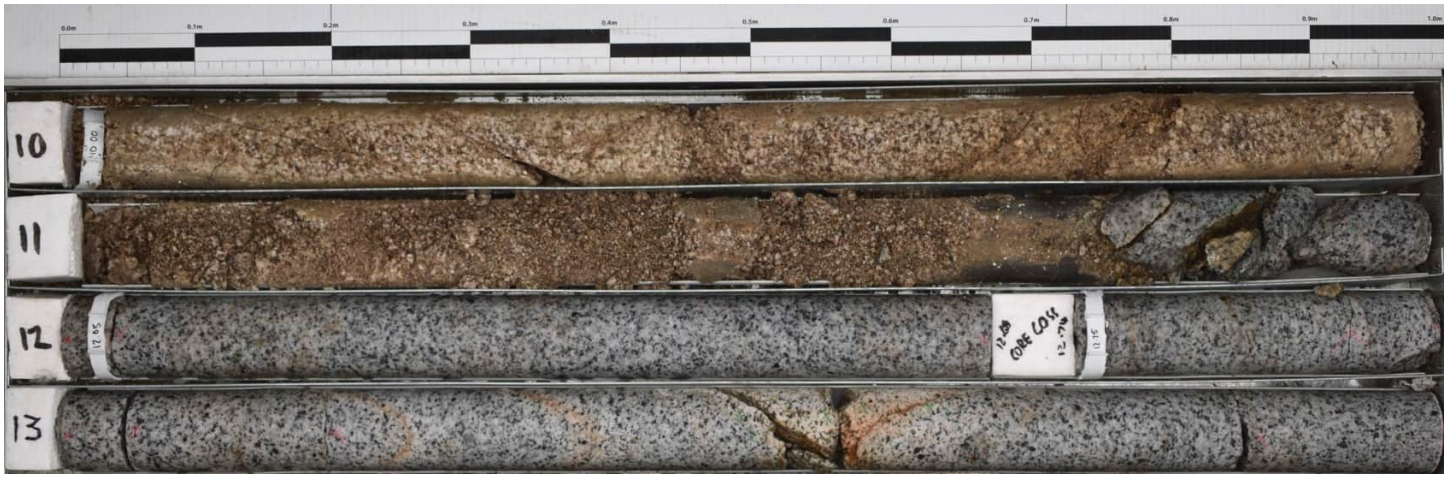
PointID	Depth	Bottom	Fracture Set	Defect Number	Type	Type Suffix	Dip Minimum (degrees)	Dip Maximum (degrees)	Infilling Material	Aperture Observation	Planarity	Roughness	Aperture Measurement Sign	Aperture Measurement	Aperture	Spacing	Remark
BHL-06	136.22	136.48			hJs	x3	45				PR						70-200 mm spacing
BHL-06	136.33	136.84			hJs	x3	55				PR						110-410 mm spacing
BHL-06	136.53				J		45			CN	PR	RF					
BHL-06	137.00				MB												
BHL-06	137.09				hJ		50				PR						
BHL-06	137.14				J		5			CN	PR	RF					
BHL-06	137.25				hJ		50				PR						
BHL-06	137.53				hJ		50				CU						
BHL-06	137.55				hJ		60				UN						
BHL-06	137.58				hJ		70				UN						
BHL-06	137.60				hJ		70				PR						
BHL-06	137.62				J		5			CN	PR	RF					
BHL-06	137.78				hJ		30				PR						
BHL-06	137.81				J		30			SN	PR	RF					
BHL-06	137.86				hJ		60				PR						
BHL-06	137.93				hJ		60				PR						
BHL-06	137.94				HB		65				PR						
BHL-06	138.00				MB												
BHL-06	138.05				hJ		50				ST						
BHL-06	138.17	138.70			hJ		60				CU						
BHL-06	138.24				hJ		20				PR						
BHL-06	138.59				J		10			SN	PR	RF					
BHL-06	138.88	138.96			hJs	x2	60			SN	ST	RF					80 mm spacing
BHL-06	139.00				MB												
BHL-06	139.48				hJ		55				UN						
BHL-06	139.86				J		50			SN	PR	RF					
BHL-06	139.92				hJ		55				PR						
BHL-06	139.93				J		50			SN	PR	RF					
BHL-06	140.00				MB												
BHL-06	140.10				hJ		65				UN						
BHL-06	140.26				hJ		65				UN						
BHL-06	140.34				hJ		60				UN						
BHL-06	140.38				J		10			SN	CU						
BHL-06	140.50				hJ		75				ST						
BHL-06	141.00				MB												



PointID : BHL-06 Depth Range: 2.25 - 6.00 m

PointID : BHL-06 Depth Range: 6.00 - 10.00 m

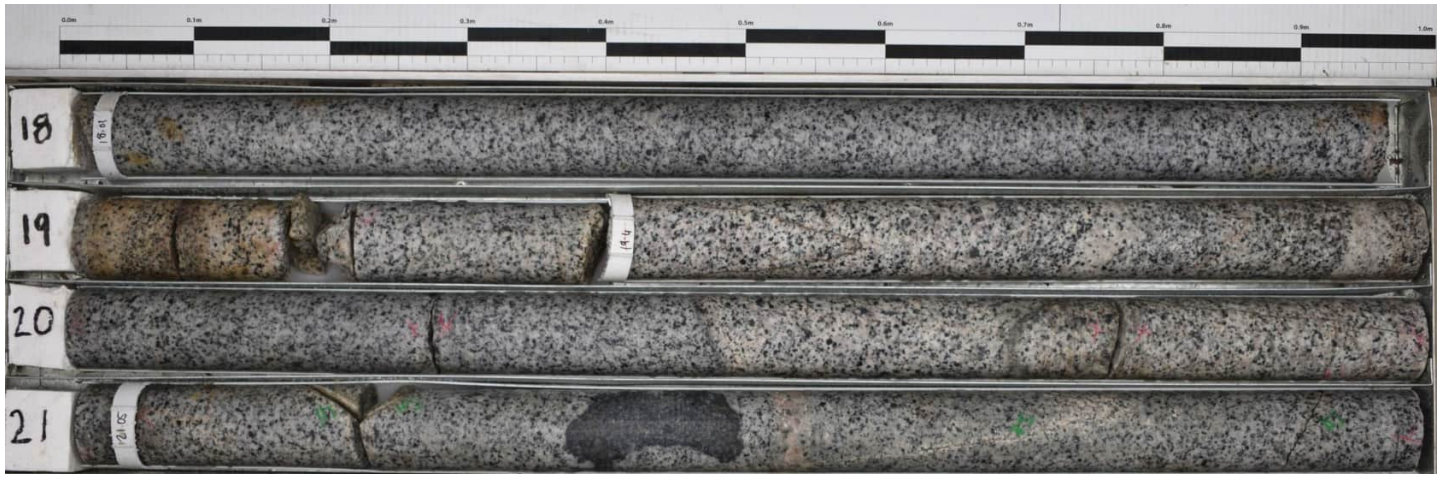
wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-06	DRAWN RC	DATE 2/10/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 1/18



PointID : BHL-06 Depth Range: 10.00 - 14.00 m

PointID : BHL-06 Depth Range: 14.00 - 18.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-06	DRAWN RC	DATE 2/10/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 2/18



PointID : BHL-06 Depth Range: 18.00 - 22.00 m

PointID : BHL-06 Depth Range: 22.00 - 26.00 m

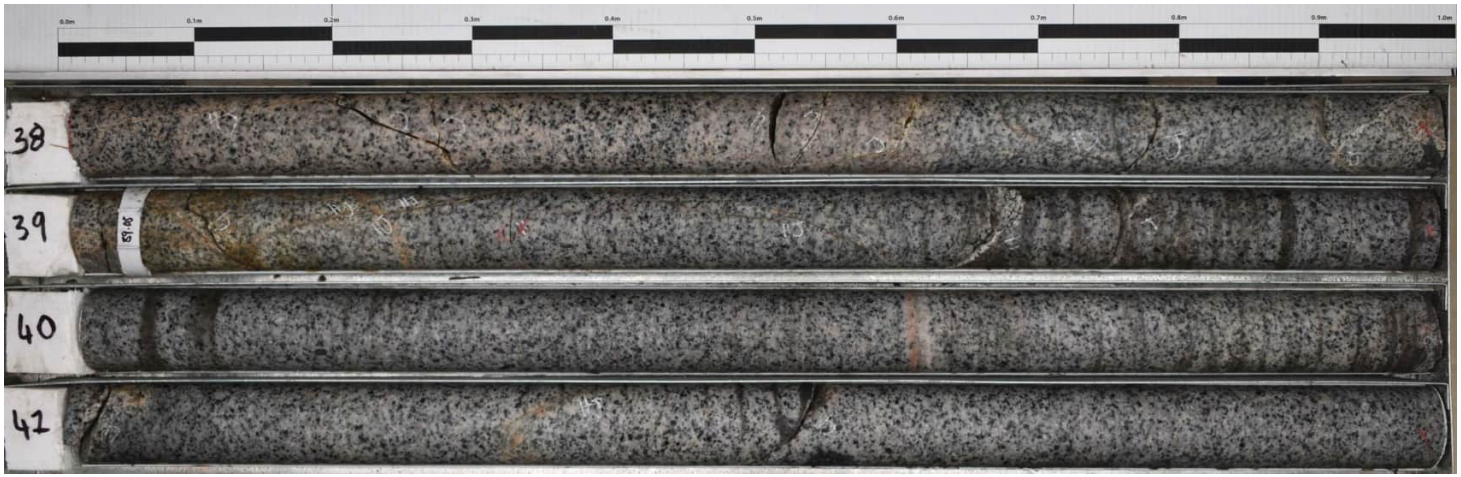
wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-06	DRAWN RC	DATE 2/10/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 3/18

PointID : BHL-06 Depth Range: 26.00 - 30.00 m

PointID : BHL-06 Depth Range: 30.00 - 34.00 m

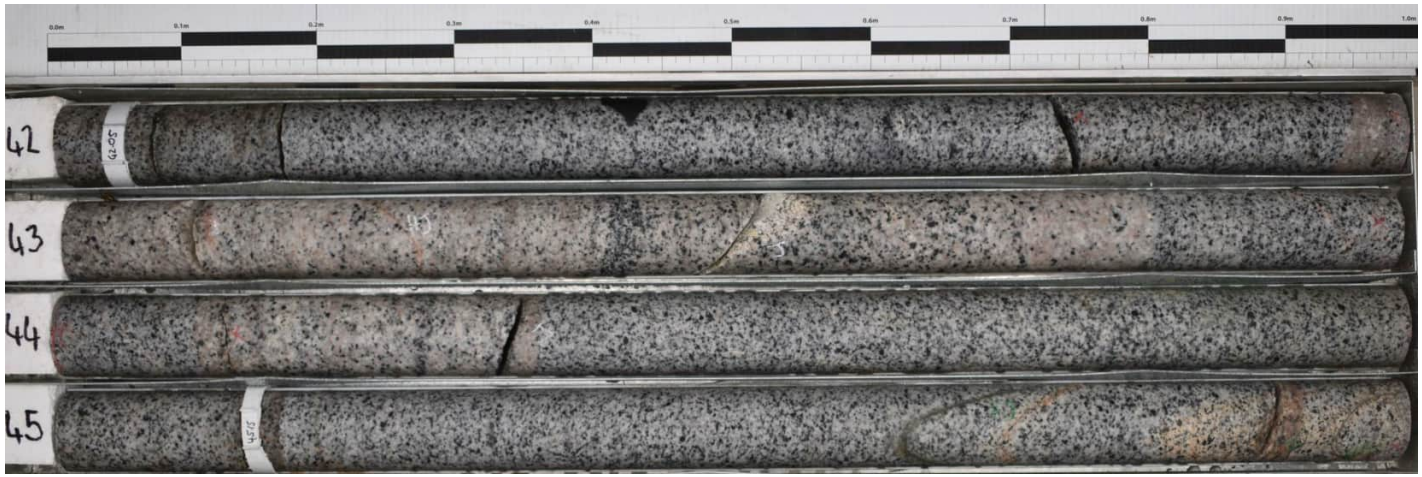
wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-06	DRAWN RC	DATE 2/10/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 4/18

PointID : BHL-06 Depth Range: 34.00 - 38.00 m



PointID : BHL-06 Depth Range: 38.00 - 42.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-06	DRAWN RC	DATE 2/10/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 5/18



PointID : BHL-06 Depth Range: 42.00 - 46.00 m

PointID : BHL-06 Depth Range: 46.00 - 50.00 m

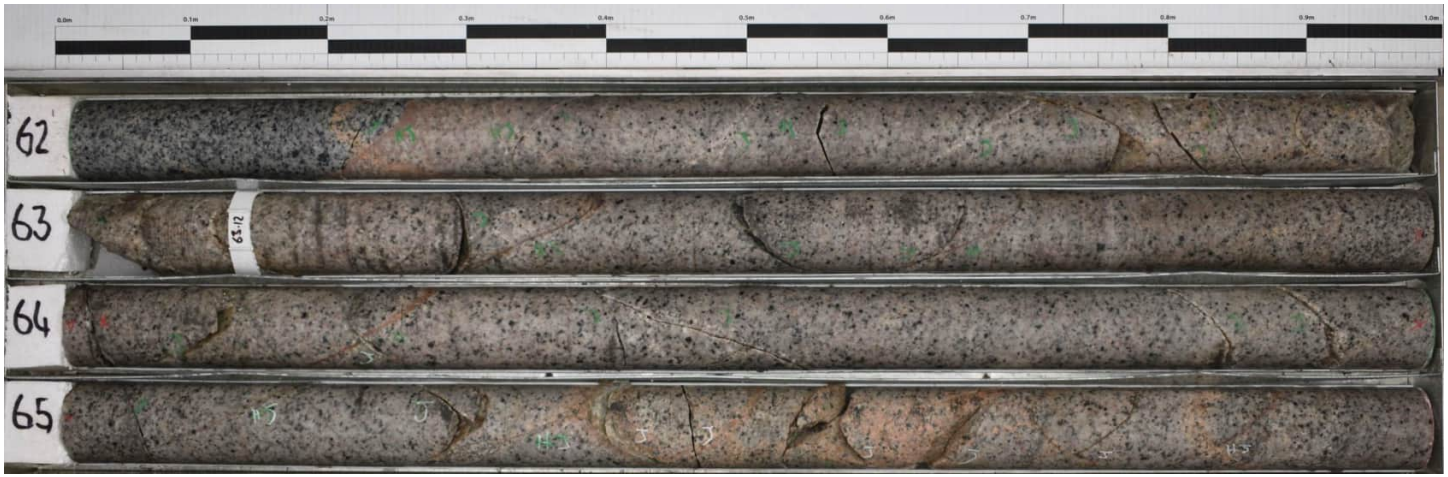
wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-06	DRAWN RC	DATE 2/10/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 6/18

PointID : BHL-06 Depth Range: 50.00 - 54.00 m

PointID : BHL-06 Depth Range: 54.00 - 58.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-06	DRAWN RC	DATE 2/10/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 7/18

PointID : BHL-06 Depth Range: 58.00 - 62.00 m



PointID : BHL-06 Depth Range: 62.00 - 66.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-06	DRAWN RC	DATE 2/10/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 8/18

PointID : BHL-06 Depth Range: 66.00 - 70.00 m

PointID : BHL-06 Depth Range: 70.00 - 74.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-06	DRAWN RC	DATE 2/10/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 9/18

PointID : BHL-06 Depth Range: 74.00 - 78.00 m

PointID : BHL-06 Depth Range: 78.00 - 82.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-06	DRAWN RC	DATE 2/10/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 10/18

PointID : BHL-06 Depth Range: 82.00 - 86.00 m

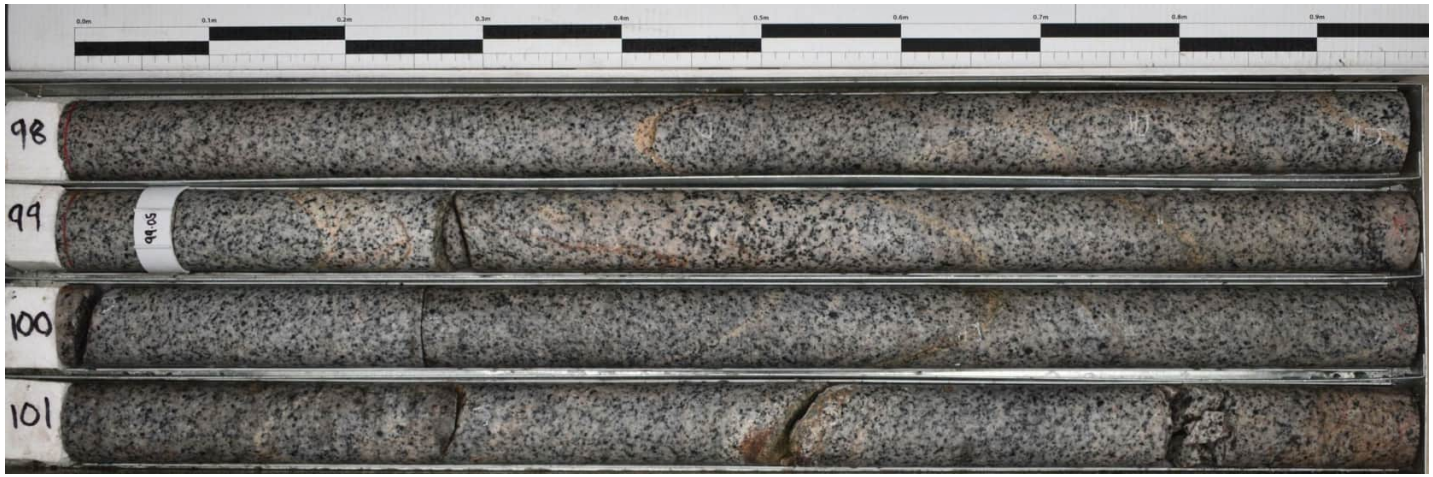
PointID : BHL-06 Depth Range: 86.00 - 90.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-06	DRAWN RC	DATE 2/10/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 11/18

PointID : BHL-06 Depth Range: 90.00 - 94.00 m

PointID : BHL-06 Depth Range: 94.00 - 98.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-06	DRAWN RC	DATE 2/10/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 12/18



PointID : BHL-06 Depth Range: 98.00 - 102.00 m

PointID : BHL-06 Depth Range: 102.00 - 106.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-06	DRAWN RC	DATE 2/10/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 13/18

PointID : BHL-06 Depth Range: 106.00 - 110.00 m

PointID : BHL-06 Depth Range: 110.00 - 114.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-06	DRAWN RC	DATE 2/10/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 14/18

PointID : BHL-06 Depth Range: 114.00 - 118.00 m

PointID : BHL-06 Depth Range: 118.00 - 122.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-06	DRAWN RC	DATE 2/10/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 15/18

PointID : BHL-06 Depth Range: 122.00 - 126.00 m

PointID : BHL-06 Depth Range: 126.00 - 130.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-06	DRAWN RC	DATE 2/10/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 16/18

PointID : BHL-06 Depth Range: 130.00 - 134.00 m

PointID : BHL-06 Depth Range: 134.00 - 138.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-06	DRAWN RC	DATE 2/10/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 17/18

PointID : BHL-06 Depth Range: 138.00 - 141.10 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-06	DRAWN RC	DATE 2/10/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 18/18

BHL-06 Structural Log

WSP Australia Pty Limited
Level 12, 900 Ann Street
Fortitude Valley
QLD 4006
Australia

GEOPHYSICAL RECORD OF BOREHOLE: BHL-06

PROJECT:	Pioneer-Burdekin PHES	JOB #	PS138693
CLIENT:	Queensland Hydro	DATE:	20-Dec-2023

BOREHOLE DETAILS

LOCATION:	Lower Reservoir	BH DEPTH:	141.05 m
EASTING:	660091.759 m E	BH DIAMETER:	96 mm (HQ)
NORTHING:	7661263.923 m N	BH AZIMUTH:	312°
ELEVATION:	156.767 m	BH PLUNGE:	-68°
COORD SYSTEM:	MGA2020-55	CASING DEPTH:	13.25 m
LOGGING DATUM:	Ground Level	CASING TYPE:	HWT

DOCUMENT DETAILS

LOGGED BY:	G Hay
LOGGED DATE:	08/11/2023
DRAWN BY:	SB
REVIEWED BY:	GH
FILE:	BHL-06_Structure_RevC
LOGGED DEPTH:	140.18 m

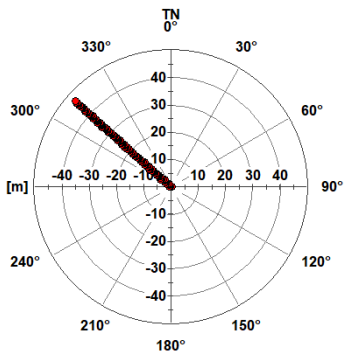
NOTES

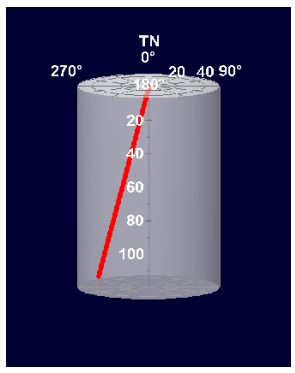
Image logs are oriented relative to high side. Final structures corrected to true north using magnetic declination of 8.2 deg East.

Mechanical calliper log used for structure dip corrections.

All logs zeroed to ground level. Cased section assumed straight for deviation calculations.

BOREHOLE DEVIATION

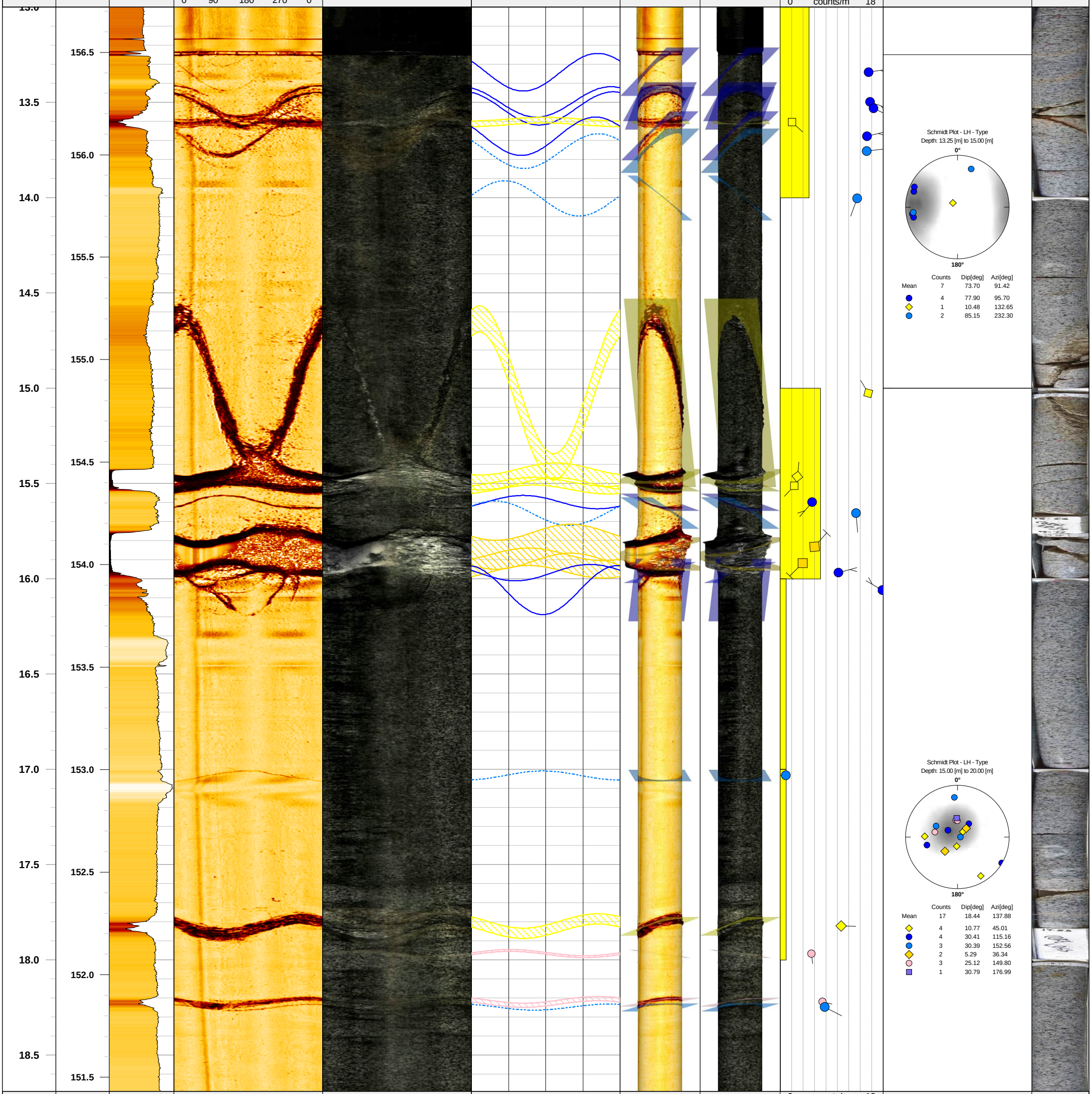


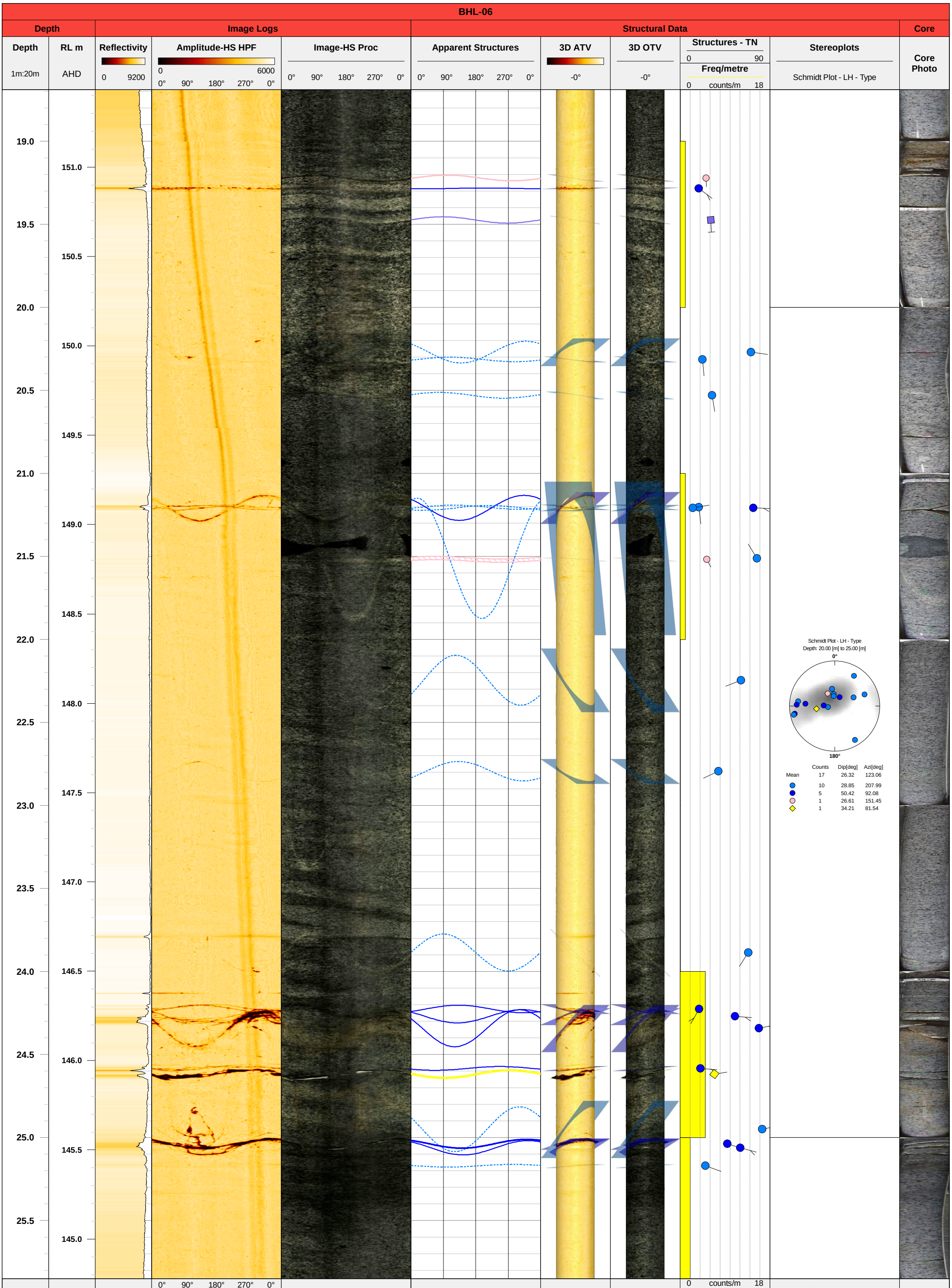


INTERPRETED STRUCTURES

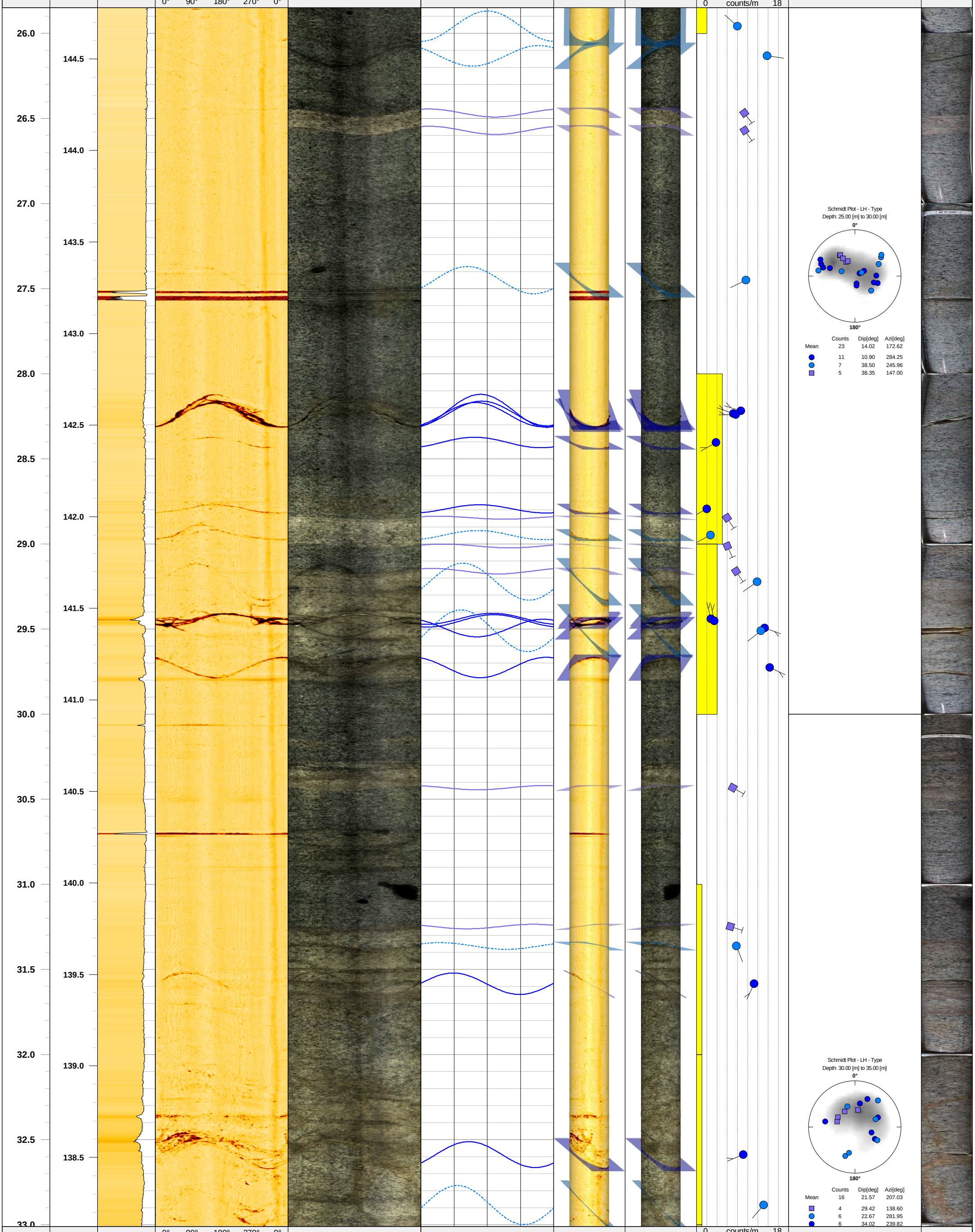
Contact | Joint | Shear Seam | Shear Zone | Vein | Healed Joint

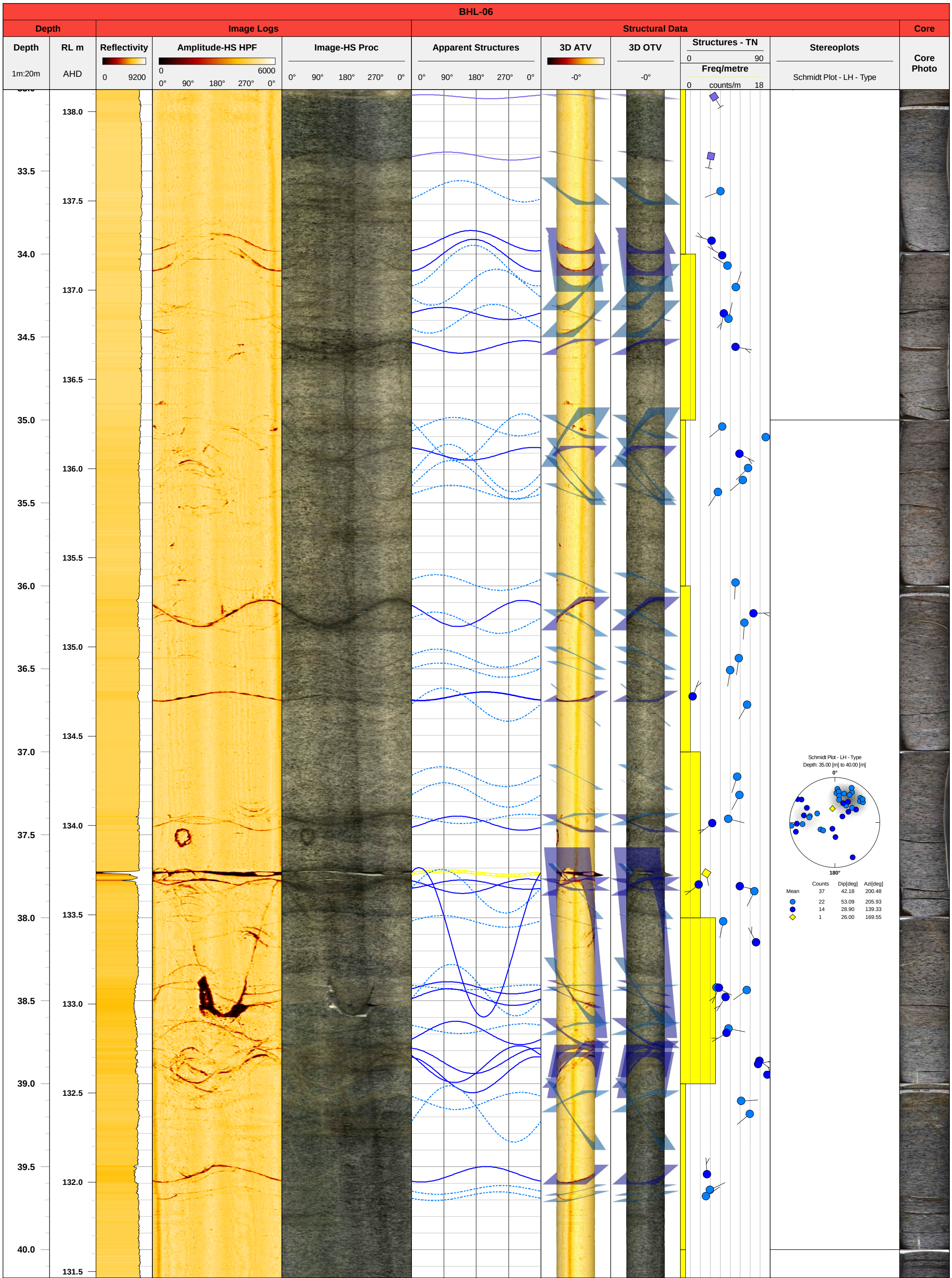
BHL-06



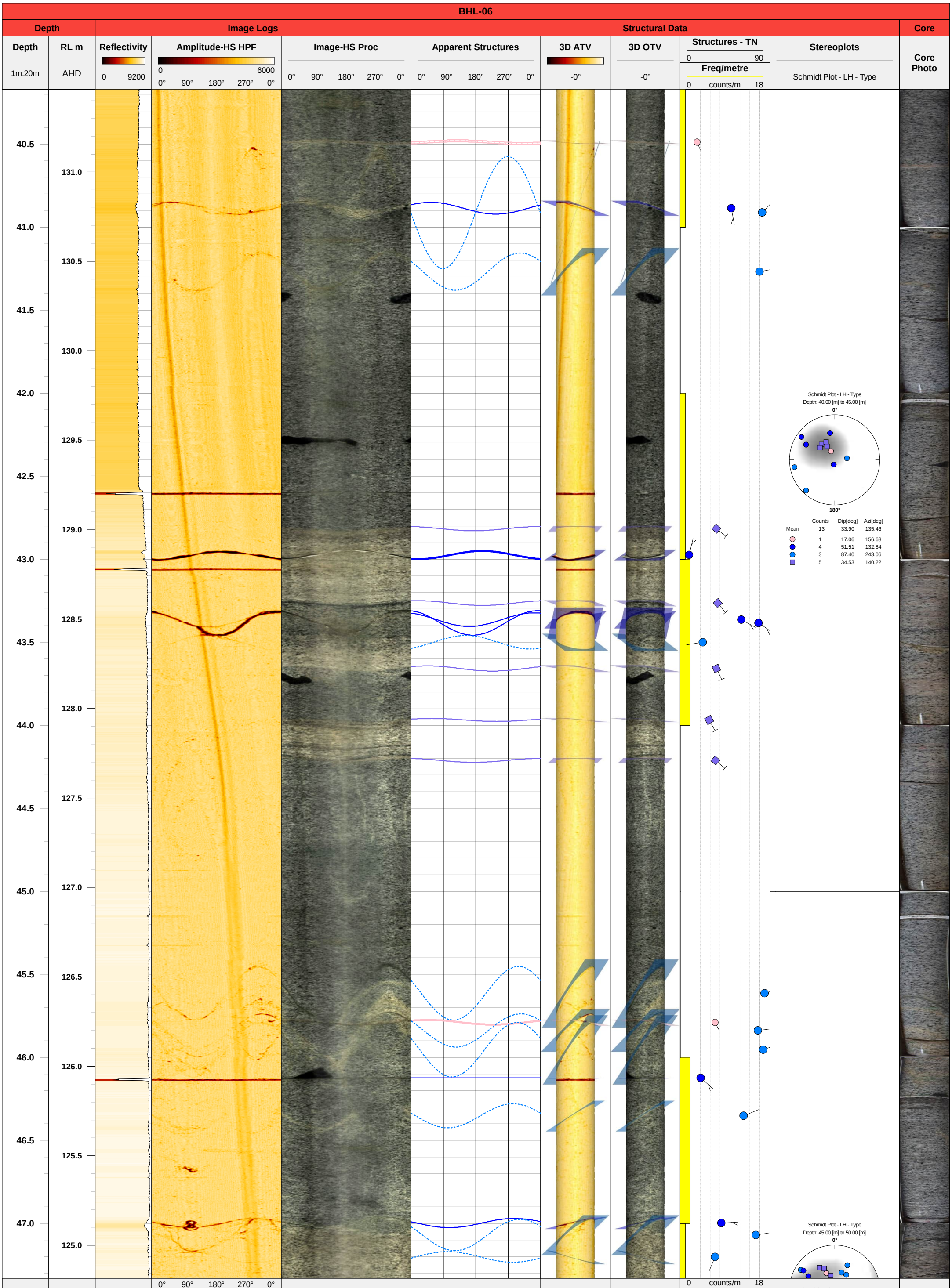


BHL-06





BHL-06



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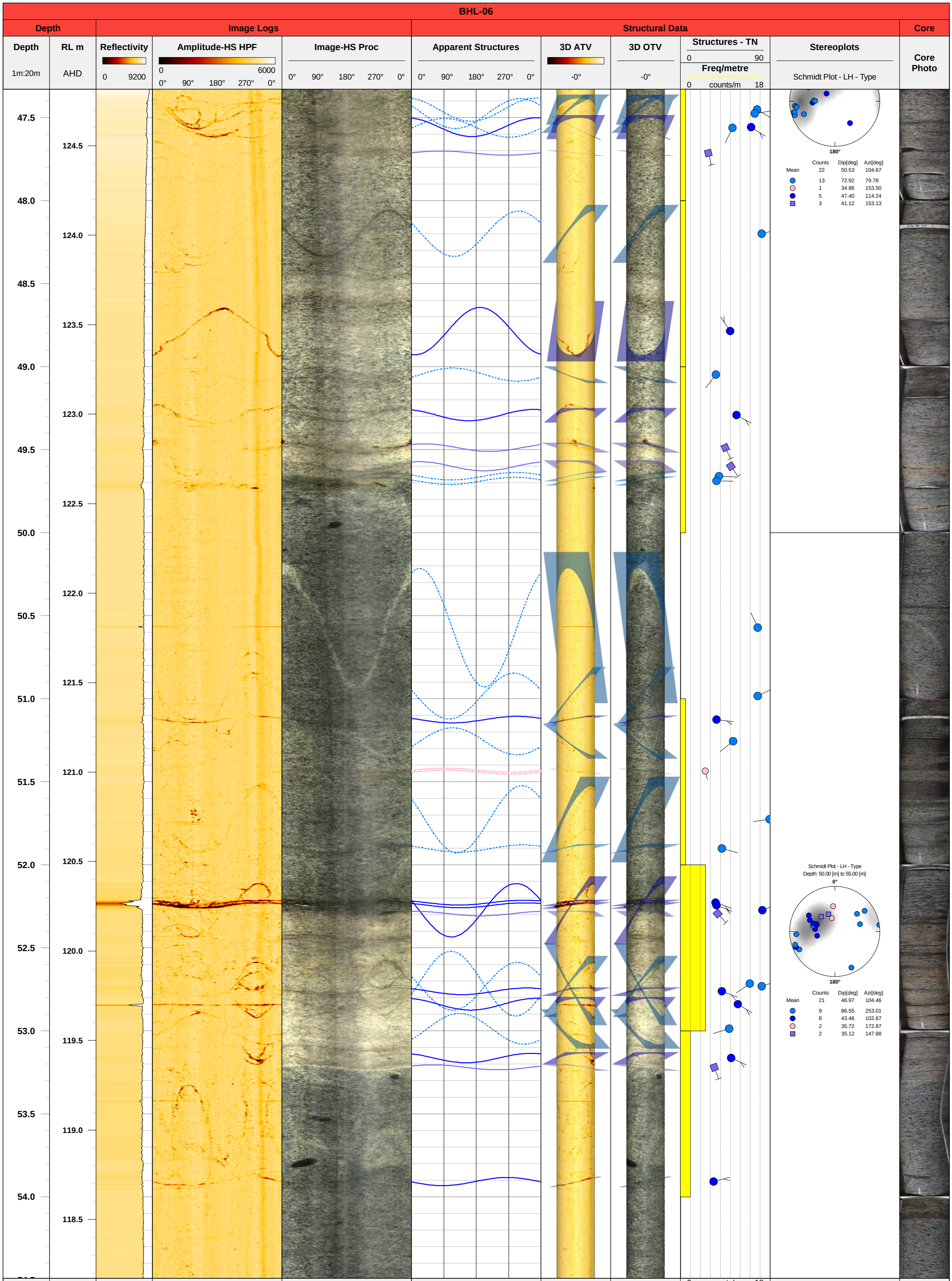

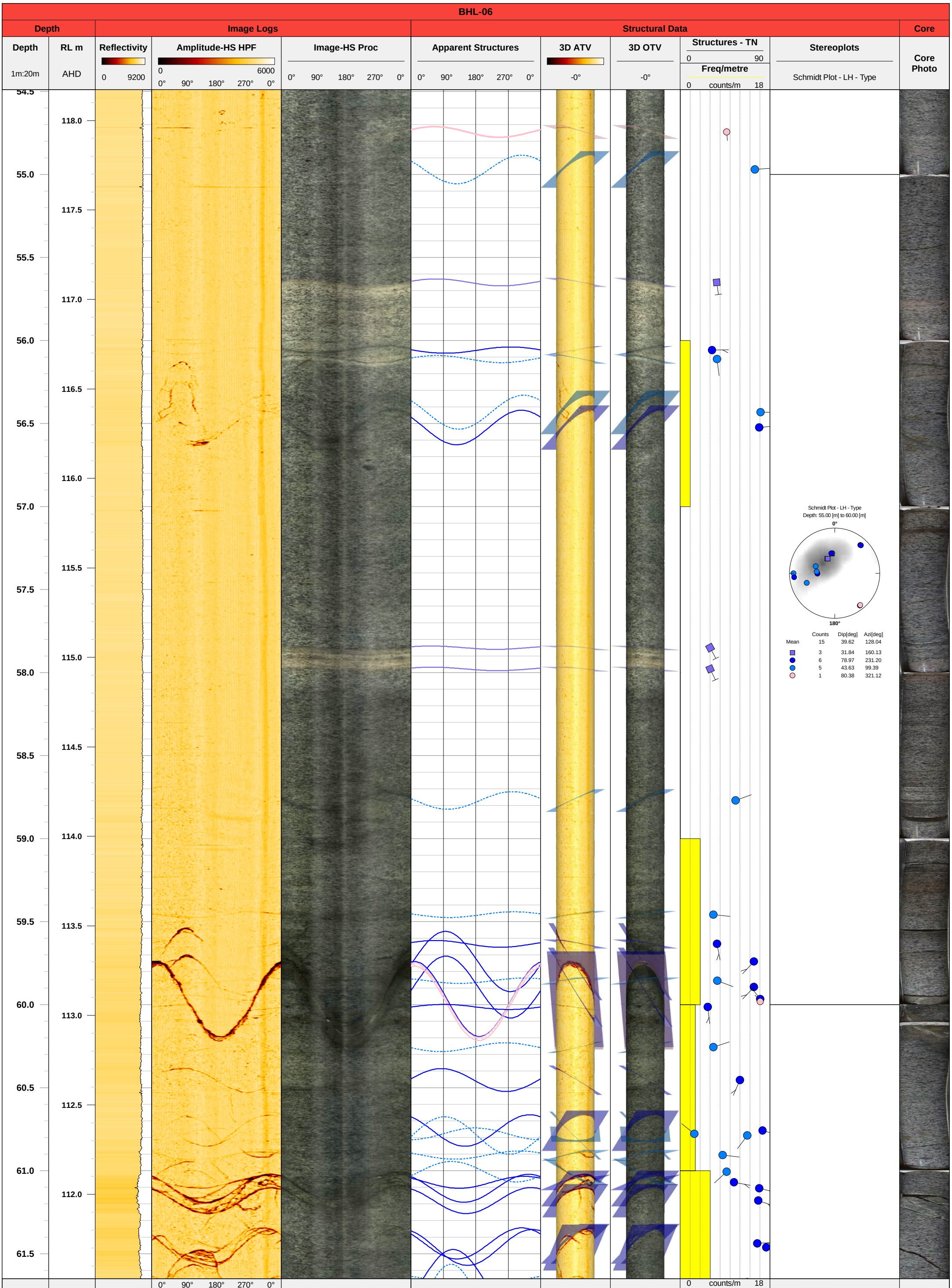

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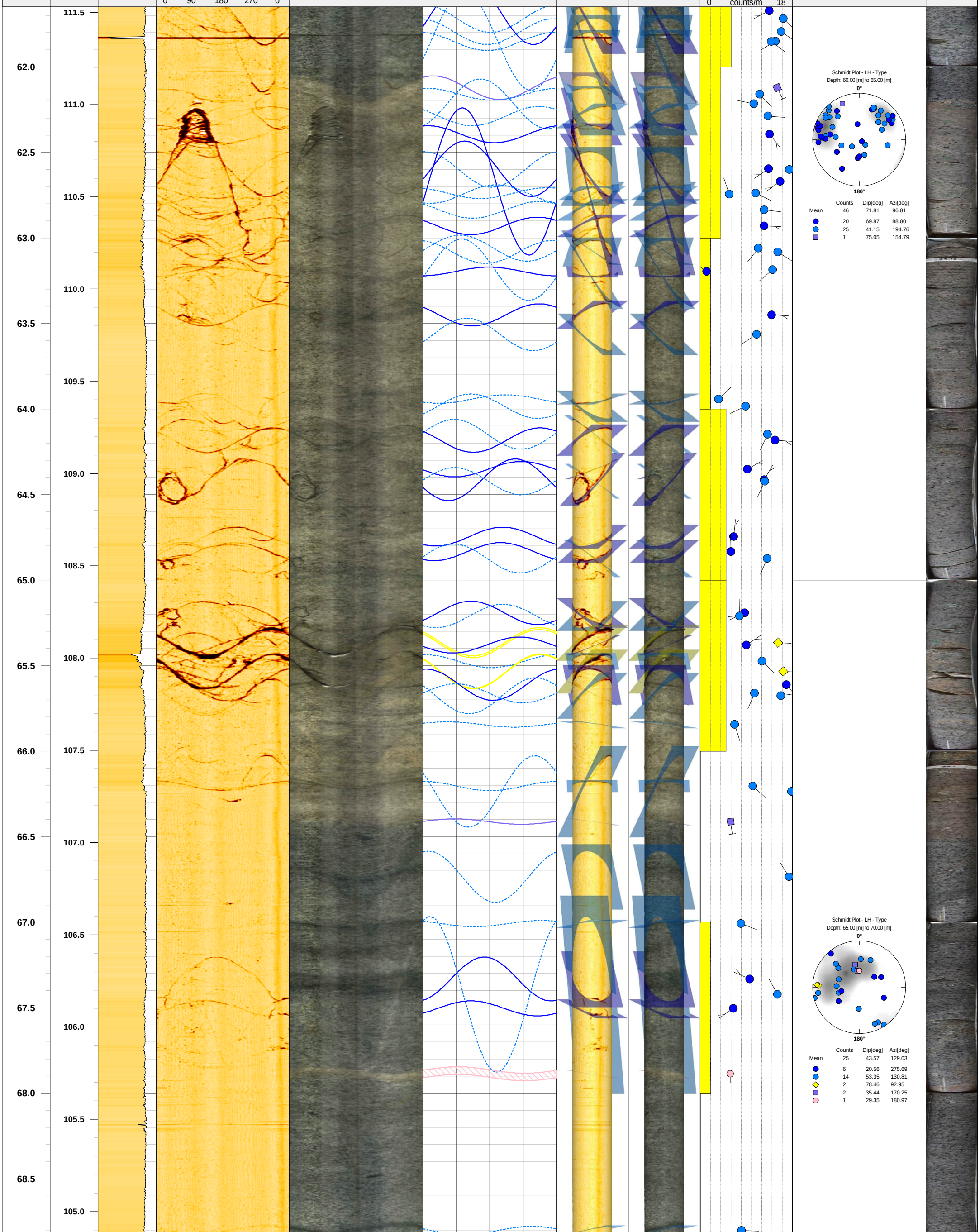

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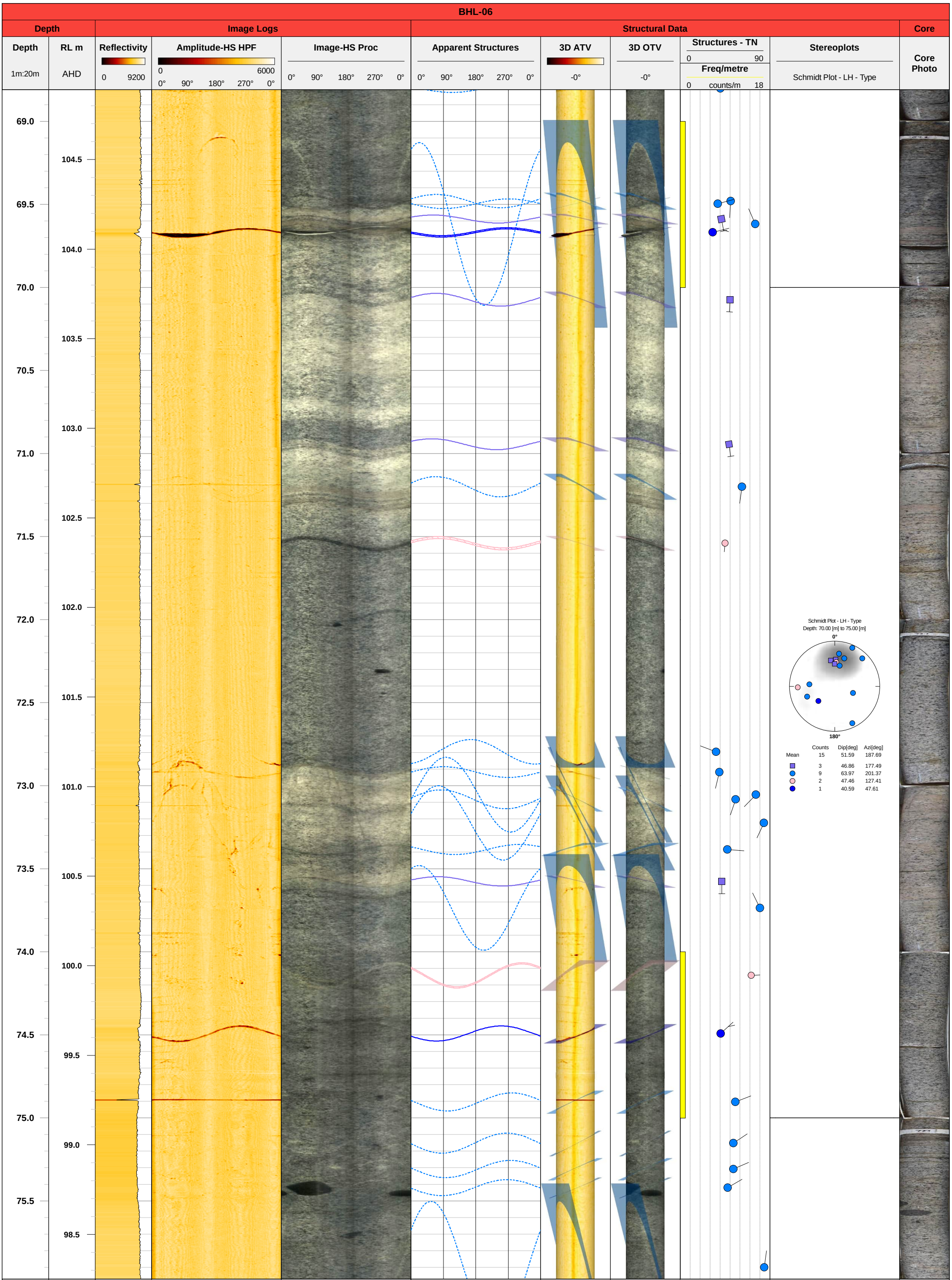

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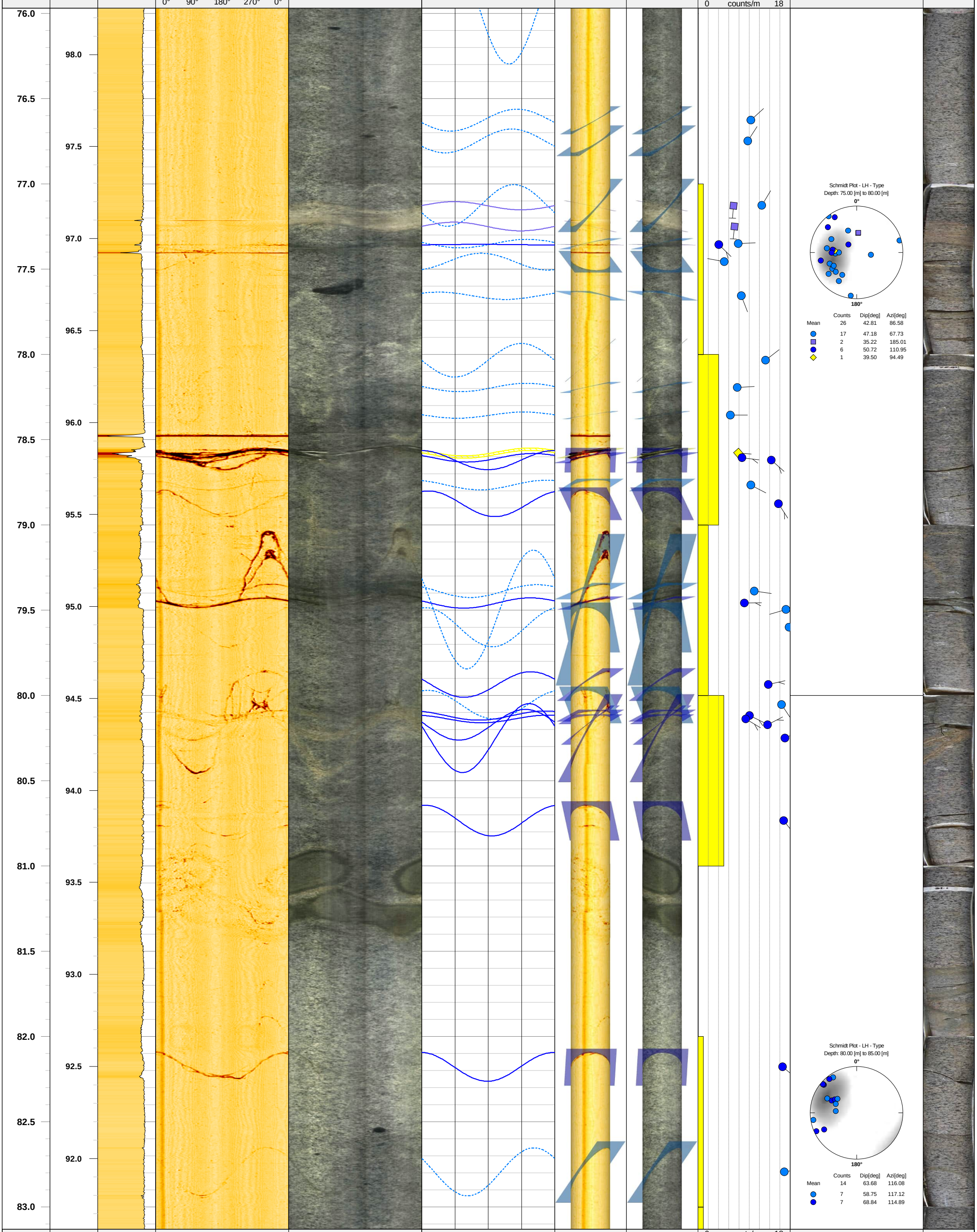
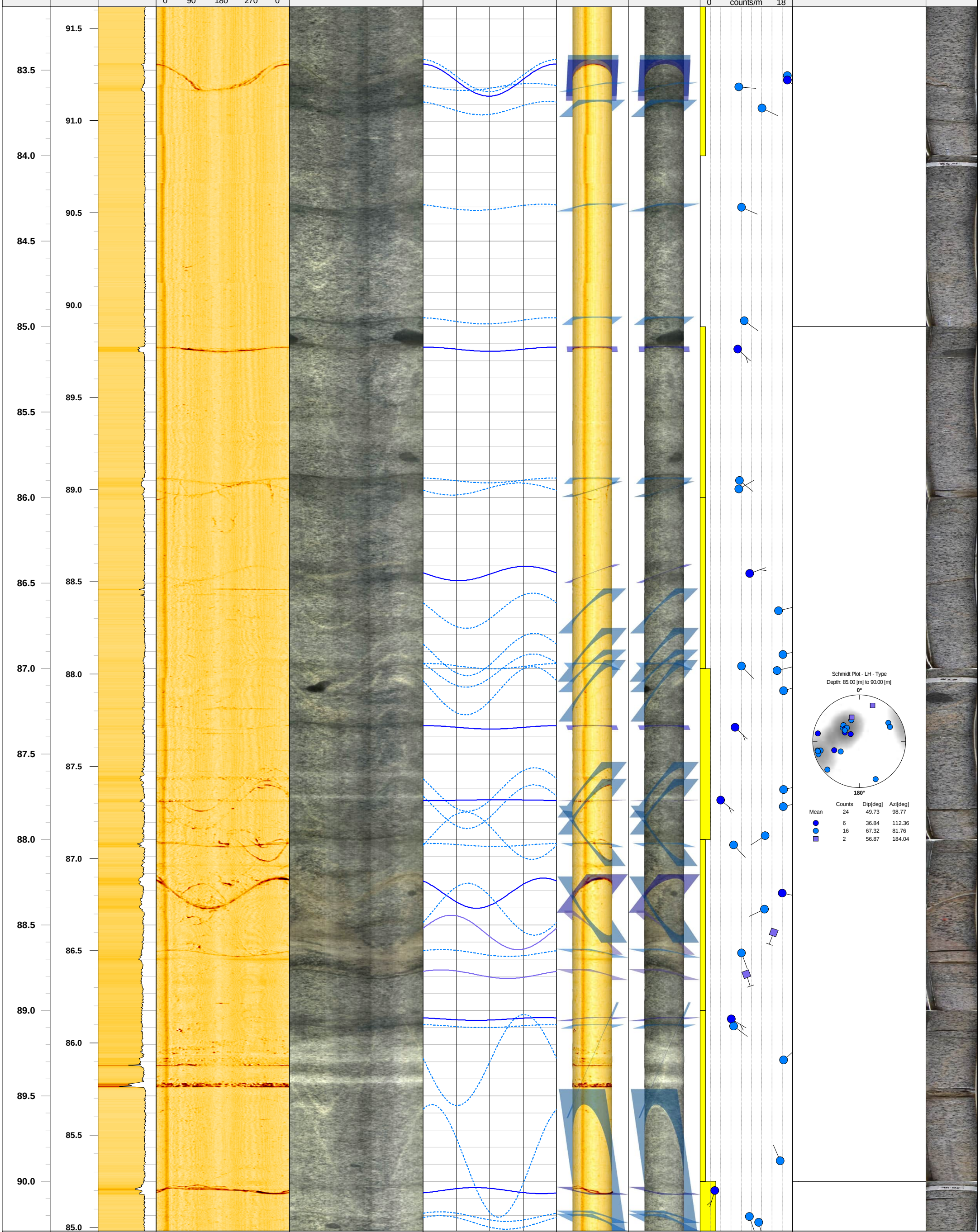


BHL-06

BHL-06



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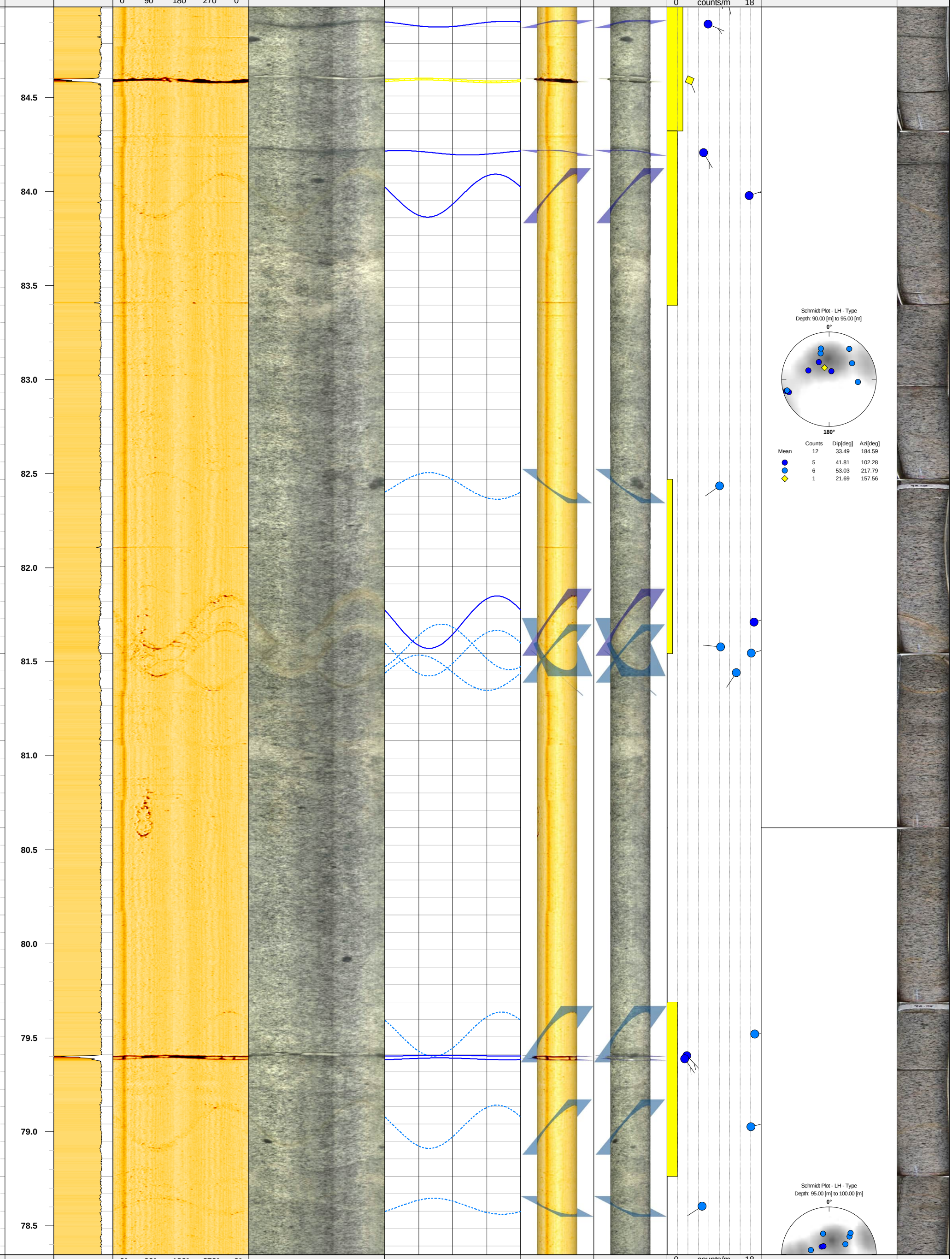

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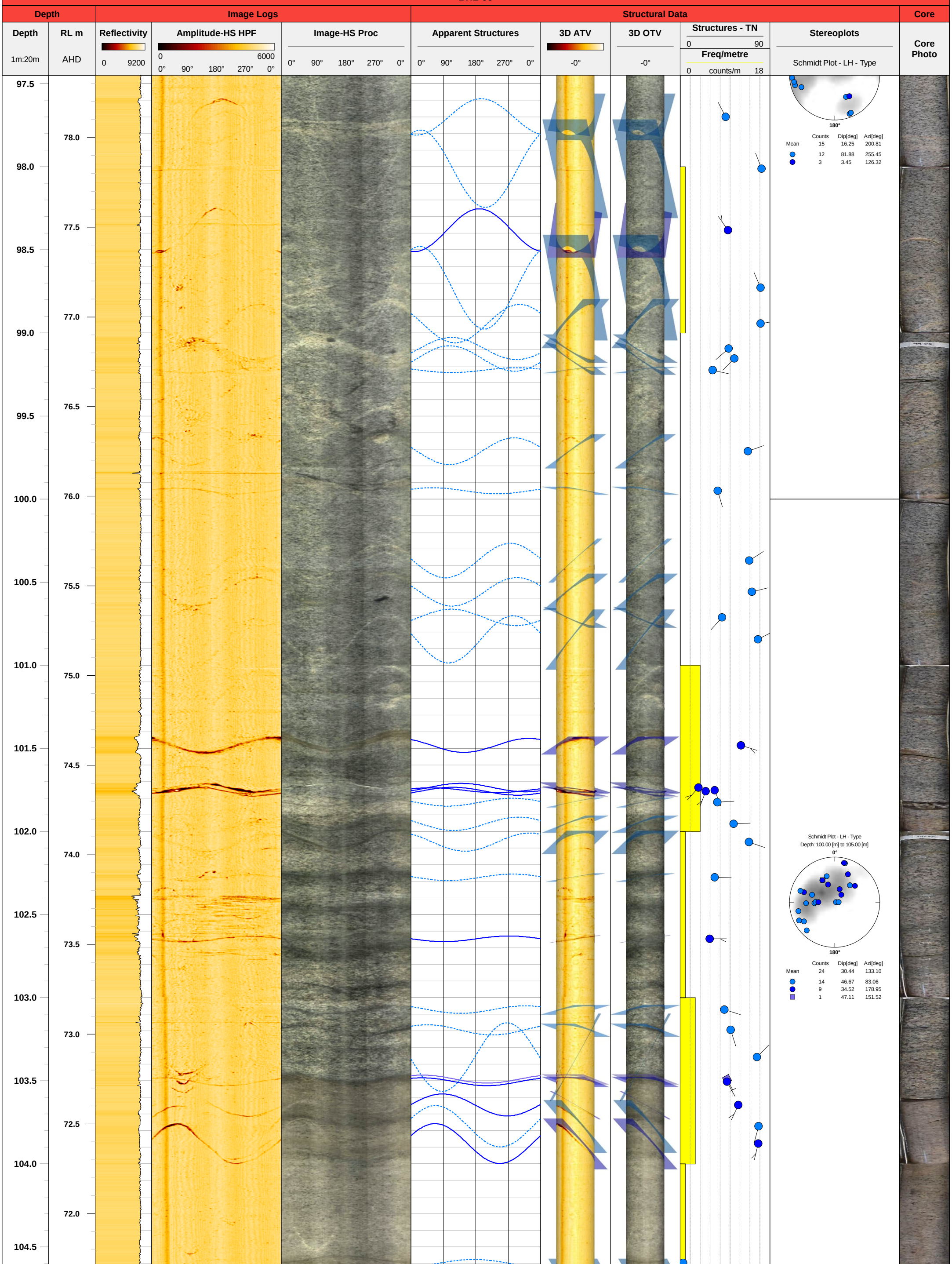

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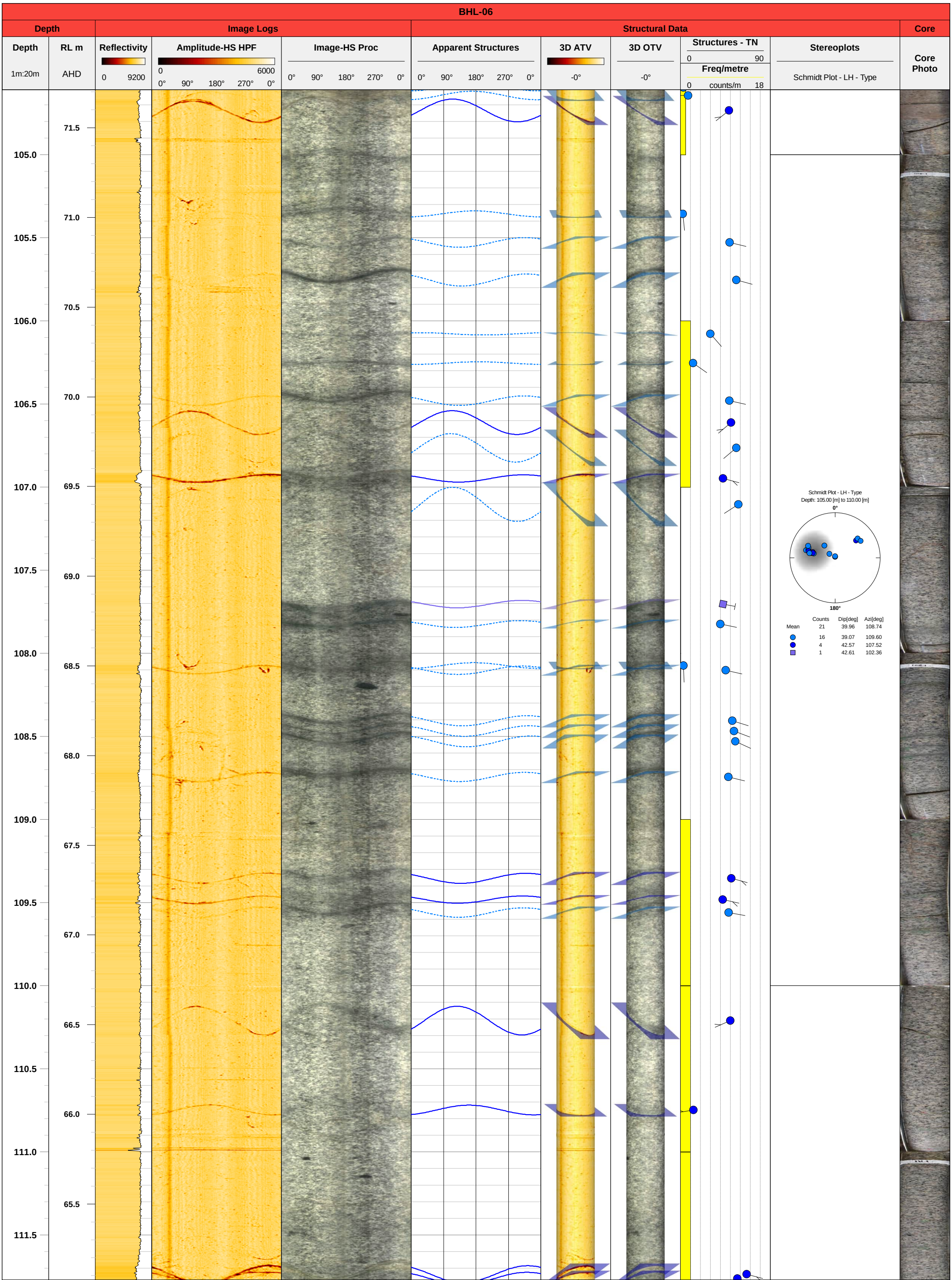
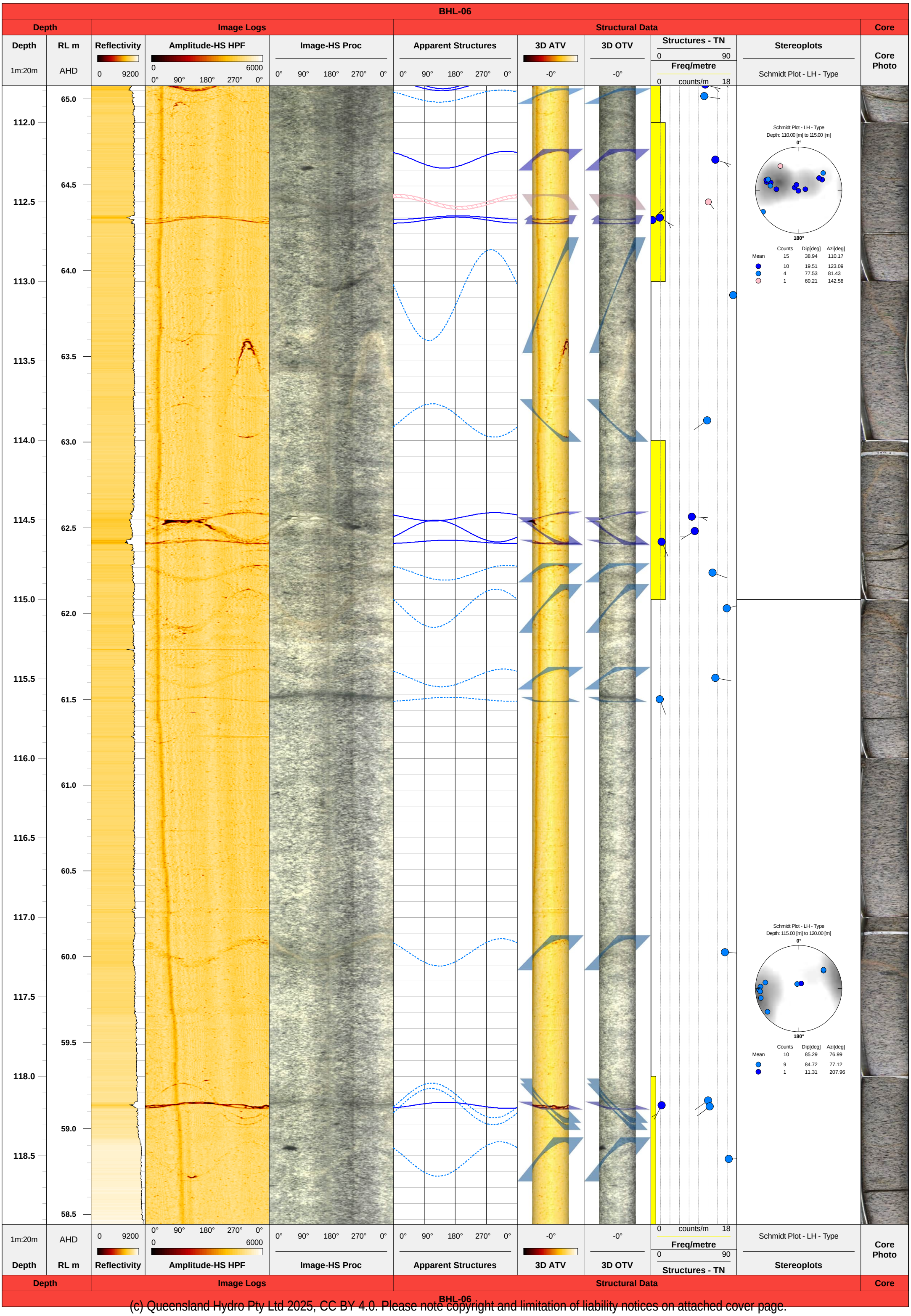
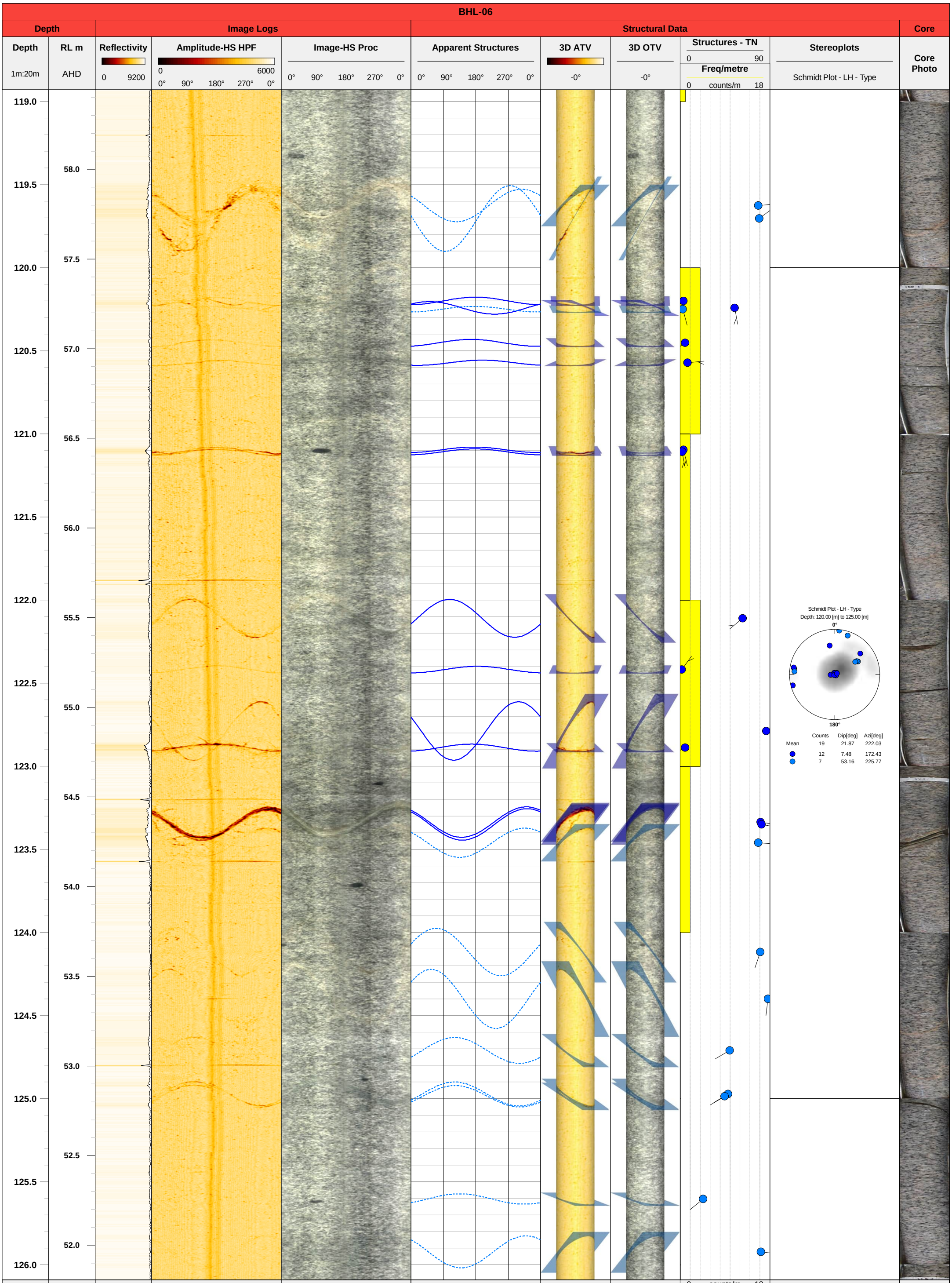
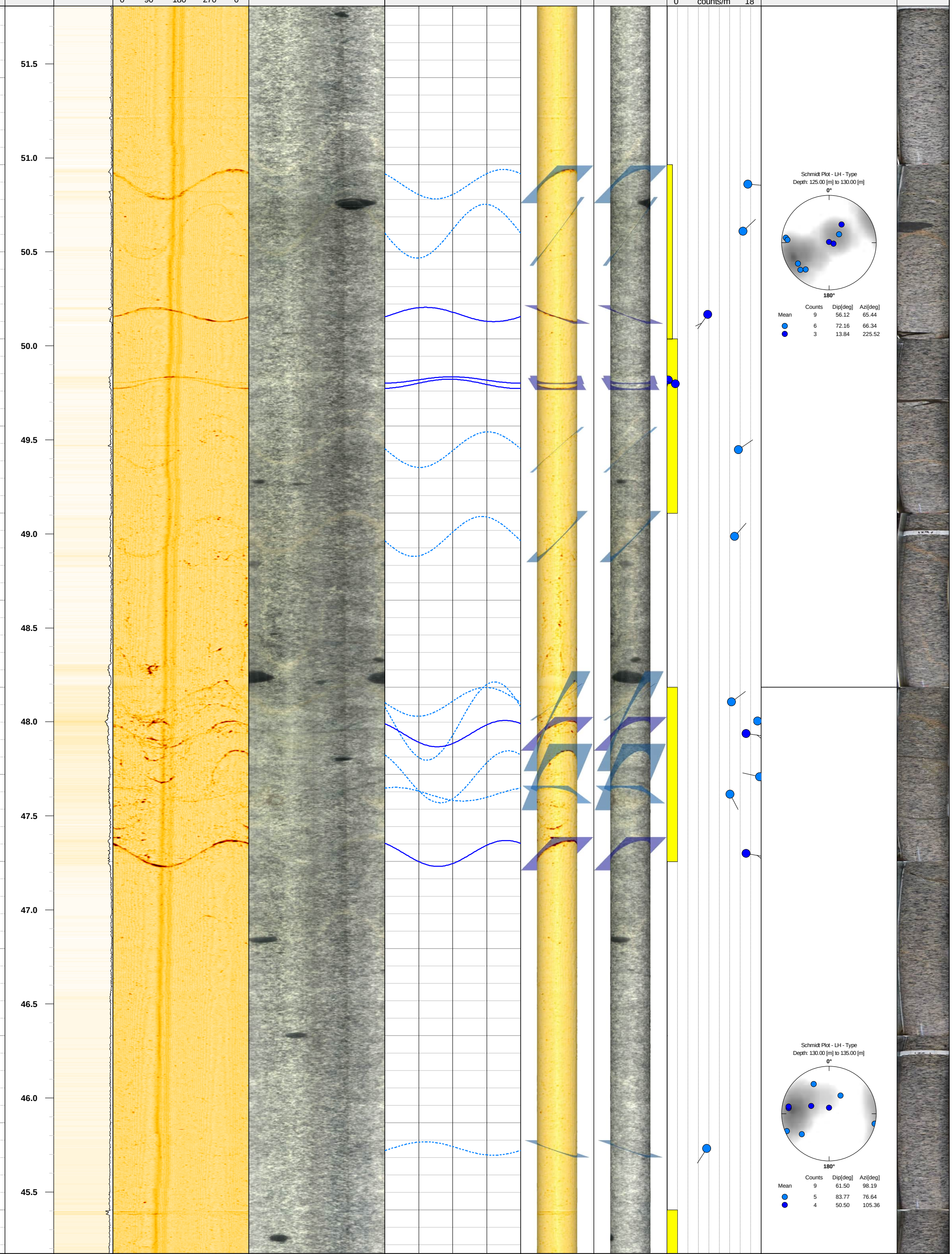




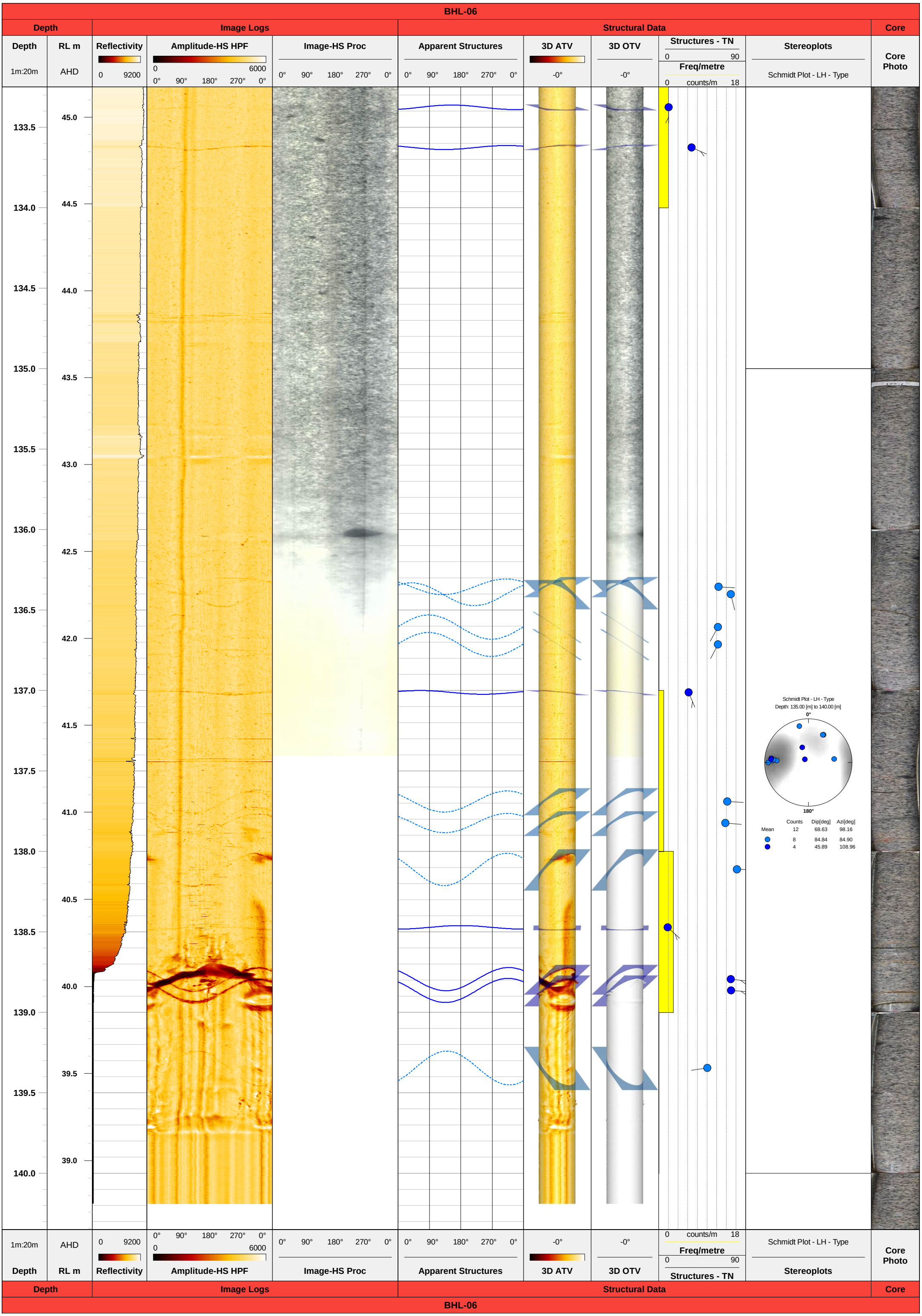


BHL-06

Depth		Image Logs			Structural Data					Core
Depth 1m:20m	RL m AHD	Reflectivity 0 9200	Amplitude-HS HPF 0 6000 0° 90° 180° 270° 0°	Image-HS Proc 0° 90° 180° 270° 0°	Apparent Structures 0° 90° 180° 270° 0°	3D ATV -0°	3D OTV -0°	Structures - TN 0 90 Freq/metre 0 counts/m 18	Stereoplots Schmidt Plot - LH - Type	Core Photo



1m:20m	AHD	0 9200	0° 90° 180° 270° 0° 0 6000	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	-0°	-0°	0 counts/m 18 Freq/metre 0 90	Schmidt Plot - LH - Type	Core Photo
Depth	RL m	Reflectivity	Amplitude-HS HPF	Image-HS Proc	Apparent Structures	3D ATV	3D OTV	Structures - TN	Stereoplots	Core
Depth		Image Logs			Structural Data					Core



BHL-06 Composite Log

WSP Australia Pty Limited
Level 12, 900 Ann Street
Fortitude Valley
QLD 4006
Australia

GEOPHYSICAL RECORD OF BOREHOLE: BHL-06

PROJECT:	Pioneer-Burdekin PHES	JOB #	PS138693
CLIENT:	Queensland Hydro	DATE:	08-02-2024

BOREHOLE DETAILS

LOCATION:	Lower Reservoir	BH DEPTH:	141.05 m
EASTING:	660091.759 m E	BH DIAMETER:	96 mm (HQ)
NORTHING:	7661263.923 m N	BH AZIMUTH:	312°
ELEVATION:	156.767 m	BH PLUNGE:	-68°
COORD SYSTEM:	MGA2020-55	CASING DEPTH:	13.25 m
LOGGING DATUM:	Ground Level	CASING TYPE:	HWT

DOCUMENT DETAILS

LOGGED BY:	G Hay
LOGGED DATE:	08/11/2023
DRAWN BY:	SB
REVIEWED BY:	GH
FILE:	BHL-06_Comp_RevC
LOGGED DEPTH:	140.18 m

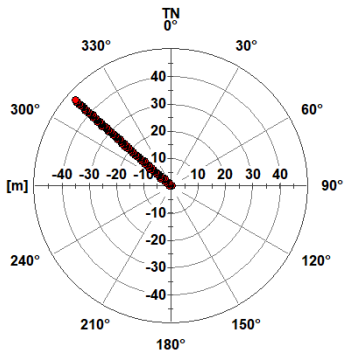
NOTES

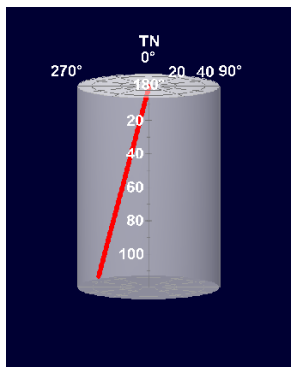
Image logs are oriented relative to high side. Final structures corrected to true north using magnetic declination of 8.2 deg East.

Mechanical caliper log used for structure dip corrections.

All logs zeroed to ground level. Cased section assumed straight for deviation calculations.

BOREHOLE DEVIATION





INTERPRETED STRUCTURES

Contact · Joint · Shear Seam · Shear Zone · Vein · Healed Joint

BHL-06