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BOREHOLE: BHUA-13

Project:	Pioneer-Burdekin PHES	Position:	Upper Reservoir	Sheet	1 of 14
Location:	Netherdale/Dalrymple Heights	Coords:	658075.7 m E 7667418.3 m N MGA2020-55		
Client:	Queensland Hydro	Surface RL:	861.16 m AHD	Date Started:	17/4/2024
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Desco 7000	Date Completed:	5/4/2024
		Inclination:	-88° Direction: 027°	Logged:	AB/AK

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		0	861.16 / 0.20				CH	TOPSOIL Sandy Silty CLAY: high plasticity, brown black, sand is fine to medium grained.		S - F	TOPSOIL
				860.96				CH	Silty CLAY: high plasticity, orange brown, trace fine to medium grained, sub-rounded to rounded gravel.			RESIDUAL SOIL
	E-F		1									
				1.80 / 859.36					Pale brown, trace medium grained sand.	w<PL - w≈PL	St - VSt	
			2	2.00 / 859.16				SM	Sandy SILT: low plasticity, brown grey, sand is fine to medium grained; trace high plasticity clay; trace fine to coarse grained, sub-rounded to rounded gravel.			
				2.30 / 858.86					Trace cobbles.			
	H											
			3	3.00 / 858.16					Brown, sand becoming fine to coarse grained.			
				3.60								
									Continued as Cored Borehole			
			4									
			5									
			6									
			7									
			8									
			9									
			10									

Comments

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Date 3/12/2024

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BOREHOLE: BHUA-13

Project:	Pioneer-Burdekin PHES	Position:	Upper Reservoir	Sheet	2 OF 14
Location:	Netherdale/Dalrymple Heights	Coords:	658075.7 m E 7667418.3 m N MGA2020-55		
Client:	Queensland Hydro	Surface RL:	861.16 m AHD	Date Started:	17/4/2024
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Desco 7000	Date Completed:	5/4/2024
		Inclination:	-88° Direction: 027°	Logged:	AB/AK

Drilling

METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL
				0	
				1	
				2	
				3	3.60
HQ3		100	10	4	4.20
		93	17	5	5.00
		100	0	6	6.48
		100	0	7	
		100	20	8	9.01
		79	46	9	
				10	

Field Material Description

GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING
	Continuation from non-cored borehole	
857.56	GRANITE: medium to coarse grained, grey, green and brown, crystalline, massive, orange brown staining.	MW
856.96 / 856.76	LAMPROPHYRE: fine to medium grained, dark grey, porphyritic, massive, phenocrysts to 2 mm diameter. Medium to coarse grained, orange brown and pale grey.	
856.36	NO CORE 0.20m (4.80-5.00)	
856.16	MIXED LAMPROPHYRE AND GRANITE: lamprophyre is fine to medium grained, pale grey, crystalline, massive, granite is medium to coarse grained, pale grey, pale yellow, grey, crystalline, massive, highly altered.	MW - SW
854.68	Fine grained, pale grey to dark grey, moderate alteration and staining around defects.	
852.16	Lithology alternating between fine and coarse grained, few lamprophyre dykes <150mm.	SW

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)

- 3.60-4.30: J/FZ, Fe VN, UN, RF
- 4.38-4.42: Jx2, 20°, Fe SN, UN, RF
- 4.52: J, 50°, Fe SN, PR, RF
- 4.60: J, 40°, Fe SN, PR, RF
- 4.62: J, 55°, Fe SN, PR, RF
- 4.68: J, 30°, Fe SN, UN, RF
- 4.70-4.80: FZ, recovered as gravel
- 5.04: J, 30°, Fe SN, UN, RF
- 5.12: J, 60°, Fe SN, UN, RF
- 5.10-5.35: J, 80 - 90°, Fe SN, PR, RF
- 5.37: J, 20°, Fe SN, UN, RF
- 5.52: J, 35°, Fe SN, UN, RF
- 5.52-5.54: Jx2, 10°, Fe SN, PR, RF
- 5.63-5.78: Jx4, 20°, Fe SN, UN, RF
- 5.82: J, 75°, Fe SN, UN, RF
- 6.00-6.13: Jx4, 5 - 10°, Fe SN, UN, RF
- 6.17: J, 40°, Fe SN, UN, RF
- 6.31: J, 30°, Fe SN, PR, RF
- 6.40-6.46: CS, 30 - 40°, Fe VN, PR, RF
- 6.50-7.00: FZ, recovered as gravel
- 7.00-7.25: Jx3, 30°, SN, UN, RF
- 7.25-7.40: FZ, recovered as gravel
- 7.50-8.00: Jx6, 0 - 10°, SN, PR, RF
- 8.00-8.22: Jx3, 10 - 20°, gy mi, Fe SN, PR, RF
- 8.22-8.42: FZ, recovered as gravel
- 8.43: J, 30°, SN, UN, RF
- 8.53: J, 15°, SN, UN, RF
- 8.60-8.77: FZ, recovered as gravel
- 8.90: J, 5°, Fe SN, UN, RF
- 9.10: J, 40°, SN, PR, RF
- 9.23: J, 60°, Fe SN, PR, RF
- 9.50: J, 15°, SN, PR, RF
- 9.50-9.85: J, 80°, SN, PR, RF
- 9.88: J, 35°, CN, PR, RF

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

Comments

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Date	3/12/2024

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BOREHOLE: BHUA-13

Project:	Pioneer-Burdekin PHES	Position:	Upper Reservoir	Sheet	3 OF 14
Location:	Netherdale/Dalrymple Heights	Coords:	658075.7 m E 7667418.3 m N MGA2020-55		
Client:	Queensland Hydro	Surface RL:	861.16 m AHD	Date Started:	17/4/2024
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Desco 7000	Date Completed:	5/4/2024
		Inclination:	-88° Direction: 027°	Logged:	AB/AK

Drilling

METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL
HQ3		79	46	10	10.20 / 850.97
					10.55 / 850.62
		100	100	11	
		100	100	12	
		100	100	13	
		100	100	14	
		100	100	15	
		100	100	16	
		100	100	17	
		100	100	18	
		100	100	19	
		100	100	20	

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 -200)
		SW	
	NO CORE 0.35m (10.20-10.55)		
	MIXED LAMPROPHYRE AND GRANITE: lamprophyre is fine to medium grained, grey, dark grey, crystalline, massive, granite is medium to coarse grained, dark grey, grey and white, crystalline, massive, moderately altered..	FR	

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)
9.95: J, 50°, SN, PR, RF	
10.03: J, 30°, wh mn CN, PR, RF, <2 mm	
10.09: J, 20°, CN, PR, RF	
10.08-10.12: Jx2, 15 - 20°, SN, PR, RF	
10.12: J, 20°, CN, PR, RF	
10.50-10.65: Jx3, 0 - 10°, UN, RF	
10.61-10.63: Jx3, 30°, SN, PR	
11.00: J, 5°, SN, PR, RF	
11.90: J, 10°, CN, PR, RF	
12.32: J, 10°, CN, PR, RF	
12.61: J, 10°, CN, PR, RF	
12.85: J, 30°, PR, RF	
13.37: J, 5°, CN, PR, RF	
14.22: J, 65°, SN, PR, RF	
14.25: J, 45°, gn mi, PR, RF, <40 mm, possible MB on hJ	
14.56: J, 45°, wh mi SN, PR, RF	
15.06: J, 5°, IR, RF	
15.27: J, 15°, CN, PR, RF	
16.09: J, 10°, CN, PR, RF	
17.36: J, 10°, CN, ST	
18.20: J, 5°, PR, RF	
18.74: J, 20°, CN, ST, RF	
18.87: J, 10°, yl mi, PR, <5 mm	

Comments

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BOREHOLE: BHUA-13

		Position:	Upper Reservoir	Sheet	4 OF 14
Project:	Pioneer-Burdekin PHES	Coords:	658075.7 m E 7667418.3 m N MGA2020-55		
Location:	Netherdale/Dalrymple Heights	Surface RL:	861.16 m AHD	Date Started:	17/4/2024
Client:	Queensland Hydro	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Desco 7000	Date Completed:	5/4/2024
Job No.:	PS138693	Inclination:	-88° Direction: 027°	Logged:	AB/AK

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	20			MIXED LAMPROPHYRE AND GRANITE: lamprophyre is fine to medium grained, grey, dark grey, crystalline, massive, granite is medium to coarse grained, dark grey, grey and white, crystalline, massive, moderately altered..	FR	VL -2 L -5 M -20 H -60 VH -200 EH -200	20.12: J, 20°, PR, SM 20.52: J, 10°, CN, CU, SM 20.54: J, 15°, CN, CU, SM	10 30 100 300 1000 3000
		100	100	21						21.71-21.77: J, 20°, CN, PR, RF 21.86: J, 25°, SN, PR, RF	
				22						22.39: J, 40°, SN, PR	
		100	100	23						23.55-23.68: Jx2, 30°, PR, RF	
		100	100	24						24.82: J, 5°, ST, SM 24.87: J, 60°, PR	
				25						25.35: J, 5°, PR, RF	
		100	100	26						25.97: J, 60°, PR 26.37: J, 75°, CN, ST, RF 26.54-26.63: J, 30°, SN, PR, SM 26.56-26.68: J, 90°, UN 26.81-26.98: J x3, 60°, ST, RF	
				27	27.40					27.16: J, 15°, CN, PR, SM 27.19: J, 30°, CN, UN, SM	
					833.78 27.70		NO CORE 0.30m (27.40-27.70)				
		79	18	28	833.48		MIXED LAMPROPHYRE AND GRANITE: lamprophyre is fine to medium grained grey, crystalline, massive, granite is medium to coarse grained, dark grey and white, crystalline, massive, moderately altered..	FR		27.70-28.10: Jx10, multiple defects, likely rubbled by drilling 28.08-28.27: J, 85°, CN, UN, SM 28.25-28.62: J x5, 0 - 15°, CN, UN, RF	
		100	100	29							
				30							

Comments

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BOREHOLE: BHUA-13

Project:	Pioneer-Burdekin PHES	Position:	Upper Reservoir	Sheet	5 OF 14
Location:	Netherdale/Dalrymple Heights	Coords:	658075.7 m E 7667418.3 m N MGA2020-55		
Client:	Queensland Hydro	Surface RL:	861.16 m AHD	Date Started:	17/4/2024
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Desco 7000	Date Completed:	5/4/2024
		Inclination:	-88° Direction: 027°	Logged:	AB/AK

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	30			MIXED LAMPROPHYRE AND GRANITE: lamprophyre is fine to medium grained grey, crystalline, massive, granite is medium to coarse grained, dark grey and white, crystalline, massive, moderately altered..	FR		30.02: J, 10°, CN, PR, RF 30.43: J, 20°, CN, PR, RF 30.61: J, 5°, CN, PR, RF	
				31							
		100	100	32							
				33						33.03: J, 15°, CN, PR, SM	
				34							
		100	100	35							
				36							
		100	100	37						36.75: J, 45°, SN, PR 37.13: J, 30°, CN, PR, RF 37.42-37.46: J, 15°, CN, PR, RF 37.55: J, 10°, CN, PR, RF 37.74: J, 65°, CN, PR	
		100	100	38							
				39						39.05: J, 5°, CN, ST, RF	
		107	107	40							

Comments

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BOREHOLE: BHUA-13

Project:	Pioneer-Burdekin PHES	Position:	Upper Reservoir	Sheet	6 OF 14
Location:	Netherdale/Dalrymple Heights	Coords:	658075.7 m E 7667418.3 m N MGA2020-55		
Client:	Queensland Hydro	Surface RL:	861.16 m AHD	Date Started:	17/4/2024
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Desco 7000	Date Completed:	5/4/2024
		Inclination:	-88° Direction: 027°	Logged:	AB/AK

Drilling

METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL
HQ3		107	107	40	
		100	100	41	
		100	100	42	
		100	100	43	
		100	100	44	
		100	100	45	
		100	100	46	
		100	100	47	47.10
		100	100		814.09 / 47.50
		100	100	48	813.69
		100	100	49	
		97	97	50	

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 -200)
	MIXED AND GRANITE: lamprophyre is fine to medium grained grey, crystalline, massive, granite is medium to coarse grained, dark grey and white, crystalline, massive, moderately altered..	FR	
	BRECCIA: fine to medium grained, pale grey to white, crystalline, massive, basalt fragments in a white mineral matrix.		
	LAMPROPHYRE: fine to medium grained, dark grey, pale grey and white, crystalline, massive, phenocrysts to 5 mm diameter.		

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)
40.47: J, 5°, CN, ST	
41.88: J, 10°, CN, PR, RF	
42.05: J, 30°, CN, PR, RF	
42.63: J, 40°, CN, PR, RF	
43.46: J, 20°, CN, ST, RF	
43.56: J, 10°, CN, ST, RF	
45.45: J, 5°, CN, UN, RF	
46.19: J, 10°, PR, RF	
48.05: J, 10°, CN, ST, RF	
48.66: J, 5°, PR, RF	
49.63: J, 35°, CN, ST, RF	

Comments

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BOREHOLE: BHUA-13

		Position:	Upper Reservoir	Sheet	7 OF 14
Project:	Pioneer-Burdekin PHES	Coords:	658075.7 m E 7667418.3 m N MGA2020-55		
Location:	Netherdale/Dalrymple Heights	Surface RL:	861.16 m AHD	Date Started:	17/4/2024
Client:	Queensland Hydro	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Desco 7000	Date Completed:	5/4/2024
Job No.:	PS138693	Inclination:	-88° Direction: 027°	Logged:	AB/AK

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		97	97	50			LAMPROPHYRE: fine to medium grained, dark grey, pale grey and white, crystalline, massive, phenocrysts to 5 mm diameter.	FR		49.96: J, 5°, CN, PR, RF	
				51						50.92: J, 50°, CN, PR, RF 51.05: J, 40°, CN, ST, RF	
		100	100	52	52.00 809.19		GRANITE: medium to coarse grained, pale grey to dark grey mottled white, crystalline, massive, basalt inclusion up to 150 mm, slightly to moderately altered around healed defects.				
		100	100	53						52.87-52.93: Jx2, 10°, CN, PR, RF 53.00: J, 20°, CN, UN, SM	
		100	100	54						54.44: J, 10°, CN, PR, SM	
				55						54.88: J, 20°, bk mi SN, PR, SM 55.14: J, 20°, CN, UN, RF	
		100	100	56						55.91: J, 5°, CN, PR, SM	
				57						56.46: J, 20°, CN, PR, SM 56.62: J, 25°, CN, PR, SM 57.06: J, 10°, CN, ST, RF 57.12-57.16: Jx2, 10°, CN, ST, RF	
		100	100	58						57.64: J, 20°, CN, PR, SM	
		100	100	59	59.00 802.20		Dark grey, white and pink, with some pink granite inclusions, highly altered around healed joints and veins, few basalt Intrusions and aplite veins.			59.07: J, 5°, CN, PR, SM	
				60	60.00					59.82-59.87: Jx2, 0°, CN, PR, RF	

Comments

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BOREHOLE: BHUA-13

Project:	Pioneer-Burdekin PHES	Position:	Upper Reservoir	Sheet	8 OF 14
Location:	Netherdale/Dalrymple Heights	Coords:	658075.7 m E 7667418.3 m N MGA2020-55		
Client:	Queensland Hydro	Surface RL:	861.16 m AHD	Date Started:	17/4/2024
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Desco 7000	Date Completed:	5/4/2024
		Inclination:	-88° Direction: 027°	Logged:	AB/AK

Drilling

METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL
HQ3		100	100	60–61	
		100	100	61–62	
		100	100	62–63	62.55 / 798.65; 62.85 / 798.35
		100	100	63–66	66.00 / 795.20
		100	100	66–69	
		100	100	69–70	69.83 / 791.37

Field Material Description

GRAPHIC LOG

ROCK / SOIL MATERIAL DESCRIPTION

WEATHERING

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

GRANITE: medium to coarse grained, pale grey to dark grey mottled white, crystalline, massive, basalt inclusion up to 150 mm, slightly to moderately altered around healed defects. — WEATHERING: FR

BASALT: fine grained, dark grey to black, crystalline, massive, with granite inclusion.

MIXED LAMPROPHYRE AND GRANITE: lamprophyre is fine to medium grained, dark grey, crystalline, massive, granite is medium to coarse grained, dark grey, grey, white, massive, crystalline.

DIORITE: fine to medium grained, dark grey, porphyritic, massive, phenocrysts to 2 mm diameter.

Medium to coarse grained, dark grey, white and pink, porphyritic, massive, phenocrysts to 5 mm diameter, with numerous healed joints.

Defect Information

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

- 61.41: J, 40°, CN, ST, RF
- 61.44: J, 75°, CN, ST, RF
- 61.60: J, 60°, CN, PR, RF
- 62.02-62.05: Jx3, 90°, CN, UN, RF
- 62.49: J, 70°, CN, PR, RF
- 63.07: J, 40°, CN, PR, RF
- 63.10: J, 25°, CN, ST, RF
- 63.61: J, 30°, CN, UN, RF
- 65.18: J, 30°, CN, PR, RF
- 66.03: J, 10°, CN, PR, RF
- 67.04: J, 30°, CN, PR, RF
- 68.76: J, 80°, CN, UN, RF
- 68.91-68.96: Jx2, 60°, CN, PR, RF

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

Comments

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BOREHOLE: BHUA-13

Project:	Pioneer-Burdekin PHES	Position:	Upper Reservoir	Sheet	9 OF 14
Location:	Netherdale/Dalrymple Heights	Coords:	658075.7 m E 7667418.3 m N MGA2020-55		
Client:	Queensland Hydro	Surface RL:	861.16 m AHD	Date Started:	17/4/2024
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Desco 7000	Date Completed:	5/4/2024
		Inclination:	-88° Direction: 027°	Logged:	AB/AK

Drilling

METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL
HQ3		100	100	70	70.25
		100	100	71	
		100	100	72	
		100	100	73	
		100	100	74	74.20
		100	100	75	
		100	100	76	
		100	100	77	77.60
		100	100	78	
		100	100	79	
		100	100	80	80.00

Field Material Description

GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH (MPa) ■ - UCS
	LAMPROPHYRE: fine to medium grained, dark grey to green grey, porphyritic, massive, phenocrysts to 2 mm diameter. (790.95)	FR	
	LAMPROPHYRE: fine to medium grained, dark grey, black and pink, porphyritic, massive, large phenocrysts..		
	MIXED LAMPROPHYRE AND GRANITE: lamprophyre is fine to medium grained, dark grey and grey, crystalline, massive, granite is medium to coarse grained, dark grey, pale grey, and grey, crystalline, massive, moderately altered., with pale pink, black, white granodiorite intrusion. (787.01)		
	GRANITE: medium to coarse grained, dark grey, pale pink, black and white, crystalline, massive. (783.61)		

Defect Information

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

70.34: J, 90°, CN, ST, RF
70.39: J, 30°, CN, ST, RF
70.54: J, 20°, CN, PR, SM
70.70: J, 60°, PR
70.77: J, 60°, PR
71.03: J, 30°, CN, PR, SM
71.13: J, 80°, CN, PR, SM
71.89: J, 20°, CN, PR, SM
71.94: J, 80°, CN, PR, SM
72.45: J, 30°, CN, PR, SM
72.82-72.83: Jx2, 60°, CN, PR, RF
73.12: J, 20°, CN, PR, RF
75.03: J, 5°, CN, UN, RF
75.85: J, 40°, CN, PR, SM
75.91: J, 20°, PR
76.03: J, 30°, CT, PR, RF
76.22: J, 50°, pk mi CT, PR, RF
76.25-76.29: CS, 20°, angular gravel, PR
76.29: J/CO, 40°, CN, PR, SM
76.36: J, 20°, CN, PR, SM
76.46: J, 30°, CN, PR, RF
76.58: J, 40°, CN, UN, RF

AVERAGE DEFECT SPACING (mm)

Comments

Checked GEM
Date 3/12/2024

Preliminary

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BOREHOLE: BHUA-13

Project:	Pioneer-Burdekin PHES	Position:	Upper Reservoir	Sheet	10 OF 14
Location:	Netherdale/Dalrymple Heights	Coords:	658075.7 m E 7667418.3 m N MGA2020-55		
Client:	Queensland Hydro	Surface RL:	861.16 m AHD	Date Started:	17/4/2024
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Desco 7000	Date Completed:	5/4/2024
		Inclination:	-88° Direction: 027°	Logged:	AB/AK

Drilling

METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL
HQ3		100	100	80	
				81	
		100	100		81.78
				82	779.43
		100	100		83.00
				83	778.21
					83.75
		100	93	84	777.46
					84.60
				85	776.61
				86	86.00
		100	100		775.21
					86.40
				87	774.81
		100	100	88	
		100	100	89	
				90	

Field Material Description

GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH (MPa) ■ - UCS
	MIXED LAMPROPHYRE AND GRANITE: lamprophyre is fine to medium grained, dark grey and grey, crystalline, massive, granite is medium to coarse grained, dark grey, pale grey, and grey, crystalline, massive, moderately altered., with pale pink, black, white granodiorite intrusion.	FR	
	METAGRANITE: medium to coarse grained, pale grey, white and pink, crystalline, massive, highly altered, pink alteration, fabric shows metamorphic crystal reorientation, numerous healed microfractures..		
	MIXED LAMPROPHYRE AND GRANITE: lamprophyre is fine to medium grained, dark grey, crystalline, massive, granite is medium to coarse grained, dark grey, brown, massive, crystalline..		
	METAGRANITE: medium to coarse grained, pink, dark grey, crystalline, massive, highly altered granite, pink alteration, fabric shows metamorphic crystal reorientation, numerous healed microfractures.		
	LAMPROPHYRE: fine grained, grey, porphyritic, massive, phenocrysts becoming coarser from 85.25m.		
	Fine grained, pale grey to dark green grey, layered, alternating bands at 45 - 50 degrees.		
	METAGRANITE: medium to coarse grained, dark grey, dark grey mottled dark pink, crystalline, massive, highly altered granite, pink, grey alteration, fabric shows metamorphic crystal reorientation, numerous healed microfractures.		

Defect Information

DEFECT DESCRIPTION & Additional Observations (Core partings shown - refer to Detailed Defect Descriptions table for all logged features)
80.87: J, 10°, CN, PR, SM
81.50: J, 10°, CN, PR, SM
82.10: J, 10°, CN, PR, SM
82.34: J, 30°, PR, SM
82.44-82.54: Jx4, 40°, PR
82.50-82.51: Jx2, 80°, CN, PR, RF
82.84: J, 70°, CN, UN, RF
82.96: J, 60°, CN, PR, SM
83.43: J, 60°, CN, ST, RF
84.57: J, 75°, gravel, UN, RF, <5 mm, gravelled host rock at contact
83.76-85.85: Jx3, 40°, CN, ST, RF
86.06: J, 5°, CN, PR, RF
86.20: J, 5°, CN, PR, RF
86.58: J, 90°, CN, PR, RF
86.74: J, 40°, CN, PR, RF
87.71: J, 30°, CN, UN, RF
87.91: J, 40°, CN, PR, RF
88.07: J, 30°, CN, PR, RF
88.36: J, 30°, CN, UN, RF
88.48: J, 50°, CN, ST, SM
89.09: J, 50°, CN, PR, SM
89.12: J, 50°, CN, PR, SM
89.25: J, 50°, PR
89.42: J, 20°, CN, PR, SM
89.49: J, 80°, CN, PR, RF
89.62-89.67: Jx3, 30°, CN, PR, RF
89.74: J, 80°, CN, ST, RF
89.85: J, 80°, CN, PR, RF

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

Comments

Checked GEM

Date 3/12/2024

Preliminary

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BOREHOLE: BHUA-13

Project:	Pioneer-Burdekin PHES	Position:	Upper Reservoir	Sheet	11 OF 14
Location:	Netherdale/Dalrymple Heights	Coords:	658075.7 m E 7667418.3 m N MGA2020-55		
Client:	Queensland Hydro	Surface RL:	861.16 m AHD	Date Started:	17/4/2024
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Desco 7000	Date Completed:	5/4/2024
		Inclination:	-88° Direction: 027°	Logged:	AB/AK

Drilling

METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL
HQ3		100	100	90	
		100	100	91	
		100	100	92	92.23
		100	87	93	
		100	93	94	
		100	93	95	
		133	117	96	
		100	43	97	
				98	
				99	99.70
				100	

Field Material Description

GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING
	METAGRANITE: medium to coarse grained, dark grey, dark grey mottled dark pink, crystalline, massive, highly altered granite, pink, grey alteration, fabric shows metamorphic crystal reorientation, numerous healed microfractures.	FR
	768.99 / 92.56 — BASALT: fine grained, pale brown and pale orange yellow, massive, massive, highly altered, pale orange yellow alteration.	
	768.66 — METAGRANITE: medium to coarse grained, grey, white, and pink, crystalline, massive, highly altered granite, pink, grey alteration, fabric shows metamorphic crystal reorientation, numerous healed microfractures.	
	761.52 — BASALT: fine to medium grained, dark grey, crystalline, massive.	

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)

89.95: J, 40°, CN, PR, RF
90.01: J, 10°, SN, PR, RF
90.04: J, 40°, SN, PR, RF
90.07: J, 50°, CN, PR, SM
90.24-90.25: Jx2, 50°, CN, PR, SM
90.70-90.74: Jx2, 30°, CN, PR, SM
91.37: J, 40°, CN, PR, SM
92.21-92.87: Jx4, 10°, SN, PR, SM
93.22: J, 60°, PR, RF
93.06-93.94: Jx3, 20°, SN, PR, RF
94.13: J, 70°, CN, PR, RF
94.16: J, 60°, CN, PR, RF
94.20-94.31: Jx2, 80°, SN, PR, RF
94.24-94.31: CZ, PR
94.23-94.34: Jx2, 10°, SN, PR, RF
94.44: J, 90°, SN, PR, RF
94.59: J, 60°, SN, PR, SM
94.66: J, 80°, CN, PR, SM
94.80: J, 70°, CN, PR, SM
94.95: J, 80°, CN, PR, SM
95.06: J, 60°, CN, PR, SM
95.26: J, 40°, CN, PR, SM
95.44: J, 50°, CN, PR, RF
95.70: J, 80°, CN, PR, SM
95.61-95.81: Jx4, 20°, CN, PR, SM
95.93: J, 80°, CN, PR, SM
95.94: J, 60°, CN, PR, SM
96.04: J, 10°, CN, PR, SM
96.16-96.27: Jx2, 15°, CN, PR, RF
96.62-96.65: Jx2, 50°, CN, ST, RF
96.89: J, 50°, CN, PR, RF
97.11-97.16: Jx2, 70°, ST, RF
97.06-97.22: Jx2, 60°, CN, ST, RF
97.28: J, 70°, CN, ST, RF
97.37: J, 40°, CN, PR, RF
97.56: J, 50°, SN, PR, SM
97.68: J, 60°, CN, PR, SM
97.77: J, 5°, CN, PR
97.80: J, 80°, UN, RF
97.80-97.82: Jx2, 70°, PR, RF
97.96: J, 50°, CN, PR, RF
98.02: J, 60°, PR
98.07: J, 50°, PR, RF
98.16: J, 70°, CN, PR, RF
98.19: J, 20°, CN, PR, RF
98.22: J, 40°, PR, RF
98.31: J, 85°, UN, RF
98.35: J, 60°, CN, PR, RF
98.51: J, 60°, CN, PR, RF
98.62: J, 70°, CN, ST, RF
98.64: J, 60°, CN, PR, RF
98.85: J, 50°, PR, SM, <5 mm
99.02: J, 10°, PR, RF
99.03: J, 50°, PR, SM
99.04: J, 60°, PR, SM
99.22: J, 80°, CN, PR, SM

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

Comments

Checked GEM
Date 3/12/2024

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BOREHOLE: BHUA-13

		Position:	Upper Reservoir	Sheet	12 OF 14
Project:	Pioneer-Burdekin PHES	Coords:	658075.7 m E 7667418.3 m N MGA2020-55		
Location:	Netherdale/Dalrymple Heights	Surface RL:	861.16 m AHD	Date Started:	17/4/2024
Client:	Queensland Hydro	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Desco 7000	Date Completed:	5/4/2024
Job No.:	PS138693	Inclination:	-88° Direction: 027°	Logged:	AB/AK

Drilling

METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL
HQ3		100	43	100.10	761.12
		100	87	101	
		100	48	102	
		100	100	103	
		100	100	104	
		100	75	105	
		100	80	106	
		100	77	107	
				108	
				109	
				110	

Field Material Description

GRAPHIC LOG

ROCK / SOIL MATERIAL DESCRIPTION

METAGRANITE: medium to coarse grained, dark grey, dark pink, crystalline, massive, highly altered granite, pink alteration, fabric shows metamorphic crystal reorientation, numerous healed microfractures.

WEATHERING: FR

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)

99.09-99.39: Jx3, 30°, CN, PR, SM
99.32: J, 80°, UN, RF
99.36: J, 70°, PR, RF
99.39: J, 30°, CN, PR, SM
99.44: CS, 50°, 20, UN, RF, host rock recovered as gravel
99.64: J, 80°, CT, UN, SM
99.71: J, 10°, CN, PR, SM
99.88: J, 60°, CN, PR, SM
100.13: J, 10°, CN, ST, RF
100.21: J, 60°, CN, PR, SM
100.36-100.37: Jx2, 10°, CN, PR, RF
100.50: J, 40°, CN, PR, SM
100.57: J, 70°, CN, PR, SM
100.60: J, 80°, UN, RF
100.66: J, 40°, CN, PR, SM
100.65-100.79: Jx5, 40°, CN, PR, SM
100.77: J, 70°, CN, PR, SM
101.05: J, 60°, CN, PR, SM
101.12: J, 20°, CN, PR, SM
101.22: J, 90°, CN, ST, RF
101.28: J, 20°, CN, ST, RF
101.56: J, 70°, CN, UN
101.65: J, 30°, CN, PR, RF
101.77-101.78: Jx2, 85°, CN, PR, RF
101.79: J, 50°, CN, PR, RF
101.81-101.96: Jx2, 20°, CN, PR, RF
101.94: J, 90°, CN, ST, RF
102.07-102.13: Jx2, 20°, CN, PR
102.10: J, 90°, CN, PR, SM
102.20-102.27: J, 70°, CN, ST, RF
102.23-102.81: J, 70°, CN, PR, SM
102.82: J, 60°, CN, PR, SM
102.96: J, 70°, CN, PR, SM
103.01: J, 90°, ST, RF
103.05: J, 70°, ST, RF
103.10-103.40: Jx5, 60°, CN, ST, RF
103.30: J, 90°, CN, ST, RF
103.39: J, 10°, CN, PR, SM
103.59: J, 10°, CN, PR, RF
103.67: J, 30°, CN, PR, SM
104.13: J, 40°, CN, PR, RF
104.24: J, 60°, CN, PR, RF
104.40: J, 20°, ST, RF
105.02: J, 40°, CN, PR, RF
105.14: J, 85°, CN, PR, RF
105.31: J, 10°, CN, PR, RF
105.64: J, 40°, CN, ST, RF
105.70: J, 90°, UN, RF
105.94: J, 75°, CN, UN, RF
106.15-106.16: Jx2, 60°, CN, PR, SM
106.28: J, 60°, CN, PR, RF
106.42: J, 60°, ST, RF
106.48-106.56: Jx2, 60°, CN, PR, SM
106.61: J, 40°, CN, PR, SM, Disturbed by drilling
106.65: J, 60°, CN, UN, RF, Disturbed by drilling
106.84: Jx3, 50°, CN, PR, SM
106.89: J, 90°, PR, SM
107.04: J, 78°, CN, PR, RF
107.23: J, 35°, CN, PR, RF
107.34-107.42: Jx2, 70°, PR, SM
107.48: J, 45°, ST, RF
107.59: J, 10°, PR, SM
107.68: J, 50°, bk pk-mi, PR, SM
107.69: J, 60°, PR, SM
107.85: J, 20°, ST, SM
108.10: J, 10°, CN, PR, SM
108.46-108.62: Jx4, 50°, gn mi SN, PR, RF
108.68: J, 20°, CN, PR, SM
108.85: J, 30°, gn mi SN, UN, RF
109.15: J, 30°, CN, PR, RF
109.24: J, 40°, CN, PR, SM
109.31-109.32: Jx2, 70°, CT, PR, RF
109.37: J, 30°, CN, PR, RF
109.49-109.64: Jx3, 20°, CN, PR, RF
109.71: J, 45°, CN, PR, RF
109.80: J, 40°, SN, PR, RF

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

Comments

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Date 3/12/2024

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BOREHOLE: BHUA-13

		Position:	Upper Reservoir	Sheet	13 OF 14
Project:	Pioneer-Burdekin PHES	Coords:	658075.7 m E 7667418.3 m N MGA2020-55		
Location:	Netherdale/Dalrymple Heights	Surface RL:	861.16 m AHD	Date Started:	17/4/2024
Client:	Queensland Hydro	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Desco 7000	Date Completed:	5/4/2024
Job No.:	PS138693	Inclination:	-88° Direction: 027°	Logged:	AB/AK

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 1 H 20 VH 60 EH 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	77	110			METAGRANITE: medium to coarse grained, dark grey, dark pink, crystalline, massive, highly altered granite, pink alteration, fabric shows metamorphic crystal reorientation, numerous healed microfractures.	FR		109.85-109.86: Jx2, 85°, SN, PR, RF 109.89-109.94: Jx2, 5°, CN, PR, RF 110.03: J, 10°, CN, UN, SM 110.06: J, 50°, CN, PR, RF 110.22-110.28: J, 30°, CN, PR, RF	
										110.60: J, 60°, UN, RF 110.64: J, 60°, CN, PR, RF 110.70: J, 10°, CN, RF 110.80: J, 10°, CN, PR, RF 110.81: J, 10°, CN, PR, RF 110.90: J, 40°, CN, PR, RF 111.07: J, 10°, CN, PR, RF 111.13: J, 50°, CN, PR, RF 111.44: J, 90°, rd-mi SN, IR 111.49: J, 20°, CN, RF 111.52: J, 64°, ST, SM 111.84: J, 40°, PR 111.95: J, 40°, SN, RF	
		100	73	111							
				112						112.46: J, 5°, SN, UN, RF 112.46-112.47: Jx2, 80°, CN, PR, RF	
		100	100	113						112.97: J, 30°, SN, PR, RF 113.11-113.12: Jx4, 30°, SN, PR, RF 113.15-113.68: J, 40°, CN, UN, RF	
				114						114.02: J, 40°, SN, PR, SM 114.05: J, 90°, SN, PR, SM 114.07: J, 10°, SN, PR, SM 114.15: J, 10°, SN, PR, RF 114.47: J, 30°, CN, PR, RF	
		100	100	115						115.62: J, 50°, CN, PR 115.65: J, 10°, CN, PR, RF	
				116							
		100	100	117						116.84-116.92: Jx2, 40°, CU, RF	
										117.41: J, 50°, ST, RF 117.67: J, 60°, CN, PR, RF	
		100	93	118						117.95: J, 70°, SN, PR, RF 118.03: J, 60°, SN, PR, RF 118.19: J, 90°, CN, PR, RF	
				119						118.79: J, 60°, SN, PR, RF 118.14-119.45: Jx4, 60°, SN, PR, RF 118.95: J, 10°, SN, PR, RF 118.97: J, 85°, SN, PR, RF 119.22-119.29: Jx2, 10°, SN, UN, RF	
		100	100	120							

Comments

Checked GEM

Date 3/12/2024

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BOREHOLE: BHUA-13

Project:	Pioneer-Burdekin PHES	Position:	Upper Reservoir	Sheet	14 OF 14
Location:	Netherdale/Dalrymple Heights	Coords:	658075.7 m E 7667418.3 m N MGA2020-55		
Client:	Queensland Hydro	Surface RL:	861.16 m AHD	Date Started:	17/4/2024
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Desco 7000	Date Completed:	5/4/2024
		Inclination:	-88° Direction: 027°	Logged:	AB/AK

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	120	120.71		METAGRANITE: medium to coarse grained, dark grey, dark pink, crystalline, massive, highly altered granite, pink alteration, fabric shows metamorphic crystal reorientation, numerous healed microfractures.	FR		119.95: J, 50°, SN, PR, RF 120.03: J, 80°, SN, PR, RF 120.08: J, 50°, CN, PR, RF 120.16: J, 40°, PR, SM 120.22: J, 20°, CN, PR, SM 120.27: J, 30°, PR, SM	
				121	740.52		LAMPROPHYRE: fine to medium grained, dark grey mottled black, grey, crystalline, massive, phenocrysts to 2 mm diameter.			121.05-121.07: Jx2, 60°, CN, PR, RF 121.24: J, 80°, CN, IR, RF	
		100	100	122	122.15					121.59: J, 40°, CN, PR 121.75: J, 70°, CN, PR, SM	
					739.08		Hole Terminated at 122.15 m Target depth. Standpipe Piezometer Installed.				
				123							
				124							
				125							
				126							
				127							
				128							
				129							
				130							

Comments

Checked GEM

Date 3/12/2024

Preliminary

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Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BHUA-13
Defects List

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
BHUA-13	3.60	4.30			J	/FZ			Fe	VN	UN	RF					
BHUA-13	4.38	4.42			J	x2	20		Fe	SN	UN	RF					
BHUA-13	4.52				J		50		Fe	SN	PR	RF					
BHUA-13	4.60				J		40		Fe	SN	PR	RF					
BHUA-13	4.62				J		55		Fe	SN	PR	RF					
BHUA-13	4.68				J		30		Fe	SN	UN	RF					
BHUA-13	4.70	4.80			FZ												recovered as gravel
BHUA-13	5.04				J		30		Fe	SN	UN	RF					
BHUA-13	5.10	5.35			J		80	90	Fe	SN	PR	RF					
BHUA-13	5.12				J		60		Fe	SN	UN	RF					
BHUA-13	5.37				J		20		Fe	SN	UN	RF					
BHUA-13	5.52				J		35		Fe	SN	UN	RF					
BHUA-13	5.52	5.54			J	x2	10		Fe	SN	PR	RF					
BHUA-13	5.63	5.78			J	x4	20		Fe	SN	UN	RF					
BHUA-13	5.82				J		75		Fe	SN	UN	RF					
BHUA-13	6.00	6.13			J	x4	5	10	Fe	SN	UN	RF					
BHUA-13	6.17				J		40		Fe	SN	UN	RF					
BHUA-13	6.31				J		30		Fe	SN	PR	RF					
BHUA-13	6.40	6.46			CS		30	40	Fe	VN	PR	RF					
BHUA-13	6.50	7.00			FZ												recovered as gravel
BHUA-13	7.00	7.25			J	x3	30			SN	UN	RF					
BHUA-13	7.25	7.40			FZ												recovered as gravel
BHUA-13	7.50	8.00			J	x6	0	10		SN	PR	RF					
BHUA-13	8.00	8.22			J	x3	10	20	gy mi, Fe	SN	PR	RF					
BHUA-13	8.22	8.42			FZ												recovered as gravel
BHUA-13	8.43				J		30			SN	UN	RF					
BHUA-13	8.53				J		15			SN	UN	RF					
BHUA-13	8.60	8.77			FZ												recovered as gravel
BHUA-13	8.90				J		5		Fe	SN	UN	RF					
BHUA-13	9.10				J		40			SN	PR	RF					
BHUA-13	9.23				J		60		Fe	SN	PR	RF					
BHUA-13	9.25	9.50			hJ		80				UN	RF					
BHUA-13	9.50				J		15			SN	PR	RF					
BHUA-13	9.50	9.85			J		80			SN	PR	RF					
BHUA-13	9.83				hJ		60		wh mn	SN	PR		<	5			
BHUA-13	9.88				J		35			CN	PR	RF					
BHUA-13	9.90				hJ	x2	80		wh mn	SN	PR		<	3			
BHUA-13	9.93				HB		50										
BHUA-13	9.95				J		50			SN	PR	RF					
BHUA-13	10.01				hJ		10		wh mn	SN	PR						
BHUA-13	10.03				J		30		wh mn	CN	PR	RF	<	2			
BHUA-13	10.05				hJ		80		gn mi, wh mi	SN	PR		<	5			
BHUA-13	10.06				hJ		10		wm	SN	PR		<	3			
BHUA-13	10.08	10.12			J	x2	15	20		SN	PR	RF					
BHUA-13	10.09				J		20			CN	PR	RF					
BHUA-13	10.12				J		20			CN	PR	RF					
BHUA-13	10.17				hJ		20		gn mi, wh mi	SN	PR		<	5			
BHUA-13	10.19				hJ		20		wh mn	SN	PR		<	4			
BHUA-13	10.20				hJ		6		wh mn	SN	PR		<	3			
BHUA-13	10.21				hJ		90		wh mn	SN	PR		<	3			
BHUA-13	10.50	10.65			J	x3	0	10			UN	RF					
BHUA-13	10.61	10.63			J	x3	30			SN	PR						
BHUA-13	10.64				DB		5			CN		RF					
BHUA-13	10.68				DB		5			CN		RF					
BHUA-13	10.70				DB		5			CN		RF					
BHUA-13	10.75				hJ		5			SN	PR						
BHUA-13	10.80				hJ		30		wh mn	SN	PR		<	3			
BHUA-13	10.87				hJ		55		wh mn	SN	PR		<	2			
BHUA-13	10.91				hJ		55		wh mn	SN	PR		<	5			
BHUA-13	10.93				hJ		50			SN	PR						
BHUA-13	10.97				hJ		40			SN	PR						
BHUA-13	10.98				hJ		40			SN	PR						
BHUA-13	11.00				J		5			SN	PR	RF					
BHUA-13	11.16				hJ		20		wh mn	SN	PR		<	2			
BHUA-13	11.17				hJ		10		wh mn	SN	PR		<	2			
BHUA-13	11.30				hJ		30		gn mi, wh mi	SN	PR		<	2			
BHUA-13	11.33				hJ		5		wh mn	SN	PR						
BHUA-13	11.35				hJ		45		gn mi	SN	PR						
BHUA-13	11.44				hJ		75		gn mi, wh mi	SN	PR						
BHUA-13	11.57				hJ		80		pl gn mi	SN	PR		<	5			
BHUA-13	11.70				hJ		60		pl gn-wh mi	SN	PR		<	3			
BHUA-13	11.81				hJ		75		pl gn mi		PR		<	5			
BHUA-13	11.90				J		10			CN	PR	RF					
BHUA-13	11.94				hJ		70		pl gn-wh mi	SN	PR		<	5			
BHUA-13	12.01				hJ		70			SN	PR						
BHUA-13	12.05				hJ		45		wh mn	SN	PR		<	2			
BHUA-13	12.10				DB		0			CN	PR	RF					
BHUA-13	12.21				hJ		70		wh mn	SN	PR						
BHUA-13	12.24				hJ		40		wh mn	SN	PR						

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Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BHUA-13
Defects List

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
BHUA-13	12.28				hJ		80		wh mn	SN	PR						
BHUA-13	12.32				J		10			CN	PR	RF					
BHUA-13	12.35				hJ		20		wh mn	SN	PR						
BHUA-13	12.44				hJ		50			SN	PR						
BHUA-13	12.46				hJ		20		pl gn mi	SN	PR		<	3			
BHUA-13	12.53				hJ		40			SN	PR						
BHUA-13	12.58				hJ		40		wh mn	SN	PR		<	2			
BHUA-13	12.59				hJ		20			SN	PR						
BHUA-13	12.60				hJ		40			SN	PR						
BHUA-13	12.61				J		10			CN	PR	RF					
BHUA-13	12.71				hJ		30		wh mn	SN	PR		<	4			
BHUA-13	12.85				J		30				PR	RF					
BHUA-13	12.86				hJ		30		gn and wh mi		PR		<	3			
BHUA-13	12.87				hJ		40		gn mi, wh mi	SN	PR		<	4			
BHUA-13	12.89				hJ		70		wh mn	SN	PR		<	3			
BHUA-13	12.95				hJ		70		wh mn	SN	PR		<	3			
BHUA-13	13.02				hJ		60			SN	PR						
BHUA-13	13.04				hJ		45		pl gn mi, wh mi	SN	PR		<	8			
BHUA-13	13.05				hJ		45		gn mi, wh mi	SN	PR		<	10			
BHUA-13	13.07				hJ		45		gn mi, wh mi	SN	PR		<	8			
BHUA-13	13.12				hJ		90		wh mn	SN	PR		<	2			
BHUA-13	13.23				hJ		90		wh mn	SN	PR		<	2			
BHUA-13	13.26				hJ		30			SN	PR						
BHUA-13	13.28				hJ		30			SN	PR						
BHUA-13	13.29				hJ		50			SN	PR						
BHUA-13	13.30				hJ		45		wh mn	SN	PR		<	4			
BHUA-13	13.31				HB												
BHUA-13	13.34				hJ		90			SN	PR						
BHUA-13	13.37				J		5			CN	PR	RF					
BHUA-13	13.48				hJ		40		gn mi, wh mi	SN	PR		<	5			
BHUA-13	13.55				hJ		50			SN	PR						
BHUA-13	13.56				hJ		60			SN	PR						
BHUA-13	13.59				DB												
BHUA-13	13.63				hJ		30			SN	PR						
BHUA-13	13.65				hJ		20		gn mi, wh mi	SN	PR		<	4			
BHUA-13	13.69				hJ		30			SN	PR						
BHUA-13	13.70				hJ		30			SN	PR						
BHUA-13	13.78				hJ		70		pl gn mi		UN		<	4			
BHUA-13	13.83	13.86			hJ		60			SN	UN						
BHUA-13	13.87				hJ		5		gr and pale gr mn	SN	PR		<	3			
BHUA-13	13.88				hJ		40			SN	PR						
BHUA-13	13.89				hJ		40			SN	PR						
BHUA-13	13.90				hJ		40		wh mn	SN	PR		<	4			
BHUA-13	14.20	16.60			hJ		65				UN						
BHUA-13	14.22				J		65			SN	PR	RF					
BHUA-13	14.25				J		45		gn mi		PR	RF	<	40			possible MB on hJ
BHUA-13	14.27				hJ		65		gn mi		PR		<	40			
BHUA-13	14.30				hJ		50		gn mi		PR		<	3			
BHUA-13	14.32				hJ		45		gn mi		PR		<	10			
BHUA-13	14.35				hJ		40		gn mi		PR		<	3			
BHUA-13	14.40				hJ		50		gn mi		PR		<	3			
BHUA-13	14.44	14.52			hJ	x4	55		gn mi		PR		<	5			
BHUA-13	14.56				J		45		wh mi	SN	PR	RF					
BHUA-13	14.57	14.59			hJ	x2	45		gn mi		PR		<	3			
BHUA-13	14.62				hJ		30		yl mi		PR		<	2			
BHUA-13	14.63				hJ		75		yl mi		PR		<	4			
BHUA-13	14.66				hJ		5		yl mi		PR		<	10			
BHUA-13	14.69				hJ		80		yl mi		PR		<	4			
BHUA-13	14.71				hJ		20		yl mi		PR		<	2			
BHUA-13	14.74	14.76			hJ		50		yl mi		PR		<	3			
BHUA-13	14.77				hJ		30		yl mi		PR		<	3			
BHUA-13	14.79	14.90			hJ		90		yl mi		UN		<	3			
BHUA-13	14.96				hJ		80		yl mi		UN		<	5			
BHUA-13	15.04				hJ		60		yl mi		PR		<	10			
BHUA-13	15.06				J		5				IR	RF					
BHUA-13	15.11				hJ		70		yl mi		UN		<	5			
BHUA-13	15.15				hJ		5		yl mi		UN		<	10			
BHUA-13	15.20	15.21			hJ	x3	90				IR		<	3			
BHUA-13	15.27				J		15			CN	PR	RF					
BHUA-13	15.34				hJ		5		wh mi		UN		<	2			
BHUA-13	15.37				hJ		20		yl mi		UN		<	15			
BHUA-13	15.41				hJ		15		yl wh mi		UN		<	20			
BHUA-13	15.45				hJ		70				UN						
BHUA-13	15.47				V		20		yl wh mi		PR		<	15			
BHUA-13	15.58	15.66			hJ	x3	40				PR						
BHUA-13	15.73				hJ		70				PR						
BHUA-13	15.82	15.84			hJ	x2	50				PR						
BHUA-13	15.96	15.98			hJ		65				PR						
BHUA-13	16.09				J		10			CN	PR	RF					

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Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BHUA-13
Defects List

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
BHUA-13	16.16				hJ		20				UN						
BHUA-13	16.19				hJ		20				UN						
BHUA-13	16.27				hJ		65				UN						
BHUA-13	16.30				hJ		20				PR						
BHUA-13	16.38				hJ		70				PR						
BHUA-13	16.43				hJ		60				PR						
BHUA-13	16.50				V		60		wh yl mi		UN		<	70			
BHUA-13	16.57				hJ		70		wh mi		PR		<	5			
BHUA-13	16.69	16.80			hJ	x8	50	60	wh mi		CU						multiple defects, 30-100mm spacing
BHUA-13	16.77				hJ		50				PR						
BHUA-13	16.78				hJ		10		yl mi		PR		<	4			
BHUA-13	16.82				hJ		40				PR						
BHUA-13	16.89	16.91			hJ		50				PR						
BHUA-13	16.94				hJ		40				PR						
BHUA-13	16.97				hJ		40				PR						
BHUA-13	17.08				hJ		70				PR						
BHUA-13	17.16				hJ		70				PR						
BHUA-13	17.18				hJ		10				PR						
BHUA-13	17.33				hJ		75				PR						
BHUA-13	17.35				hJ		10		yl mi		PR		<	7			
BHUA-13	17.36				J		10			CN	ST						
BHUA-13	17.40				hJ		60		yl mi		IR		<	15			
BHUA-13	17.42				hJ		70				PR						
BHUA-13	17.46				hJ		60		wh mi		PR		<	10			
BHUA-13	17.48				hJ		20		yl mi		PR		<	5			
BHUA-13	17.59				hJ		60		yl mi		PR		<	3			
BHUA-13	17.60				hJ		5		yl mi		PR		<	5			
BHUA-13	17.75				hJ		90				PR						
BHUA-13	17.78				hJ		30		wh mi		UN		<	5			
BHUA-13	17.91				hJ		5				PR						
BHUA-13	17.94				hJ		15				PR						
BHUA-13	18.03				hJ		75				PR						
BHUA-13	18.04				hJ		30		wh mi		PR		<	15			
BHUA-13	18.05				hJ		70		wh mi		PR		<	5			
BHUA-13	18.12				hJ		10		wh mi		UN		<	3			
BHUA-13	18.20				J		5				PR	RF					
BHUA-13	18.26				hJ		70		yl mi		UN		<	3			
BHUA-13	18.36				hJ		60		yl mi		UN		<	3			
BHUA-13	18.41				hJ		5		yl mi		PR		<	10			
BHUA-13	18.45	18.47			V		15		wh, Qz								
BHUA-13	18.56				hJ		10		wh mi		PR		<	30			
BHUA-13	18.58				hJ		55		wh yl mi		PR		<	10			
BHUA-13	18.74				J		20			CN	ST	RF					
BHUA-13	18.79				hJ		90				PR						
BHUA-13	18.87				J		10		yl mi		PR		<	5			
BHUA-13	18.90	18.91			hJ	x2	20				PR						
BHUA-13	19.04				hJ		25				PR						
BHUA-13	19.17	19.19			V		25		wh, Qz								
BHUA-13	19.20				hJ		75				PR						
BHUA-13	19.26				hJ		45		wh mi		PR		<	30			
BHUA-13	19.28				hJ		70				PR						
BHUA-13	19.36	19.38			hJ	x2	60		yl mi		PR		<	5			
BHUA-13	19.58				hJ		90				PR						
BHUA-13	19.71				V		45		wh mi		PR		<	4			
BHUA-13	19.78				hJ		35				PR						
BHUA-13	19.82	19.84			V	x2	80		wh, Qz								
BHUA-13	19.86				hJ		80				PR						
BHUA-13	19.91				hJ		50				IR		<	50			
BHUA-13	19.98				hJ		25				PR						
BHUA-13	20.03				hJ		25		yl mi		PR		<	3			
BHUA-13	20.07				hJ		50		yl mi		PR		<	10			
BHUA-13	20.09				hJ		20		yl mi		PR		<	3			
BHUA-13	20.12				J		20				PR	SM					
BHUA-13	20.41				hJ		40				PR						
BHUA-13	20.48				V		40		yl mi		PR		<	10			
BHUA-13	20.52				J		10			CN	CU	SM					
BHUA-13	20.54				J		15			CN	CU	SM					
BHUA-13	20.73	20.74			hJ		20			CN	UN	RF					
BHUA-13	20.83				hJ		90				PR						
BHUA-13	21.04	21.05			hJ	x2	55		yl mi		PR		<	5			
BHUA-13	21.05	21.08			hJ	x4	30			SN	PR						
BHUA-13	21.10				hJ		40			SN	PR						
BHUA-13	21.12				DB					CN	PR	RF					
BHUA-13	21.13				V		30		wh-mi, Qz	SN	PR		<	4			
BHUA-13	21.17				hJ		5		wh-mi	SN	PR		<	4			
BHUA-13	21.17	21.21			hJ	x3	80			SN	PR						
BHUA-13	21.25	21.28			hJ	x4	20			SN	PR						
BHUA-13	21.27				hJ		80			SN	PR						
BHUA-13	21.32				hJ		85		wh mi		PR		<	2			

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Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BHUA-13
Defects List

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
BHUA-13	21.38				hJ		50		pl gn mi, wh mi	SN	PR		<	5			
BHUA-13	21.40				hJ		60		pl gn mi	SN	PR		<	5			
BHUA-13	21.45				hJ		60		pl gn mi	SN	PR		<	10			
BHUA-13	21.52				hJ		85		pl gn mi	SN	PR		<	10			
BHUA-13	21.55				hJ		40		wh-mi	SN	PR		<	4			
BHUA-13	21.56				hJ		45		pl gn mi	SN	PR		<	4			
BHUA-13	21.58				hJ		85		wh-mi	SN	PR		<	3			
BHUA-13	21.60				hJ		50		wh-mi	SN	PR		<	5			
BHUA-13	21.60	21.63			hJ	x3	50		wh-mi	SN	PR		<	2			
BHUA-13	21.65				hJ		70			SN	PR						
BHUA-13	21.69				hJ		25		wh-mi	SN	PR		<	5			
BHUA-13	21.71				hJ		50			SN	PR						
BHUA-13	21.71	21.77			J		20			CN	PR	RF					
BHUA-13	21.78				AZ												
BHUA-13	21.86				J		25			SN	PR	RF					
BHUA-13	21.93				hJ		50			SN	PR						
BHUA-13	21.97				hJ		50		wh-mi	SN	PR		<	4			
BHUA-13	21.99				hJ		50		pl gn mi	SN	PR		<	8			
BHUA-13	22.03				hJ		50		pl gn mi		PR		<	8			
BHUA-13	22.08				DB												
BHUA-13	22.19	22.30			hJ		45		wh-mi	SN	PR		<	2			
BHUA-13	22.36				AZ												
BHUA-13	22.39				J		40			SN	PR						
BHUA-13	22.48				hJ		40			SN	PR						
BHUA-13	22.51				hJ		45		pl gn mi	SN	PR		<	10			
BHUA-13	22.60				hJ		45		pl gn mi	SN	PR		<	5			
BHUA-13	22.85				DB		5			CN	PR	RF					
BHUA-13	22.91	23.30			hJ	x4	70		wh mi		UN		<	6			
BHUA-13	23.40				hJ		40				UN		<	7			
BHUA-13	23.46				hJ		60		yl mi		PR		<	4			
BHUA-13	23.55	23.68			J	x2	30				PR	RF					
BHUA-13	23.75				hJ		30				PR						
BHUA-13	23.85	23.97			hJ	x2	70				PR						
BHUA-13	23.86				hJ		90				PR						
BHUA-13	23.97				hJ		70				PR						
BHUA-13	24.24				hJ		30				PR						
BHUA-13	24.64				hJ		30				PR						
BHUA-13	24.70				hJ		40				PR						
BHUA-13	24.75				hJ		55				UN						
BHUA-13	24.82				J		5				ST	SM					
BHUA-13	24.87				J		60				PR						
BHUA-13	24.97				hJ		5		yl mi		UN		<	8			
BHUA-13	25.01				hJ		70		yl mi		UN		<	5			
BHUA-13	25.04				hJ		5		yl mi		PR		<	4			
BHUA-13	25.16				hJ		50		yl mi		UN		<	4			
BHUA-13	25.21	25.23			hJ		70		yl mi		UN		<	6			
BHUA-13	25.26				hJ		5		yl mi		PR		<	3			
BHUA-13	25.31				hJ		50		yl mi		UN		<	2			
BHUA-13	25.35				J		5				PR	RF					
BHUA-13	25.37	25.42			hJ	x3	70		yl mi		UN		<	3			
BHUA-13	25.45				hJ		5				PR						
BHUA-13	25.50	25.53			hJ	x2	40		yl mi		PR		<	3			
BHUA-13	25.52				hJ		25		yl mi		PR		<	4			
BHUA-13	25.54				hJ		25		yl mi		PR		<	4			
BHUA-13	25.57				hJ		50		yl mi		PR		<	4			
BHUA-13	25.91				hJ		25				PR						
BHUA-13	25.93				hJ		30				PR						
BHUA-13	25.97				J		60				PR						
BHUA-13	26.04	26.07			hJ	x3	60		yl mi		PR		<	10			
BHUA-13	26.10				hJ		10				PR						
BHUA-13	26.13				hJ		80				PR						
BHUA-13	26.18				hJ		30				PR						
BHUA-13	26.21				hJ		50				PR						
BHUA-13	26.28				hJ		50				PR						
BHUA-13	26.30				hJ		60				PR						
BHUA-13	26.35				hJ		45		yl mi		PR		<	2			
BHUA-13	26.37				J		75			CN	ST	RF					
BHUA-13	26.40				hJ	x4	10				PR						
BHUA-13	26.46				hJ		20				UN						
BHUA-13	26.51				hJ		30				UN						
BHUA-13	26.54	26.63			J		30			SN	PR	SM					
BHUA-13	26.56	26.68			J		90				UN						
BHUA-13	26.74	26.98			hJ	x4	10		yl mi		UN		<	4			
BHUA-13	26.81	26.98			J	x3	60				ST	RF					
BHUA-13	26.93	26.95			hJ	x2	80		wh mi		UN		<	5			
BHUA-13	27.05				hJ		30		wh mi		UN		<	4			
BHUA-13	27.09				hJ		45				PR						
BHUA-13	27.10				hJ		65		wh mi		UN		<	4			
BHUA-13	27.12				hJ		60		yl mi		PR		<	4			

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Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BHUA-13
Defects List

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
BHUA-13	27.16				J		15			CN	PR	SM					
BHUA-13	27.18				hJ		20		yl mi		UN		<	3			
BHUA-13	27.19				J		30			CN	UN	SM					
BHUA-13	27.20				hJ		45		yl mi		UN		<	5			
BHUA-13	27.23				hJ		5		yl mi		PR		<	3			
BHUA-13	27.25	27.26			hJ	x2	15		yl mi		PR		<	3			
BHUA-13	27.34				hJ		25		yl mi		PR		<	2			
BHUA-13	27.37				hJ		60		wh mi		UN		<	2			
BHUA-13	27.40				hJ		30		yl mi		PR		<	3			
BHUA-13	27.70	28.10			J	x10											multiple defects, likely rubbled by drilling
BHUA-13	28.08	28.27			J		85			CN	UN	SM					
BHUA-13	28.11	28.14			AZ												
BHUA-13	28.16	28.17			hJ	x2	40		yl mi		UN		<	3			
BHUA-13	28.20				hJ		90		yl mi		UN		<	3			
BHUA-13	28.25	28.62			J	x5	0	15		CN	UN	RF					
BHUA-13	28.35				hJ		85		bk mi		UN		<	12			
BHUA-13	28.44				V		40		yl mi		PR		<	5			
BHUA-13	28.52				hJ		60		yl mi		UN		<	5			
BHUA-13	28.56				hJ		30		wh mi		UN		<	15			
BHUA-13	28.59				hJ		35		wh mi		IR		<	30			
BHUA-13	28.60				hJ		5		wh-mi	SN	PR		<	5			
BHUA-13	28.66	28.80			hJ	x12	40		wh-mi	SN	PR		<	4			
BHUA-13	28.82	28.83			V		30		wh-mi	SN	PR						
BHUA-13	28.84				hJ		30		wh-mi	SN	PR		<	15			
BHUA-13	28.89				hJ		85		gn wh mi	SN	UN		<	10			
BHUA-13	28.90				hJ		50		gn mi	SN	PR		<	5			
BHUA-13	28.92				hJ		5		wh-mi	SN	PR		<	4			
BHUA-13	28.95				hJ		80		wh-mi	SN	PR		<	4			
BHUA-13	29.01				hJ		90		wh-mi	SN	PR		<	4			
BHUA-13	29.03				hJ		40		wh-mi	SN	PR		<	2			
BHUA-13	29.05				hJ		40		pl gn-mi	SN	PR		<	4			
BHUA-13	29.09				hJ		40		pl gn-mi	SN	PR		<	4			
BHUA-13	29.11				hJ		40		pl gn mi, wh mi	SN	PR		<	10			
BHUA-13	29.13	29.15			V	x2	45		wh-mi	SN	PR		<	5			
BHUA-13	29.19				V		40			SN	PR						
BHUA-13	29.23				V		40		wh-mi	SN	PR		<	4			
BHUA-13	29.30				V		50		wh-mi	SN	PR		<	3			
BHUA-13	29.33				V		30		wh-mi	SN	PR		<	10			
BHUA-13	29.39				V		45		wh-mi	SN	PR		<	5			
BHUA-13	29.43				V		40		wh-mi	SN	PR		<	4			
BHUA-13	29.52				hJ		85		pl gn mi, wh mi	SN	UN		<	10			
BHUA-13	29.57				HB												
BHUA-13	29.64	29.65			V	x2	0		wh-mi	SN	ST		<	5			
BHUA-13	29.78				hJ		60			SN	PR						
BHUA-13	29.86				V		45		wh-mi	SN	PR		<	3			
BHUA-13	29.94				hJ		45		wh-mi	SN	PR		<	3			
BHUA-13	29.95				V		30		wh-mi	SN	PR		<	3			
BHUA-13	29.96				V		40		pl gn-mi	SN	PR		<	5			
BHUA-13	30.02				J		10			CN	PR	RF					
BHUA-13	30.08	30.16			hJ	x5	50		wh mi		PR		<	3			
BHUA-13	30.26				hJ		60			SN	PR						
BHUA-13	30.34				hJ		50		wh-mi	SN	PR		<	3			
BHUA-13	30.39				hJ		35		wh-mi	SN	IR		<	3			
BHUA-13	30.43				J		20			CN	PR	RF					
BHUA-13	30.52				hJ		70			SN	PR		<	8			
BHUA-13	30.56				hJ		20		gn mi	SN	PR		<	4			
BHUA-13	30.61				J		5			CN	PR	RF					
BHUA-13	30.68				hJ		75		pl gn mi, wh mi	SN	UN		<	15			
BHUA-13	30.71				hJ		85			SN	PR						
BHUA-13	30.84				hJ		70			SN	PR						
BHUA-13	30.86				hJ		30			SN	PR						
BHUA-13	30.88				hJ		15		wh-mi	SN	PR		<	3			
BHUA-13	30.89				hJ		70		wh-mi	SN	PR		<	5			
BHUA-13	30.94				V		20		wh-mi	SN	PR		<	5			
BHUA-13	30.98				hJ		90		wh-mi	SN	PR		<	2			
BHUA-13	31.03				hJ		30		wh-mi	SN	PR		<	20			
BHUA-13	31.07	31.14			hJ	x4	55		wh-mi	SN	PR		<	4			
BHUA-13	31.15				hJ		50		wh-mi	SN	PR		<	3			
BHUA-13	31.17				hJ		30			SN	PR						
BHUA-13	31.22				hJ		90		wh-mi	SN	PR		<	3			
BHUA-13	31.26				hJ		90		wh-mi	SN	PR		<	3			
BHUA-13	31.33	31.36			hJ	x3	70		wh-mi	SN	PR		<	3			
BHUA-13	31.40	31.44			hJ		40			SN	PR						
BHUA-13	31.45				hJ		40		pl gn mi, wh mi	SN	PR		<	3			
BHUA-13	31.48				DB		40			CN	PR	RF					
BHUA-13	31.53				DB		10			CN	PR	RF					
BHUA-13	31.59				DB		10			CN	PR	RF					
BHUA-13	31.62				hJ		50		wh-mi	SN	PR		<	3			
BHUA-13	31.65	31.75			hJ	x3	60		wh mi		PR		<	2			

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Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BHUA-13
Defects List

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
BHUA-13	31.81				hJ		60		wh mi		PR		<	2			
BHUA-13	31.88	31.92			hJ	x3	70		wh-mi	SN	PR		<	4			
BHUA-13	32.05				hJ		55			SN	PR						
BHUA-13	32.12	32.14			hJ	x2	50			SN	PR						
BHUA-13	32.21				hJ		40		wh-mi	SN	PR		<	2			
BHUA-13	32.25				hJ		40		wh-mi	SN	PR		<	3			
BHUA-13	32.28				hJ		70		wh-mi	SN	PR		<	4			
BHUA-13	32.35				hJ		80			SN	PR						
BHUA-13	32.42				hJ		70		wh-mi	SN	PR		<	15			
BHUA-13	32.52				hJ		50		wh-mi	SN	PR		<	3			
BHUA-13	32.53				hJ		30		wh-mi	SN	PR		<	4			
BHUA-13	32.55				hJ		30		wh-mi	SN	PR		<	4			
BHUA-13	32.58				hJ		50		wh-mi	SN	PR		<	4			
BHUA-13	32.60	32.64			hJ	x4	20		wh-mi	SN	PR		<	5			
BHUA-13	32.72				hJ		40		wh-mi	SN	PR		<	3			
BHUA-13	32.83	32.85			hJ		80		yl mi		UN		<	2			
BHUA-13	32.91				hJ		40				PR						
BHUA-13	33.03				J		15			CN	PR	SM					
BHUA-13	33.06				hJ		90		wh mi		IR		<	6			
BHUA-13	33.08	33.09			hJ		85		wh mi		PR		<	4			
BHUA-13	33.10				hJ		20		wh mi		PR		<	5			
BHUA-13	33.22				hJ		30		wh mi		UN		<	6			
BHUA-13	33.28				hJ		75		wh mi		UN		<	6			
BHUA-13	33.33				hJ		70				PR						
BHUA-13	33.40				hJ		80		wh mi		PR		<	6			
BHUA-13	33.44				hJ		50				PR						
BHUA-13	33.54				hJ		30				UN						
BHUA-13	33.66				hJ		80				UN						
BHUA-13	33.71				hJ		30				PR						
BHUA-13	33.89	33.99			hJ	x3	40				PR						
BHUA-13	33.98				hJ		45				PR						
BHUA-13	34.02				hJ		15				PR						
BHUA-13	34.09				V		75		bk mi		PR		<	3			
BHUA-13	34.10				hJ		5		wh mi		PR		<	7			
BHUA-13	34.18	34.34			hJ	x2	10				PR						
BHUA-13	34.25				hJ		90				PR						
BHUA-13	34.31				hJ		85				PR						
BHUA-13	34.48				hJ		80				PR						
BHUA-13	34.51				hJ		80		wh mi		PR		<	3			
BHUA-13	34.55				DB		10			CN	PR	RF					
BHUA-13	34.62				hJ	x2	40			SN	PR						
BHUA-13	34.70				hJ		80			SN	PR						
BHUA-13	34.74				hJ		80			SN	PR						
BHUA-13	34.81				hJ		85			SN	PR						
BHUA-13	35.01				hJ		75				PR						
BHUA-13	35.02				hJ		75			SN	PR						
BHUA-13	35.03				hJ		25			SN	PR						
BHUA-13	35.04				V		30		wh-mi	SN	PR		<	2			
BHUA-13	35.05				hJ		35		wh-mi	SN	PR		<	5			
BHUA-13	35.10				hJ		30		wh-mi	SN	PR		<	5			
BHUA-13	35.11				V		80		wh-mi	SN	PR		<	3			
BHUA-13	35.14	35.17			hJ		35				PR						
BHUA-13	35.19				hJ		15		wh-mi	SN	PR		<	5			
BHUA-13	35.21				V		25		wh-mi	SN	PR		<	5			
BHUA-13	35.61				hJ		85		pl gn-mi	SN	UN		<	15			
BHUA-13	35.66				V		85		pl gn-mi	SN	UN		<	15			
BHUA-13	35.70				hJ		10		pl gn mi, wh mi	SN	PR		<	5			
BHUA-13	35.73				DB		5			CN	PR	RF					
BHUA-13	35.73	35.98			AZ				wh mi								
BHUA-13	35.95				V		25		pl gn mi, wh mi	SN	PR		<	15			
BHUA-13	36.03				DB		10			CN	PR	RF					
BHUA-13	36.07				hJ		85			SN	PR						
BHUA-13	36.12	36.14			hJ	x3	90			SN	PR						
BHUA-13	36.23				hJ		85			SN	PR						
BHUA-13	36.28				hJ		85			SN	PR						
BHUA-13	36.31				hJ		70			SN	PR						
BHUA-13	36.33				hJ		5			SN	PR						
BHUA-13	36.40				V		45		wh-mi	SN	PR		<	15			
BHUA-13	36.47				hJ		85			SN	PR						
BHUA-13	36.62				hJ		45			SN	PR						
BHUA-13	36.68				V		45			SN	PR						
BHUA-13	36.73				hJ		45		wh gn mi	SN	PR		<	15			
BHUA-13	36.75				J		45			SN	PR						
BHUA-13	36.78	36.88			hJ	x3	45			SN	PR						
BHUA-13	36.85				V		70		wh-mi	SN	PR		<	4			
BHUA-13	36.89	36.92			hJ	x2	20			SN	PR						
BHUA-13	37.03				DB												
BHUA-13	37.09				hJ		55			SN	PR						
BHUA-13	37.11				V		30		wh-mi	SN	PR		<	5			

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Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BHUA-13
Defects List

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
BHUA-13	37.13				J		30			CN	PR	RF					
BHUA-13	37.14				hJ		60		wh-mi	SN	PR		<	2			
BHUA-13	37.16				hJ		40		wh-mi	SN	PR		<	2			
BHUA-13	37.17				hJ		40		wh-mi	SN	PR		<	8			
BHUA-13	37.18				V		40		wh-mi	SN	PR		<	3			
BHUA-13	37.22				V		45		wh-mi	SN	UN		<	5			
BHUA-13	37.26				hJ		45		wh-mi	SN	UN		<	5			
BHUA-13	37.27				hJ		10		wh-mi	SN	PR		<	2			
BHUA-13	37.32				hJ		15		wh-mi	SN	IR		<	4			
BHUA-13	37.38				hJ		10			SN	PR						
BHUA-13	37.42				AZ												
BHUA-13	37.42	37.46			J		15			CN	PR	RF					
BHUA-13	37.55				J		10			CN	PR	RF					
BHUA-13	37.58				V		70		wh-mi	SN	PR		<	2			
BHUA-13	37.60				hJ		30		wh mi		PR		<	3			
BHUA-13	37.67				hJ		70		wh-mi	SN	PR		<	2			
BHUA-13	37.72				hJ		65		wh gn mi	SN	UN		<	15			
BHUA-13	37.74				J		65			CN	PR						
BHUA-13	37.77				V		65		wh gn mi		UN		<	30			
BHUA-13	37.89				hJ		25			SN	PR						
BHUA-13	37.91				hJ		35			SN	PR						
BHUA-13	37.93				V		15		gn mi	SN	PR		<	5			
BHUA-13	38.08				hJ		5			SN	PR						
BHUA-13	38.14				hJ		25			SN	PR						
BHUA-13	38.18				V		40		wh-mi	SN	PR		<	5			
BHUA-13	38.21				hJ		50		wh-mi	SN	PR		<	2			
BHUA-13	38.22				hJ		50		wh-mi	SN	PR		<	4			
BHUA-13	38.28				hJ		85			SN	PR						
BHUA-13	38.34				V		15		wh pl yl-mi	SN	PR		<	10			
BHUA-13	38.37	38.45			AZ												
BHUA-13	38.47				hJ		50		wh-mi	SN	PR		<	10			
BHUA-13	38.52	38.53			hJ	x2	20		wh-mi	SN	PR		<	10			
BHUA-13	38.62				hJ		25			SN	PR						
BHUA-13	38.66				hJ		30			SN	PR						
BHUA-13	38.72	38.75			hJ	x3	85			SN	PR						
BHUA-13	38.74				hJ		20			SN	PR						
BHUA-13	38.78				hJ		40		wh-mi	SN	PR		<	3			
BHUA-13	38.79				hJ		45		wh-mi	SN	PR		<	5			
BHUA-13	38.80	38.82			hJ		45		wh-mi	SN	PR		<	2			
BHUA-13	38.86				hJ		30			SN	PR						
BHUA-13	38.87				V		30		wh-mi	SN	PR		<	7			
BHUA-13	38.93				hJ		80		gn wh mi	SN	PR		<	5			
BHUA-13	38.96				V		80		wh-mi	SN	PR		<	2			
BHUA-13	39.02				hJ		50				UN						
BHUA-13	39.05				J		5			CN	ST	RF					
BHUA-13	39.08				hJ		20				PR						
BHUA-13	39.14				hJ		60		wh mi		PR		<	4			
BHUA-13	39.15				hJ		75		wh mi		PR		<	4			
BHUA-13	39.18				hJ		70		wh mi		PR		<	3			
BHUA-13	39.21				V		20		wh mi		PR		<	4			
BHUA-13	39.27				hJ		70				IR						
BHUA-13	39.30				V		85		wh mi		UN		<	3			
BHUA-13	39.36				hJ		80		wh mi		UN		<	3			
BHUA-13	39.47				hJ	x2	70		wh mi		UN		<	3			
BHUA-13	39.48	39.49			hJ		80		wh mi		UN		<	4			
BHUA-13	39.59				hJ		80		wh mi		UN		<	4			
BHUA-13	39.64				V		75		wh mi		UN		<	4			
BHUA-13	39.72				V		90		wh mi		UN		<	7			
BHUA-13	39.79				hJ		40		wh mi		PR		<	12			
BHUA-13	39.84				hJ		30				PR						
BHUA-13	39.87				hJ		80				PR						
BHUA-13	39.91				hJ		25				UN						
BHUA-13	39.95				hJ		90				UN						
BHUA-13	40.11				hJ		90				UN						
BHUA-13	40.13				hJ		30				PR						
BHUA-13	40.14				hJ		80				PR						
BHUA-13	40.18				hJ		10				UN						
BHUA-13	40.19				hJ		60				UN						
BHUA-13	40.20				V		65		wh mi		UN		<	3			
BHUA-13	40.24				hJ		65		wh mi		UN						
BHUA-13	40.25				hJ		50				PR						
BHUA-13	40.28				V		20		wh mi		PR		<	10			
BHUA-13	40.31				hJ		50				ST						
BHUA-13	40.38				hJ		80				PR						
BHUA-13	40.40				hJ		30				PR						
BHUA-13	40.45				hJ		50				PR						
BHUA-13	40.46				V		70		wh mi		UN		<	3			
BHUA-13	40.47				J		5			CN	ST						
BHUA-13	40.48				V		40		wh-mi	SN	PR		<	3			

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Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BHUA-13
Defects List

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
BHUA-13	40.51				V		20		wh-mi	SN	PR		<	3			
BHUA-13	40.55				DB		5			CN	PR	RF					
BHUA-13	40.58				hJ		45			SN	PR						
BHUA-13	40.61				hJ		5			SN	PR						
BHUA-13	40.66				V		30		wh-mi	SN	PR		<	3			
BHUA-13	40.70				hJ		60		wh-mi	SN	PR		<	3			
BHUA-13	40.80				hJ		30		wh-mi	SN	PR		<	10			
BHUA-13	40.81	40.83			hJ	x2	40		wh mi		PR		<	3			
BHUA-13	40.84				hJ		40			SN	PR						
BHUA-13	40.88				V		30		gn wh mi	SN	PR		<	5			
BHUA-13	40.90				hJ		45		wh-mi	SN	UN		<	5			
BHUA-13	40.92				hJ		40		wh-mi	SN	UN		<	3			
BHUA-13	40.95				hJ		90		wh mi		PR		<	2			
BHUA-13	40.97	40.98			hJ	x2	30				PR						
BHUA-13	40.99				V		30		wh-mi	SN	PR		<	2			
BHUA-13	41.04				hJ		20		wh-mi	SN	PR		<	15			
BHUA-13	41.08				hJ		40		wh mi		UN		<	3			
BHUA-13	41.15				hJ	x2	40		wh-mi	SN	PR		<	4			
BHUA-13	41.19				V		70		gn wh mi	SN	UN		<	40			
BHUA-13	41.23				hJ		45				PR						
BHUA-13	41.28				V		40		wh mi		IR		<	5			
BHUA-13	41.33				hJ		75				PR		<	3			
BHUA-13	41.35				hJ		30		wh mi		PR		<	3			
BHUA-13	41.35	41.63			hJ	x2	30				PR						
BHUA-13	41.40				hJ		80				PR						
BHUA-13	41.43				V		40			SN	PR		<	3			
BHUA-13	41.46				V		25		gn mi	SN	PR		<	2			
BHUA-13	41.52				hJ		60			SN	PR						
BHUA-13	41.59				hJ		50			SN	PR						
BHUA-13	41.71	41.73			hJ	x2	25			SN	PR						
BHUA-13	41.76				V		20			SN	PR						
BHUA-13	41.81				hJ		10			SN	PR						
BHUA-13	41.85				V		45		pl gn mi	SN	PR		<	10			
BHUA-13	41.88				J		10			CN	PR	RF					
BHUA-13	41.95				V		70		pl gn wh mi		UN						
BHUA-13	42.05				J		30			CN	PR	RF					
BHUA-13	42.10				hJ		45				PR						
BHUA-13	42.18				V		45		wh-mi	SN	PR		<	2			
BHUA-13	42.24				hJ		25		wh-mi	SN	PR		<	3			
BHUA-13	42.29				hJ		20		wh-mi	SN	PR		<	3			
BHUA-13	42.33				hJ		50			SN	PR						
BHUA-13	42.36				V		40		wh-mi	SN	UN		<	7			
BHUA-13	42.38				hJ		40			SN	PR						
BHUA-13	42.47	42.48			hJ	x4	40			SN	PR						
BHUA-13	42.49				V		60		gn mi	SN	PR		<	4			
BHUA-13	42.60				hJ		40			SN	PR						
BHUA-13	42.63				J		40			CN	PR	RF					
BHUA-13	43.05				hJ		50				PR						
BHUA-13	43.15				hJ		25				UN						
BHUA-13	43.22				hJ		30				PR						
BHUA-13	43.33				V		50		wh mi		UN		<	3			
BHUA-13	43.37				hJ		90		yl mi		UN		<	4			
BHUA-13	43.38				hJ		50		yl mi		UN		<	3			
BHUA-13	43.41	43.42			hJ	x2	25		yl mi		UN		<	3			
BHUA-13	43.45				V		40		wh mi		IR		<	25			
BHUA-13	43.46				J		20			CN	ST	RF					
BHUA-13	43.56				J		10			CN	ST	RF					
BHUA-13	43.61				V		85		wh mi		UN		<	4			
BHUA-13	43.65				V		60		wh mi		UN		<	4			
BHUA-13	43.71				hJ		90		yl mi		UN		<	3			
BHUA-13	43.82				hJ		80		yl mi		UN		<	3			
BHUA-13	43.92				hJ		50		wh mi		PR		<	1			
BHUA-13	43.97	43.99			hJ	x2	45		wh mi		PR		<	10			
BHUA-13	44.07				V		80		wh mi		UN		<	5			
BHUA-13	44.09	44.11			hJ		90		wh mi		UN		<	5			
BHUA-13	44.44				hJ		45				PR						
BHUA-13	44.46				hJ		30				PR						
BHUA-13	44.53	44.60			V	x2	70				UN		<	4			
BHUA-13	44.55				hJ		80		yl mi		UN		<	30			
BHUA-13	44.63				hJ		90		wh mi		UN		<	3			
BHUA-13	44.66				V		60		wh mi		UN		<	3			
BHUA-13	44.72				hJ		65		bk whi mi		UN		<	15			
BHUA-13	44.76				V		50		wh mi		UN		<	20			
BHUA-13	44.80				hJ		70		wh mi		PR		<	20			
BHUA-13	44.83				hJ		80		wh mi		PR		<	4			
BHUA-13	44.85				V		90		wh mi		PR		<	3			
BHUA-13	44.86				hJ		70		wh mi		PR		<	4			
BHUA-13	44.89				hJ		60				PR						
BHUA-13	44.90				hJ		40				PR						

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Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BHUA-13
Defects List

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
BHUA-13	44.96	44.99			V	x3	55		wh mi		PR		<	4			
BHUA-13	45.03				hJ		90		wh mi		PR		<	5			
BHUA-13	45.25				hJ		70		wh mi		UN		<	10			
BHUA-13	45.32				hJ		50				PR						
BHUA-13	45.45				J		5			CN	UN	RF					
BHUA-13	45.48				hJ		40				PR						
BHUA-13	45.52				V		50		yl mi		PR		<	5			
BHUA-13	45.58				V		20		wh mi		PR		<	20			
BHUA-13	45.60				hJ		20				PR						
BHUA-13	45.63				hJ		70				UN						
BHUA-13	45.65				V		10		wh mi		PR		<	4			
BHUA-13	45.73				hJ		50				UN						
BHUA-13	45.77				hJ		40				PR						
BHUA-13	45.79	45.90			V	x2	40		wh mi		UN		<	4			
BHUA-13	45.80				hJ		30		yl mi		UN		<	5			
BHUA-13	45.84				hJ		20		wh mi		PR		<	10			
BHUA-13	45.88				hJ		40				PR						
BHUA-13	45.92				hJ		10				PR						
BHUA-13	45.95				hJ		65				PR						
BHUA-13	45.97				hJ		80				PR						
BHUA-13	46.01				V		30		wh mi		PR		<	3			
BHUA-13	46.04				hJ		40		wh mi		PR		<	5			
BHUA-13	46.08				hJ		60				PR						
BHUA-13	46.17				hJ		5				PR						
BHUA-13	46.19				J		10				PR	RF					
BHUA-13	46.25	46.30			V	x2	20		wh mi		PR						
BHUA-13	46.36				hJ		70				PR						
BHUA-13	46.42	46.44			hJ	x2	20				PR						
BHUA-13	46.57				V		90		wh mi		UN		<	3			
BHUA-13	46.60				hJ		40				UN						
BHUA-13	46.66				hJ		80				PR						
BHUA-13	46.76	46.83			V	x2	75		yl mi		UN		<	5			
BHUA-13	46.91	46.92			hJ	x2	10				UN						
BHUA-13	46.94	47.03			hJ	x3	30				UN						
BHUA-13	47.12	47.13			hJ	x11	10				UN						
BHUA-13	47.14				V		70		gn yl mi		IR		<	7			
BHUA-13	47.22				V		80		gn yl mi		IR		<	10			
BHUA-13	47.30	47.32			hJ		30				IR		<	5			
BHUA-13	47.38				hJ		25		yl mi		PR		<	7			
BHUA-13	47.49				hJ		50				PR						
BHUA-13	47.59	47.60			V	x2	80		yl mi		PR		<	3			
BHUA-13	47.68	47.89			hJ	x2	80				PR						
BHUA-13	47.92				hJ		40				PR						
BHUA-13	47.98	47.99			V	x2	5		wh mi		PR		<	1			
BHUA-13	48.05				J		10			CN	ST	RF					
BHUA-13	48.12	48.54			hJ	x3	10				PR						
BHUA-13	48.58				V		5		wh mi		PR		<	4			
BHUA-13	48.66				J		5				PR	RF					
BHUA-13	48.75	48.75			hJ	x3	20				PR						
BHUA-13	48.96				V		5		wh mi		PR		<	4			
BHUA-13	49.05				hJ		10		wh mi		UN		<	4			
BHUA-13	49.09				hJ		10				PR						
BHUA-13	49.10				hJ		20				PR						
BHUA-13	49.26				hJ		30				PR						
BHUA-13	49.55				V		20		wh mi		PR		<	3			
BHUA-13	49.63				J		35			CN	ST	RF					
BHUA-13	49.84				hJ		60				PR						
BHUA-13	49.96				J		5			CN	PR	RF					
BHUA-13	50.16				hJ		10				PR						
BHUA-13	50.18				V		40		wh mi		UN		<	4			
BHUA-13	50.25				hJ		50				UN						
BHUA-13	50.26				V		50		yl mi		UN		<	5			
BHUA-13	50.27				hJ		10		yl mi		PR		<	3			
BHUA-13	50.31	50.32			hJ	x2	30		yl mi		PR		<	5			
BHUA-13	50.33				hJ		10				UN						
BHUA-13	50.34				hJ		75				CU						
BHUA-13	50.35				hJ		0				IR						
BHUA-13	50.36				V		0		wh mi		UN		<	7			
BHUA-13	50.39				hJ		5				UN						
BHUA-13	50.41				V		5		yl mi		IR		<	10			
BHUA-13	50.45				hJ		40				UN						
BHUA-13	50.46				V		70		yl mi		IR		<	5			
BHUA-13	50.55				hJ		40				PR						
BHUA-13	50.61				hJ		60				UN						
BHUA-13	50.65				hJ		40				IR						
BHUA-13	50.67				V		20		yl mi		PR		<	3			
BHUA-13	50.70				hJ		80				UN						
BHUA-13	50.86				hJ		60				PR						
BHUA-13	50.90				hJ		50				PR						

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Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BHUA-13
Defects List

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
BHUA-13	50.92				J		50			CN	PR	RF					
BHUA-13	51.05				J		40			CN	ST	RF					
BHUA-13	51.08				V		70		yl mi		PR		<	4			
BHUA-13	51.12				V		65		yl mi		PR		<	4			
BHUA-13	51.15				hJ		70				PR						
BHUA-13	51.16				hJ		80				IR						
BHUA-13	51.19				hJ		30				IR						
BHUA-13	51.22				V		0		yl mi		IR		<	10			
BHUA-13	51.25				hJ		50				PR						
BHUA-13	51.28				hJ		90				UN						
BHUA-13	51.29				hJ		30				PR						
BHUA-13	51.32				V		40		yl mi		IR		<	3			
BHUA-13	51.36				hJ		5				IR						
BHUA-13	51.43				hJ		40				UN						
BHUA-13	51.44	51.46			hJ	x3	5				PR						
BHUA-13	51.47				V		5		yl mi		PR		<	20			
BHUA-13	51.50				hJ		20		yl bk gn mi		PR		<	15			
BHUA-13	51.52				hJ		30				PR		<	4			
BHUA-13	51.55				V		70				UN		<	3			
BHUA-13	51.57				hJ		90				PR						
BHUA-13	51.62				hJ		10				PR						
BHUA-13	51.64				hJ		70				PR						
BHUA-13	51.77				hJ		40				PR						
BHUA-13	51.84				V		35				PR						
BHUA-13	51.89				V		90		yl mi		UN		<	4			
BHUA-13	51.94				hJ		70				PR						
BHUA-13	51.95	51.97			hJ	x2	90				PR						
BHUA-13	51.98				hJ		70				PR						
BHUA-13	52.05				V		50		wh mi		PR		<	5			
BHUA-13	52.13				V		90		wh mi		PR		<	3			
BHUA-13	52.25	52.27			hJ	x2	85		wh mi		UN		<	3			
BHUA-13	52.29				hJ		30				PR						
BHUA-13	52.35	52.38			hJ	x2	40				UN						
BHUA-13	52.40				V		80		wh pk gn mi		UN		<	15			
BHUA-13	52.46				hJ		50		yl mi		UN		<	30			
BHUA-13	52.50				hJ		50				PR						
BHUA-13	52.61				hJ		30				PR						
BHUA-13	52.64				hJ		40				PR						
BHUA-13	52.68				hJ		30				PR						
BHUA-13	52.76				hJ		10				PR						
BHUA-13	52.87	52.93			J	x2	10			CN	PR	RF					
BHUA-13	52.90				hJ		90				UN						
BHUA-13	53.00				J		20			CN	UN	SM					
BHUA-13	53.01				hJ		40				PR						
BHUA-13	53.03				hJ		90				PR						
BHUA-13	53.08				V		30		yl mi		PR		<	3			
BHUA-13	53.13	53.56			hJ	x10	30				PR						
BHUA-13	53.17				V		20		yl mi		PR		<	4			
BHUA-13	53.20				hJ		15				PR						
BHUA-13	53.22				V		90		wh mi		UN		<	3			
BHUA-13	53.24				V		70		wh mi		PR		<	3			
BHUA-13	53.57				hJ		60				UN						
BHUA-13	53.65	53.67			hJ	x7	50				PR						
BHUA-13	53.66				hJ		20				PR						
BHUA-13	53.72	53.79			hJ	x7	70				UN						
BHUA-13	53.81				hJ		25				PR						
BHUA-13	53.86	53.97			hJ	x3	40				PR						
BHUA-13	53.92	53.96			hJ		10				UN						
BHUA-13	54.02				hJ		30				PR						
BHUA-13	54.15	55.30															
BHUA-13	54.24				V		70		yl mi		UN		<	4			
BHUA-13	54.28				hJ		30		gn yl mi		IR		<	8			
BHUA-13	54.44				J		10			CN	PR	SM					
BHUA-13	54.47				V		20		pk		PR		<	4			
BHUA-13	54.54				V		80		pk yl mi		UN		<	5			
BHUA-13	54.57				hJ		80		yl mi		UN						
BHUA-13	54.58				V		60		gn yl mi		UN		<	5			
BHUA-13	54.69				V		85		yl mi		IR		<	3			
BHUA-13	54.71				hJ		50				PR						
BHUA-13	54.78				V		75		yl mi		IR		<	4			
BHUA-13	54.84				hJ		20		yl mi		IR		<	3			
BHUA-13	54.88				J		20		bk mi	SN	PR	SM					
BHUA-13	54.95	55.08			V	x2	90		yl mi		PR		<	3			
BHUA-13	55.08				hJ		65				PR						
BHUA-13	55.14				J		20			CN	UN	RF					
BHUA-13	55.16				V		60		yl mi		UN		<	4			
BHUA-13	55.19				hJ		20		yl mi		PR		<	6			
BHUA-13	55.21	55.23			Vs		45		yl mi		UN		<	2			
BHUA-13	55.22				V		90		yl mi		UN		<	2			

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Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BHUA-13
Defects List

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
BHUA-13	55.24				hJ		10				UN						
BHUA-13	55.29				hJ		40				PR						
BHUA-13	55.32				hJ		80				PR						
BHUA-13	55.42				hJ		50				PR						
BHUA-13	55.44				hJ		80				PR						
BHUA-13	55.51				V		30		yl mi		PR		<	5			
BHUA-13	55.59				hJ		75		gn mi		UN		<	10			
BHUA-13	55.67				hJ		55		gn yl mi		PR						
BHUA-13	55.72				hJ		30				PR						
BHUA-13	55.74				V		10		yl mi		PR		<	12			
BHUA-13	55.80				hJ		90				PR						
BHUA-13	55.91				J		5			CN	PR	SM					
BHUA-13	55.98				hJ		30				PR						
BHUA-13	56.02				hJ		50				PR						
BHUA-13	56.05				hJ		90				PR						
BHUA-13	56.06				hJ		70				PR						
BHUA-13	56.10	56.13			Vs	x2	50		wh pk mi		PR		<	40			
BHUA-13	56.12				V		20		yl mi		PR		<	5			
BHUA-13	56.13				hJ		90				PR						
BHUA-13	56.19				hJ		55				PR						
BHUA-13	56.21				hJ		10				PR						
BHUA-13	56.30				hJ		90				PR						
BHUA-13	56.31				hJ		20				PR						
BHUA-13	56.33	56.37			hJs	x2	60				PR						
BHUA-13	56.36	56.38			hJs	x2	70				PR						
BHUA-13	56.40				hJ		30				PR						
BHUA-13	56.46				J		20			CN	PR	SM					
BHUA-13	56.52	56.59			hJs	x2	80				PR						
BHUA-13	56.61				hJ		20				PR						
BHUA-13	56.62				J		25			CN	PR	SM					
BHUA-13	56.63				V		20		yl mi		PR		<	3			
BHUA-13	56.77	56.78			hJs		40				PR						
BHUA-13	56.79				hJ		90				PR						
BHUA-13	56.80	57.00			AZ												
BHUA-13	56.82				hJ		90				UN						
BHUA-13	56.91				V		80		yl mi		IR		<	80			
BHUA-13	57.04				hJ		80		yl mi		PR		<	3			
BHUA-13	57.05				hJ		20		yl gn mi		PR		<	3			
BHUA-13	57.06				J		10			CN	ST	RF					
BHUA-13	57.12	57.16			J	x2	10			CN	ST	RF					
BHUA-13	57.21				Vs		65		yl gn mi		UN		<	4			
BHUA-13	57.22				V		55		yl gn mi		UN		<	3			
BHUA-13	57.23				V		60		yl mi		UN		<	3			
BHUA-13	57.26	57.35			hJ	x6	5				PR						
BHUA-13	57.28				Vs		75		yl mi		PR		<	3			
BHUA-13	57.36				V		25		yl mi		UN		<	3			
BHUA-13	57.45				hJ		25		yl mi		IR		<	3			
BHUA-13	57.46				hJ		90		yl mi		UN		<	3			
BHUA-13	57.54	57.57			hJ	x3	65				UN						
BHUA-13	57.58				hJ		40				PR						
BHUA-13	57.64				J		20			CN	PR	SM					
BHUA-13	57.65				hJ		40				PR						
BHUA-13	57.70	57.71			hJ	x2	60				PR						
BHUA-13	57.74				Vs		30		yl gn mi		PR		<	3			
BHUA-13	57.76				V		45		gn yl mi		UN		<	3			
BHUA-13	57.80				hJ		10		gn yl mi		PR		<	3			
BHUA-13	57.83				hJ		60		pk mi		PR		<	10			
BHUA-13	57.88				hJ		40				PR						
BHUA-13	57.91				hJ		5				PR						
BHUA-13	57.95				hJ		30				PR						
BHUA-13	58.03				hJ		10				PR						
BHUA-13	58.05				V		90				PR		<	3			
BHUA-13	58.07				hJ		55				PR						
BHUA-13	58.09				hJ		5				PR						
BHUA-13	58.10	58.11			hJ	x2	60				PR						
BHUA-13	58.16				hJs		50				PR						
BHUA-13	58.18	58.20			hJ	x2	70				UN						
BHUA-13	58.24				hJs		10				PR						
BHUA-13	58.27				hJ		20				UN						
BHUA-13	58.30				hJ		40				UN						
BHUA-13	58.33				V		85				UN						
BHUA-13	58.42	58.49			hJ	x5	30				PR						
BHUA-13	58.53				hJs		20				UN						
BHUA-13	58.54	58.55			V	x2	75		yl mi		UN		<	3			
BHUA-13	58.57				Vs		40		yl mi		UN						
BHUA-13	58.59				V		85		yl mi		UN		<	3			
BHUA-13	58.60	58.90			hJ		15				PR						
BHUA-13	58.67				AZ												
BHUA-13	58.73				hJ		65		yl mi		UN		<	3			

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Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BHUA-13
Defects List

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
BHUA-13	58.74				hJ		70		yl mi		PR						
BHUA-13	58.78	58.81			hJ	x2	40		yl mi		UN		<	3			
BHUA-13	58.83				Vs		50		yl mi		UN		<	6			
BHUA-13	58.86	58.87			hJ	x2	60		yl mi		UN		<	3			
BHUA-13	58.88				Vs		40		yl mi		PR		<	2			
BHUA-13	59.07				J		5			CN	PR	SM					
BHUA-13	59.11				hJ		40		yl mi		IR		<	10			
BHUA-13	59.13	59.20			hJ	x3	30				PR						
BHUA-13	59.22	59.43			hJs	x4	10				PR						
BHUA-13	59.29				hJs		50				PR						
BHUA-13	59.34				V		40				PR						
BHUA-13	59.37				hJ		20		yl mi		UN		<	7			
BHUA-13	59.46	59.52			hJ	x2	20				UN						
BHUA-13	59.53				Vs		70		pk mi		PR		<	15			
BHUA-13	59.54				V		40										
BHUA-13	59.55				hJ		10				UN						
BHUA-13	59.57				V		20		yl gn mi		UN		<	2			
BHUA-13	59.65				hJ		30		yl gn mi		UN		<	3			
BHUA-13	59.72				hJ		90				PR						
BHUA-13	59.73				hJ		40				PR						
BHUA-13	59.76				hJ		30				PR						
BHUA-13	59.82	59.87			J	x2	0			CN	PR	RF					
BHUA-13	59.89				hJs		50				PR						
BHUA-13	59.94				hJ		10				PR						
BHUA-13	60.04	60.10			hJ	x4	80				PR						
BHUA-13	60.17				hJs		70				PR						
BHUA-13	60.21	60.22			hJ	x2	40				UN						
BHUA-13	60.27				hJs		60				PR						
BHUA-13	60.43				hJ		40				PR						
BHUA-13	60.46	60.51			V	x2	60		yl mi		PR		<	3			
BHUA-13	60.52				hJs		60				PR						
BHUA-13	60.53				V		5		yl mi		PR		<	3			
BHUA-13	60.56				V		15		yl mi		PR		<	3			
BHUA-13	60.62				hJ		20				PR						
BHUA-13	60.66				hJ		60				PR						
BHUA-13	60.75	60.93			hJ	x3	40				PR						
BHUA-13	60.80				Vs		60		pk mi		PR		<	10			
BHUA-13	60.84				hJ		60				PR						
BHUA-13	60.97				V		50		yl mi		UN		<	3			
BHUA-13	61.10				hJ		30				UN						
BHUA-13	61.17				hJ		90				PR						
BHUA-13	61.23				hJ		40				PR						
BHUA-13	61.35				hJ		90				PR						
BHUA-13	61.38				hJ		20				PR						
BHUA-13	61.41				J		40			CN	ST	RF					
BHUA-13	61.44				J		75			CN	ST	RF					
BHUA-13	61.50	61.53			hJ	x4	10				PR						
BHUA-13	61.51				Vs		70				UN						
BHUA-13	61.60				J		60			CN	PR	RF					
BHUA-13	61.66				V		80		yl mi		UN		<	6			
BHUA-13	61.72				hJ		40				UN						
BHUA-13	61.78				hJ		90				un						
BHUA-13	61.85				hJ		70				PR						
BHUA-13	61.87				hJ		70				PR						
BHUA-13	61.91				hJ		50				UN						
BHUA-13	61.93				hJ		90				PR						
BHUA-13	61.94				hJ		70				PR						
BHUA-13	62.02	62.05			J	x3	90			CN	UN	RF					
BHUA-13	62.04				hJs		20				PR						
BHUA-13	62.10				hJ		60				PR						
BHUA-13	62.11	62.12			hJ	x2	60				PR						
BHUA-13	62.13	62.17			hJs		40				PR						
BHUA-13	62.21				V		30		pk mi		PR		<	10			
BHUA-13	62.22				hJ		60				UN						
BHUA-13	62.29				V		30				IR		<	3			
BHUA-13	62.33				V		40				UN		<	3			
BHUA-13	62.34				hJ		90				UN						
BHUA-13	62.37				hJ		70				PR						
BHUA-13	62.39				hJ		80				PR						
BHUA-13	62.43				V		80				IR						
BHUA-13	62.48				hJ		80				PR						
BHUA-13	62.49				J		70			CN	PR	RF					
BHUA-13	62.50				V		40				UN						
BHUA-13	62.52				hJ		40				PR						
BHUA-13	62.54				hJ		25				PR						
BHUA-13	62.55	62.58			hJ	x6	45				PR						
BHUA-13	62.60	62.66			Vs	x5	5				UN						
BHUA-13	62.69	62.74			hJs	x2	15				ST						
BHUA-13	62.84				Vs				yl mi		UN		<	10			

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Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BHUA-13
Defects List

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
BHUA-13	62.90				hJ		84				PR						
BHUA-13	62.91	62.93			hJ	x2	90				PR						
BHUA-13	62.95				hJs		50				UN						
BHUA-13	62.97	63.03			hJ	x2	60				PR						
BHUA-13	63.05				Vs		40		yl gn mi		PR		<	10			
BHUA-13	63.07				J		40			CN	PR	RF					
BHUA-13	63.08				hJ		40				PR						
BHUA-13	63.10				J		25			CN	ST	RF					
BHUA-13	63.11				hJ		90				UN						
BHUA-13	63.15				hJ		10				PR						
BHUA-13	63.16	63.17			hJ	x2	10				PR						
BHUA-13	63.19				hJs		70				PR						
BHUA-13	63.20				V		80		wh mi		PR		<	5			
BHUA-13	63.24				hJ		30				UN						
BHUA-13	63.26				hJ		60				PR						
BHUA-13	63.28				hJ		45				UN						
BHUA-13	63.29				hJ		90				PR						
BHUA-13	63.34				hJ		40				UN						
BHUA-13	63.37	63.39			V	x2	40		wh mi		UN		<	4			
BHUA-13	63.38	63.40			Vs	x2	20		wh mi		UN		<	4			
BHUA-13	63.42	63.50			Vs	x8	40		wh mi		UN		<	4			
BHUA-13	63.51	63.54			Vs	x4	30		wh mi		UN		<	4			
BHUA-13	63.55	63.58			Vs	x3	20		wh mi		UN		<	3			
BHUA-13	63.59				Vs		30		wh mi		UN		<	3			
BHUA-13	63.61				J		30			CN	UN	RF					
BHUA-13	63.72				hJ		10				PR						
BHUA-13	63.78				hJ		75				UN						
BHUA-13	63.83				hJ		70				PR						
BHUA-13	63.88				hJ		70				UN						
BHUA-13	63.92				hJ		10				PR						
BHUA-13	63.93	63.96			V	x2	90		wh mi		PR		<	3			
BHUA-13	63.95				hJ		15		wh mi		PR		<	3			
BHUA-13	63.97				hJ		90		wh mi		PR		<	3			
BHUA-13	63.99				hJ		40		wh mi		IR		<	5			
BHUA-13	64.02				V		15		wh mi		PR		<	3			
BHUA-13	64.03				hJ		80		wh mi		UN		<	3			
BHUA-13	64.06				V		20		wh mi		UN		<	5			
BHUA-13	64.11				hJ		40		wh mi		UN		<	3			
BHUA-13	64.12				hJ		90		wh mi		UN		<	10			
BHUA-13	64.13				V		90		wh yl mi		UN		<	10			
BHUA-13	64.18				V		50		wh mi		PR		<	5			
BHUA-13	64.36				hJ		20				PR						
BHUA-13	64.38	64.44			V	x2	70		wh mi		UN		<	20			
BHUA-13	64.46				hJ		55				UN						
BHUA-13	64.48				hJ		40				UN						
BHUA-13	64.49				V		20		or mi		UN		<	10			
BHUA-13	64.50				hJ		50				PR						
BHUA-13	64.51				V		90		wh mi		IR		<	25			
BHUA-13	64.60				V		80		wh mi		UN		<	4			
BHUA-13	64.65	64.69			V	x2	40		wh mi		PR		<	3			
BHUA-13	64.72				hJ		30				UN						
BHUA-13	64.80				V		90		wh mi		UN		<	10			
BHUA-13	64.83				V		60		wh mi		UN		<	10			
BHUA-13	64.85				hJ		40				PR						
BHUA-13	65.01				hJ		80				UN						
BHUA-13	65.02				hJ		50				UN						
BHUA-13	65.09				hJ		30		wh mi		UN						
BHUA-13	65.14				V		40		wh mi		UN		<	12			
BHUA-13	65.16				V		50				PR		<	4			
BHUA-13	65.18				J		30			CN	PR	RF					
BHUA-13	65.30				V		40		wh mi		IR		<	10			
BHUA-13	65.32				hJ		50				PR						
BHUA-13	65.35				hJ		90				PR						
BHUA-13	65.36				V		90		wh mi		IR		<	10			
BHUA-13	65.38				V		70		wh mi		IR		<	10			
BHUA-13	65.40				V		40		wh mi		UN		<	5			
BHUA-13	65.41				hJ		40				PR						
BHUA-13	65.44				V		90		wh mi		UN		<	5			
BHUA-13	65.46				hJ		40				PR						
BHUA-13	65.47				V		40		wh mi		UN		<	3			
BHUA-13	65.49				V		40		wh mi		UN		<	10			
BHUA-13	65.51	65.53			hJ	x2	80				PR						
BHUA-13	65.55				V		60		wh mi		PR		<	12			
BHUA-13	65.59				hJ		80				PR						
BHUA-13	65.60				V		30		yl mi		PR		<	5			
BHUA-13	65.63				hJ		90				PR						
BHUA-13	65.64	65.65			hJ	x2	60				PR						
BHUA-13	65.67				hJ		40				UN						
BHUA-13	65.69				hJ		10				PR						

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Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BHUA-13
Defects List

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
BHUA-13	65.71				hJ		30				PR						
BHUA-13	65.73				hJ		90				PR						
BHUA-13	65.76				V		20		yl mi		UN		<	6			
BHUA-13	65.78				V		20		yl mi		UN		<	6			
BHUA-13	65.81				V		40		wh mi		PR		<	7			
BHUA-13	65.89				hJ		50				PR						
BHUA-13	65.90				hJ		60				PR						
BHUA-13	65.95				V		10		wh mi		UN		<	50			
BHUA-13	66.02				hJ		70		wh mi		UN		<	3			
BHUA-13	66.03				J		10			CN	PR	RF					
BHUA-13	66.05	66.08			hJ	x3	40				PR						
BHUA-13	66.10				hJ		90				UN						
BHUA-13	66.14				V		90		wh mi		IR		<	5			
BHUA-13	66.17	66.18			hJ	x2	20		wh mi		UN		<	5			
BHUA-13	66.19	66.20			hJ	x2	90		wh mi		UN		<	5			
BHUA-13	66.22				V		50		wh mi		IR		<	10			
BHUA-13	66.23	66.26			hJ	x2	60		wh mi		UN		<	3			
BHUA-13	66.31				V		90		wh mi		UN		<	3			
BHUA-13	66.35				hJ		70		yl mi		PR		<	60			
BHUA-13	66.40				hJ		40				PR						
BHUA-13	66.44	66.54			hJ		50				PR						
BHUA-13	66.66				hJ	x3	60				PR						
BHUA-13	66.75				V		85		wh mi		PR		<	15			
BHUA-13	66.83				hJ		50				PR						
BHUA-13	66.84	66.86			hJ		50				PR						
BHUA-13	66.90				hJ	x3	20				PR						
BHUA-13	67.04				J		30			CN	PR	RF					
BHUA-13	67.08				hJ		30				PR						
BHUA-13	67.10	67.15			hJ	x2	30				PR						
BHUA-13	67.12				V		40		wh mi		PR		<	3			
BHUA-13	67.16	67.18			hJ	x2	50		yl mi		PR						
BHUA-13	67.20				hJ		10		yl mi		PR		<	4			
BHUA-13	67.25				hJ		70		yl mi		PR		<	5			
BHUA-13	67.27				hJ		10		yl mi		PR		<	4			
BHUA-13	67.30				hJ		70		yl mi		PR		<	5			
BHUA-13	67.38				hJ		90		yl mi		UN		<	4			
BHUA-13	67.45				V		30		yl mi		PR		<	7			
BHUA-13	67.53				hJ		50				PR						
BHUA-13	67.55				hJ		20				PR						
BHUA-13	67.56				hJ		30				PR						
BHUA-13	67.59	67.62			V		20		wh mi		PR		<	6			
BHUA-13	67.67				V		40		wh mi		PR		<	10			
BHUA-13	67.70				hJ		30				PR						
BHUA-13	67.75				hJ		20				PR						
BHUA-13	67.81				hJ		80				PR						
BHUA-13	67.96				V		30		wh mi		PR		<	7			
BHUA-13	68.03	68.06			hJ	x2	60		wh or yl mi		UN		<	10			
BHUA-13	68.07				hJ		20				PR						
BHUA-13	68.10				V		10		wh mi		PR		<	5			
BHUA-13	68.14				hJ		20		yl mi		PR		<	5			
BHUA-13	68.21				hJ		50		yl mi		PR		<	4			
BHUA-13	68.30	68.38			V	x3	60		yl mi		PR		<	5			
BHUA-13	68.46				hJ		50				PR						
BHUA-13	68.52	68.54			hJ		30				PR						
BHUA-13	68.56				hJ		40				PR						
BHUA-13	68.57				V		70		wh mi		IR		<	20			
BHUA-13	68.75				V		40		wh mi		PR		<	40			
BHUA-13	68.76				J		80			CN	UN	RF					
BHUA-13	68.89				hJ		60				PR						
BHUA-13	68.91	68.96			J	x2	60			CN	PR	RF					
BHUA-13	69.07				V		20		wh mi		PR		<	10			
BHUA-13	69.08				hJ		30		wh mi		PR		<	7			
BHUA-13	69.12				hJ		90		wh mi		PR		<	6			
BHUA-13	69.16				V		70		wh mi		UN		<	10			
BHUA-13	69.17				hJ		50				PR						
BHUA-13	69.19				hJ		20				PR						
BHUA-13	69.20				V		50		wh or-mi		CU		<	15			
BHUA-13	69.25				hJ		20		wh mi		UN		<	7			
BHUA-13	69.30				V		85		wh mi		UN		<	10			
BHUA-13	69.31				hJ		10				PR						
BHUA-13	69.35				V		60		wh mi		PR		<	8			
BHUA-13	69.42				hJ		50				PR						
BHUA-13	69.46				V		90		yl mi		UN		<	12			
BHUA-13	69.53				hJ		10				PR						
BHUA-13	69.57				V		70		wh mi		PR		<	5			
BHUA-13	69.66				hJ		30				PR						
BHUA-13	69.70				V		80		wh mi		UN		<	10			
BHUA-13	69.72	69.74			hJ	x2	70		wh mi		UN		<	7			
BHUA-13	69.75				V		30		wh mi		UN		<	10			

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Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BHUA-13
Defects List

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
BHUA-13	69.79				hJ		90		wh mi		UN		<	10			
BHUA-13	69.81				V		20		wh mi		UN		<	15			
BHUA-13	69.84				hJ		70				PR						
BHUA-13	69.85				CO		70				UN						
BHUA-13	69.86				hJ		30				PR						
BHUA-13	69.90				hJ		60				PR						
BHUA-13	69.94				hJ		90		wh mi		UN		<	3			
BHUA-13	69.95				hJ		90				PR						
BHUA-13	69.98				hJ		70				PR						
BHUA-13	70.03				hJ		50				PR						
BHUA-13	70.07				hJ		90				PR						
BHUA-13	70.10	70.14			hJ	x2	65				PR						
BHUA-13	70.17				hJ		70				PR						
BHUA-13	70.23				hJ		90				PR						
BHUA-13	70.25				hJ		80				PR						
BHUA-13	70.26				V	x2	90		wh mi		PR		<	10			
BHUA-13	70.27				hJ		70				PR						
BHUA-13	70.29				hJ		50				PR						
BHUA-13	70.34				J		90			CN	ST	RF					
BHUA-13	70.39				J		30			CN	ST	RF					
BHUA-13	70.40	70.44			hJ		10				PR						
BHUA-13	70.42				V		70		wh mi		PR		<	20			
BHUA-13	70.47	70.49			hJ	x2	20				PR						
BHUA-13	70.54				J		20			CN	PR	SM					
BHUA-13	70.63				hJ		70				PR						
BHUA-13	70.70				J		60				PR						
BHUA-13	70.77				J		60				PR						
BHUA-13	70.87	70.89			V	x3	30		wh mi		UN		<	5			
BHUA-13	70.95				hJ		90				PR						
BHUA-13	71.03				J		30			CN	PR	SM					
BHUA-13	71.13				J		80			CN	PR	SM					
BHUA-13	71.35				hJ		60				PR						
BHUA-13	71.36				hJ	x2	5				PR						
BHUA-13	71.40				hJ		5		wh mi		PR		<	3			
BHUA-13	71.42				hJ		20				PR						
BHUA-13	71.50	71.52			hJ	x2	90				PR						
BHUA-13	71.53				hJ		50				UN						
BHUA-13	71.60				V		50		wh mi		UN		<	10			
BHUA-13	71.61				hJ		90				UN						
BHUA-13	71.62				hJ		60				PR						
BHUA-13	71.63				hJ		80				PR						
BHUA-13	71.64				hJ		50				PR						
BHUA-13	71.67				hJ		70				PR						
BHUA-13	71.69				hJ		90				PR						
BHUA-13	71.72				hJ		60				PR						
BHUA-13	71.80				hJ		60				PR						
BHUA-13	71.87				hJ		50				PR						
BHUA-13	71.89				J		20			CN	PR	SM					
BHUA-13	71.94				J		80			CN	PR	SM					
BHUA-13	71.95				hJ		50				UN						
BHUA-13	72.03				hJ		50				UN						
BHUA-13	72.04	72.06			hJ	x3	70				PR						
BHUA-13	72.15				hJ		90				UN						
BHUA-13	72.20	72.23			hJ	x2	50				PR						
BHUA-13	72.23	72.25			hJ	x2	60				PR						
BHUA-13	72.40				V		70		yl mi		UN		<	3			
BHUA-13	72.45				J		30			CN	PR	SM					
BHUA-13	72.46				hJ		70		yl mi		UN		<	10			
BHUA-13	72.50				V		10		yl mi		PR		<	3			
BHUA-13	72.56	72.62			hJ	x2	60				PR						
BHUA-13	72.71				hJ		85				PR						
BHUA-13	72.79				hJ		80				PR						
BHUA-13	72.82	72.83			J	x2	60			CN	PR	RF					
BHUA-13	72.86	72.87			hJ	x2	60				PR						
BHUA-13	72.91				hJ		50				PR						
BHUA-13	72.94				hJ		60				PR						
BHUA-13	72.96	72.97			hJ	x2	40				PR						
BHUA-13	73.02	73.03			hJ	x2	80				PR						
BHUA-13	73.05				hJ		70				PR						
BHUA-13	73.09	73.10			hJ	x2	50				PR						
BHUA-13	73.12				J		20			CN	PR	RF					
BHUA-13	73.13	73.16			hJ	x3	10				PR						
BHUA-13	73.19				hJ		50				PR						
BHUA-13	73.20				hJ		40				PR						
BHUA-13	73.22	73.23			V	x2	50		yl mi		UN		<	5			
BHUA-13	73.26				hJ		50				PR						
BHUA-13	73.27				hJ		20				PR						
BHUA-13	73.29				hJ		15				PR						
BHUA-13	73.32				V		20		yl mi		UN		<	3			

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Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BHUA-13
Defects List

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
BHUA-13	73.34				hJ		5		yl mi		PR		<	2			
BHUA-13	73.38	73.48			V	x3	20		yl mi		PR		<	3			
BHUA-13	73.44				hJ		80				UN						
BHUA-13	73.46				V		40		yl mi		UN		<	4			
BHUA-13	73.60				hJ		20		yl mi		UN		<	10			
BHUA-13	73.62				hJ		30				UN						
BHUA-13	73.70				hJ		20				PR						
BHUA-13	73.74				hJ		90				UN						
BHUA-13	73.77	73.80			V	x3	20		yl mi		PR		<	3			
BHUA-13	73.90				hJ		20				PR						
BHUA-13	73.92	73.94			hJ		20				PR						
BHUA-13	74.02				hJ		30				PR						
BHUA-13	74.06				V		20				UN						
BHUA-13	74.07				hJ		60				PR						
BHUA-13	74.09	74.60			hJ	x2	40				PR						
BHUA-13	74.12				V		40		yl mi		PR		<	3			
BHUA-13	74.16	74.17			hJ	x2	60				PR						
BHUA-13	74.18				hJ		40				PR						
BHUA-13	74.20				CO		60				PR						
BHUA-13	74.30	74.36			V	x4	50		yl or-mi		PR		<	3			
BHUA-13	74.38				V		60		gn mi		PR		<	3			
BHUA-13	74.40	74.42			V		40		gn mi		PR		<	3			
BHUA-13	74.46				hJ		60				PR						
BHUA-13	74.48	74.50			hJ	x2	50				PR						
BHUA-13	74.54				V		20		pk wh mi		PR		<	5			
BHUA-13	74.59	74.80			hJ		30				PR						
BHUA-13	74.62				hJ		20				PR						
BHUA-13	74.69	74.92			hJ	x6	40				PR						
BHUA-13	74.76				hJ		40				PR						
BHUA-13	74.78				hJ		50				PR						
BHUA-13	74.81				V		90		wh mi		PR		<	5			
BHUA-13	74.84				hJ		40		wh mi		UN		<	10			
BHUA-13	74.93				V		30		wh mi		UN		<	5			
BHUA-13	74.96				hJ		30		yl mi		UN		<	3			
BHUA-13	74.97	74.99			V	x2	30		yl pk-mi		UN		<	3			
BHUA-13	75.02				V		40		yl pk-mi		UN		<	3			
BHUA-13	75.03				J		5			CN	UN	RF					
BHUA-13	75.10				V		40		pk-mi		IR		<	10			
BHUA-13	75.13				hJ		30				PR						
BHUA-13	75.15				V		30		wh mi		PR		<	4			
BHUA-13	75.17				hJ		20				PR						
BHUA-13	75.19				hJ		85				PR						
BHUA-13	75.20				V		90		pk-mi		PR		<	10			
BHUA-13	75.21				hJ		20		pk-mi		PR		<	20			
BHUA-13	75.25				hJ		85		pk-mi		PR		<	10			
BHUA-13	75.30				hJ		20				PR						
BHUA-13	75.31				V		5		wh mi		UN		<	5			
BHUA-13	75.37	75.39			hJ	x2	40				UN						
BHUA-13	75.38				V		30		wh mi		UN		<	3			
BHUA-13	75.42				hJ		20		pk wh mi		IR		<	10			
BHUA-13	75.45				hJ		60		wh mi		UN		<	4			
BHUA-13	75.49				hJ		40		pk-mi		UN		<	7			
BHUA-13	75.54				hJ		85		yl mi		PR		<	3			
BHUA-13	75.56				hJ		40		wh mi		PR		<	3			
BHUA-13	75.62				V		50		pk-mi		PR		<	7			
BHUA-13	75.64				hJ		90				UN						
BHUA-13	75.68	75.75			hJ	x5	30				UN						
BHUA-13	75.82				V		50		gn yl mi		UN		<	10			
BHUA-13	75.85				J		40			CN	PR	SM					
BHUA-13	75.89				V		30		gn yl mi		IR		<	20			
BHUA-13	75.90				V		90		gn yl mi		IR		<	10			
BHUA-13	75.91				J		20				PR						
BHUA-13	75.95	75.96			hJ		10				PR						
BHUA-13	75.98				V		40		wh mi		PR		<	15			
BHUA-13	76.03				J		30			CT	PR	RF					
BHUA-13	76.06				V		70		gn mi		PR		<	3			
BHUA-13	76.07	76.11			V	x6	50		gn mi		PR		<	3			
BHUA-13	76.22				J		50		pk mi	CT	PR	RF					
BHUA-13	76.25	76.29			CS		20		angular gravel		PR						
BHUA-13	76.29				J	/CO	40			CN	PR	SM					
BHUA-13	76.34				hJ		70			CN	UN						
BHUA-13	76.36				J		20			CN	PR	SM					
BHUA-13	76.37				V		20		gn mi		UN		<	5			
BHUA-13	76.41				V		80		yl or-mi		UN		<	10			
BHUA-13	76.42				hJ		60				PR						
BHUA-13	76.46				J		30			CN	PR	RF					
BHUA-13	76.48				V		30		wh mi		IR		<	3			
BHUA-13	76.50				hJ		90				UN						
BHUA-13	76.53				V		20		yl mi		PR		<	10			

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Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BHUA-13
Defects List

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
BHUA-13	76.58				J		40			CN	UN	RF					
BHUA-13	76.62	76.63			hJ	x2	80				UN						
BHUA-13	76.65				V		40		gn mi		UN		<	15			
BHUA-13	76.67				hJ		40				PR						
BHUA-13	76.70				hJ		40				PR						
BHUA-13	76.73	76.90			V	x7	20		gy bk-mi		PR		<	3			
BHUA-13	76.95				V		20		wh mi		PR		<	30			
BHUA-13	76.97				V		70		wh mi		PR		<	5			
BHUA-13	77.01	77.03			hJ	x2	50				PR						
BHUA-13	77.04				V		30		wh mi		PR		<	50			
BHUA-13	77.08				hJ		70				UN						
BHUA-13	77.13				hJ		40				PR						
BHUA-13	77.18	77.20			hJ		50				PR						
BHUA-13	77.21				hJ		60				PR						
BHUA-13	77.22				V		20				PR						
BHUA-13	77.28	77.31			hJ	x3	50				PR						
BHUA-13	77.37				hJ		50		wh mi		PR		<	40			
BHUA-13	77.40				V		50		gn mi		PR		<	3			
BHUA-13	77.42				hJ		70		yl mi		PR		<	10			
BHUA-13	77.45				hJ		30		yl mi		PR		<	10			
BHUA-13	77.60				hJ		90		gn mi		UN		<	10			
BHUA-13	77.61				V		85		yl mi		UN		<	10			
BHUA-13	77.72				hJ		30		wh mi		UN		<	15			
BHUA-13	77.81				V		30		yl mi		PR		<	3			
BHUA-13	77.91	77.92			V	x2	80		yl mi		UN		<	3			
BHUA-13	77.92				hJ		70				PR						
BHUA-13	77.97				hJ		50				PR						
BHUA-13	78.03	78.04			V	x2	40		yl mi		PR		<	3			
BHUA-13	78.06				hJ		50				PR						
BHUA-13	78.20				V		75		yl mi		PR		<	3			
BHUA-13	78.26				hJ		50				PR						
BHUA-13	78.28				hJ		65				PR						
BHUA-13	78.29				hJ		20				PR						
BHUA-13	78.38	78.39			hJ	x3	40				PR						
BHUA-13	78.42				hJ		80		yl mi		UN		<	5			
BHUA-13	78.49				hJ		20				PR						
BHUA-13	78.60				hJ		20		bk-mi		UN		<	3			
BHUA-13	78.66				hJ		70				PR						
BHUA-13	78.74				hJ		90				UN						
BHUA-13	78.76				hJ		60				UN						
BHUA-13	78.81				hJ		60		yl mi		IR		<	3			
BHUA-13	78.82				hJ		40				UN						
BHUA-13	78.92				hJ		20		yl mi		UN		<	5			
BHUA-13	79.04				hJ		65		yl mi		UN		<	3			
BHUA-13	79.06				hJ		90		yl mi		UN		<	3			
BHUA-13	79.08	79.16			hJ	x2	50				PR						
BHUA-13	79.14				hJ		70				UN						
BHUA-13	79.24				hJ		60				PR						
BHUA-13	79.25				hJ		90				PR						
BHUA-13	79.33	79.50			hJ	x3	70		bk-mi		UN		<	5			
BHUA-13	79.41				hJ		80		bk-mi		UN		<	5			
BHUA-13	79.52				hJ		80				PR						
BHUA-13	79.53				hJ		70		yl mi		UN		<	3			
BHUA-13	79.59	79.99			hJ	x6	90				PR						
BHUA-13	79.60				hJ		20		wh mi		PR		<	60			
BHUA-13	79.63				hJ		60				PR						
BHUA-13	79.73	79.75			hJ	x2	60		wh mi		PR		<	10			
BHUA-13	79.75				hJ		90		wh mi		PR		<	5			
BHUA-13	79.76				hJ		40				PR						
BHUA-13	79.83				hJ		40		wh mi		UN		<	10			
BHUA-13	79.89				hJ		40				PR						
BHUA-13	79.90	79.94			hJ	x2	60				UN						
BHUA-13	79.96				hJ		70				PR						
BHUA-13	79.99				hJ		40		wh mi		UN		<	4			
BHUA-13	80.04				hJ		60				PR						
BHUA-13	80.05				hJ		70				UN						
BHUA-13	80.06				hJ		80				UN						
BHUA-13	80.09				hJ		40				PR						
BHUA-13	80.29				hJ		40		pk wh mi		UN		<	10			
BHUA-13	80.30				hJ		40				UN						
BHUA-13	80.31	80.32			hJs	x2	20		yl mi		UN		<	3			
BHUA-13	80.33				hJs	x2	20		yl mi		UN		<	3			
BHUA-13	80.41				V		60		pk wh mi		IR		<	15			
BHUA-13	80.45				hJ		80				PR						
BHUA-13	80.49				V		30		pk wh mi		UN		<	5			
BHUA-13	80.50	80.66			hJ	x3	50				PR						
BHUA-13	80.59				hJ		50		yl mi		PR		<	5			
BHUA-13	80.71				hJ		40		yl mi		PR		<	5			
BHUA-13	80.76				hJ		20				UN						

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Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BHUA-13
Defects List

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
BHUA-13	80.82				hJ		90		yl mi		IR		<	20			
BHUA-13	80.86				hJ		40		gn mi		IR		<	10			
BHUA-13	80.87				J		10			CN	PR	SM					
BHUA-13	80.93	80.98			hJ	x3	20		yl or-mi		UN		<	3			
BHUA-13	81.09				hJ		40				PR						
BHUA-13	81.19				hJ		60		yl mi		PR		<	15			
BHUA-13	81.24				hJ		30		yl mi		PR		<	15			
BHUA-13	81.32	81.36			hJ	x4	50		yl mi		UN		<	5			
BHUA-13	81.42				hJ		10				PR						
BHUA-13	81.50				J		10			CN	PR	SM					
BHUA-13	81.51	81.52			hJ	x2	10		yl or-mi		PR		<	4			
BHUA-13	81.54				hJ		10		wh gn mi		PR		<	40			
BHUA-13	81.56				hJ		5		gn mi		PR		<	15			
BHUA-13	81.59				hJ		10		gn yl mi		PR		<	5			
BHUA-13	81.60				hJ		20		yl mi		UN		<	12			
BHUA-13	81.66				hJ		80		yl mi		UN		<	7			
BHUA-13	81.73				hJ		20		yl mi		UN		<	30			
BHUA-13	81.79				CO		60				PR						
BHUA-13	81.80	81.82			hJ	x2	90				PR						
BHUA-13	81.85				hJ		40				PR						
BHUA-13	81.88	81.98			hJ	x5	30				PR						
BHUA-13	82.02	82.09			hJ	x2	40				PR						
BHUA-13	82.08	82.36			hJ	x3	80				PR						
BHUA-13	82.10				J		10			CN	PR	SM					
BHUA-13	82.15	82.20			V	x5	10		wh pk-mi		PR						
BHUA-13	82.17				V		70		yl mi		PR		<	5			
BHUA-13	82.20				V		30		yl mi		PR		<	5			
BHUA-13	82.22				V		60		yl bk-mi		PR		<	5			
BHUA-13	82.33				hJ		50				PR						
BHUA-13	82.34				J		30				PR	SM					
BHUA-13	82.36				hJ		80				PR						
BHUA-13	82.39				hJ		40				UN						
BHUA-13	82.41				hJ		30				PR						
BHUA-13	82.44	82.54			J	x4	40				PR						
BHUA-13	82.50	82.51			J	x2	80			CN	PR	RF					
BHUA-13	82.55				hJ		40			CN	PR	RF					
BHUA-13	82.61	82.63			hJ	x2	30				UN						
BHUA-13	82.70	82.75			hJ	x3	65				PR						
BHUA-13	82.78				hJ		60				PR						
BHUA-13	82.79				hJ		10				PR						
BHUA-13	82.84				J		70			CN	UN	RF					
BHUA-13	82.90				hJ		30				PR						
BHUA-13	82.96				J		60			CN	PR	SM					
BHUA-13	83.06	83.37			hJ	x3	30				PR						
BHUA-13	83.07				hJ		60				PR						
BHUA-13	83.22	83.32			hJ	x2	60				PR						
BHUA-13	83.43				J		60			CN	ST	RF					
BHUA-13	83.44				hJ		5				PR						
BHUA-13	83.63				hJ		50				PR						
BHUA-13	83.72				hJ		60				PR						
BHUA-13	83.76	85.85			J	x3	40			CN	ST	RF					
BHUA-13	83.82	83.96			hJ	x2	70				UN						
BHUA-13	83.83	83.87			hJ		70				UN						
BHUA-13	83.84				hJ		85				PR						
BHUA-13	83.90				hJ		40				PR						
BHUA-13	83.99				hJ		70				PR						
BHUA-13	84.03	84.05			hJ	x4	40				PR						
BHUA-13	84.04				hJ		50				PR						
BHUA-13	84.10	84.11			hJ	x2	20				PR						
BHUA-13	84.14	84.46			hJ	x15	50				PR						
BHUA-13	84.15				hJ		70				PR						
BHUA-13	84.16				hJ		40				UN						
BHUA-13	84.34				hJ		50				UN						
BHUA-13	84.36				hJ		20				PR						
BHUA-13	84.57				J		75		gravel		UN	RF	<	5			gravelled host rock at contact
BHUA-13	84.58				hJ		20			CN	ST	RF					
BHUA-13	84.69	84.80			hJ	x3	70				PR						
BHUA-13	84.75	84.79			hJ	x2	40				PR						
BHUA-13	84.87				hJ		90				PR						
BHUA-13	84.96				hJ		40				PR						
BHUA-13	85.04				hJ		50				PR						
BHUA-13	85.06				hJ		30				PR						
BHUA-13	85.09				hJ		90				PR						
BHUA-13	85.20				hJ		70				PR						
BHUA-13	85.37				hJ		90				PR						
BHUA-13	85.61				hJ		30				PR						
BHUA-13	85.80				hJ		50				PR						
BHUA-13	85.86				hJ		20				PR						
BHUA-13	85.92				hJ		50				PR						

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Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BHUA-13
Defects List

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
BHUA-13	85.93				hJ		90				PR						
BHUA-13	85.95				hJ		50				PR						
BHUA-13	86.06				J		5			CN	PR	RF					
BHUA-13	86.08				hJ		80				UN						
BHUA-13	86.11				hJ		70		bk mi		PR		<	3			
BHUA-13	86.12				hJ		50				PR						
BHUA-13	86.20				J		5			CN	PR	RF					
BHUA-13	86.23	86.29			hJ	x2	5				PR						
BHUA-13	86.33	86.36			hJ		70				PR						
BHUA-13	86.42				CO		70				UN						
BHUA-13	86.58				J		90			CN	PR	RF					
BHUA-13	86.60	86.64			hJ	x3	70				PR						
BHUA-13	86.61				hJ		90				PR						
BHUA-13	86.73				hJ		40				PR						
BHUA-13	86.74				J		40			CN	PR	RF					
BHUA-13	86.80	86.84			hJ	x2	50				PR						
BHUA-13	86.92				hJ		60				PR						
BHUA-13	86.95				hJ		60		bk mi		PR		<	5			
BHUA-13	87.17				hJ		10		wh mi		PR		<	3			
BHUA-13	87.23				hJ		20				PR						
BHUA-13	87.27	87.31			hJ		60				PR						
BHUA-13	87.32				hJ	x3	30				PR						
BHUA-13	87.34	87.41			hJ		60				PR						
BHUA-13	87.51	87.64			hJ	x3	80				PR						
BHUA-13	87.55				hJ	x4	10				PR						
BHUA-13	87.71				J		30			CN	UN	RF					
BHUA-13	87.78				hJ		30				PR						
BHUA-13	87.85				hJ		60				PR						
BHUA-13	87.91				J		40			CN	PR	RF					
BHUA-13	87.94				hJ		80				PR						
BHUA-13	88.03	88.04			hJ		90				PR						
BHUA-13	88.07				J		30			CN	PR	RF					
BHUA-13	88.11				hJ		40				PR						
BHUA-13	88.18				hJ		90				PR						
BHUA-13	88.23				hJ		60				UN						
BHUA-13	88.25				hJ		40				UN						
BHUA-13	88.28	88.29			hJ	x2	50				UN						
BHUA-13	88.30				hJ		80				UN						
BHUA-13	88.31				hJ		90				UN						
BHUA-13	88.33				hJ		30		yl mi		UN		<	3			
BHUA-13	88.36				J		30			CN	UN	RF					
BHUA-13	88.42	88.43			hJ	x3	80				PR						
BHUA-13	88.48				J		50			CN	ST	SM					
BHUA-13	88.54				hJ		40				PR						
BHUA-13	88.61				hJ		10				PR						
BHUA-13	88.63				hJ		50				PR						
BHUA-13	88.66				hJ		40				PR						
BHUA-13	88.73	89.11			hJ	x2	90				PR						
BHUA-13	88.74				hJ		40				PR						
BHUA-13	88.84				hJ		20				PR						
BHUA-13	88.89				hJ		70				PR						
BHUA-13	88.92				hJ		10				PR						
BHUA-13	88.95				hJ		40				UN						
BHUA-13	89.02				hJ		40				PR						
BHUA-13	89.04				hJ		30				UN						
BHUA-13	89.09				J		50			CN	PR	SM					
BHUA-13	89.11				hJ		90				PR						
BHUA-13	89.12				J		50			CN	PR	SM					
BHUA-13	89.16	89.17			hJ	x2	80				PR						
BHUA-13	89.25				J		50				PR						
BHUA-13	89.27	89.29			hJ	x2	50				PR						
BHUA-13	89.34	89.40			hJ	x4	70				PR						
BHUA-13	89.42				J		20			CN	PR	SM					
BHUA-13	89.48	89.51			hJ	x4	80				PR						
BHUA-13	89.49				J		80			CN	PR	RF					
BHUA-13	89.57	89.60			hJ	x4	10				PR						
BHUA-13	89.62	89.67			J	x3	30			CN	PR	RF					
BHUA-13	89.74				J		80			CN	ST	RF					
BHUA-13	89.75				hJ		80				ST						
BHUA-13	89.85				J		80			CN	PR	RF					
BHUA-13	89.90				hJ		50				UN						
BHUA-13	89.95				J		40			CN	PR	RF					
BHUA-13	90.01				J		10			SN	PR	RF					
BHUA-13	90.04				J		40			SN	PR	RF					
BHUA-13	90.07				J		50			CN	PR	SM					
BHUA-13	90.19				hJ		85				UN						
BHUA-13	90.24	90.25			J	x2	50			CN	PR	SM					
BHUA-13	90.44	90.48			hJ	x2	60				PR						
BHUA-13	90.57	90.63			hJ	x3	50				PR						

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Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BHUA-13
Defects List

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
BHUA-13	90.68				hJ		30				PR						
BHUA-13	90.70	90.74			J	x2	30			CN	PR	SM					
BHUA-13	90.80	90.85			hJ	x3	30				PR						
BHUA-13	90.81	90.88			hJ	x5	50				PR						
BHUA-13	91.05				hJ		90				UN						
BHUA-13	91.08	91.35			hJ	x11	50				PR						
BHUA-13	91.37				J		40			CN	PR	SM					
BHUA-13	91.60	91.94			hJ	x23	40				PR						
BHUA-13	91.75	91.83			hJ	x5	60				PR						
BHUA-13	92.00	92.20			hJ	x6	60				PR						
BHUA-13	92.17	92.18			hJ	x4	60		yl gr bk-mi		UN		<	4			
BHUA-13	92.21	92.87			J	x4	10			SN	PR	SM					
BHUA-13	92.24	94.10			AZ						PR						multiple healed defects, various angles, generally high angle, UN-PR, wh-yl mi, 1-2mm, up to 20mm alt halo, 10-30mm s
BHUA-13	92.25				hJ		10				PR						
BHUA-13	92.28	92.29			hJ	x2	10		br		PR		<	5			
BHUA-13	92.57				hJ		50				PR						
BHUA-13	92.68				hJ		90				PR						
BHUA-13	92.72				hJ		90				UN						
BHUA-13	92.75				hJ		5				PR						
BHUA-13	92.79				hJ	x4	40		bk yl mi		UN		<	4			
BHUA-13	93.04	93.06			hJ	x3	90				UN						
BHUA-13	93.05				hJ		45		bk-mi		UN		<	3			
BHUA-13	93.06	93.94			J	x3	20			SN	PR	RF					
BHUA-13	93.21				hJ		80		yl-wh mi		UN		<	10			
BHUA-13	93.22				J		60				PR	RF					
BHUA-13	93.42				hJ		85		wh mi		UN		<	3			
BHUA-13	93.44				hJ		20				PR						
BHUA-13	93.55				hJ		30		wh mi		PR		<	30			
BHUA-13	93.72				V		90		wh mi		IR		<	5			
BHUA-13	93.75	93.88			hJ	x2	90				UN						
BHUA-13	94.08				CO		45				PR	SM					
BHUA-13	94.13				J		70			CN	PR	RF					
BHUA-13	94.14				hJ		30				PR						
BHUA-13	94.16				J		60			CN	PR	RF					
BHUA-13	94.20	94.31			J	x2	80			SN	PR	RF					
BHUA-13	94.23	94.34			J	x2	10			SN	PR	RF					
BHUA-13	94.24	94.31			CZ						PR						
BHUA-13	94.44				J		90			SN	PR	RF					
BHUA-13	94.48				hJ		60				PR						
BHUA-13	94.59				J		60			SN	PR	SM					
BHUA-13	94.66				J		80			CN	PR	SM					
BHUA-13	94.70	94.73			hJ	x2	80				PR						
BHUA-13	94.75				hJ		10				UN						
BHUA-13	94.80				J		70			CN	PR	SM					
BHUA-13	94.81	94.82			hJ	x2	60				PR						
BHUA-13	94.83	94.87			hJ	x3	10				PR						
BHUA-13	94.92				hJ		65				PR						
BHUA-13	94.94				hJ		70				PR						
BHUA-13	94.95				J		80			CN	PR	SM					
BHUA-13	95.06				J		60			CN	PR	SM					
BHUA-13	95.10	95.16			hJ	x12	40				PR						
BHUA-13	95.21				hJ		70				ST						
BHUA-13	95.26				J		40			CN	PR	SM					
BHUA-13	95.27	95.48			hJ	x8	40				PR						
BHUA-13	95.44				J		50			CN	PR	RF					
BHUA-13	95.45	95.46			hJ	x2	40		wh mi		PR		<	20			
BHUA-13	95.53				hJ		90				UN						
BHUA-13	95.54				hJ		20				PR						
BHUA-13	95.61	95.81			J	x4	20			CN	PR	SM					
BHUA-13	95.70				J		80			CN	PR	SM					
BHUA-13	95.77				hJ		80				UN						
BHUA-13	95.81	95.83			hJ	x3	80				PR						
BHUA-13	95.93				J		80			CN	PR	SM					
BHUA-13	95.94				J		60			CN	PR	SM					
BHUA-13	96.00	96.70			AZ						PR						
BHUA-13	96.04				J		10			CN	PR	SM					
BHUA-13	96.08				hJ		70		wh bk-mi		PR		<	5			
BHUA-13	96.10				hJ		90				UN						
BHUA-13	96.12	96.14			hJ	x2	50				UN						
BHUA-13	96.16	96.27			J	x2	15			CN	PR	RF					
BHUA-13	96.27				hJ		70				UN						
BHUA-13	96.35	96.55			hJ	x8	10				PR						
BHUA-13	96.36				hJ		50		wh mi		PR		<	10			
BHUA-13	96.42				hJ		60				PR						
BHUA-13	96.48	96.49			hJ	x2	20		wh bk-mi		UN						
BHUA-13	96.62	96.65			J	x2	50			CN	ST	RF					
BHUA-13	96.72	96.73			hJ	x2	80				PR						
BHUA-13	96.89				J		50			CN	PR	RF					
BHUA-13	96.91	96.92			hJ	x2	90				PR						

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Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BHUA-13
Defects List

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
BHUA-13	96.93	96.93			hJ	x2	50				PR						
BHUA-13	96.96	96.97			hJ	x2	50				PR						
BHUA-13	97.06	97.22			J	x2	60			CN	ST	RF					
BHUA-13	97.09	97.47			hJ	x6	70				PR						
BHUA-13	97.11	97.16			J	x2	70				ST	RF					
BHUA-13	97.27	97.33			hJ	x2	30				IR						
BHUA-13	97.28				J		70			CN	ST	RF					
BHUA-13	97.37				J		40			CN	PR	RF					
BHUA-13	97.43	97.50			hJ	x5	20				PR						
BHUA-13	97.56				J		50			SN	PR	SM					
BHUA-13	97.58	97.62			hJ	x3	20				PR						
BHUA-13	97.68				J		60			CN	PR	SM					
BHUA-13	97.69	97.93			hJ	x8	10				PR						
BHUA-13	97.71	97.74			hJ	x2	60				PR						
BHUA-13	97.77				J		5			CN	PR						
BHUA-13	97.80				J		80				UN	RF					
BHUA-13	97.80	97.82			J	x2	70				PR	RF					
BHUA-13	97.96				J		50			CN	PR	RF					
BHUA-13	98.02				J		60				PR						
BHUA-13	98.05				hJ		70				PR						
BHUA-13	98.07				J		50				PR	RF					
BHUA-13	98.11	98.12			hJ	x2	50				PR						
BHUA-13	98.15				hJ		50				PR						
BHUA-13	98.16				J		70			CN	PR	RF					
BHUA-13	98.18				hJ		80				PR						
BHUA-13	98.19				J		20			CN	PR	RF					
BHUA-13	98.20				hJ		50				PR						
BHUA-13	98.22				J		40				PR	RF					
BHUA-13	98.23				hJ		40				PR						
BHUA-13	98.28	98.33			hJ	x4	60				PR						
BHUA-13	98.31				J		85				UN	RF					
BHUA-13	98.33	98.34			hJ	x2	30				PR						
BHUA-13	98.35				J		60			CN	PR	RF					
BHUA-13	98.37				hJ		70				PR						
BHUA-13	98.41				V		20		wh mi		PR		<	5			
BHUA-13	98.44	98.45			hJ	x2	50				PR						
BHUA-13	98.46	98.48			hJ	x3	70				PR						
BHUA-13	98.51				J		60			CN	PR	RF					
BHUA-13	98.52	98.58			hJ	x4	30				PR						
BHUA-13	98.62				J		70			CN	ST	RF					
BHUA-13	98.64				J		60			CN	PR	RF					
BHUA-13	98.76	98.78			hJ	x2	20				ST						
BHUA-13	98.81				V		50		bk mi		UN		<	7			
BHUA-13	98.85				J		50				PR	SM	<	5			
BHUA-13	98.86	98.95			hJ	x6	45				PR						
BHUA-13	98.97				hJ		90				UN						
BHUA-13	99.02				J		10				PR	RF					
BHUA-13	99.03				J		50				PR	SM					
BHUA-13	99.04				J		60				PR	SM					
BHUA-13	99.09	99.39			J	x3	30			CN	PR	SM					
BHUA-13	99.22				J		80			CN	PR	SM					
BHUA-13	99.31				hJ		30				PR						
BHUA-13	99.32				J		80				UN	RF					
BHUA-13	99.36				J		70				PR	RF					
BHUA-13	99.39				J		30			CN	PR	SM					
BHUA-13	99.42	99.72			CO		80				PR	RF					
BHUA-13	99.44				CS		50			20	UN	RF					host rock recovered as gravel
BHUA-13	99.64				J		80			CT	UN	SM					
BHUA-13	99.71				J		10			CN	PR	SM					
BHUA-13	99.77	99.78			hJ	x2	70				PR						
BHUA-13	99.88				J		60			CN	PR	SM					
BHUA-13	99.93				hJ		20				PR						
BHUA-13	99.97				hJ		30				PR						
BHUA-13	100.02				CO		60			VN	UN	SM					
BHUA-13	100.12				hJ		20		wh mi		PR		<	10			
BHUA-13	100.13				J		10			CN	ST	RF					
BHUA-13	100.16	100.18			hJ	x2	20				PR						
BHUA-13	100.20				hJ		30				PR						
BHUA-13	100.21				J		60			CN	PR	SM					
BHUA-13	100.26				hJ		60				PR						
BHUA-13	100.32				hJ		80		yl mi		IR		<	3			
BHUA-13	100.36	100.37			J	x2	10			CN	PR	RF					
BHUA-13	100.40	100.46			hJ	x5	20				PR						
BHUA-13	100.41				hJ		50				PR						
BHUA-13	100.44				hJ		70				PR						
BHUA-13	100.50				J		40			CN	PR	SM					
BHUA-13	100.52				hJ		60				PR						
BHUA-13	100.55				hJ		60				PR						
BHUA-13	100.57				J		70			CN	PR	SM					

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Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BHUA-13
Defects List

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
BHUA-13	100.60				J		80				UN	RF					
BHUA-13	100.62				hJ		60		yl mi		PR		<	10			
BHUA-13	100.65	100.79			J	x5	40			CN	PR	SM					
BHUA-13	100.66				J		40			CN	PR	SM					
BHUA-13	100.68	100.69			hJ	x2	90				PR						
BHUA-13	100.69	100.70			hJ	x2	50				PR						
BHUA-13	100.77				J		70			CN	PR	SM					
BHUA-13	100.84	100.92			hJ	x9	50				PR						
BHUA-13	100.96				hJ		50		bk-mi		UN		<	3			
BHUA-13	101.05				J		60			CN	PR	SM					
BHUA-13	101.07	101.08			hJ	x3	70				PR						
BHUA-13	101.12				J		20			CN	PR	SM					
BHUA-13	101.14	101.83			hJ	x16	30										
BHUA-13	101.19				hJ		60				PR						
BHUA-13	101.22				J		90			CN	ST	RF					
BHUA-13	101.28				J		20			CN	ST	RF					
BHUA-13	101.32	101.33			hJ		90				UN						
BHUA-13	101.47	101.49			hJ	x2	80				PR						
BHUA-13	101.56				J		70			CN	UN						
BHUA-13	101.63	101.64			hJ	x4	90				PR						
BHUA-13	101.65				J		30			CN	PR	RF					
BHUA-13	101.73				hJ		80				PR						
BHUA-13	101.77	101.78			J	x2	85			CN	PR	RF					
BHUA-13	101.79				J		50			CN	PR	RF					
BHUA-13	101.81	101.96			J	x2	20			CN	PR	RF					
BHUA-13	101.94				J		90			CN	ST	RF					
BHUA-13	101.99				hJ	x2	65				PR						
BHUA-13	102.07	102.13			J	x2	20			CN	PR						
BHUA-13	102.10				J		90			CN	PR	SM					
BHUA-13	102.17	102.60			hJ	x3	60				PR		<	14			
BHUA-13	102.20	102.27			J		70			CN	ST	RF					
BHUA-13	102.22				hJ		80				PR						
BHUA-13	102.23	102.81			J		70			CN	PR	SM					
BHUA-13	102.62				hJ		70		wh mi		PR		<	10			
BHUA-13	102.82				J		60			CN	PR	SM					
BHUA-13	102.92				hJ		70				PR						
BHUA-13	102.96				J		70			CN	PR	SM					
BHUA-13	103.01				J		90				ST	RF					
BHUA-13	103.05				J		70				ST	RF					
BHUA-13	103.10	103.40			J	x5	60			CN	ST	RF					
BHUA-13	103.20				hJ		20				PR						
BHUA-13	103.30				J		90			CN	ST	RF					
BHUA-13	103.39				J		10			CN	PR	SM					
BHUA-13	103.40	103.42			hJ		15				PR		<	3			
BHUA-13	103.51				hJ		60		bk-mi		PR		<	3			
BHUA-13	103.59				J		10			CN	PR	RF					
BHUA-13	103.67				J		30			CN	PR	SM					
BHUA-13	103.68	103.92			hJ	x9	60				PR						
BHUA-13	103.78				hJ	x2	40				PR						
BHUA-13	103.93				hJ				wh mi				<	15			
BHUA-13	103.95				hJ				wh mi				<	15			
BHUA-13	103.96				hJ		10				ST		<	10			
BHUA-13	103.97				hJ		50				UN						
BHUA-13	104.02				hJ		50		bk-mi		UN		<	10			
BHUA-13	104.03	104.23			hJ	x4	40				UN						
BHUA-13	104.13				J		40			CN	PR	RF					
BHUA-13	104.14	104.28			hJ	x10	40				PR						
BHUA-13	104.16				hJ		20		wh mi		PR		<	10			
BHUA-13	104.24				J		60			CN	PR	RF					
BHUA-13	104.31	104.32			hJ	x2	70				PR						
BHUA-13	104.35				hJ		60				PR						
BHUA-13	104.36				hJ		60				PR						
BHUA-13	104.39				hJ		40		bk-mi		PR		<	10			
BHUA-13	104.40				J		20				ST	RF					
BHUA-13	104.42	104.95			hJ	x17	20				PR						
BHUA-13	104.48				hJ		30				PR						
BHUA-13	104.51	104.55			hJ	x3	30				PR						
BHUA-13	104.65				hJ		60				PR						
BHUA-13	104.83				hJ		60				UN						
BHUA-13	105.02				J		40			CN	PR	RF					
BHUA-13	105.03				hJ		10				PR						
BHUA-13	105.14				J		85			CN	PR	RF					
BHUA-13	105.24	105.25			hJ	x2	80				PR						
BHUA-13	105.28				hJ		90				PR						
BHUA-13	105.31				J		10			CN	PR	RF					
BHUA-13	105.36				hJ		10				UN						
BHUA-13	105.37	105.39			hJ		60				UN						
BHUA-13	105.38				hJ		90				UN						
BHUA-13	105.40				hJ		20				UN						

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Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BHUA-13
Defects List

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
BHUA-13	105.41				hJ		20				PR						
BHUA-13	105.42				hJ	x3	90				PR						
BHUA-13	105.51	105.56			hJ	x3	60				UN						
BHUA-13	105.62				hJ		40		bk-mi		UN		<	5			
BHUA-13	105.64				J		40			CN	ST	RF					
BHUA-13	105.69	105.70			hJ	x2	90				UN						
BHUA-13	105.70				J		90				UN	RF					
BHUA-13	105.71				hJ		60		bk-mi		PR		<	10			
BHUA-13	105.79				hJ		80				PR						
BHUA-13	105.81				hJ		30				UN						
BHUA-13	105.87				hJ		40			CN	PR	RF					
BHUA-13	105.90	105.91			hJ		40		wh mi		PR		<	7			
BHUA-13	105.94				J		75			CN	UN	RF					
BHUA-13	106.02				hJ		15				PR						
BHUA-13	106.03				hJ		90		wh mi		PR		<	10			
BHUA-13	106.10	106.12			hJ	x3	60				PR						
BHUA-13	106.15	106.16			J	x2	60			CN	PR	SM					
BHUA-13	106.20	106.22			hJ	x3	85				PR						
BHUA-13	106.25				V		60		wh mi		UN		<	10			
BHUA-13	106.27				hJ		65				PR						
BHUA-13	106.28				J		60			CN	PR	RF					
BHUA-13	106.32				hJ		20				UN						
BHUA-13	106.34				hJ		90				UN						
BHUA-13	106.41				hJ		5		bk-mi		UN		<	3			
BHUA-13	106.42				J		60				ST	RF					
BHUA-13	106.44				V		40		gn mi		UN		<	3			
BHUA-13	106.45				hJ	x2	90				UN						
BHUA-13	106.46				hJ		90				UN						
BHUA-13	106.48	106.56			J	x2	60			CN	PR	SM					
BHUA-13	106.61				J		40			CN	PR	SM					Disturbed by drilling
BHUA-13	106.65				J		60			CN	UN	RF					Disturbed by drilling
BHUA-13	106.72				hJ	x3	85				UN						
BHUA-13	106.77				hJ		10				UN						
BHUA-13	106.84				J	x3	50			CN	PR	SM					
BHUA-13	106.89				J		90				PR	SM					
BHUA-13	106.95				hJ		40				PR						
BHUA-13	107.02				hJ		5		bk-mi		UN		<	3			
BHUA-13	107.04				J		78			CN	PR	RF					
BHUA-13	107.10	107.52			hJ	x5	5				PR						
BHUA-13	107.20				hJ		70				PR						
BHUA-13	107.23				J		35			CN	PR	RF					
BHUA-13	107.25				hJ		30				PR						
BHUA-13	107.34	107.42			J	x2	70				PR	SM					
BHUA-13	107.39				hJ		30				PR						
BHUA-13	107.48				J		45				ST	RF					
BHUA-13	107.50				hJ		85				ST	RF					
BHUA-13	107.55				hJ		75				UN						
BHUA-13	107.59				J		10				PR	SM					
BHUA-13	107.68				J		50		bk pk-mi		PR	SM					
BHUA-13	107.69				J		60				PR	SM					
BHUA-13	107.70				hJ		20				IR						
BHUA-13	107.77	107.78			hJ		30				PR						
BHUA-13	107.85				J		20				ST	SM					
BHUA-13	107.96	107.97			hJ	x2	10				UN						
BHUA-13	108.05	108.26			hJ	x4	20				UN						
BHUA-13	108.10				J		10			CN	PR	SM					
BHUA-13	108.16				hJ		30				UN						
BHUA-13	108.32				hJ	x2	45				UN						
BHUA-13	108.40				hJ		60				UN						
BHUA-13	108.45				hJ		10				UN						
BHUA-13	108.46	108.62			J	x4	50		gn mi	SN	PR	RF					
BHUA-13	108.55	108.66			hJ	x2	5				PR						
BHUA-13	108.60				hJ		70				PR						
BHUA-13	108.68				J		20			CN	PR	SM					
BHUA-13	108.72				hJ		35				PR						
BHUA-13	108.75				hJ		30				PR						
BHUA-13	108.77				hJ		40				PR						
BHUA-13	108.78	108.82			hJ	x4	20				PR						
BHUA-13	108.85				J		30		gn mi	SN	UN	RF					
BHUA-13	108.88	108.91			hJ	x2	30				UN						
BHUA-13	108.93	108.96			hJ	x3	20				UN						
BHUA-13	108.96				hJ		80				UN						
BHUA-13	109.04				hJ		20				PR						
BHUA-13	109.05				hJ		50				UN						
BHUA-13	109.07	109.10			hJ	x2	10				PR						
BHUA-13	109.12				hJ		60				PR						
BHUA-13	109.15				J		30			CN	PR	RF					
BHUA-13	109.21				hJ		25				UN						
BHUA-13	109.24				J		40			CN	PR	SM					

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Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BHUA-13
Defects List

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
BHUA-13	109.26	109.31			hJ		30				UN						
BHUA-13	109.31	109.32			J	x2	70			CT	PR	RF					
BHUA-13	109.37				J		30			CN	PR	RF					
BHUA-13	109.44				hJ	x3	85				PR						
BHUA-13	109.49	109.64			J	x3	20			CN	PR	RF					
BHUA-13	109.66				hJ		20				PR						
BHUA-13	109.67				hJ		65				PR						
BHUA-13	109.68				hJ		60				PR						
BHUA-13	109.71				J		45			CN	PR	RF					
BHUA-13	109.74				hJ		90				PR						
BHUA-13	109.80				J		40			SN	PR	RF					
BHUA-13	109.82				hJ		80				PR						
BHUA-13	109.85	109.86			J	x2	85			SN	PR	RF					
BHUA-13	109.89	109.94			J	x2	5			CN	PR	RF					
BHUA-13	110.03				J		10			CN	UN	SM					
BHUA-13	110.05	110.06			hJ	x2	90				PR						
BHUA-13	110.06				J		50			CN	PR	RF					
BHUA-13	110.17				hJ		60				PR						
BHUA-13	110.22	110.28			J		30			CN	PR	RF					
BHUA-13	110.45	110.63			hJ	x4	15				PR						
BHUA-13	110.60				J		60				UN	RF					
BHUA-13	110.64				J		60			CN	PR	RF					
BHUA-13	110.70				J		10			CN		RF					
BHUA-13	110.75				hJ		10				UN						
BHUA-13	110.78				hJ		60				PR						
BHUA-13	110.80				J		10			CN	PR	RF					
BHUA-13	110.81				J		10			CN	PR	RF					
BHUA-13	110.83				hJ		30				ST						
BHUA-13	110.90				J		40			CN	PR	RF					
BHUA-13	110.92				hJ		10				UN						
BHUA-13	110.95				hJ		90										
BHUA-13	111.04				hJ		90		yl mi		IR	RF	<	5			
BHUA-13	111.07				J		10			CN	PR	RF					
BHUA-13	111.10				hJ		50				PR						
BHUA-13	111.13				J		50			CN	PR	RF					
BHUA-13	111.17				hJ		60				IR						
BHUA-13	111.24				hJ		50				IR						
BHUA-13	111.27				hJ		30		yl mi		IR		<	3			
BHUA-13	111.28				hJ		15				UN						
BHUA-13	111.30				hJ		60				PR						
BHUA-13	111.38				hJ		10				IR						
BHUA-13	111.44				J		90		rd-mi	SN	IR						
BHUA-13	111.49				J		20			CN		RF					
BHUA-13	111.51	111.53			hJ		40										
BHUA-13	111.52				J		64				ST	SM					
BHUA-13	111.55				hJ		50				UN						
BHUA-13	111.57				hJ		40				UN						
BHUA-13	111.60				hJ		60				UN						
BHUA-13	111.62				hJ		85				UN						
BHUA-13	111.71				hJ		65				ST						
BHUA-13	111.73	111.75			hJ		60				UN						
BHUA-13	111.78	111.80			hJ	x2	90										
BHUA-13	111.84				J		40				PR						
BHUA-13	111.95				J		40			SN		RF					
BHUA-13	112.03				hJ	x3	30				PR						
BHUA-13	112.10				hJ	x2	80				PR						
BHUA-13	112.13				hJ		70				UN						
BHUA-13	112.21				hJ		50				PR						
BHUA-13	112.26	112.39			hJ	x4	80				PR						
BHUA-13	112.46				J		5			SN	UN	RF					
BHUA-13	112.46	112.47			J	x2	80			CN	PR	RF					
BHUA-13	112.55	112.66			hJ		80				PR						
BHUA-13	112.64				hJ		40				PR						
BHUA-13	112.73	112.98			hJ	x2	30				PR						
BHUA-13	112.74				hJ		85				UN						
BHUA-13	112.78	112.93			hJ	x3	90				PR						
BHUA-13	112.82	112.85			hJ	x4	10				PR						
BHUA-13	112.89				hJ	x2	30				PR						
BHUA-13	112.92	112.94			hJ	x2	80				PR						
BHUA-13	112.97				J		30			SN	PR	RF					
BHUA-13	112.98				hJ		60				PR						
BHUA-13	113.01	113.92			hJ	x13	30				PR						
BHUA-13	113.08	113.41			hJ	x4	10				UN						
BHUA-13	113.11	113.12			J	x4	30			SN	PR	RF					
BHUA-13	113.12	113.85			hJ	x2	90				UN						
BHUA-13	113.14	113.98			hJ	x5	20				PR						
BHUA-13	113.15	113.68			J		40			CN	UN	RF					
BHUA-13	113.20				hJ	x2	80				UN						
BHUA-13	113.36	113.62			hJ	x6	40				UN						

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Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BHUA-13
Defects List

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
BHUA-13	114.02				J		40			SN	PR	SM					
BHUA-13	114.05				J		90			SN	PR	SM					
BHUA-13	114.06				hJ		60				UN						
BHUA-13	114.07				J		10			SN	PR	SM					
BHUA-13	114.10	114.11			hJ	x2	90				PR						
BHUA-13	114.12	114.15			hJ	x2	70				UN						
BHUA-13	114.15				J		10			SN	PR	RF					
BHUA-13	114.20	114.98			hJ	x8	20				PR						
BHUA-13	114.24	114.95			hJ	x16	10				PR						
BHUA-13	114.35				hJ		40					RF					
BHUA-13	114.41				hJ		60				UN						
BHUA-13	114.47				J		30			CN	PR	RF					
BHUA-13	114.49	114.90			hJ	x2	90				UN						
BHUA-13	114.58	114.95			hJ	x7	70				UN						
BHUA-13	114.76	117.78			hJ	x4	40				UN						
BHUA-13	114.81				hJ		60				PR						
BHUA-13	115.04	115.55			hJ		70				UN						
BHUA-13	115.07				hJ		40				UN						
BHUA-13	115.15				hJ		40				UN						
BHUA-13	115.21				hJ		90				UN						
BHUA-13	115.36	115.58			hJ	x5	20				UN						
BHUA-13	115.37				hJ		20		bk-mi		PR		<	5			
BHUA-13	115.62				J		50			CN	PR						
BHUA-13	115.65				J		10			CN	PR	RF					
BHUA-13	116.05	116.26			hJ	x8	20				PR	RF					
BHUA-13	116.07				hJ		80				PR						
BHUA-13	116.10	116.59			hJ	x3	30				PR	RF					
BHUA-13	116.12	116.96			hJ	x13	10				PR	RF					
BHUA-13	116.32	116.36			hJ	x2	40				PR						
BHUA-13	116.44	116.79			hJ	x11	50				PR						
BHUA-13	116.55	116.63			hJ		60		yl mi		PR		<	10			
BHUA-13	116.69	116.73			V		50				PR						
BHUA-13	116.84	116.92			J	x2	40				CU	RF					
BHUA-13	116.94				hJ		90				UN						
BHUA-13	117.06				hJ	x4	50				PR						
BHUA-13	117.09	117.11			hJ	x4	50				PR						
BHUA-13	117.17	117.92			hJ	x8	30				UN						
BHUA-13	117.19				hJ		90				UN						
BHUA-13	117.21	117.64			hJ	x7	20				PR						
BHUA-13	117.31	117.51			hJ	x5	70				PR						
BHUA-13	117.41				J		50				ST	RF					
BHUA-13	117.52				hJ		90				PR						
BHUA-13	117.56	117.74			hJ		50				PR						
BHUA-13	117.59				hJ		10				PR	RF					
BHUA-13	117.67				J		60			CN	PR	RF					
BHUA-13	117.81	117.84			hJ		40				PR						
BHUA-13	117.95				J		70			SN	PR	RF					
BHUA-13	118.03				J		60			SN	PR	RF					
BHUA-13	118.07	119.52			hJ	x2	10				PR						
BHUA-13	118.12				hJ	x3	80				PR						
BHUA-13	118.14	119.45			J	x4	60			SN	PR	RF					
BHUA-13	118.15				hJ		60		yl mi		PR		<	1			
BHUA-13	118.19				J		90			CN	PR	RF					
BHUA-13	118.20				hJ	x2	90				PR						
BHUA-13	118.21				hJ		20				PR						
BHUA-13	118.33	119.55			hJ	x7	60				PR						
BHUA-13	118.34				hJ		80				PR						
BHUA-13	118.53	119.54			hJ	x4	70				PR						
BHUA-13	118.58	119.63			hJ	x5	60				PR	RF					
BHUA-13	118.72	119.86			hJ	x6	40				PR						
BHUA-13	118.79				J		60			SN	PR	RF					
BHUA-13	118.95				J		10			SN	PR	RF					
BHUA-13	118.97				J		85			SN	PR	RF					
BHUA-13	119.05				V		60		yl bk-mi		UN		<	4			
BHUA-13	119.06	119.55			hJ	x3	20				PR						
BHUA-13	119.07	119.61			hJ	x3	30				PR						
BHUA-13	119.13	119.83			hJ	x4	10				UN						
BHUA-13	119.22	119.29			J	x2	10			SN	UN	RF					
BHUA-13	119.27	119.30			hJ	x2	80				PR						
BHUA-13	119.33	119.89			hJ	x10	60				PR						
BHUA-13	119.40				hJ		50				PR						
BHUA-13	119.68				hJ		40				UN						
BHUA-13	119.75				hJ		5				PR						
BHUA-13	119.95				J		50			SN	PR	RF					
BHUA-13	120.03				J		80			SN	PR	RF					
BHUA-13	120.08				J		50			CN	PR	RF					
BHUA-13	120.16				J		40				PR	SM					
BHUA-13	120.17				hJ		20				PR						
BHUA-13	120.22				J		20			CN	PR	SM					

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Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BHUA-13
Defects List

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
BHUA-13	120.25				hJ	x2	60				PR						
BHUA-13	120.27				J		30				PR	SM					
BHUA-13	120.28	120.88			hJ	x2	50		yl mi		PR	RF	<	1			
BHUA-13	120.33				hJ		20										
BHUA-13	120.40	120.60			hJ	x2	50				PR						
BHUA-13	120.42	120.47			hJ	x2	40				PR						
BHUA-13	120.70				CO		30				UN						
BHUA-13	120.82	120.84			V	x2	60		yl mi		IR	RF	<	2			
BHUA-13	120.86				hJ		90		yl mi			RF	<	2			
BHUA-13	120.95				hJ		70		yl mi								
BHUA-13	121.05	121.07			J	x2	60			CN	PR	RF					
BHUA-13	121.10				hJ	x2	60		yl mi		PR		<	5			
BHUA-13	121.24				J		80			CN	IR	RF					
BHUA-13	121.26				hJ		40				PR						
BHUA-13	121.34				hJ		90				PR						
BHUA-13	121.50				hJ		40				PR						
BHUA-13	121.59				J		40			CN	PR						
BHUA-13	121.75				J		70			CN	PR	SM					
BHUA-13	121.91				hJ		5		wh mi		PR		<	3			
BHUA-13	121.95				hJ		60		bk yl mi		PR		<	5			

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PointID : BHUA-13 Depth Range: 3.00 - 7.00 m

PointID : BHUA-13 Depth Range: 7.00 - 11.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BHUA-13	DRAWN RC	DATE 11/11/2024
		CHECKED GEM	DATE 18/11/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 1/15

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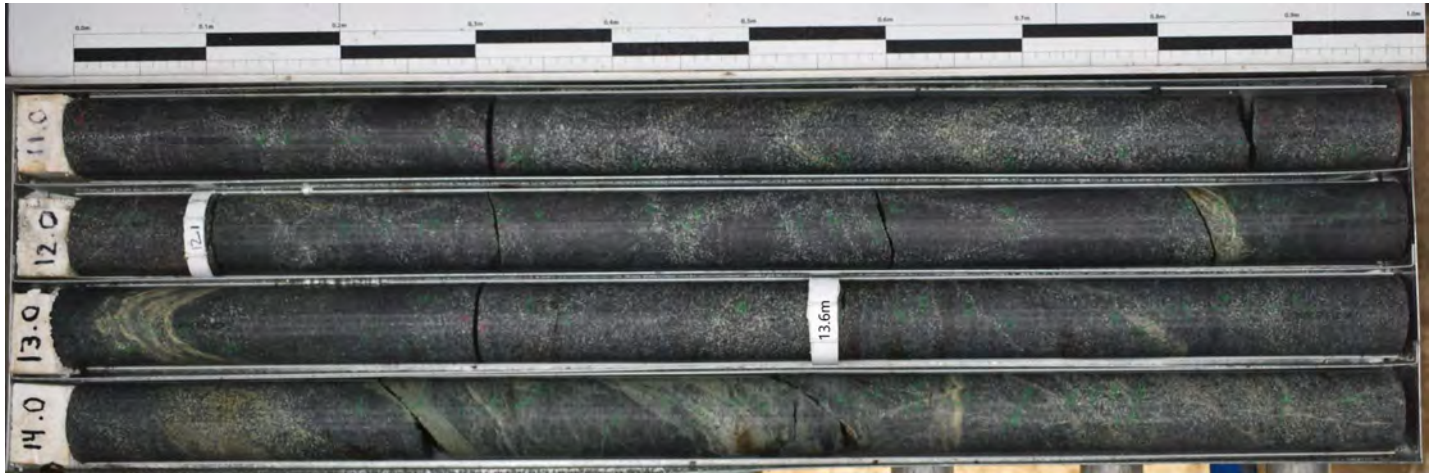
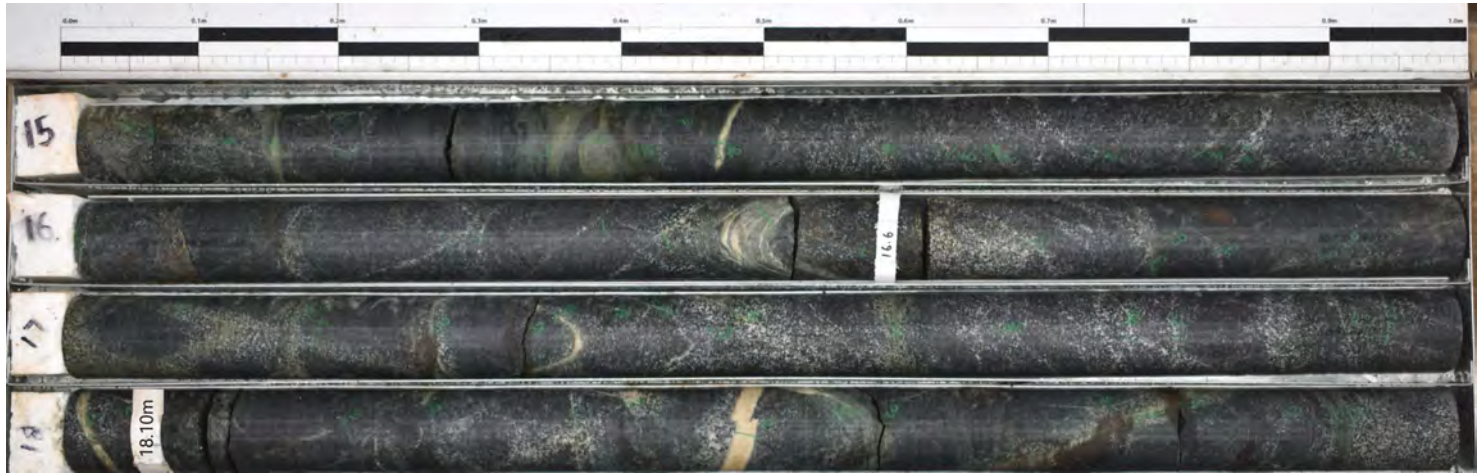


PointID : BHUA-13 Depth Range: 11.00 - 15.00 m



PointID : BHUA-13 Depth Range: 15.00 - 19.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BHUA-13	DRAWN RC	DATE 11/11/2024
		CHECKED GEM	DATE 18/11/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 2/15

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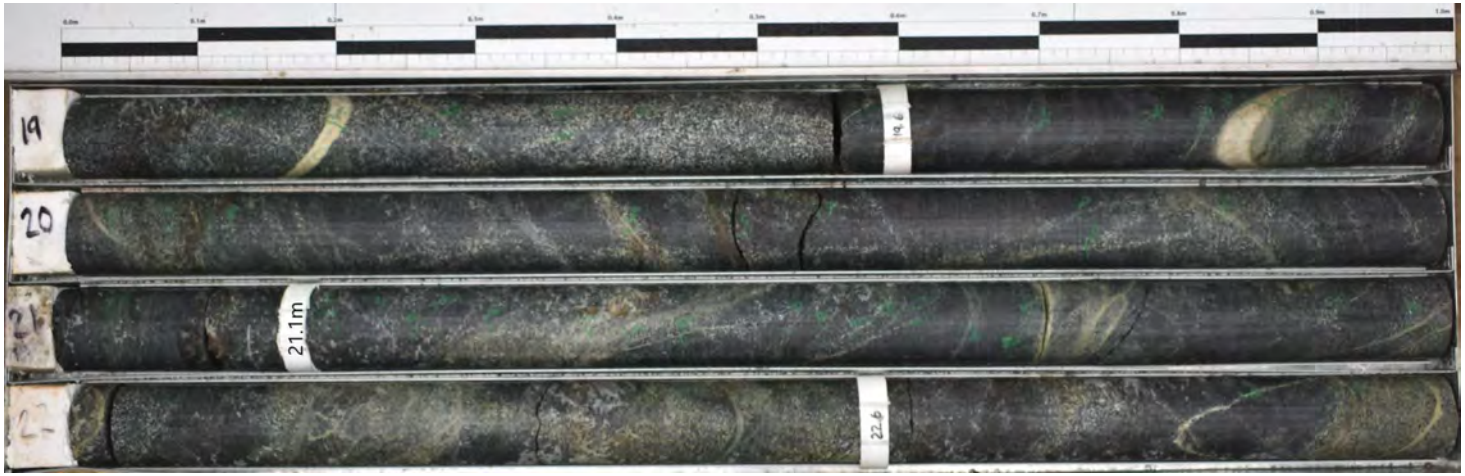
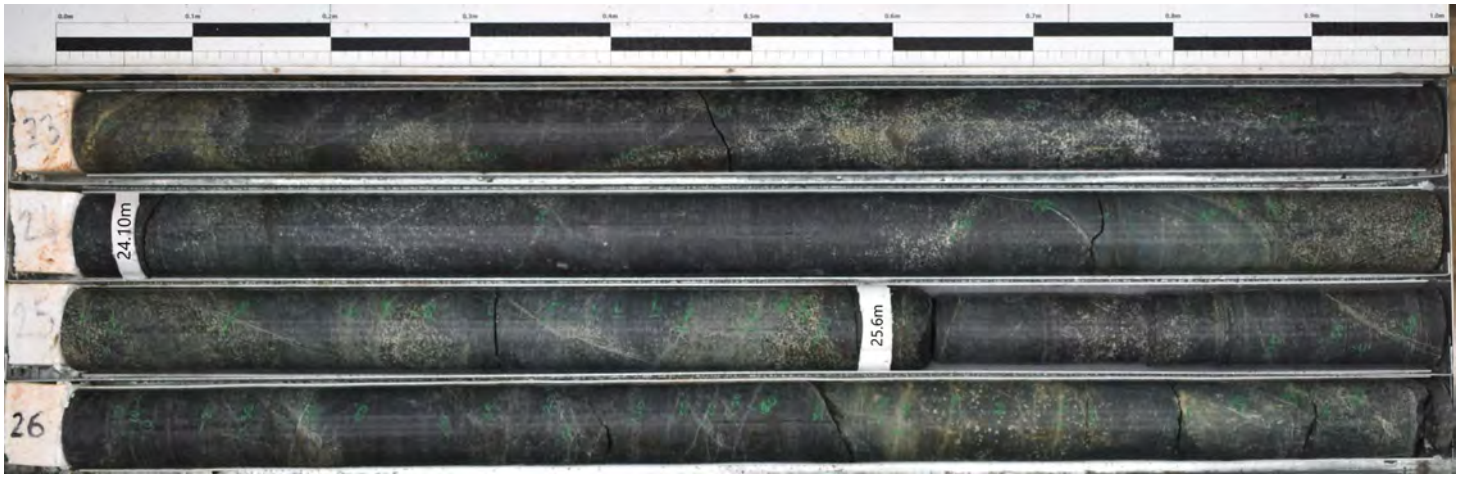


PointID : BHUA-13 Depth Range: 19.00 - 23.00 m



PointID : BHUA-13 Depth Range: 23.00 - 27.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BHUA-13	DRAWN RC	DATE 11/11/2024
		CHECKED GEM	DATE 18/11/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 3/15

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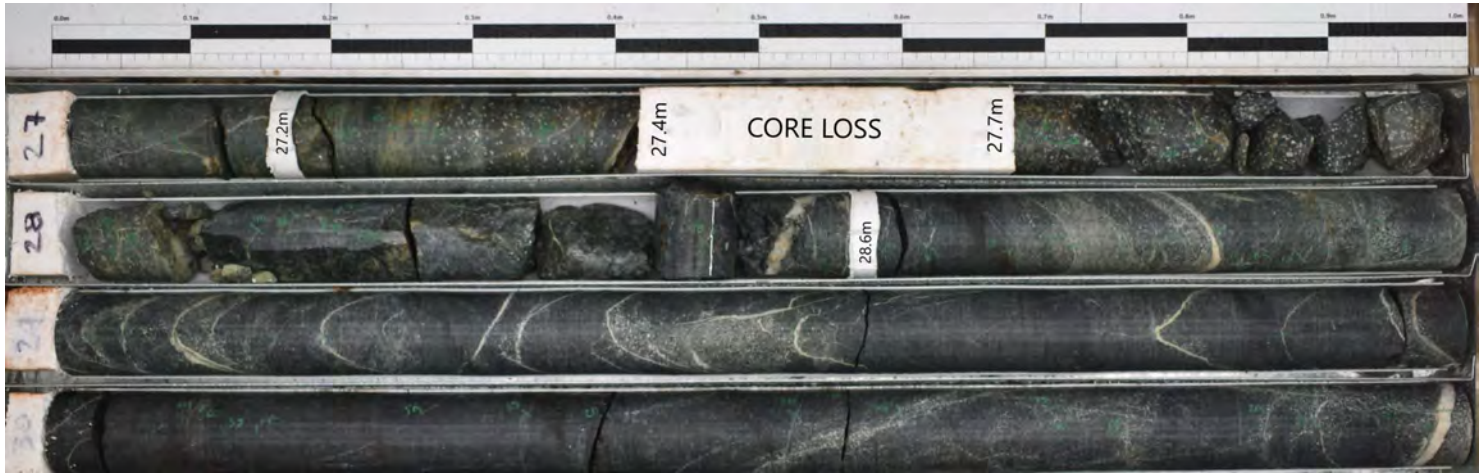
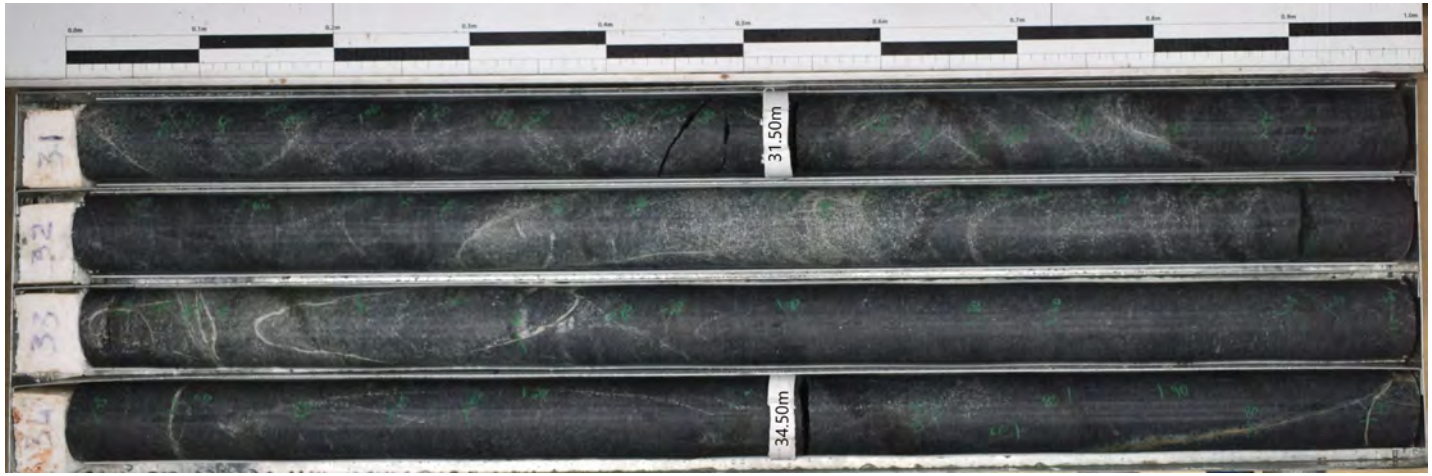


PointID : BHUA-13 Depth Range: 27.00 - 31.00 m



PointID : BHUA-13 Depth Range: 31.00 - 35.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BHUA-13	DRAWN RC	DATE 11/11/2024
		CHECKED GEM	DATE 18/11/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 4/15

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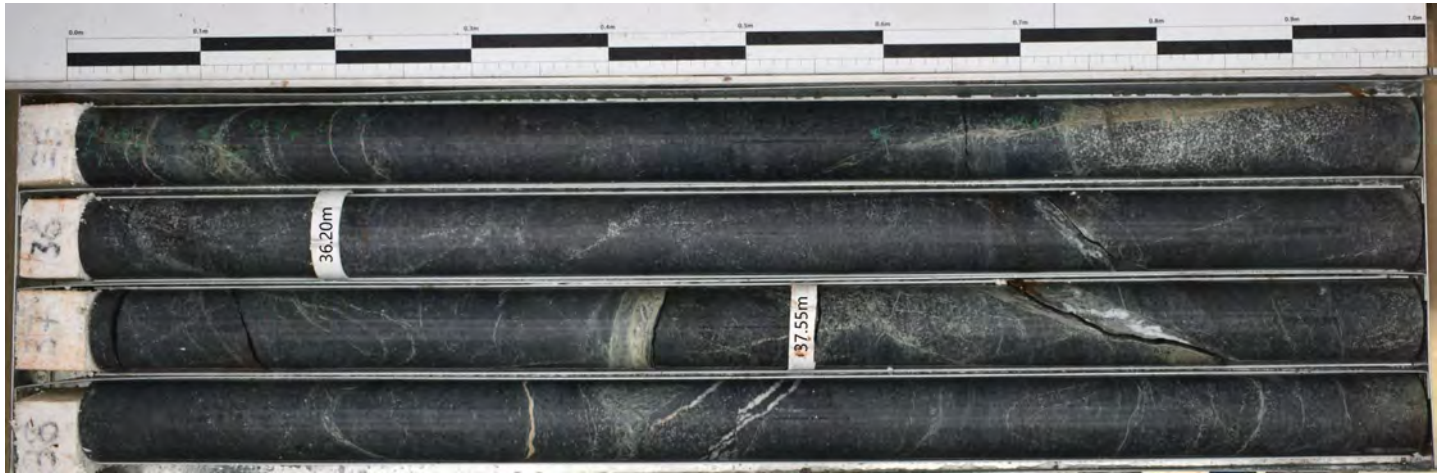
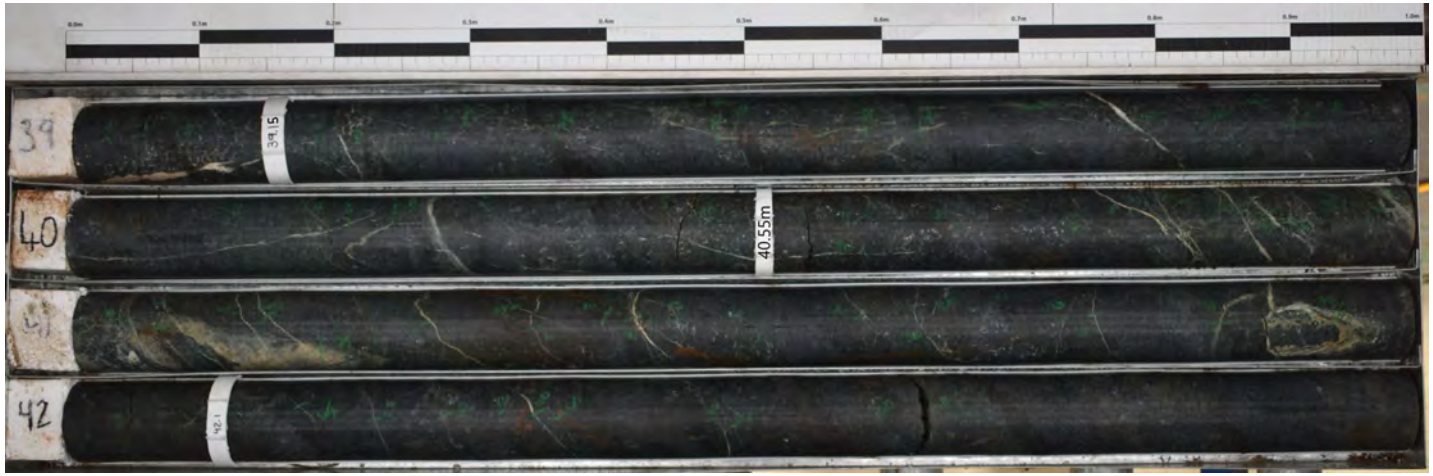


PointID : BHUA-13 Depth Range: 35.00 - 39.00 m



PointID : BHUA-13 Depth Range: 39.00 - 43.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BHUA-13	DRAWN RC	DATE 11/11/2024
		CHECKED GEM	DATE 18/11/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 5/15

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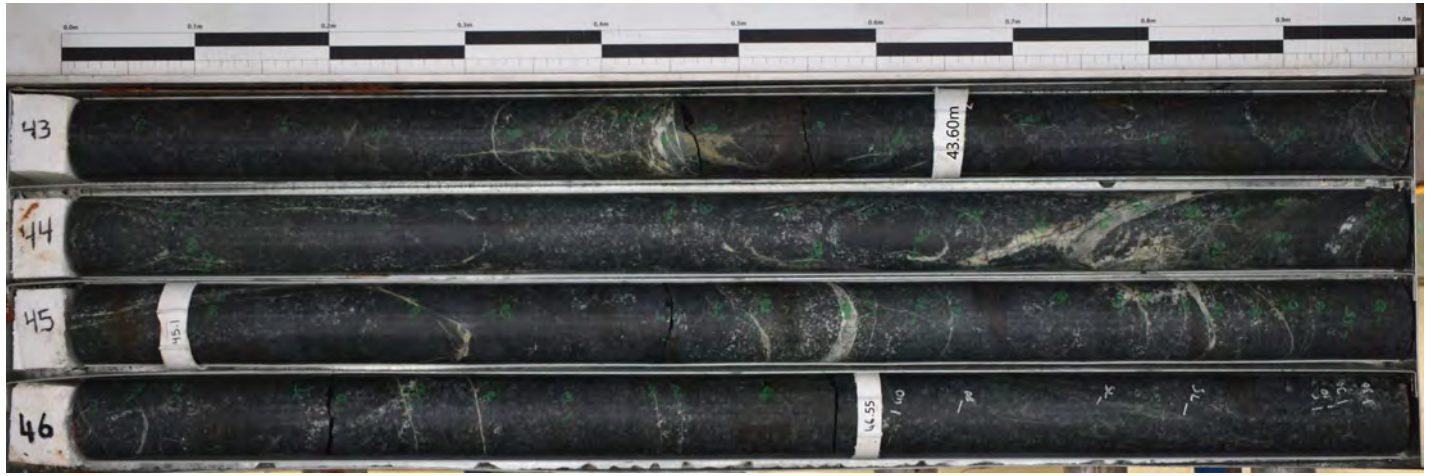
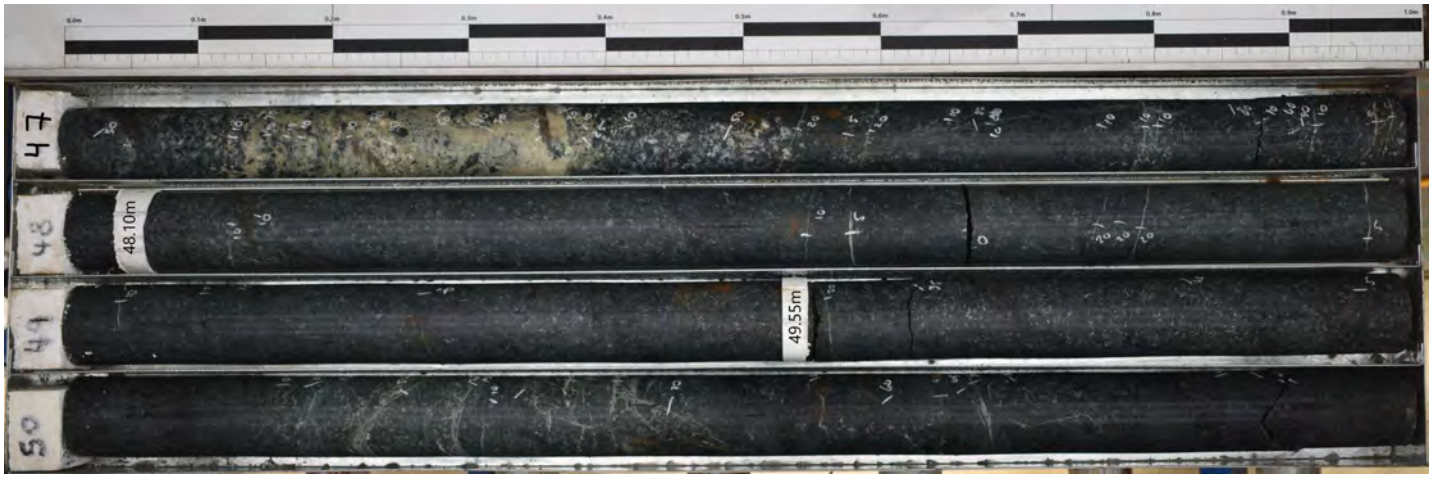


PointID : BHUA-13 Depth Range: 43.00 - 47.00 m



PointID : BHUA-13 Depth Range: 47.00 - 51.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BHUA-13	DRAWN RC	DATE 11/11/2024
		CHECKED GEM	DATE 18/11/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 6/15

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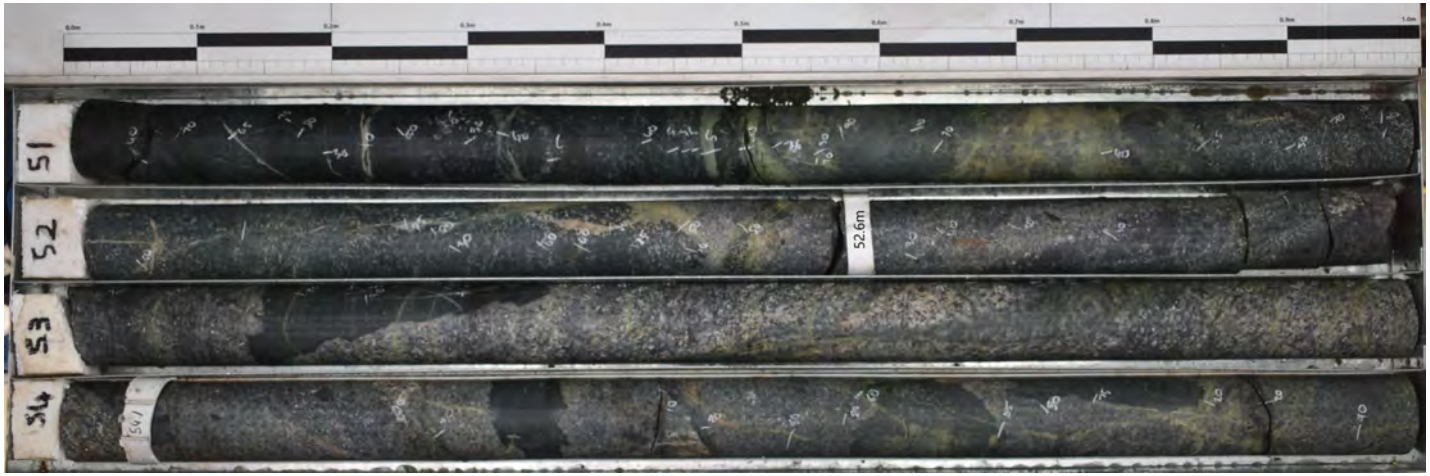
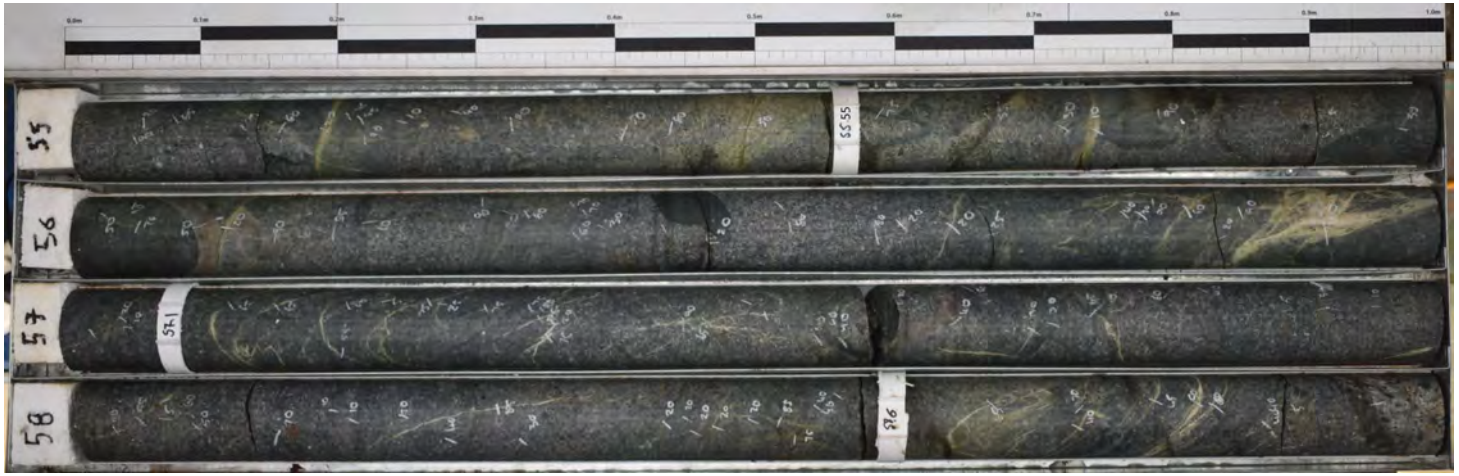


PointID : BHUA-13 Depth Range: 51.00 - 55.00 m



PointID : BHUA-13 Depth Range: 55.00 - 59.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BHUA-13	DRAWN RC	DATE 11/11/2024
		CHECKED GEM	DATE 18/11/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 7/15

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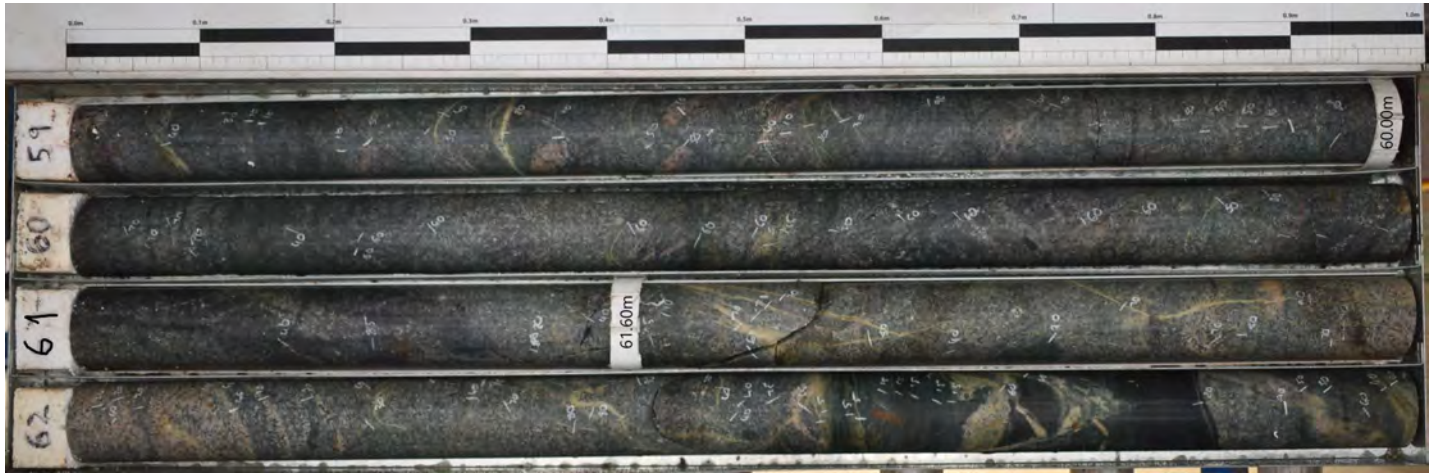
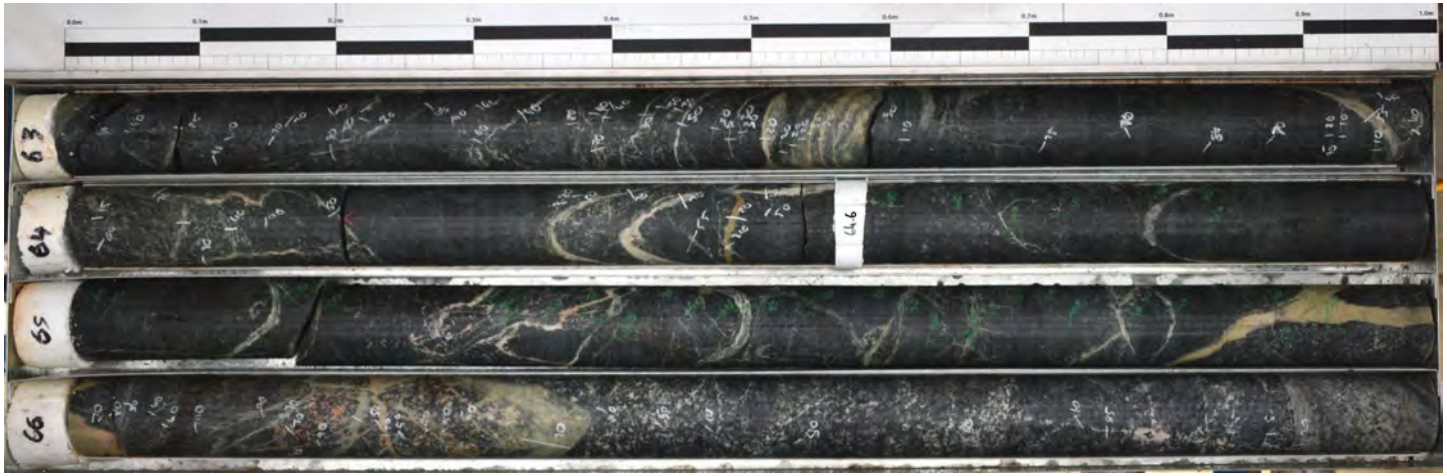


PointID : BHUA-13 Depth Range: 59.00 - 63.00 m



PointID : BHUA-13 Depth Range: 63.00 - 67.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BHUA-13	DRAWN RC	DATE 11/11/2024
		CHECKED GEM	DATE 18/11/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 8/15

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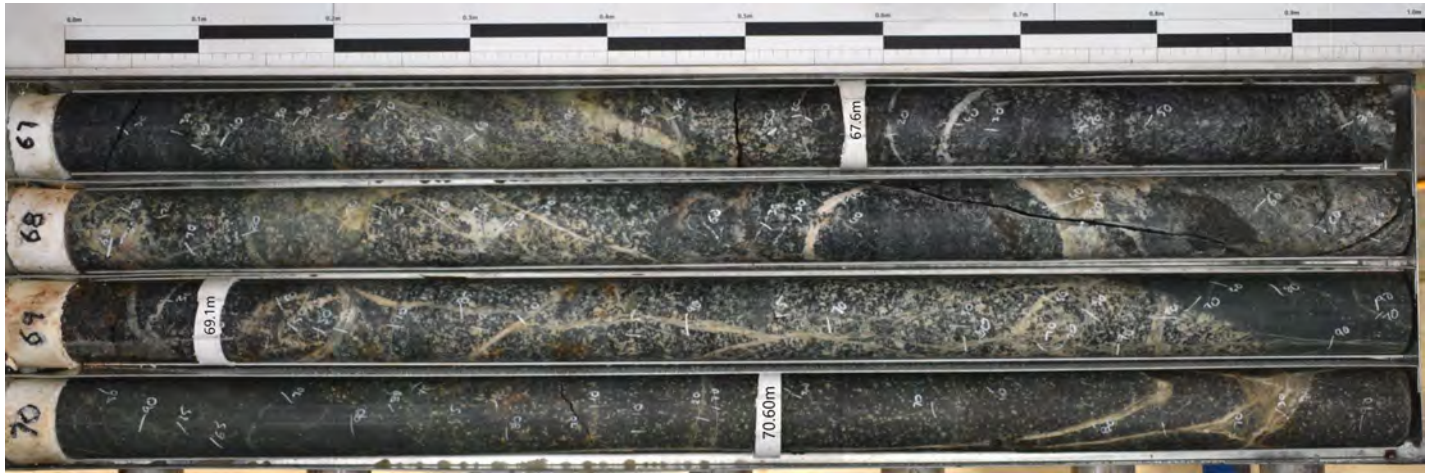

PointID : BHUA-13 Depth Range: 67.00 - 71.00 m

PointID : BHUA-13 Depth Range: 71.00 - 75.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BHUA-13	DRAWN RC	DATE 11/11/2024
		CHECKED GEM	DATE 18/11/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 9/15

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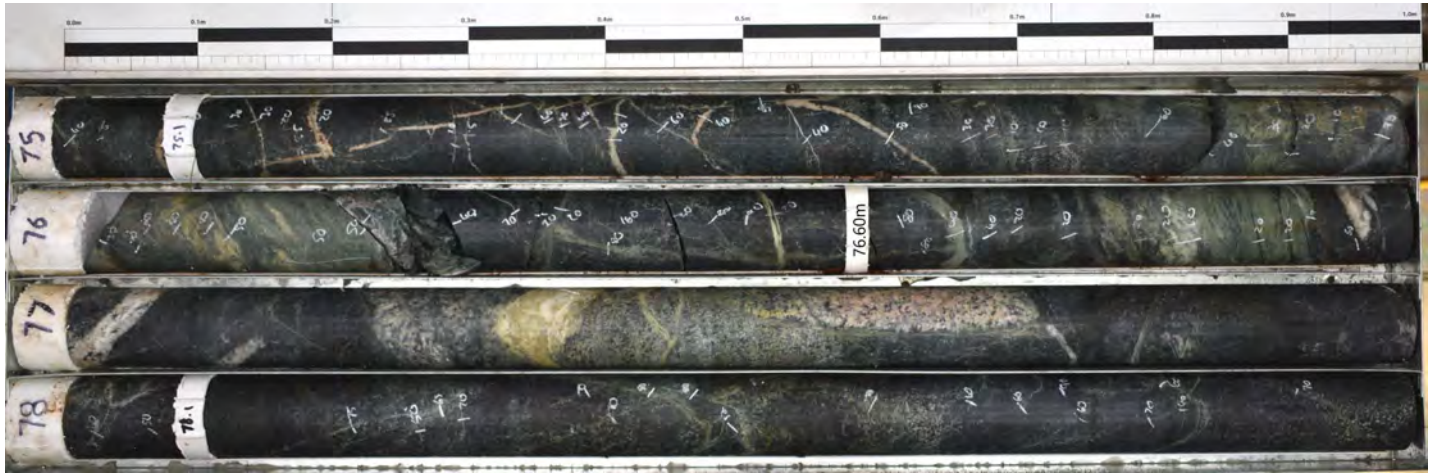

PointID : BHUA-13 Depth Range: 75.00 - 79.00 m

PointID : BHUA-13 Depth Range: 79.00 - 83.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BHUA-13	DRAWN RC	DATE 11/11/2024
		CHECKED GEM	DATE 18/11/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 10/15

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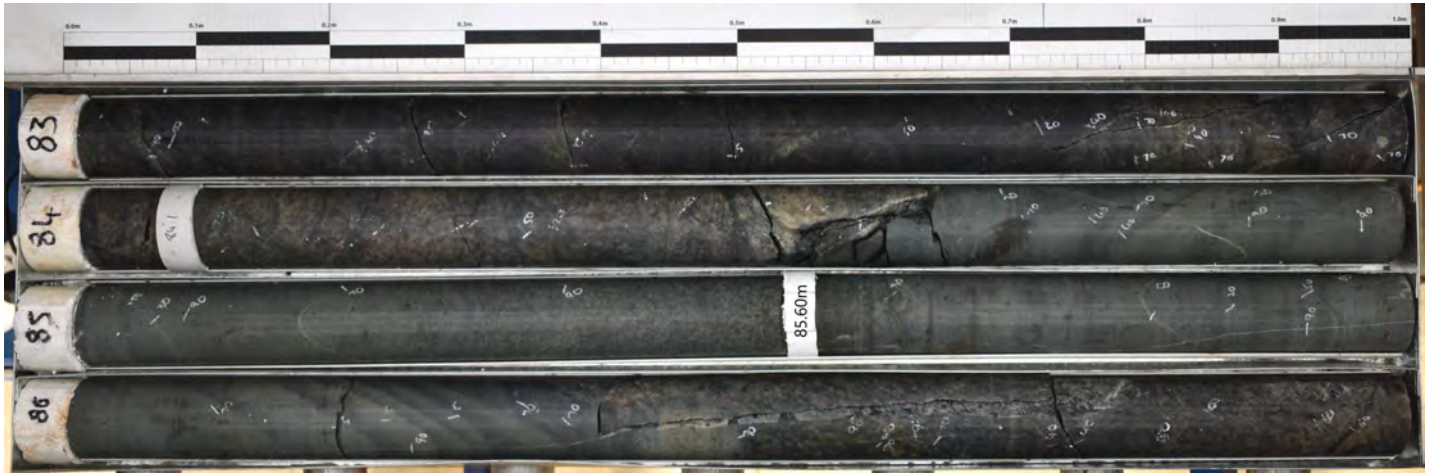

PointID : BHUA-13 Depth Range: 83.00 - 87.00 m

PointID : BHUA-13 Depth Range: 87.00 - 91.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BHUA-13	DRAWN RC	DATE 11/11/2024
		CHECKED GEM	DATE 18/11/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 11/15

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PointID : BHUA-13 Depth Range: 91.00 - 95.00 m

PointID : BHUA-13 Depth Range: 95.00 - 99.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BHUA-13	DRAWN RC	DATE 11/11/2024
		CHECKED GEM	DATE 18/11/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 12/15

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PointID : BHUA-13 Depth Range: 99.00 - 103.00 m

PointID : BHUA-13 Depth Range: 103.00 - 107.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BHUA-13	DRAWN RC	DATE 11/11/2024
		CHECKED GEM	DATE 18/11/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 13/15

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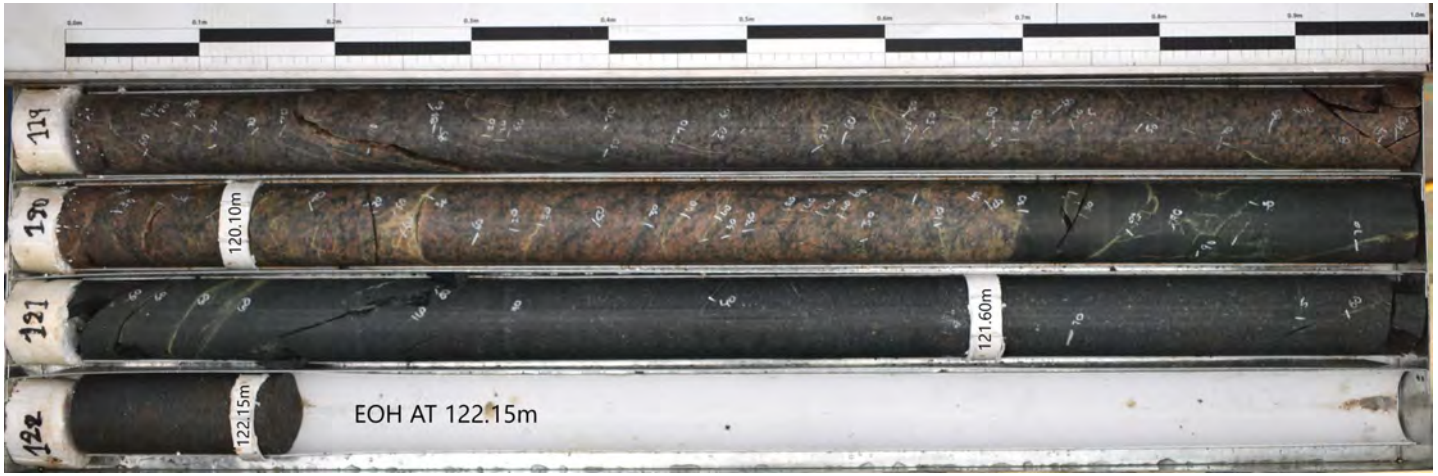
PointID : BHUA-13 Depth Range: 107.00 - 111.00 m

PointID : BHUA-13 Depth Range: 111.00 - 115.00 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BHUA-13	DRAWN RC	DATE 11/11/2024
		CHECKED GEM	DATE 18/11/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 14/15

PointID : BHUA-13 Depth Range: 115.00 - 119.00 m



PointID : BHUA-13 Depth Range: 119.00 - 122.15 m

wsp	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BHUA-13	DRAWN RC	DATE 11/11/2024
		CHECKED GEM	DATE 18/11/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 15/15

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BHUA-13 Structural Logs

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WSP Australia Pty Limited
Level 12, 900 Ann Street
Fortitude Valley
QLD 4006
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GEOPHYSICAL RECORD OF BOREHOLE: BHUA-13

PROJECT:	Pioneer-Burdekin PHES	JOB #	PS138693
CLIENT:	Queensland Hydro	DATE:	04/11/2024

BOREHOLE DETAILS

LOCATION:	Upper Reservoir	BH DEPTH:	121.40 m
EASTING:	658075.71 m E	BH DIAMETER:	HQ (96 mm)
NORTHING:	7667418.28 m N	BH AZIMUTH:	027°
ELEVATION:	-	BH PLUNGE:	-89°
COORD SYSTEM:	MGA2020-55	CASING DEPTH:	7.20 m
LOGGING DATUM:	Ground Level	CASING TYPE:	HWT

DOCUMENT DETAILS

LOGGED BY:	JH
LOGGED DATE:	09-11/05/2024
DRAWN BY:	BW/GH
REVIEWED BY:	GH
FILE:	BHUA-13_Comp_RevB
LOGGED DEPTH:	121.70 m

NOTES

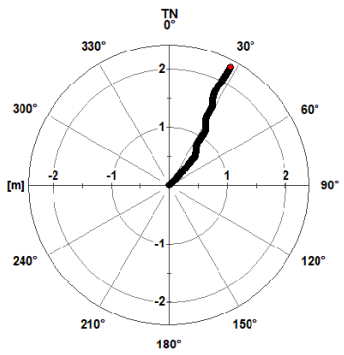
Image logs are oriented relative to magnetic north. Final structure log is oriented relative to true north using magnetic declination of 8.2° East.

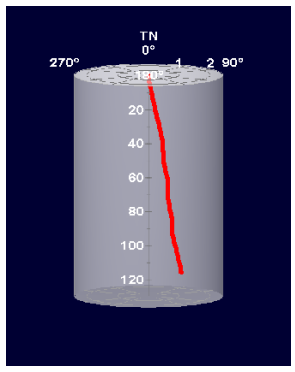
Mechanical calliper log used for structure dip corrections.

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

Image orientation affected by steel casing above 8.4 m, no structures picked above this point.

BOREHOLE DEVIATION

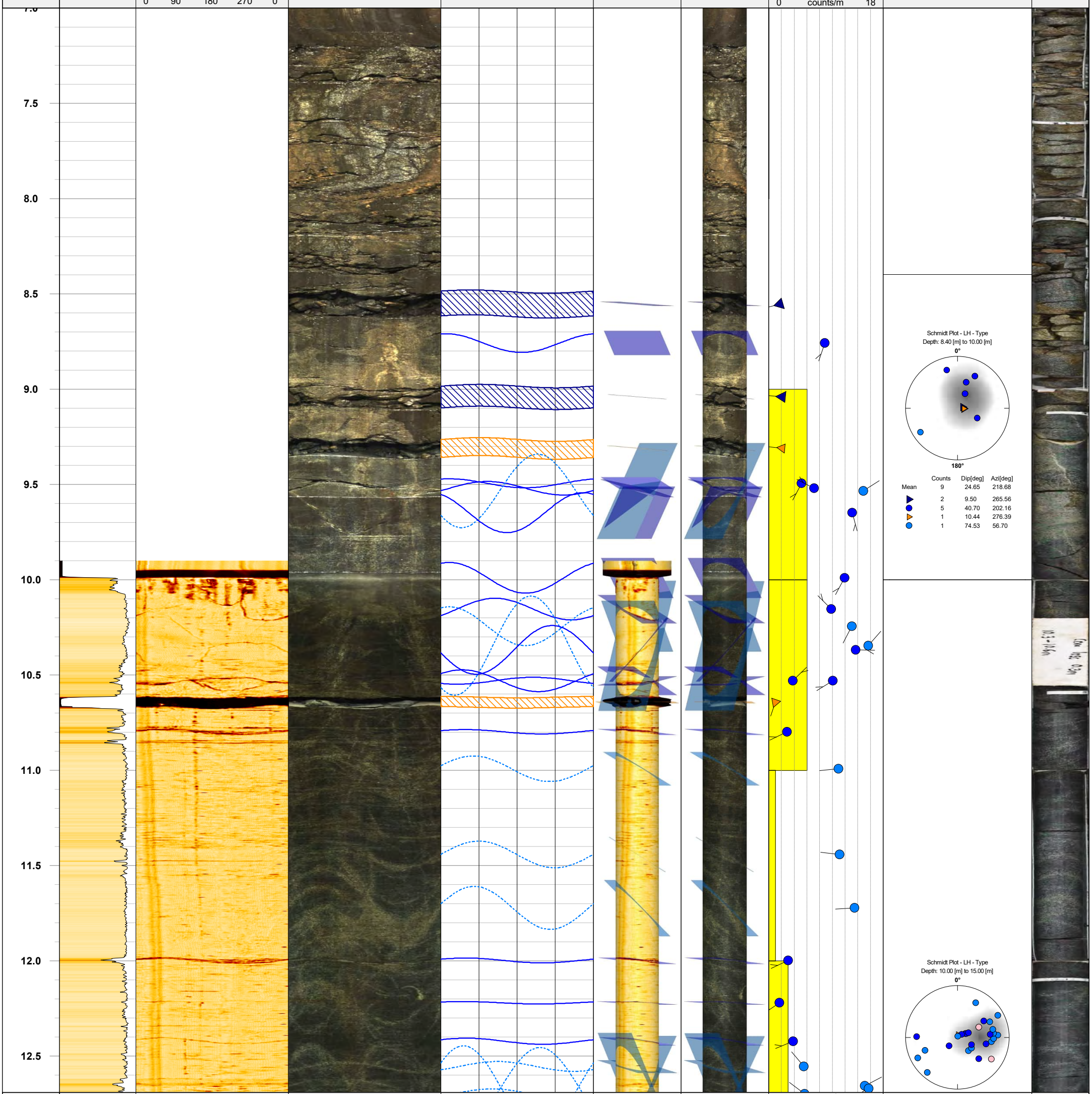




INTERPRETED STRUCTURES

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

BHUA-13



BHUA-13

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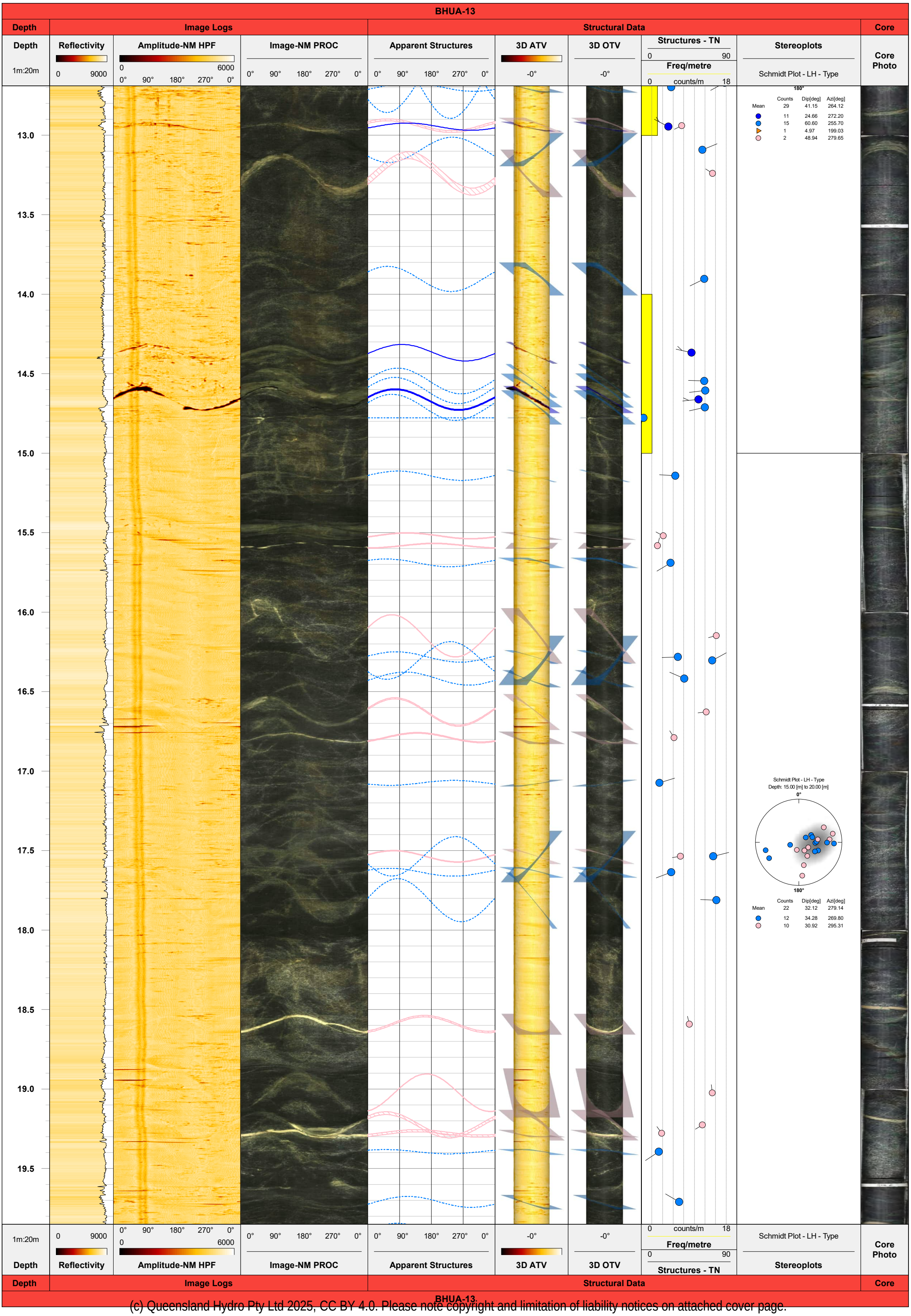

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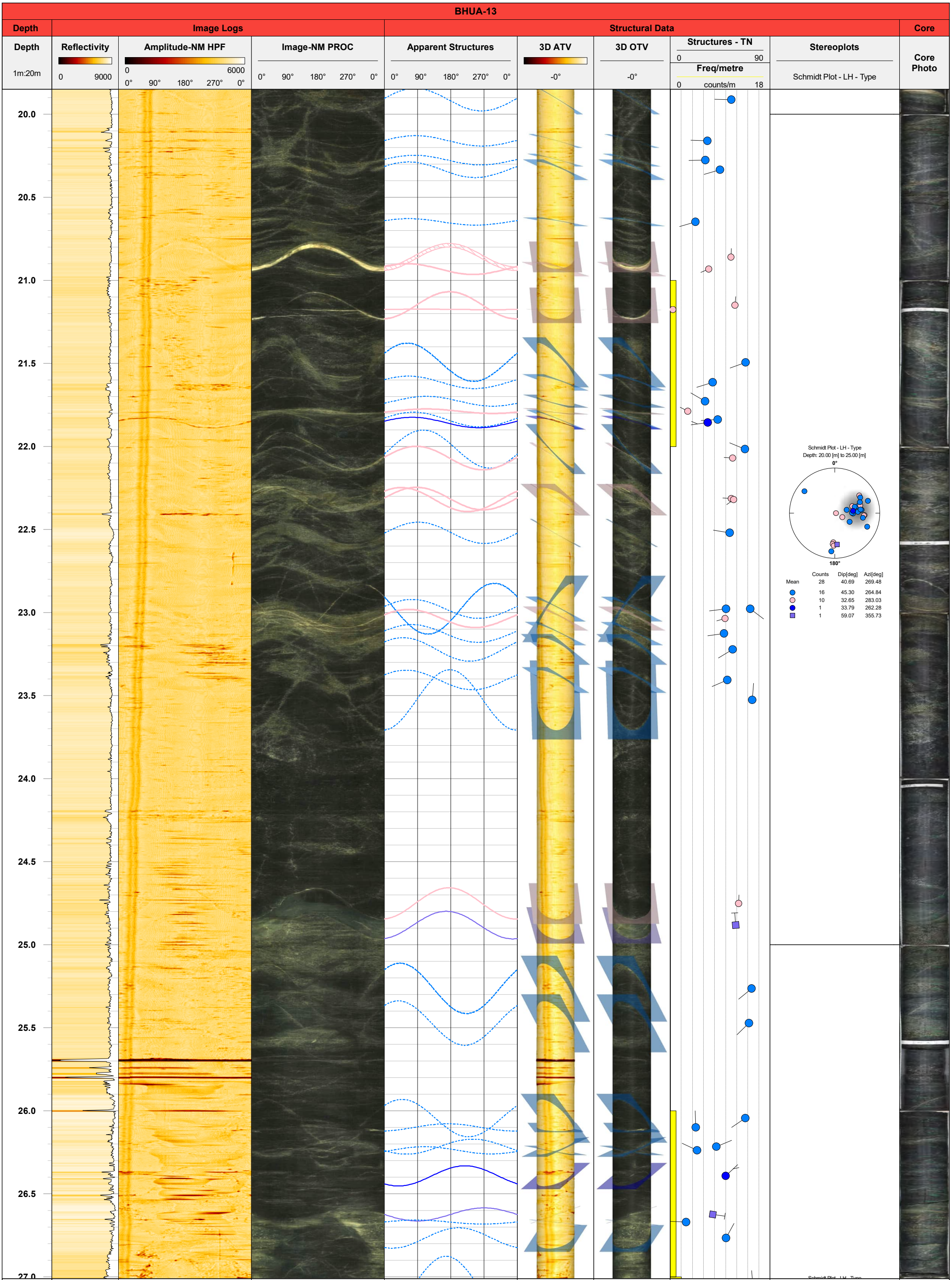

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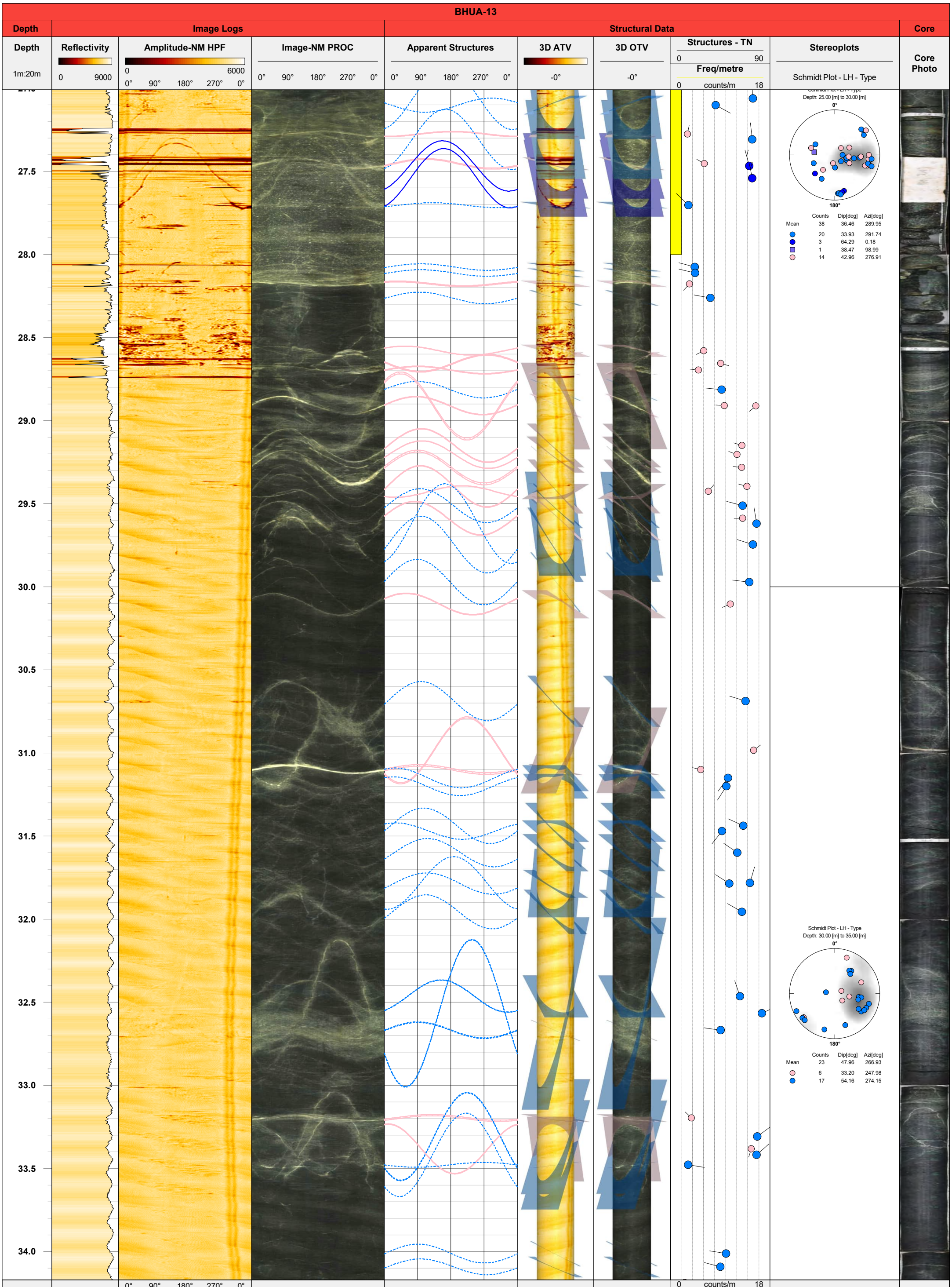

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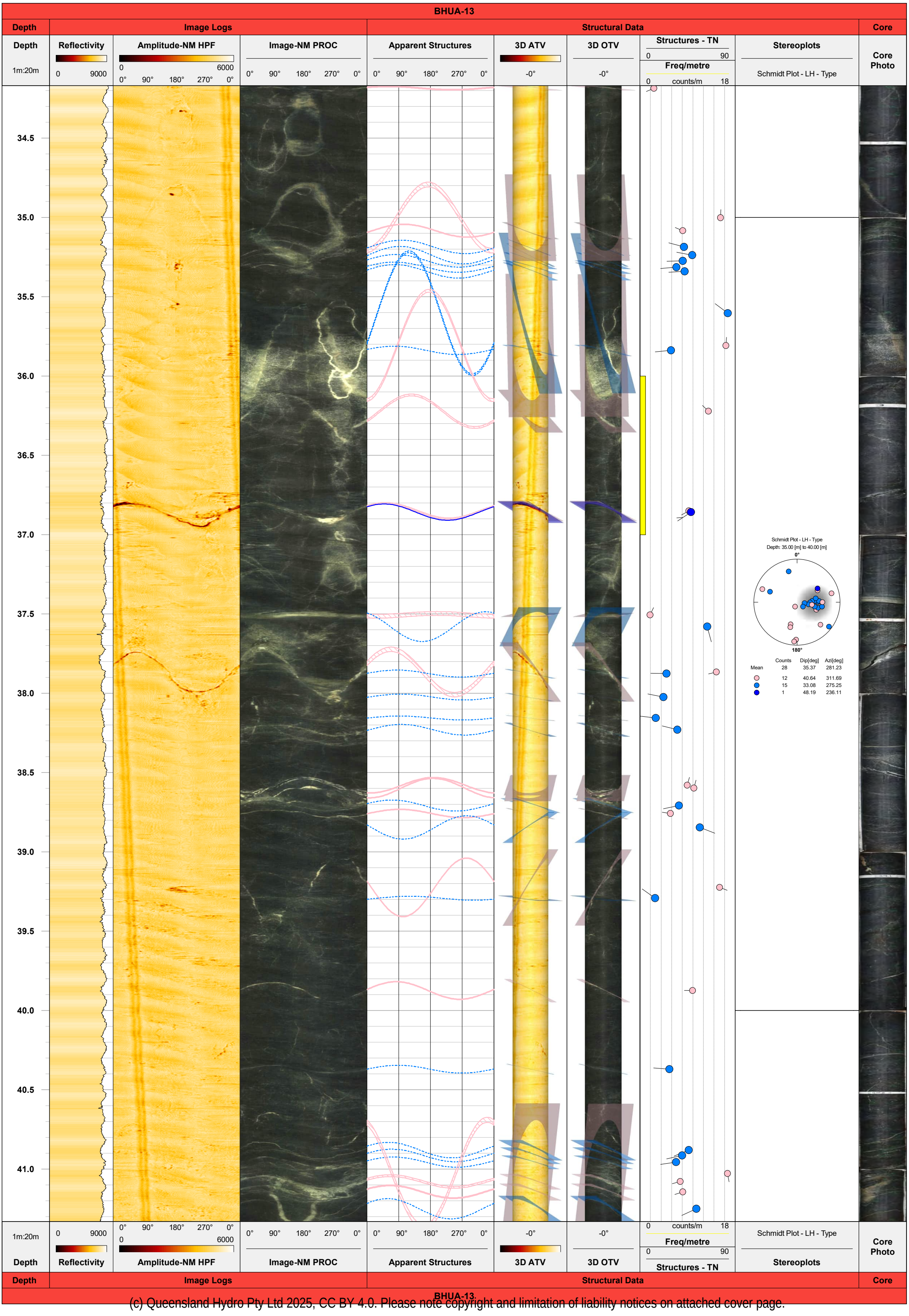

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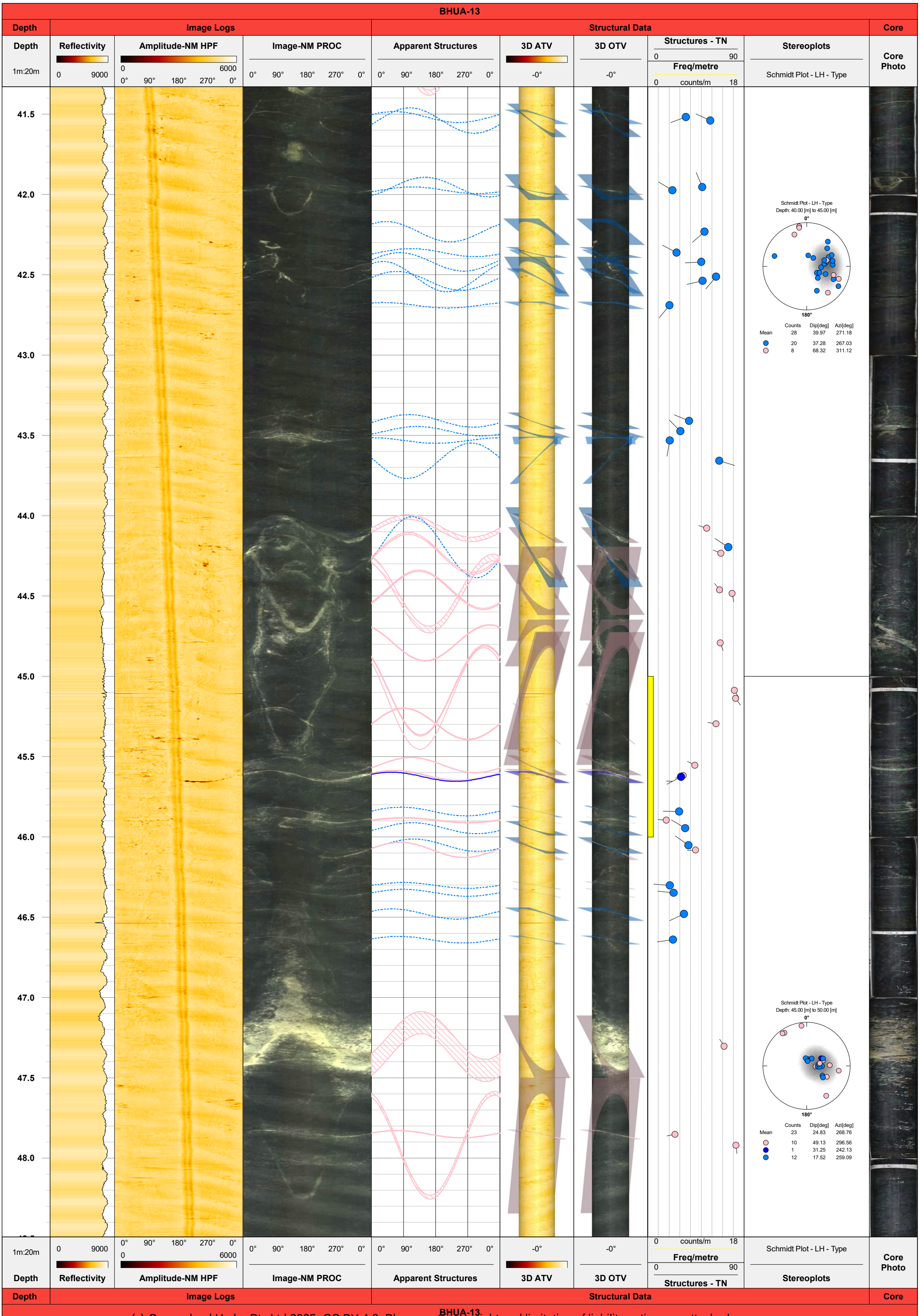

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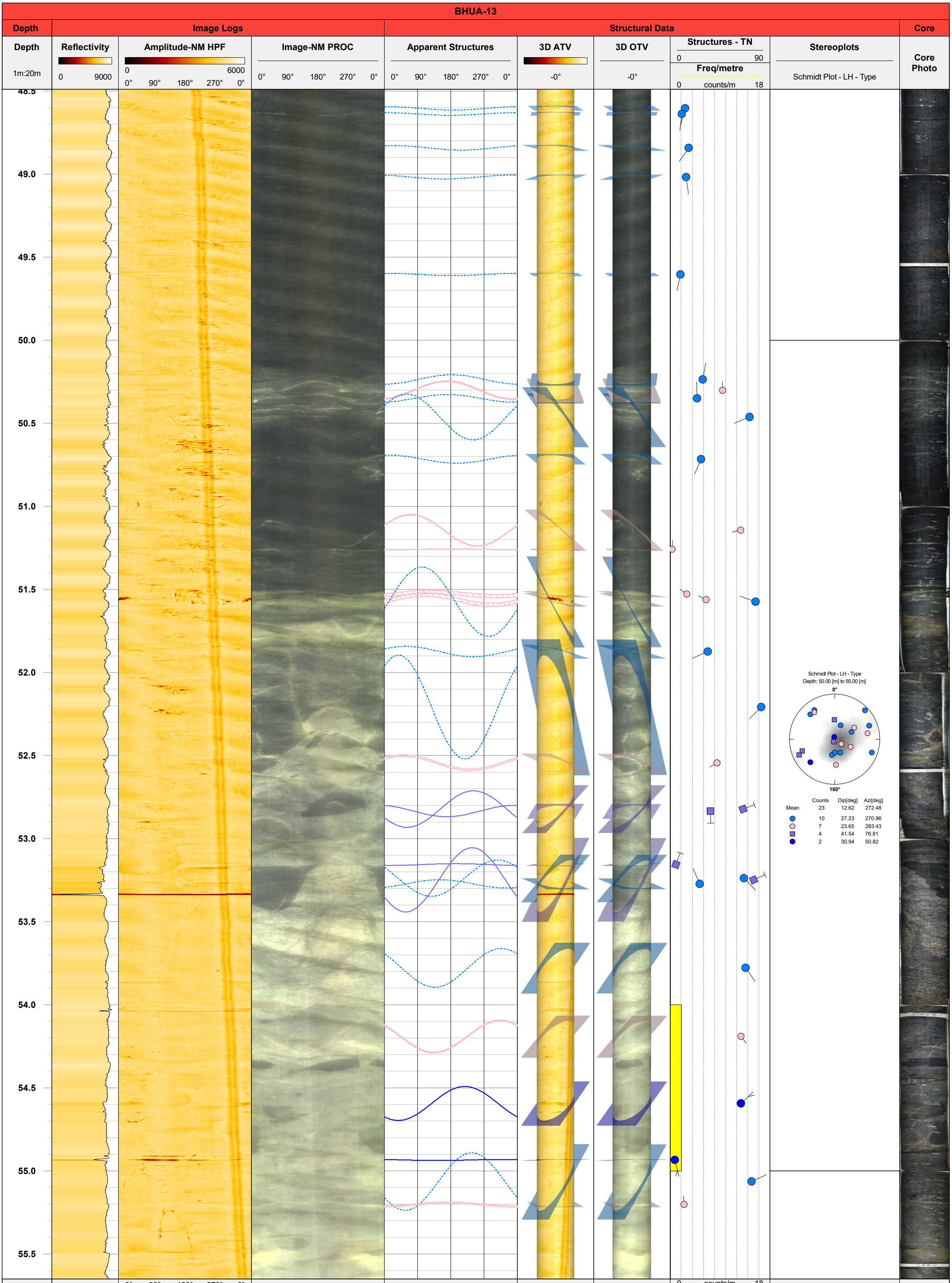

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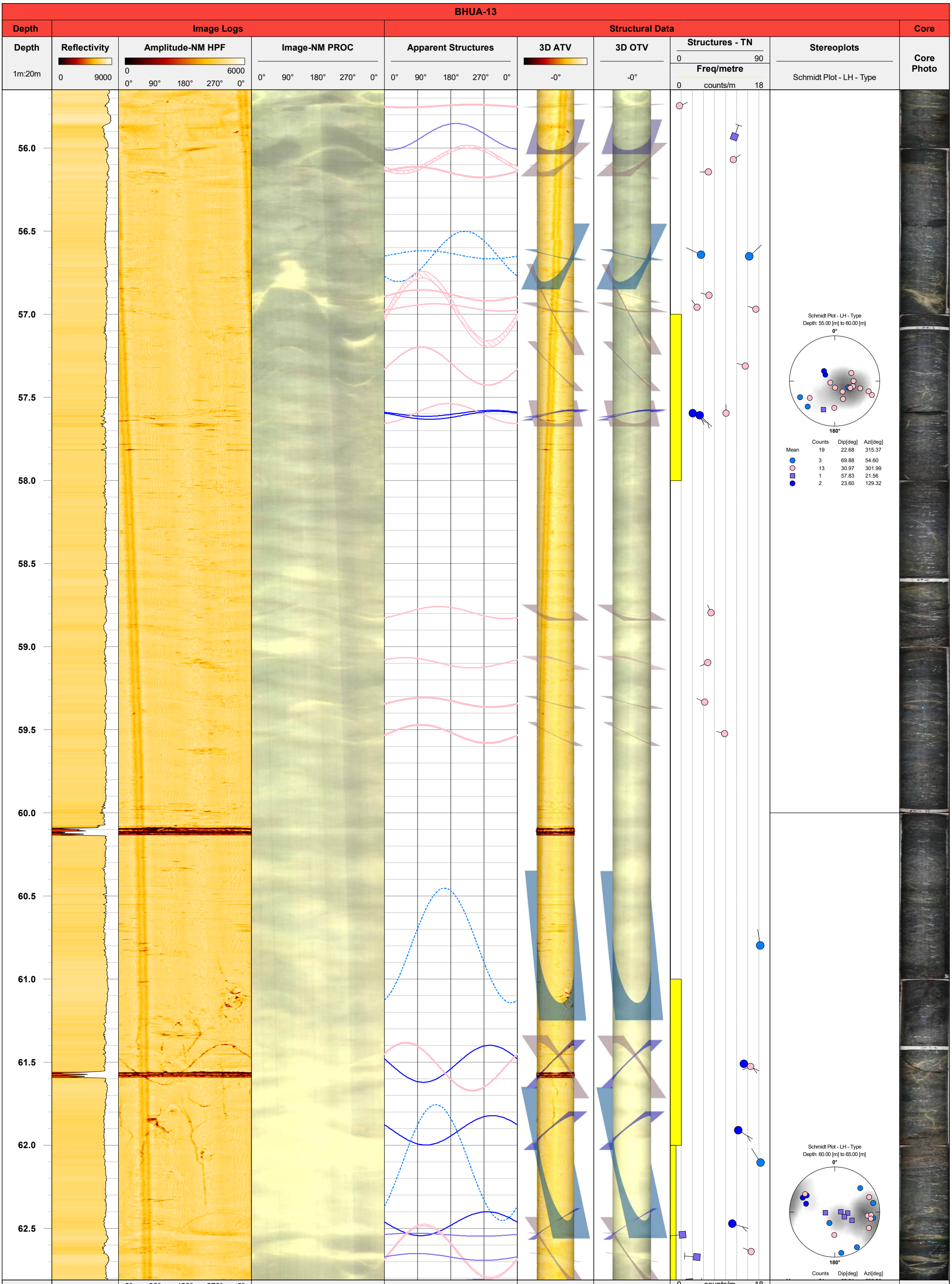

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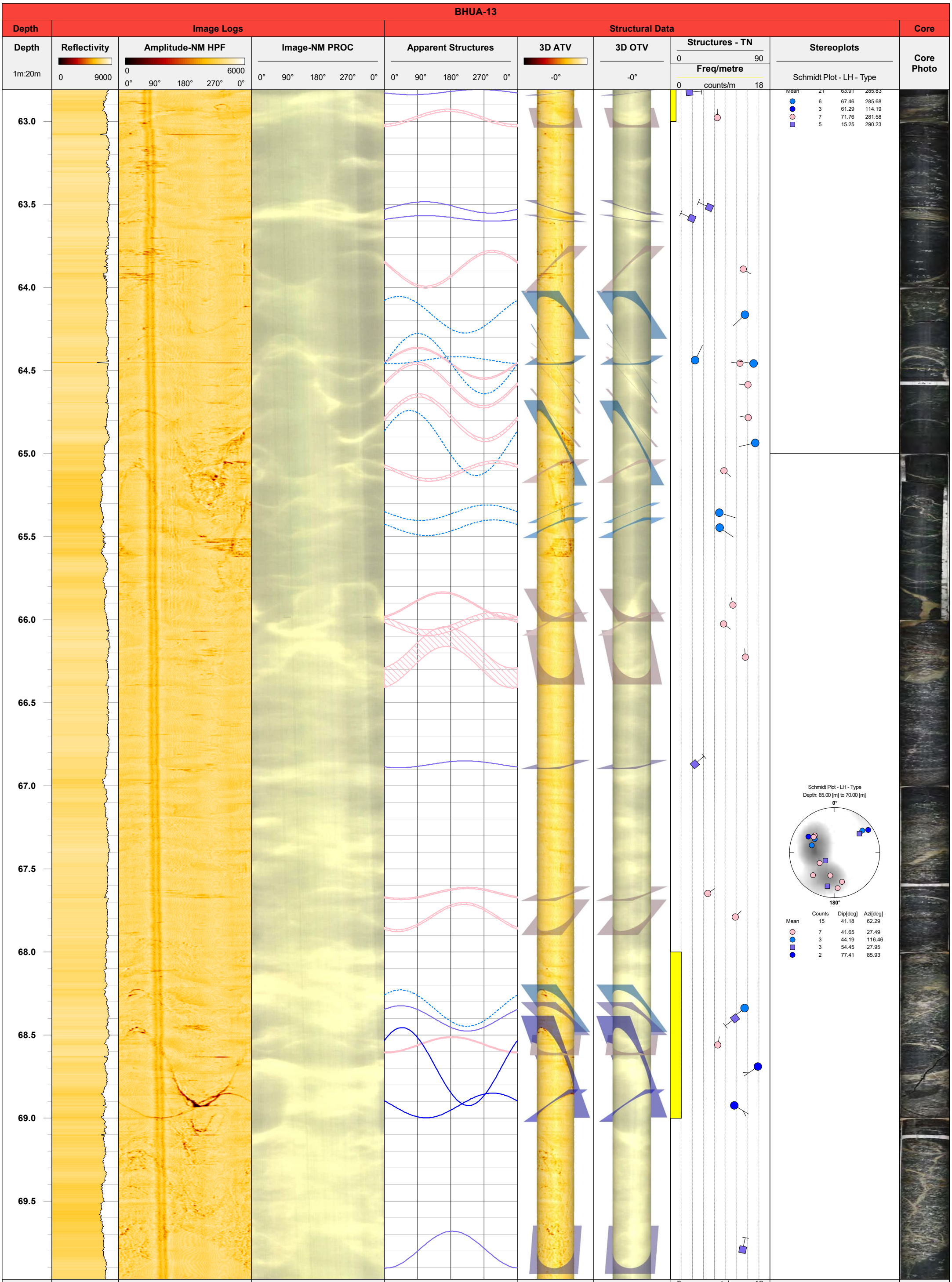

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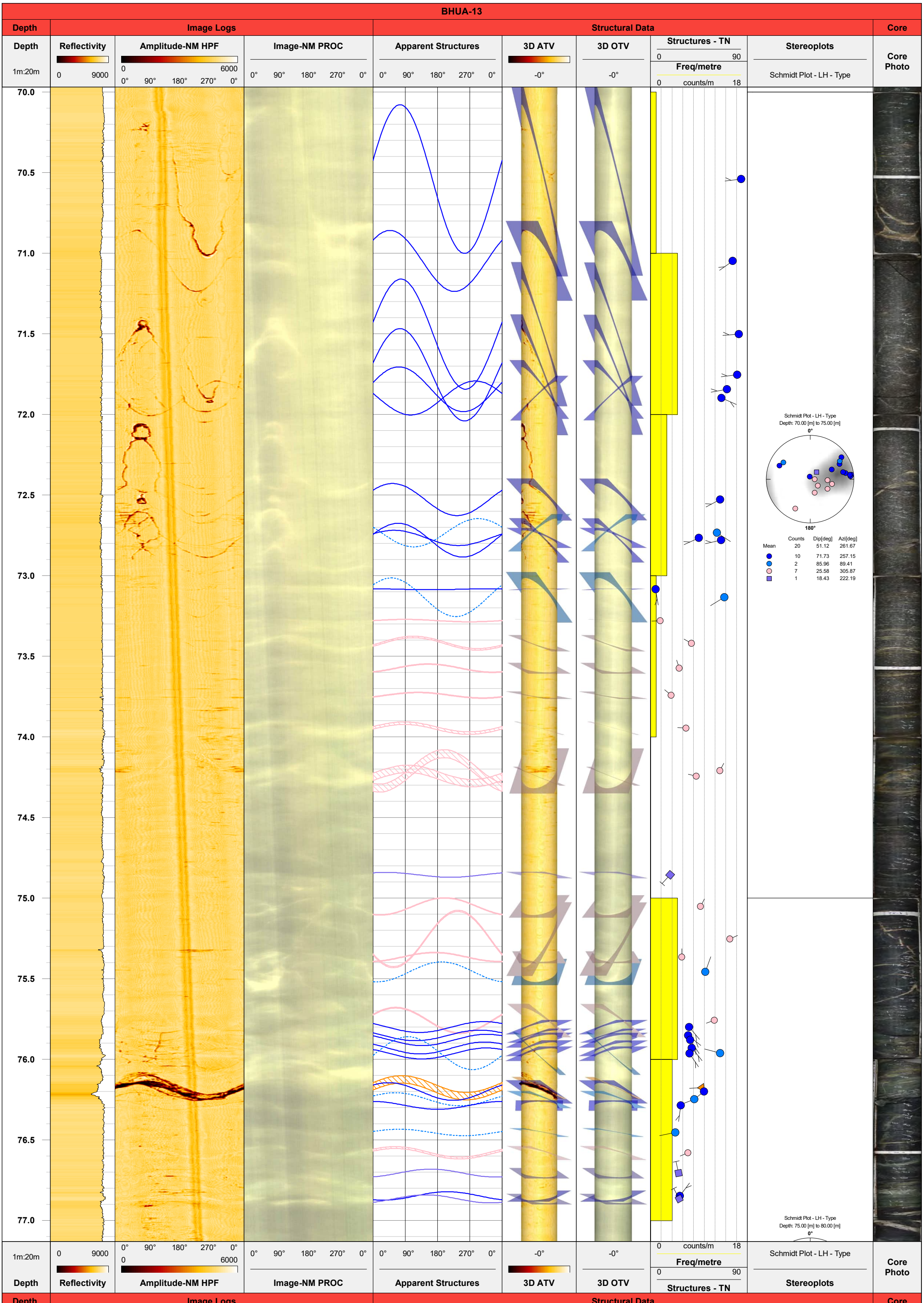

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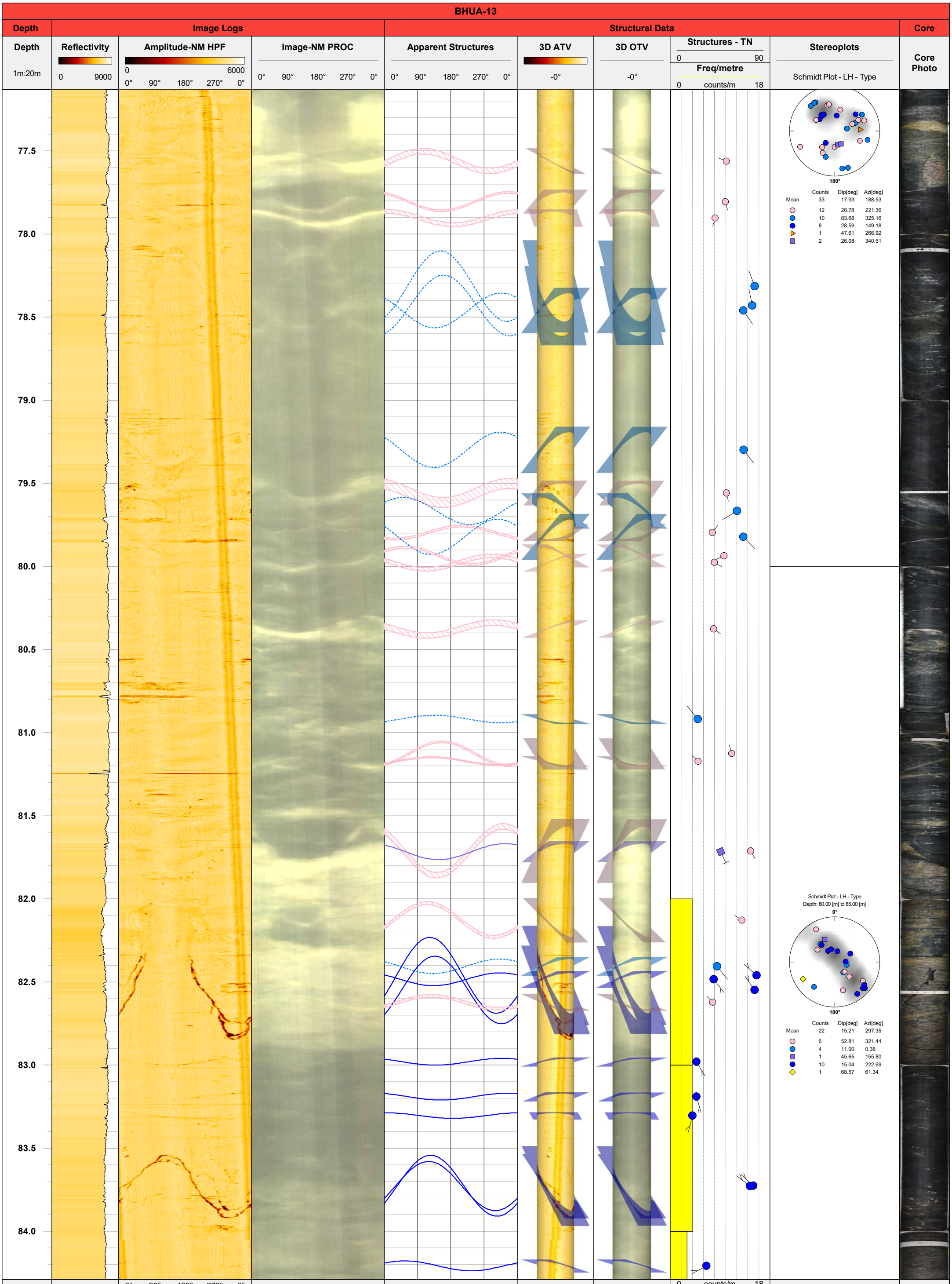

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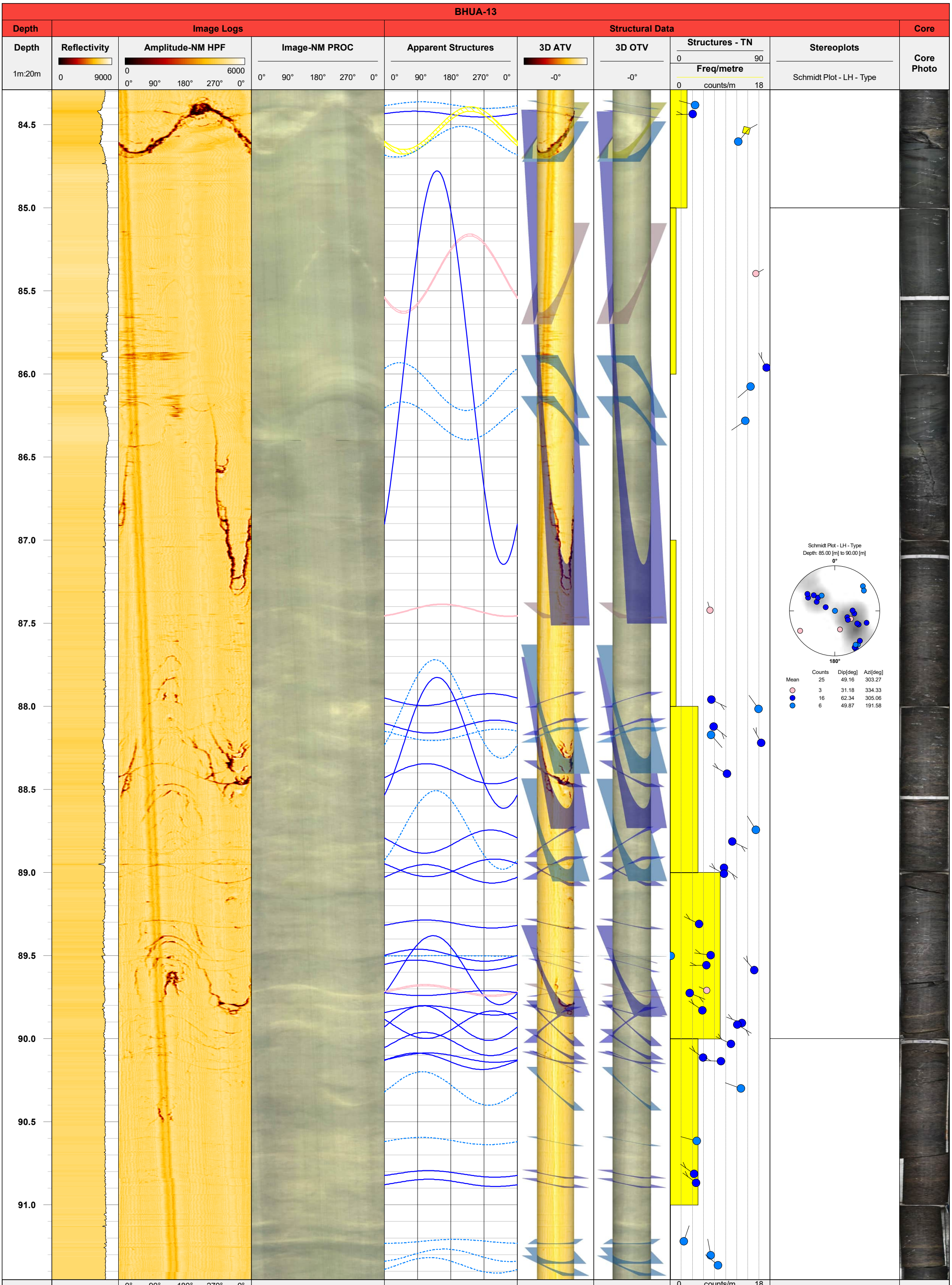

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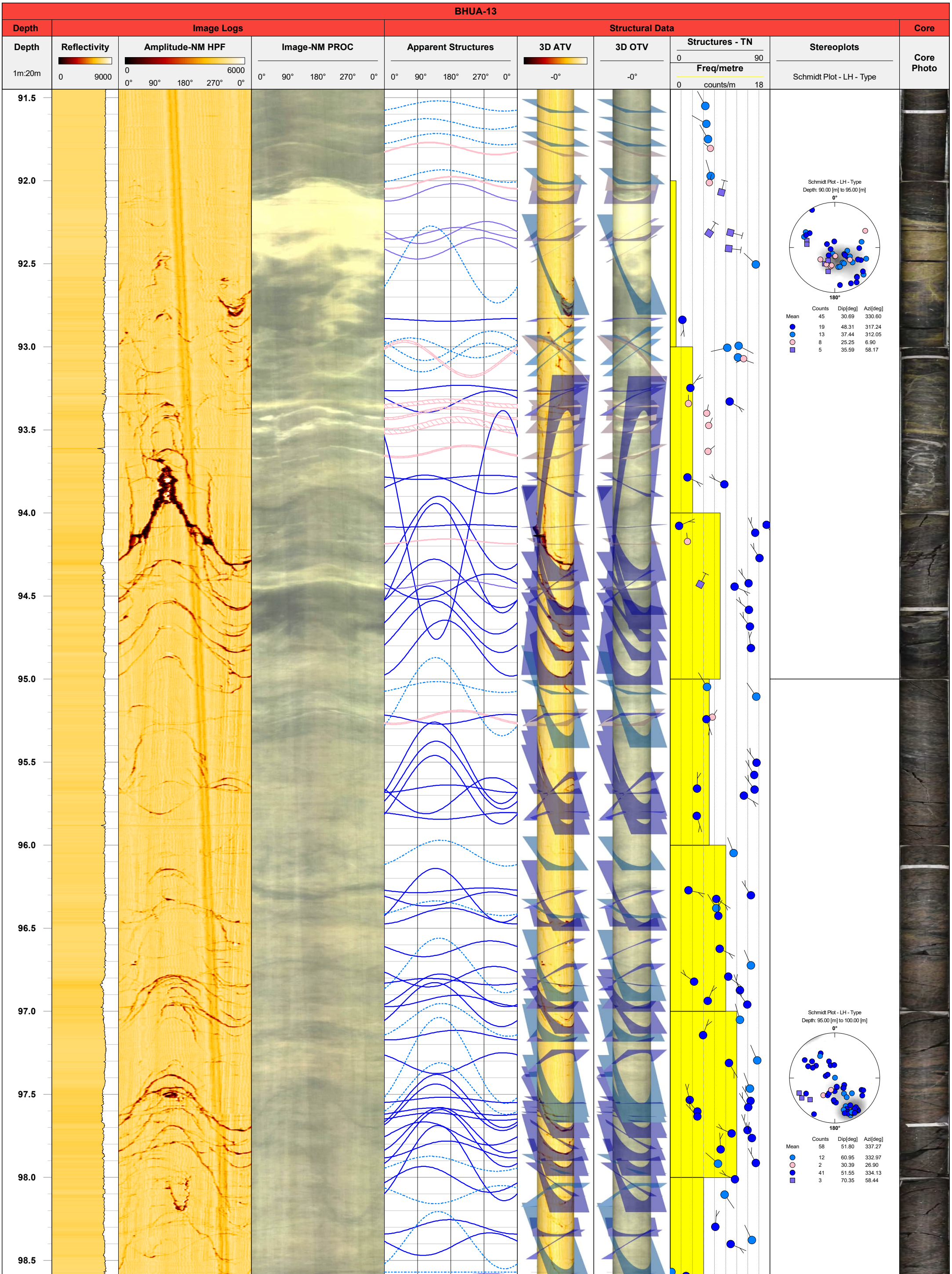

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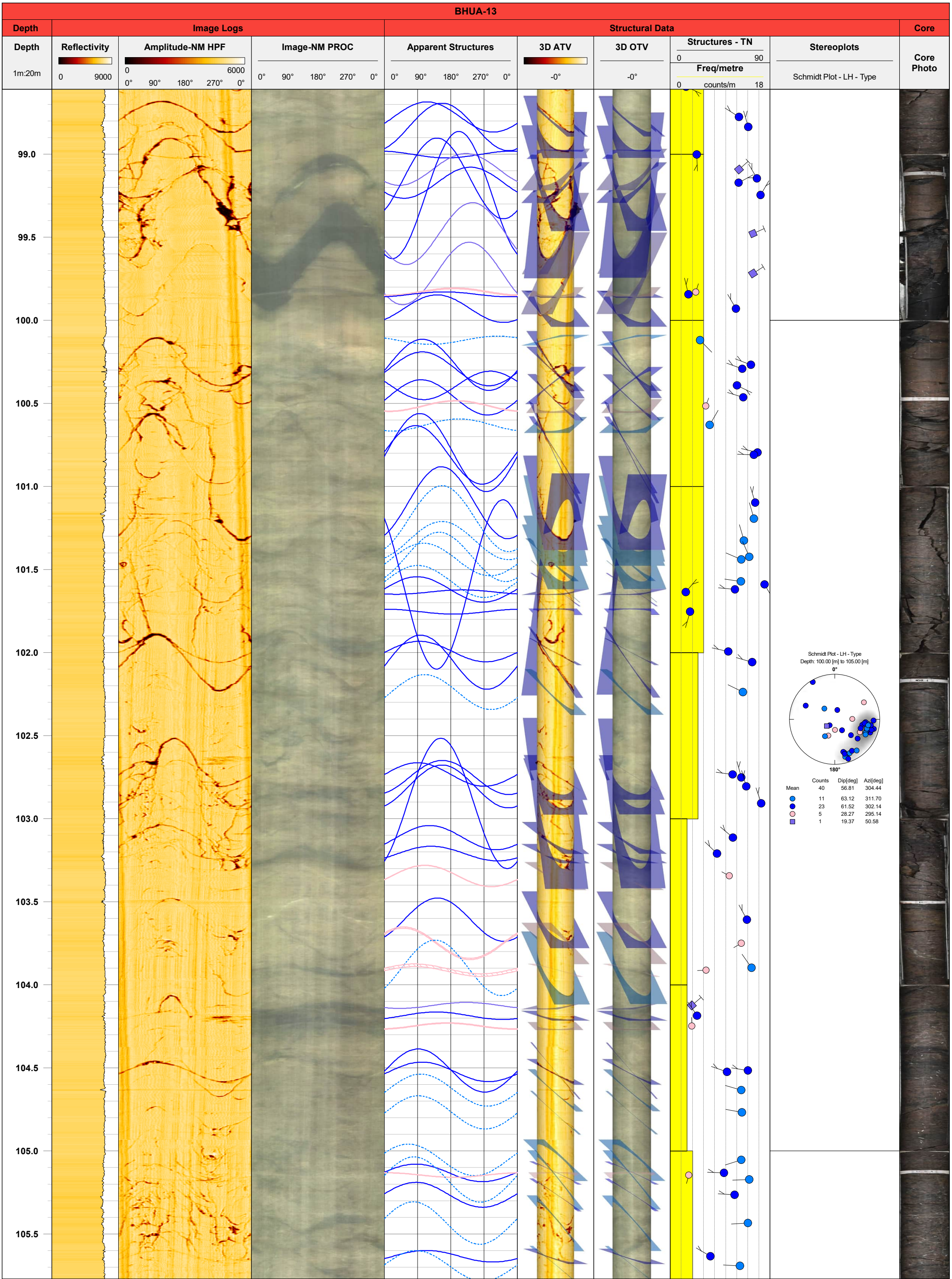

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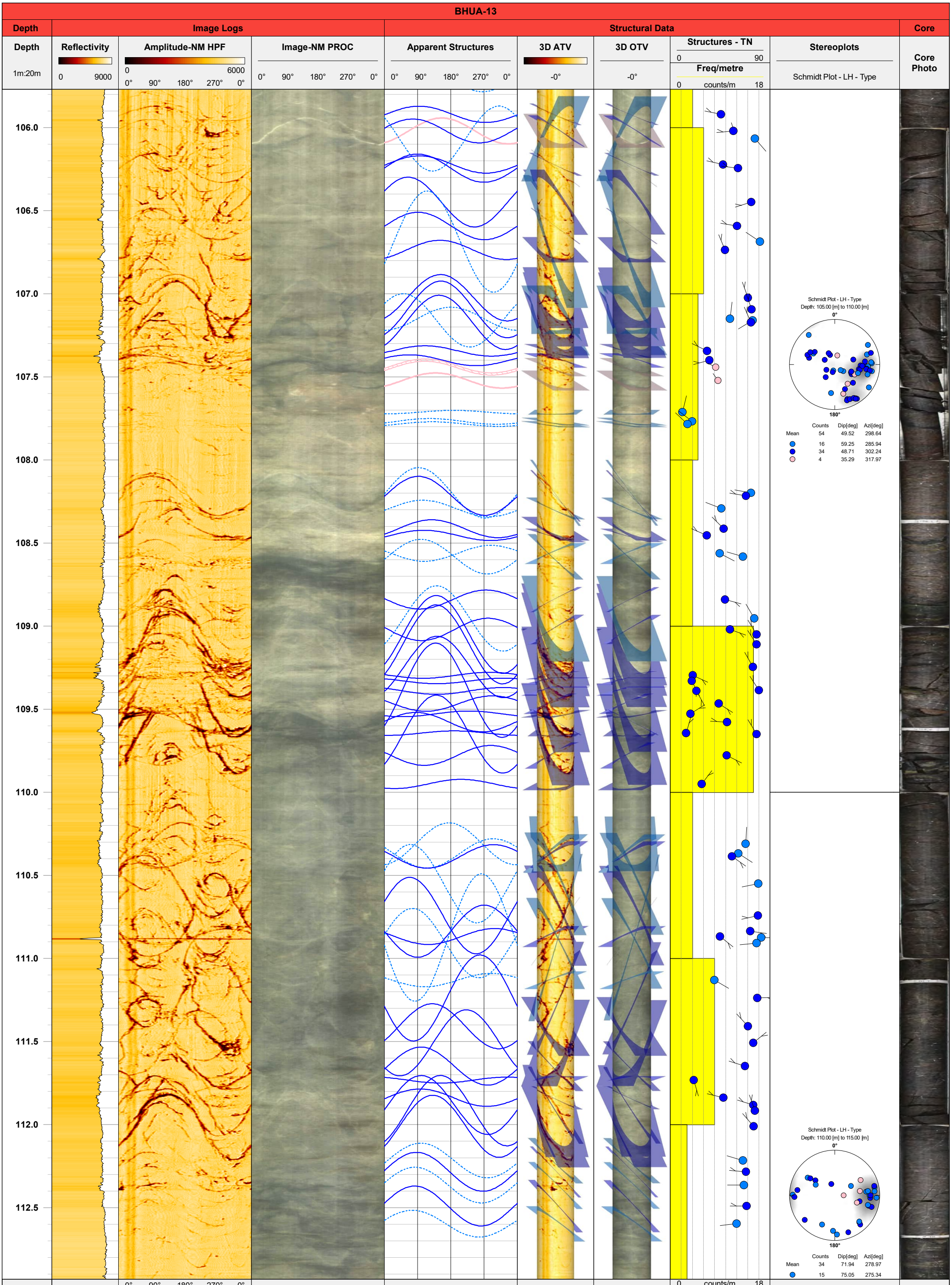

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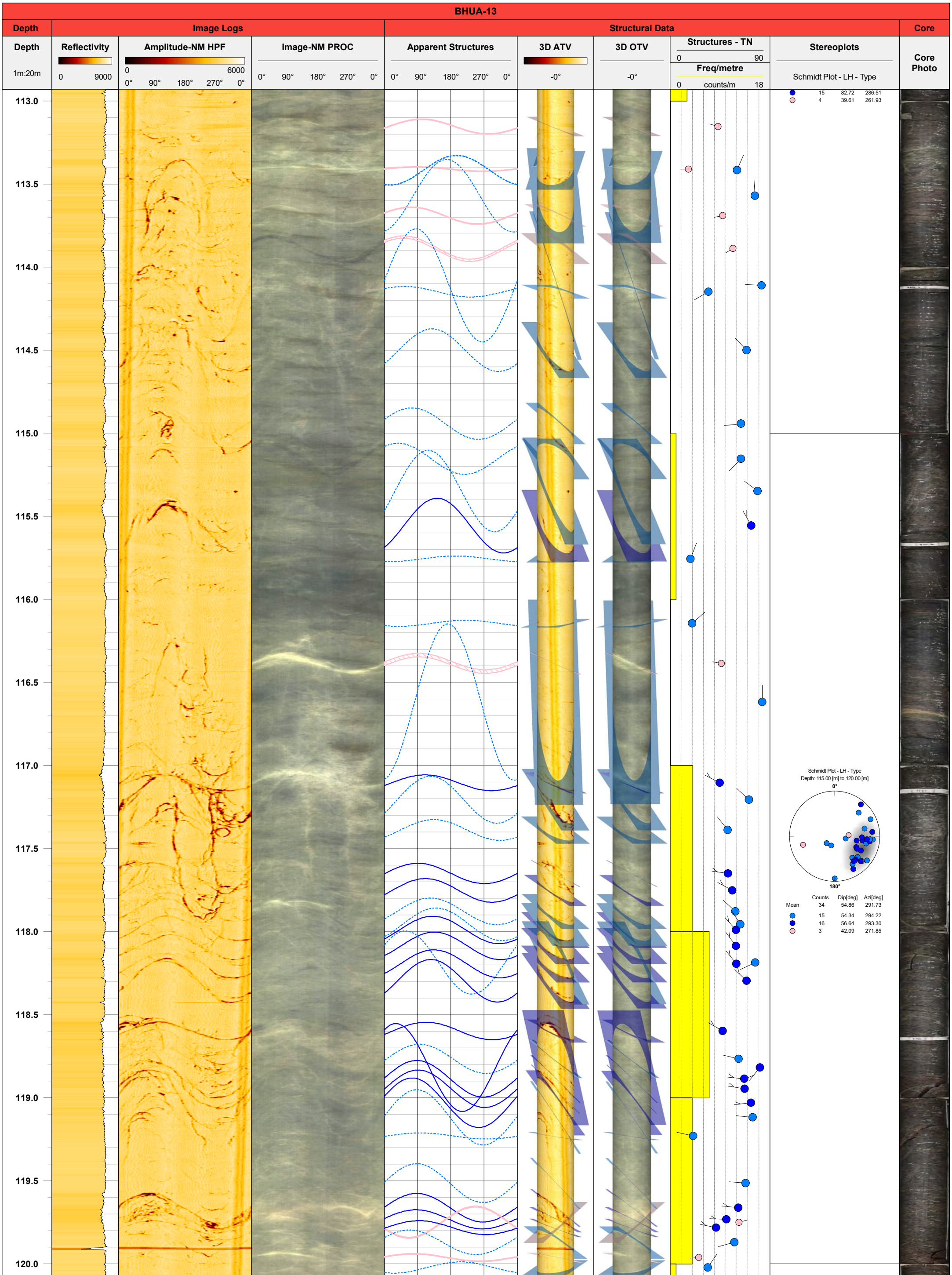

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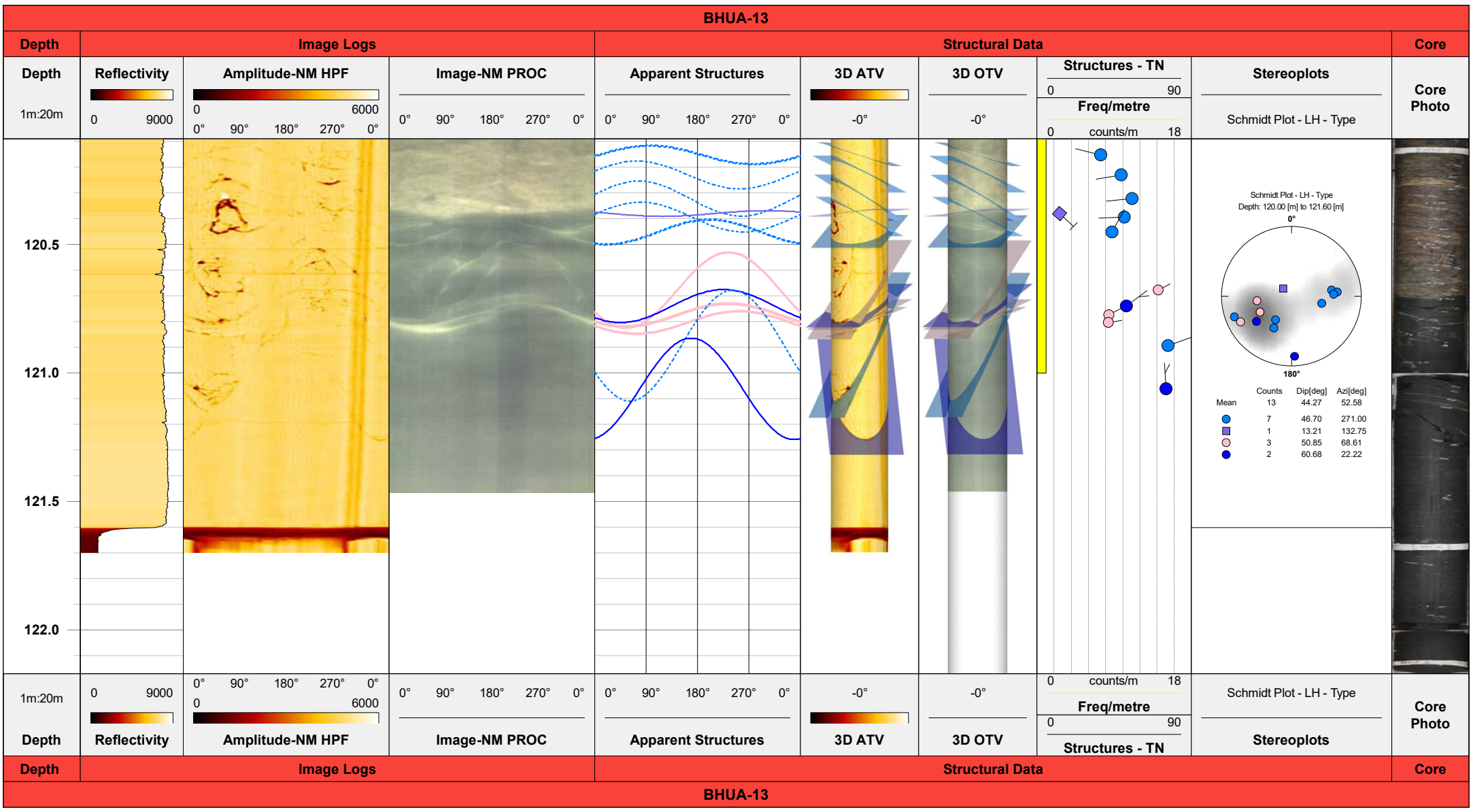

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BHUA-13 Composite Logs

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Level 12, 900 Ann Street
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QLD 4006
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GEOPHYSICAL RECORD OF BOREHOLE: BHUA-13

PROJECT:	Pioneer-Burdekin PHES	JOB #	PS138693
CLIENT:	Queensland Hydro	DATE:	06/11/2024

BOREHOLE DETAILS

LOCATION:	Upper Reservoir	BH DEPTH:	121.40 m
EASTING:	658075.71 m E	BH DIAMETER:	HQ (96 mm)
NORTHING:	7667418.28 m N	BH AZIMUTH:	027°
ELEVATION:	-	BH PLUNGE:	-89°
COORD SYSTEM:	MGA2020-55	CASING DEPTH:	7.20 m
LOGGING DATUM:	Ground Level	CASING TYPE:	HWT

DOCUMENT DETAILS

LOGGED BY:	JH
LOGGED DATE:	09-11/05/2024
DRAWN BY:	BW/GH
REVIEWED BY:	GH
FILE:	BHUA-13_Comp_RevB
LOGGED DEPTH:	121.70 m

NOTES

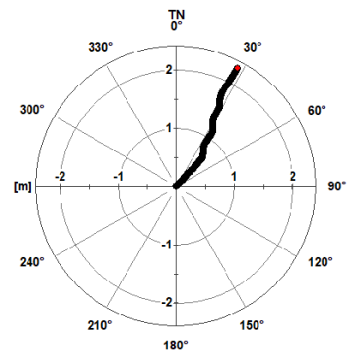
Image logs are oriented relative to magnetic north. Final structure log is oriented relative to true north using magnetic declination of 8.2° East.

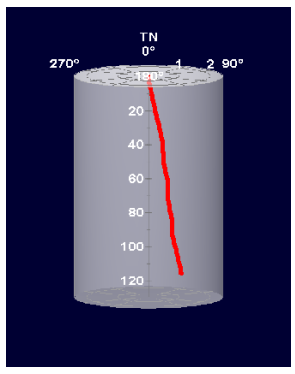
Mechanical calliper log used for structure dip corrections.

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

Image orientation affected by steel casing above 8.4 m, no structures picked above this point.

BOREHOLE DEVIATION

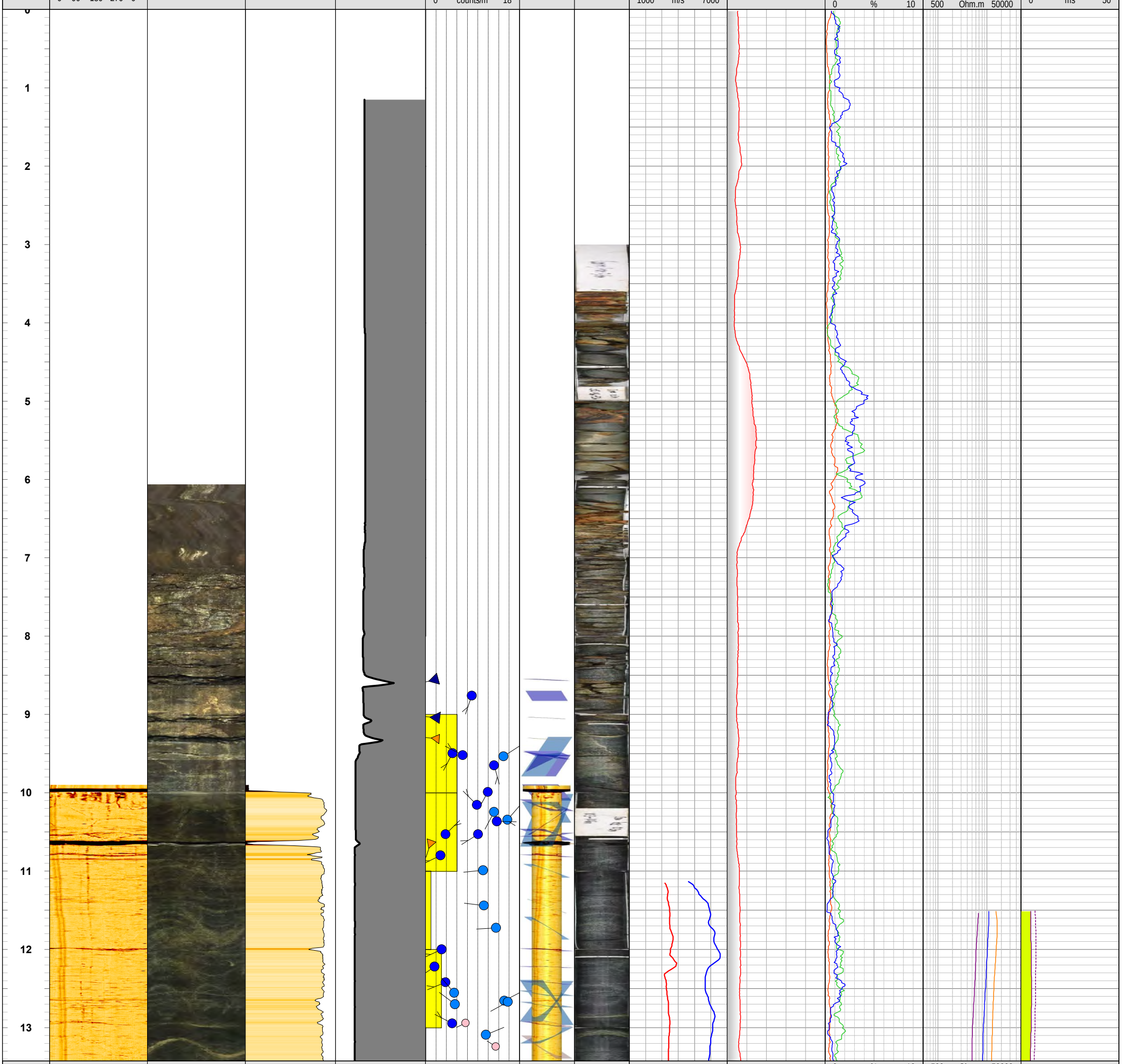




INTERPRETED STRUCTURES

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

BHUA-13



Depth | Image Logs | Calliper | Structural Logs | Sonic Logs | Gamma Logs | Electrical Logs
BHUA-13

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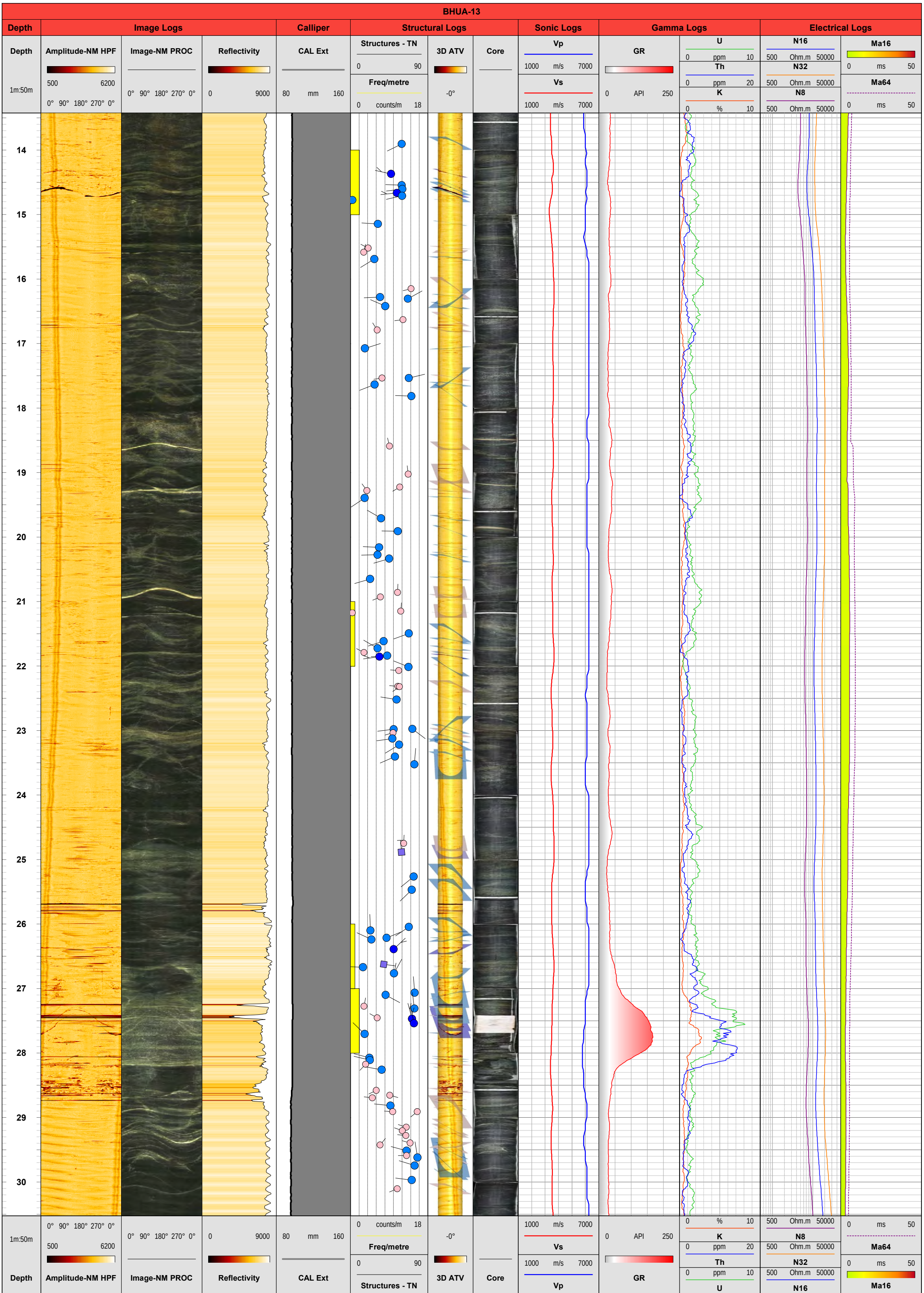

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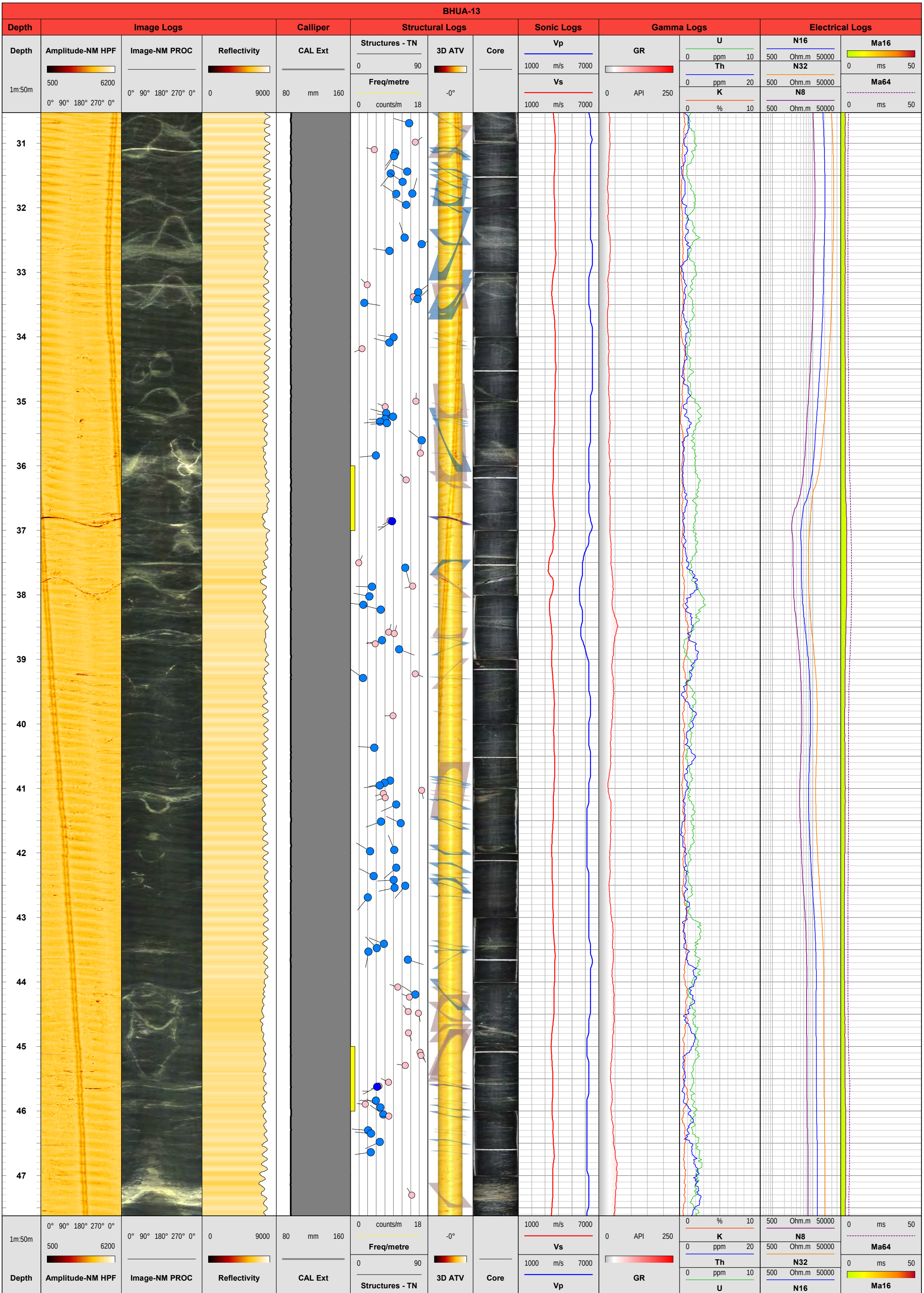

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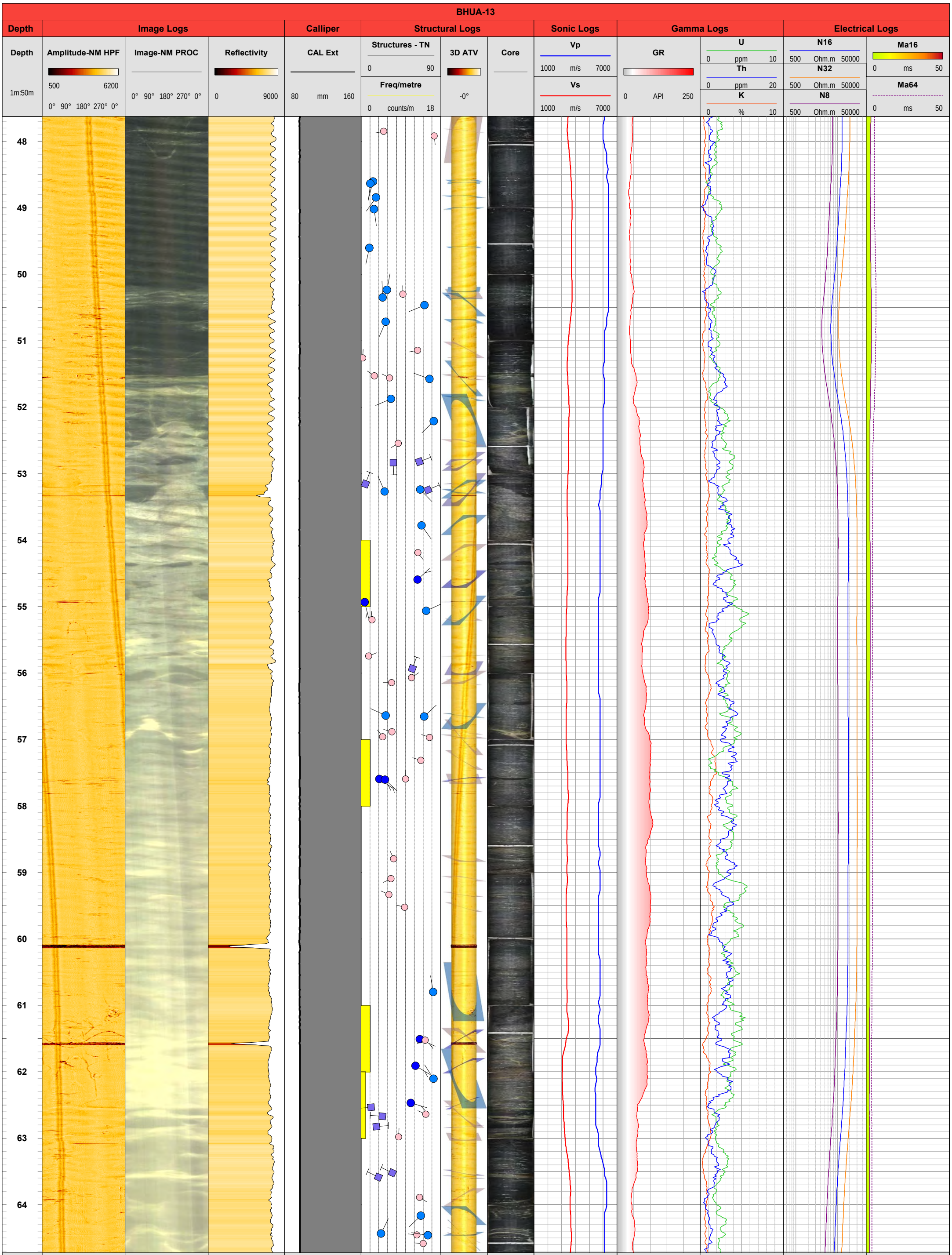

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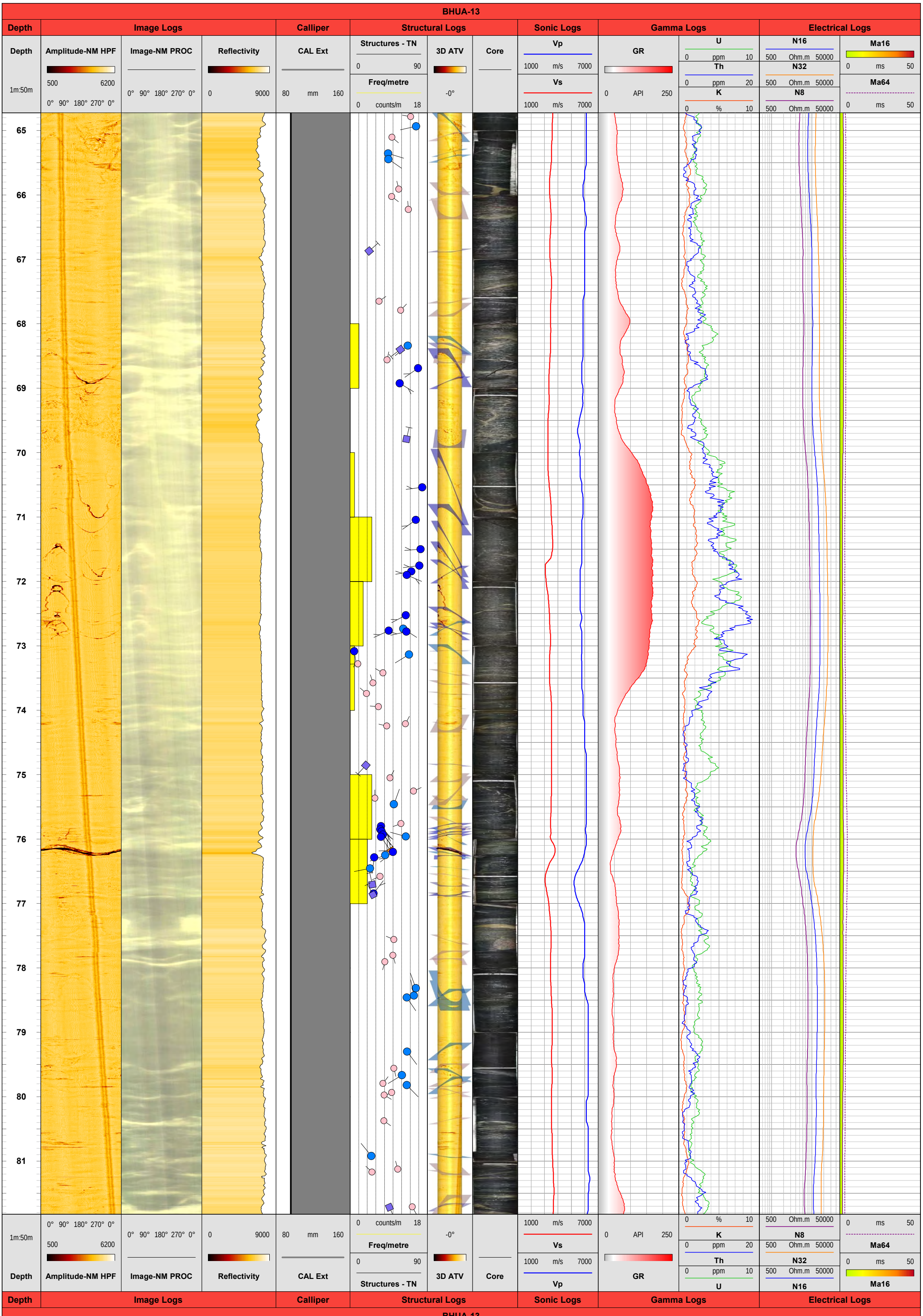

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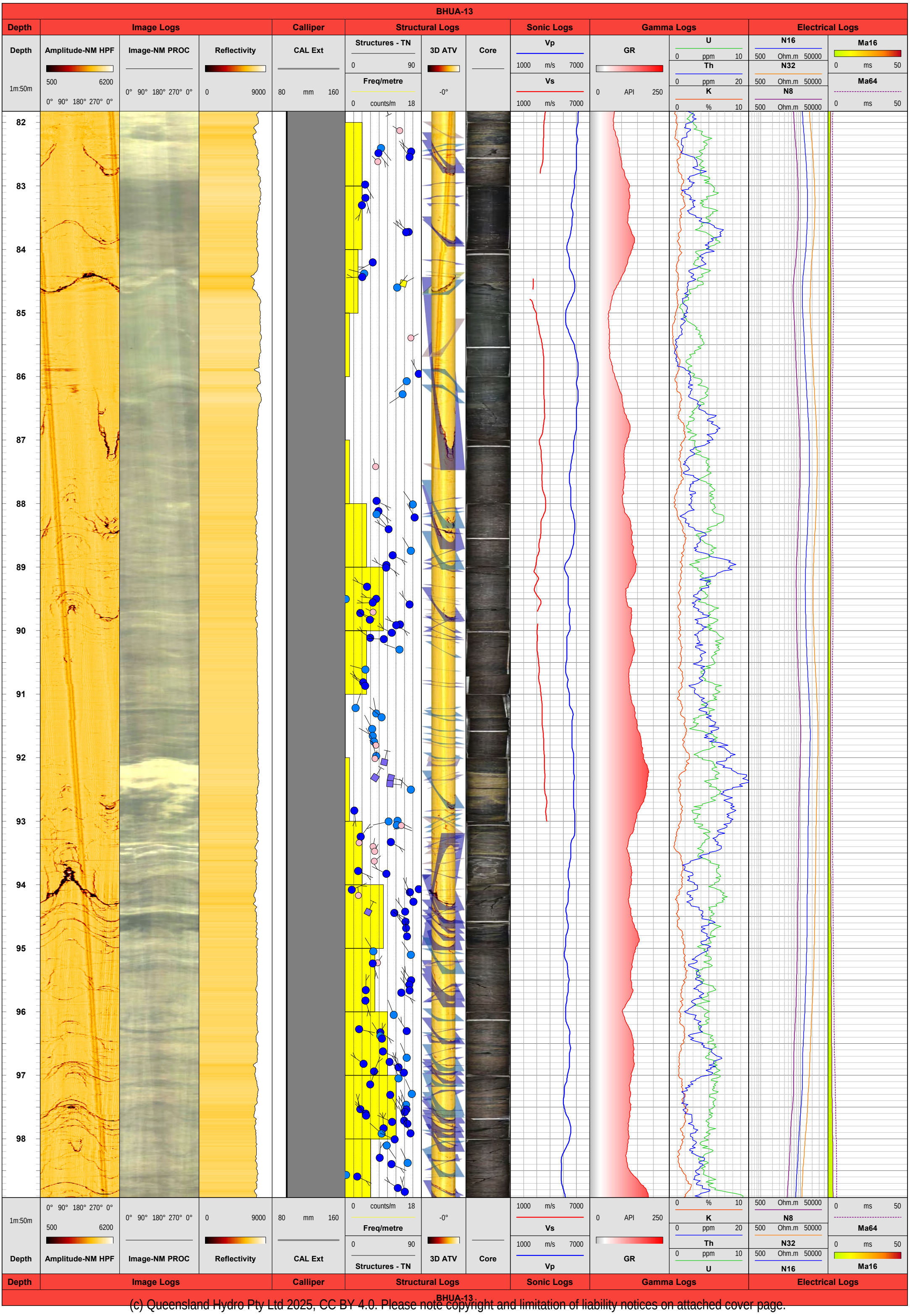

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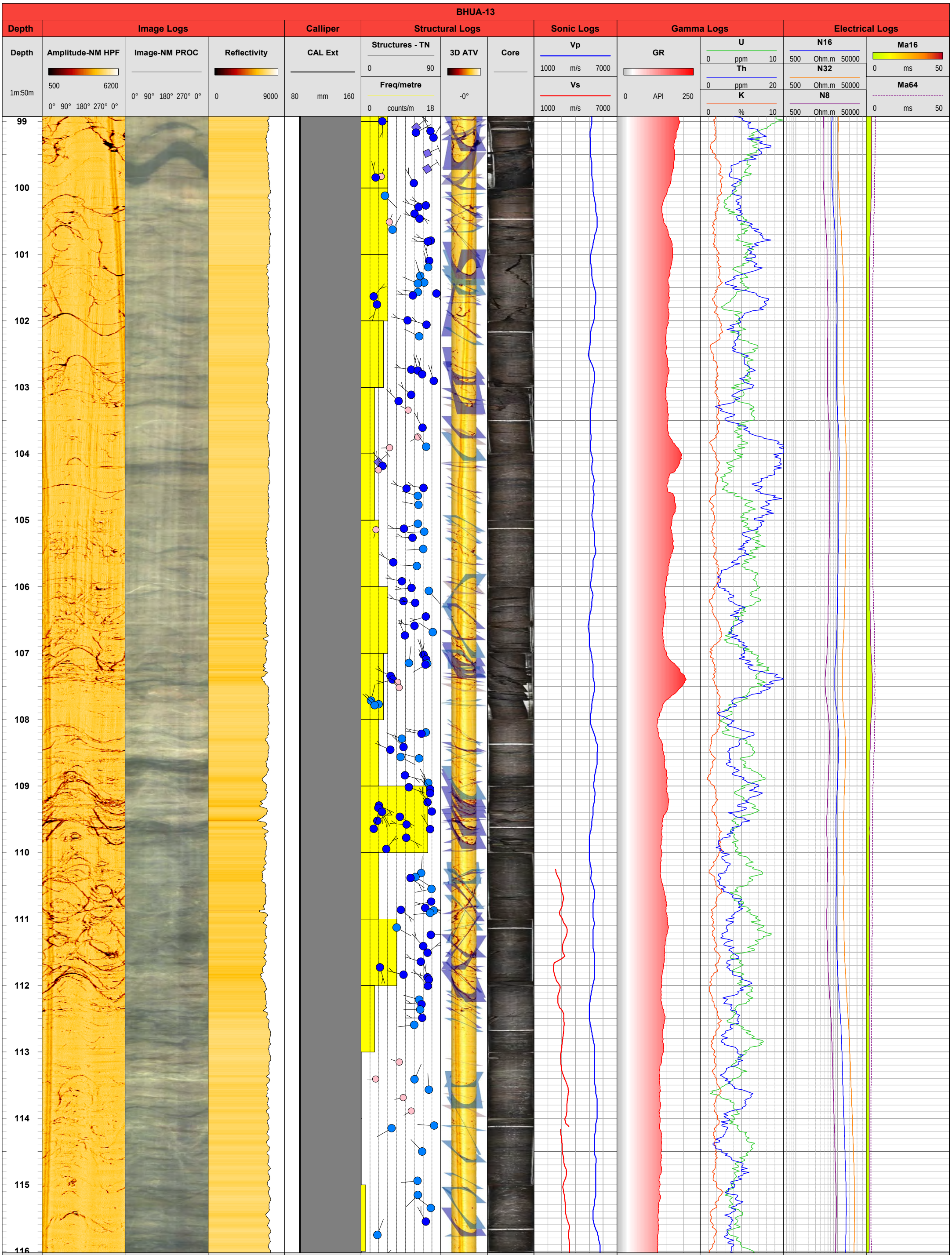

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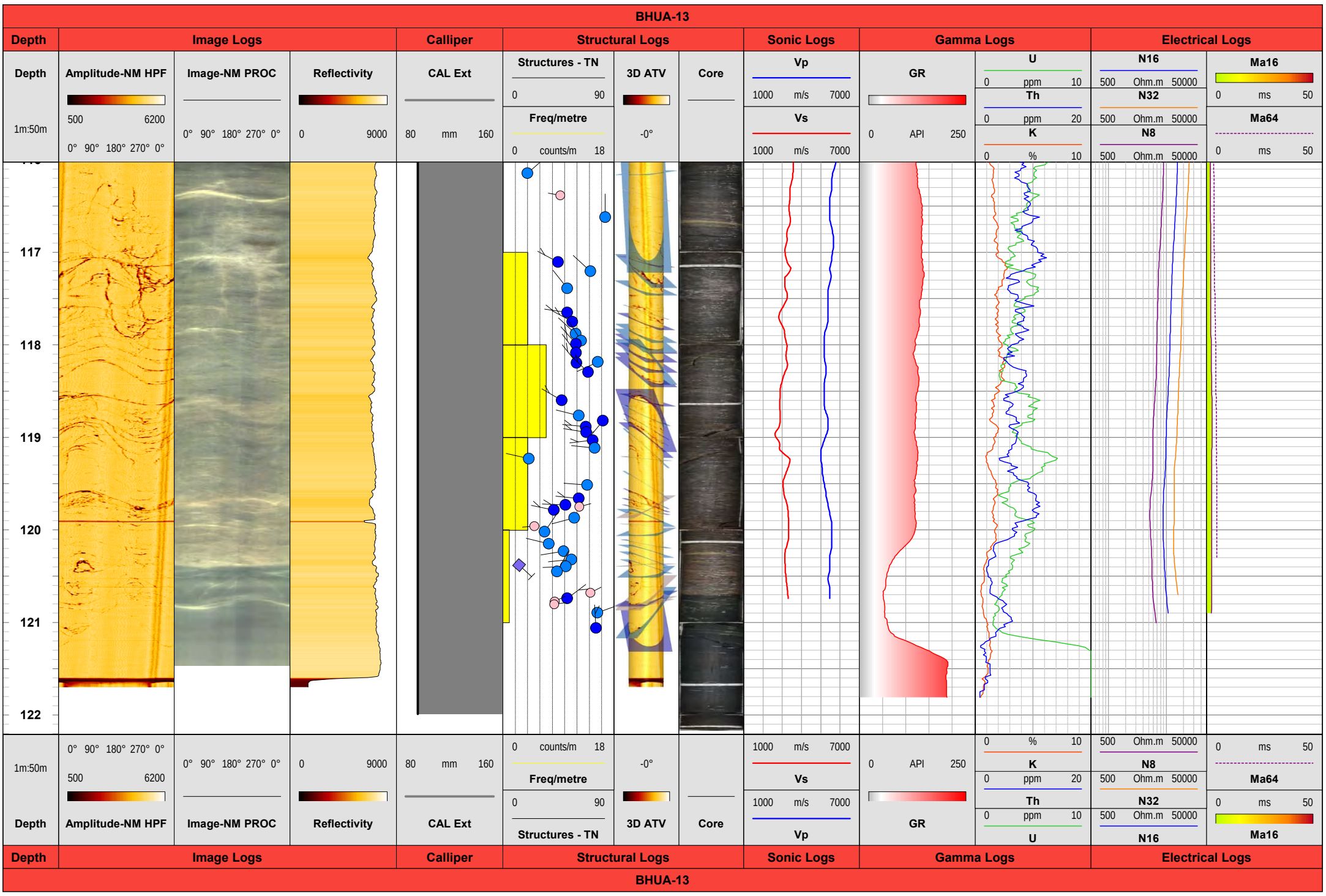

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