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BOREHOLE: BHL-02

Project: Pioneer-Burdekin PHES
Location: Netherdale/Dalrymple Heights
Client: Queensland Hydro
Job No.: PS138693

Position: Lower Reservoir
Coords: 660362.3 m E 7661262.7 m N MGA2020-55
Surface RL: 152.5 m AHD
Contractor: Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout
Mark V
Inclination: -56°
-55° Direction: 268°

Sheet 1 of 12
Date Started: 5/9/2023
Date Completed: 18/9/2023
Logged: NP

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	16/10/2024 01:00, VWP1	0	152.54	U 1.50-1.95 m PB-BHL-02-001			SM	FILL Silty SAND: fine to coarse grained, brown grey, with fine to coarse grained gravel.	D	D	FILL	
			0.75	151.92				CI	CLAY: medium plasticity, dark grey, trace fine to coarse grained sand; trace fine grained gravel.	w<PL	St	ALLUVIAL SOIL	
	E-F	16/10/2024 02:00, VWP2	2	150.90	U 3.00-3.40 m PB-BHL-02-002			SC	Clayey SAND: fine to coarse grained, brown grey, clay is low plasticity; with fine to coarse grained gravel.		MD		
			3	150.08				SM	Silty SAND: fine to coarse grained, brown grey, with fine grained gravel.	D			
	F-H	16/10/2024 03:00, VWP3	4	149.26	D 5.50-6.00 m PB-BHL-02-003				Brown.		VD		
			5	148.03				SC	Clayey SAND: fine to coarse grained, dark brown, clay is low plasticity; with fine grained gravel.				
	F	16/10/2024 04:00, VWP4	6		U 6.00-6.20 m PB-BHL-02-004					M - W	MD - D		
			7										
	H		7.85										
				8						Continued as Cored Borehole			
			9										
			10										
Comments													
										Checked	GEM		
										Date	16/10/2024		

PEPHES LIB - REV V.G.L.B. Log IS AU BOREHOLE 3 BHL-02.GPJ <<DrawingFile>> 16/10/2024 21:41 10.03.00.09 Dalrymple Lab and in situ Tool - DGO | Lib: WSP 5.07.2 2023-10-30 Proj: WSP 5.04.1 2023-06-14



BOREHOLE: BHL-02

Project: Pioneer-Burdekin PHES

Location: Netherdale/Dalrymple Heights

Client: Queensland Hydro

Job No.: PS138693

Position: Lower Reservoir

Coords: 660362.3 m E 7661262.7 m N MGA2020-55

Surface RL: 152.5 m AHD

Contractor: Twin Hills Engineering & Drilling

Drill Rig: Hydrapower Scout

Mark V

Inclination: -55° Direction: 268°

Sheet 2 OF 12

Date Started: 5/9/2023

Date Completed: 18/9/2023

Logged: NP

Drilling						Field Material Description				Defect Information			
METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations (Core partings shown - refer to Detailed Defect Descriptions table for all logged features)		AVERAGE DEFECT SPACING (mm)	
									■ - UCS				
				0									
				1									
				2									
				3									
				4									
				5									
				6									
				7									
				8									
				9									
				10									

7439

10095

7.85

146.11

8.08

145.92

8.34

145.71

10.00

Continuation from non-cored borehole

GRANODIORITE: coarse grained, white grey black, crystalline, massive, rare dark grey dacite inclusions up to 20mm diameter, slightly altered.

NO CORE 0.26m (8.08-8.34)

GRANODIORITE: coarse grained, white grey black, crystalline, massive, slightly altered.

FR

7.85: J, 60°, CN, PR, RF

7.95: J, 65°, br SN, PR, SM

8.00: J, 0°, ph br SN, PR

8.05: J, 0°, CN, PR

8.34-8.44: CS, 20°, CN, PR, RF, GRAVEL, fine to coarse grained, sub-angular, granodiorite, possible DB

8.57: J, 15°, br SN, PR, SM

8.68: J, 60°, PR

9.00-9.51: PLT(A) Is50 = 6.5MPa (M); PLT(D) Is50 = 9.1MPa (M)

9.36: J, 50°, CN, PR, RF

9.51: J, 15°, CN, PR, RF

9.67: J, 15°, ph gr SN, PR, SM

9.74: J, 15°, br SN, PR, SM

9.81: J, 40°, CN, PR, SM

1030003000

Comments

Checked GEM

Date 16/10/2024

PEPHES LIB - REV:GLB Log IS AU CORED BOREHOLE 3 BHL-02.GPJ <<DrawingFile>> 19/10/2024 21:34 10.03.00.09 Datagel Lib and In Situ Tool - DSD | Lib: WSP 5.07.2 2023-10-30 Pjt: WSP 5.04.1 2023-06-14



BOREHOLE: BHL-02

Project: Pioneer-Burdekin PHES

Location: Netherdale/Dalrymple Heights

Client: Queensland Hydro

Job No.: PS138693

Position: Lower Reservoir

Coords: 660362.3 m E 7661262.7 m N MGA2020-55

Surface RL: 152.5 m AHD

Contractor: Twin Hills Engineering & Drilling

Drill Rig: Hydrapower Scout

Mark V

Inclination: -55° Direction: 268°

Sheet 3 OF 12

Date Started: 5/9/2023

Date Completed: 18/9/2023

Logged: NP

Drilling						Field Material Description				Defect Information			
METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH (MPa)	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
				10	144.35	+	GRANODIORITE: coarse grained, white grey black, crystalline, massive, slightly altered.	FR		10.00: J, 5°, bl-gr SN, PR, SM			
			100	95	11	+				10.86: J, 25°, CN, IR, SM 10.99: J, 35°, CN, PR, SM			
				12		+				11.40: J, 0°, CN, PR, RF			
				13		+				12.25: J, 25°, CN, PR, RF			
				14		+				12.66: J, 10°, CN, PR, SM			
			100	100	13.32	+							
					141.63	+	Medium grained, pale yellow grey black pink, moderately altered (micro-granodiorite).			13.41: J, 15°, CN, PR, RF			
				15		+				14.00: J, 5°, gr SN, PR, RF			
				16		+				14.22: J, 15°, CN, IR, RF			
				17		+				14.40: J, 30°, CN, PR, SM 14.45-14.85: PLT(A) Is50 = 8.8MPa (M); PLT(D) Is50 = 15MPa (M)			
				18		+				15.34: J, 55°, CN, PR, SM			
				19		+				15.78: J, 0°, CN, IR, RF			
			100	98	16.71	+				16.12: J, 70°, CN, ST, SM, incipient 16.31: J, 20°, CN, PR, SM			
					138.85	+	Coarse grained, black grey white, rare pink apite veins, slightly altered.			16.55: J, 35°, CN, PR, SM 16.59: J, 5°, CN, IR, SM			
				20		+				17.35: J, 10°, CN, PR, SM			
					17.55	+				17.55: J, 10°, CN, PR, RF 17.59: J, 10°, CN, PR, SM			
					138.16	+	Medium grained, pale brown grey black, rare pink apite veins, rare green minerals within apite veins, moderately altered (micro-granodiorite).			18.10: J, 55°, CN, PR, RF 18.15: J, 55°, CN, ST, RF 18.29: J, 20°, CN, PR, SM			
					19.69	+				18.95: J, 65°, CN, PR, SM 19.00-19.30: PLT(A) Is50 = 8.5MPa (M); PLT(D) Is50 = 0.36MPa (W)			
			100	98	136.41	+				19.29: J, 5°, CN, PR, SM 19.46: J, 25°, CN, PR, SM			
					20.00	+	Coarse grained, white grey black, rare dark grey dacite inclusions up to 30mm diameter, rare pink apite veins.			19.68: J, 5°, CN, PR, SM			

Comments

Checked GEM
Date 16/10/2024

PEPHES LIB REV B GLB Log IS AU CORED BOREHOLE 3 BHL-02.GPJ <<DrawingFile>> 19/10/2024 21:34 10.03.00.09 Datagel Lab and In Situ Tool - DSD | Lib: WSP 5.07.2 2023-10-30 Proj: WSP 5.04.1 2023-06-14



BOREHOLE: BHL-02

Project: Pioneer-Burdekin PHES

Location: Netherdale/Dalrymple Heights

Client: Queensland Hydro

Job No.: PS138693

Position: Lower Reservoir

Coords: 660362.3 m E 7661262.7 m N MGA2020-55

Surface RL: 152.5 m AHD

Contractor: Twin Hills Engineering & Drilling Drill Rig: Hydrapower Scout

Mark V

Inclination: -55° Direction: 268°

Sheet 4 OF 12

Date Started: 5/9/2023

Date Completed: 18/9/2023

Logged: NP

Drilling						Field Material Description				Defect Information		
METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations (Core partings shown - refer to Detailed Defect Descriptions table for all logged features)	AVERAGE DEFECT SPACING (mm)	
HQ3		100	98	20	136.15		GRANODIORITE: coarse grained, white grey black, crystalline, massive, rare dark grey dacite inclusions up to 30mm diameter, rare pink aplite veins, moderately altered.	FR		20.07: J, 10°, CN, PR, RF		
				21						20.64: J, 30°, CN, IR, SM		
				22						21.03: J, 50°, CN, PR, SM 21.04: J, 55°, CN, PR, SM 21.05-21.25: J, 90°, mi CT, IR, RF 21.25: J, 15°, CN, PR, SM 21.49-22.00: PLT(A) Is50 = 3.3MPa (M); PLT(D) Is50 = 12MPa (M) 21.67: J, 50°, CN, ST, SM		
		100	83	23						22.13: J, 65°, CN, PR, SM 22.42: J, 55°, CN, UN, RF		
				24						22.78: J, 10°, CN, PR, SM 22.80: J, 35°, CN, IR, RF 22.81: J, 65°, wh mi CT, PR, SM 23.12: J, 10°, CN, PI, SM		
				25						23.60-24.65: SZ, 60°, extremely to very closely spaced Js, extremely to highly weathered, EWs CLAY IN <5 mm, generally recovered as broken core, significant		
		100	0	26						24.72-25.10: J, 60°, CN, PR, SM, very closely spaced		
				27						25.32: J, 20°, CN, PR, SM 25.34: J, 40°, CN, PR, SM 25.46: J, 30 - 60°, SN, IR, RF 25.50-25.60: PLT(A) Is50 = 0.73MPa (W); PLT(D) Is50 = 4.9MPa (M) 25.56: J, 20°, CN, PR, SM 26.03: J, 20°, CN, PR, SM 26.07: J, 65°, wh mi CT, PR, SM 26.09: J, 10°, CN, UN, SM 26.30: J, 35°, CN, PR, SM 26.54: J, 20 - 50°, SN, UN, RF 26.73: J, 30°, CN, PR, SM		
		100	43	28						27.29: J, 35°, CN, PR 27.34: J, 40°, CN, IR, RF 27.53: J, 60°, wh mi CT, PR, SM 27.57: J, 55°, wh mi CT, PR, SM, <2 mm 27.67: J, 50°, ph wh mi VN, PR, SM 27.69: J, 70°, wh mi CT, PR, SM, partly healed 27.95: J, 65°, ph wh mi CT, PR, RF 28.12: J, 60°, wh mi CT, PR, SM		
				29						28.45: J, 30°, CN, PR, RF		
				30	30.00		Coarse grained, white grey black, rare dark grey dacite inclusions up to 30mm diameter, rare pink aplite veins, slightly altered.					
Comments											Checked	GEM
											Date	16/10/2024



Sheet 5 OF 12

Logged: NP

H3Q3

Date 16/10/2024



BOREHOLE: BHL-02

Project: Pioneer-Burdekin PHES
Location: Netherdale/Dalrymple Heights
Client: Queensland Hydro
Job No.: PS138693
Position: Lower Reservoir
Coords: 660362.3 m E 7661262.7 m N MGA2020-55
Surface RL: 152.5 m AHD
Contractor: Twin Hills Engineering & Drilling
Mark V
Inclination: -55° Direction: 268°
Sheet 6 OF 12
Date Started: 5/9/2023
Date Completed: 18/9/2023
Logged: NP

Drilling						Field Material Description				Defect Information			
METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations (Core partings shown - refer to Detailed Defect Descriptions table for all logged features)		AVERAGE DEFECT SPACING (mm)	
HQ3			100	97	40	119.77	GRANODIORITE: coarse grained, white grey black, crystalline, massive, slightly altered.	FR		39.95: J, 25°, CN, PR, SM 40.00-40.48: PLT(A) Is50 = 9.4MPa (M); PLT(D) Is50 = 12MPa (M) 40.37: J, 20°, CN, PR, SM 40.47: J, 20°, CN, PR, RF 40.66: J, 55°, wh mi CT, PR, SM, <2 mm			
					41					40.96: J, 25°, CN, PR, RF 41.17: J, 25°, CN, PR, RF 41.46: J, 40°, CN, PR, SM 41.71: J, 40°, CN, PR, SM 41.85: J, 35°, CN, PR, SM			
					42					42.27: J, 55°, CN, IR, RF 42.42: J, 10°, CN, PR, RF			
					42.52								
					42.64								
					42.64		Medium grained, pale pink grey white, moderately altered (microgranodiorite).						
			100	75	43	117.61	Coarse grained, white grey black, slightly altered, rare pink aplite veins, rare mafic inclusions up to 50mm diameter.			42.91: J, 55°, CN, PR, SM 42.95: J, 60°, CN, PR, SM 43.07: J, 65°, ph wh mi CT, PR, SM 43.09: J, 70°, ph wh mi CT, PR, SM 43.15: J, 65°, CN, PR, SM			
					44					43.81: J, CN, IR, RF 43.83: J, 65°, wh mi CT, PR, SM 43.88: J, 30°, CN, PR, SM 43.92: J, 40°, CN, PR, SM 44.08: J, 45°, CN, PR, RF 44.18: J, 45°, wh mi CT, PR, RF 44.22: J, 45°, CN, PR, RF 44.43: J, 35°, CN, PR, SM 44.45: J, 60°, CN, PR, SM, incipient 44.62: J, 35°, CN, PR, SM 44.66: J, 20°, CN, PR, SM 44.67: J, 55°, CN, PR, SM, incipient 44.71: J, 15°, CN, PR, SM 45.23: J, 15°, CN, IR, SM 45.24: J, 35°, CN, PR, SM			
					45					45.66: J, 25°, CN, PR, RF			
					45.14								
HQ3					45.28		Medium grained, pale pink grey white, moderately altered (microgranodiorite).						
					45.28		Coarse grained, white grey black, slightly altered.						
					46					46.09-46.16: SZ, 40°, fragmented rock, 80 mm, significant			
			100	80	47	114.37	Medium to coarse grained, pale pink grey white, moderately altered.			46.33: J, 40°, CN, PR, RF 46.42: J, 40°, CN, PR, SM 46.44: J, 35°, ph wh mi CT, IR, RF 46.51: J, 35°, ph wh mi CT, PR, RF 46.54: J, 35°, CN, PR, SM 46.55: J, 35°, IR 46.56: J, 35°, IR 46.76: J, 65°, PR, incipient 46.79: J, 65°, CN, PR, SM 46.80: J, 65°, CN, PR, SM, incipient 46.81: J, 5°, CN, PR, RF 46.89: J, 50°, ph wh mi CT, PR, SM 46.94: J, 60°, CN, IR 47.06: J, 55°, ph wh mi CT, PR, SM 47.08: J, 55°, ph wh mi CT, PR, SM 47.14: J, 55°, ph wh mi CT, PR, SM 47.16: J, 60°, PR 47.18: J, 55°, ph wh mi CT, PR, SM 47.49: J, 45°, CN, PR, SM 47.62: J, 55°, CN, PR, SM, 3 mm br halo 48.07: J, 20°, CN, PR, SM 48.22: J, 25°, CN, PR, SM 48.63: J, 20°, CN, PR, SM 48.78: J, 25°, CN, PR, SM			
					47	114.04	Coarse grained, white grey black pale orange, occasional moderately altered halos on healed joints, up to 20mm wide, rare aplite veins.	SW		49.30: J, 35°, CN, PR, SM 49.53: J, 45°, CN, PR, SM			
					48								
					49								
			100	88	49								
					50					49.91: J, 60°, CN, PR, RF			
					50.00								

Comments

Checked GEM
Date 16/10/2024



Sheet 7 OF 12

Inclination: -55° Direction: 268°

1Q3

Date 16/10/2024



BOREHOLE: BHL-02

Project: Pioneer-Burdekin PHES

Location: Netherdale/Dalrymple Heights

Client: Queensland Hydro

Job No.: PS138693

Position: Lower Reservoir

Coords: 660362.3 m E 7661262.7 m N MGA2020-55

Surface RL: 152.5 m AHD

Contractor: Twin Hills Engineering & Drilling

Drill Rig: Hydrapower Scout

Mark V

Inclination: -55° Direction: 268°

Sheet 8 OF 12

Date Started: 5/9/2023

Date Completed: 18/9/2023

Logged: NP

Drilling						Field Material Description				Defect Information		
METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations (Core partings shown - refer to Detailed Defect Descriptions table for all logged features)	AVERAGE DEFECT SPACING (mm)	
				60	103.39		QUARTZ LATITE: fine to medium grained, grey green, porphyritic, massive, some pale brown phenocrysts.	SW		60.30-60.77: PLT(A) Is50 = 5MPa (M); PLT(D) Is50 = 11MPa (M) 60.47: J, 50°, CN, PR, SM		
			100	61						60.81: J, 55°, CN, PR, SM 60.82: J, 55°, wh mi CT, PR 61.05: J, 75°, ph wh mi VN, IR, RF 61.08: J, 45°, ph wh mi VN, PR, RF		
				62						61.59: J, 55°, CN, PR, SM 61.78: J, 25°, CN, PR, RF 61.89: J, 25°, CN, IR, RF 61.95: J, 75°, CN, PR, SM 62.03: J, 60°, CN, PR, SM 62.08: J, 70°, CN, PR, SM 62.39: J, 5°, CN, IR, possible DB 62.52: J, 0°, CN, IR, possible DB		
				63	63.00 100.93		Grey, white and pink phenocrysts, rare white veins and healed joints.	FR		63.51: J, 40°, CN, IR, SM		
			100	64						64.60: J, 5°, CN, IR, SM 64.66: J, 65°, ph wh mi CT, PR, SM 64.82: J, 50°, CN, PR, SM		
				65						65.51: J, 60°, wh to gr mi CT, PR, RF 65.56: J, 60°, wh-gr mi CT, PR, RF		
				66	65.85 98.60		Grey green, many white phenocrysts, slightly altered.			66.53: J, 5°, CN, PR 66.62: J, 40°, CN, PR, RF		
				67						67.36: J, 50°, wh mi VN, IR, SM 67.65: J, 30°, CN, PR, SM		
			100	68						68.39: J, 60°, wh mi CT, PR, RF 68.66: J, 50°, wh mi CT, PR, RF		
				69	68.85 96.14		Pale grey.			69.24: J, 60°, wh mi, PR 69.48: J, 40°, CN, PR, RF		
			100	70	70.00					69.87: J, 60°, CN, PR, RF		

Comments

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Date 16/10/2024



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Sheet 9 OF 12

Date Started: 5/9/2023

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Logged: NP

Drilling						Field Material Description				Defect Information			
METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations (Core partings shown - refer to Detailed Defect Descriptions table for all logged features)	AVERAGE DEFECT SPACING (mm)		
											10	30	100
											300	1000	3000
HQ3			100	100	70	95.20	QUARTZ LATITE: fine to medium grained, pale grey, crystalline, massive, many white phenocrysts, slightly altered.	FR		70.00-70.55: PLT(A) Is50 = 0.88MPa (W); PLT(D) Is50 = 13MPa (W)			
					71					70.56: J, 60°, ph wh mi CT, PR, SM			
										71.06: J, 60°, wh mi CT, PR, SM, <2 mm			
										71.29: J, 50°, ph wh mi CT, PR, SM			
					72								
										72.44: J, 15°, CN, PR, SM			
					73								
			100	100						73.04: AZ, bk and wh mi, IR, 10 mm			
										73.49: J, 55°, ph wh mi VN, PR, SM			
					74					74.28: J, 5°, CN, PR			
					75	74.85 91.22	Fine grained, green grey, cryptocrystalline, massive, contact metamorphosed.			74.60-75.00: AZ, zone of hJs and Vs <2 mm, wh mi, some 1 mm br halos			
					76					75.65: J, 45°, CN, PR, SM			
			100	98						76.48: J, 55°, CN, IR, SM			
					77					76.92: J, 45°, CN, PR, SM			
						77.55				77.00-77.43: PLT(A) Is50 = 9.3MPa (M); PLT(D) Is50 = 7.5MPa (W)			
							BASALT: fine grained, dark grey, crystalline, massive.			77.26: J, 30°, CN, PR, SM			
						88.96	QUARTZ LATITE: fine grained, green grey, cryptocrystalline, massive.			77.55: J, 60°, CN, PR			
					78					77.62: J, 60°, CN, PR			
						78.16 88.51	BASALT: fine grained, dark grey, crystalline, massive.			78.16: J, 40°, CN, PR, SM			
										78.20: J, 40°, CN, PR, SM			
										78.34: J, 70°, CN, PR, SM			
										78.52: J, 80°, ph wh mi CT, IR, RF			
			100	92	79	79.00 87.82	BASALT: fine to medium grained, dark grey to grey, crystalline, massive.			79.13: J, 20°, CN, PR, SM			
					80	80.00				79.72: J, 40°, CN, IR, RF			

Comments

Checked GEM
Date 16/10/2024

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Inclination: -55° Direction: 268°

Sheet 10 OF 12

Date Started: 5/9/2023

Date Completed: 18/9/2023

Logged: NP

Drilling						Field Material Description				Defect Information		
METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations (Core partings shown - refer to Detailed Defect Descriptions table for all logged features)	AVERAGE DEFECT SPACING (mm)	
HQ3		100	92	80	87.01		BASALT: fine to medium grained, dark grey to grey, crystalline, massive.	FR		80.36: J, 40°, CN, PR, SM		
				81						81.04: J, 65°, CN, UN, SM 81.18: J, 15°, CN, PR, SM		
				82						81.93: J, 45°, CN, UN, RF 82.40: J, 15°, CN, IR		
		100	100	83						82.94: J, 55°, CN, UN, RF 83.32: J, 60°, CN, PR, RF 83.42: J, 50°, CN, PR, SM 83.60: J, 50°, CN, PR, SM		
				84						84.32: J, 50°, ph wh mi CT, PR, SM		
				85						84.96: J, CN, IR, RF, possible DB		
		100	100	86						85.75: J, 70°, wh and pk mi CT, PR, SM, white and pink mineral		
				87						87.00-87.35: PLT(A) Is50 = 7.6MPa (M); PLT(D) Is50 = 11MPa (M) 87.44: J, 65°, CN, PR, RF		
				88						87.81: J, 40°, wh, gr, pk mi CT, PR, SM 88.22: J, 50°, ph wh mi VN, PR, SM, possible DB 88.29: J, 50°, ph wh mi VN, PR, SM		
		100	90	89						89.34: J, 55°, ph wh mi CT, PR, SM 89.48: J, 45°, CN, PR, SM 89.60: J, 35°, CN, PR, SM 89.67: J, 45°, CN, PR, SM		
		100	96	90	90.00							

Comments

Checked GEM
Date 16/10/2024

PEPHES LIB - REV B GLB Log IS AU CORED BOREHOLE 3 BHL-02.GPJ <<DrawingFile>> 19/10/2024 21:34 10.03.00.09 Datagel Lib and In Situ Tool - DSD | Lib: WSP 5.07.2 2023-10-30 Pjt: WSP 5.04.1 2023-06-14



BOREHOLE: BHL-02

Project: Pioneer-Burdekin PHES

Location: Netherdale/Dalrymple Heights

Client: Queensland Hydro

Job No.: PS138693

Position: Lower Reservoir

Coords: 660362.3 m E 7661262.7 m N MGA2020-55

Surface RL: 152.5 m AHD

Contractor: Twin Hills Engineering & Drilling

Mark V

Inclination: -55° Direction: 268°

Sheet 11 OF 12

Date Started: 5/9/2023

Date Completed: 18/9/2023

Logged: NP

Drilling						Field Material Description				Defect Information			
METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations (Core partings shown - refer to Detailed Defect Descriptions table for all logged features)		AVERAGE DEFECT SPACING (mm)	
									<				

Comments

Checked GEM
Date 16/10/2024



BOREHOLE: BHL-02

Project: Pioneer-Burdekin PHES

Location: Netherdale/Dalrymple Heights

Client: Queensland Hydro

Job No.: PS138693

Position: Lower Reservoir

Coords: 660362.3 m E 7661262.7 m N MGA2020-55

Surface RL: 152.5 m AHD

Contractor: Twin Hills Engineering & Drilling

Drill Rig: Hydrapower Scout

Mark V

Inclination: -55° Direction: 268°

Sheet 12 OF 12

Date Started: 5/9/2023

Date Completed: 18/9/2023

Logged: NP

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		94	43	100	70.62		BASALT: fine grained, dark grey and brown grey, crystalline, massive.	FR		100.02: J, 15°, CN, IR, SM 100.17: J, 50°, ph wh mi VN, PR, SM 100.40: J, 35°, CN, IR, SM 100.51: J, 40°, ph wh mi VN, PR, SM 100.84: J, 45°, ph wh mi VN, PR, SM			
				100.32									
				100.50									
				70.21	BASALT: fine grained, dark grey and brown grey, crystalline, massive.		FR						
				101									
				102	102.00 68.98		Hole Terminated at 102.00 m Target depth. Vibrating Wire Piezometers Installed.						
				103									
				104									
				105									
				106									
				107									
				108									
				109									
				110									

Comments

Checked GEM
Date 16/10/2024

PEPHES LIB - REV:G.L.B Log IS AU CORED BOREHOLE 3 BHL-02.GPJ <<DrawingFile>> 19/10/2024 21:35 10.03.00.09 Datagel Lib and In Situ Tool - D3D | Lib: WSP 5.07.2 2023-10-30 Pjt: WSP 5.04.1 2023-06-14



Pioneer-Burdekin Pumped Hydro Energy Scheme: Tranche 1 – BHL-02 Defects List

Refer to Explanatory Notes sheets for abbreviation definitions

PointID	Depth	Bottom	Fracture Set	Defect Number	Type	Type Suffix	Dip Minimum (degrees)	Dip Maximum (degrees)	Infilling Material	Aperture Observation	Planarity	Roughness	Aperture Measurement Sign	Aperture Measurement	Aperture	Spacing	Remark
BHL-02	7.85				J		60			CN	PR	RF					
BHL-02	7.95				J		65		br	SN	PR	SM					
BHL-02	8.00				J		0		ph br	SN	PR						
BHL-02	8.05				J		0			CN	PR						
BHL-02	8.34	8.44			CS		20			CN	PR	RF					GRAVEL, fine to coarse grained, sub-angular, granodiorite, possible DB
BHL-02	8.46	8.62			hJ		85				PR						
BHL-02	8.47				hJ		20				PR						
BHL-02	8.49				hJ		35				PR						
BHL-02	8.57				J		15		br	SN	PR	SM					
BHL-02	8.58				hJ		20				PR						
BHL-02	8.67				hJ		55				PR						
BHL-02	8.68				J		60				PR						
BHL-02	8.69				hJ		60				PR						
BHL-02	8.71				hJ		60				PR						
BHL-02	8.85				hJ		65		wh mi (qu?)		PR						DB
BHL-02	8.93				hJ		30				PR						
BHL-02	9.04				hJ		65				PR						
BHL-02	9.36				J		50			CN	PR	RF					
BHL-02	9.51				J		15			CN	PR	RF					
BHL-02	9.67				J		15		ph gr	SN	PR	SM					
BHL-02	9.74				J		15		br	SN	PR	SM					
BHL-02	9.81				J		40			CN	PR	SM					
BHL-02	9.95				hJ		60				PR						
BHL-02	10.00				J		5		bl-gr	SN	PR	SM					
BHL-02	10.48				hJ		50			CN	ST	SM					possible DB
BHL-02	10.51				V		65		wh mi (qu?)		PR			2			possible DB
BHL-02	10.86				J		25			CN	IR	SM					
BHL-02	10.98				hJ		55				PR						
BHL-02	10.99				J		35			CN	PR	SM					
BHL-02	11.40				J		0			CN	PR	RF					
BHL-02	11.66				hJ		65				PR						
BHL-02	12.02				hJ		10				PR						DB
BHL-02	12.25				J		25			CN	PR	RF					
BHL-02	12.53				hJ		60				PR						
BHL-02	12.65				hJ		25				PR						
BHL-02	12.66				J		10			CN	PR	SM					
BHL-02	12.93				hJ		5				PR						pk altered halo
BHL-02	13.20				hJ		65		pk mi		PR						3 mm altered halo
BHL-02	13.32						30				PR						
BHL-02	13.41				J		15			CN	PR	RF					
BHL-02	13.54				hJ		65		pk mi		PR						
BHL-02	13.55				hJ		65		pk mi		PR						
BHL-02	13.69				V		30		APLITE		PR			15			
BHL-02	13.82				hJ		65		pk mi		PR						
BHL-02	13.83				hJ		65		pk mi		UN						possible DB
BHL-02	13.88				hJ		60				PR						
BHL-02	14.00				J		5		gr	SN	PR	RF					
BHL-02	14.15				hJ		70		gr		PR						
BHL-02	14.22				J		15			CN	IR	RF					
BHL-02	14.40				J		30			CN	PR	SM					
BHL-02	15.34				J		55			CN	PR	SM					
BHL-02	15.38	15.75			V		75		pk APLITE		PR		<	65			significant
BHL-02	15.78				J		0			CN	IR	RF					
BHL-02	16.08				V		30		pk APLITE		PR			20			
BHL-02	16.12				J		70			CN	ST	SM					incipient
BHL-02	16.24	16.44			V		75		pk APLITE		PR		<	15			
BHL-02	16.31				J		20			CN	PR	SM					
BHL-02	16.55				J		35			CN	PR	SM					
BHL-02	16.59				J		5			CN	IR	SM					
BHL-02	17.33				hJ		20				PR						
BHL-02	17.35				J		10			CN	PR	SM					
BHL-02	17.55				J		10			CN	PR	RF					
BHL-02	17.59				J		10			CN	PR	SM					
BHL-02	17.60	17.80			hJ		80				PR						5 mm altered halo
BHL-02	18.10				J		55			CN	PR	RF					
BHL-02	18.15				J		55			CN	ST	RF					
BHL-02	18.26	18.34			V		70		pk APLITE		PR						some gr mi
BHL-02	18.29				J		20			CN	PR	SM					
BHL-02	18.64										PR						
BHL-02	18.74				hJ		55		gr mi		PR						
BHL-02	18.95				J		65			CN	PR	SM					
BHL-02	19.29				J		5			CN	PR	SM					
BHL-02	19.31				hJ		65				PR						
BHL-02	19.46				J		25			CN	PR	SM					
BHL-02	19.68				J		5			CN	PR	SM					
BHL-02	19.69						30				PR						
BHL-02	20.07				J		10			CN	PR	RF					
BHL-02	20.15	20.18			V		35		pk mi		PR		<	30			rare gr mi
BHL-02	20.64				J		30			CN	IR	SM					



Pioneer-Burdekin Pumped Hydro Energy Scheme: Tranche 1 – BHL-02 Defects List

Refer to Explanatory Notes sheets for abbreviation definitions

PointID	Depth	Bottom	Fracture Set	Defect Number	Type	Type Suffix	Dip Minimum (degrees)	Dip Maximum (degrees)	Infilling Material	Aperture Observation	Planarity	Roughness	Aperture Measurement Sign	Aperture Measurement	Aperture	Spacing	Remark
BHL-02	21.01				hJ		50				PR						
BHL-02	21.03				J		50			CN	PR	SM					
BHL-02	21.04				J		55			CN	PR	SM					
BHL-02	21.05	21.25			J		90		mi	CT	IR	RF					
BHL-02	21.25				J		15			CN	PR	SM					
BHL-02	21.67				J		50			CN	ST	SM					
BHL-02	21.94				hJ		60				IR						altered halo
BHL-02	22.13				J		65			CN	PR	SM					
BHL-02	22.33				hJ		15				PR						
BHL-02	22.42				J		55			CN	UN	RF					
BHL-02	22.55				V		35		pk APLITE					15			
BHL-02	22.78				J		10			CN	PR	SM					
BHL-02	22.80				J		35			CN	IR	RF					
BHL-02	22.81				J		65		wh mi	CT	PR	SM					
BHL-02	22.94				hJ		75				PR						
BHL-02	23.12				J		10			CN	PL	SM					
BHL-02	23.60	24.65			SZ		60										extremely to very closely spaced Js, extremely to highly weathered, EWs CLAY IN <5 mm, generally recovered as broken core, significant
BHL-02	24.72	25.10			J		60			CN	PR	SM				very closely	
BHL-02	25.32				J		20			CN	PR	SM					
BHL-02	25.34				J		40			CN	PR	SM					
BHL-02	25.46				J		30	60		SN	IR	RF					
BHL-02	25.56				J		20			CN	PR	SM					
BHL-02	25.70	25.77			hJ		60				PR					extremely closely	
BHL-02	26.03				J		20			CN	PR	SM					
BHL-02	26.07				J		65		wh mi	CT	PR	SM					
BHL-02	26.09				J		10			CN	UN	SM					
BHL-02	26.30				J		35			CN	PR	SM					
BHL-02	26.54				J		20	50		SN	UN	RF					
BHL-02	26.73				J		30			CN	PR	SM					
BHL-02	27.06				V		60		pk APLITE		PR			40			
BHL-02	27.14				hJ		55				PR						incipient
BHL-02	27.15				hJ		55				PR						
BHL-02	27.16				hJ		50				PR						
BHL-02	27.17				hJ		50		wh mi		PR						
BHL-02	27.18				hJ		60		wh mi		PR						
BHL-02	27.29				J		35			CN	PR						
BHL-02	27.30				V		35		pk APLITE		PR			30			
BHL-02	27.34				J		40			CN	IR	RF					
BHL-02	27.53				J		60		wh mi	CT	PR	SM					
BHL-02	27.57				J		55		wh mi	CT	PR	SM	<	2			
BHL-02	27.67				J		50		ph wh mi	VN	PR	SM					
BHL-02	27.69				J		70		wh mi	CT	PR	SM					partly healed
BHL-02	27.71				hJs						PR						35 mm zone of hJs, bounded by two planer defects
BHL-02	27.73				hJ		50				PR						
BHL-02	27.95				J		65		ph wh mi	CT	PR	RF					
BHL-02	28.12				J		60		wh mi	CT	PR	SM					
BHL-02	28.45				J		30			CN	PR	RF					
BHL-02	28.69				V		55		pk APLITE		PR			15			
BHL-02	29.66				V		45		pk APLITE		PR			40			
BHL-02	30.34				J		60			CN	PR	RF					
BHL-02	30.48				hJ		45				PR						
BHL-02	30.50				hJ		45				PR						
BHL-02	30.76				J		25			CN	PR	SM					
BHL-02	30.97				J		60		ph wh mi	VN	PR	RF					
BHL-02	31.15						45				PR						
BHL-02	31.25				hJ						IR						incipient
BHL-02	31.35				J		55		ph CLAY	VN	PR	RF					
BHL-02	31.55				J		50		wh mi	CT	PR	SM					
BHL-02	31.61				J		15			CN	PR	RF					
BHL-02	31.63				J		60		wh CLAY	CT	PR	SM					
BHL-02	31.64						55				PR						
BHL-02	31.65				J		60		wh CLAY	CT	PR	SM					
BHL-02	31.69				J		55			CN	UN	SM					
BHL-02	31.83				hJ		50				PR						
BHL-02	31.89				V		75		pk APLITE		PR			3			
BHL-02	32.02				J		40			CN	ST	SM					incipient
BHL-02	32.10				hJ		50				PR						
BHL-02	32.25				hJ		50				PR						
BHL-02	32.66				J		50			CN	PR	RF					
BHL-02	32.76				J		35			CN	PR	SM					
BHL-02	32.81				hJ		75				PR						
BHL-02	32.85				J		50			CN	PR	SM					
BHL-02	32.91				hJ		60				PR						
BHL-02	32.92				hJ		55				PR						
BHL-02	32.94				hJ		55				PR						
BHL-02	33.08				hJ		35				PR						
BHL-02	33.23				J		35			CN	PR	SM					
BHL-02	33.42				J		45		mi	CT	PR	SM					



Pioneer-Burdekin Pumped Hydro Energy Scheme: Tranche 1 – BHL-02 Defects List

Refer to Explanatory Notes sheets for abbreviation definitions

PointID	Depth	Bottom	Fracture Set	Defect Number	Type	Type Suffix	Dip Minimum (degrees)	Dip Maximum (degrees)	Infilling Material	Aperture Observation	Planarity	Roughness	Aperture Measurement Sign	Aperture Measurement	Aperture	Spacing	Remark
BHL-02	33.56				hJ						IR						
BHL-02	33.58				hJ		25			CN	PR	SM					possible DB
BHL-02	33.75				hJ		50				PR						
BHL-02	34.05				J		40			CN	PR	SM					
BHL-02	34.17				V		30		pk APLITE		PR			30			
BHL-02	34.23				hJ		40				PR						
BHL-02	34.27				hJ		40				PR						
BHL-02	34.29				hJ		40				PR						
BHL-02	34.40				hJ		75				PR						
BHL-02	34.48				J		40			CN	PR	RF					
BHL-02	34.53				hJ		35				PR						
BHL-02	34.59				hJ		70				PR						
BHL-02	34.67				J		25			CN	PR	RF					
BHL-02	34.72				J		10			CN	PR	RF					
BHL-02	34.82				hJ		30				PR						
BHL-02	34.91				hJ		30				PR						
BHL-02	34.97				hJ		30				PR						
BHL-02	35.04				hJ		65				PR						
BHL-02	35.05				hJ		75				PR						
BHL-02	35.08				J		10			CN	PR	SM					
BHL-02	35.13				J		5			CN	PR	SM					
BHL-02	35.21				V		50		pk APLITE		PR			25			
BHL-02	35.33				J		10			CN	PR						
BHL-02	35.42				J		20			CN	PR	SM					
BHL-02	35.46				J		15			CN	PR	SM					
BHL-02	35.50				J		25			CN	PR	SM					
BHL-02	35.52				hJ		35				PR						
BHL-02	35.58				J		5			CN	PR	RF					
BHL-02	35.60				hJ		35				PR						
BHL-02	35.75				J		10			CN	PR	SM					
BHL-02	35.77				hJ		70				PR						
BHL-02	35.78				hJ		85				PR						
BHL-02	35.85				J		25			CN	PR	RF					
BHL-02	35.90				J		30			CN	PR	RF					
BHL-02	35.93				J		50		ph wh mi	CT	PR	SM					
BHL-02	35.99				J		45			CN	PR	SM					
BHL-02	36.02				hJ		40				PR						
BHL-02	36.07				J		40		ph wh mi	VN	PR	SM					
BHL-02	36.12				J		55		ph wh mi	VN	PR	SM					
BHL-02	36.21				J		80		ph wh mi	CT	PR	SM					bk SN
BHL-02	36.29				J		45			CN	PR	SM					incipient
BHL-02	36.32				hJ		40				PR						
BHL-02	36.34				J		40			CN	PR	SM					
BHL-02	36.37	36.66			J		80		wh mi	CT	PR	SM					
BHL-02	36.38				hJ		70				PR						
BHL-02	36.47				J		50			CN	PR	SM					
BHL-02	36.54	36.80			Js	/hJs											zone of very closely spaced incipient Js and hJs
BHL-02	36.58				J		40			CN	PR	SM					incipient
BHL-02	36.59				J		20			CN	PR	SM					incipient
BHL-02	36.65				J		50			CN	PR	SM					
BHL-02	36.70				J		60			CN	IR	RF					incipient
BHL-02	36.79				J		35			CN	IR	RF					
BHL-02	36.82				hJ		25				PR						
BHL-02	36.92				J		35			CN	IR	RF					
BHL-02	36.93				J		45			CN	PR	SM					
BHL-02	37.00				J		40			CN	PR	SM					
BHL-02	37.07				J		45			CN	PR	SM					
BHL-02	37.14				hJ		45				PR						
BHL-02	37.15				hJ		50				PR						
BHL-02	37.18				J		45			CN	PR	SM					
BHL-02	37.21				hJ		45										
BHL-02	37.26				J		45			CN	PR	SM					
BHL-02	37.39				J		55			CN	PR	SM					
BHL-02	37.43				J		40			CN	IR	RF					
BHL-02	37.56				hJ		60										
BHL-02	37.58				hJ		60										
BHL-02	37.61				hJ		55										3 mm pk halo
BHL-02	37.67				hJ		60										5 mm pk halo
BHL-02	37.71				V		55						<	2			
BHL-02	37.84				J		5			CN	IR	RF					
BHL-02	38.04				V		40		pk APLITE		PR						
BHL-02	38.06				J		50		pk mi	CT	PR	SM					
BHL-02	38.16				J		10			CN	IR	RF					possible DB
BHL-02	38.26				hJ												incipient
BHL-02	38.46						45				PR						
BHL-02	38.63				J		55			CN	PR	SM					
BHL-02	38.68				J	x2	45		mi	CT	PR						
BHL-02	38.77				J		80			CN	ST	SM					
BHL-02	38.85				J		45			CN	PR	SM					



Pioneer-Burdekin Pumped Hydro Energy Scheme: Tranche 1 – BHL-02 Defects List

Refer to Explanatory Notes sheets for abbreviation definitions

PointID	Depth	Bottom	Fracture Set	Defect Number	Type	Type Suffix	Dip Minimum (degrees)	Dip Maximum (degrees)	Infilling Material	Aperture Observation	Planarity	Roughness	Aperture Measurement Sign	Aperture Measurement	Aperture	Spacing	Remark
BHL-02	39.18				V		45				PR						
BHL-02	39.33				J		0			CN	PR	RF					
BHL-02	39.48				hJ		70				PR						
BHL-02	39.52				hJ		55				PR						
BHL-02	39.75				J		20			CN	PR	SM					
BHL-02	39.80				hJ		50		wh mi		PR						
BHL-02	39.95				J		25			CN	PR	SM					
BHL-02	40.37				J		20			CN	PR	SM					
BHL-02	40.47				J		20			CN	PR	RF					
BHL-02	40.50				hJ		55				PR						
BHL-02	40.51				hJ		55				PR						
BHL-02	40.62				hJ		55		wh to pk mi		PR						
BHL-02	40.64				hJ		60		wh to pk mi		PR						
BHL-02	40.66				J		55		wh mi	CT	PR	SM	<	2			
BHL-02	40.92				hJ		65				PR						
BHL-02	40.96				J		25			CN	PR	RF					
BHL-02	41.17				J		25			CN	PR	RF					
BHL-02	41.46				J		40			CN	PR	SM					
BHL-02	41.71				J		40			CN	PR	SM					
BHL-02	41.85				J		35			CN	PR	SM					
BHL-02	41.88				hJ		40				PR						
BHL-02	41.91				hJ		50				PR						
BHL-02	42.03				hJ		65				PR						
BHL-02	42.27				J		55			CN	IR	RF					
BHL-02	42.42				J		10			CN	PR	RF					
BHL-02	42.58				V		45		pk APLITE		PR			100			significant
BHL-02	42.91				J		55			CN	PR	SM					
BHL-02	42.95				J		60			CN	PR	SM					
BHL-02	43.07				J		65		ph wh mi	CT	PR	SM					
BHL-02	43.09				J		70		ph wh mi	CT	PR	SM					
BHL-02	43.15				J		65			CN	PR	SM					
BHL-02	43.23				hJ		45				PR						
BHL-02	43.81				J					CN	IR	RF					
BHL-02	43.83				J		65		wh mi	CT	PR	SM					
BHL-02	43.88				J		30			CN	PR	SM					
BHL-02	43.92				J		40			CN	PR	SM					
BHL-02	44.08				J		45			CN	PR	RF					
BHL-02	44.18				J		45		wh mi	CT	PR	RF					
BHL-02	44.22				J		45			CN	PR	RF					
BHL-02	44.43				J		35			CN	PR	SM					
BHL-02	44.45				J		60			CN	PR	SM					incipient
BHL-02	44.55				hJ		90				UN						
BHL-02	44.62				J		35			CN	PR	SM					
BHL-02	44.64				V		45		pk APLITE		PR						
BHL-02	44.66				J		20			CN	PR	SM					
BHL-02	44.67				J		55			CN	PR	SM					incipient
BHL-02	44.68				hJ		15				PR						incipient
BHL-02	44.71				J		15			CN	PR	SM					
BHL-02	45.13	45.32			V		40		pk APLITE		PR			180			significant
BHL-02	45.23				J		15			CN	IR	SM					
BHL-02	45.24				J		35			CN	PR	SM					
BHL-02	45.25				hJ		35				PR						
BHL-02	45.66				J		25			CN	PR	RF					
BHL-02	45.83				hJ		40				PR						2 mm br halo
BHL-02	45.84				hJ		40				PR						2 mm br halo
BHL-02	46.09	46.16			SZ		40		fragmented rock					80			significant
BHL-02	46.19				hJ		40				PR						1 mm pl br halo
BHL-02	46.24				hJ		40		rd-br mi		PR						
BHL-02	46.33				J		40			CN	PR	RF					
BHL-02	46.34				hJ		40		rd-br mi		PR						
BHL-02	46.42				J		40			CN	PR	SM					
BHL-02	46.44				J		35		ph wh mi	CT	IR	RF					
BHL-02	46.51				J		35		ph wh mi	CT	PR	RF					
BHL-02	46.54				J		35			CN	PR	SM					
BHL-02	46.55				J		35				IR						
BHL-02	46.56				J		35				IR						
BHL-02	46.64	46.96			V				pk APLITE		PR						some gr mi, significant
BHL-02	46.76				J		65				PR						incipient
BHL-02	46.79				J		65			CN	PR	SM					
BHL-02	46.80				J		65			CN	PR	SM					incipient
BHL-02	46.81				J		5			CN	PR	RF					
BHL-02	46.82				hJ		65				PR						incipient
BHL-02	46.86				hJ		55				PR						incipient
BHL-02	46.89				J		50		ph wh mi	CT	PR	SM					
BHL-02	46.94				J		60			CN	IR						
BHL-02	47.06				J		55		ph wh mi	CT	PR	SM					
BHL-02	47.08				J		55		ph wh mi	CT	PR	SM					
BHL-02	47.09				V				APLITE		IR			2			
BHL-02	47.10				V		45		APLITE		IR			3			incipient



Pioneer-Burdekin Pumped Hydro Energy Scheme: Tranche 1 – BHL-02 Defects List

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PointID	Depth	Bottom	Fracture Set	Defect Number	Type	Type Suffix	Dip Minimum (degrees)	Dip Maximum (degrees)	Infilling Material	Aperture Observation	Planarity	Roughness	Aperture Measurement Sign	Aperture Measurement	Aperture	Spacing	Remark
BHL-02	47.13				V				APLITE		IR			5			incipient
BHL-02	47.14				J		55		ph wh mi	CT	PR	SM					
BHL-02	47.16				J		60				PR						
BHL-02	47.18				J		55		ph wh mi	CT	PR	SM					
BHL-02	47.24				V		30				PR						5-20 mm halo
BHL-02	47.49				J		45			CN	PR	SM					
BHL-02	47.62				J		55			CN	PR	SM					3 mm br halo
BHL-02	47.62				V		55		wh mi		PR			5			
BHL-02	48.07				J		20			CN	PR	SM					
BHL-02	48.22				J		25			CN	PR	SM					
BHL-02	48.32				hJ		60				IR						2 mm pl br halo
BHL-02	48.35				hJ		25				PR						
BHL-02	48.36				hJ		55				PR						2 mm pl br halo
BHL-02	48.39				hJ		25				PR						2 mm pl br halo
BHL-02	48.44				hJ		40		wh mi		PR						2-4 mm altered halo
BHL-02	48.52				hJ		50				PR						
BHL-02	48.54				hJ		60				PR						5 mm altered halo
BHL-02	48.63				J		20			CN	PR	SM					
BHL-02	48.67				hJ		65				PR						5-10 mm altered halo
BHL-02	48.72				hJ		55				PR						3 mm altered halo
BHL-02	48.78				J		25			CN	PR	SM					
BHL-02	48.95				hJ		65				PR						ph altered halo
BHL-02	49.05				hJ		65		wh mi		PR						
BHL-02	49.08				hJ		70				PR						
BHL-02	49.09				hJ		65				PR						
BHL-02	49.30				J		35			CN	PR	SM					
BHL-02	49.35				hJ		60				PR						5 mm altered halo
BHL-02	49.39				hJ		60				PR						
BHL-02	49.53				J		45			CN	PR	SM					
BHL-02	49.54				hJ		45				PR						
BHL-02	49.60				hJ		55				PR						3 mm altered halo
BHL-02	49.71				hJ		65				PR						1 mm altered halo
BHL-02	49.79				hJ		20				IR						
BHL-02	49.82				hJ		80		ph wh mi		IR						<3 mm altered halo
BHL-02	49.83				V		40		pk APLITE		PR			45			
BHL-02	49.90				hJ		90				IR						
BHL-02	49.91				J		60			CN	PR	RF					
BHL-02	49.95				J		35			CN	PR	SM					
BHL-02	50.15				V		35		pk APLITE		PR			20			
BHL-02	50.17				J		35			CN	PR	SM					
BHL-02	50.20				J		35			CN	PR	SM					
BHL-02	50.27				J		60		ph wh mi	VN	PR	SM					
BHL-02	50.29				J		30			CN	PR	SM					
BHL-02	50.41				J		40			CN	PR	SM					
BHL-02	50.44				V		55		pk APLITE		PR			60			rare granodiorite inclusions, significant
BHL-02	50.53				hJ		50		wh mi		PR						
BHL-02	50.56				V		25		pk APLITE		IR			20			
BHL-02	50.57				J		50			CN	PR	SM					
BHL-02	50.60				J		45			CN	PR	RF					
BHL-02	50.64				hJ		50				PR						
BHL-02	50.70				J		55			CN	PR	SM					incipient
BHL-02	50.72				J		55			CN	PR	SM					
BHL-02	50.78				V		45				PR			70			significant
BHL-02	50.80				hJ		55				PR						
BHL-02	51.00				J		50			CN	PR	SM					
BHL-02	51.07				J		70			CN	PR	RF					
BHL-02	51.08				J		70			CN	PR	RF					incipient
BHL-02	51.37				J		40			CN	PR	RF					
BHL-02	51.49				hJ		10				PR						
BHL-02	51.51				hJ		65				PR						
BHL-02	51.72				J		15			CN	PR	SM					
BHL-02	51.86				J		5		ph rd-br mi		IR						
BHL-02	51.96				V		45		pk APLITE		PR			35			
BHL-02	51.98				CS		30		GRAVEL, fine to coarse grained, very high strength		PR			25			possible DB
BHL-02	52.01				J		80			CN	PR	SM					
BHL-02	52.13				hJ		45				PR						
BHL-02	52.21				J		10		ph wh mi	CT	PR	SM					
BHL-02	52.22				J		25			CN	PR	RF					
BHL-02	52.23				J		35			CN	PR	RF					
BHL-02	52.33	52.49			hJ		90		wh mi		IR						incipient
BHL-02	52.34				J		35		ph wh mi	CT	PR	SM					
BHL-02	52.38				hJ		90		wh mi		IR						
BHL-02	52.43				hJ		70				IR						incipient
BHL-02	52.50				J		20			CN	IR	RF					
BHL-02	52.51				V		45		pk APLITE, coarse grained		PR						
BHL-02	52.52				J		20			CN	PR	SM					
BHL-02	52.53				J		60		ph wh mi	VN	PR	SM					
BHL-02	52.61				hJs	x3	65		wh mi		PR						incipient



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PointID	Depth	Bottom	Fracture Set	Defect Number	Type	Type Suffix	Dip Minimum (degrees)	Dip Maximum (degrees)	Infilling Material	Aperture Observation	Planarity	Roughness	Aperture Measurement Sign	Aperture Measurement	Aperture	Spacing	Remark
BHL-02	52.66				J		30			CN	PR	SM					
BHL-02	52.71	52.97			V		40		pk APLITE, coarse grained		PR			230			some gr mi
BHL-02	52.88				J		30			CN	PR	SM					
BHL-02	52.94				hJ		90				IR						incipient
BHL-02	52.98				hJ		40				IR						incipient
BHL-02	53.00				J		20			CN	PR	SM					
BHL-02	53.10				J		25			CN	PR	SM					
BHL-02	53.17				J		25			CN	PR	SM					
BHL-02	53.30				J		20			CN	PR	RF					
BHL-02	53.34				J		45		ph wh mi	VN	PR	SM					
BHL-02	53.38				J		40			CN	PR	SM					
BHL-02	53.42				hJ		55				PR						
BHL-02	53.45				J		45				PR						incipient
BHL-02	53.50				J		45			CN	PR	RF					
BHL-02	53.53				J		25			CN	PR	RF					
BHL-02	53.61				J		55			CN	PR	RF					
BHL-02	53.85				hJ		50		wh mi		PR						incipient, 10 mm pl br to gr-br halo
BHL-02	54.28				J		40		ph wh mi	VN	PR	RF					
BHL-02	54.33				J		45		ph wh mi	VN	PR	RF					rare rd-br mi
BHL-02	54.38				J		50			CN	PR	SM					
BHL-02	54.53				hJ		85				IR						
BHL-02	54.75				hJ		45				PR						1 mm altered halo
BHL-02	54.81				hJ		65				IR						incipient
BHL-02	54.89	55.51			V		90		wh mi		UN		<	3			
BHL-02	54.90				J		45		SAND, coarse grained	CT	PR						possible DB
BHL-02	54.91	54.97			V				pl br APLITE, coarse grained, MW					40			
BHL-02	55.06				V		50		bk to dk gy glassy mi (qu?)		PR			2			5 mm br halo
BHL-02	55.13				V		50		bk glassy mi		PR			1			
BHL-02	55.48				J		40			CN	PR	RF					
BHL-02	55.53				V		45		bk glassy mi					3			rare rd mi, incipient, 10 mm br halo
BHL-02	55.54				J		45			CN	PR	SM					
BHL-02	55.55	56.10			J		90		wh mi	CT	IR	SM					
BHL-02	55.56				hJ		55		wh mi		PR						
BHL-02	55.59				V		55		bk mi		PR			2			
BHL-02	55.64				J		65		wh mi	VN	PR	SM					
BHL-02	55.72				J		55			CN	PR	RF					possible DB
BHL-02	55.80				J		35				PR						incipient, 1 mm pl br halo
BHL-02	55.87	56.18			V		40		pk APLITE, porphyritic		PR						
BHL-02	55.96				J		20			CN	PR	SM					
BHL-02	56.11				J		45			CN	PR	RF					possible DB
BHL-02	56.17				hJ		50		wh mi		PR						
BHL-02	56.22				J		50		ph wh mi	VN	PR	SM					
BHL-02	56.23				J		50		ph wh mi	VN	PR	SM					
BHL-02	56.30				J		55		ph wh mi	VN	PR	RF					possible DB
BHL-02	56.31				J		55		ph wh mi	VN	PR	RF					
BHL-02	56.34				J		60			CN	PR	SM					
BHL-02	56.45				J		30			CN	PR	RF					
BHL-02	56.51				hJ		50				PR						
BHL-02	56.68				hJ		45				PR						
BHL-02	56.71				J		55			CN	PR	SM					incipient, possible DB
BHL-02	56.77				J		60			CN	PR	RF					possible DB
BHL-02	56.93				hJ		50		bk mi		IR						br halo
BHL-02	56.95				hJ		50		wh mi		PR						
BHL-02	56.97				J		40		wh mi	CT	PR	SM					
BHL-02	57.02				J		55		wh mi	CT	PR	RF					
BHL-02	57.14				J		40		wh mi	CT	PR	SM					
BHL-02	57.22				hJ						IR						incipient
BHL-02	57.30				hJ						IR						incipient
BHL-02	57.37				hJ						IR						incipient
BHL-02	57.43				J		45			CN	PR	SM					
BHL-02	57.52				J		60			CN	PR	SM					
BHL-02	57.53				J		60		ph wh mi	CT	PR	RF					
BHL-02	57.59				V		60		bk and wh mi		PR		<	2			
BHL-02	57.65				hJ		65				PR						
BHL-02	57.77				hJ		55				PR						
BHL-02	57.78				V		55		wh mi		PR		<	5			
BHL-02	57.82				J		50			CN	IR						possible DB
BHL-02	57.88				J		55			CN	IR	RF					
BHL-02	58.11				J		40			CN	PR	RF					possible DB
BHL-02	58.29				J		65		wh mi		PR						
BHL-02	58.42				J		55		wh mi	VN	PR	SM					
BHL-02	58.44				hJs	x6	60		wh mi		PR						2-20 mm spacing
BHL-02	58.55				J		60		wh mi	VN	ST	SM					possible DB
BHL-02	58.62				J		60		wh mi		PR						
BHL-02	58.63				J		55		wh mi	VN	PR	SM					possible DB
BHL-02	58.83				J		60			CN	PR	SM					
BHL-02	58.84	59.00			V		70		wh mi		UN		<	5			incipient
BHL-02	59.01				J		60			CN	PR	SM					
BHL-02	59.07				J		60			CN	PR	SM					possible DB



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BHL-02	59.18				J		60			CN	PR	SM					40-50 mm halo of incipient Js
BHL-02	59.27				J		60			CN	PR	SM					
BHL-02	59.34				J		60			CN	PR	SM					
BHL-02	59.53				J		70		wh mi	CT	PR	SM					
BHL-02	59.59				V		35		wh mi				<	5			
BHL-02	59.70	59.85			MB												
BHL-02	60.47				J		50			CN	PR	SM					
BHL-02	60.81				J		55			CN	PR	SM					
BHL-02	60.82				J		55		wh mi	CT	PR						
BHL-02	61.01				hJ		80				IR						incipient
BHL-02	61.05				J		75		ph wh mi	VN	IR	RF					
BHL-02	61.08				J		45		ph wh mi	VN	PR	RF					
BHL-02	61.10				hJ		70				IR						incipient
BHL-02	61.59				J		55			CN	PR	SM					
BHL-02	61.78				J		25			CN	PR	RF					
BHL-02	61.89				J		25			CN	IR	RF					
BHL-02	61.95				J		75			CN	PR	SM					
BHL-02	62.03				J		60			CN	PR	SM					
BHL-02	62.08				J		70			CN	PR	SM					
BHL-02	62.39				J		5			CN	IR						possible DB
BHL-02	62.52				J		0			CN	IR						possible DB
BHL-02	63.51				J		40			CN	IR	SM					
BHL-02	63.62				V		75		wh mi		PR						
BHL-02	64.60				J		5			CN	IR	SM					
BHL-02	64.66				J		65		ph wh mi	CT	PR	SM					
BHL-02	64.69				hJ		60		wh mi		PR						
BHL-02	64.82				J		50			CN	PR	SM					
BHL-02	65.42				hJ		90		wh mi		PR						
BHL-02	65.51				J		60		wh to gr mi	CT	PR	RF					
BHL-02	65.53				V		60		wh mi		PR		<	2			2 mm br halo
BHL-02	65.56				J		60		wh-gr mi	CT	PR	RF					
BHL-02	65.70				hJ		80		wh mi		PR						
BHL-02	66.36				hJ		60		wh mi		PR						
BHL-02	66.39				hJ		50		wh mi		PR						<1 mm rd-br halo
BHL-02	66.53				J		5			CN	PR						
BHL-02	66.62				J		40			CN	PR	RF					
BHL-02	66.83				hJ		70		wh mi		PR						
BHL-02	67.05				hJ		60		wh mi		PR						
BHL-02	67.22				hJ		50		wh mi		PR						
BHL-02	67.26				hJ		60				IR						<2 mm br halo
BHL-02	67.31				hJ		50		wh mi		PR						
BHL-02	67.36				J		50		wh mi	VN	IR	SM					
BHL-02	67.45				hJ		80		wh mi		PR						
BHL-02	67.65				J		30			CN	PR	SM					
BHL-02	67.68				hJ		40		wh mi		PR						
BHL-02	67.74				hJ		60		wh mi		PR						
BHL-02	67.84				hJ		60		wh mi		PR						
BHL-02	67.86				hJ		50		wh mi		IR						
BHL-02	68.16				hJ		90		wh mi		IR						incipient
BHL-02	68.39				J		60		wh mi	CT	PR	RF					
BHL-02	68.44				hJ		60		wh mi		PR						
BHL-02	68.48				hJ		60		wh mi		PR						
BHL-02	68.52				hJ		40		wh mi		PR						
BHL-02	68.63				hJ		50		wh mi		PR						
BHL-02	68.66				J		50		wh mi	CT	PR	RF					
BHL-02	68.88				hJ		50		wh mi		PR						incipient
BHL-02	68.98				hJ		80		wh mi		IR						
BHL-02	69.05				hJ		70				PR						
BHL-02	69.07				hJ		70				PR						
BHL-02	69.12				hJ		70		wh mi		PR						
BHL-02	69.24				J		60		wh mi		PR						
BHL-02	69.45				hJ		60		wh mi		IR						incipient
BHL-02	69.46				hJ		45		wh mi		PR						
BHL-02	69.48				J		40			CN	PR	RF					
BHL-02	69.69				hJ		70				IR						incipient
BHL-02	69.87				J		60			CN	PR	RF					
BHL-02	70.18				hJ		45				PR						
BHL-02	70.23				hJ		70				PR						
BHL-02	70.56				J		60		ph wh mi	CT	PR	SM					
BHL-02	70.90				hJ		50				IR						
BHL-02	71.00				hJ		50		wh mi		PR						
BHL-02	71.06				J		60		wh mi	CT	PR	SM	<	2			
BHL-02	71.20				hJ		90		wh mi		IR						incipient
BHL-02	71.29				J		50		ph wh mi	CT	PR	SM					
BHL-02	71.42				hJ		80		wh mi		IR						incipient
BHL-02	71.52				hJ		80		wh mi		IR						incipient
BHL-02	71.55				V		60				PR		<	2			
BHL-02	71.89				V		50						<	2			
BHL-02	71.97				hJ		65		wh mi		PR						



Pioneer-Burdekin Pumped Hydro Energy Scheme: Tranche 1 – BHL-02 Defects List

Refer to Explanatory Notes sheets for abbreviation definitions

PointID	Depth	Bottom	Fracture Set	Defect Number	Type	Type Suffix	Dip Minimum (degrees)	Dip Maximum (degrees)	Infilling Material	Aperture Observation	Planarity	Roughness	Aperture Measurement Sign	Aperture Measurement	Aperture	Spacing	Remark
BHL-02	72.34				hJ		60				PR						
BHL-02	72.41				hJ		45				PR						
BHL-02	72.44				J		15			CN	PR	SM					
BHL-02	72.58						55				UN						
BHL-02	73.04				AZ				bk and wh mi		IR			10			
BHL-02	73.25						60				PR						
BHL-02	73.27				hJ		60		pl gr to wh mi		PR						
BHL-02	73.38	73.41			hJs				qu								
BHL-02	73.41				hJ		55		wh mi		PR						
BHL-02	73.49				J		55		ph wh mi	VN	PR	SM					
BHL-02	73.59				hJ		70		wh mi		PR						
BHL-02	73.64				V		45				PR		<	2			
BHL-02	73.70				hJ		60				PR						
BHL-02	73.73				hJ		40				PR						<10 mm halo of incipient hJs
BHL-02	73.87				hJ		55		wh mi		PR						
BHL-02	74.16				hJ		65				PR						incipient
BHL-02	74.19				hJ		70				PR						10 mm alteration halo
BHL-02	74.28				J		5			CN	PR						
BHL-02	74.36				hJ		70				PR						wh mi
BHL-02	74.43				hJ		55				PR						
BHL-02	74.60	75.00			AZ												zone of hJs and Vs <2 mm, wh mi, some 1 mm br halos
BHL-02	74.62					vugh?			qu					10			
BHL-02	74.65				hJ		60		wh mi		PR						<10 mm halo of incipient Js and Vs
BHL-02	74.66				hJ		65		wh mi		PR						
BHL-02	74.68				V		60		wh mi		PR		<	2			
BHL-02	74.74				V		60		wh mi		PR		<	2			slightly altered rd-br
BHL-02	74.78				hJ		60		wh mi		PR						
BHL-02	74.81				V		70		wh mi		PR		<	2			
BHL-02	74.86				hJ		45		wh mi		PR						
BHL-02	74.90				hJ		65		wh mi		PR						
BHL-02	74.93				hJ		45		wh mi		PR						
BHL-02	74.95				hJs	x2	40		wh mi		PR						10 mm spacing
BHL-02	74.96				hJ		90		wh mi		IR						
BHL-02	74.97				V		45		wh mi		PR		<	2			
BHL-02	75.03				hJ		70		wh mi		PR						
BHL-02	75.10				hJ		45		wh mi		PR						
BHL-02	75.11				hJ		45		wh mi		PR						
BHL-02	75.13				hJ		45		wh mi		PR						
BHL-02	75.16				hJ		50		wh mi		PR						
BHL-02	75.20				hJ		40		wh mi		PR						
BHL-02	75.26				hJ		50		wh mi		PR						
BHL-02	75.31				hJ		50		wh mi		PR						
BHL-02	75.32				hJ		50		wh mi		PR						
BHL-02	75.33				hJ		40		wh mi		PR						
BHL-02	75.35	75.65			hJs	/Vs	45	55	wh mi		PR		<	2			some br halos, incipient
BHL-02	75.36				hJ		30		wh mi		PR						
BHL-02	75.39				hJ		30		wh mi		PR						
BHL-02	75.41				hJ		50		wh mi		PR						
BHL-02	75.46				hJ		50		wh mi		PR						
BHL-02	75.47				hJ		65		wh mi		PR						some rd alteration
BHL-02	75.50				hJ		50		wh mi		PR						
BHL-02	75.52				hJ		50		wh mi		PR						some br alteration
BHL-02	75.56				hJ		55		wh mi		PR						
BHL-02	75.60				hJ		45		wh mi		PR						some br alteration
BHL-02	75.61				hJ		55		wh mi		PR						
BHL-02	75.65				J		45			CN	PR	SM					
BHL-02	75.69				hJ		25		wh mi		PR						
BHL-02	75.73				hJ		25		wh mi		PR						
BHL-02	75.74				hJ		25		wh mi		PR						
BHL-02	75.75				hJ		25		wh mi		PR						
BHL-02	75.77				hJ		45		wh mi		PR						
BHL-02	75.79				hJ		75		wh mi		PR						
BHL-02	75.85				hJ		55		wh mi		PR						
BHL-02	75.95				hJ		45		wh mi		PR						
BHL-02	76.00	76.45			hJs	/Vs	45	55	wh mi		PR						some br halos, incipient
BHL-02	76.01				hJ		35		wh mi		UN						
BHL-02	76.15				hJ		55		wh mi		PR						
BHL-02	76.19				hJ		60		wh mi		PR						
BHL-02	76.20				hJ		40		wh mi		PR						
BHL-02	76.21				hJ		20		wh mi		PR						10 mm halo of hJs, slightly altered br in areas
BHL-02	76.23				hJ		45				PR						altered br in areas
BHL-02	76.26				hJ		50		bk and wh mi		PR						
BHL-02	76.27				hJ		40		bk and wh mi		PR						
BHL-02	76.28				hJ		50		bk and wh mi		PR						
BHL-02	76.32				hJ		25		wh mi		PR						
BHL-02	76.34				hJ		25		bk and wh mi		PR						altered br in areas
BHL-02	76.36				hJ		60		bk and wh mi		PR						altered br
BHL-02	76.38				hJ		60		bk and wh mi		PR						
BHL-02	76.40				hJ		60		bk and wh mi		PR						



Pioneer-Burdekin Pumped Hydro Energy Scheme: Tranche 1 – BHL-02 Defects List

Refer to Explanatory Notes sheets for abbreviation definitions

PointID	Depth	Bottom	Fracture Set	Defect Number	Type	Type Suffix	Dip Minimum (degrees)	Dip Maximum (degrees)	Infilling Material	Aperture Observation	Planarity	Roughness	Aperture Measurement Sign	Aperture Measurement	Aperture	Spacing	Remark
BHL-02	76.42				hJ		60		bk and wh mi		PR						
BHL-02	76.48				J		55			CN	IR	SM					
BHL-02	76.58				hJ		60		wh mi		PR						altered br in areas
BHL-02	76.86				hJ		65		wh mi		PR						
BHL-02	76.92				J		45			CN	PR	SM					
BHL-02	77.04				hJ		60		wh mi		PR						
BHL-02	77.06				hJ		60		wh mi		PR						
BHL-02	77.10				hJ		65		wh mi		PR						
BHL-02	77.26				J		30			CN	PR	SM					
BHL-02	77.33				hJ		45		wh mi		PR						altered br in areas
BHL-02	77.48				hJ		40				UN						
BHL-02	77.54	77.62			V		60		dark grey, fine grained, VH		PR						
BHL-02	77.55				J		60			CN	PR						
BHL-02	77.62				J		60			CN	PR						
BHL-02	77.64				hJ		45		wh mi		PR						altered br in areas
BHL-02	77.66				hJ		45				PR						
BHL-02	77.73				hJ		45				PR						
BHL-02	78.03				hJ		40				PR						
BHL-02	78.09				hJ		45				PR						
BHL-02	78.12				hJ		10				IR						
BHL-02	78.16				J		40			CN	PR	SM					
BHL-02	78.18				hJ		40		wh mi		PR						5-10 mm altered halo
BHL-02	78.20				J		40			CN	PR	SM					
BHL-02	78.34				J		70			CN	PR	SM					
BHL-02	78.44				hJ		70		wh mi		IR						
BHL-02	78.48				hJ		90		wh mi		IR						
BHL-02	78.50				hJ		40		wh mi		IR						
BHL-02	78.52				J		80		ph wh mi	CT	IR	RF					
BHL-02	78.61				hJ		50				IR						
BHL-02	78.68				hJ		70				IR						
BHL-02	78.73				hJ		60				IR						incipient
BHL-02	78.80				hJ		80				IR						incipient
BHL-02	78.82				hJ		60				PR						
BHL-02	78.85				hJ		58				PR						
BHL-02	78.90				hJ		70				PR						
BHL-02	78.92				hJ		70		wh mi		PR						
BHL-02	79.07				hJ		35				PR						
BHL-02	79.13				J		20			CN	PR	SM					
BHL-02	79.27				hJ		55		wh mi		UN						
BHL-02	79.50				hJ		80		wh mi		UN						
BHL-02	79.64				hJ		60		wh mi		IR						incipient
BHL-02	79.68				hJ		90		wh mi		IR						incipient
BHL-02	79.72				J		40			CN	IR	RF					
BHL-02	80.03				V		45		wh mi					2			
BHL-02	80.36				J		40			CN	PR	SM					
BHL-02	81.04				J		65			CN	UN	SM					
BHL-02	81.18				J		15			CN	PR	SM					
BHL-02	81.93				J		45			CN	UN	RF					
BHL-02	82.36				hJ		70		wh mi		UN						
BHL-02	82.40				J		15			CN	IR						
BHL-02	82.44				V		55		wh and pk mi		PR		<	3			
BHL-02	82.53				hJ		55				PR						
BHL-02	82.64				hJ		55				PR						
BHL-02	82.94				J		55			CN	UN	RF					
BHL-02	83.32				J		60			CN	PR	RF					
BHL-02	83.42				J		50			CN	PR	SM					
BHL-02	83.60				J		50			CN	PR	SM					
BHL-02	84.29				hJ		50		wh mi		PR						
BHL-02	84.32				J		50		ph wh mi	CT	PR	SM					
BHL-02	84.96				J					CN	IR	RF					possible DB
BHL-02	84.99				V				wh and gy mi				<	3			
BHL-02	85.14				hJ		70		wh mi		PR						
BHL-02	85.42				V		70		wh mi		PR		<	2			
BHL-02	85.75				J		70		wh and pk mi	CT	PR	SM					white and pink mineral
BHL-02	86.54				V		75		pk, wh, gr-bl mi		PR						
BHL-02	87.44				J		65			CN	PR	RF					
BHL-02	87.81				J		40		wh, gr, pk mi	CT	PR	SM					
BHL-02	88.22				J		50		ph wh mi	VN	PR	SM					possible DB
BHL-02	88.29				J		50		ph wh mi	VN	PR	SM					
BHL-02	89.34				J		55		ph wh mi	CT	PR	SM					
BHL-02	89.39				hJ		50		wh mi		PR						
BHL-02	89.42				hJ		45				IR						
BHL-02	89.48				J		45			CN	PR	SM					
BHL-02	89.49	89.52			hJs		45				PR			25			zone of bk mi hJs
BHL-02	89.57				hJ		45										
BHL-02	89.60				J		35			CN	PR	SM					
BHL-02	89.60	89.67															broken core from drilling
BHL-02	89.67				J		45			CN	PR	SM					
BHL-02	89.71				hJ		45		bk and wh mi		PR						



Pioneer-Burdekin Pumped Hydro Energy Scheme: Tranche 1 – BHL-02 Defects List

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PointID	Depth	Bottom	Fracture Set	Defect Number	Type	Type Suffix	Dip Minimum (degrees)	Dip Maximum (degrees)	Infilling Material	Aperture Observation	Planarity	Roughness	Aperture Measurement Sign	Aperture Measurement	Aperture	Spacing	Remark
BHL-02	89.73				V				br and wh mi (qu?)					10			
BHL-02	90.03				hJ		70		bk and wh mi		PR						
BHL-02	90.04				hJ		90		bk and wh mi		IR						
BHL-02	90.09				hJ		50		bk and wh mi		IR						
BHL-02	90.10				hJ		40		bk mi		PR						
BHL-02	90.18				J		35			CN	PR	SM					
BHL-02	90.18	90.26			hJs	/Vs	35		bk mi		PR						zone of very closely spaced hJs and Vs, <1 mm spacing
BHL-02	90.26				J		35			CN	PR	SM					
BHL-02	90.36				hJ		10				PR						
BHL-02	90.47				J		40			CN	PR	SM					
BHL-02	90.54				J		40			CN	PR	SM					
BHL-02	91.48				V		50		wh mi		PR			2			
BHL-02	92.50				J		30			CN	PR	SM					
BHL-02	92.57				hJ		45		wh mi		PR						
BHL-02	92.88				J		40			CN	PR	SM					
BHL-02	92.95				J		50		wh mi	CT	PR	SM					
BHL-02	92.98				V		65		wh mi		PR		<	2			
BHL-02	93.01				hJ		60				PR						
BHL-02	93.06				V		65		wh mi		PR		<	2			incipient
BHL-02	93.22				hJ		40		wh mi		PR						
BHL-02	93.28				hJ		35		wh mi		PR						
BHL-02	93.87				V		75		wh mi		UN		<	4			<20 mm halo of incipient Js
BHL-02	93.96				V		65		wh mi		PR		<	4			<10 mm halo of incipient Js
BHL-02	93.99				J		50			CN	PR	RF					
BHL-02	94.07				V		60		pl br, wh, and gy-bl mi		PR		<	5			gy-bk mi at edges
BHL-02	94.08				J		60			CN	PR	SM					
BHL-02	94.60				hJ		65		gy-bl mi		PR						
BHL-02	95.13				J		45			CN	PR	RF					
BHL-02	95.23				hJ		45		wh mi		PR						
BHL-02	95.44				V		45				PR		<	2			
BHL-02	95.51				J		40			CN	PR	RF					
BHL-02	95.59				J		40			CN	PR	SM					
BHL-02	95.88				V		60		wh mi		PR		<	2			
BHL-02	96.10				J		60		wh mi	CT	PR	SM					
BHL-02	96.23				J		70		wh mi		UN						
BHL-02	96.29				hJ		55		wh mi		PR						incipient
BHL-02	96.31				hJ		70		wh mi		UN						incipient
BHL-02	96.54				J		40			CN	PR	SM					
BHL-02	96.58				hJ		50		wh mi		PR						
BHL-02	96.68				hJ		40		wh mi		PR						
BHL-02	96.75				V		40		wh mi		UN		<	5			
BHL-02	96.76				J		40			CN	UN	SM					
BHL-02	96.77				J		40			CN	PR	SM					
BHL-02	96.80				hJ		85		wh mi		IR						
BHL-02	96.81				hJ		40				PR						incipient
BHL-02	96.86				hJ		55		wh mi		PR						
BHL-02	96.94				V		75		wh mi		UN		<	2			
BHL-02	96.95				hJ				wh mi		IR						incipient
BHL-02	97.09				hJ		5		wh mi		PR						
BHL-02	97.26				hJ		55		wh mi		PR						
BHL-02	97.28				hJ		25		wh mi		PR						
BHL-02	97.35				J		20			CN	PR	SM					
BHL-02	97.36				hJ		65		wh mi		PR						
BHL-02	97.38	97.85			hJs												zone of very closely to extremely closely spaced hJs, altered bk, many incipient Js, <2 mm gy halos
BHL-02	97.49				hJ		60		wh mi		PR						
BHL-02	97.50				hJ				wh mi		PR						incipient
BHL-02	97.51				J		20			CN	PR	SM					
BHL-02	97.56				hJ		35		wh mi		PR						
BHL-02	97.60				hJ						IR						
BHL-02	97.63				hJ		35				PR						<2 mm gy halo
BHL-02	97.66				hJ		35				PR						<2 mm gy halo
BHL-02	97.68				hJ		45		wh mi		PR		<	2			
BHL-02	97.71				hJ		45		wh mi		IR						
BHL-02	97.73				hJ		45		wh mi		PR						
BHL-02	97.82				hJ		35		wh mi		PR						
BHL-02	97.87				hJ		50		wh mi		PR						
BHL-02	97.91				hJ		50		wh mi		PR						
BHL-02	97.94				hJ		65		wh mi		PR						
BHL-02	97.96				hJ		65		wh mi		PR						
BHL-02	97.99				J		35			CN	PR	SM					
BHL-02	98.00				hJ		35		wh mi		IR						incipient
BHL-02	98.01				J		35			CN	PR	SM					
BHL-02	98.07				J		5			CN	PR	SM					
BHL-02	98.12				hJ		65		wh mi		IR						incipient
BHL-02	98.13				J		45			CN	PR	SM					
BHL-02	98.21				V		70		wh mi		IR		<	4			
BHL-02	98.29				V		45		wh mi		PR		<	3			
BHL-02	98.35				hJ		70				PR						

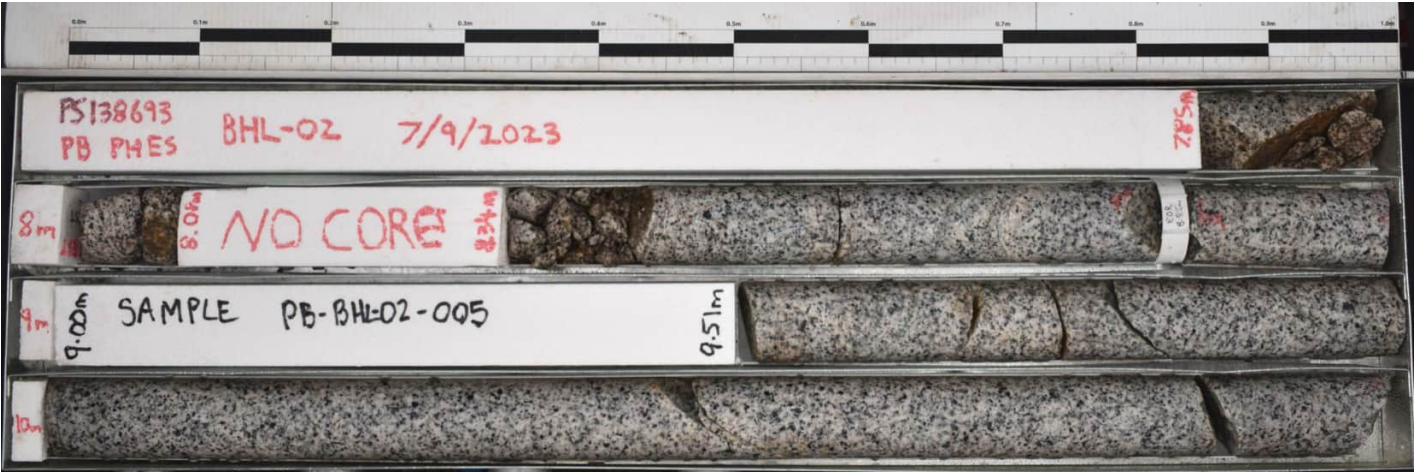


Pioneer-Burdekin Pumped Hydro Energy Scheme: Tranche 1 – BHL-02 Defects List

Refer to Explanatory Notes sheets for abbreviation definitions

PointID	Depth	Bottom	Fracture Set	Defect Number	Type	Type Suffix	Dip Minimum (degrees)	Dip Maximum (degrees)	Infilling Material	Aperture Observation	Planarity	Roughness	Aperture Measurement Sign	Aperture Measurement	Aperture	Spacing	Remark
BHL-02	98.45				hJ		50				PR						2 mm gy halo
BHL-02	98.49				hJ		70		wh mi		PR						
BHL-02	98.81				J		55			CN	PR	SM					
BHL-02	98.92				J		25			CN	PR	SM					
BHL-02	98.96				J		40			CN	PR	SM					
BHL-02	99.03				J		45		wh mi	CT	PR	SM					
BHL-02	99.07				J		50		wh mi	CT	PR	SM					
BHL-02	99.14				hJ		50				PR						
BHL-02	99.15				hJ		50				PR						
BHL-02	99.31				J		80			CN	PR	SM					
BHL-02	99.37				J		70		ph wh mi	VN	PR	SM					
BHL-02	99.57						5				PR						
BHL-02	99.61				hJ				wh mi		IR						
BHL-02	99.64				hJ		70										
BHL-02	99.68				hJ		90										
BHL-02	99.89				hJ		75										
BHL-02	100.02				J		15			CN	IR	SM					
BHL-02	100.07				V		65				PR			3			
BHL-02	100.17				J		50		ph wh mi	VN	PR	SM					
BHL-02	100.33				hJ		75		wh mi		PR						
BHL-02	100.40				J		35			CN	IR	SM					
BHL-02	100.51				J		40		ph wh mi	VN	PR	SM					
BHL-02	100.62				hJ		35		wh mi		PR						
BHL-02	100.72				hJ		75		wh mi		PR						
BHL-02	100.84				J		45		ph wh mi	VN	PR	SM					
BHL-02	100.91				hJ		80		wh mi		PR						Incipient
BHL-02	101.04				V		55				PR			3			
BHL-02	101.13				hJ		60				PR						
BHL-02	101.16				hJ		65				PR						

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PointID : BHL-02 Depth Range: 7.85 - 11.00 m



PointID : BHL-02 Depth Range: 11.00 - 15.00 m

	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-02	DRAWN RC	DATE 2/10/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 1/12

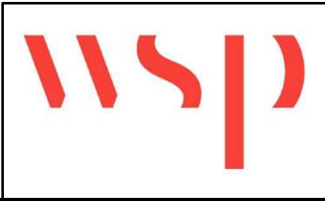
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PointID : BHL-02 Depth Range: 15.00 - 19.00 m



PointID : BHL-02 Depth Range: 19.00 - 23.00 m

	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-02	DRAWN RC	DATE 2/10/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 2/12

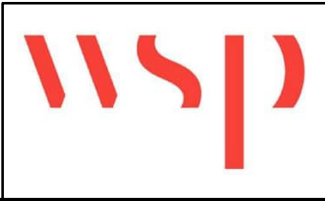
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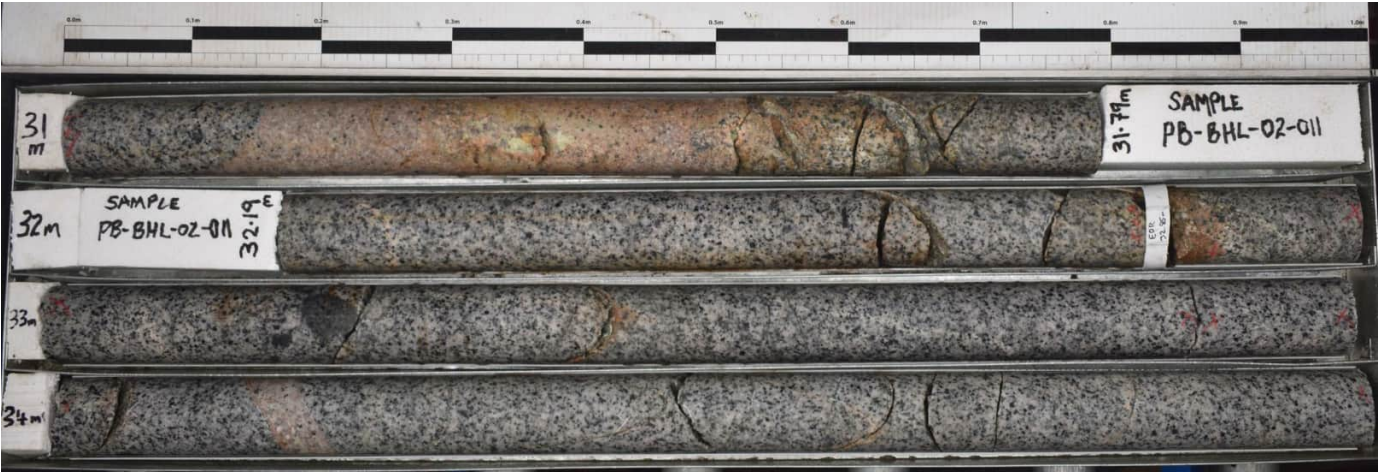
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PointID : BHL-02 Depth Range: 27.00 - 31.00 m

	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-02	DRAWN RC	DATE 2/10/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 3/12

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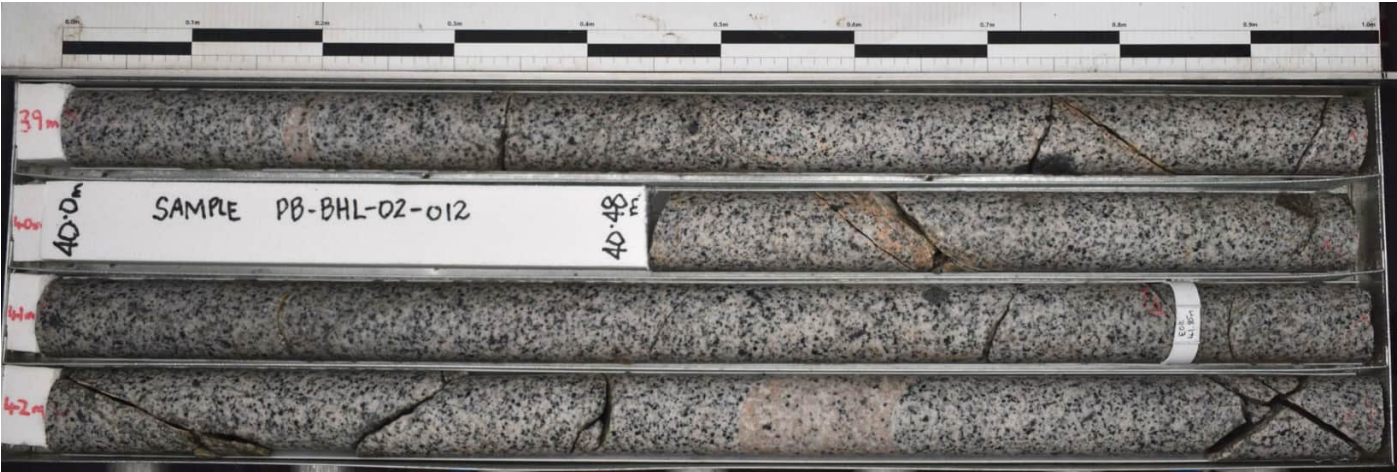
PointID : BHL-02 Depth Range: 31.00 - 35.00 m



PointID : BHL-02 Depth Range: 35.00 - 39.00 m

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		CHECKED	GEM	DATE	7/10/2024
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		PROJECT No	PS138693		FIGURE No 4/12

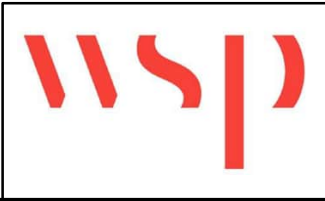
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PointID : BHL-02 Depth Range: 39.00 - 43.00 m



PointID : BHL-02 Depth Range: 43.00 - 47.00 m

	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-02	DRAWN RC	DATE 2/10/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 5/12

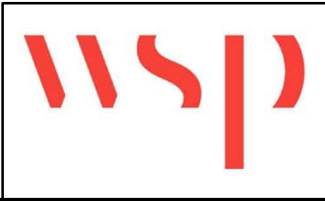
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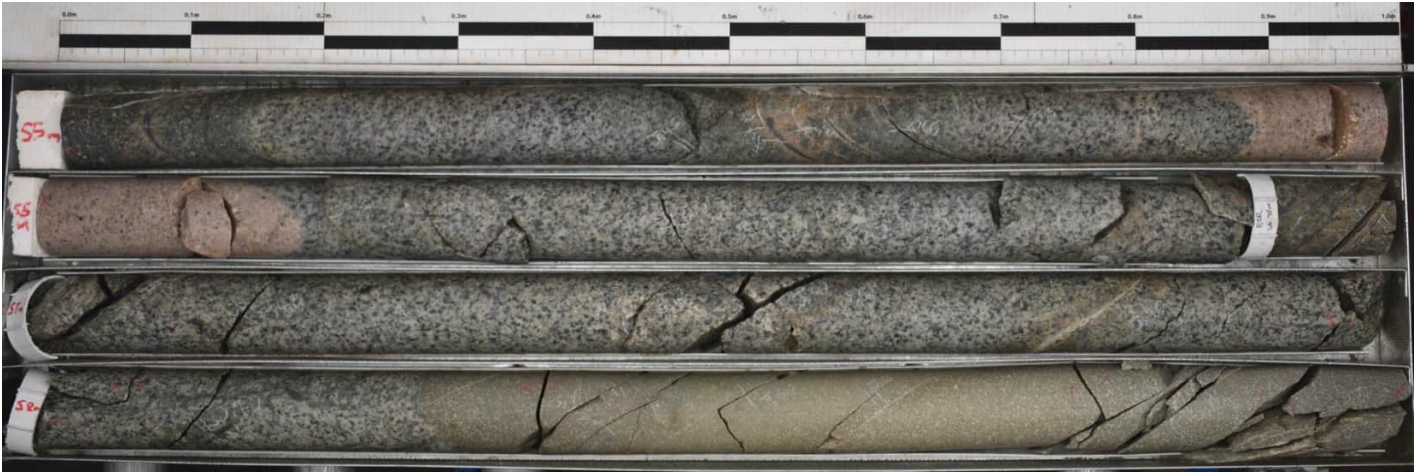
PointID : BHL-02 Depth Range: 47.00 - 51.00 m



PointID : BHL-02 Depth Range: 51.00 - 55.00 m

	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-02	DRAWN RC	DATE 2/10/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 6/12

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PointID : BHL-02 Depth Range: 55.00 - 59.00 m



PointID : BHL-02 Depth Range: 59.00 - 63.00 m

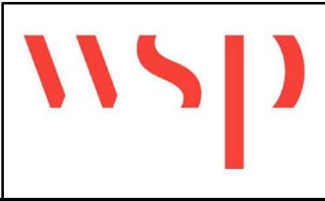
	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-02	DRAWN	RC	DATE	2/10/2024
		CHECKED	GEM	DATE	7/10/2024
		SCALE	Not To Scale		A4
		PROJECT No	PS138693		FIGURE No 7/12



PointID : BHL-02 Depth Range: 63.00 - 67.00 m



PointID : BHL-02 Depth Range: 67.00 - 71.00 m

	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-02	DRAWN RC	DATE 2/10/2024
		CHECKED GEM	DATE 7/10/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 8/12



PointID : BHL-02 Depth Range: 71.00 - 75.00 m



PointID : BHL-02 Depth Range: 75.00 - 79.00 m

	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-02	DRAWN RC		DATE 2/10/2024		
		CHECKED GEM		DATE 7/10/2024		
		SCALE Not To Scale				A4
		PROJECT No PS138693		FIGURE No 9/12		

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PointID : BHL-02 Depth Range: 87.00 - 92.00 m



PointID : BHL-02 Depth Range: 92.00 - 97.00 m

	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-02	DRAWN RC	DATE 2/10/2024	
		CHECKED GEM	DATE 7/10/2024	
		SCALE Not To Scale		A4
		PROJECT No PS138693		FIGURE No 11/12



PointID : BHL-02 Depth Range: 97.00 - 102.00 m

	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core Photo - BHL-02	DRAWN RC	DATE 2/10/2024		
		CHECKED GEM	DATE 7/10/2024		
		SCALE Not To Scale			A4
		PROJECT No PS138693		FIGURE No 12/12	

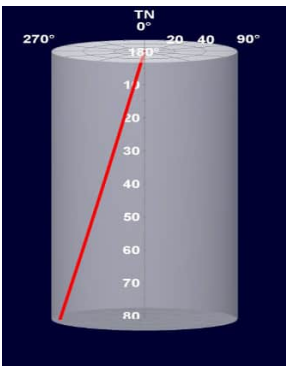
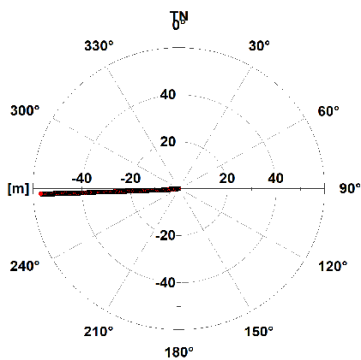


BHL-02 Structural Log



PROJECT:	Pioneer-Burdekin PHES	JOB #	PS138693
CLIENT:	Queensland Hydro	DATE:	19 October 2023

BOREHOLE DEVIATION



BOREHOLE DETAILS

DOCUMENT DETAILS

NOTES

LOCATION:	Lower Reservoir	BH DEPTH:	102.15
EASTING:	660362.27 m	BH DIAMETER:	HQ (96 mm)
NORTHING:	7661262.70 m	BH AZIMUTH:	268°
ELEVATION:	152.54 m	BH PLUNGE:	-56°
COORD SYSTEM:	MGA2020-55	CASING DEPTH:	8.45 m
LOGGING DATUM:	Ground Level	CASING TYPE:	HWT

LOGGED BY: G Hay
LOGGED DATE: 18-19/09/2023
DRAWN BY: SB
REVIEWED BY: GH
FILE: BHL-02_Structure_RevC
LOGGED DEPTH: 102.01 m

Image logs are oriented relative to borehole high side. 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 zeroed to ground level. Cased section assumed straight for deviation calculations.

INTERPRETED STRUCTURES



Contact



Crushed Seam



Infilled Seam



Joint



Shear Search



Shear Zone



Vein

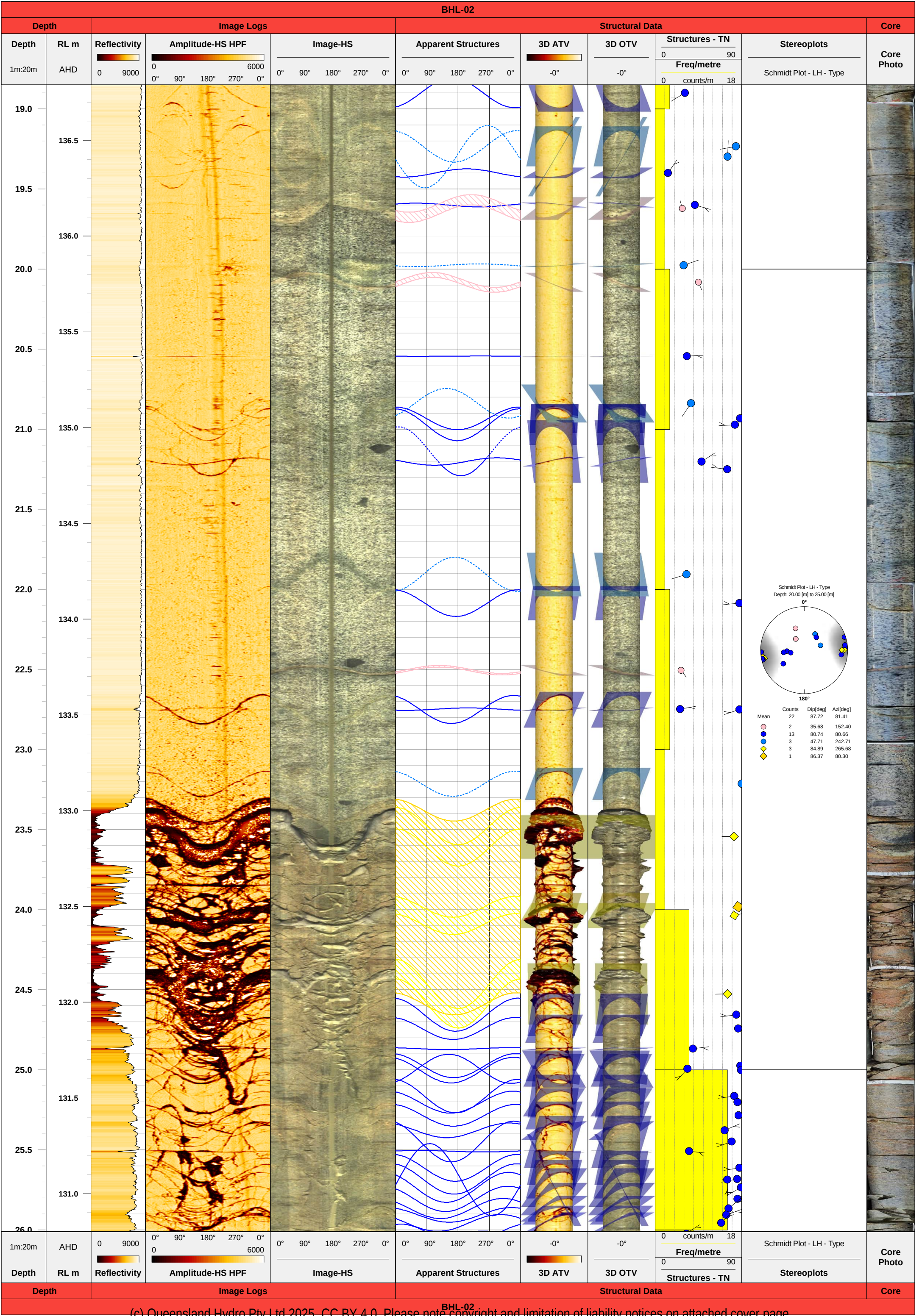


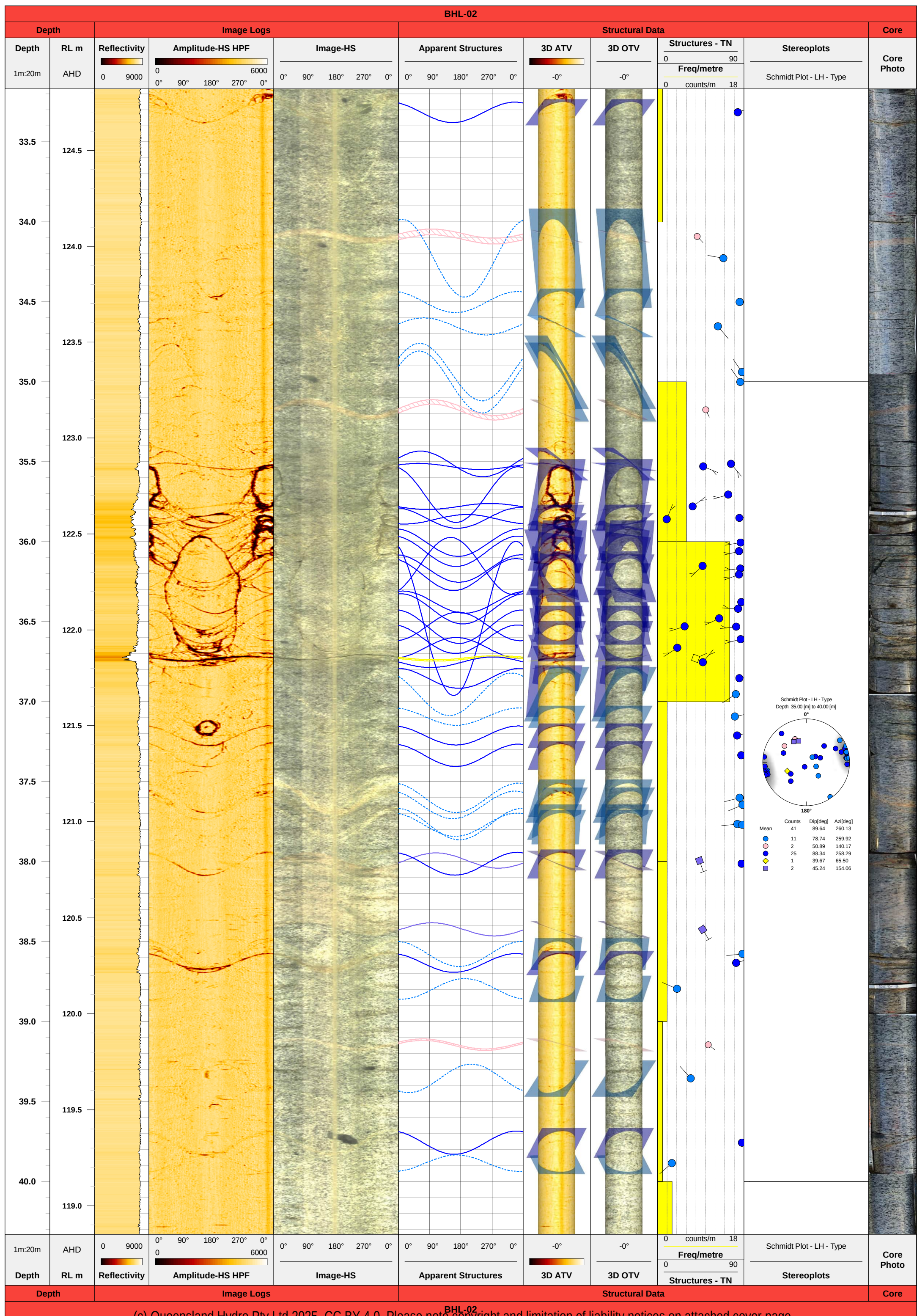
Healed Joint

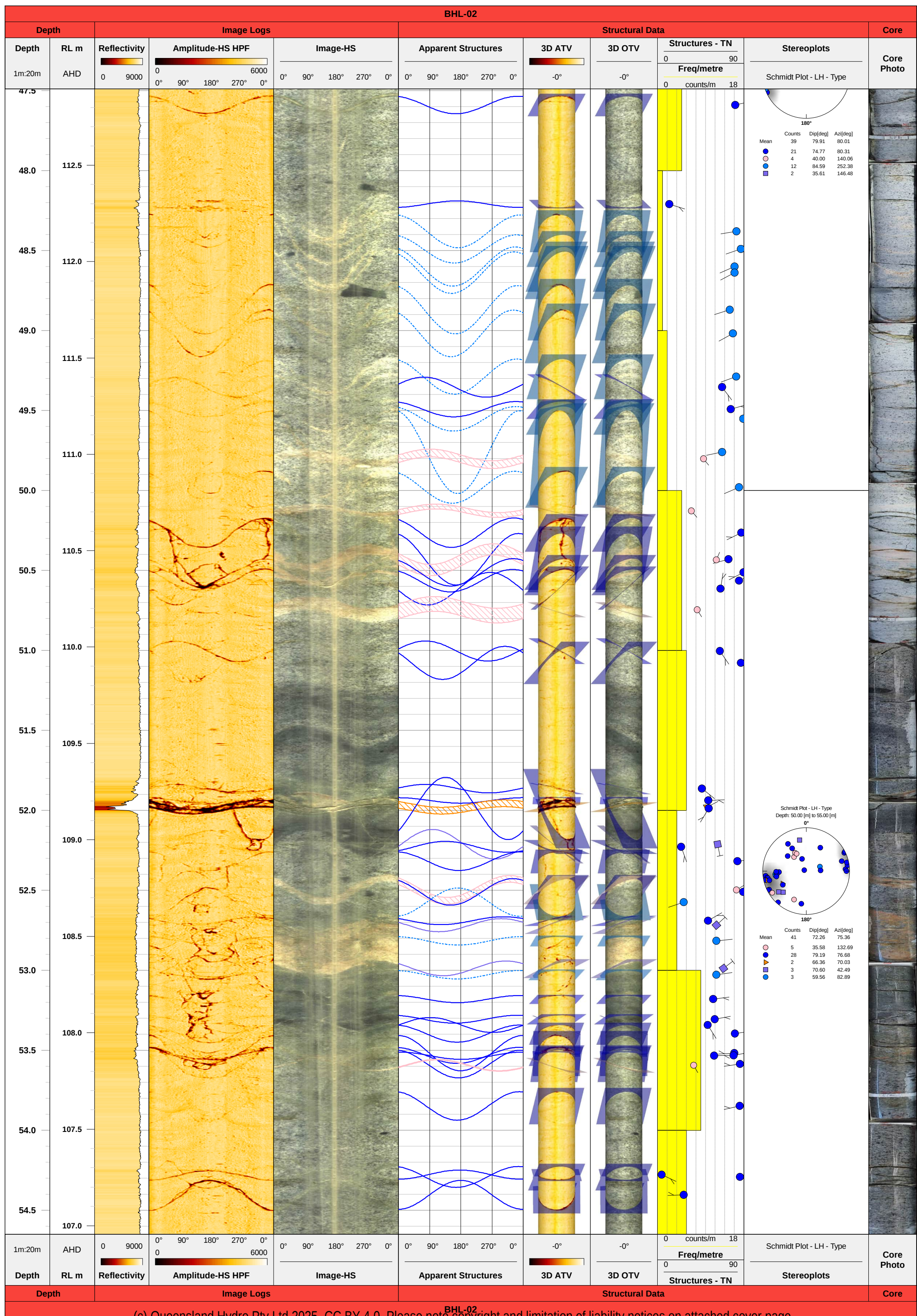
BHL-02

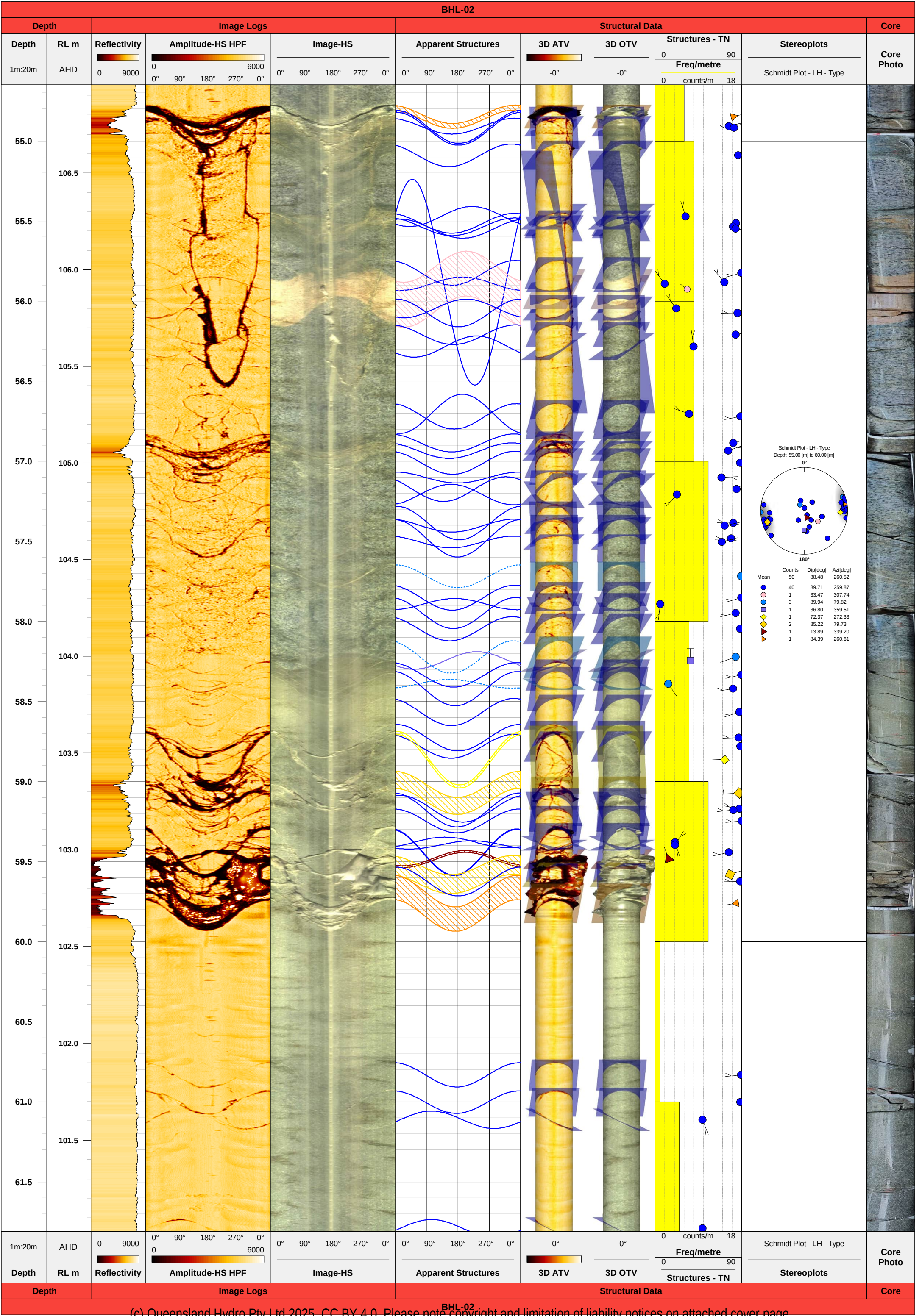
Depth		Image Logs					Structural Data					Core
Depth	RL m	Reflectivity	Amplitude-HS HPF	Image-HS	Apparent Structures	3D ATV	3D OTV	Structures - TN	Stereoplots	Core Photo		
1m:20m	AHD	09000	06000	0°90°180°270°0°	0°90°180°270°0°	-0°	-0°	090 Freq/metre 0counts/m18	Schmidt Plot - LH - Type	Core Photo		
		09000	06000	0°90°180°270°0°	0°90°180°270°0°	-0°	-0°	0counts/m18	Schmidt Plot - LH - Type	Core Photo		
6.5	147.0											
7.0												
	146.5											
7.5												
	146.0											
8.0												
	145.5											
8.5												
	145.0											
9.0												
	144.5											
9.5												
	144.0											
10.0												
	143.5											
10.5												
	143.0											
11.0												
	142.5											
11.5												
1m:20m	AHD	09000	06000	0°90°180°270°0°	0°90°180°270°0°	-0°	-0°	090 Freq/metre 0counts/m18	Schmidt Plot - LH - Type	Core Photo		
Depth	RL m	Reflectivity	Amplitude-HS HPF	Image-HS	Apparent Structures	3D ATV	3D OTV	Structures - TN	Stereoplots	Core Photo		

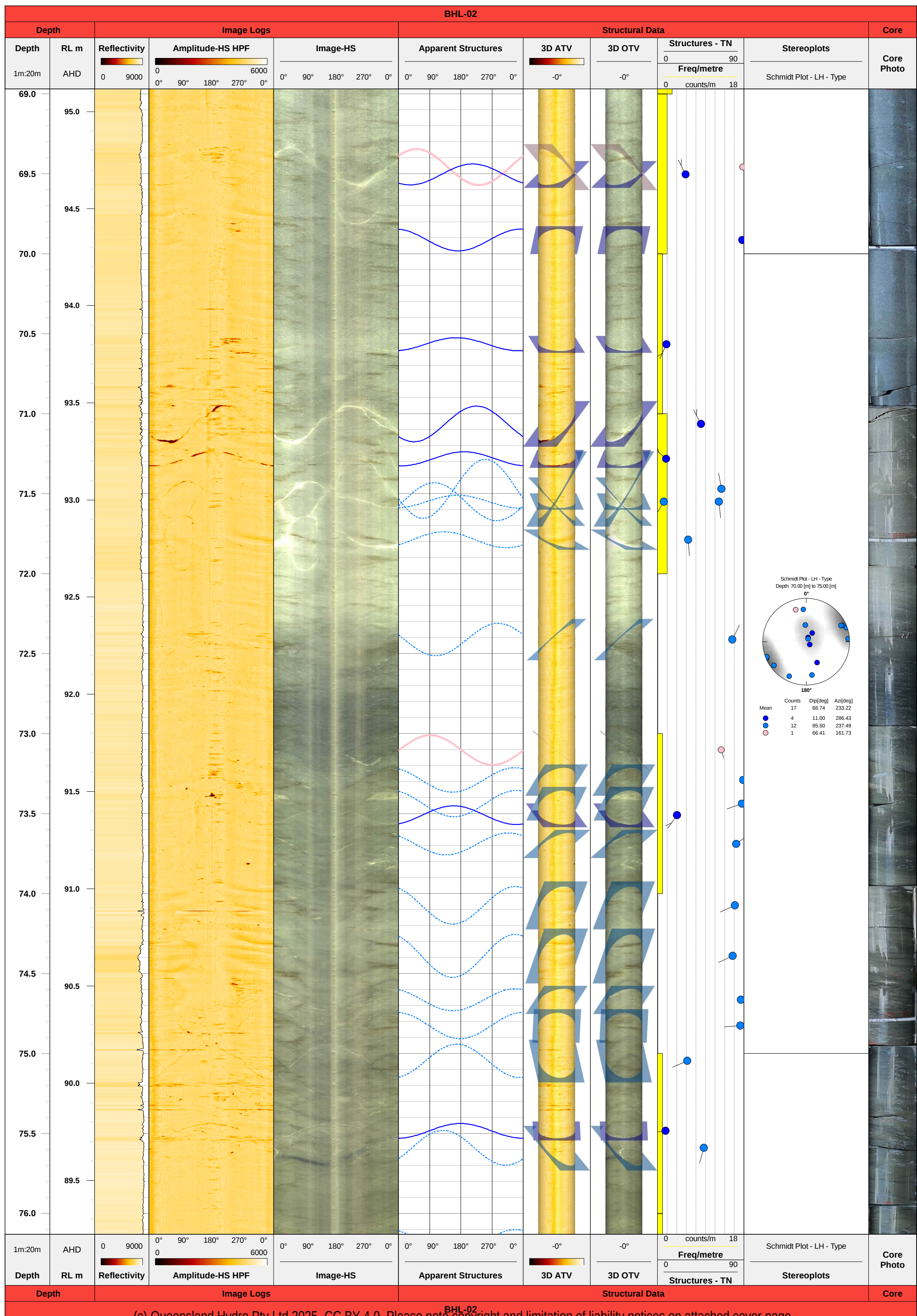
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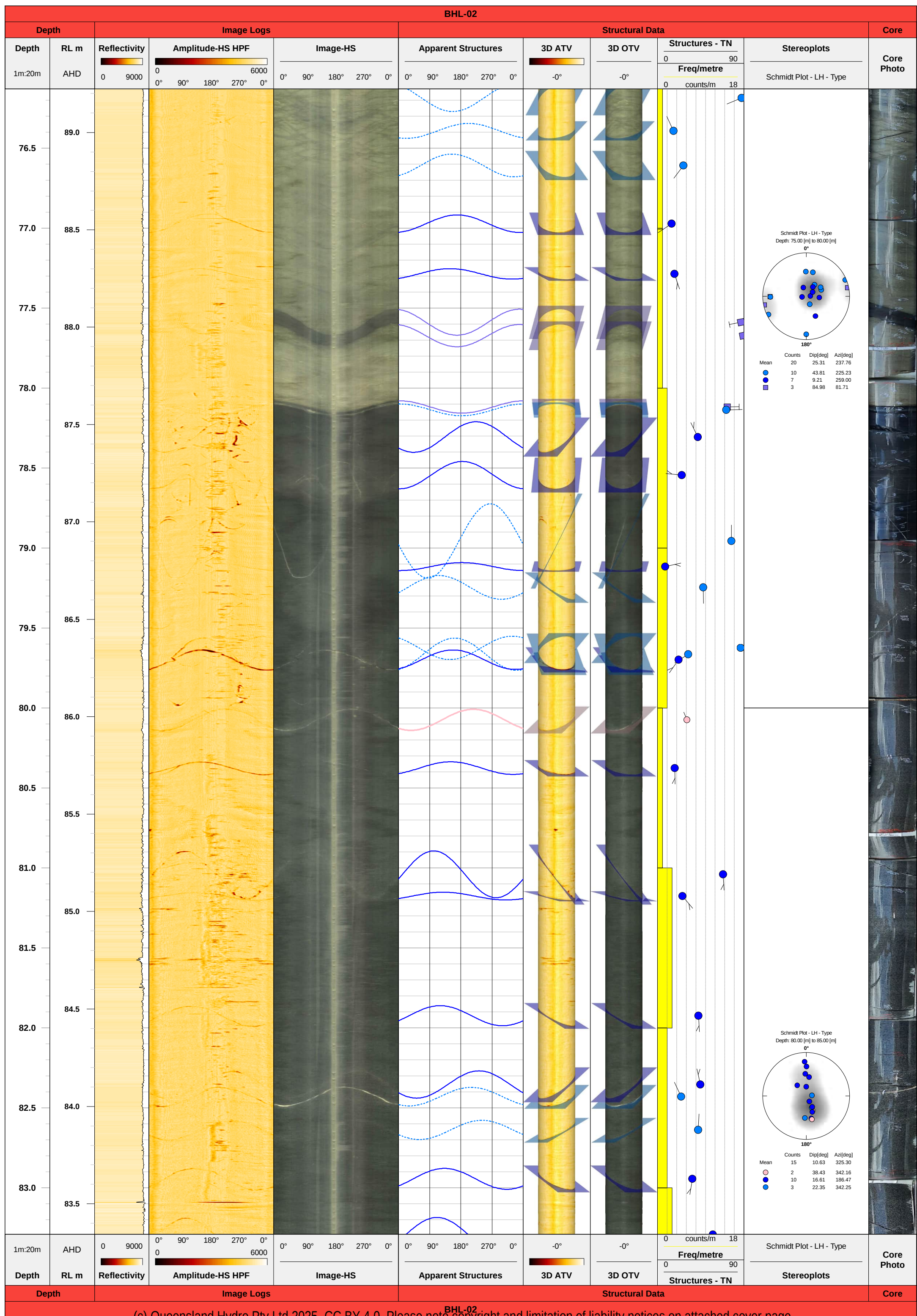


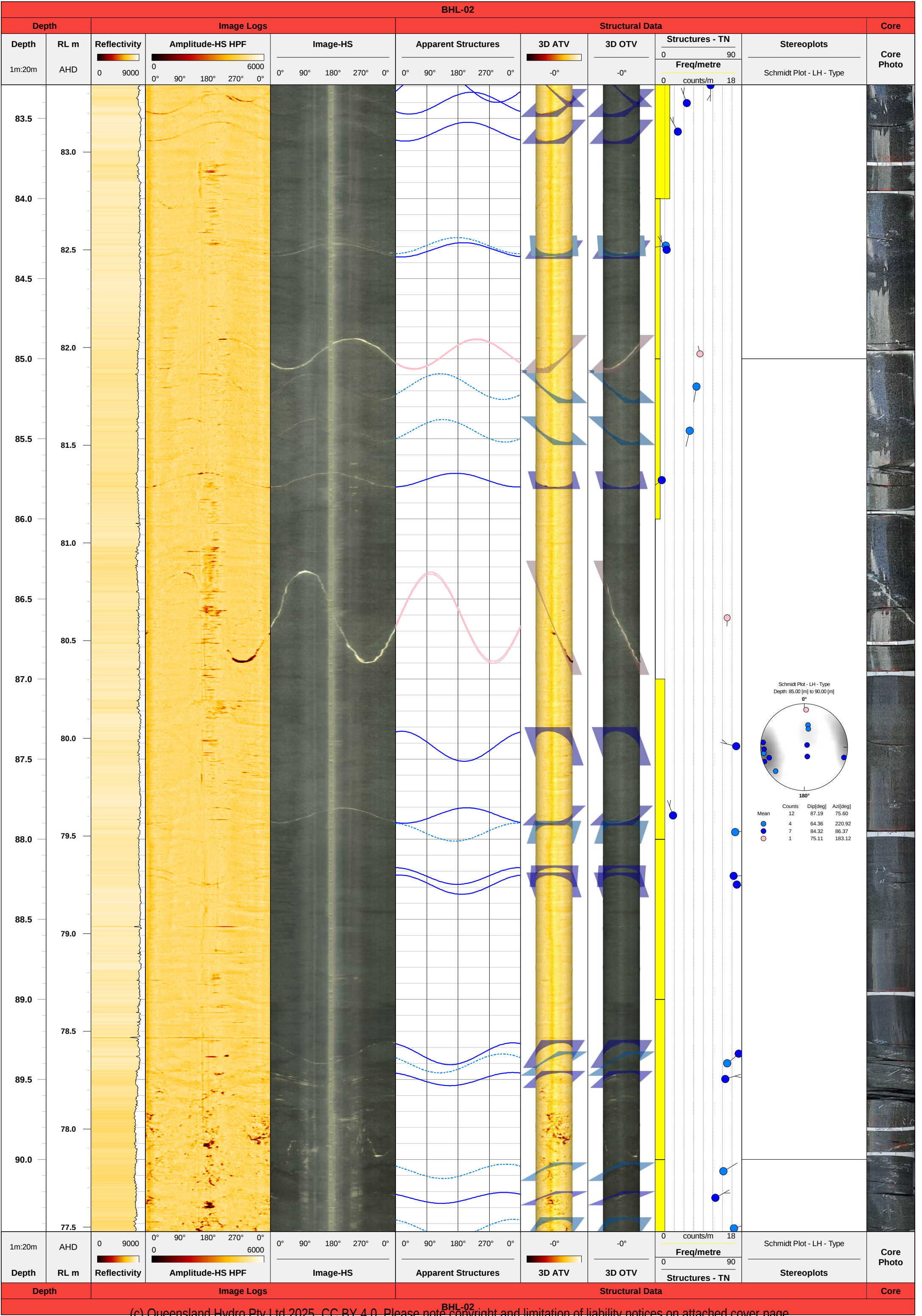






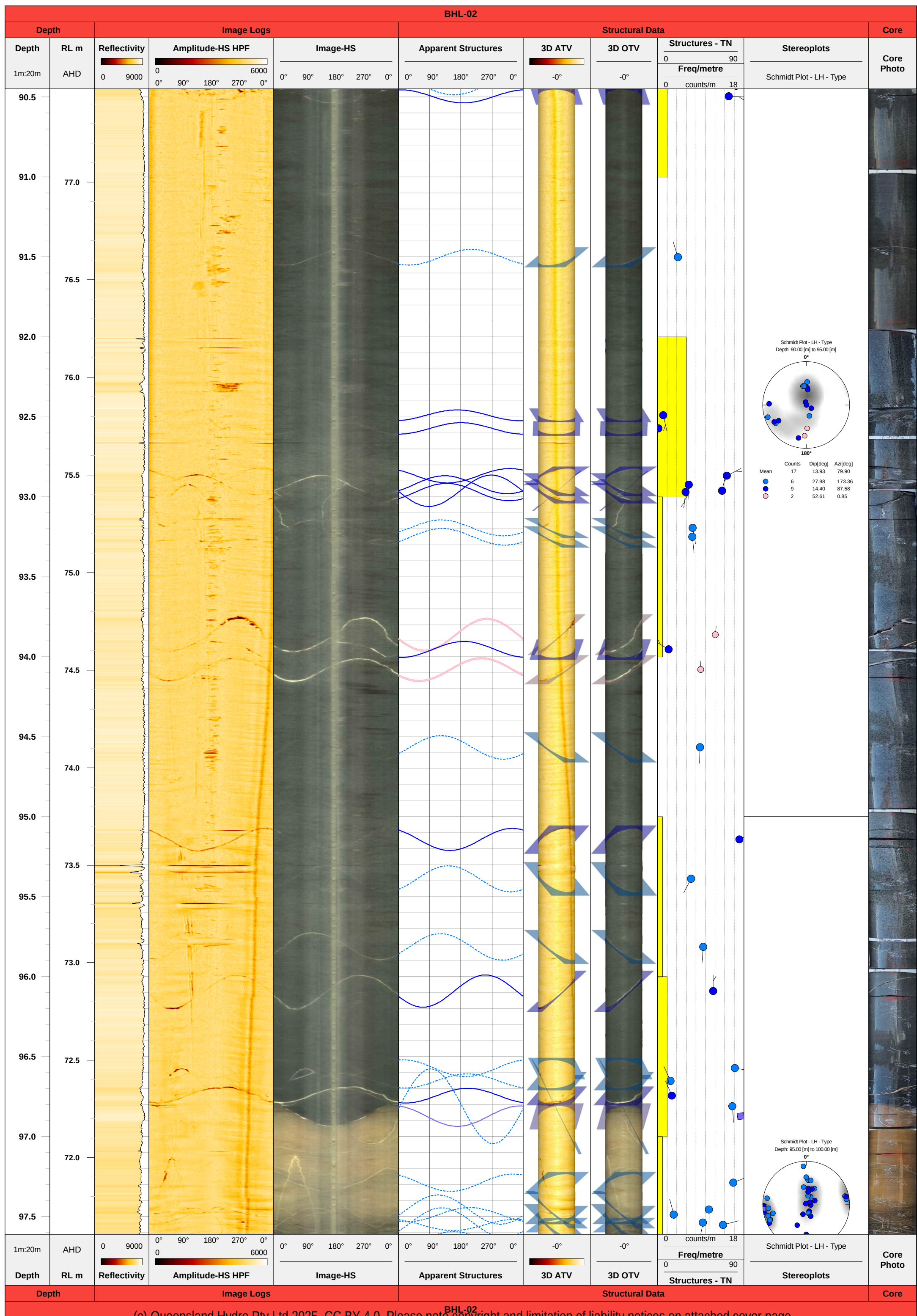






BHL-02

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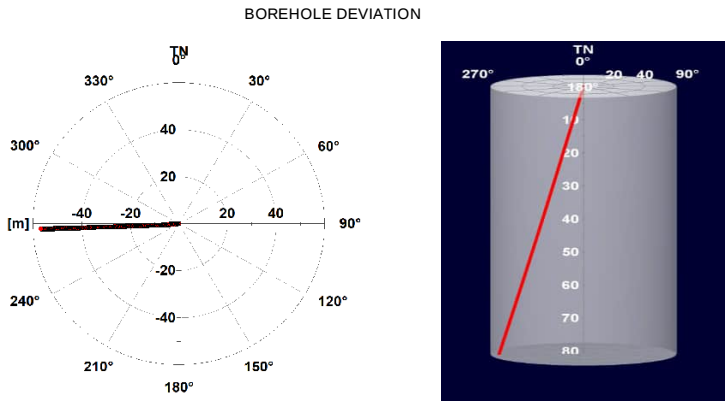




BHL-02 Composite Log



PROJECT:	Pioneer-Burdekin PHES	JOB #	PS138693
CLIENT:	Queensland Hydro	DATE:	18-Sep-2023



BOREHOLE DETAILS				DOCUMENT DETAILS		NOTES
LOCATION:	Lower Reservoir	BH DEPTH:	102.15	LOGGED BY:	GH	Image logs are oriented relative to borehole high side. Final structure log is oriented relative to true north using magnetic declination of 8.2° East.
EASTING:	660362.27 m	BH DIAMETER:	HQ	LOGGED DATE:	18-19/09/2023	
NORTHING:	7661262.70 m	BH AZIMUTH:	268°	DRAWN BY:	SB	Mechanical calliper log used for structure dip corrections.
ELEVATION:	152.54 m	BH PLUNGE:	-56°	REVIEWED BY:	GH	All logs zeroed to ground level. Cased section assumed straight for deviation calculations.
COORD SYSTEM:	MGA2020-55	CASING DEPTH:	8.45 m	FILE:	BHL-02_Composite_RevC	
LOGGING DATUM:	Ground Level	CASING TYPE:	HWT	LOGGED DEPTH:	102.01 m	

INTERPRETED STRUCTURES



BHL-02													
Depth	Image Logs			Calliper	Structural Logs			Sonic Logs	Gamma Logs			Electrical Logs	
Depth	Amplitude-HS HPF	Image-HS	Reflectivity	CAL	Structures - TN	3D ATV	Core	VS	GR	K	N32	Ma16	
	500 6000 0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	0 9000		0 90 Freq/metre	-0°		1000 m/s 7000 VP		0 API 250	0 % 10 U		200 Ohm.m 20000 N16
1m:50m	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	0 9000	80 mm 160	0 counts/m 16	-0°		1000 m/s 7000		0 ppm 10 Th	200 Ohm.m 20000 N8	0 ms 50 Ma64	
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
1m:50m	0° 90° 180° 270° 0° 500 6000	0° 90° 180° 270° 0°	0 9000	80 mm 160	0 counts/m 16 Freq/metre	-0°		1000 m/s 7000 VP	0 API 250	0 ppm 10 Th	200 Ohm.m 20000 N8	0 ms 50 Ma64	
Depth	Amplitude-HS HPF	Image-HS	Reflectivity	CAL	Structures - TN	3D ATV	Core	VS	GR	K	N32	Ma16	

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