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BOREHOLE: BGL-04

		Position:	Lower Reservoir		
		Coords:	660325.573 m E 7661354.000 m N MGA2020-55	Sheet	1 of 13
Project:	Pioneer-Burdekin PHES	Surface RL:	175.8 m AHD		
Location:	Netherdale/Dalrymple Heights	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Date Started:	22/1/2024
Client:	Queensland Hydro	Mark V		Date Completed:	17/2/2024
Job No.:	PS138693	Inclination:	-59° Direction: 184°	Logged:	DD/NP/BK

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/T	E	Groundwater Not Encountered	0	0.10 175.67				ML	SILT: brown, trace fine grained, sub-angular gravel; trace fine grained sand; trace high plasticity clay, trace rootlets.		S	RESIDUAL SOIL
								ML	SILT: yellow brown, with fine grained sand; trace high plasticity clay; trace rootlets to 0.4m.			RESIDUAL SOIL - EXTREMELY WEATHERED MATERIAL
	F		1								MD	
			2	2.40 173.70				ML	SILT: grey pale brown, with fine grained sand; trace high plasticity clay.	w<PL		EXTREMELY WEATHERED MATERIAL
				2.70 173.44					Trace fine grained sand.			
	H		3								MD - D	
			4	4.88								
			5						Continued as Cored Borehole			
			6									
			7									
			8									
			9									
			10									

Comments

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Date 18/10/2024

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BOREHOLE: BGL-04

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir		
Location:	Netherdale/Dalrymple Heights	Coords:	660325.573 m E 7661354.000 m N MGA2020-55	Sheet	2 OF 13
Client:	Queensland Hydro	Surface RL:	175.8 m AHD		
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Date Started:	22/1/2024
		Mark V		Date Completed:	17/2/2024
		Inclination:	-59° Direction: 184°	Logged:	DD/NP/BK

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							
				3							
				4							
					4.88		Continuation from non-cored borehole				
HQ3		100	100	5	171.57		QUARTZ LATITE: fine to medium grained, grey, porphyritic, massive, white feldspar phenocrysts.	SW		5.15: J, 50°, CN, PR, RF	
					5.60 170.95		Brown grey.	MW - SW		5.60: J, 60°, CN, PR, RF	
		100	48	6						5.86: J, 25°, Fe SN, PR, RF 6.00: J, 40°, Fe VN, PR, RF 6.08-6.50: J, 70 - 80°, VN, UN, RF 6.40: J, 0°, SN, PR, RF 6.45: J, 55°, SN, PR, RF 6.48: J, 0°, CN, UN, RF 6.55: J, 65°, CN, PR, RF 6.58: J, 10°, CN, UN, RF 6.75: J, 40°, CN, UN, RF	
		100	93	7						6.85: J, 65°, Fe SN, PR, RF 7.15: J, 55°, Fe SN, UN, RF 7.20-8.00: PLT(A) Is50 = 8.2MPa (M); PLT(D) Is50 = 7.6MPa (M) 7.20: J, 30°, SN, PR, RF 7.60: J, 25°, SN, PR, RF	
				8						8.10: J, 60°, SN, PR, RF 8.35-8.37: Jx2, 40°, Fe SN, UN, RF 8.45: J, 60°, SN, PR, RF 8.57: J, 60°, Fe SN, PR, RF	
		100	100	9						8.81: J, 60°, Fe SN, PR, SM 9.06: J, 50°, CN, IR, SM 9.15: J, 60°, Fe SN, ST, SM 9.26: J, 80°, SN, PR, SM 9.40: J, 35°, Fe SN, PR, RF 9.53: J, 60°, CN, PR, SM	
		100	100	10	10.00					9.76: J, 40°, CN, PR, SM 9.85: J, 20°, CN, PR, SM	

Comments

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Date 18/10/2024

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BOREHOLE: BGL-04

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir		
		Coords:	660325.573 m E 7661354.000 m N MGA2020-55	Sheet	3 OF 13
Location:	Netherdale/Dalrymple Heights	Surface RL:	175.8 m AHD		
Client:	Queensland Hydro	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Date Started:	22/1/2024
		Mark V		Date Completed:	17/2/2024
Job No.:	PS138693	Inclination:	-59° Direction: 184°	Logged:	DD/NP/BK

Drilling

METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL
HQ3		100	100	10	167.18
		100	100	11	
		100	100	12	
		100	88	13	
		100	100	14	14.30
		100	94	15	163.50
		100	100	16	
		100	100	17	
		100	71	18	18.60
					159.81
					18.92
				19	159.54
		100	100		19.80
				20	20.00

Field Material Description

GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH (MPa) ■ - UCS
	QUARTZ LATITE: fine to medium grained, brown grey, porphyritic, massive, white feldspar phenocrysts.	MW - SW	
		MW	
	Grey.	SW	
		MW / SW	
	Brown.	MW - SW	
	Brown grey.	MW	
	Grey.		

Defect Information

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

9.96: J, 40°, CN, PR, SM
10.29-10.31: Jx2, 20°, CN, PR, RF
10.45: J, 60°, Fe SN, PR, RF
10.82: J, 60°, CN, PR, SM
10.86: J, 60°, CN, PR, SM
11.38: J, 80°, CN, PR, SM
11.45: J, 80°, CN, PR, SM
11.62: J, 70°, CN, PR, SM
11.79: J, 30°, SN, PR, RF
11.93: J, 70°, wh mi CT, PR, RF, <=3 mm
12.08: J, 50°, CN, PR, SM
12.35-12.48: J, 80°, wh mi CT, PR, RF, <=2 mm
12.42: J, 10°, CN, PR, SM
13.12: J, 20°, CN, PR, SM
13.48: J, 70°, Fe SN, PR, SM
13.63: J, 20°, Fe SN, ST, RF
13.76: J, 10°, Fe SN, PR, SM
13.70-14.32: J, 80°, Fe SN, PR, SM
14.23: J, 10°, Fe SN, ST, SM
14.70: J, 10°, CN, PR, SM
14.78: J, 10°, CN, IR, SM
14.84: J, 0°, CN, PR, SM-RF
14.89: J, 10°, CN, UN, RF
15.07: J, 30°, CN, IR, SM
15.20-16.00: PLT(A) Is50 = 9.7MPa (M); PLT(D) Is50 = 10.0MPa (W)
15.47: J, 30°, CN, PR, SM
15.89: J, 40°, CN, PR, SM
16.41: J, 10°, CN, PR, SM
16.70: J, 35°, Fe SN, PR, SM
16.88-16.96: J, 50°, CN, IR, SM, rubbled by drilling
17.18: J, 50°, SN, PR, SM
17.53: J, 50°, SN, PR, SM
17.83: J, 80°, CN, PR, SM
17.88: J, 10°, CN, PR, SM
17.92: J, 60°, CN, PR, SM
18.22: J, 20°, CN, PR, SM
18.25: J, 70°, CN, PR, SM
18.52: J, 30°, CN, PR, SM
18.69: J, 70°, SN, PR, SM
18.78: J, 70°, SN, PR, SM
18.92-19.42: J/hJ, Fe SN, very closely spaced
19.40: J, 70°, CN, PR, SM
19.46: J, 70°, CN, PR, SM
19.65: J, 70°, CN, PR, SM
19.73: J, 70°, CN, PR, SM
19.74: J, 35°, CN, PR, SM

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

Comments

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Date 18/10/2024

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BOREHOLE: BGL-04

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir		
		Coords:	660325.573 m E 7661354.000 m N MGA2020-55	Sheet	4 OF 13
Location:	Netherdale/Dalrymple Heights	Surface RL:	175.8 m AHD		
Client:	Queensland Hydro	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Date Started:	22/1/2024
Job No.:	PS138693	Mark V		Date Completed:	17/2/2024
		Inclination:	-59° Direction: 184°	Logged:	DD/NP/BK

Drilling

METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL
HQ3	16/10/2024 17:00, VWP2	100	100	20	158.61
		100	100	21	
		100	100	22	
		100	100	23	
		100	100	24	
	16/6/2024 17:00, VWP1	100	100	25	
		100	100	26	
		100	100	27	
		100	90	28	
		100	100	29	
		100	100	30	

Field Material Description

GRAPHIC LOG

ROCK / SOIL MATERIAL DESCRIPTION

QUARTZ LATITE: fine to medium grained, grey, porphyritic, massive, white feldspar phenocrysts.

WEATHERING: SW - FR

INFERRED STRENGTH (MPa) ■ - UCS: VL -2, L -6, 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)

- 19.76: J, 30°, CN, PR, SM
- 20.23: J, 5°, CN, PR, SM
- 20.55: J, 80°, wh mi VN, PR, SM
- 20.65-21.52: drilling grease on core surface
- 20.64: J, 10°, CN, PR, SM, possible DB, drilling grease surrounding
- 20.81: J, 40°, Fe CN, PR, SM, drilling grease surrounding
- 21.51: J, 30°, Fe CN, PR, SM
- 22.77: J, 40°, CN, PR, SM
- 23.13: J, 45°, CN, IR, SM
- 24.39: J, 20°, CN, IR, SM
- 25.07: J, 60°, CN, IR, SM
- 25.61: J, 40°, SN, PR, RF
- 25.67: J, 55°, Fe SN, PR, RF
- 25.86: J, 65°, SN, PR, RF, pale gr br alteration halo
- 26.00-26.70: PLT(A) Is50 = 5.2MPa (M); PLT(D) Is50 = 1.1MPa (M)
- 25.99: J, 55°, CN, PR, SM
- 26.40: J, 5°, CN, PR, SM
- 27.11: J, 10°, CN, IR, SM
- 27.35: J, 50°, Fe SN, IR, SM
- 27.65: J, 50°, Fe SN, PR, SM
- 27.96: J, 70°, Fe SN, PR, SM
- 28.27: J, 90°, Fe SN, IR, SM
- 28.30: J, 0°, Fe SN, PR, SM
- 28.33: J, 50°, Fe SN, PR, SM
- 28.37: J, 70°, Fe SN, PR, SM
- 28.78: J, 15°, PR, SM
- 29.67: J, 10°, CN, IR, SM
- 29.90: J, 5°, CN, IR, SM

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

Comments

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BOREHOLE: BGL-04

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir		
		Coords:	660325.573 m E 7661354.000 m N MGA2020-55	Sheet	5 OF 13
Location:	Netherdale/Dalrymple Heights	Surface RL:	175.8 m AHD		
Client:	Queensland Hydro	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Date Started:	22/1/2024
Job No.:	PS138693	Mark V		Date Completed:	17/2/2024
		Inclination:	-59° Direction: 184°	Logged:	DD/NP/BK

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		100	100	30			QUARTZ LATITE: fine to medium grained, grey, porphyritic, massive, white feldspar phenocrysts.	SW - FR			
		100	100	31						31.59: J, 60°, CN, PR, SM	
		100	100	32							
		100	100	33							
		100	100	34							
		100	100	35							
		100	100	36						35.84: J, 30°, Fe SN, PR, RF 35.88: J, 40°, Fe SN, PR, RF 36.33: J, 50°, wh mi VN, PR, SM, <=4 mm, wmi	
		100	100	37						37.48-37.54: J, 60°, wh mi VN, PR, RF, rubbled by drilling 37.61: J, 35°, wh mi VN, PR, SM, wmi 37.63: J, 45°, SN, PR, SM	
				38					■	38.00-38.70: PLT(A) Is50 = 12.0MPa (M); PLT(D) Is50 = 16.0MPa (M)	
		100	100	39						38.59: J, 20°, Fe SN, PR, RF 38.61: J, 45°, Fe SN, PR, RF 38.66: J, 50°, Fe SN, PR, SM 39.24: J, 40°, SN, PR, SM 39.40: J, 50°, Fe SN, PR, SM 39.41: J, 30°, Fe SN, PR, SM 39.62: J, 30°, CN, PR, SM 39.61-39.82: J, 70°, Fe SN, PR, SM 39.79: J, 40°, Fe SN, PR, SM	
				40							

Comments

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BOREHOLE: BGL-04

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir	Sheet	6 OF 13
Location:	Netherdale/Dalrymple Heights	Coords:	660325.573 m E 7661354.000 m N MGA2020-55	Date Started:	22/1/2024
Client:	Queensland Hydro	Surface RL:	175.8 m AHD	Date Completed:	17/2/2024
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Logged:	DD/NP/BK
		Mark V			
		Inclination:	-59° Direction: 184°		

Drilling

METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL
HQ3		100	100	40	
		100	81	41	
		100	100	42	
		100	90	43	
		100	67	44	
		100	100	47	
		100	60	49	
		100	95	50	

Field Material Description

GRAPHIC LOG

ROCK / SOIL MATERIAL DESCRIPTION

QUARTZ LATITE: fine to medium grained, grey, porphyritic, massive, white feldspar phenocrysts.

WEATHERING: SW - FR; FR

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)

- 39.84: J, 30°, Fe SN, PR, SM, rubbled by drilling
- 40.32: J, 30°, CN, PR, SM
- 40.42: J, 90°, wh mi CN, PR, SM, partially healed
- 40.46: J, 50°, wh mi CN, PR, SM, partially healed
- 40.67: J, 50°, CN, PR, SM
- 40.75-40.91: J, 30 - 80°, CN, PR, SM, very closely spaced
- 41.14: J, 5°, CN, PR, RF
- 41.20: J, 70°, wh mi CT, PR, SM
- 41.43: J, 45°, CN, UN, SM
- 41.54: J, 40°, Fe SN, PR
- 41.60: J, 60°, CN, IR, RF
- 41.63: J, 10°, CN, PR, RF
- 41.50-41.90: J, 80 - 90°, CN, IR, RF
- 41.85: J, 10°, CN, IR, SM, possible DB
- 42.43: J, 40°, CN, PR, RF
- 42.55: J, 20°, CN, PR, SM
- 43.40: J, 70°, CN, PR, SM
- 43.71: J, 10°, CN, UN, RF
- 43.74: J, 40°, CN, PR, RF
- 44.88-44.95: Jx3, 0 - 15°, CN, PR, RF, very closely spaced
- 44.10-45.76: J, 50 - 70°, CN, PR, RF, closely spaced, occasionally with wh mi up to 3mm thick, occasioanl Fe SN
- 45.08: J, 15°, CN, IR, RF
- 45.12: J, 5°, wh mi SN, PR, RF
- 45.27: J, 30°, CN, IR, RF
- 46.07-46.36: J, 25 - 60°, Fe SN, IR, RF, very closely spaced, rubbled by drilling
- 46.94-47.05: J, 50 - 80°, CN, ST, RF
- 47.07: J, 80°, CN, IR, SM
- 47.09: J, 30°, CN, IR, RF
- 47.70: Jx2, 20°, wh mi CT, PR
- 48.16: J, 35°, wh mi, UN, RF
- 48.18: J, 35°, wh mi CT, PR, RF
- 49.00-50.00: PLT(A) Is50 = 5.8MPa (M); PLT(D) Is50 = 7.5MPa (M)
- 49.25: J, 45°, wh mi, Fe SN VN, PR, RF

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

Comments

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BOREHOLE: BGL-04

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir		
		Coords:	660325.573 m E 7661354.000 m N MGA2020-55	Sheet	7 OF 13
Location:	Netherdale/Dalrymple Heights	Surface RL:	175.8 m AHD		
Client:	Queensland Hydro	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Date Started:	22/1/2024
Job No.:	PS138693	Mark V		Date Completed:	17/2/2024
		Inclination:	-59° Direction: 184°	Logged:	DD/NP/BK

Drilling

METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL
HQ3		100	95	50	
		100	86	51	
		100	98	52	
		100	91	53	
		100	47	54	
		100	85	55	
		100	73	56	
		100	100	57	
		100	43	58	
		100	89	59	
				60	

Field Material Description

GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH (MPa) ■ - UCS
	QUARTZ LATITE: fine to medium grained, grey, porphyritic, massive, white feldspar phenocrysts.	FR	

Defect Information

DEFECT DESCRIPTION & Additional Observations (Core partings shown - refer to Detailed Defect Descriptions table for all logged features)	AVERAGE DEFECT SPACING (mm)
50.41: J, 5°, wh mi VN, CU, RF, 2 mm	
50.68: J, 10°, wh mi VN, PR, RF	
50.76: J, 55°, wh mi VN, PR, RF	
50.97: J, 20°, wh mi VN, PR, RF	
51.28: J, 25°, wh mi VN, PR, RF	
51.48: J, 10°, wh mi VN, PR, RF	
51.98: J, 10°, wh mi VN, PR, RF, 2 mm	
52.10-52.28: Jx3, 10 - 40°, CN, PR, RF, closely spaced, multiple defects rubbled by drilling	
52.75: J, 30°, VN, PR, RF	
52.78: J, 30°, VN, PR, RF	
52.78-52.86: Jx2, 15 - 20°, CN, PR, RF, closely spaced	
53.01: J/hJ x2, 45°, wh mi VN, PR, RF, 5mm Fe alt halo	
53.23: J, 70°, CN, PR, RF	
53.85: J, 40°, wh mi VN, PR, RF	
53.90: J, 40°, wh mi VN, CU, RF	
54.08: J, 10°, wh mi VN, PR, RF	
54.35-54.58: Jx4, 50 - 70°, wh mi VN, PR, RF, closely spaced	
54.80-55.05: J, 80°, wh mi VN, PR, RF	
55.06: J, 10°, wh mi VN, PR, RF	
55.14: J, 40°, wh mi VN, PR, RF	
55.22: J, 40°, wh mi VN, PR, RF	
55.80: J, 65°, CN, PR, RF	
55.89: J, 75°, wh mi VN, PR, RF	
55.90: J, 10°, wh mi CN, PR, RF	
56.17-56.53: Jx4, 45 - 70°, wh mi VN, PR, RF	
56.03-57.07: J, 85°, wh mi VN, UN, RF, partially healed	
57.18: J, 65°, wh mi VN, PR, RF	
57.65: J, 60°, wh mi VN, PR, RF	
58.05: J, 65°, wh mi VN, PR, RF	
58.90-59.15: J, 10 - 20°, CN, PR, RF, very closely spaced	
59.13-59.33: J, 65°, wh mi CT, PR, RF	
58.85-59.65: J, 50 - 65°, wh mi VN, PR, RF, closely spaced	
59.33-59.64: J, 80°, wh mi VN, UN, RF	
59.55-59.70: J, 20 - 40°, CN, PR, RF, closely spaced	

Comments

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Date 18/10/2024

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BOREHOLE: BGL-04

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir		
Location:	Netherdale/Dalrymple Heights	Coords:	660325.573 m E 7661354.000 m N MGA2020-55	Sheet	8 OF 13
Client:	Queensland Hydro	Surface RL:	175.8 m AHD		
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Date Started:	22/1/2024
		Mark V		Date Completed:	17/2/2024
		Inclination:	-59° Direction: 184°	Logged:	DD/NP/BK

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		100	89	60			QUARTZ LATITE: fine to medium grained, grey, porphyritic, massive, white feldspar phenocrysts.	FR		60.00-60.75: PLT(A) Is50 = 5.9MPa (M); PLT(D) Is50 = 11.0MPa (M)	
				61						60.99: J, 50°, wh mi VN, PR, RF	
		100	100							61.55: J, 20°, wh mi VN, PR, RF	
				62						62.18: J, 50°, CN, PR, RF 62.40: J, 35°, CN, PR, RF	
		100	100	63						63.06: J, 45 - 50°, CN, CU, RF	
		100	100	64							
		100	100	65							
		100	100	66							
		100	100	67							
		100	100	68							
		100	100	69						69.00-70.00: PLT(A) Is50 = 12.0MPa (M); PLT(D) Is50 = 16.0MPa (M)	
				70							

Comments

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Date 18/10/2024

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BOREHOLE: BGL-04

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir		
Location:	Netherdale/Dalrymple Heights	Coords:	660325.573 m E 7661354.000 m N MGA2020-55	Sheet	9 OF 13
Client:	Queensland Hydro	Surface RL:	175.8 m AHD		
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Date Started:	22/1/2024
		Mark V		Date Completed:	17/2/2024
		Inclination:	-59° Direction: 184°	Logged:	DD/NP/BK

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		100	100	70			QUARTZ LATITE: fine to medium grained, grey, porphyritic, massive, white feldspar phenocrysts.	FR				
		100	96	71								
		100	100	72								
		100	100	73							72.90: J, 45°, wh mi VN, PR, RF 73.03: J, 55°, CN, PR, RF	
		100	100	74							73.90: J, 50°, wh mi VN, PR, RF	
		100	100	75							75.40: J, 55°, CN, PR, RF	
		100	100	76							75.89: J, 55°, wh mi VN, PR, RF	
		100	100	77							77.50: J, 55°, wh mi VN, PR, RF	
		100	95	78							78.69: J, 50°, wh mi VN, PR, RF	
		100	100	79							79.33: J, 40°, wh mi VN, PR, RF 79.40-80.00: PLT(A) Is50 = 7.2MPa (M); PLT(D) Is50 = 11.0MPa (M) 79.38: J, 25°, CN, IR, RF 79.40: J, 40°, CN, IR, RF	
				80								

Comments

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BOREHOLE: BGL-04

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir		
Location:	Netherdale/Dalrymple Heights	Coords:	660325.573 m E 7661354.000 m N MGA2020-55	Sheet	10 OF 13
Client:	Queensland Hydro	Surface RL:	175.8 m AHD		
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Date Started:	22/1/2024
		Mark V		Date Completed:	17/2/2024
		Inclination:	-59° Direction: 184°	Logged:	DD/NP/BK

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		100	100	80			QUARTZ LATITE: fine to medium grained, grey, porphyritic, massive, white feldspar phenocrysts.	FR		80.30: J, 85°, wh mi VN, UN, RF 80.38: J, 80°, CN, UN, RF 80.44-80.54: Jx2, 15°, wh mi VN, UN, RF, closely spaced 80.50: J, 90°, wh mi VN, RF 80.23-80.79: J, 70 - 90°, wh mi VN, UN, RF 80.67: J, 5°, wh mi VN, UN, RF 80.68-80.95: J, 70°, wh mi VN, UN, RF	
		100	87	81						81.25: J, 55°, CN, PR, RF 81.52: J, 45°, CN, UN, RF	
		100	100	82						81.81-82.20: SZ, 50 - 55°, recovered as angular gravel, wh mi CT on exposed surfaces, rubbled by drilling, significant 82.15-82.34: J, 50 - 85°, CN, CU, RF 82.32: J, 45°, wh mi VN, PR, RF 82.68: J, 55°, CN, PR, RF	
		100	100	83						83.03: J, 10°, wh mi VN, PR, RF	
		100	100	84							
		100	100	85						85.75: Jx2, 40°, wh mi, PR, RF, <2 mm	
		100	40	86						86.80-87.15: J, 70°, PR 86.95-87.43: SZ, 70°, comprising crushed rock and subparallel defects dipping 10-20 degs with spacing 5-25mm, significant 87.49: J, 15°, CN, PR, RF 87.58-87.78: SZ, 60°, comprising subparallel defects dipping 10-20 degs with spacing 5-20mm, significant 87.75-88.10: AZ, 80°, comprising multiple IR intersecting defects, 5-15mm spacing	
		100	98	87						88.33: J, 10°, wh mi VN, CU, RF 88.37-88.55: Jx2, 70°, wh mi VN, PR, RF	
		100	67	88						89.54: J, 65°, wh mi VN, PR, RF 89.47-89.65: J, 65°, wh mi VN, PR, RF 89.72: J, 60°, gr mi VN, PR, RF	
				89							
				90							

Comments

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BOREHOLE: BGL-04

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir		
Location:	Netherdale/Dalrymple Heights	Coords:	660325.573 m E 7661354.000 m N MGA2020-55	Sheet	11 OF 13
Client:	Queensland Hydro	Surface RL:	175.8 m AHD		
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Date Started:	22/1/2024
		Mark V		Date Completed:	17/2/2024
		Inclination:	-59° Direction: 184°	Logged:	DD/NP/BK

Drilling

METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL
HQ3		100	67	90	
		100	100	91	
		100	83	92	
		100	100	93	
		100	96	94	
		100	99	95	
		100	100	96	
				97	
				98	
				99	
				100	100.00

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)
	QUARTZ LATITE: fine to medium grained, grey, porphyritic, massive, white feldspar phenocrysts.	FR	

Defect Information

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

89.77-90.00: J x7, 15 - 30°, gr mi VN, PR, RF, very closely spaced, multiple open and healed defects, 10-30mm defect spacing, possiblle SZ, significant
90.05: J, 25°, gr mi VN, PR, RF
90.08: J, 20°, gr mi VN, IR, RF
90.88: J, 5°, clay, PR, RF, 10 mm
91.05: J, 60°, wh mi VN, PR, RF
91.10: J, 60 - 70°, CN, PR, RF
91.12-91.22: Jx4, 70 - 80°, CN, PR, RF
91.20: J, 60°, wh mi VN, PR, RF
91.47: J, 20°, wh mi VN, PR, RF
91.56: J, 60°, wh mi VN, PR, RF
91.58: J, 60°, gr mi, PR, RF
91.97: J, 50°, wh mi, PR, RF
92.05-92.15: Jx5, 20 - 35°, gr mi VN, PR, RF, 5-20 mm spacing
92.10: J, 85°, wh mi, PR, RF
92.35: J, 20°, CN, PR, RF
92.42: J, 60°, wh mi VN, PR, RF
92.93: J, 10°, wh mi VN, PR, RF
93.11: J, 10°, wh mi CN, CU, RF
93.28: J, 35°, wh mi VN, UN, RF
93.36: J, 15°, wh mi VN, UN, RF
93.25-93.55: SZ, 20 - 45°, IR, RF, comprising numerous subparallel defects with spacing <10mm, significant
93.60-93.71: J, 85°, wh mi VN, PR, RF
93.72: J, 10°, CN, CU, RF
93.79: J, 40°, wh mi, UN
93.80: J, 40°, wh mi VN, PR, RF
93.90: J, 30°, wh mi VN, PR, RF
95.10-96.00: PLT(A) Is50 = 7.2MPa (M); PLT(D) Is50 = 4.3MPa (W)
95.10: J, 40°, VN, PR, RF
95.57: J, 5°, wh mi, PR, RF
96.10: J, 25°, gy mi VN, PR, RF
96.16: J, 25°, gy mi VN, PR, RF
97.00: J, 65°, wh mi CT, PR, RF
97.45: J, 20°, wh mi, PR, RF
97.78: J, 60°, wh mi VN, IR, RF
97.93: J, 55°, wh mi, IR, RF
98.28: J, 50°, wh mi VN, PR, RF
98.48: J, 50°, wh mi, IR, RF
99.20: J, 55°, wh mi VN, PR, RF
99.47: J, 30°, CN, PR, RF

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

Comments

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BOREHOLE: BGL-04

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir		
Location:	Netherdale/Dalrymple Heights	Coords:	660325.573 m E 7661354.000 m N MGA2020-55	Sheet	12 OF 13
Client:	Queensland Hydro	Surface RL:	175.8 m AHD		
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Date Started:	22/1/2024
		Mark V		Date Completed:	17/2/2024
		Inclination:	-59° Direction: 184°	Logged:	DD/NP/BK

Drilling

METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL
HQ3		100	100	100	90.04
		100	100	101	
		100	100	102	
		100	100	103	
		100	100	104	
		100	100	105	
		100	100	106	
		100	100	107	107.00 / 84.04
		100	100	108	
		100	87	109	
				110	110.00

Field Material Description

GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH (MPa) ■ - UCS
	QUARTZ LATITE: fine to medium grained, grey, porphyritic, massive, white feldspar phenocrysts.	FR	
	Brown grey.		

Defect Information

DEFECT DESCRIPTION & Additional Observations (Core partings shown - refer to Detailed Defect Descriptions table for all logged features)	AVERAGE DEFECT SPACING (mm)
101.08: J, 70°, wh mi VN, PR, RF	
102.34: J, 45°, wh mi VN, PR, RF	
103.76: J, 25°, wh mi VN, PR, RF	
104.17: J, 25°, wh mi VN, PR, RF	
105.87: J, 20°, wh mi VN, IR, RF	
106.04: J, 60°, wh mi VN, PR, RF	
106.50: J, 20°, CN, PR, RF	
107.26: J, 10°, wh mi VN, PR, RF	
108.05: J, 45°, gy mi wh mi CT, PR, RF, <=5 mm, 50mm alteration halo on lower side of defect	
108.44: J, 45°, wh mi CT, PR, RF, <=3 mm, 100mm alteration halo around defect	
109.30-109.40: J x2, 10°, wh mi VN, PR, RF, closely spaced	
109.40: J, 10°, wh mi CN, PR, RF	
109.52-109.85: J, 75°, CN, UN, RF	
109.70: Jx2, 50°, CN, UN, RF, very closely spaced	

Comments

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BOREHOLE: BGL-04

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir		
		Coords:	660325.573 m E 7661354.000 m N MGA2020-55	Sheet	13 OF 13
Location:	Netherdale/Dalrymple Heights	Surface RL:	175.8 m AHD		
Client:	Queensland Hydro	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout	Date Started:	22/1/2024
Job No.:	PS138693	Mark V		Date Completed:	17/2/2024
		Inclination:	-59° Direction: 184°	Logged:	DD/NP/BK

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 L M H VH EH -2 -4 -20 -60 -200	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		100	87	110	81.47		QUARTZ LATITE: fine to medium grained, brown grey, porphyritic, massive, white feldspar phenocrysts.	FR		110.08: J, 25°, wh mi VN, CU, RF	
		100	54	111						109.90-111.12: Jx10, 45 - 60°, wh mi VN, PR, SM, closely spaced 110.55: J, 30°, CN, UN, RF 110.77: J, 10°, CN, UN, RF 110.85: J, 5°, CN, UN, RF 111.45: J, 25°, pi mi CT, PR, RF	
		100	100	112						112.12: J, 55°, wh mi VN, PR, RF	
		100	100		112.90 78.98		Grey.			112.45-112.90: PLT(A) Is50 = 11.0MPa (M); PLT(D) Is50 = 8.7MPa (M) 112.43: J, 10°, CN, UN, RF	
		100	100	113						113.00: J, 10°, pi mi CT, PR, RF 113.18: J, 25°, wh mi VN, PR, RF, <=3 mm	
					113.70 78.30		Hole Terminated at 113.70 m Target depth. Vibrating Wire Piezometers Installed				
				114							
				115							
				116							
				117							
				118							
				119							
				120							

Comments

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Pioneer-Burdekin Pumped Hydro Energy Scheme: Tranche 1 – BGL-04 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
BGL-04	5.15				J		50			CN	PR	RF					
BGL-04	5.60				J		60			CN	PR	RF					
BGL-04	5.80				DB												
BGL-04	5.86				J		25		Fe	SN	PR	RF					
BGL-04	6.00				J		40		Fe	VN	PR	RF					
BGL-04	6.03				hJ		60		br mi		PR			1			
BGL-04	6.08	6.50			J		70	80		VN	UN	RF					
BGL-04	6.40				J		0			SN	PR	RF					
BGL-04	6.45				J		55			SN	PR	RF					
BGL-04	6.48				J		0			CN	UN	RF					
BGL-04	6.55				J		65			CN	PR	RF					
BGL-04	6.58				J		10			CN	UN	RF					
BGL-04	6.75				J		40			CN	UN	RF					
BGL-04	6.85				J		65		Fe	SN	PR	RF					
BGL-04	7.15				J		55		Fe	SN	UN	RF					
BGL-04	7.20				J		30			SN	PR	RF					
BGL-04	7.60				J		25			SN	PR	RF					
BGL-04	8.08				hJ		65		Fe	SN	PR	RF					
BGL-04	8.10				J		60			SN	PR	RF					
BGL-04	8.25				hJ		70		Fe		PR						
BGL-04	8.35	8.37			J	x2	40		Fe	SN	UN	RF					
BGL-04	8.45				J		60			SN	PR	RF					
BGL-04	8.57				J		60		Fe	SN	PR	RF					
BGL-04	8.81				J		60		Fe	SN	PR	SM					
BGL-04	9.06				J		50			CN	IR	SM					
BGL-04	9.15				J		60		Fe	SN	ST	SM					
BGL-04	9.26				J		80			SN	PR	SM					
BGL-04	9.35				hJ		80		Fe	SN	PR	SM					
BGL-04	9.40				J		35		Fe	SN	PR	RF					
BGL-04	9.53				J		60			CN	PR	SM					
BGL-04	9.63				hJ		40				PR						
BGL-04	9.72				hJ		40				PR						
BGL-04	9.76				J		40			CN	PR	SM					
BGL-04	9.82				hJ		5				IR						
BGL-04	9.85				J		20			CN	PR	SM					
BGL-04	9.96				J		40			CN	PR	SM					
BGL-04	10.29	10.31			J	x2	20			CN	PR	RF					
BGL-04	10.45				J		60		Fe	SN	PR	RF					
BGL-04	10.82				J		60			CN	PR	SM					
BGL-04	10.86				J		60			CN	PR	SM					
BGL-04	11.08				hJ		80			CN	PR						
BGL-04	11.16				hJ		60				PR						
BGL-04	11.38				J		80			CN	PR	SM					
BGL-04	11.45				J		80			CN	PR	SM					
BGL-04	11.59				hJ		80				ST						
BGL-04	11.62				J		70			CN	PR	SM					
BGL-04	11.79				J		30			SN	PR	RF					
BGL-04	11.93				J		70		wh mi	CT	PR	RF	<=	3			
BGL-04	12.08				J		50			CN	PR	SM					
BGL-04	12.18				hJ		70				PR						
BGL-04	12.35	12.48			J		80		wh mi	CT	PR	RF	<=	2			
BGL-04	12.42				J		10			CN	PR	SM					
BGL-04	12.68				hJ		50				PR						
BGL-04	12.83				hJ		70				PR						
BGL-04	12.88				hJ		50				CU						
BGL-04	13.09				hJ		70				PR						
BGL-04	13.12				J		20			CN	PR	SM					
BGL-04	13.36				hJ		40				PR						
BGL-04	13.38				hJ		70				PR						
BGL-04	13.42				hJ		50				PR						
BGL-04	13.48				J		70		Fe	SN	PR	SM					
BGL-04	13.63				J		20		Fe	SN	ST	RF					
BGL-04	13.70	14.32			J		80		Fe	SN	PR	SM					
BGL-04	13.76				J		10		Fe	SN	PR	SM					
BGL-04	14.23				J		10		Fe	SN	ST	SM					
BGL-04	14.70				J		10			CN	PR	SM					
BGL-04	14.78				J		10			CN	IR	SM					
BGL-04	14.84				J		0			CN	PR	SM-RF					
BGL-04	14.89				J		10			CN	UN	RF					
BGL-04	15.07				J		30			CN	IR	SM					
BGL-04	15.47				J		30			CN	PR	SM					
BGL-04	15.89				J		40			CN	PR	SM					
BGL-04	16.22				hJ		60				PR						
BGL-04	16.41				J		10			CN	PR	SM					
BGL-04	16.65	16.67			hJ	x2	40			CN	PR	SM					
BGL-04	16.70				J		35		Fe	SN	PR	SM					
BGL-04	16.88	16.96			J		50			CN	IR	SM					rubbled by drilling
BGL-04	17.18				J		50			SN	PR	SM					
BGL-04	17.53				J		50			SN	PR	SM					

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Pioneer-Burdekin Pumped Hydro Energy Scheme: Tranche 1 – BGL-04 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
BGL-04	17.83				J		80			CN	PR	SM					
BGL-04	17.84				hJ		50				PR						
BGL-04	17.88				J		10			CN	PR	SM					
BGL-04	17.92				J		60			CN	PR	SM					
BGL-04	17.95				hJ		80				PR						
BGL-04	18.22				J		20			CN	PR	SM					
BGL-04	18.25				J		70			CN	PR	SM					
BGL-04	18.52				J		30			CN	PR	SM					
BGL-04	18.69				J		70			SN	PR	SM					
BGL-04	18.70	18.73			hJ		10			CN	PR	SM					
BGL-04	18.78				J		70			SN	PR	SM					
BGL-04	18.92	19.42			J	/hJ			Fe	SN						very closely	
BGL-04	19.40				J		70			CN	PR	SM					
BGL-04	19.46				J		70			CN	PR	SM					
BGL-04	19.53				hJ		70				PR						
BGL-04	19.65				J		70			CN	PR	SM					
BGL-04	19.73				J		70			CN	PR	SM					
BGL-04	19.74				J		35			CN	PR	SM					
BGL-04	19.76				J		30			CN	PR	SM					
BGL-04	20.09				hJ		80				PR						
BGL-04	20.23				J		5			CN	PR	SM					
BGL-04	20.55				J		80		wh mi	VN	PR	SM					
BGL-04	20.64				J		10			CN	PR	SM					possible DB, drilling grease surrounding
BGL-04	20.81				J		40		Fe	CN	PR	SM					drilling grease surrounding
BGL-04	21.51				J		30		Fe	CN	PR	SM					
BGL-04	21.76				hJ						PR						
BGL-04	21.94				hJ		80				PR						
BGL-04	22.02				hJ	x3	20				PR						
BGL-04	22.77				J		40			CN	PR	SM					
BGL-04	23.13				J		45			CN	IR	SM					
BGL-04	23.14				hJ		40				PR						
BGL-04	24.39				J		20			CN	IR	SM					
BGL-04	24.68				hJ		10				PR						
BGL-04	25.07				J		60			CN	IR	SM					
BGL-04	25.61				J		40			SN	PR	RF					
BGL-04	25.67				J		55		Fe	SN	PR	RF					
BGL-04	25.86				J		65			SN	PR	RF					pale gr br alteration halo
BGL-04	25.99				J		55			CN	PR	SM					
BGL-04	26.40				J		5			CN	PR	SM					
BGL-04	26.73	26.75			hJ		40				PR						
BGL-04	27.11				J		10			CN	IR	SM					
BGL-04	27.35				J		50		Fe	SN	IR	SM					
BGL-04	27.65				J		50		Fe	SN	PR	SM					
BGL-04	27.96				J		70		Fe	SN	PR	SM					
BGL-04	28.27				J		90		Fe	SN	IR	SM					
BGL-04	28.30				J		0		Fe	SN	PR	SM					
BGL-04	28.33				J		50		Fe	SN	PR	SM					
BGL-04	28.37				J		70		Fe	SN	PR	SM					
BGL-04	28.44				hJ		50				IR						
BGL-04	28.78				J		15				PR	SM					
BGL-04	29.04				MB		0										
BGL-04	29.13				MB		0										
BGL-04	29.16				MB		0										
BGL-04	29.33				hJ		50				PR						
BGL-04	29.67				J		10			CN	IR	SM					
BGL-04	29.76				hJ		5				PR						
BGL-04	29.90				J		5			CN	IR	SM					
BGL-04	30.20				hJ		20				CU						
BGL-04	30.81				hJ		75				CU						
BGL-04	30.97				hJ		80				PR						
BGL-04	31.02				hJ		90				PR						
BGL-04	31.05				hJ		60				IR						
BGL-04	31.10				hJ		10			CN	IR	SM					
BGL-04	31.14				hJ		75				IR						
BGL-04	31.15				hJ		80				IR						
BGL-04	31.23				hJ		80				IR						
BGL-04	31.25				hJ		40				CU						
BGL-04	31.30				hJ		30				CU						
BGL-04	31.34				hJ		40				PR						
BGL-04	31.46				hJ		50				PR						
BGL-04	31.59				J		60			CN	PR	SM					
BGL-04	31.60				hJ		60				PR						
BGL-04	34.60				hJ		70				IR						
BGL-04	35.40				hJ		80		wh mi, Fe Sn	VN	UN						
BGL-04	35.52				DB												
BGL-04	35.76				DB												
BGL-04	35.84				J		30		Fe	SN	PR	RF					
BGL-04	35.86				hJ		60				PR						
BGL-04	35.88				J		40		Fe	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
BGL-04	36.02				hJ		90				IR						
BGL-04	36.03				hJ		10				IR						
BGL-04	36.07				hJ		85				IR						
BGL-04	36.13				hJ		20				PR						
BGL-04	36.33				J		50		wh mi	VN	PR	SM	<=	4			wmi
BGL-04	36.44				hJ		70				PR						
BGL-04	37.07				hJ		80				IR						
BGL-04	37.19	37.27			MB		0										
BGL-04	37.30				hJ		60				PR						
BGL-04	37.47				hJ		25		wh mi		UN						
BGL-04	37.48	37.54			J		60		wh mi	VN	PR	RF					rubbled by drilling
BGL-04	37.61				J		35		wh mi	VN	PR	SM					wmi
BGL-04	37.62				hJ		35				PR						
BGL-04	37.63				J		45			SN	PR	SM					
BGL-04	37.88				hJ		30				PR						
BGL-04	37.90	38.06			hJ		45				PR						x7
BGL-04	38.19				hJ		10				PR						
BGL-04	38.59				J		20		Fe	SN	PR	RF					
BGL-04	38.61				J		45		Fe	SN	PR	RF					
BGL-04	38.66				J		50		Fe	SN	PR	SM					
BGL-04	38.76				hJ		60				PR						
BGL-04	38.83				hJ		40				PR						
BGL-04	39.23				hJ		50				IR						
BGL-04	39.24				J		40			SN	PR	SM					
BGL-04	39.32				hJ		70				IR						
BGL-04	39.32	39.60			hJ		70		wh mi		IR		<=	2			
BGL-04	39.40				J		50		Fe	SN	PR	SM					
BGL-04	39.41				J		30		Fe	SN	PR	SM					
BGL-04	39.43				hJ		30				PR						
BGL-04	39.47				hJ		80				IR						
BGL-04	39.49				hJ		50				PR						
BGL-04	39.55				hJ		50				PR						
BGL-04	39.59				hJ		30				PR						
BGL-04	39.60				hJ		50				PR						
BGL-04	39.61	39.82			J		70		Fe	SN	PR	SM					
BGL-04	39.62				J		30			CN	PR	SM					
BGL-04	39.64				hJ		50				PR						
BGL-04	39.79				J		40		Fe	SN	PR	SM					
BGL-04	39.84				J		30		Fe	SN	PR	SM					rubbled by drilling
BGL-04	39.92				hJ		80				PR						
BGL-04	40.04				hJ		75				PR						
BGL-04	40.09				hJ		90				PR						
BGL-04	40.20	41.55			hJ		90			CN	PR	SM					
BGL-04	40.20	42.02			hJ		80	90			PR	SM					
BGL-04	40.22				hJ		85				PR						
BGL-04	40.28				hJ		70			CN	PR	SM					
BGL-04	40.32				J		30			CN	PR	SM					
BGL-04	40.42				J		90		wh mi	CN	PR	SM					partially healed
BGL-04	40.46				J		50		wh mi	CN	PR	SM					partially healed
BGL-04	40.61				hJ		50				PR						
BGL-04	40.67				J		50			CN	PR	SM					
BGL-04	40.69				hJ		50				PR						
BGL-04	40.75	40.91			J		30	80		CN	PR	SM				very closely	
BGL-04	41.04				hJ		70				IR						
BGL-04	41.14				J		5			CN	PR	RF					
BGL-04	41.20				J		70		wh mi	CT	PR	SM					
BGL-04	41.43				J		45			CN	UN	SM					
BGL-04	41.50	41.90			J		80	90		CN	IR	RF					
BGL-04	41.54				J		40		Fe	SN	PR						
BGL-04	41.60				J		60			CN	IR	RF					
BGL-04	41.63				J		10			CN	PR	RF					
BGL-04	41.85				J		10			CN	IR	SM					possible DB
BGL-04	41.87				hJ		50		wh mi		CU						
BGL-04	42.14				hJ		20				PR						
BGL-04	42.21				hJ		40				PR						
BGL-04	42.30				hJ		50		wh mi		PR						Fe alteration halo 10mm
BGL-04	42.33				hJ		40				PR						
BGL-04	42.35				hJ		10				IR						
BGL-04	42.36				hJ		10				IR						
BGL-04	42.40	43.05			V	x3	80		wh mi		PR		<	4			
BGL-04	42.43				J		40			CN	PR	RF					
BGL-04	42.52				hJ		30				PR						
BGL-04	42.55				J		20			CN	PR	SM					
BGL-04	42.65	42.68			hJ	x2	75		wh mi		PR		<	3			
BGL-04	42.75	42.85			hJ	x2	75		wh mi		PR		<	10			
BGL-04	43.18				hJ		40				PR						
BGL-04	43.20	43.35			hJ	x3			wh mi, Fe		PR					very closely	
BGL-04	43.40				J		70			CN	PR	SM					
BGL-04	43.51				hJ		50				PR						

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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
BGL-04	43.68				hJ		60				CU						
BGL-04	43.71				J		10			CN	UN	RF					
BGL-04	43.73	44.26			V		80	90	wh mi		CU		<	3			
BGL-04	43.74				J		40			CN	PR	RF					
BGL-04	43.95				hJ		30				CU						
BGL-04	44.10	45.76			J		50	70		CN	PR	RF				closely	occasionally with wh mi up to 3mm thick, occasioanl Fe SN
BGL-04	44.88	44.95			J	x3	0	15		CN	PR	RF				very closely	
BGL-04	45.08				J		15			CN	IR	RF					
BGL-04	45.12				J		5		wh mi	SN	PR	RF					
BGL-04	45.27				J		30			CN	IR	RF					
BGL-04	45.80				hJ		50				PR						
BGL-04	45.98				hJ		60				PR						
BGL-04	46.07	46.36			J		25	60	Fe	SN	IR	RF				very closely	rubbled by drilling
BGL-04	46.54				hJ		90				IR						
BGL-04	46.72				hJ		90				IR						
BGL-04	46.93				DB												
BGL-04	46.94	47.05			J		50	80		CN	ST	RF					
BGL-04	47.07				J		80			CN	IR	SM					
BGL-04	47.09				J		30			CN	IR	RF					
BGL-04	47.12				hJ		70				PR						
BGL-04	47.25				hJ		70				PR						
BGL-04	47.70				J	x2	20		wh mi	CT	PR						
BGL-04	48.15				hJ	x2	50	55	wh mi		PR		<	2			
BGL-04	48.16				J		35		wh mi		UN	RF					
BGL-04	48.18				J		35		wh mi	CT	PR	RF					
BGL-04	48.43				hJ		40		wh mi		PR			1			
BGL-04	48.91				HB												
BGL-04	49.03				hJ		35		wh mi		PR						
BGL-04	49.25				J		45		wh mi, Fe SN	VN	PR	RF					
BGL-04	49.28				hJ		35		wh mi		PR						
BGL-04	49.49				hJ		20		wh mi		CU						
BGL-04	49.72				DB												
BGL-04	49.97	50.09			hJ		50		wh mi		PR		<	2			
BGL-04	50.01	50.15			hJ		55		wh mi		PR						
BGL-04	50.03				hJ		65		wh mi		PR	RF					
BGL-04	50.07				hJ		65		wh mi		PR	RF					
BGL-04	50.25	50.27			hJ		80		wh mi		IR						
BGL-04	50.41				J		5		wh mi	VN	CU	RF		2			
BGL-04	50.62				hJ		50		wh mi		IR						
BGL-04	50.68				J		10		wh mi	VN	PR	RF					
BGL-04	50.76				J		55		wh mi	VN	PR	RF					
BGL-04	50.97				J		20		wh mi	VN	PR	RF					
BGL-04	51.10	51.47			hJ		90		wh mi		PR						sporadic 10mm Fe alt halo
BGL-04	51.25	51.46			hJ		90		wh mi		ST						
BGL-04	51.28				J		25		wh mi	VN	PR	RF					
BGL-04	51.48				J		10		wh mi	VN	PR	RF					
BGL-04	51.50				hJ		25		wh mi		PR						
BGL-04	51.52				hJ		10		wh mi		PR						
BGL-04	51.87				hJ		15		wh mi		PR						
BGL-04	51.98				J		10		wh mi	VN	PR	RF		2			
BGL-04	52.00	52.12			hJ		60		wh mi		PR						
BGL-04	52.10	52.28			J	x3	10	40		CN	PR	RF				closely	multiple defects rubbled by drilling
BGL-04	52.20	52.25			hJ	x2	0	10	wh mi		PR		<	2			
BGL-04	52.20	52.29															
BGL-04	52.40				DB												
BGL-04	52.45	52.63			hJ	x2	60		wh mi		PR						
BGL-04	52.45	52.65			hJ		60		wh mi		PR						
BGL-04	52.50				hJ		60		wh mi		CU						
BGL-04	52.56				hJ		60		wh mi		CU						
BGL-04	52.61				hJ		80		wh mi		CU						
BGL-04	52.74				hJ		60		wh mi		CU			2			
BGL-04	52.75				J		30			VN	PR	RF					
BGL-04	52.77				hJ		45		wh mi		PR						
BGL-04	52.78				J		30			VN	PR	RF					
BGL-04	52.78	52.86			J	x2	15	20		CN	PR	RF				closely	
BGL-04	52.97				hJ		15		wh mi, Fe SN		PR						
BGL-04	53.01				J	/hJ x2	45		wh mi	VN	PR	RF					5mm Fe alt halo
BGL-04	53.06				hJ		55		wh mi		PR						15mm Fe alt halo
BGL-04	53.12	53.30			hJ		10	80	wh mi		IR		<	1		very closely	
BGL-04	53.15	53.47			V		70	90	wh mi		IR		<	3			
BGL-04	53.23				J		70			CN	PR	RF					
BGL-04	53.35				hJ		70		wh mi		PR						
BGL-04	53.54				hJ		25		wh mi		CU						
BGL-04	53.64				hJ		25		wh mi		CU			2			
BGL-04	53.78				hJ		45		wh mi		CU						
BGL-04	53.85				J		40		wh mi	VN	PR	RF					
BGL-04	53.90				J		40		wh mi	VN	CU	RF					
BGL-04	53.95	54.54			hJ	x3	70	85	wh mi		PR		<	2		moderately widely	

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BGL-04	54.04				hJ		20		wh mi		PR						
BGL-04	54.08				J		10		wh mi	VN	PR	RF					
BGL-04	54.35	54.58			J	x4	50	70	wh mi	VN	PR	RF				closely	
BGL-04	54.48				hJ		50		wh mi		UN						
BGL-04	54.63				hJ		50		wh mi		PR						opened by drilling
BGL-04	54.80	55.05			J		80		wh mi	VN	PR	RF					
BGL-04	55.06				J		10		wh mi	VN	PR	RF					
BGL-04	55.08	55.23			hJ		70	85	wh mi		UN						
BGL-04	55.14				J		40		wh mi	VN	PR	RF					
BGL-04	55.22				J		40		wh mi	VN	PR	RF					
BGL-04	55.39				hJ		60		wh mi		PR						
BGL-04	55.39	55.43			hJ	x2	60	65	wh mi		PR						
BGL-04	55.41				DB												
BGL-04	55.43				hJ		65		wh mi		PR						
BGL-04	55.74				hJ		60		wh mi		PR						
BGL-04	55.74	55.78			hJ	x2	60		wh mi		PR						
BGL-04	55.78				hJ		60		wh mi		PR						
BGL-04	55.80				J		65			CN	PR	RF					
BGL-04	55.89				J		75		wh mi	VN	PR	RF					
BGL-04	55.90				J		10		wh mi	CN	PR	RF					
BGL-04	56.03	57.07			J		85		wh mi	VN	UN	RF					partially healed
BGL-04	56.17	56.53			J	x4	45	70	wh mi	VN	PR	RF					
BGL-04	57.18				J		65		wh mi	VN	PR	RF					
BGL-04	57.30				hJ		75		wh mi		PR			2			
BGL-04	57.31				DB									3			
BGL-04	57.44				DB												
BGL-04	57.65				J		60		wh mi	VN	PR	RF					
BGL-04	57.73				DB												
BGL-04	58.05				J		65		wh mi	VN	PR	RF					
BGL-04	58.47				V		20		wh mi		CU						
BGL-04	58.50				V		15		wh mi		CU	RF					
BGL-04	58.55	58.70			V		70		wh mi		CU						
BGL-04	58.62				V		70		wh mi		CU	RF					
BGL-04	58.85	59.65			J		50	65	wh mi	VN	PR	RF				closely	
BGL-04	58.90	59.15			J		10	20		CN	PR	RF				very closely	
BGL-04	59.13	59.33			J		65		wh mi	CT	PR	RF					
BGL-04	59.16	59.34			hJ		85	90	wh mi		UN						
BGL-04	59.33	59.64			J		80		wh mi	VN	UN	RF					
BGL-04	59.55	59.70			J		20	40		CN	PR	RF				closely	
BGL-04	59.81				hJ		45		wh mi		UN						
BGL-04	59.89				hJ		55		wh mi		UN						
BGL-04	60.63				hJ		70		wh mi		PR						
BGL-04	60.76				DB												
BGL-04	60.78				hJ		65		wh mi		PR						
BGL-04	60.80				hJ		65		wh mi		PR						
BGL-04	60.83				hJ		70		wh mi		UN						
BGL-04	60.94				hJ		70		wh mi		PR						
BGL-04	60.99				J		50		wh mi	VN	PR	RF					
BGL-04	61.32	61.54			hJ		75		wh mi		CU						
BGL-04	61.37				V		75		dk gy and gy mi, 1-3mm		PR	RF					
BGL-04	61.48				hJ		70		wh mi		PR						
BGL-04	61.52				hJ		50		wh mi		PR						
BGL-04	61.55				J		20		wh mi	VN	PR	RF					
BGL-04	61.56				hJ	x2	60		wh mi		UN						
BGL-04	61.82	62.20			hJ	x7	55		wh mi		PR						Fe alt halo 30mm on some defects, 50-100mm spacing
BGL-04	61.87				hJ		55		wh mi		PR						
BGL-04	61.93				hJ		55		wh mi		PR						
BGL-04	62.09				hJ		50		wh mi		PR						
BGL-04	62.12	62.25			hJ	x2	80		wh mi								
BGL-04	62.18				J		50			CN	PR	RF					
BGL-04	62.40				J		35			CN	PR	RF					
BGL-04	63.06				J		45	50		CN	CU	RF					
BGL-04	68.54				HB												
BGL-04	68.65				HB												
BGL-04	69.60	69.63			MB												
BGL-04	70.05	70.42			hJ		80		wh mi		UN		<	10			
BGL-04	70.10				hJ		70		wh mi		UN						
BGL-04	70.62	70.95			hJ	x4	60	80	wh mi		CU						wh mi alt halo, 50-100mm spacing
BGL-04	70.78				hJ		70		wh mi		UN						
BGL-04	71.04	71.26			hJ		85		wh mi		UN		<	3			
BGL-04	71.07				hJ		70		wh mi		UN						
BGL-04	71.26	71.42			hJ		70		wh mi		PR		<	5			
BGL-04	71.37				hJ		65		wh mi		PR						
BGL-04	71.90	72.20			hJ		80	90	wh mi		PR						
BGL-04	72.15	72.40			hJ		70		wh mi		PR						
BGL-04	72.22				V		60		wh mi		PR	RF					
BGL-04	72.42				hJ		60		wh mi		PR						
BGL-04	72.90				J		45		wh mi	VN	PR	RF					
BGL-04	73.03				J		55			CN	PR	RF					

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Pioneer-Burdekin Pumped Hydro Energy Scheme: Tranche 1 – BGL-04 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
BGL-04	73.90				J		50		wh mi	VN	PR	RF					
BGL-04	74.41	74.75			hJ		70		wh mi		UN						
BGL-04	74.60				hJ		70		wh mi		PR						
BGL-04	74.80				V		60		wh mi		PR	RF					
BGL-04	75.40				J		55			CN	PR	RF					
BGL-04	75.89				J		55		wh mi	VN	PR	RF					
BGL-04	76.28				DB				gy mi								
BGL-04	76.40				hJ		75		wh mi		PR						
BGL-04	77.45				hJ		50		wh mi		PR						10mm whi mi alt halo
BGL-04	77.50				J		55		wh mi	VN	PR	RF					
BGL-04	77.52	77.77			hJ		50	90	wh mi		CU						
BGL-04	77.71				MB												
BGL-04	77.72	77.83			hJ		60	80	wh mi		CU						
BGL-04	77.73				hJ		50		wh mi		PR						
BGL-04	77.75				V		80		wh gy mi		UN	RF					
BGL-04	77.80	78.15			hJ		80		wh mi		UN						
BGL-04	77.90				hJ		80		wh mi		UN						
BGL-04	78.55				hJ		60		wh mi		PR						
BGL-04	78.66	79.08			V		80		wh mi		UN						
BGL-04	78.69				J		50		wh mi	VN	PR	RF					
BGL-04	78.80				V		80		wh gy mi		UN	RF					
BGL-04	79.04				hJ		45		wh mi		PR						
BGL-04	79.33				J		40		wh mi	VN	PR	RF					
BGL-04	79.38				J		25			CN	IR	RF					
BGL-04	79.40				J		40			CN	IR	RF					
BGL-04	79.50				hJ		60	90	wh mi		PR						
BGL-04	80.23	80.79			J		70	90	wh mi	VN	UN	RF					
BGL-04	80.30				J		85		wh mi	VN	UN	RF					
BGL-04	80.38				J		80			CN	UN	RF					
BGL-04	80.44	80.54			J	x2	15		wh mi	VN	UN	RF				closely	
BGL-04	80.50				J		90		wh mi	VN		RF					
BGL-04	80.57	80.64			hJ	x2	5		wh mi		PR						
BGL-04	80.67				J		5		wh mi	VN	UN	RF					
BGL-04	80.68	80.95			J		70		wh mi	VN	UN	RF					
BGL-04	80.79				hJ	x2	80		wh mi		UN						
BGL-04	80.81	80.86			hJ		80		wh mi		UN						
BGL-04	80.93	81.10			hJ		80		wh mi		UN						
BGL-04	81.13				hJ		50		wh mi		UN						
BGL-04	81.25				J		55			CN	PR	RF					
BGL-04	81.26	81.48			hJ		80		wh mi		PR						
BGL-04	81.35				DB												
BGL-04	81.52				J		45			CN	UN	RF					
BGL-04	81.81	82.20			SZ		50	55									recovered as angular gravel, wh mi CT on exposed surfaces, rubbled by drilling, significant
BGL-04	82.15	82.34			J		50	85		CN	CU	RF					
BGL-04	82.32				J		45		wh mi	VN	PR	RF					
BGL-04	82.38				hJ		40		wh mi		PR						
BGL-04	82.39	82.60			hJ		70	80	wh mi		PR						
BGL-04	82.48				hJ		70		wh mi								
BGL-04	82.67				hJ		80	90	wh mi		UN						
BGL-04	82.68				J		55			CN	PR	RF					
BGL-04	82.87				hJ		85		wh mi								
BGL-04	83.03				J		10		wh mi	VN	PR	RF					
BGL-04	83.06	83.27			hJ	x4	70	90	wh mi		CU						
BGL-04	83.17				DB												
BGL-04	83.50				hJ		85		wh mi		PR						
BGL-04	83.76				hJ		50		wh mi		PR		<	4			
BGL-04	84.38				hJ		40		wh mi		PR						
BGL-04	84.90				hJ		10		wh mi		PR						
BGL-04	84.95				hJ		65		wh mi		PR						
BGL-04	85.75				J	x2	40		wh mi		PR	RF	<	2			
BGL-04	85.92	86.10			hJ		15	20	wh mi		PR						
BGL-04	85.94				hJ	x4	10	25	wh mi		UN		<	3			
BGL-04	85.97				hJ		45		wh mi		PR						
BGL-04	86.26				hJ	x2	20		wh mi		PR						
BGL-04	86.80	87.15			J		70				PR						
BGL-04	86.95	87.43			SZ		70										comprising crushed rock and subparallel defects dipping 10-20 degs with spacing 5-25mm, significant
BGL-04	87.49				J		15			CN	PR	RF					
BGL-04	87.58	87.78			SZ		60										comprising subparallel defects dipping 10-20 degs with spacing 5-20mm, significant
BGL-04	87.75	88.10			AZ		80										comprising multiple IR intersecting defects, 5-15mm spacing
BGL-04	88.18				hJ		45		wh mi		CU						
BGL-04	88.26				hJ		65		wh mi		PR						
BGL-04	88.31				hJ	x2	70		wh mi		PR						
BGL-04	88.33				J		10		wh mi	VN	CU	RF					
BGL-04	88.37	88.55			J	x2	70		wh mi	VN	PR	RF					
BGL-04	88.50	88.65			hJ	x2	70		wh mi		PR						
BGL-04	88.77				hJ		45		wh mi		CU						
BGL-04	88.80				hJ		30		wh mi		CU						
BGL-04	89.20				hJ		70		wh mi		UN						

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Pioneer-Burdekin Pumped Hydro Energy Scheme: Tranche 1 – BGL-04 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
BGL-04	89.28				hJ		30		wh mi		CU						
BGL-04	89.30				hJ		75		wh mi		PR						
BGL-04	89.47	89.65			J		65		wh mi	VN	PR	RF					
BGL-04	89.54				J		65		wh mi	VN	PR	RF					
BGL-04	89.72				J		60		gr mi	VN	PR	RF					
BGL-04	89.77	90.00			J	x7	15	30	gr mi	VN	PR	RF				very closely	multiple open and healed defects, 10-30mm defect spacing, possiblle SZ, significant
BGL-04	90.05				J		25		gr mi	VN	PR	RF					
BGL-04	90.08				J		20		gr mi	VN	IR	RF					
BGL-04	90.12				hJ		60		wh mi		PR						
BGL-04	90.15				hJ		10		wh mi		CU						
BGL-04	90.22				hJ		25		wh mi		PR						
BGL-04	90.33				hJ		30		wh mi		PR						
BGL-04	90.50				hJ		40		wh mi		PR						
BGL-04	90.71				hJ		0	5	wh mi		IR						
BGL-04	90.88				J		5		clay		PR	RF		10			
BGL-04	90.94				hJ		50				CU						
BGL-04	91.05				J		60		wh mi	VN	PR	RF					
BGL-04	91.07				hJ		30		wh mi		CU						
BGL-04	91.10				J		60	70		CN	PR	RF					
BGL-04	91.12	91.22			J	x4	70	80		CN	PR	RF					
BGL-04	91.20				J		60		wh mi	VN	PR	RF					
BGL-04	91.24				hJ		20		wh mi		UN						
BGL-04	91.26				DB												
BGL-04	91.30				hJ		0		wh mi		PR						
BGL-04	91.38				DB												
BGL-04	91.39				hJ		20		wh mi		CU						
BGL-04	91.47				J		20		wh mi	VN	PR	RF					
BGL-04	91.52				hJ		60				PR						
BGL-04	91.56				J		60		wh mi	VN	PR	RF					
BGL-04	91.58				J		60		gr mi		PR	RF					
BGL-04	91.73				hJ		15		wh mi		UN						
BGL-04	91.97				J		50		wh mi		PR	RF					
BGL-04	92.05	92.15			J	x5	20	35	gr mi	VN	PR	RF					5-20 mm spacing
BGL-04	92.10				J		85		wh mi		PR	RF					
BGL-04	92.28				hJ		60		wh mi		PR						
BGL-04	92.35				J		20			CN	PR	RF					
BGL-04	92.42				J		60		wh mi	VN	PR	RF					
BGL-04	92.46				hJ		70		wh mi		PR						
BGL-04	92.49				hJ		40		wh mi		CU						
BGL-04	92.66				hJ		30		wh mi		CU						
BGL-04	92.89				hJ		80		wh mi		PR						
BGL-04	92.93				J		10		wh mi	VN	PR	RF					
BGL-04	93.11				J		10		wh mi	CN	CU	RF					
BGL-04	93.25	93.55			SZ		20	45			IR	RF					comprising numerous subparallel defects with spacing <10mm, significant
BGL-04	93.28				J		35		wh mi	VN	UN	RF					
BGL-04	93.36				J		15		wh mi	VN	UN	RF					
BGL-04	93.57				hJ		20		wh mi		CU						
BGL-04	93.60	93.71			J		85		wh mi	VN	PR	RF					
BGL-04	93.72				J		10			CN	CU	RF					
BGL-04	93.79				J		40		wh mi		UN						
BGL-04	93.80				J		40		wh mi	VN	PR	RF					
BGL-04	93.90				J		30		wh mi	VN	PR	RF					
BGL-04	94.05				HB												
BGL-04	94.06				V		90		gr mi		UN	RF					
BGL-04	94.06	94.44			V	x3	70	80	wh mi		UN		<=	5			
BGL-04	94.25				V		70	80	wh mi		CU	RF					
BGL-04	94.62				DB												
BGL-04	94.65				V		70		wh mi		UN	RF					
BGL-04	94.87				hJ		80	90	wh mi		CU						
BGL-04	95.10				J		40			VN	PR	RF					
BGL-04	95.14				V		40		wh mi		PR	RF					
BGL-04	95.57				J		5		wh mi		PR	RF					
BGL-04	95.77				DB												
BGL-04	95.83	96.00			hJ		60		wh mi		PR						
BGL-04	95.95	95.98			hJ	x2	0	5	wh mi		PR						
BGL-04	96.05				hJ		65		wh mi		PR						
BGL-04	96.10				J		25		gy mi	VN	PR	RF					
BGL-04	96.16				J		25		gy mi	VN	PR	RF					
BGL-04	97.00				J		65		wh mi	CT	PR	RF					
BGL-04	97.15				hJ		70		wh mi		PR						
BGL-04	97.25				DB												
BGL-04	97.28				hJ		55		wh mi		PR						
BGL-04	97.35				V		20		whi mi gy mi	VN	UN	RF					
BGL-04	97.45				J		20		wh mi		PR	RF					
BGL-04	97.50				hJ		55		wh mi	VN	PR						
BGL-04	97.70	98.80			hJ	x2	55		wh mi		PR		<=	2			
BGL-04	97.78				J		60		wh mi	VN	IR	RF					
BGL-04	97.79	98.20			hJ	x3	80	90	wh mi		PR						
BGL-04	97.80				hJ		60		wh mi		UN		<=	3			

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Pioneer-Burdekin Pumped Hydro Energy Scheme: Tranche 1 – BGL-04 Defects List

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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
BGL-04	97.82				V		55		wh mi	VN	PR	RF					
BGL-04	97.93				J		55		wh mi		IR	RF					
BGL-04	98.28				J		50		wh mi	VN	PR	RF					
BGL-04	98.48				J		50		wh mi		IR	RF					
BGL-04	98.50				hJ	x2	55		wh mi		UN						
BGL-04	98.57				hJ		10		wh mi		UN						
BGL-04	98.75				V		55		wh mi		PR	RF					
BGL-04	98.85				hJ		90		wh mi		UN						
BGL-04	99.15				V		45		wh mi		PR	RF					
BGL-04	99.20				J		55		wh mi	VN	PR	RF					
BGL-04	99.47				J		30			CN	PR	RF					
BGL-04	99.90				V		10		gy mi		CU	RF					
BGL-04	100.18				hJ		65		wh mi		UN						
BGL-04	100.20				DB												
BGL-04	101.08				J		70		wh mi	VN	PR	RF					
BGL-04	101.14				hJ		70		wh mi		PR						
BGL-04	101.43				hJ		55		wh mi		PR						
BGL-04	101.56				DB												
BGL-04	102.00				V		15		whi mi gy mi		PR	RF					
BGL-04	102.01	102.80			V		75	80	pi mi			RF					
BGL-04	102.34				J		45		wh mi	VN	PR	RF					
BGL-04	103.10				V		90		pi mi		UN	RF					
BGL-04	103.47				hJ		10		wh mi		PR						
BGL-04	103.76				J		25		wh mi	VN	PR	RF					
BGL-04	104.17				J		25		wh mi	VN	PR	RF					
BGL-04	104.60				DB												
BGL-04	105.00				V		65		gy mi		PR	RF					
BGL-04	105.46				V		60		pi mi		PR	RF					
BGL-04	105.87				J		20		wh mi	VN	IR	RF					
BGL-04	106.04				J		60		wh mi	VN	PR	RF					
BGL-04	106.11				V		60		wh mi		PR	RF					
BGL-04	106.13				V		5		wh mi		PR	RF					
BGL-04	106.50				J		20			CN	PR	RF					
BGL-04	106.68				hJ		0		wh mi		UN						
BGL-04	106.87				hJ		60		wh mi		PR						
BGL-04	107.26				J		10		wh mi	VN	PR	RF					
BGL-04	107.47				hJ		5		wh mi		UN						
BGL-04	107.63				DB		60										
BGL-04	107.65				hJ		55		wh mi		PR			2			
BGL-04	107.78				hJ		60		wh mi		PR						
BGL-04	107.97				hJ		55		wh mi		PR						
BGL-04	108.05				J		45		gy mi wh mi	CT	PR	RF	<=	5			50mm alteration halo on lower side of defect
BGL-04	108.08				DB												
BGL-04	108.40				hJ		90		wh mi		UN						
BGL-04	108.41				hJ		0		wh mi		UN						
BGL-04	108.44				J		45		wh mi	CT	PR	RF	<=	3			100mm alteration halo around defect
BGL-04	108.51				hJ				wh mi		PR						
BGL-04	108.63				DB												
BGL-04	108.75				DB									2			
BGL-04	109.02				hJ				wh mi								
BGL-04	109.02	109.23			hJ	x3	40	50	wh mi		PR						
BGL-04	109.08				DB												
BGL-04	109.30	109.40			J	x2	10		wh mi	VN	PR	RF				closely	
BGL-04	109.35				hJ		40		wh mi		UN						
BGL-04	109.38	109.53			V	x2	55		wh mi		UN		<=	5			
BGL-04	109.40				J		10		wh mi	CN	PR	RF					
BGL-04	109.44				V		55		wh mi		PR	RF					
BGL-04	109.50				V		55		wh mi		PR	RF					
BGL-04	109.52	109.85			J		75			CN	UN	RF					
BGL-04	109.55				hJ		0		wh mi		UN						
BGL-04	109.67	109.75			hJ		75		wh mi		UN						
BGL-04	109.70				J	x2	50			CN	UN	RF				very closely	
BGL-04	109.77	110.00			hJ		80	90	wh mi		UN						
BGL-04	109.90	111.12			J	x10	45	60	wh mi	VN	PR	SM				closely	
BGL-04	110.08				J		25		wh mi	VN	CU	RF					
BGL-04	110.17				hJ		0		wh mi		UN						
BGL-04	110.44				hJ	x2	45		wh mi		PR						
BGL-04	110.45				hJ		60		wh mi		UN						
BGL-04	110.47				hJ		60		wh mi		PR						
BGL-04	110.55				J		30			CN	UN	RF					
BGL-04	110.75				hJ		50				PR						
BGL-04	110.77				J		10			CN	UN	RF					
BGL-04	110.80				hJ	x4	40	50	wh mi		PR						
BGL-04	110.85				J		5			CN	UN	RF					
BGL-04	111.03	111.10			hJ	x3	15		wh mi		UN						
BGL-04	111.45				J		25		pi mi	CT	PR	RF					
BGL-04	111.69				V		10		dk gy mi, 1-9mm	PR							
BGL-04	112.07				hJ		50		wh mi	PR							
BGL-04	112.12				J		55		wh mi	VN	PR	RF					

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Pioneer-Burdekin Pumped Hydro Energy Scheme: Tranche 1 – BGL-04 Defects List

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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
BGL-04	112.20				hJ		30		wh mi	PR							
BGL-04	112.38				hJ		15		wh mi		UN						
BGL-04	112.43				J		10			CN	UN	RF					
BGL-04	113.00				J		10		pi mi	CT	PR	RF					
BGL-04	113.18				J		25		wh mi	VN	PR	RF	<=	3			

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PointID : BGL-04 Depth Range: 4.88 - 8.00 m

PointID : BGL-04 Depth Range: 8.00 - 12.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BGL-04	DRAWN RC/PL	DATE 7/08/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 1/14

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PointID : BGL-04 Depth Range: 12.00 - 16.00 m

PointID : BGL-04 Depth Range: 16.00 - 20.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BGL-04	DRAWN RC/PL	DATE 7/08/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 2/14

PointID : BGL-04 Depth Range: 20.00 - 24.00 m

PointID : BGL-04 Depth Range: 24.00 - 28.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BGL-04	DRAWN RC/PL	DATE 7/08/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 3/14

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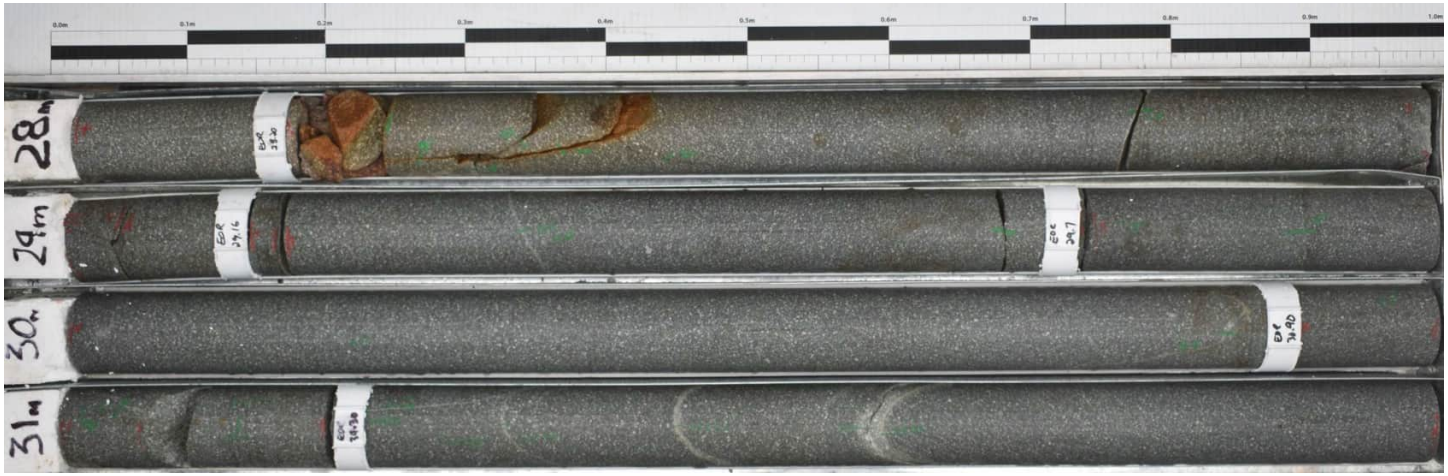
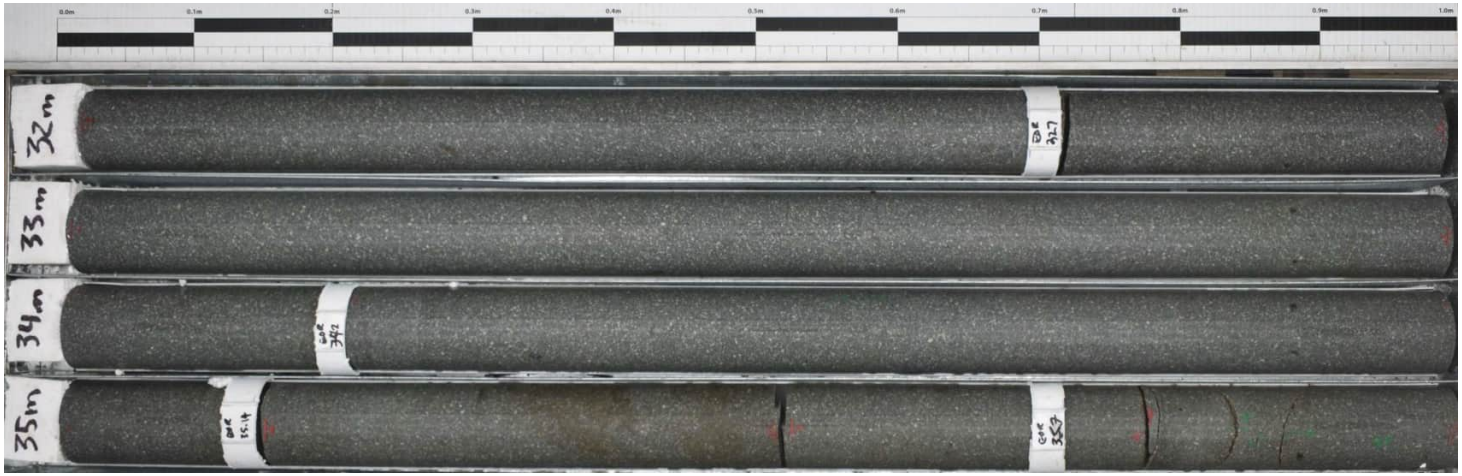


PointID : BGL-04 Depth Range: 28.00 - 32.00 m



PointID : BGL-04 Depth Range: 32.00 - 36.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BGL-04	DRAWN RC/PL	DATE 7/08/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 4/14

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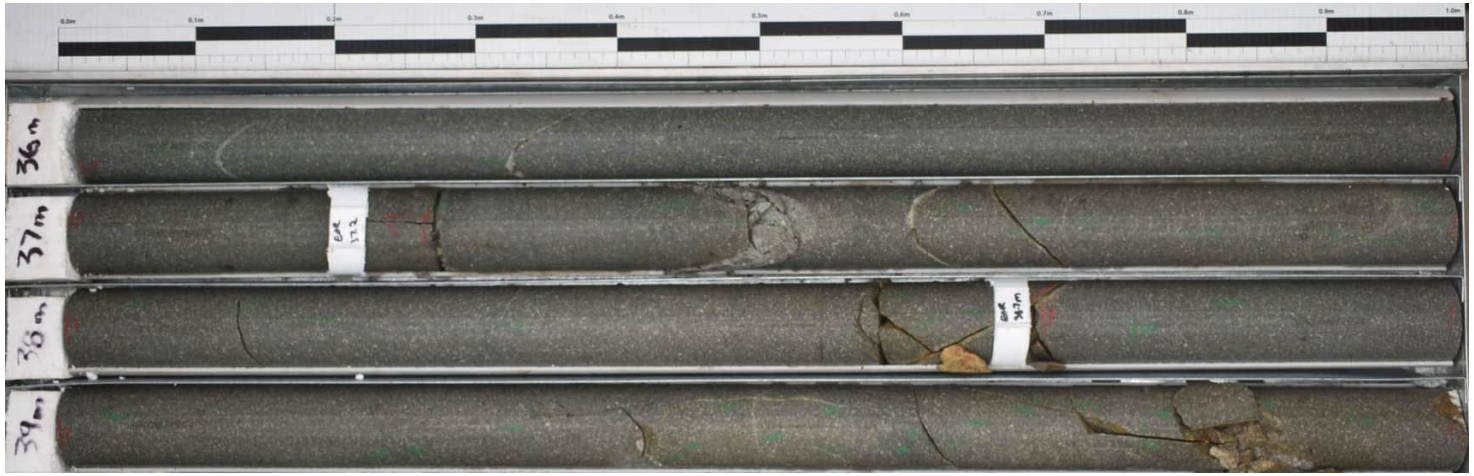

PointID : BGL-04 Depth Range: 36.00 - 40.00 m

PointID : BGL-04 Depth Range: 40.00 - 44.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BGL-04	DRAWN RC/PL	DATE 7/08/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 5/14

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PointID : BGL-04 Depth Range: 44.00 - 48.00 m

PointID : BGL-04 Depth Range: 48.00 - 52.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BGL-04	DRAWN RC/PL	DATE 7/08/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 6/14

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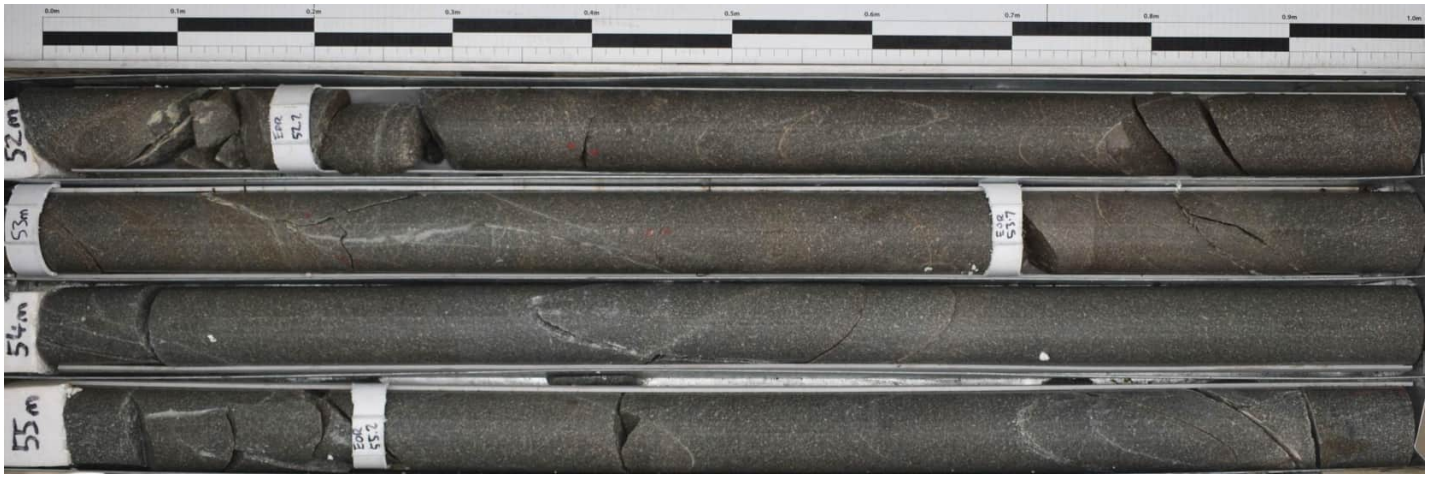
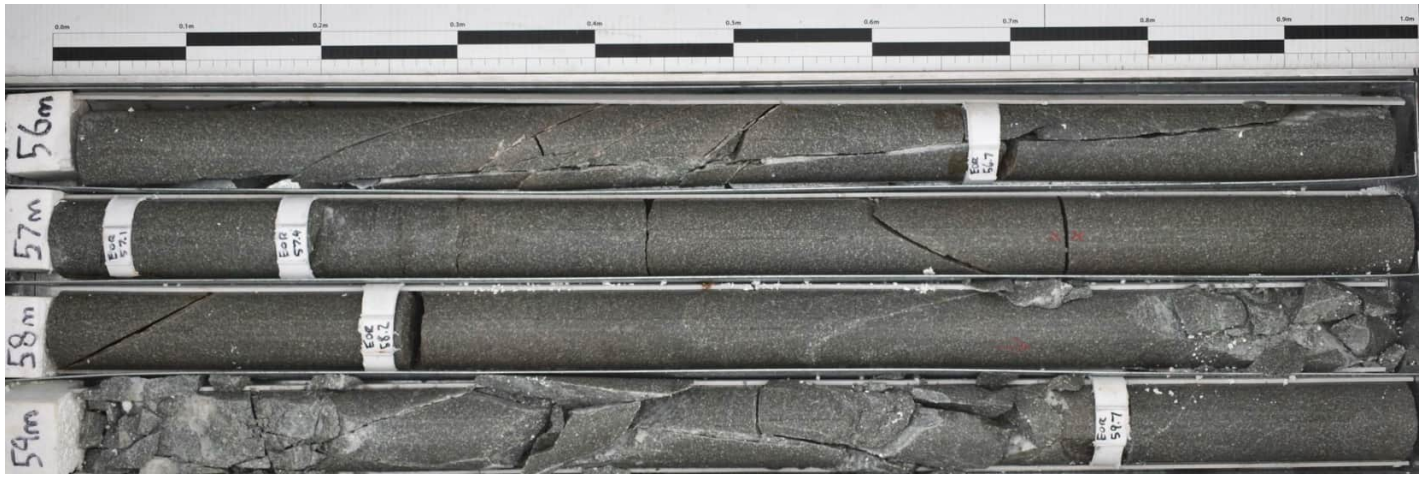


PointID : BGL-04 Depth Range: 52.00 - 56.00 m



PointID : BGL-04 Depth Range: 56.00 - 60.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BGL-04	DRAWN RC/PL	DATE 7/08/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 7/14

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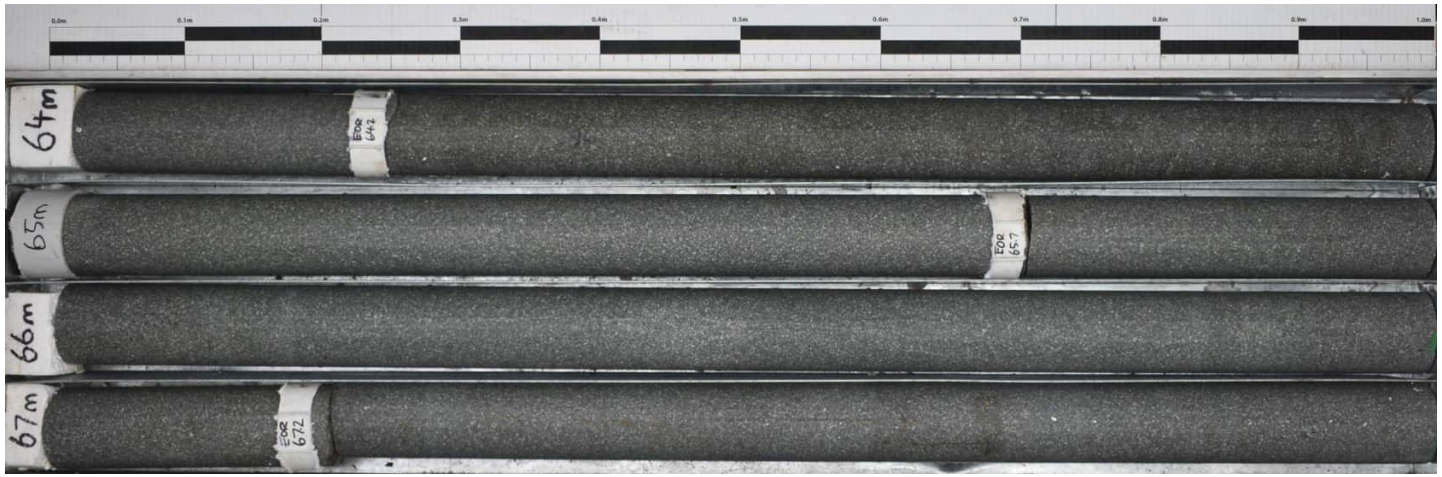
PointID : BGL-04 Depth Range: 60.00 - 64.00 m



PointID : BGL-04 Depth Range: 64.00 - 68.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BGL-04	DRAWN RC/PL	DATE 7/08/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 8/14

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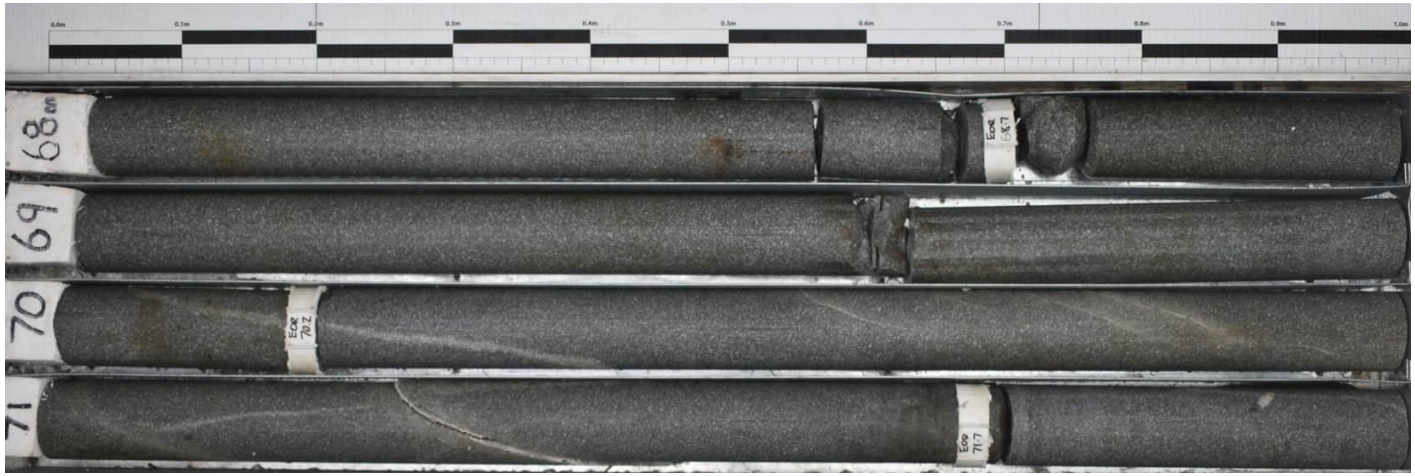

PointID : BGL-04 Depth Range: 68.00 - 72.00 m

PointID : BGL-04 Depth Range: 72.00 - 76.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BGL-04	DRAWN RC/PL	DATE 7/08/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 9/14

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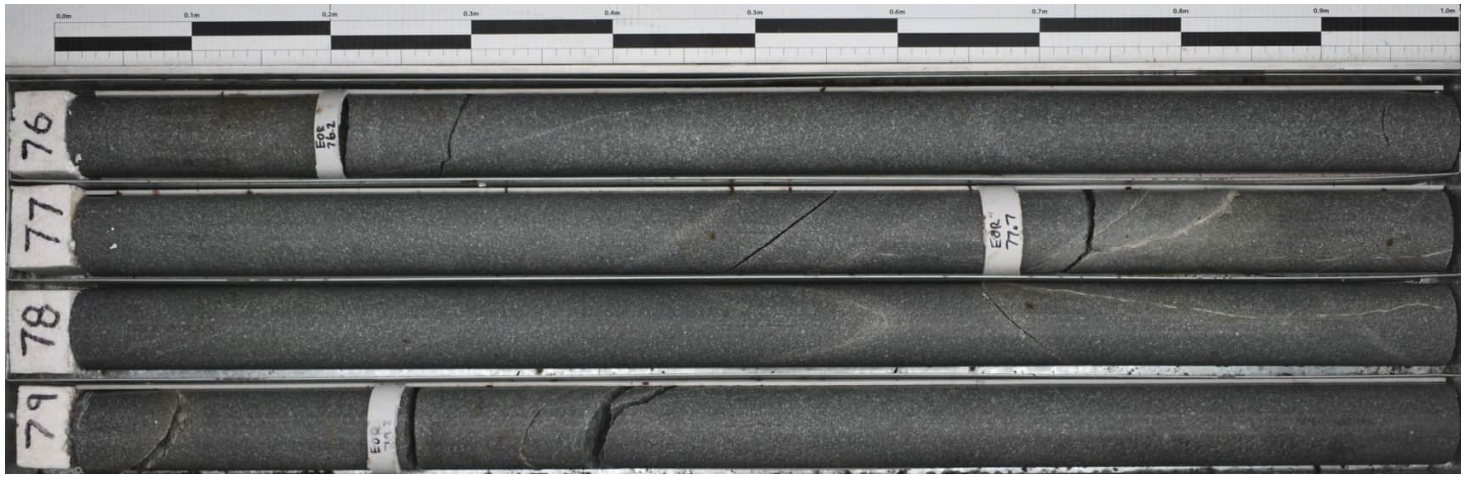
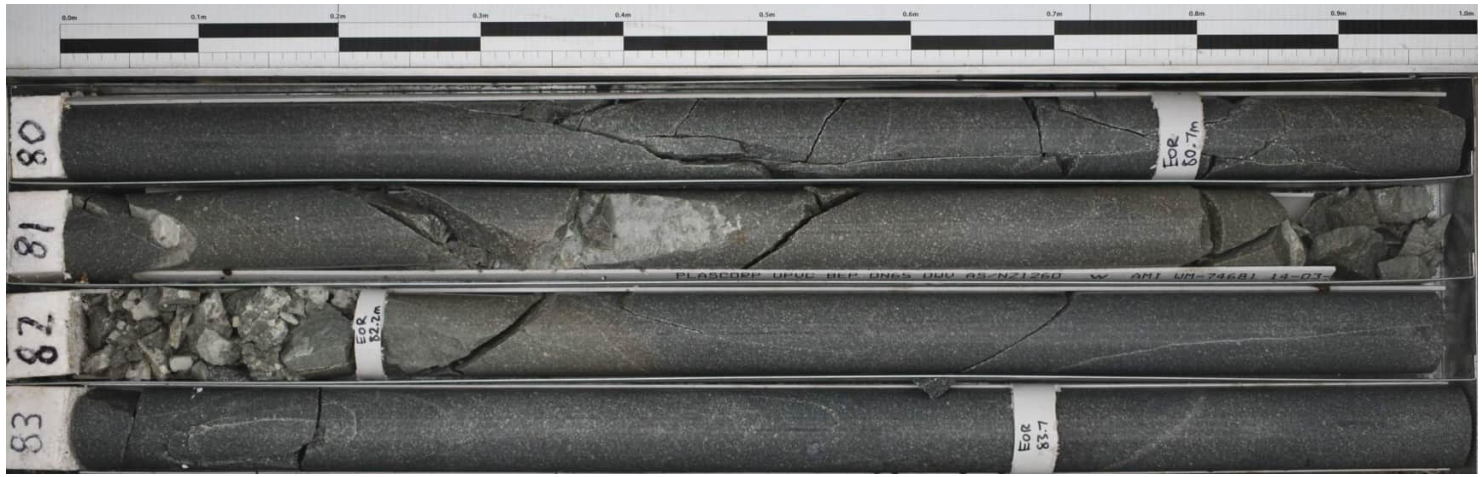


PointID : BGL-04 Depth Range: 76.00 - 80.00 m



PointID : BGL-04 Depth Range: 80.00 - 84.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BGL-04	DRAWN RC/PL	DATE 7/08/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 10/14

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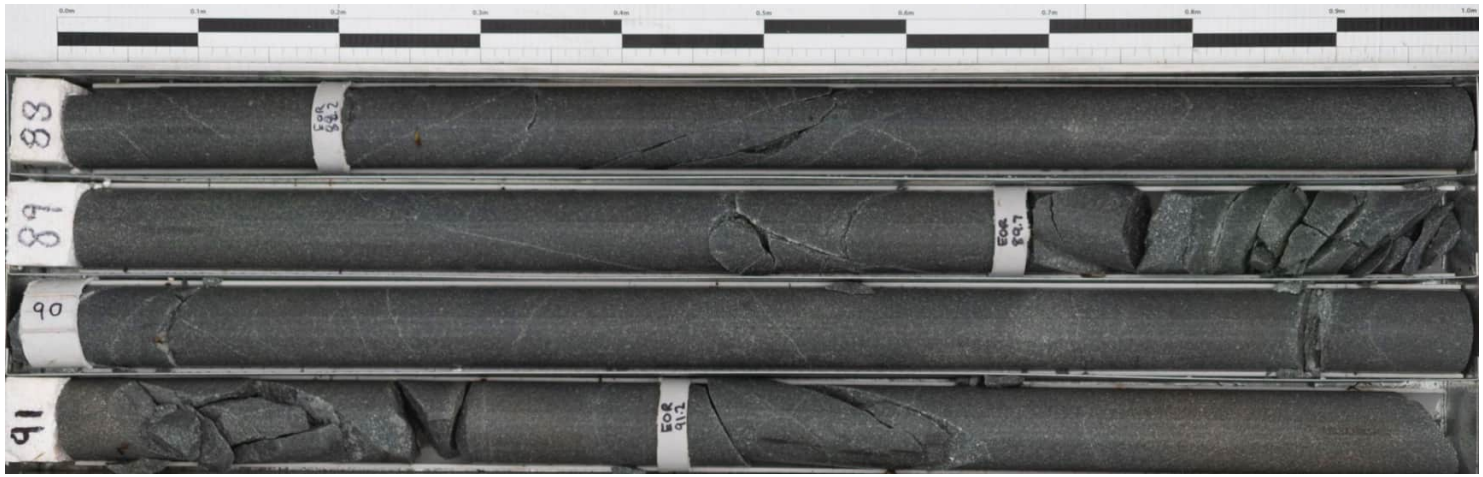
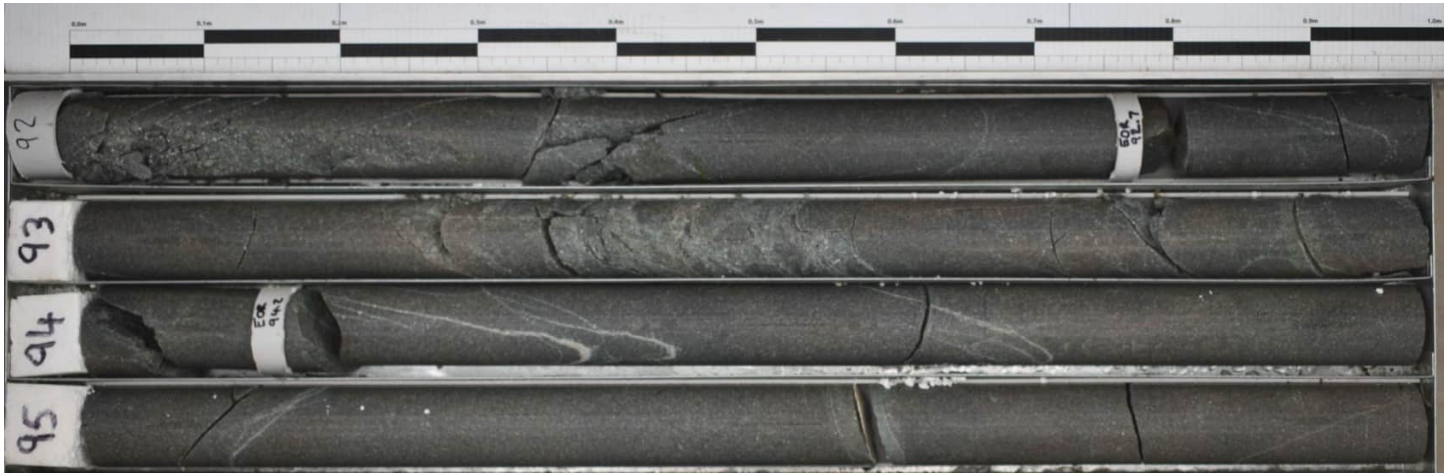
PointID : BGL-04 Depth Range: 84.00 - 88.00 m

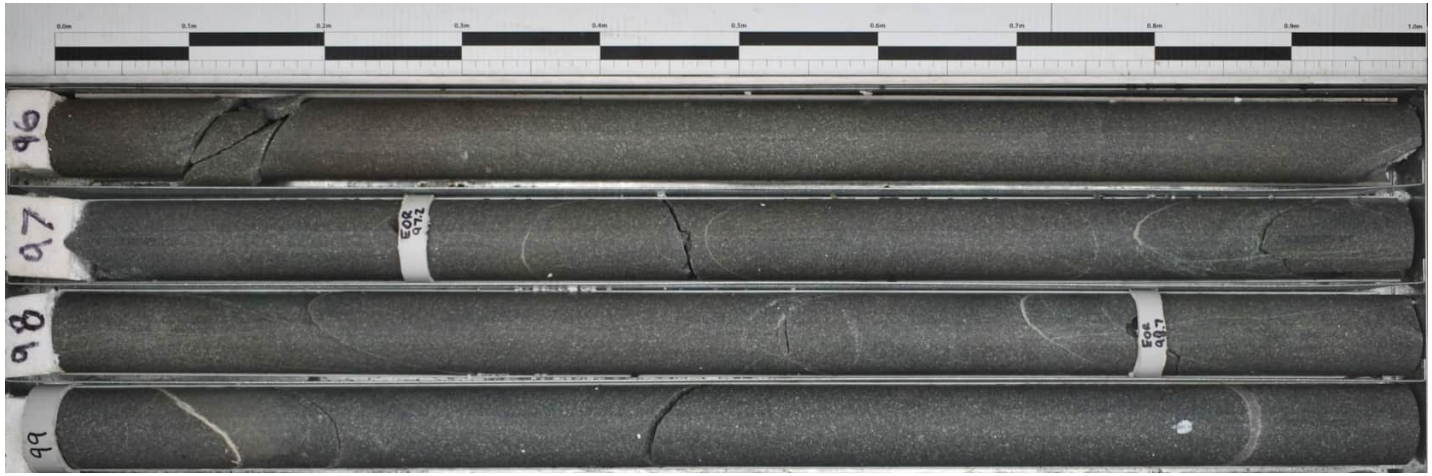


PointID : BGL-04 Depth Range: 88.00 - 92.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BGL-04	DRAWN RC/PL	DATE 7/08/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 11/14



PointID : BGL-04 Depth Range: 92.00 - 96.00 m



PointID : BGL-04 Depth Range: 96.00 - 100.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BGL-04	DRAWN RC/PL	DATE 7/08/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 12/14

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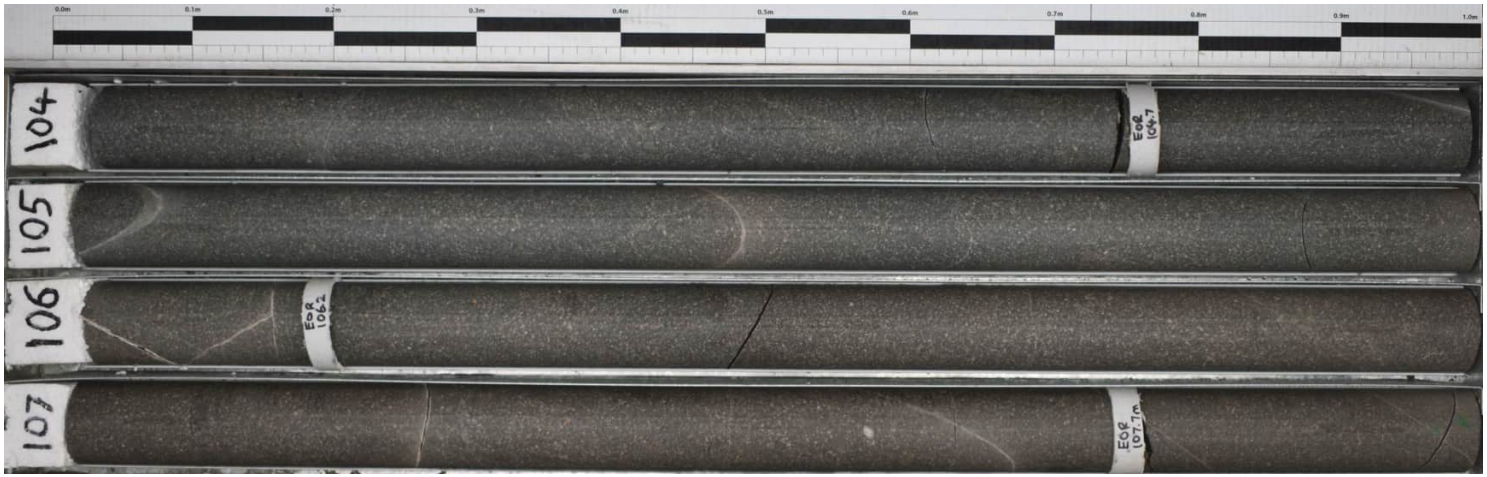
PointID : BGL-04 Depth Range: 100.00 - 104.00 m



PointID : BGL-04 Depth Range: 104.00 - 108.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BGL-04	DRAWN RC/PL	DATE 7/08/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 13/14

PointID : BGL-04 Depth Range: 108.00 - 112.00 m

PointID : BGL-04 Depth Range: 112.00 - 113.70 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BGL-04	DRAWN RC/PL	DATE 7/08/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 14/14

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BGL-04 Structural Logs

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WSP Australia Pty Limited
Level 12, 900 Ann Street
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QLD 4006
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GEOPHYSICAL RECORD OF BOREHOLE: BGL-04

PROJECT:	Pioneer-Burdekin PHES	JOB #	PS138693
CLIENT:	Queensland Hydro	DATE:	24/05/2024

BOREHOLE DETAILS

LOCATION:	Lower Reservoir	BH DEPTH:	113.7 m
EASTING:	660325.57 m E	BH DIAMETER:	96 mm (HQ)
NORTHING:	7661354.00 m N	BH AZIMUTH:	184°
ELEVATION:	175.76 m	BH PLUNGE:	-59°
COORD SYSTEM:	MGA2020-56	CASING DEPTH:	9.07 m
LOGGING DATUM:	Ground Level	CASING TYPE:	HWT

DOCUMENT DETAILS

LOGGED BY:	GH
LOGGED DATE:	19-20/02/2024
DRAWN BY:	SB
REVIEWED BY:	GH
FILE:	BGL-04_Structure_RevC
LOGGED DEPTH:	112.93 m

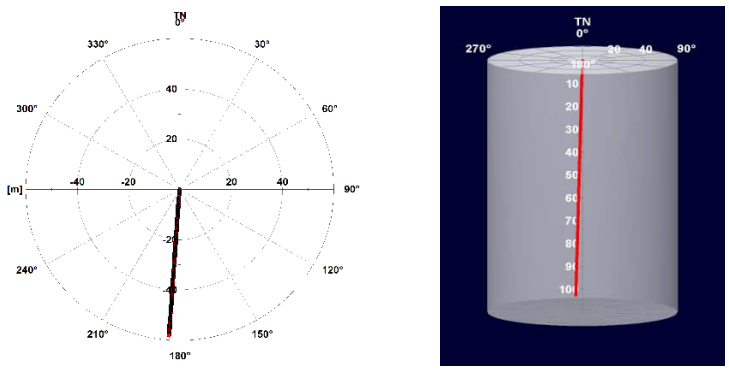
NOTES

Image logs are oriented relative to borehole highside. 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.

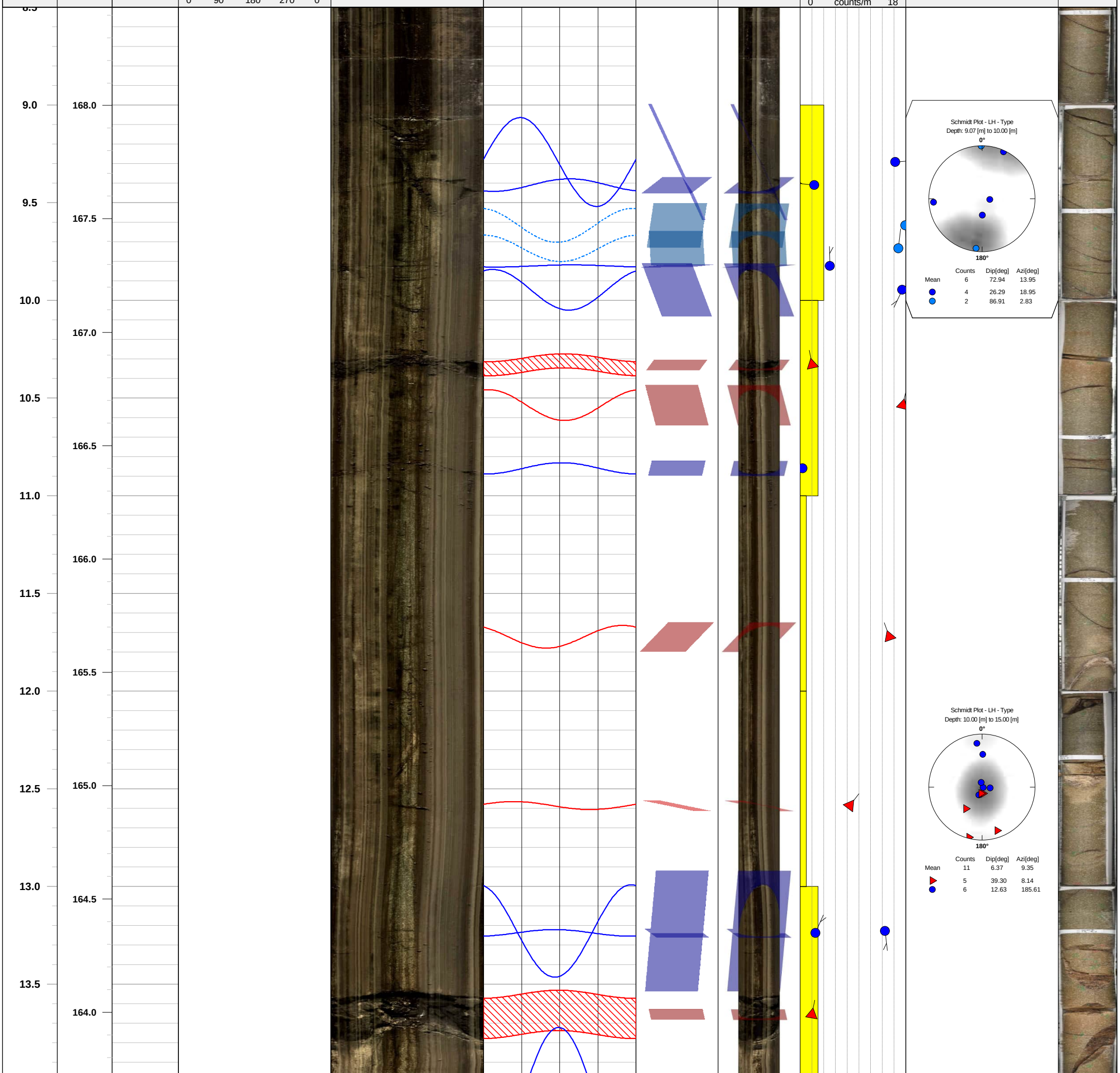
BOREHOLE DEVIATION



INTERPRETED STRUCTURES

Extremely Weathered Seam · Fracture Zone · Joint · Shear Seam · Sheared Surface · Shear Zone · Vein · Healed Joint

BGL-04



BGL-04

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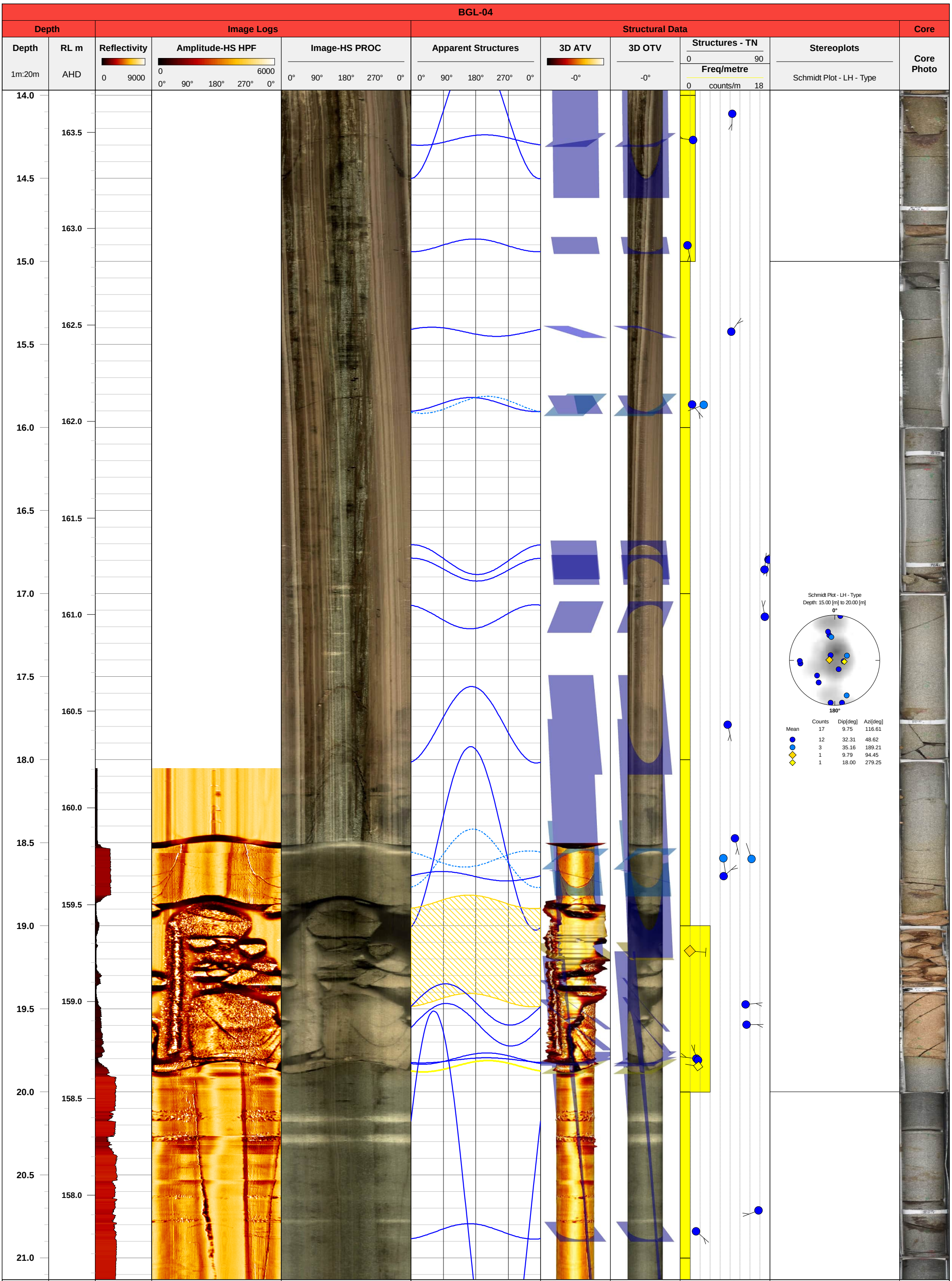

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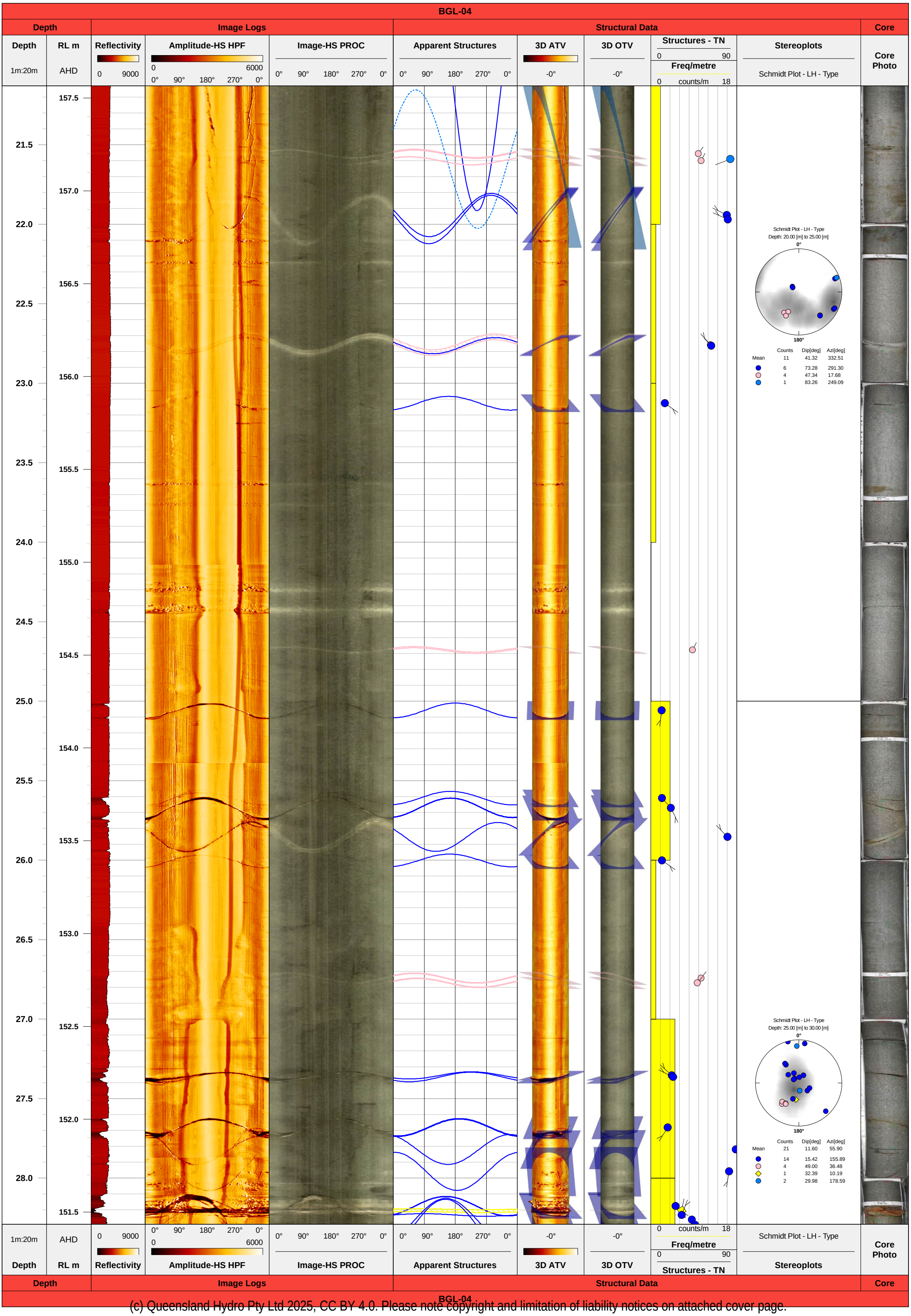

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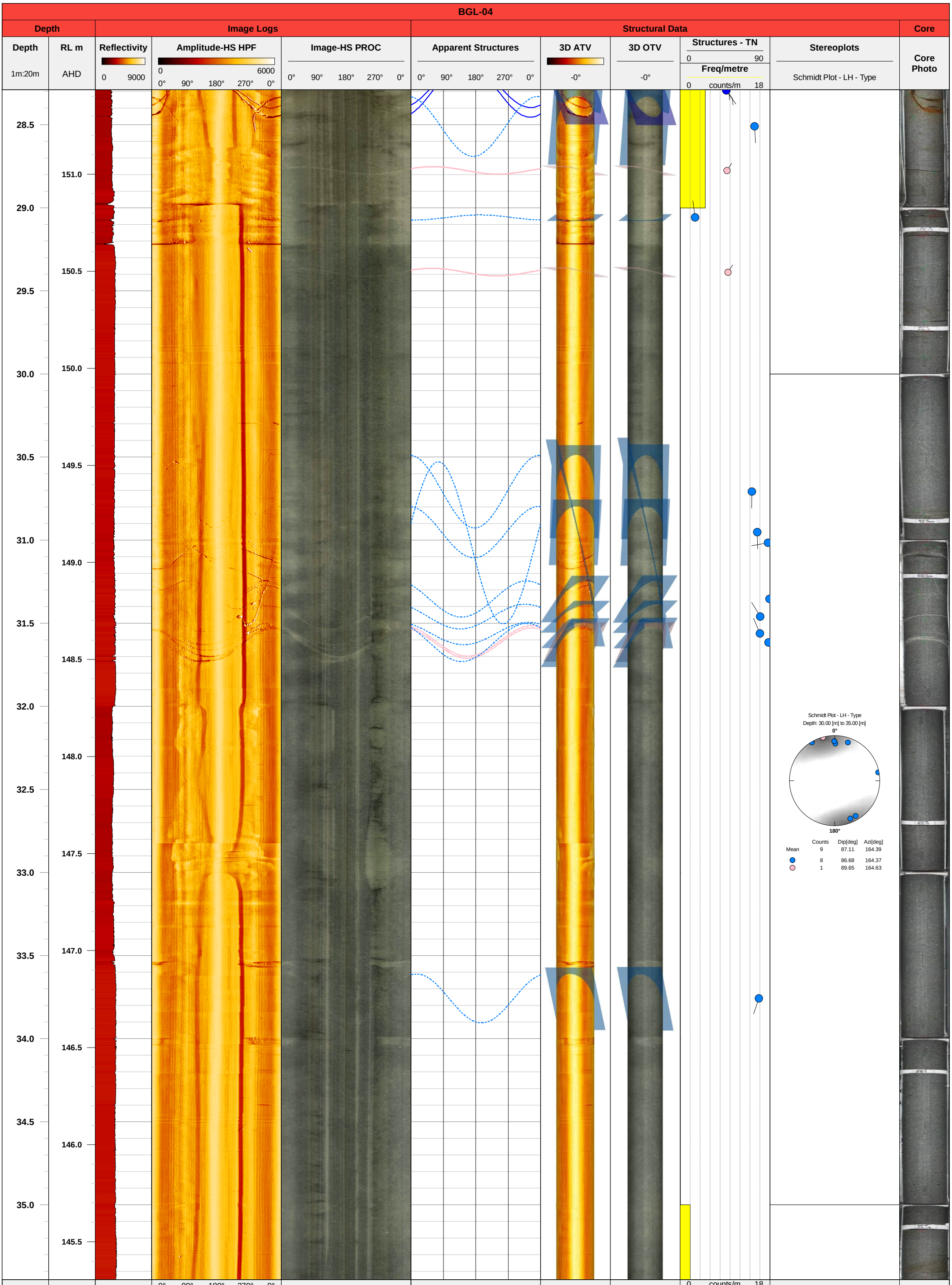

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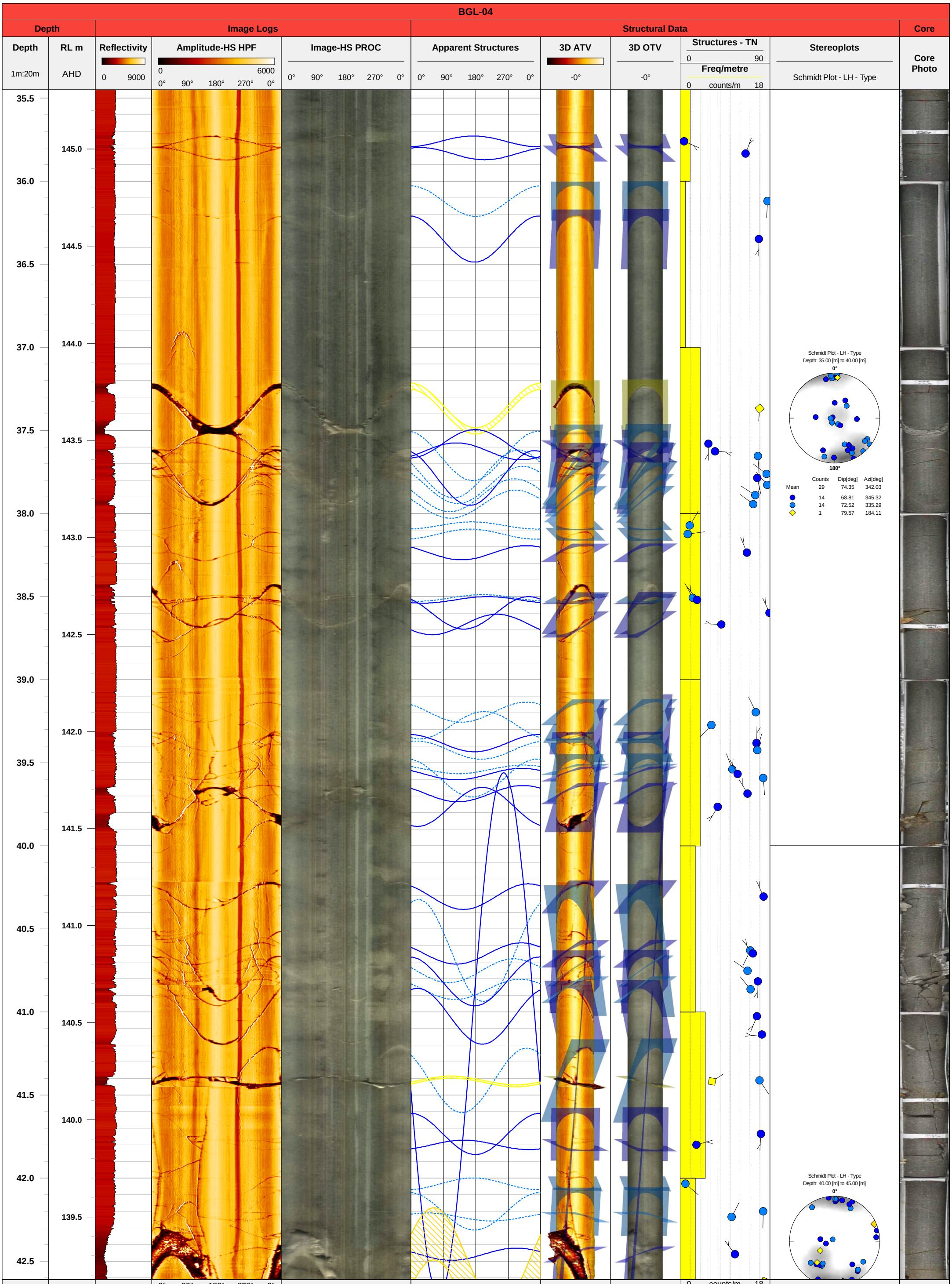

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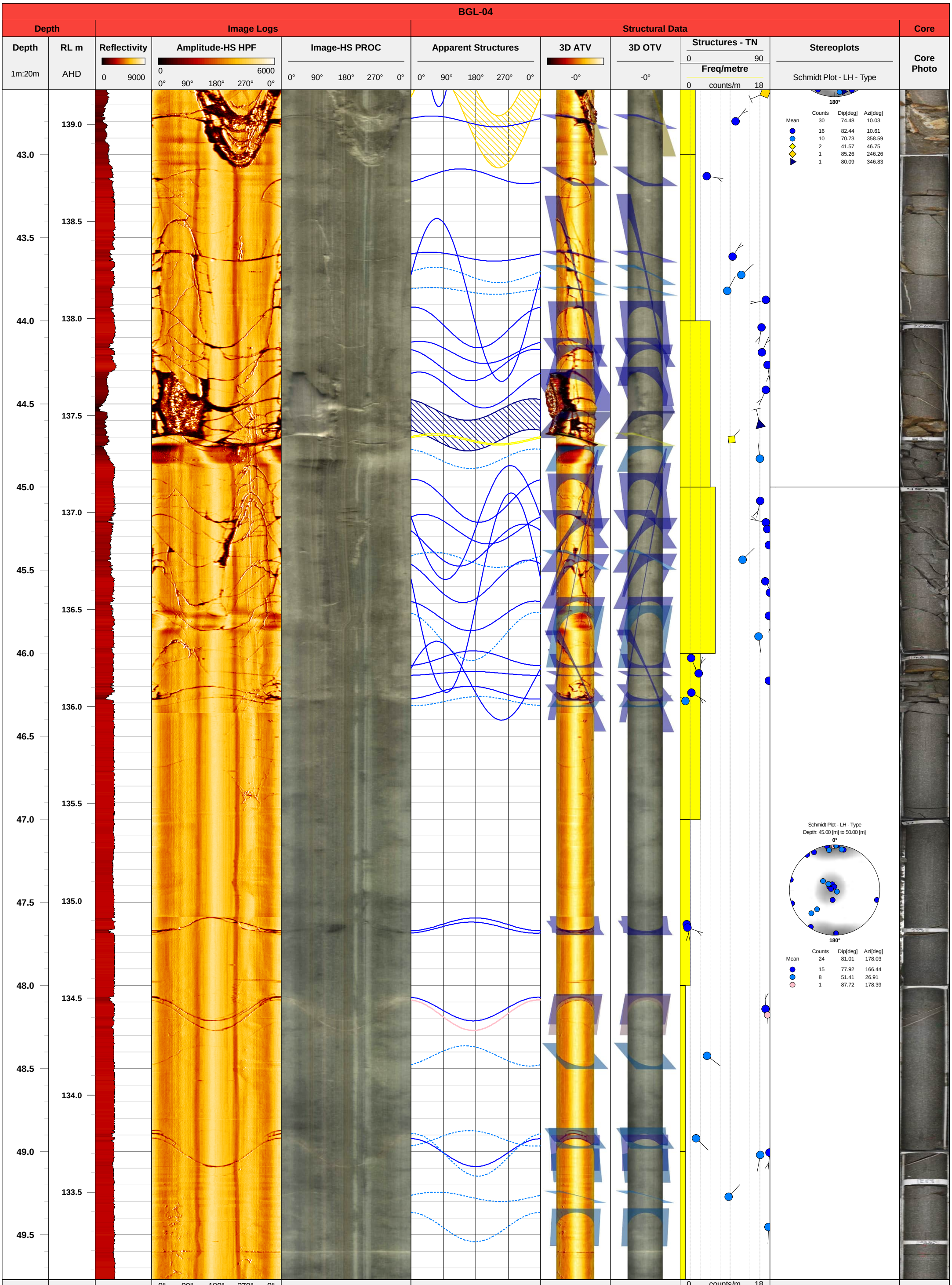

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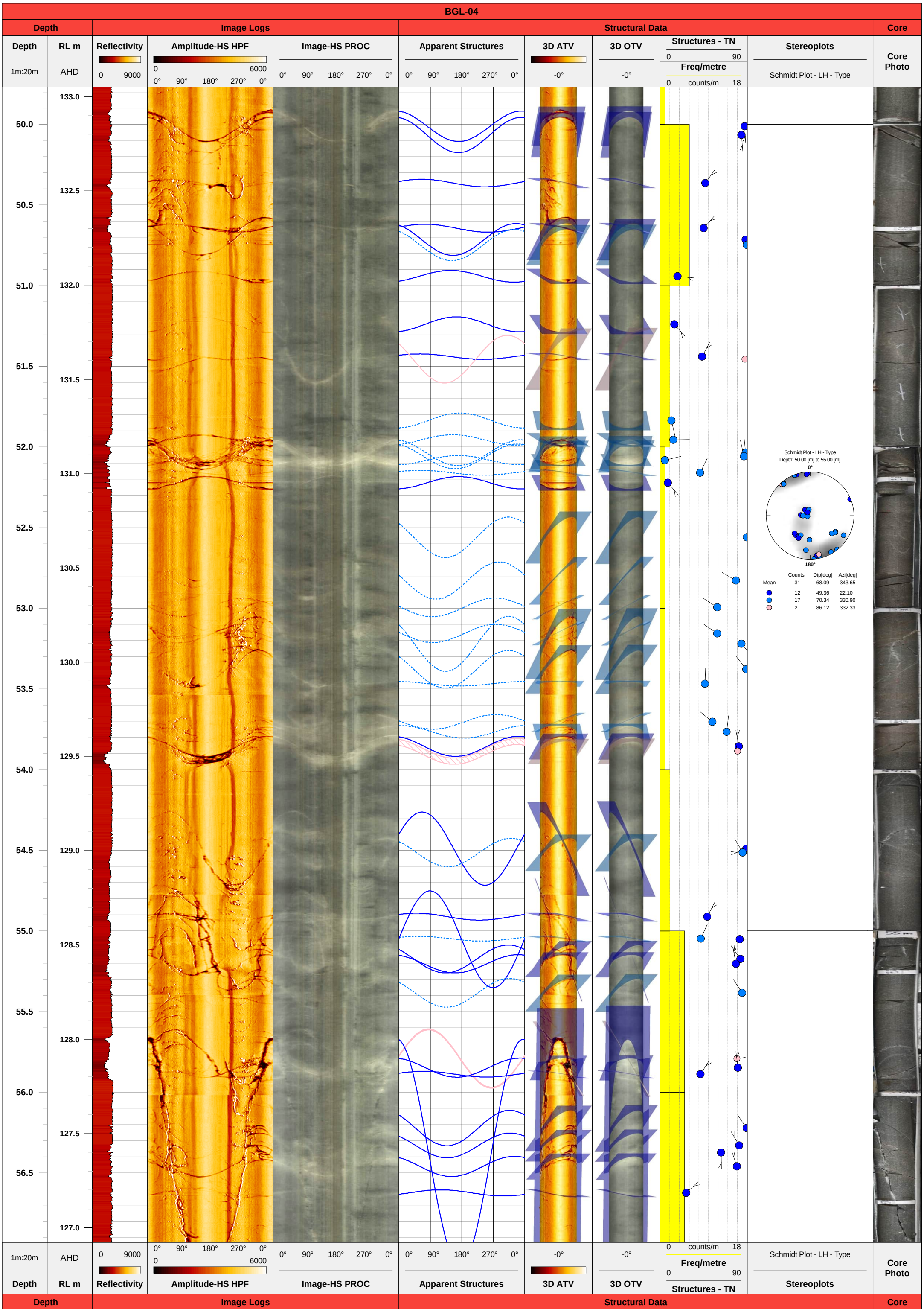

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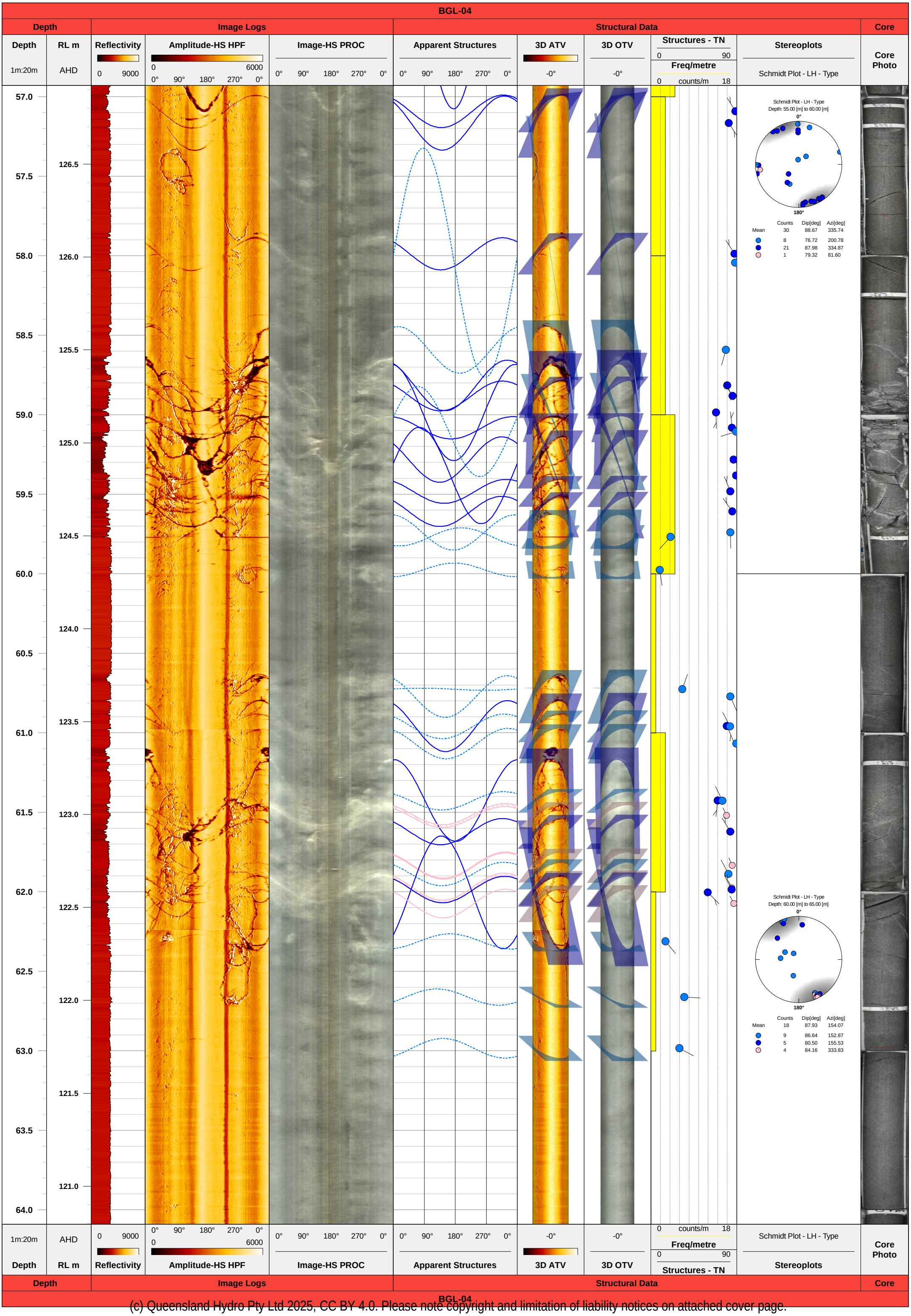

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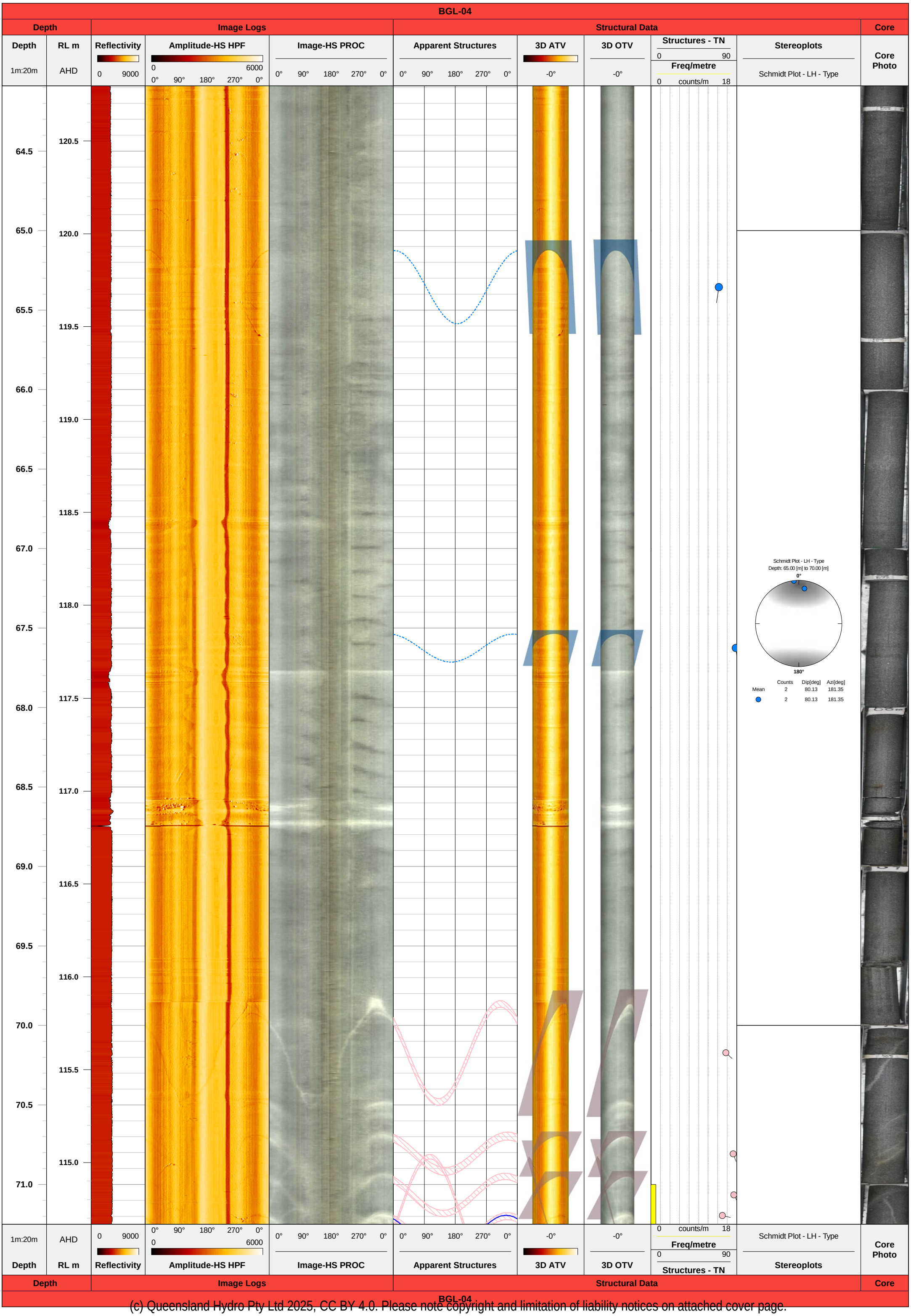

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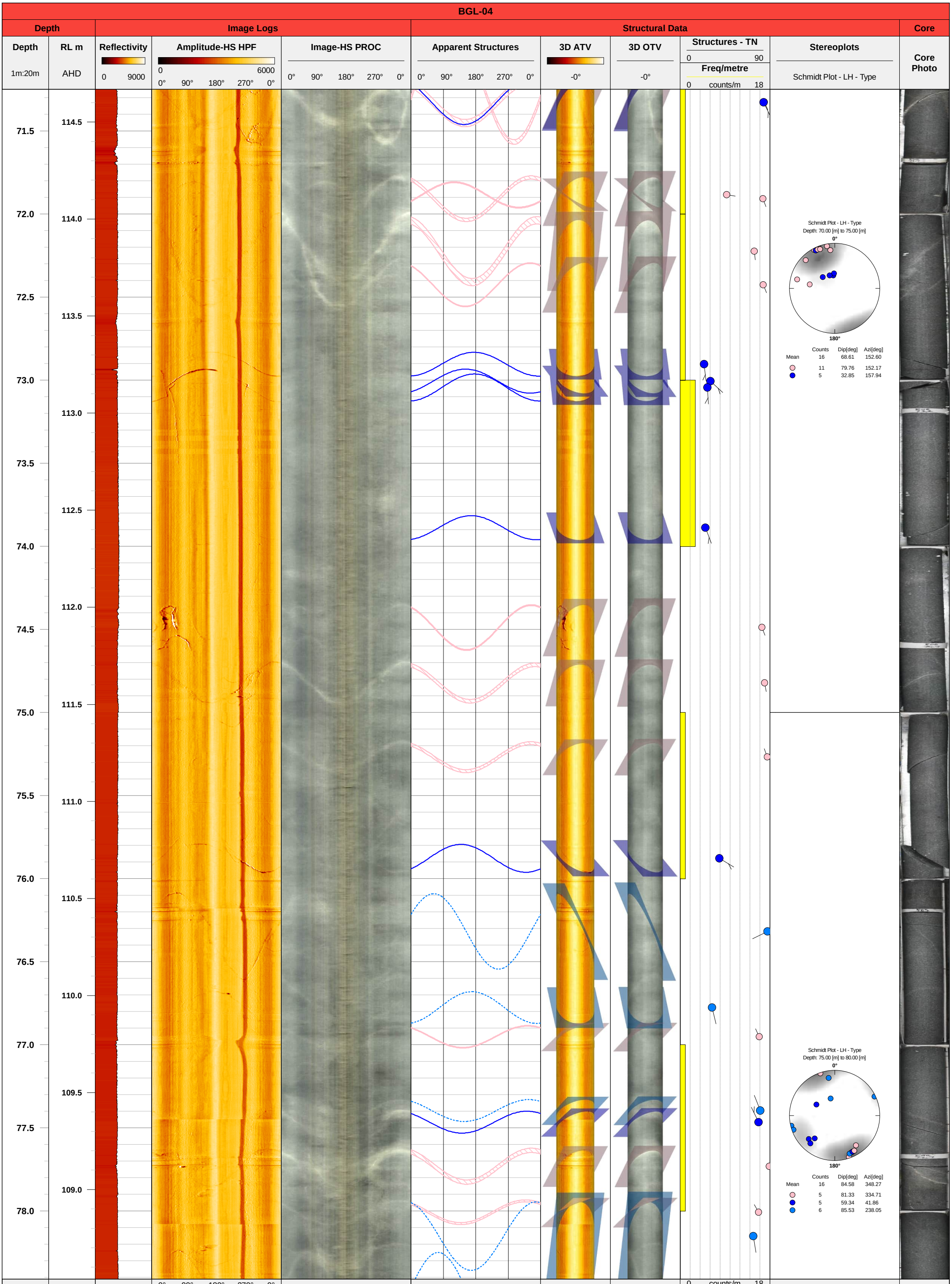

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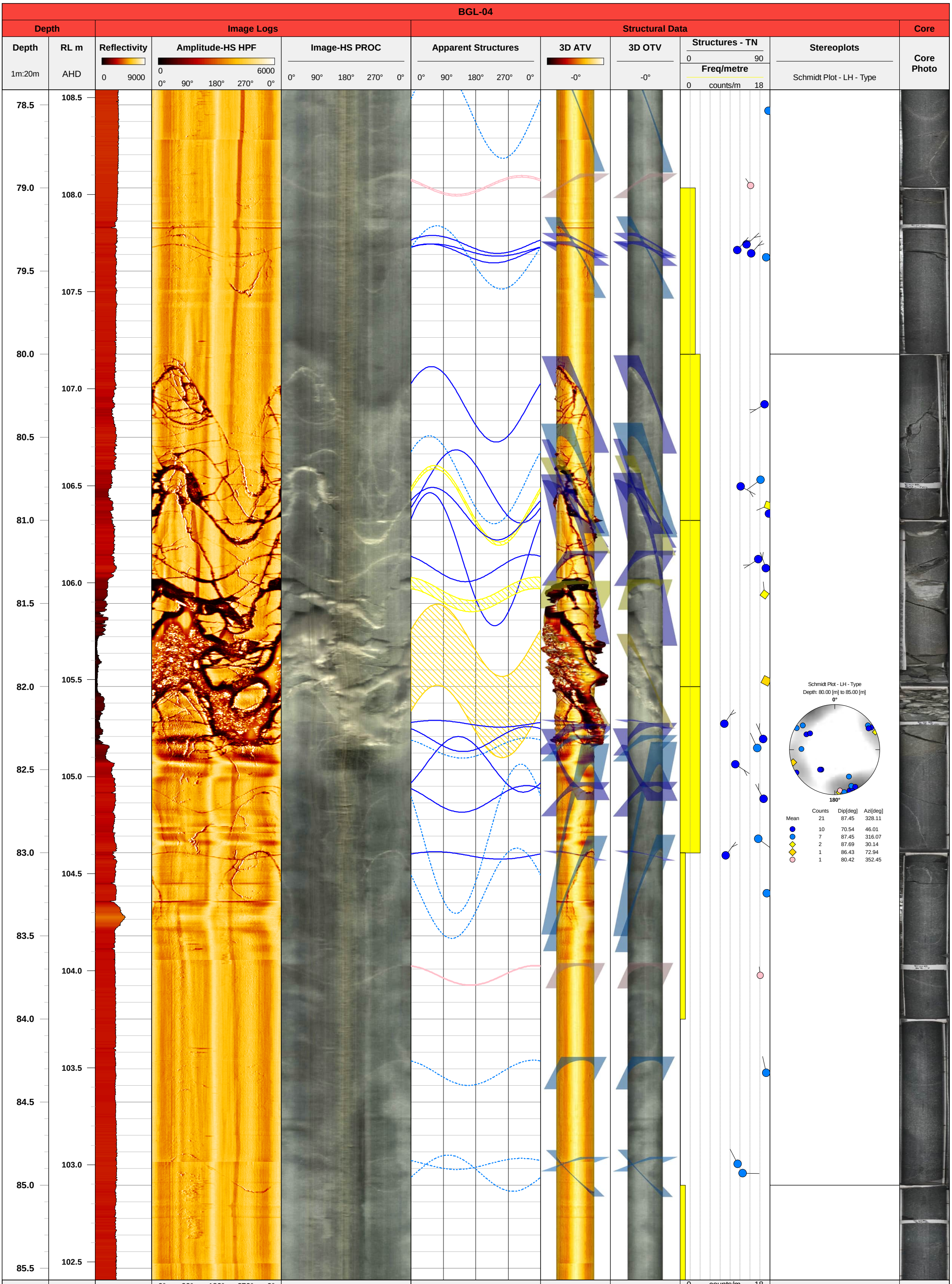

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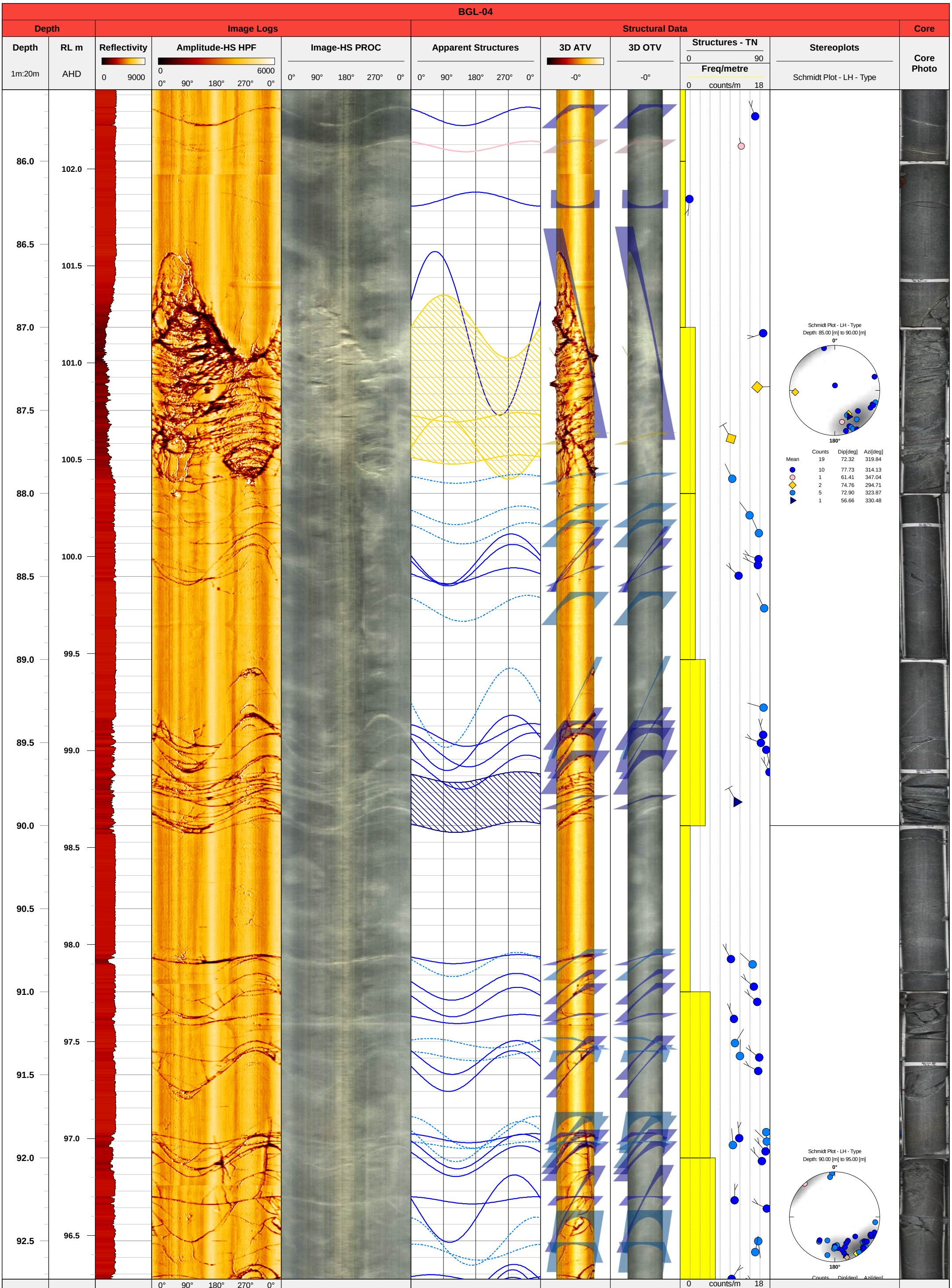

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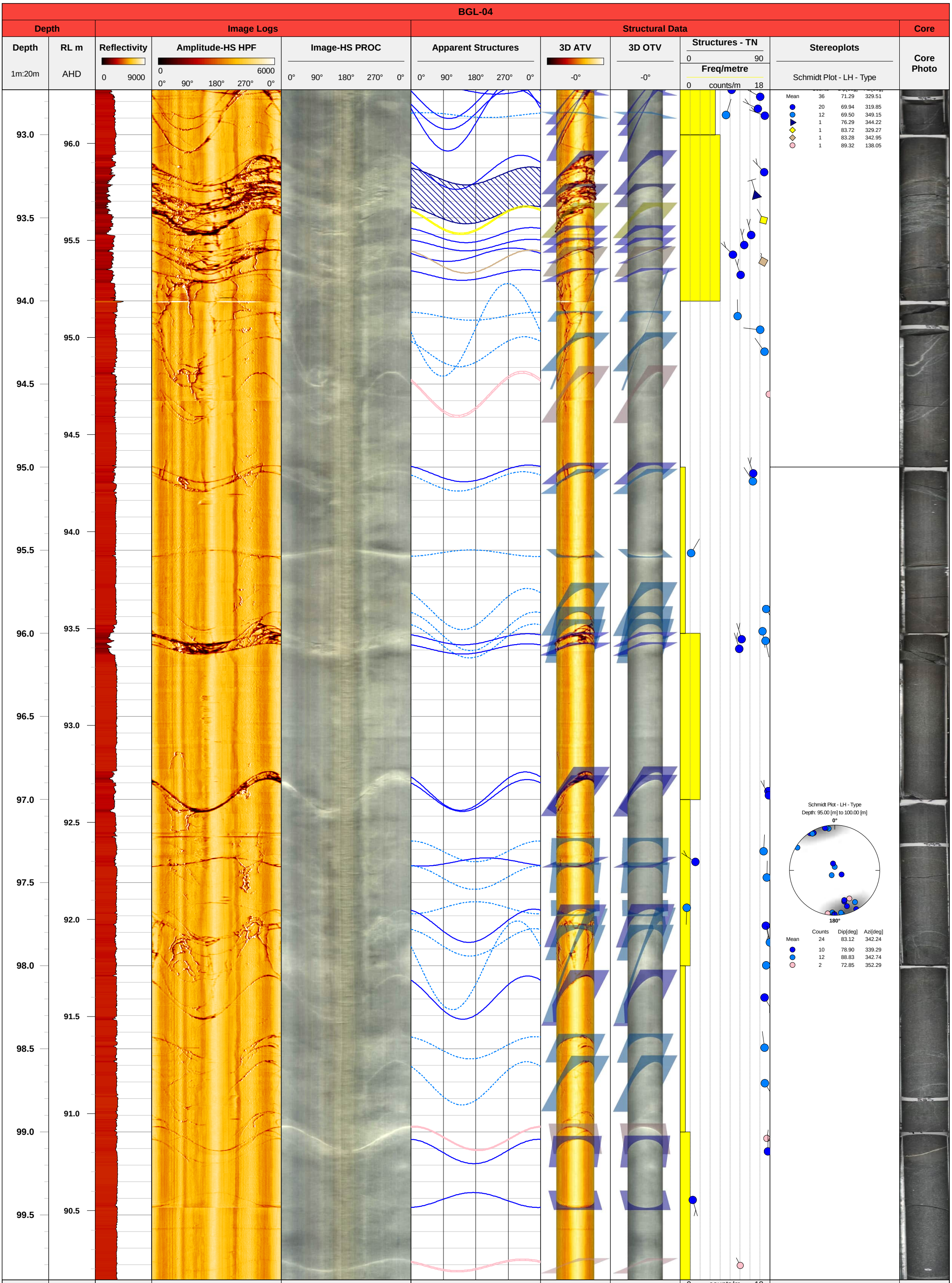

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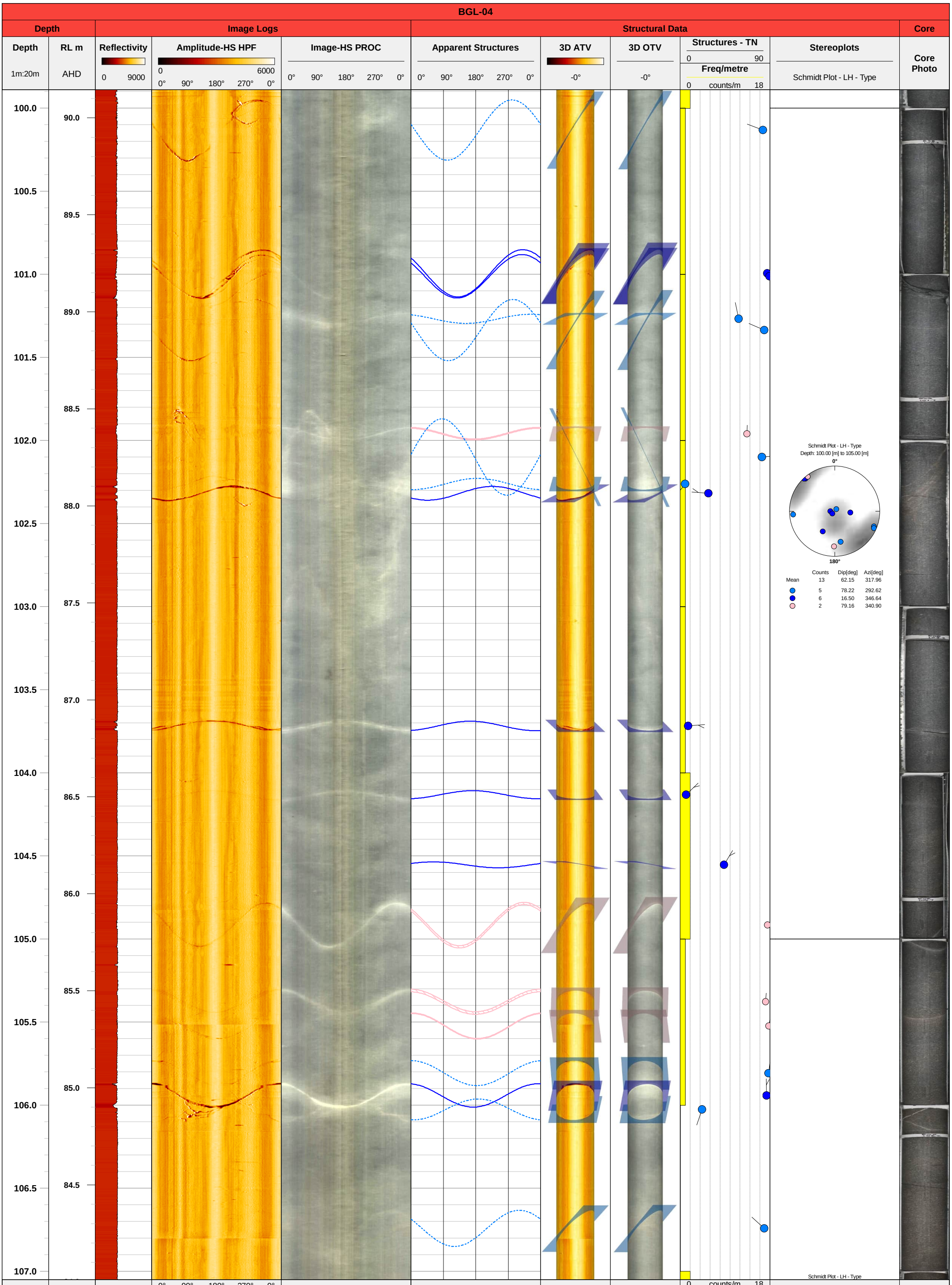

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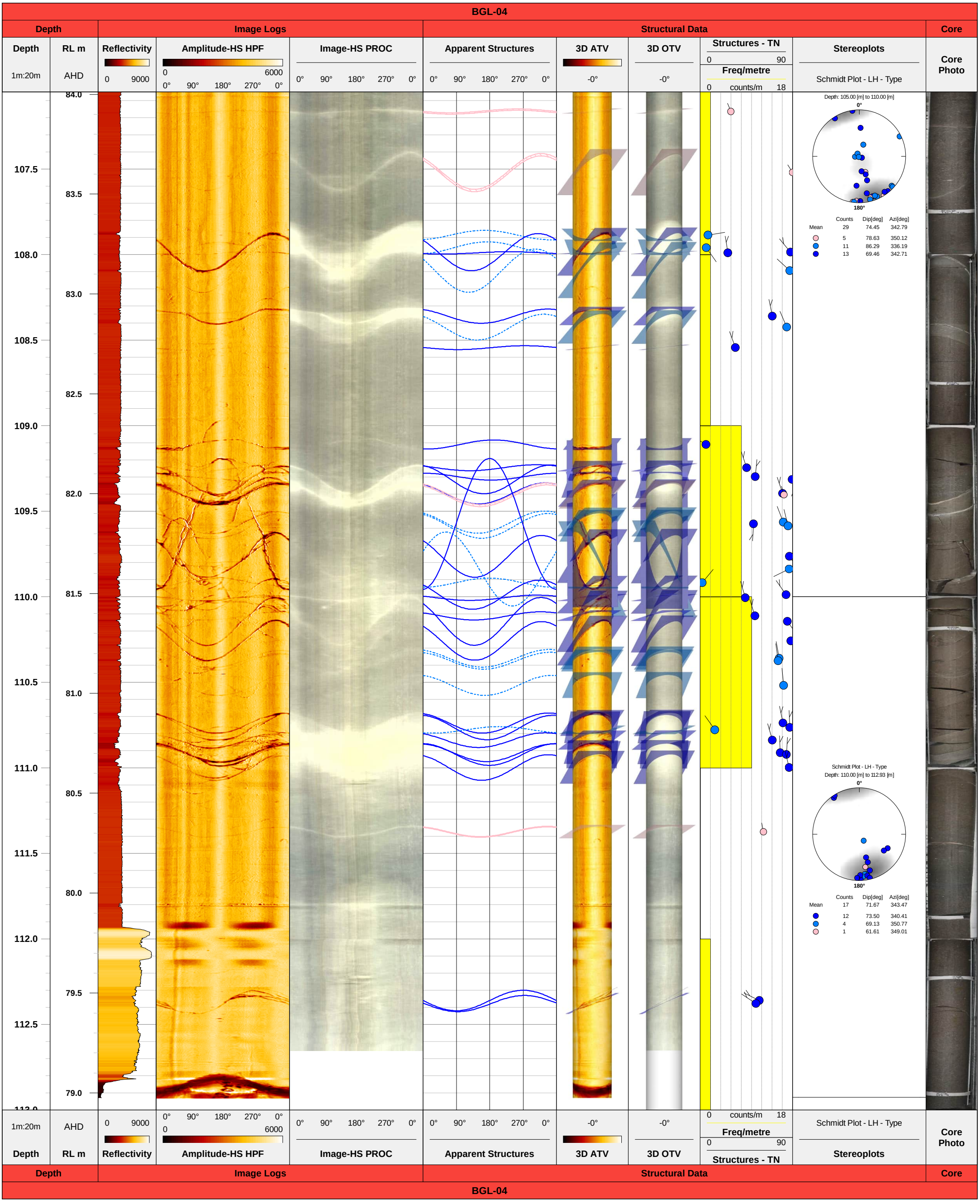

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BGL-04 Composite Logs

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GEOPHYSICAL RECORD OF BOREHOLE: BGL-04

PROJECT:	Pioneer-Burdekin PHES	JOB #	PS138693
CLIENT:	Queensland Hydro	DATE:	24/05/2024

BOREHOLE DETAILS

LOCATION:	Lower Reservoir	BH DEPTH:	113.7 m
EASTING:	660325.57 m E	BH DIAMETER:	96 mm (HQ)
NORTHING:	7661354.00 m N	BH AZIMUTH:	184°
ELEVATION:	175.76 m	BH PLUNGE:	-59°
COORD SYSTEM:	MGA2020-56	CASING DEPTH:	9.07 m
LOGGING DATUM:	Ground Level	CASING TYPE:	HWT

DOCUMENT DETAILS

LOGGED BY:	GH
LOGGED DATE:	19-20/02/2024
DRAWN BY:	SB
REVIEWED BY:	GH
FILE:	BGL-04_Composite_RevC
LOGGED DEPTH:	112.93 m

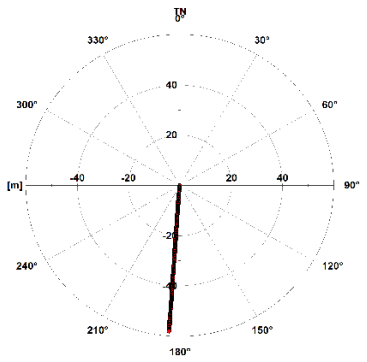
NOTES

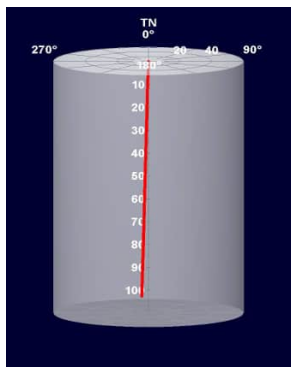
Image logs are oriented relative to borehole highside. Final structures corrected to true north using magnetic declination of 8.2 deg East.

Mechanical calliper log used for structure dip corrections.

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

BOREHOLE DEVIATION

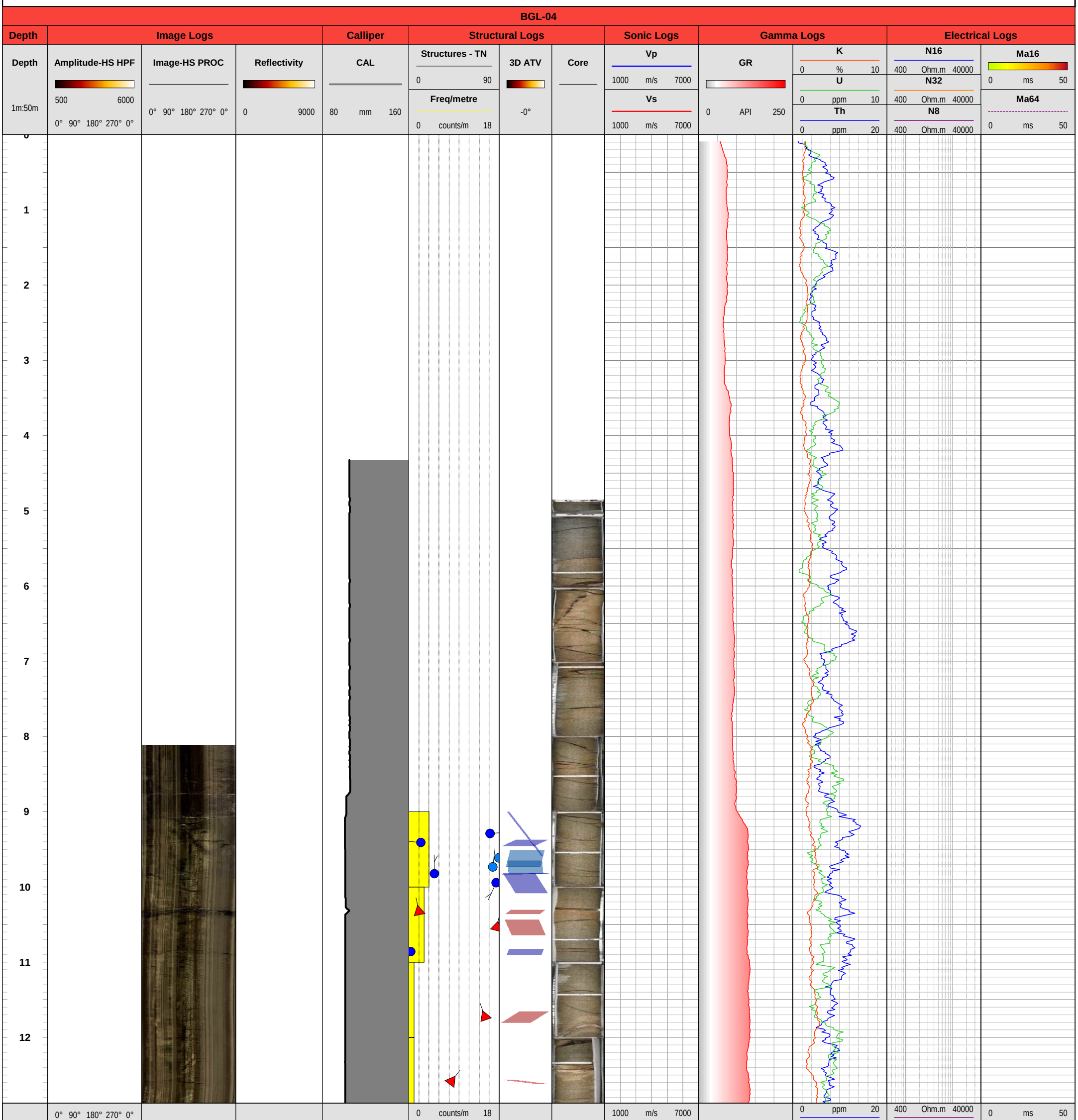




INTERPRETED STRUCTURES

Extremely Weathered Seam · Fracture Zone · Joint · Shear Seam · Sheared Surface · Shear Zone · Vein · Healed Joint

BGL-04



BGL-04

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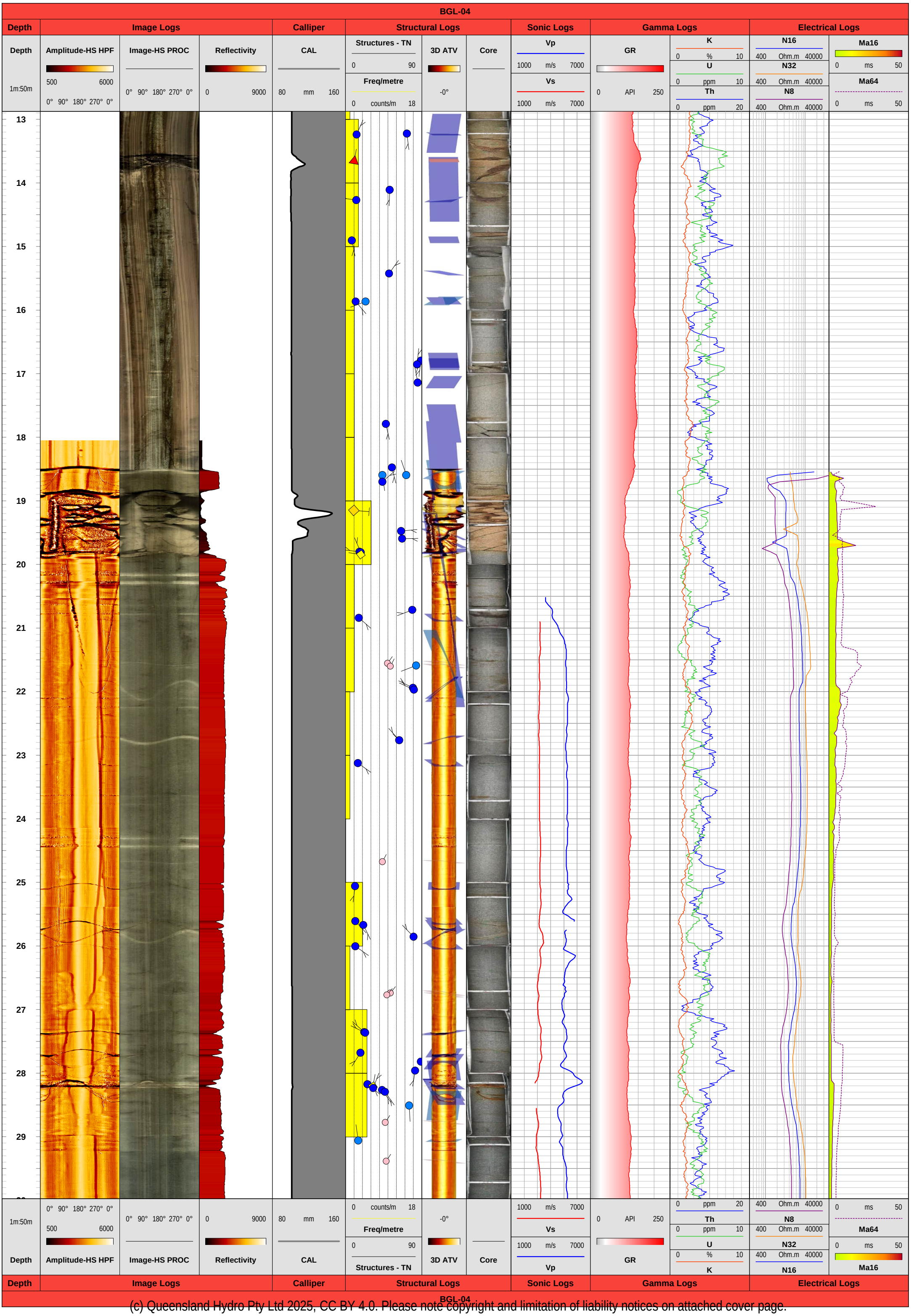

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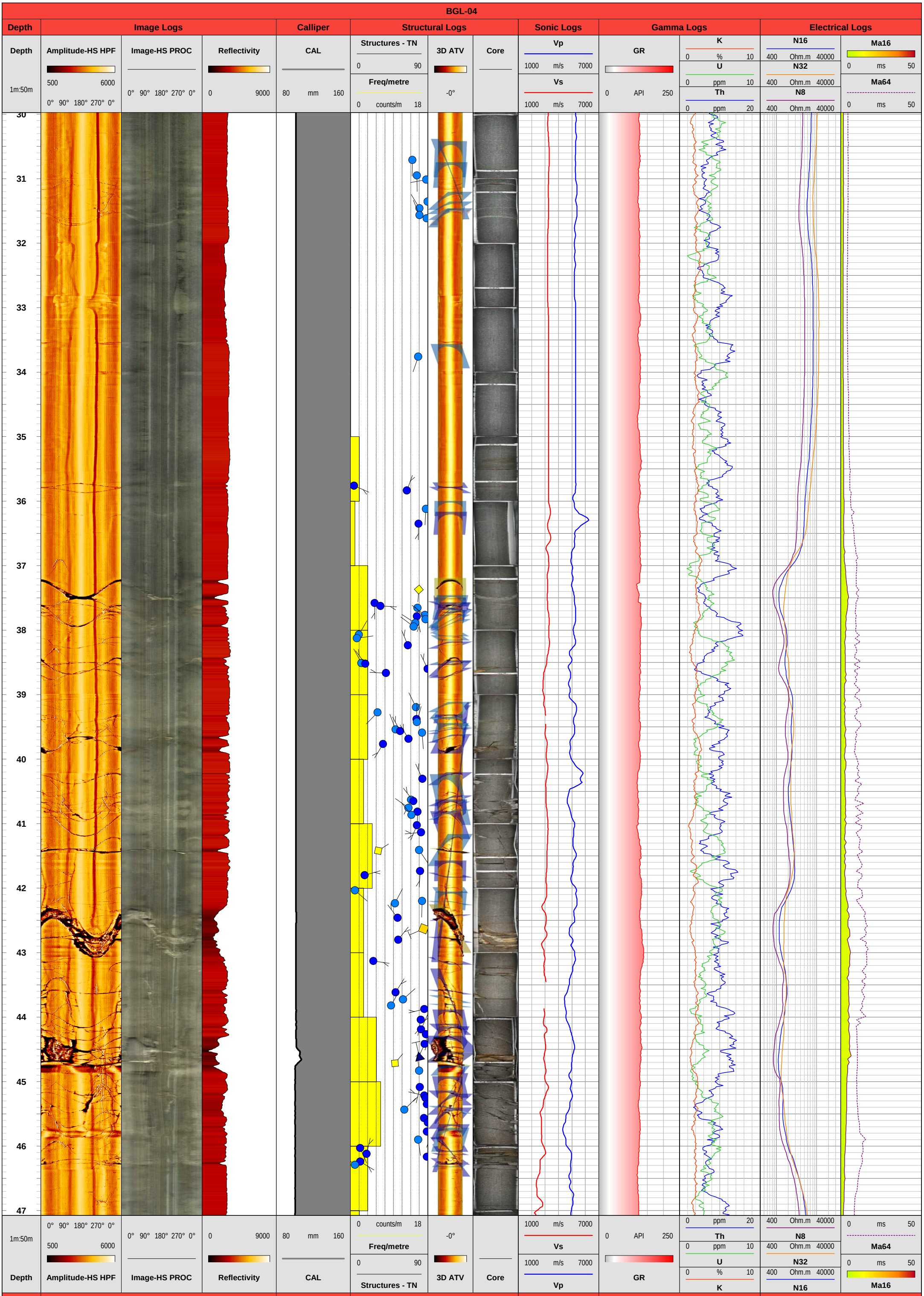

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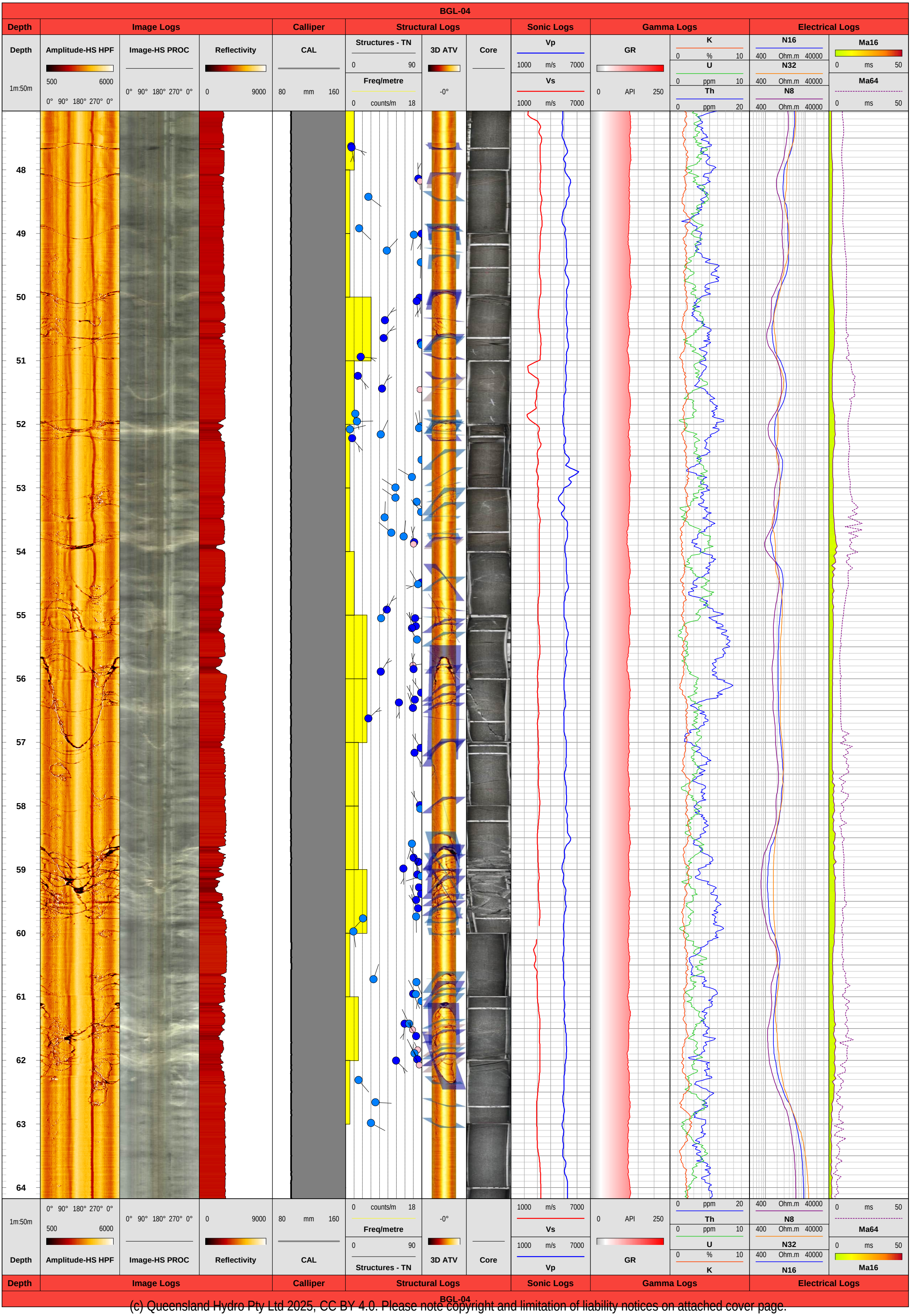

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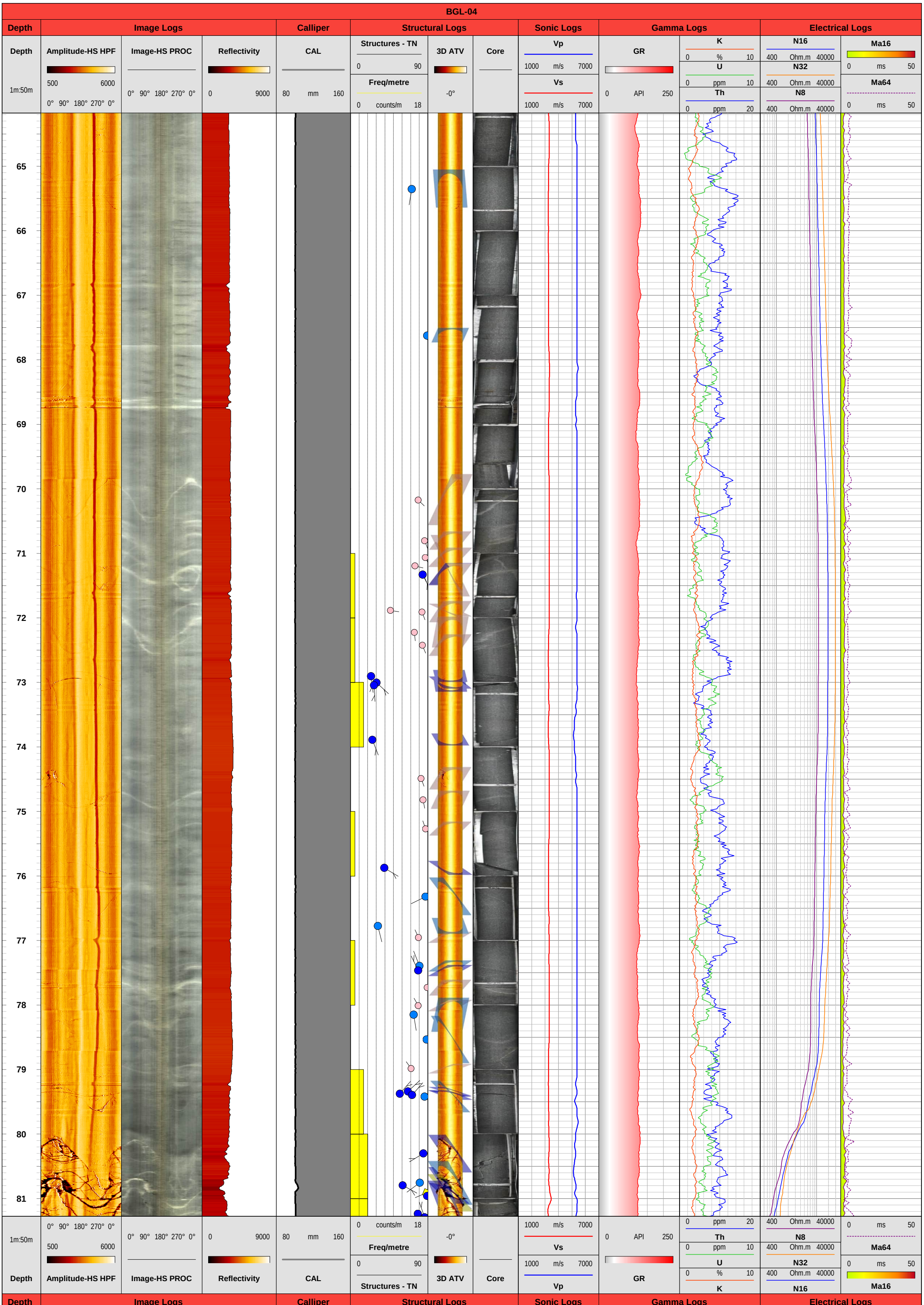

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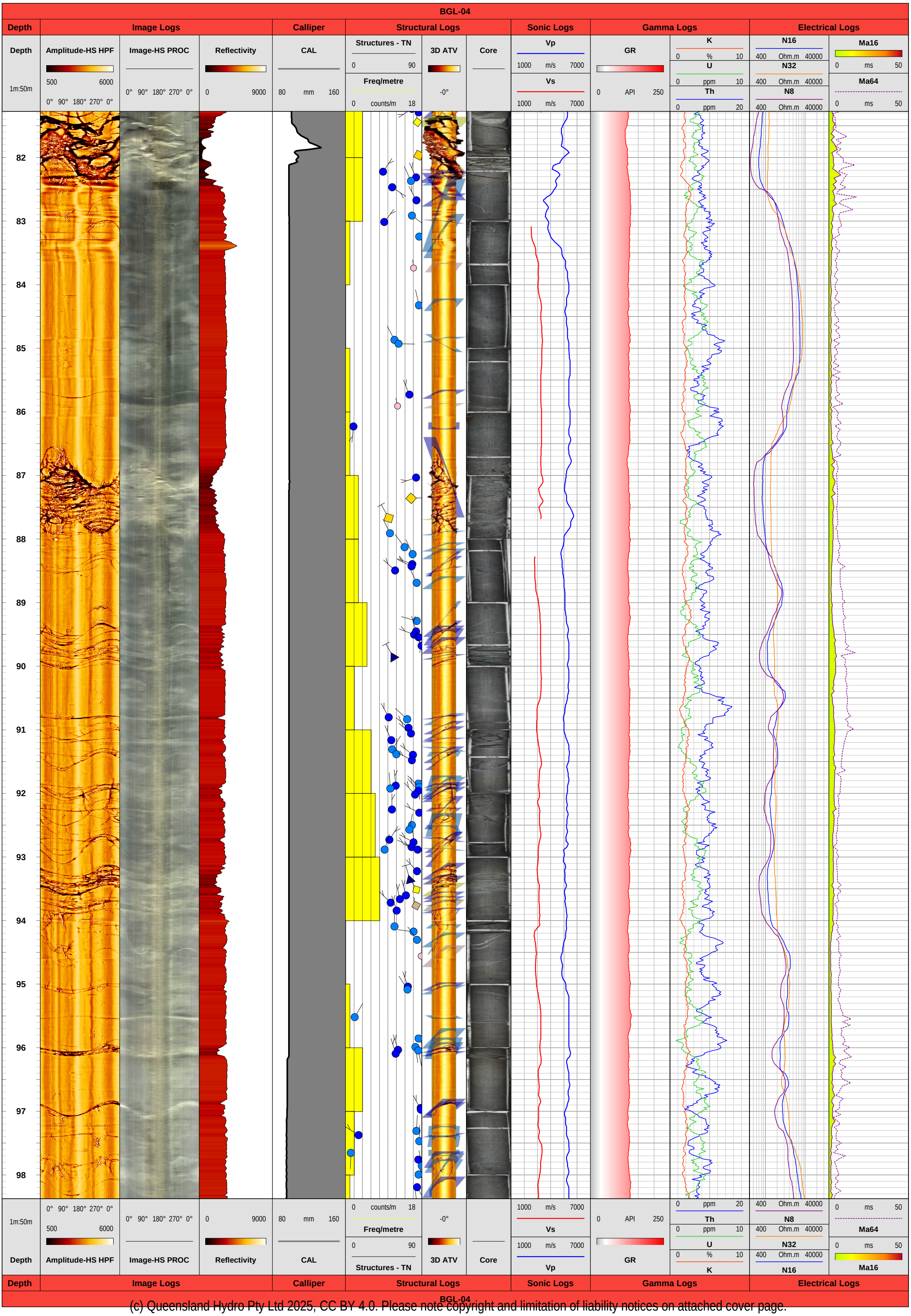

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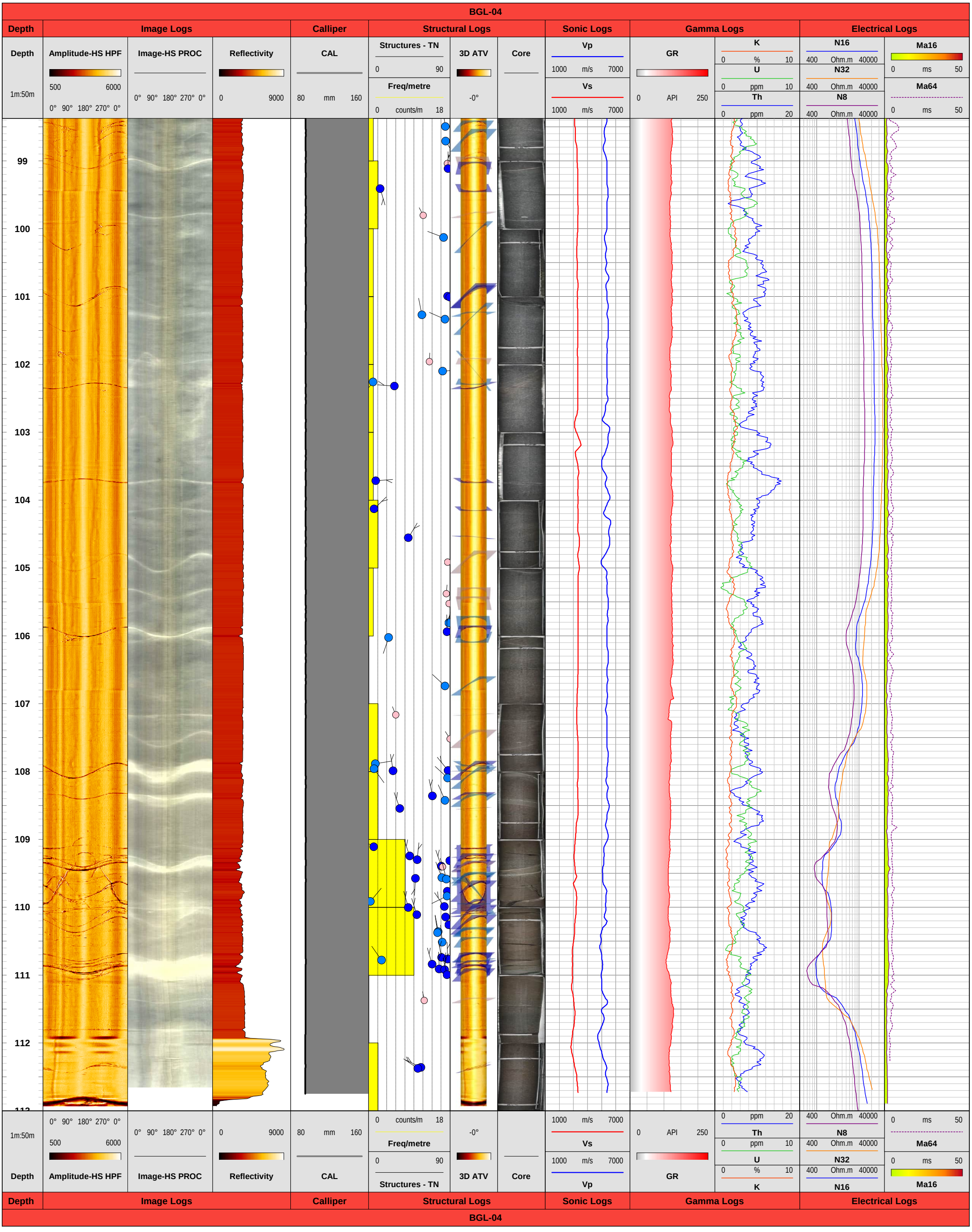

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