BOREHOLE: BGUA-02

Project:	Pioneer-Burdekin PHES	Position:	Upper Reservoir	Sheet	1 of 14
Location:	Netherdale/Dalrymple Heights	Coords:	657838.6 m E 7667647.1 m N MGA2020-55		
Client:	Queensland Hydro	Surface RL:	853.48 m AHD	Date Started:	21/2/2024
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Elton 600	Date Completed:	6/3/2024
		Inclination:	-69° Direction: 078°	Logged:	PJL

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	F		0	853.48				CI-CH	INTERBEDDED CLAY COBBLES/BOULDERS: clay is medium to high plasticity, red brown, with fine to coarse grained sand; trace fine to coarse grained, sub-angular to angular gravel. cobbles/boulders is sub-angular, cobbles and boulders are in-situ corestones, white, black, pale red, granitdiorite, massive crystalline.	w<PL	F - St	RESIDUAL SOIL
			1	*1.00*					Continued as Cored Borehole			
			2									
			3									
			4									
			5									
			6									
			7									
			8									
			9									
			10									

Comments

Checked GEM

Date 2/12/2024

BOREHOLE: BGUA-02

Project:	Pioneer-Burdekin PHES	Position:	Upper Reservoir	Sheet	2 OF 14
Location:	Netherdale/Dalrymple Heights	Coords:	657838.6 m E 7667647.1 m N MGA2020-55		
Client:	Queensland Hydro	Surface RL:	853.48 m AHD	Date Started:	21/2/2024
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Elton 600	Date Completed:	6/3/2024
		Inclination:	-69° Direction: 078°	Logged:	PJL

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)
				0							
					1.00		Continuation from non-cored borehole				
HQ3				1	852.55		NO CORE 0.70m (1.00-1.70) CORE LOSS.				
					1.70						
		59	18	2	851.89	+ +	METAGRANITE: medium to coarse grained, pale grey, dark grey, pale brown, crystalline, massive, slightly altered.	HW		1.87: J, 45°, CN, PR, RF, disturbed by drilling 2.07: J, 5°, Fe SN, UN, RF 2.08-2.13: Js, Fe SN, IR, RF, multiple open defects, 0-10 mm spacing 2.18-2.25: J, 65°, Fe SN, UN, RF 2.25: J, 15°, Fe SN, UN, RF 2.25-2.31: J, 60°, Fe SN, UN, RF 2.31: J, 15°, Fe SN, UN, RF 2.31-2.70: AZ, 15 - 60°, Fe SN, UN, multiple healed defects, 0-10 mm spacing 2.51-2.57: J, 60°, Fe SN, UN, RF	
					2.30	+ +					
					851.33	+ +	RHYOLITE: fine grained, pale orange, white, pale brown, porphyritic, fine to coarse grained white crystals.	XW - HW			
					2.70	+ +					
				3	850.96		NO CORE 2.30m (2.70-5.00)				
		12	0	4							
					5.00						
				5	848.81	+ +	METAGRANITE: medium to coarse grained, pale grey, pale orange, dark grey, crystalline, massive, crystal reorientation due to metamorphism, slightly altered.	HW			
					5.30	+ +					
					848.53		NO CORE 1.00m (5.30-6.30)				
				6							
					6.30						
		63	0		847.60	+ +	METAGRANITE: medium to coarse grained, pale grey, pale brown, pale orange, crystalline, crystal reorientation due to metamorphism, bands of fine to medium grained rock with porphyritic coarse grained quartz crystals.	MW		6.37: J, 50°, CN, UN, RF 6.43: J, 5°, CN, UN, RF 6.32-6.62: AZ, 15 - 60°, Fe SN, UN, multiple healed defects, 0-10 mm spacing 6.51: J x2, 5°, Fe SN, PR, RF 6.52-6.62: J, 90°, Fe SN, PR, RF 6.62-6.70: J, 70°, Fe SN, PR, RF 6.73: J, 5°, CN, PR, RF 6.80-6.81: Jx2, 20°, CN, CU, SM, 10mm spaced 6.70-7.00: J, 85°, Fe SN, PR, SM 6.92: J, 15°, CN, PR, RF 7.08: J, 5°, Fe VN, PR, SM 7.14: J, 20°, CN, PR, SM 7.25: J, 60°, CN, PR, SM 7.38-7.49: J, 60°, clay, CU, SM 7.61: J, 0°, CN, PR, SM 7.71: J, 5°, CN, PR, RF 7.60-7.92: AZ 7.77: J, 5°, clay, PR, RF, <3 mm 7.82: J, 10°, Fe SN, UN, RF 7.93: J, 30°, CN, PR, SM 8.10: J, 5°, CN, PR, SM 8.19: J, 5°, gravel, Fe SN, PR, RF, <5 mm 8.32: J, 5°, CN, UN, RF 8.52: J, 20°, CN, PR, RF 8.63: J, 20°, CN, PR, SM 8.75: J, 10°, CN, PR, SM 8.87: J, 30°, CN, PR, SM 9.04-9.09: Jsx2, 20°, CN, PR, RF, 50 mm spaced 9.37: J, 60°, CN, PR, SM 9.42-9.46: J, 15 - 50°, CN, UN, RF 9.58: J, 60°, gravel, PR, RF	
				7							
				8							
	6/11/2024 23:03, VWP3	100	79		*8.42*						
					845.62	+ +	Coarse grained, dark grey, brown, red, crystalline, massive.				
		100	35	9							
				10	*10.00*						

Comments

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Date 2/12/2024

BOREHOLE: BGUA-02

Project:	Pioneer-Burdekin PHES	Position:	Upper Reservoir	Sheet	3 OF 14
Location:	Netherdale/Dalrymple Heights	Coords:	657838.6 m E 7667647.1 m N MGA2020-55		
Client:	Queensland Hydro	Surface RL:	853.48 m AHD	Date Started:	21/2/2024
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Elton 600	Date Completed:	6/3/2024
		Inclination:	-69° Direction: 078°	Logged:	PJL

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	6/11/2024 2:00:00 PM WL	100	35	10	844.14		METAGRANITE: coarse grained, grey, dark grey, brown, crystalline, massive, crystal reorientation due to metamorphism.	MW - SW		9.59: J, 0°, CN, PR, RF 9.73: J, 65°, Fe SN, PR, RF 9.77: J, 20°, CN, UN, RF 9.78: J, 35°, br SN, PR, RF 9.81: J, 20°, br SN, PR, RF 9.95: J, 15°, CN, PR, RF 10.36: J, 30°, CN, PR, RF	
		100	95							10.84: J, 10°, CN, UN, RF	
					11.00						
				11	843.21		Dark grey, brown, red.			11.04: J, 15°, CN, PR, SM 11.17: J, 5°, CN, PR, RF 11.22: J, 70°, CN, PR, SM 11.26: J, 15°, br SN, UN, RF 11.39-11.46: AZ, 5 - 60°, IR, multiple healed defects, 0-10mm spacing 11.48: J, 15°, CN, PR, SM 11.71: J, 10°, CN, PR, SM	
										11.80-12.37: AZ, 5 - 30°, PL-IR, multiple healed defects, 0-10mm spacing 12.23: J, 30°, CN, PR, SM 12.25: J, 5°, br SN, PR, RF 12.35: J, 10°, br SN, UN, RF 12.62: J, 35°, br SN, UN, RF	
				12							
					12.40						
		100	99		841.81		Coarse grained, black, grey, crystalline. Medium to coarse grained, pale orange, pale grey, dark grey, crystalline, massive.			12.78-13.00: AZ, 0 - 30°, PL-IR, multiple healed defects, 0-10mm spacing 12.96-13.10: J, 80°, Fe SN, UN, RF	
				13						13.33-13.35: J x2, 15 - 25°, br SN, PR, RF 13.30-13.51: AZ, 0 - 85°, IR, multiple healed defects, 0-10mm spacing 13.52: J, 20°, CN, PR, SM 13.60: J, 20°, dark gy SN, PR, RF 13.69: J, 10°, br SN, UN, RF	
					14.00						
		100	50	14	840.41		Coarse grained, grey, dark grey, pale brown, crystalline.			14.25: J x2, 5°, CN, PR, SM	
										14.61: J, 5°, PR 14.63: J, 5°, CN, PR, SM 14.80: J, 20°, CN, PR, SM	
		100	93	15						15.26: J, 30°, CN, PR, SM	
										15.47: J, 20°, br SN, PR, RF 15.52: J, 20°, br SN, PR, RF	
										15.79: J, 10°, CN, PR, SM 15.89: J, 20°, CN, PR, SM	
		100	100	16						16.20: J, 20°, CN, PR, SM 16.42: J, 20°, CN, PR, SM	
										16.69: J, 15°, CN, PR, SM 16.81: J, 30°, CN, PR, VR	
					17.00						
				17	837.61		Medium to coarse grained, grey, dark grey, crystalline.			17.33-17.36: J, 60°, CN, PR, SM 17.36: J, 10°, CN, PR, SM 17.40: J, 45°, CN, PR, SM 17.50: J, 40°, CN, PR, SM 17.65: J, 30°, br SN, PR, RF	
				18						17.94: J, 20°, CN, PR, RF	
		100	83							18.78: J, 0°, br gy CT, PR	
				19						19.08: J, 10°, CN, PR, SM 19.26: J, 10°, CN, PR, RF 19.29: J, 10°, CN, PR, SM	
					19.50						
		100	87		835.28		With orange staining.				
					19.80						
				20	20.00		Medium to coarse grained, grey, dark grey.			19.89: J, 60°, CN, PR, SM	

Comments

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Date 2/12/2024

BOREHOLE: BGUA-02

Project:	Pioneer-Burdekin PHES	Position:	Upper Reservoir	Sheet	4 OF 14
Location:	Netherdale/Dalrymple Heights	Coords:	657838.6 m E 7667647.1 m N MGA2020-55		
Client:	Queensland Hydro	Surface RL:	853.48 m AHD	Date Started:	21/2/2024
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Elton 600	Date Completed:	6/3/2024
		Inclination:	-69° Direction: 078°	Logged:	PJL

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 .6 M 2 H 6 VH 20 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	87	20	834.81		METAGRANITE: medium to coarse grained, pale grey with pink and dark grey, crystalline, massive, crystal reorientation due to metamorphism.	MW - SW		20.00: J, 5°, SN, PR, RF 20.05: J, 70°, br SN, PR, RF 20.07: J, 65°, CN, PR, RF 20.08: J, 25°, CN, PR, RF 20.32-20.40: J x2, 5°, CN, PR, SM, 80 mm spaced	
		100	100							20.62: J, 60°, CN, PR, SM 20.68: J, 70°, CN, PR, SM 20.84: J, 25°, br SN, PR, RF 20.88: J, 25°, dark gy SN, PR, RF 20.97: J, 20°, br SN, PR, RF 21.16: J, 35°, CN, PR, SM-RF	
		100	100	21						21.51: J, 60°, bk mi SN, PR, SM 21.55: J, 70°, bk mi SN, PR, SM 21.69: J, 50°, CN, PR, SM	
		100	100	22						22.05: J, 0°, CN, PR, SM 22.17: J, 45°, CN, IR, RF 22.28: J, 20°, bk mi SN, IR, RF	
										22.57: J, 15°, bk mi SN, IR, RF	
				23	23.06		Basalt inclusion dark grey, fine grained.			22.84: J, 50°, bk mi SN, IR, SM 22.40-23.30: AZ, 0°, PR 22.88: J, 60°, bk mi SN, PR, SM 23.12: J, bk mi SN, IR, RF 23.18: J, 5°, bk mi SN, IR, RF	
		100	100							23.67: J, 20°, br mi SN, IR, SM	
				24						24.03: J, 30°, bk mi SN, PR, SM 24.16: J, 25°, bk mi SN, IR, SM	
										24.42: J, 50°, bk mi SN, PR, SM	
										24.65: J, 10°, CN, IR, RF	
		100	100	25						25.00-25.19: AZ, 0°, multiple healed joints, 25.19: J, 20°, CN, PR, SM	
				26						25.75: J, 30°, bk mi SN, IR, SM 25.84: J, 45°, CN, PR, SM 25.98: J, 20°, CN, IR, RF	
					26.80					26.41: J, 10°, bk mi SN, IR, SM 26.42-26.46: J, 30°, bk mi SN, IR, SM 26.46-26.53: AZ, 0°, PR 26.74: J, 30°, CN, PR, SM	
		100	93	27	828.37		Dark grey. Pale grey with pink and dark grey.			26.93: J, 35°, bk mi SN, CU, SM 27.12: J, 20°, CN, CU, SM 27.34: J, 55°, bk mi SN, PR, SM	
				28						27.90: J, 60°, CN, PR 28.11: J, 10°, CN, ST, RF	
		100	100							28.39: J, 40°, CN, PR, SM	
					29.00					28.88: J, 20°, bk mi SN, PR, SM	
				29	826.41		GRANODIORITE: medium to coarse grained, pale grey, pale brown, pale orange, crystalline, bands of fine to medium grained rock with porphyritic coarse grained quartz crystals, slightly altered.			28.99: J, 15°, CN, PR, SM 29.03: J, 55°, CN, PR, SM	
					29.30 826.13						
		100	95		29.63 29.75		MIXED LAMPROPHYRE AND METAGRANITE: fine grained, dark grey, possible shearing on lower contact.			29.58-29.65: SZ, 70°, gn-bk mi VN, UN, RF, 10-20mm vertical displacement 29.69: J, 25°, CN, PR, SM	
				30	825.71						

Comments

Checked GEM

Date 2/12/2024

BOREHOLE: BGUA-02

Project:	Pioneer-Burdekin PHES	Position:	Upper Reservoir	Sheet	5 OF 14
Location:	Netherdale/Dalrymple Heights	Coords:	657838.6 m E 7667647.1 m N MGA2020-55		
Client:	Queensland Hydro	Surface RL:	853.48 m AHD	Date Started:	21/2/2024
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Elton 600	Date Completed:	6/3/2024
		Inclination:	-69° Direction: 078°	Logged:	PJL

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	95	30			Medium to coarse grained, pale grey, pale brown, pale orange, crystalline, bands of fine to medium grained rock with porphyritic coarse grained quartz crystals. METAGRANITE: medium to coarse grained, pale grey with pink and dark grey, crystalline, massive, crystal reorientation due to metamorphism.	MW - SW	VL -2 L -6 M -20 H -60 VH -200 EH	29.73: J, 25°, CN, PR, SM 29.81: J, 70°, bk mi SN, PR, SM 30.00: J, 20°, CN, PR, SM 30.15: J, 30°, br mi SN, CU, SM 30.30: J, 30°, br mi SN, PR, SM 30.43: J, 20°, br mi SN, IR, SM 30.60: J, 10°, bk mi SN, PR, SM 30.62: J, 60°, CN, PR, SM 30.66: J, 10°, CN, PR, SM 30.84: J, 10°, CN, PR, SM 31.06: J, 60°, br mi VN, PR, RF 31.08: J, 10°, br mi SN, PR, RF 31.30: J, 10°, br mi SN, PR, RF 31.47: J, 45°, br mi SN, PR 31.58: J, 25°, br mi SN, PR 31.70: J, 35°, br mi SN, PR, SM	10 30 100 300 1000 3000
				31							
		100	100	32						31.98: J, 15°, bk mi SN, PR, SM	
		100	100	33						33.17: J, 70°, dk gy mi VN, PR, SM 33.18: J, 60°, dk gy mi CT, PR, SM	
		100	89	34						33.91: J, 45°, CN, PR, SM 34.28: J, 15°, br mi SN, PR, RF 34.54: J, 30°, br mi SN, PR, SM 34.62: J, 5°, bk mi SN, PR, SM	
				35	35.20					34.93: J, 20°, CN, IR, RF 35.07: J, 10°, CN, PR, SM 35.14: J, 40°, CN, IR, RF 35.15: J, 10°, CN, PR, SM	
		100	0		820.62 35.80		Gravelly CLAY: low plasticity, pale grey with pink, gravel is fine to medium grained, angular; trace silt; decomposed zone, potential fault gouge.			35.20-36.10: SZ, 0°, clay and fine to coarse grained angular gravel	
		100	50	36	820.06		LAMPROPHYRE: fine to medium grained, dark grey with green, porphyritic, massive, phenocrysts to 2 mm in diameter, crystal reorientation due to metamorphism, fine to med grained pale yellow crystals.	SW - FR		36.00-37.00: Js x12, 50°, gy mi SN, PR, RF 36.00-37.40: AZ, wh-gy mi, IR, multiple defects, various angles, generally sub-horizontal, 10-30mm spacing	
				37						37.00-37.40: Js x7, 50°, gy mi, PR, RF	
		100	52	38	37.97 38.10 817.91		Fine grained, dark grey, dark brown, dark red, chilled basalt margin. METAGRANITE: medium grained, pale grey with pink, massive, crystal reorientation due to metamorphism, slightly altered.			37.74: J, 40°, CN, IR, SM 37.79: J, 40°, CN, IR, SM 37.85-37.90: J, 20°, CN, IR, SM 38.10: J, 30°, wh mi CT, PR, RF 38.18: J, 30°, CN, PR, RF 38.34: J, 30°, CN, PR, SM 38.37: J, 30°, CN, IR, SM	
				39						38.86: J, 15°, CN, IR, RF 39.03: J, 30°, CN, IR, RF 39.20: J, 40°, CN, PR, SM 39.34: J, 60°, CN, IR, SM 39.37: J, 20°, CN, PR, SM 39.53: J, 10°, CN, PR, SM	
		100	100	40							

Comments

Checked GEM

Date 2/12/2024

BOREHOLE: BGUA-02

Project:	Pioneer-Burdekin PHES	Position:	Upper Reservoir	Sheet	6 OF 14
Location:	Netherdale/Dalrymple Heights	Coords:	657838.6 m E 7667647.1 m N MGA2020-55		
Client:	Queensland Hydro	Surface RL:	853.48 m AHD	Date Started:	21/2/2024
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Elton 600	Date Completed:	6/3/2024
		Inclination:	-69° Direction: 078°	Logged:	PJL

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 .6 M 2 H 6 VH 20 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	100	40			METAGRANITE: medium grained, pale grey with pink, massive, crystal reorientation due to metamorphism, slightly altered.	SW - FR		39.96: J, 30°, CN, PR, SM 40.09: J, 20°, CN, ST, SM 40.17: J, 40°, ST, SM 40.37: J, 30°, CN, UN, SM	
				41						40.59: J, 40°, CN, IR, RF 40.79: J, 55°, CN, IR, RF 40.95: J, 50°, CN, IR, RF 41.10: J, 40°, IR	
		100	100							41.27: J, 10°, CN, PR, RF 41.63: J, 30°, CN, PR, RF	
				42						41.82: J, 5°, IR	
		100	82							42.55: J, 15°, br mi SN, PR, RF	
				43						43.02-43.10: Js x2, 30°, CN, PR, SM 43.26: J, 20°, CN, IR, RF 43.31: J, 40°, CN, ST, SM 43.55: J, 20°, CN, IR, RF	
		100	96	44						44.21-44.26: Js x2, 30°, CN, PR, SM 44.44: J, 40°, CN, PR, SM	
				45						44.89: J, 60°, CN, PR, SM 45.26: J, 50°, CN, PR, SM 45.57: J, 40°, CN, PR, RF	
		100	100	46						46.02: J, 55°, CN, PR, RF 46.06: J, 20°, CN, ST, RF 46.16: J, 20°, CN, IR, RF 46.42: J, 40°, CN, IR, RF	
				47						47.26: J, 40°, CN, PR, RF 47.36: J, 15°, CN, ST, RF	
				48						47.86: J, 10°, CN, CU, SM 47.98: J, 40°, CN, PR, RF 48.09: J, 15°, CN, PR, SM	
		100	100		48.82					48.55: J, 10°, CN, PR, SM 48.67: J, 30°, CN, PR, SM 48.80: J, 30°, PR, SM	
				49	807.86		LAMPROPHYRE: fine to medium grained, dark grey and green, porphyritic, massive, with fine to medium grained pale yellow crystals. METAGRANITE: medium to coarse grained, grey and pale grey with pink, crystalline, massive, crystal reorientation due to metamorphism, slightly altered.				
				50							

Comments

Checked GEM

Date 2/12/2024

BOREHOLE: BGUA-02

Project:	Pioneer-Burdekin PHES	Position:	Upper Reservoir	Sheet	7 OF 14
Location:	Netherdale/Dalrymple Heights	Coords:	657838.6 m E 7667647.1 m N MGA2020-55		
Client:	Queensland Hydro	Surface RL:	853.48 m AHD	Date Started:	21/2/2024
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Elton 600	Date Completed:	6/3/2024
		Inclination:	-69° Direction: 078°	Logged:	PJL

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	50			LAMPROPHYRE: fine grained, dark grey and green, porphyritic, massive, 2-3mm white to grey phenocrysts, fine to medium grained pale yellow crystals.	SW - FR	VL 2 L 6 M 20 H 60 VH 200 EH	50.08: J, 5°, IR, RF 50.31: J, 15°, IR, RF 50.60: J, 40°, CN, PR, SM	10 30 100 300 1000 3000
		100	100	51							
		100	100	52							
					52.65						
					804.33		GRANODIORITE: medium grained, grey with pale grey and pink, massive, slightly altered.			52.66: J, 30°, CN, IR, SM 52.78: J, 40°, CN, PR, RF 52.97: J, 5°, CN, PR, RF 53.07: J, 10°, CN, CU, SM 53.23: J, 40°, CN, PR, RF 53.40: J, 20°, CN, IR, RF 53.53: J, 10°, CN, PR, RF 53.65: J, 10°, CN, IR, RF 53.92: J, 40°, CN, PR, RF 54.15: J, 50°, CN, IR, RF 54.30: J, 50°, CN, ST, RF 54.38: J, 35°, CN, ST, RF 54.50: J, 25°, CN, ST, RF 54.71: J, 45°, CN, PR, RF 54.80: J, 25 - 35°, SN, UN, RF 54.89: J, 35°, pale br SN, UN, RF 54.90: J, 25°, br SN, PR, RF	
		100	94	53							
				54							
					55.75					55.57: J, 10°, SN, PR, SM	
					801.43		BASALT: fine grained, dark grey, porphyritic, massive, sporadic 2mm white to grey phenocrysts, (possibly Lamprophyre).				
		100	96	55							
				56						56.35-56.37: Vs x2, 50°, PR 56.56: J, 40°, CN, PR, SM	
				57							
				58							
					59.00						
		100	89	59							
					798.40		GRANITE: medium grained, dark grey, pink, crystalline, massive, slightly altered.			59.13: J, 5°, CN, UN, SM 59.52: J, 5°, SN, UN, SM 59.67: J, 20°, CN, ST, RF	
					59.86						
				60	*60.00*		BASALT: fine grained, dark grey, crystalline, massive,			59.88: J, 15°, CN, ST, RF	

Comments

Checked GEM

Date 2/12/2024

BOREHOLE: BGUA-02

Project:	Pioneer-Burdekin PHES	Position:	Upper Reservoir	Sheet	8 OF 14
Location:	Netherdale/Dalrymple Heights	Coords:	657838.6 m E 7667647.1 m N MGA2020-55		
Client:	Queensland Hydro	Surface RL:	853.48 m AHD	Date Started:	21/2/2024
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Elton 600	Date Completed:	6/3/2024
		Inclination:	-69° Direction: 078°	Logged:	PJL

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	89	60	797.47		(possibly Lamprophyre). BASALT: fine grained, dark grey, crystalline, massive.	SW - FR		60.12: J, 30°, CN, UN, SM 60.17: J, 65°, CN, PR, SM 60.25: J, 75°, CN, PR, SM 60.52: J, 40°, CT, PR, SM 60.54-60.60: Vs x3, 40°, yl mi, IR, <5 mm 60.86-60.89: Vs x2, 80°, yl mi, UN, <8 mm 60.92-60.93: Vs x2, 30°, yl mi, UN, <5 mm	
				61	*61.22*						
		100	98	62	796.33		METAGRANITE: medium to coarse grained, dark grey, grey, pale orange, crystalline, massive, crystal reorientation due to metamorphism, slightly altered, numerous healed defects and microfractures present.			61.22: J, 60°, rd wh yl SN, UN, SM 61.78: J, 75°, PR 62.57: J, 20°, CN, PR, SM 62.63: J, 60°, CN, PR, SM 62.81: J, 10°, CN, PR, SM	
		100	97	63						63.46: J, 20°, CN, PR, SM 63.63: J, 10°, CN, PR, SM	
				64						63.97: J, 55°, CN, PR, RF 64.40: J, 20°, SN, UN, SM 64.44-64.46: Vs x2, 60°, yl mi, UN, <3 mm 64.71-64.72: Js x2, 90°, PR, RF	
				65						64.87: J, 50°, CN, PR, RF 65.27: J, 30°, CN, PR, RF 65.52: J, 10°, CN, PR, SM	
				66						65.94: J, 20°, CN, PR, SM 66.20: J, 55°, CN, PR, SM 66.22-66.33: Js x2, 50°, CN, PR, SM	
		93	59	67						66.64: J, 10°, CN, PR, SM 66.65: J, 45°, SN, PR, RF 66.78: J, 90°, CN, PR, SM 66.92: J, 35°, CN, PR, SM 66.94: J, 75°, CN, PR, SM 66.95: J, 25°, CN, PR, SM 66.96-66.97: Js x2, 75°, CN, PR, SM 67.04: J, 70°, CN, PR, SM 67.14: J, 60°, CN, UN, SM 67.44: J, 40°, CN, UN, SM	
				68						68.08: J, 70°, CN, PR, SM	
					68.63						
				69	789.41		Medium grained, pale grey, pale pink, grey, massive.	MW SW		68.62: J, 60°, CN, PR, SM 68.00-69.50: SZ, CN, IR, RF, multiple defects, generally sub-vertical, numerous closely spaced joints and sections of fragmented rock 69.00-69.23: SZ, bk-gy mi SN, IR, RF, highly fractured rock, part of 68.62-72.40m SZ 68.68-69.70: SZ, bk mi SN, IR, RF, multiple defects, generally sub-vertical, numerous closely spaced joints and sections of fragmented rock 69.34-69.50: SZ, bk-gy mi SN, IR, RF, highly fractured rock, part of 68.62-72.40m SZ 69.78: J, 70°, CT, PR, SM	
					69.50						
					788.60 *69.70*		NO CORE 0.20m (69.50-69.70)				
		100	26	70	788.41 *70.00*		METAGRANITE: medium to coarse grained, dark grey, grey, pale orange, crystalline, massive, crystal				

Comments

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Date 2/12/2024

BOREHOLE: BGUA-02

Project:	Pioneer-Burdekin PHES	Position:	Upper Reservoir	Sheet	9 OF 14
Location:	Netherdale/Dalrymple Heights	Coords:	657838.6 m E 7667647.1 m N MGA2020-55		
Client:	Queensland Hydro	Surface RL:	853.48 m AHD	Date Started:	21/2/2024
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Elton 600	Date Completed:	6/3/2024
		Inclination:	-69° Direction: 078°	Logged:	PJL

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	26	70	788.13		reorientation due to metamorphism, slightly altered.	MW - SW	VL .2 L .6 M .20 H .60 VH .200 EH	69.70-69.90: SZ, bk-gy mi SN, IR, RF, highly fractured rock, part of 68.62-72.40m SZ	10 30 100 300 1000 3000
							METAGRANITE: medium to coarse grained, dark grey, grey, pale orange, crystalline, massive, crystal reorientation due to metamorphism, slightly altered.			69.83: J, 50°, CT, ST, RF	
				71						70.37: J, 5°, CT, ST, RF	
										70.40: J, 50°, ST, RF	
										70.46: J, 45°, VN, ST, RF	
										70.57: J, 60°, PR, RF	
										70.62: J, 75°, CN, PR, RF	
										70.67: J, 50°, CN, PR, RF	
										70.69: J, 55°, CN, PR, RF	
										70.71: J, 55°, CN, UN, RF	
										70.77: J, 30°, CN, PR, RF	
										70.82: J, 70°, SN, ST, RF	
										71.00-71.27: SZ, bk-gy mi SN, IR, RF, highly fractured rock, part of 68.62-72.40m SZ	
				72						71.20: J, 55°, CT, PR, RF	
										71.22: J, 30°, CT, ST, RF	
										71.27: J, 60°, CN, PR, RF	
										71.42: J, 30°, CN, PR, RF	
										71.46: J, 70°, CN, PR, RF	
										71.66: J, 45°, CN, PR, RF	
					72.75					71.68-71.71: CS, 35°	
							Lamprophyre intrusion, dark grey, 10-40mm thick.	SW - FR		71.77: J, 60°, CN, PR	
				73						71.82-71.87: Js x2, 40°, CN, UN, RF	
										71.90-72.00: CS, 40°	
										71.70-72.50: SZ, bk-gy mi SN, IR, RF, highly fractured rock, part of 68.62-72.40m SZ	
										72.15: J, 70°, SN, PR, RF	
										72.28: J, 80°, CN, PR, SM	
										72.31: J, 60°, CN, PR, SM	
										72.35: J, 30°, CN, PR, SM	
										72.40: J, 60°, CN, PR, SM	
										72.80: J, 65°, CT, PR, SM	
		102	91	74						72.83: J, 60°, PR, RF	
										72.86: J, 60°, PR, RF	
										73.41: J, 65°, CN, PR, RF	
										73.71: J, 50°, CN, PR, RF	
										73.80: J, 30°, CN, PR, RF	
										73.87: J, 50°, CN, ST, RF	
										74.50: J, 60°, CN, UN, RF	
				75						74.86-74.89: J, 70°, UN, <50 mm	
										75.14: J, 45°, CT, PR, RF	
										75.23-75.30: CZ, 35°, UN, RF	
										75.34: J, 70°, SN, UN, RF	
										75.20-75.50: AZ, numerous healed joints	
										75.45: J, 65°, SN, PR, RF	
				76						75.85: J, 60°, CN, PR, RF	
										76.27: J, 25°, CN, PR, RF	
										76.51: J, 65°, CT, PR, RF	
					76.85						
		100	100	77	781.73		BASALT: fine grained, dark grey, massive, sharp upper and lower contacts.	FR		76.96-76.97: Vs x2, 45°, contact, PR, <15 mm	
					77.20					77.16: J, 50°, CN, PR, RF	
					77.38		METAGRANITE: medium to coarse grained, dark grey, dark brown, crystalline, massive, crystal reorientation due to metamorphism.			77.35: J, 30°, CN, UN, RF	
					781.24		DOLERITE: fine to medium grained, dark grey to green grey, crystalline, massive, phenocrysts to 2 mm diameter, (possibly Lamprophyre).				
				78						78.05: J, 25°, CN, UN, RF	
										78.37: J, 80°, CN, PR	
										78.42: J, 60°, CN, PR	
				79						79.18: J, 30°, CN, PR, RF	
		100	97	80							

Comments

Checked GEM

Date 2/12/2024

BOREHOLE: BGUA-02

Project:	Pioneer-Burdekin PHES	Position:	Upper Reservoir	Sheet	10 OF 14
Location:	Netherdale/Dalrymple Heights	Coords:	657838.6 m E 7667647.1 m N MGA2020-55		
Client:	Queensland Hydro	Surface RL:	853.48 m AHD	Date Started:	21/2/2024
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Elton 600	Date Completed:	6/3/2024
		Inclination:	-69° Direction: 078°	Logged:	PJL

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	97	80			DOLERITE: fine to medium grained, dark grey to green grey, crystalline, massive, phenocrysts to 2 mm diameter, (possibly Lamprophyre).	FR		80.50: J, 5°, CN, UN, RF 80.64: J, 60°, CN, PR, RF 80.69: J, 30°, CN, PR, RF	
				81						81.49: J, 50°, CN, PR, RF	
				82						81.81-81.82: Vs x3, 85°, wh mi, UN, <3 mm 82.52: J, 30°, CN, PR, RF	
		100	100	83	83.20 775.81		Fine grained, dark grey to black.			83.31: J, 0°, CN, PR, RF	
				84	84.20 774.87		Fine to medium grained, dark grey to green grey.			84.47: J, 10°, CT, PR, Sm 84.60: J, 55°, CT, PR, Sm	
		100	95	85	85.00 774.13		Pale grey to dark grey, distinct grey pale green flow banding, with sub-vertical joints.			85.11: J, 60°, SN, ST, SS 85.13: J, 55°, SN, PR, SS 85.22: J, 30°, SN, ST, RF 85.70: J, 5°, SN, ST, SM	
				86						85.89: J, 65°, CN, ST, SM 86.04: J, 80°, CT, PR, SM 86.08: J, 20°, CT, PR, SM 86.12: J, 60°, CN, PR, SM 86.36: J, 10°, CN, PR, SM 86.45-86.46: Vs x2, 40°, yl mi, PR, <4 mm	
		100	100	87	86.75 772.49		Pale brown, grey and green, xenolithic granidiorite clasts up to 100 - 200 mm diameter throughout, dark brown to dark grey granite inclusions up to 300 mm diameter. 87.28-87.40m: Metagranite inclusion: brown to orange and grey, fine to medium grained, crystalline, massive			85.20-88.60: AZ, yl-wh mi, UN, multiple healed defects, generally sub-vertical, 1-20mm width, 30-100mm defect spacing 87.49: J, 25°, CN, ST, RF 87.71: J, 15°, CN, ST, RF	
				88			88.00-88.44m: Metagranite inclusion: brown to orange and grey, fine to medium grained, crystalline, massive			88.22: Vs x2, 40°, yl mi, Cu, <4 mm	
		100	100	89			88.57-88.71m: Metagranite inclusion: brown to orange and grey, fine to medium grained, crystalline, massive			88.95: J, 80°, br mi SN, UN, RF 89.07: J, 85°, br mi SN, PR 89.18-89.20: Js x2, 50°, PR	
		100	100	90	89.60 769.83	+ + + + + +	METAGRANITE: medium to coarse grained, pale brown, white and grey, crystalline, crystal reorientation due to metamorphism.				

Comments

Checked GEM

Date 2/12/2024

BOREHOLE: BGUA-02

Project:	Pioneer-Burdekin PHES	Position:	Upper Reservoir	Sheet	11 OF 14
Location:	Netherdale/Dalrymple Heights	Coords:	657838.6 m E 7667647.1 m N MGA2020-55		
Client:	Queensland Hydro	Surface RL:	853.48 m AHD	Date Started:	21/2/2024
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Elton 600	Date Completed:	6/3/2024
		Inclination:	-69° Direction: 078°	Logged:	PJL

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 .6 M 2 H 6 VH 20 EH 60	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	90	90.30 769.18		DOLERITE: fine to medium grained, pale grey to dark grey, porphyritic, massive, phenocrysts to 2 mm diameter, (possibly Lamprophyre).	FR		90.15: J, 70°, PR 90.33: J, 65°, CN, PR, SM 90.61: J, 10°, CN, PR, SM 90.78: J, 40°, CN, PR, SM	
				91	91.00 768.52		Green grey.			91.14: J, 10°, CN, PR, SM 91.35: J, 60°, CN, PR, SM 91.50: J, 55°, CN, PR, SM	
		100	100	92						92.17: J, 60°, CT, PR, SM	
				93	93.00 766.66		Pale grey to dark grey.			92.66: J, 70°, CN, PR, SM 92.70: J, 70°, CT, PR, SM 92.80: J, 20°, CN, PR, SM 93.30: J, 10°, CN, PR, SM 93.50: J, 10°, PR, SM	
		100	100	94						94.63: J, 15°, CN, PR, SM 94.75: J, 20°, CN, PR, SM	
				95							
				96						96.75: J, 60°, CN, PR, SM	
				97							
		100	100	98						98.51: J, 55°, CN, PR, SM 98.72: J, 60°, CN, PR, SM 98.91-98.92: Vs x2, 70°, PR	
				99	99.40 760.68		METAGRANITE: medium to coarse grained, dark grey, grey pale orange, crystalline, massive, sharp upper contact at 45 degrees, slightly altered, numerous healed defects and microfractures present.			99.39: J, 45°, SN, PR, RF 99.63: J, 50°, CN, PR, RF 99.66: J, 5°, CN 99.82: J, 60°, CN, PR, SM	
		100	97	100							

Comments

Checked GEM

Date 2/12/2024

BOREHOLE: BGUA-02

Project:	Pioneer-Burdekin PHES	Position:	Upper Reservoir	Sheet	12 OF 14
Location:	Netherdale/Dalrymple Heights	Coords:	657838.6 m E 7667647.1 m N MGA2020-55		
Client:	Queensland Hydro	Surface RL:	853.48 m AHD	Date Started:	21/2/2024
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Elton 600	Date Completed:	6/3/2024
		Inclination:	-69° Direction: 078°	Logged:	PJL

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	97	100			METAGRANITE: medium to coarse grained, dark grey, grey pale orange, crystalline, massive, sharp upper contact at 45 degrees, slightly altered, numerous healed defects and microfractures present.	FR		99.92: J, 40°, CN, PR, SM 100.06: J, 30°, CN, ST, SM 100.09: J, 75°, SN, ST, SM 100.29: J, 30°, CN, PR, SM 100.36: J, 20°, CN, PR, SM 100.62: J, 5°, CN, PR, SM 100.74: J, 50°, CN, PR, SM 100.86: J, 60°, CT, PR, SM	
				101						101.11-101.13: J, 50°, CT, PR, SM 101.27: J, 60°, CN, PR, SM 101.45: J, 10°, CN, PR 101.57: J, 5°, CN, PR, SM 101.71-101.73: Vs x3, 25°, br mi, UN, <4 mm	
				102						101.92-101.95: Vs x2, 55°, yl wh mi, UN, <40 mm 102.28-102.36: Js x2, 20°, CN, PR 102.40: J, 60°, br mi CN, PR, <3 mm 102.58: J, 15°, CN, PR 102.61: J, 5°, CN, PR 102.71-102.73: Vs x2, 30°, br yl, PR, <10 mm	
		100	97	103						103.05: J, 10°, CN, PR 103.40: J, 40°, CN, PR 103.50-103.52: Vs x3, 30°, wh mi, PR, <4 mm 103.62: J, 20°, CN, PR	
				104						103.89: J, 20°, CN, PR, SM 104.20-104.41: Js x2, 35°, CN, PR, SM 104.51: J, 5°, CN, PR, SM 104.53: J, 30°, bk mi SN, PR, SM	
				105			105.50-105.54m: mafic inclusion, 30-40mm thick			104.83: J, 60°, CN, PR, SM 105.03: J, 15°, CN, PR, RF 105.37: J, 60°, CT, PR, SM 105.53: J, 10°, SN, UN, RF 105.61: J, 50°, CN, PR, RF	
		100	95	106						106.12: J, 40°, CN, PR, SM 106.43: J, 30°, CT, PR, RF 106.54-106.74: Js x2, 50°, CT, PR, RF	
				107						106.97: J, 10°, CN, PR, SM 107.12: J, 85°, CN, PR, SM 107.21: J, 10°, CN, PR, RF 107.39: J, 40°, CN, PR, SM 107.41: J, 10°, CN, PR, SM	
				108						107.61-108.06: Js x4, 50°, CN, PR, SM 108.22: J, 60°, VN, PR, SM 108.37: J, 10°, CN, PR, SM 108.40: J, 80°, CN, PR, SM	
		100	98	109						108.87: J, 15°, CN, PR, SM 109.34: J, 5°, CN, PR, SM 109.63: J, 20°, CN, PR, SM 109.74: J, 20°, CN, PR, SM	
				110							

Comments

Checked GEM

Date 2/12/2024

BOREHOLE: BGUA-02

Project:	Pioneer-Burdekin PHES	Position:	Upper Reservoir	Sheet	13 OF 14
Location:	Netherdale/Dalrymple Heights	Coords:	657838.6 m E 7667647.1 m N MGA2020-55		
Client:	Queensland Hydro	Surface RL:	853.48 m AHD	Date Started:	21/2/2024
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Elton 600	Date Completed:	6/3/2024
		Inclination:	-69° Direction: 078°	Logged:	PJL

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	98	110	110.15		METAGRANITE: medium to coarse grained, dark grey, grey pale orange, crystalline, massive, sharp upper contact at 45 degrees, slightly altered, numerous healed defects and microfractures present.	FR		110.14: J, 50°, CN, PR, SM	
					750.56		110.15-110.24m: mafic intrusion, crystal reorientation due to metamorphism, aphanitic.			110.62: J, 5°, CN, PR, SM	
					110.82		Dark grey, grey, pale orange.				
				111			110.82-110.86m: mafic inclusion to 50 mm in diameter.			111.07: J, 10°, CN, PR, SM	
										111.58: J, 20°, CN, PR, RF	
				112						111.85: J, 45°, CN, PR, RF	
										112.16: J, 45°, CN, PR, SM	
										112.29: J, 20°, CN, PR, SM	
										112.41: J, 60°, CN, PR, SM	
		100	77	113							
										113.48: J, 40°, CN, PR	
										113.53: J, 45°, CN, PR	
										113.21-114.41: Vs x8, 30°, yl, PR, <2 mm	
				114						113.28-114.53: Vs x12, 35°, yl, PR, <2 mm	
										114.11: J, 40°, CN, PR, RF	
										114.65: J, 20°, CN, PR, RF	
										114.68: J, 40°, CN, PR, RF	
				115						115.08: J, 5°, yl mi CN, PR, RF, <3 mm	
										115.13-115.14: Vs x2, 20°, PR	
										115.24: J, 5°, CN, PR, RF	
					115.55					115.43-115.57: Vs x3, 70°, bk mi, PR, <3 mm	
					745.60		Dark grey, grey, pale orange.			115.55: J, 35°, CN, PR, RF	
										115.62-115.64: J, 60°, CN, PR, RF	
										115.70: J, 50°, CN, PR, RF	
				116						115.78-115.85: Js x2, 65°, CN, PR, RF	
		100	79							115.83-115.99: Js, 20 - 70°, bk mi SN, PR, SM, multiple defects, 10-30mm spacing	
										116.15-116.18: J x2, 45°, CN, PR	
										116.21: J, 20°, PR	
										116.22: J, 60°, CN, PR, RF	
										116.30-116.36: J x2, 20°, bk-gy mi SN, PR, RF	
										116.57: J, 35°, CN, ST, RF	
				117						116.77: J, 5°, CN, PR, RF	
										116.87: J, 20°, CN, PR, RF	
										117.10-117.22: Js x2, 5°, CN, PR, RF	
										117.34: J, 65°, CN, PR, RF	
										117.46: J, 30°, CN, PR, RF	
										117.53-117.55: Vs x2, 10°, yl mi, PR, <5 mm	
				118						117.77: J, 5°, CN, PR, RF	
										117.98: J, 50°, CN, PR, SM	
										118.05: J, 0°, CN, UN, SM	
										118.08: J, 20°, bk, gr mi SN, UN, RF	
										118.25-118.35: Vs x3, 0°, PR	
										118.42: J, 60°, CN, PR, SM	
		100	96	119						118.83: J, 5°, CN, PR, SM	
										118.99: J, 15°, CN, PR, SM	
										119.29-119.39: Vs x4, 10°, yl mi, PR, <2 mm	
										119.18-119.68: Vs x3, 5°, yl mi, PR, <2 mm	
				120						119.78: J, 0°, CN, UN, RF	

Comments

Checked GEM

Date 2/12/2024

BOREHOLE: BGUA-02

Project:	Pioneer-Burdekin PHES	Position:	Upper Reservoir	Sheet	14 OF 14
Location:	Netherdale/Dalrymple Heights	Coords:	657838.6 m E 7667647.1 m N MGA2020-55		
Client:	Queensland Hydro	Surface RL:	853.48 m AHD	Date Started:	21/2/2024
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Elton 600	Date Completed:	6/3/2024
		Inclination:	-69° Direction: 078°	Logged:	PJL

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 .6 M 2 H 6 VH 20 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
		100	96	120	*120.13* 741.33		Hole Terminated at 120.13 m Target depth. Vibrating Wire Piezometers Installed				
				121							
				122							
				123							
				124							
				125							
				126							
				127							
				128							
				129							
				130							

Comments

Checked GEM
Date 2/12/2024

Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BGUA - 02 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
BGUA-02	1.71				hJ		70				CU						
BGUA-02	1.74	1.78			hJs	x2	30				PR						
BGUA-02	1.79				hJ		20				PR						
BGUA-02	1.82				hJ		10				PR						
BGUA-02	1.87				J		45			CN	PR	RF					disturbed by drilling
BGUA-02	1.91				hJ		80				PR						
BGUA-02	1.94				hJ		60				PR						
BGUA-02	2.07				hJ		60				PR						
BGUA-02	2.07				J		5		Fe	SN	UN	RF					
BGUA-02	2.08																
BGUA-02	2.08	2.13			Js				Fe	SN	IR	RF					multiple open defects, 0-10 mm spacing
BGUA-02	2.18	2.25			J		65		Fe	SN	UN	RF					
BGUA-02	2.19				hJ		60				PR						
BGUA-02	2.25				J		15		Fe	SN	UN	RF					
BGUA-02	2.25	2.31			J		60		Fe	SN	UN	RF					
BGUA-02	2.31				J		15		Fe	SN	UN	RF					
BGUA-02	2.31	2.70			AZ		15	60	Fe	SN	UN						multiple healed defects, 0-10 mm spacing
BGUA-02	2.51	2.57			J		60		Fe	SN	UN	RF					
BGUA-02	6.32	6.62			AZ		15	60	Fe	SN	UN						multiple healed defects, 0-10 mm spacing
BGUA-02	6.37				J		50			CN	UN	RF					
BGUA-02	6.39				hJ		60				PR						
BGUA-02	6.43				J		5			CN	UN	RF					
BGUA-02	6.51				J	x2	5		Fe	SN	PR	RF					
BGUA-02	6.52	6.62			J		90		Fe	SN	PR	RF					
BGUA-02	6.62				hJ		60				PR						
BGUA-02	6.62	6.70			J		70		Fe	SN	PR	RF					
BGUA-02	6.67				hJ		60				PR						
BGUA-02	6.70	7.00			J		85		Fe	SN	PR	SM					
BGUA-02	6.71				hJ		60				PR						
BGUA-02	6.73				J		5			CN	PR	RF					
BGUA-02	6.78				hJ		60				PR						
BGUA-02	6.80	6.81			J	x2	20			CN	CU	SM				10mm	
BGUA-02	6.92				J		15			CN	PR	RF					
BGUA-02	7.04				hJ		80				PR						
BGUA-02	7.08				J		5		Fe	VN	PR	SM					
BGUA-02	7.14				J		20			CN	PR	SM					
BGUA-02	7.21				hJ		80				PR						
BGUA-02	7.25				J		60			CN	PR	SM					
BGUA-02	7.27				hJ		80				PR						
BGUA-02	7.35				hJ		5				PR						
BGUA-02	7.38				hJ		80				PR						
BGUA-02	7.38	7.49			J		60		clay		CU	SM					
BGUA-02	7.42				hJ		60				PR						
BGUA-02	7.50				hJ		80				PR						
BGUA-02	7.60				hJ		80				PR						
BGUA-02	7.60	7.92			AZ												
BGUA-02	7.61				J		0			CN	PR	SM					
BGUA-02	7.67				hJ		80				PR						
BGUA-02	7.68				hJ		15				PR						
BGUA-02	7.71				J		5			CN	PR	RF					
BGUA-02	7.72				hJ		30				CU						
BGUA-02	7.77				J		5		clay		PR	RF	<	3			
BGUA-02	7.82				J		10		Fe	SN	UN	RF					
BGUA-02	7.83				hJ		5				PR						
BGUA-02	7.86				hJ		60				PR						
BGUA-02	7.87				hJ		10				PR						
BGUA-02	7.91				hJ		60				PR						
BGUA-02	7.93				J		30			CN	PR	SM					
BGUA-02	8.02				hJ		60				PR						
BGUA-02	8.04				hJ		5				PR						
BGUA-02	8.10				J		5			CN	PR	SM					
BGUA-02	8.12				hJ		70				PR						
BGUA-02	8.19				J		5		gravel, Fe	SN	PR	RF	<	5			
BGUA-02	8.25	8.29			hJs	x3	60				PR					20	
BGUA-02	8.32				J		5			CN	UN	RF					
BGUA-02	8.40				hJ		60				PR						
BGUA-02	8.50				hJ		30				PR						
BGUA-02	8.52				J		20			CN	PR	RF					
BGUA-02	8.55				hJ		10				IR						
BGUA-02	8.63				J		20			CN	PR	SM					
BGUA-02	8.65				hJ		70				PR						
BGUA-02	8.71				hJ		30				PR						
BGUA-02	8.75				J		10			CN	PR	SM					
BGUA-02	8.78	8.81			hJs	x3	10				PR					10	
BGUA-02	8.82				hJ		45				PR						
BGUA-02	8.87				J		30			CN	PR	SM					
BGUA-02	8.96				hJ		15				PR						
BGUA-02	8.98				hJ		10				PR						
BGUA-02	9.04	9.09			Js	x2	20			CN	PR	RF				50 mm	

Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BGUA - 02 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
BGUA-02	9.11				hJ						PR						
BGUA-02	9.13				hJ		80				PR						
BGUA-02	9.18	9.53			hJs	x6					PR					50 mm	
BGUA-02	9.37				J		60			CN	PR	SM					
BGUA-02	9.42	9.46			J		15	50		CN	UN	RF					
BGUA-02	9.58				J		60		gravel		PR	RF					
BGUA-02	9.59				J		0			CN	PR	RF					
BGUA-02	9.63				hJ		80				PR						
BGUA-02	9.64				hJ		30				PR						
BGUA-02	9.65				hJ		60				PR						
BGUA-02	9.71				DB		60			CN	PR	CN					
BGUA-02	9.73				J		65		Fe	SN	PR	RF					
BGUA-02	9.76	9.77			hJs	x2	75				PR					10 mm	
BGUA-02	9.77				J		20			CN	UN	RF					
BGUA-02	9.78				J		35		br	SN	PR	RF					
BGUA-02	9.81				J		20		br	SN	PR	RF					
BGUA-02	9.86				hJ		30				PR						
BGUA-02	9.87				hJ		15				PR						
BGUA-02	9.89	9.92			hJs	x3	30				PR					30 mm	
BGUA-02	9.94				hJ		10				PR						
BGUA-02	9.95				J		15			CN	PR	RF					
BGUA-02	9.98				hJ		70				PR						
BGUA-02	10.04				hJ		5		grey mineral		PR		<	1			
BGUA-02	10.05				hJ		10				PR						
BGUA-02	10.07				hJ		15				PR						
BGUA-02	10.11				hJ		15				PR						
BGUA-02	10.24				hJ		45				PR						
BGUA-02	10.26				hJ		60				PR						
BGUA-02	10.28				hJ		10		pale br gy		PR		<	2			
BGUA-02	10.29				hJ		15		pale br gy		PR		<	1			
BGUA-02	10.32				hJ		10				PR						
BGUA-02	10.34				hJ		30				PR						
BGUA-02	10.36				J		30			CN	PR	RF					
BGUA-02	10.37				hJ		60				PR						
BGUA-02	10.38				hJ		70				CU						
BGUA-02	10.43				hJ		30				PR						
BGUA-02	10.47				hJ		60				PR						
BGUA-02	10.51	10.60			hJ	x4	20				PR					20 mm	
BGUA-02	10.53				hJ		70				PR						
BGUA-02	10.61				hJ		10				PR						
BGUA-02	10.63				hJ		50				PR						
BGUA-02	10.64	10.65			hJ	x2	20				PR					10 mm	
BGUA-02	10.68				hJ		30				PR						
BGUA-02	10.70				hJ		30				PR						
BGUA-02	10.71				hJ		5				PR						
BGUA-02	10.75				hJ		75				PR						
BGUA-02	10.77				hJ		40				PR						
BGUA-02	10.81				hJ		10				PR						
BGUA-02	10.84				J		10			CN	UN	RF					
BGUA-02	10.85				hJ		30				PR						
BGUA-02	10.89	10.91			hJs	x2	30				PR					20 mm	
BGUA-02	10.93				hJ		75				PR						
BGUA-02	10.94				hJ		5				PR						
BGUA-02	11.04				J		15			CN	PR	SM					
BGUA-02	11.05				hJ		85				PR						
BGUA-02	11.17				J		5			CN	PR	RF					
BGUA-02	11.18				hJ						CU						
BGUA-02	11.19				hJ		80				PR						
BGUA-02	11.22				J		70			CN	PR	SM					
BGUA-02	11.26				J		15		br	SN	UN	RF					
BGUA-02	11.31				hJ		30		pale gy mi		PR		<	2			
BGUA-02	11.31	11.39			hJs	x8	5				PR					10 mm	
BGUA-02	11.39	11.46			AZ		5	60			IR						multiple healed defects, 0-10mm spacing
BGUA-02	11.47				hJ		60				PR						
BGUA-02	11.48				J		15			CN	PR	SM					
BGUA-02	11.51				hJ						PR						
BGUA-02	11.52	11.56			hJs	x4					PR						
BGUA-02	11.58				hJ		10				PR						
BGUA-02	11.60				hJ		10				PR						
BGUA-02	11.61				hJ		60		pale br gy		PR		<	1			
BGUA-02	11.62	11.69			hJs	x4	30				PR					15 mm	
BGUA-02	11.64				hJ		60				PR						
BGUA-02	11.71				J		10			CN	PR	SM					
BGUA-02	11.76				hJ		60				PR						
BGUA-02	11.80	12.37			AZ		5	30			PL-IR						multiple healed defects, 0-10mm spacing
BGUA-02	12.23				J		30			CN	PR	SM					
BGUA-02	12.25				J		5		br	SN	PR	RF					
BGUA-02	12.35				J		10		br	SN	UN	RF					
BGUA-02	12.62				J		35		br	SN	UN	RF					

Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BGUA - 02 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
BGUA-02	12.78	13.00			AZ		0	30			PL-IR						multiple healed defects, 0-10mm spacing
BGUA-02	12.96	13.10			J		80		Fe	SN	UN	RF					
BGUA-02	13.06				hJ		80				PR						
BGUA-02	13.11				hJ		10				PR						
BGUA-02	13.13				hJ		15				PR						
BGUA-02	13.21				hJ		15				PR						
BGUA-02	13.22				hJ		80				PR						
BGUA-02	13.24				hJ		15				PR						
BGUA-02	13.28				hJ		75				PR						
BGUA-02	13.30	13.51			AZ		0	85			IR						multiple healed defects, 0-10mm spacing
BGUA-02	13.33	13.35			J	x2	15	25	br	SN	PR	RF					
BGUA-02	13.52				J		20			CN	PR	SM					
BGUA-02	13.60				J		20		dark gy	SN	PR	RF					
BGUA-02	13.64				hJ		20		gy mi		PR		<	1			
BGUA-02	13.67				hJ		15		gy mi		PR		<	1			
BGUA-02	13.69				J		10		br	SN	UN	RF					
BGUA-02	13.73				hJ		45				PR						
BGUA-02	13.74				hJ		60				PR						
BGUA-02	13.76				hJ		60				PR						
BGUA-02	13.84				hJ		50				PR						
BGUA-02	13.91				hJ		50				PR						
BGUA-02	14.12				hJ		60				PR						
BGUA-02	14.15	14.20			hJs	x3	30				PR					15 mm	
BGUA-02	14.21				hJ		70				PR						
BGUA-02	14.25				J	x2	5			CN	PR	SM					
BGUA-02	14.30				hJ		5				PR						
BGUA-02	14.34	14.40			MB												
BGUA-02	14.44				hJ		60				PR						
BGUA-02	14.45				hJ		10				PR						
BGUA-02	14.50				hJ		10				PR						
BGUA-02	14.56				hJ		60				PR						
BGUA-02	14.61				J		5				PR						
BGUA-02	14.63				J		5			CN	PR	SM					
BGUA-02	14.64				hJ		5				PR						
BGUA-02	14.67	14.68			hJs	x2	15				PR					10 mm	
BGUA-02	14.70				hJ		70				PR						
BGUA-02	14.78				hJ		50				PR						
BGUA-02	14.79				hJ		60				PR						
BGUA-02	14.80				J		20			CN	PR	SM					
BGUA-02	14.85				hJ		50				PR						
BGUA-02	15.12				hJ		30				PR						
BGUA-02	15.16	15.18			hJs	x2	40				PR					20 mm	
BGUA-02	15.22	15.24			hJs	x2	30				PR					20 mm	
BGUA-02	15.26				J		30			CN	PR	SM					
BGUA-02	15.30	15.33			hJs	x4	20				PR					8 mm	
BGUA-02	15.34				hJ		60				PR						
BGUA-02	15.34	15.35			hJs	x2	25				PR					10 mm	
BGUA-02	15.39				hJ		30				PR						
BGUA-02	15.40	15.53			hJs	x7	20				PR					20 mm	
BGUA-02	15.47				J		20		br	SN	PR	RF					
BGUA-02	15.48	15.54			hJs	x2	20			CN	PR	RF				30 mm	
BGUA-02	15.51				hJ		0				PR						
BGUA-02	15.52				J		20		br	SN	PR	RF					
BGUA-02	15.60	15.62			V		5		gy br		PR						
BGUA-02	15.63	15.65			hJ		15				PR						
BGUA-02	15.67	15.69			hJ		15				PR						
BGUA-02	15.71				hJ		50				PR						
BGUA-02	15.73	15.77			hJs	x2	10				PR					40 mm	
BGUA-02	15.79				J		10			CN	PR	SM					
BGUA-02	15.82				hJ		60				PR						
BGUA-02	15.85				hJ		20				PR						
BGUA-02	15.88				hJ		5				PR						
BGUA-02	15.89				J		20			CN	PR	SM					
BGUA-02	15.91				hJ		20				PR						
BGUA-02	15.95				hJ		5				PR						
BGUA-02	15.98				hJ		35				PR						
BGUA-02	16.03	16.05			hJs	x2	20				PR					20 mm	
BGUA-02	16.13				hJ		25				PR						
BGUA-02	16.16				hJ		30				PR						
BGUA-02	16.18				hJ		0				PR						
BGUA-02	16.20				J		20			CN	PR	SM					
BGUA-02	16.23				hJ		30				PR						
BGUA-02	16.24				hJ		35				PR						
BGUA-02	16.35				hJ		40		pale br		PR		<	1			
BGUA-02	16.37				hJ		45		pale br		PR		<	1			
BGUA-02	16.42				J		20			CN	PR	SM					
BGUA-02	16.46				hJ		50				PR						
BGUA-02	16.48				hJ		45				PR						
BGUA-02	16.52				hJ		60				PR						

Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BGUA - 02 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
BGUA-02	16.53	16.55			hJs	x2	20				PR					20 mm	
BGUA-02	16.55	16.56			hJs	x2	20				PR					10 mm	
BGUA-02	16.57				hJ		60				PR						
BGUA-02	16.61	16.68			hJs	x5	15				PR					10 mm	
BGUA-02	16.69				J		15			CN	PR	SM					
BGUA-02	16.70				hJ		10				PR						
BGUA-02	16.72	16.84			V				pale br								
BGUA-02	16.76				hJ		25				PR						
BGUA-02	16.81				J		30			CN	PR	VR					
BGUA-02	16.87				hJ		30		pale gy mi		PR		<	1			
BGUA-02	16.90				hJ		30		pale gy mi		PR						
BGUA-02	17.10	17.15			MB	x3											
BGUA-02	17.28				DB												
BGUA-02	17.30	17.33			hJ		60				PR						
BGUA-02	17.33	17.36			J		60			CN	PR	SM					
BGUA-02	17.36				J		10			CN	PR	SM					
BGUA-02	17.37				hJ		10				PR						
BGUA-02	17.40				J		45			CN	PR	SM					
BGUA-02	17.45				hJ		45				PR						
BGUA-02	17.47				hJ		40				PR						
BGUA-02	17.50				J		40			CN	PR	SM					
BGUA-02	17.53				hJ		40				PR						
BGUA-02	17.57				hJ		5				PR						
BGUA-02	17.65				J		30		br	SN	PR	RF					
BGUA-02	17.80				hJ		30				PR						
BGUA-02	17.82				hJ		20				PR						
BGUA-02	17.87				hJ		75				PR						
BGUA-02	17.89				V		5		gy dark br		PR		<	3			
BGUA-02	17.90				hJ		5				PR						
BGUA-02	17.91				hJ		15				PR						
BGUA-02	17.94				J		20			CN	PR	RF					
BGUA-02	17.95	17.96			hJ		5				PR						
BGUA-02	17.98				hJ		10				PR						
BGUA-02	18.01				hJ		15				PR						
BGUA-02	18.02	18.22			hJs	x5	5				PR					50 mm	
BGUA-02	18.04				hJ		20				PR						
BGUA-02	18.06				hJ		90				IR						
BGUA-02	18.23				hJ		75				PR						
BGUA-02	18.31				hJ		45				PR						
BGUA-02	18.33				hJ		0				PR						
BGUA-02	18.41				hJ		20				PR						
BGUA-02	18.44				hJ		45				PR						
BGUA-02	18.45				hJ		50				PR						
BGUA-02	18.52	18.54			hJs	x3	15				PR					4 mm	
BGUA-02	18.57				hJ		75				PR						
BGUA-02	18.59				hJ		5				PR						
BGUA-02	18.62				V		15		gy br		PR		<	3			
BGUA-02	18.66				V		5		dark gy		PR		<	10			
BGUA-02	18.68	18.69			hJs	x2	10	15			PR					10 mm	
BGUA-02	18.72				hJ		90				IR						
BGUA-02	18.74				hJ		80				PR						
BGUA-02	18.75				hJ		5				PR						
BGUA-02	18.78				J		0		br gy	CT	PR						
BGUA-02	18.82				hJ		0				PR						
BGUA-02	18.86	18.88			hJs	x2	5				PR						
BGUA-02	18.91	18.97			hJs	x2	0				PR						
BGUA-02	18.96				hJ		5				PR						
BGUA-02	19.02				hJ		90				PR						
BGUA-02	19.05				hJ		45				PR						
BGUA-02	19.08				J		10			CN	PR	SM					
BGUA-02	19.09	19.10			hJs	x2	10				PR					10 mm	
BGUA-02	19.11				hJ		60				PR						
BGUA-02	19.14	19.15			hJs	x2	15	20			PR					10 mm	
BGUA-02	19.18	19.22			hJ		20				PR						
BGUA-02	19.22				hJ		15				PR						
BGUA-02	19.26				J		10			CN	PR	RF					
BGUA-02	19.29				J		10			CN	PR	SM					
BGUA-02	19.32				hJ		60				PR						
BGUA-02	19.48				hJ		40				PR						
BGUA-02	19.56	19.58			hJs	x2	30				PR					20 mm	
BGUA-02	19.59				hJ		70				PR						
BGUA-02	19.60	19.62			hJ		60				PR						
BGUA-02	19.69				hJ		60				PR						
BGUA-02	19.73	19.78			hJs	x3	60				PR					15 mm	
BGUA-02	19.89				J		60			CN	PR	SM					
BGUA-02	19.90				hJ		50				PR						
BGUA-02	19.91	19.96			hJs	x4	60				PR					10 mm	
BGUA-02	19.97				hJ		5				PR						
BGUA-02	20.00				J		5			SN	PR	RF					

Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BGUA - 02 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
BGUA-02	20.00	20.10			DB												disturbed by drilling and handling breaks
BGUA-02	20.05				J		70		br	SN	PR	RF					
BGUA-02	20.07				J		65			CN	PR	RF					
BGUA-02	20.08				J		25			CN	PR	RF					
BGUA-02	20.11	20.15			hJs	x3	30				PR					10 mm	
BGUA-02	20.16				hJ		15				PR						
BGUA-02	20.20				hJ		10				PR						
BGUA-02	20.27				hJ		45				PR						
BGUA-02	20.30				hJ		60				PR						
BGUA-02	20.32	20.40			J	x2	5			CN	PR	SM				80 mm	
BGUA-02	20.34				hJ		35				PR						
BGUA-02	20.42				hJ		40				PR						
BGUA-02	20.52				hJ		50				PR						
BGUA-02	20.53				hJ		60				PR						
BGUA-02	20.55	20.60			hJs	x3	30				PR					15 mm	
BGUA-02	20.60				hJ		75				PR						
BGUA-02	20.62				J		60			CN	PR	SM					
BGUA-02	20.66				hJ		25				PR						
BGUA-02	20.68				J		70			CN	PR	SM					
BGUA-02	20.75				hJ		45				PR						
BGUA-02	20.76				hJ		75				PR						
BGUA-02	20.83	20.91			hJs	x3	25				PR					25 mm	disturbed by drilling
BGUA-02	20.84				J		25		br	SN	PR	RF					
BGUA-02	20.88				J		25		dark gy	SN	PR	RF					
BGUA-02	20.92				hJ		20				PR						
BGUA-02	20.93				hJ		45				PR						
BGUA-02	20.97				J		20		br	SN	PR	RF					
BGUA-02	21.05				hJ		20				PR						
BGUA-02	21.16				J		35			CN	PR	SM-RF					
BGUA-02	21.19				hJ		15				ST						
BGUA-02	21.25				hJ		20				PR						
BGUA-02	21.30				hJ		70				PR						
BGUA-02	21.51				J		60		bk mi	SN	PR	SM					
BGUA-02	21.55				J		70		bk mi	SN	PR	SM					
BGUA-02	21.60				hJ		40				PR						
BGUA-02	21.62				hJ		40				PR						
BGUA-02	21.69				J		50			CN	PR	SM					
BGUA-02	22.05				J		0			CN	PR	SM					
BGUA-02	22.10				hJ		15				PR						
BGUA-02	22.13				hJ		15				PR						
BGUA-02	22.17				J		45			CN	IR	RF					
BGUA-02	22.19				hJ		70				PR						
BGUA-02	22.22				hJ		40				PR						
BGUA-02	22.25				hJ		20				PR						
BGUA-02	22.28				J		20		bk mi	SN	IR	RF					
BGUA-02	22.30				hJ		45				PR						
BGUA-02	22.40	23.30			AZ		0				PR						
BGUA-02	22.41				hJ		10				PR						
BGUA-02	22.51				hJ		40				PR						
BGUA-02	22.56				hJ		30				PR						
BGUA-02	22.57				J		15		bk mi	SN	IR	RF					
BGUA-02	22.60				hJ		35				PR						
BGUA-02	22.64				hJ		90				IR						
BGUA-02	22.67				hJ		20				PR						
BGUA-02	22.68				hJ		30				IR						
BGUA-02	22.71				hJ		80				IR						
BGUA-02	22.73				hJ		35				PR						
BGUA-02	22.77				hJ		80				PR						
BGUA-02	22.84				J		50		bk mi	SN	IR	SM					
BGUA-02	22.88				J		60		bk mi	SN	PR	SM					
BGUA-02	22.97				hJ		10				PR						
BGUA-02	23.07				hJ		20				PR						
BGUA-02	23.12				J				bk mi	SN	IR	RF					
BGUA-02	23.18				J		5		bk mi	SN	IR	RF					
BGUA-02	23.23				hJ		70				PR						
BGUA-02	23.25				hJ		50				PR						
BGUA-02	23.31	23.45			hJs	x5	30				PR						
BGUA-02	23.37	23.72			hJs	x18	40				PR						
BGUA-02	23.56				hJ		80										
BGUA-02	23.67				J		20		br mi	SN	IR	SM					
BGUA-02	23.79				hJs	x2	50				PR						
BGUA-02	23.89				hJs	x4	70				PR						
BGUA-02	24.03				J		30		bk mi	SN	PR	SM					
BGUA-02	24.07				hJ		50				PR						
BGUA-02	24.16				J		25		bk mi	SN	IR	SM					
BGUA-02	24.21				hJ		30				PR						
BGUA-02	24.23				hJ		60				PR						
BGUA-02	24.32				hJ		60				PR						
BGUA-02	24.35				hJ		50				PR						

Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BGUA - 02 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
BGUA-02	24.40				hJ		70				PR						
BGUA-02	24.42				J		50		bk mi	SN	PR	SM					
BGUA-02	24.46				hJs	x6	40		yl mi		PR		<	3			
BGUA-02	24.65				J		10			CN	IR	RF					
BGUA-02	24.67	24.68			hJs	x2	60				PR					10 mm	
BGUA-02	24.72	24.88			hJs	x7	30				IR						
BGUA-02	25.00	25.19			AZ		0										multiple healed joints,
BGUA-02	25.04				hJ		20				IR						
BGUA-02	25.11				hJ		30				PR						
BGUA-02	25.19				J		20			CN	PR	SM					
BGUA-02	25.21				hJ		30				PR						
BGUA-02	25.32				hJ		20				PR						
BGUA-02	25.37				hJ		60				PR						
BGUA-02	25.39				hJ		30				PR						
BGUA-02	25.40				hJ		30				PR						
BGUA-02	25.42				hJ		20				PR						
BGUA-02	25.50	25.51			hJs	x2	60				PR					10 mm	
BGUA-02	25.52	25.54			hJs	x2	20				PR					20 mm	
BGUA-02	25.55				hJ						PR						
BGUA-02	25.56				hJ		30				PR						
BGUA-02	25.57				hJ		80				IR						
BGUA-02	25.58				hJs	x2	20				PR						
BGUA-02	25.64				hJ		10				PR						
BGUA-02	25.71				hJ		70				PR						
BGUA-02	25.75				J		30		bk mi	SN	IR	SM					
BGUA-02	25.78				hJs		50				PR						
BGUA-02	25.79				hJ						PR						
BGUA-02	25.84				J		45			CN	PR	SM					
BGUA-02	25.90	25.91			hJs	x2	70				PR						
BGUA-02	25.95				hJ		70				PR						
BGUA-02	25.98				J		20			CN	IR	RF					
BGUA-02	26.02	26.12			hJs	x5	30		bk mi	SN	PR						
BGUA-02	26.05				V		60		wh mi	SN	PR		<	2			
BGUA-02	26.17				hJ		80				PR						
BGUA-02	26.27				hJ		45				PR						
BGUA-02	26.28				hJ		90				IR						
BGUA-02	26.32				hJ		65				PR						
BGUA-02	26.34				hJ		45				PR						
BGUA-02	26.36				hJ		55				PR						
BGUA-02	26.37				hJ		80				CU						
BGUA-02	26.39				hJ		45				PR						
BGUA-02	26.40				hJ		30				IR						
BGUA-02	26.41				J		10		bk mi	SN	IR	SM					
BGUA-02	26.42	26.46			J		30		bk mi	SN	IR	SM					
BGUA-02	26.46	26.53			AZ		0				PR						
BGUA-02	26.46	26.55			hJs	x2	45				PR						
BGUA-02	26.53	26.55			hJs	x3	45				PR						
BGUA-02	26.65				hJ		70				PR						
BGUA-02	26.72	26.80			hJs	x7	30				PR						
BGUA-02	26.74				J		30			CN	PR	SM					
BGUA-02	26.84				V	/ J	65		pl gr mi	SN	PR	RF	<	4			
BGUA-02	26.85	26.95			hJs	x5	65				PR						
BGUA-02	26.93				J		35		bk mi	SN	CU	SM					
BGUA-02	27.08				hJ		20				PR						
BGUA-02	27.10				hJ		20				PR						
BGUA-02	27.12				J		20			CN	CU	SM					
BGUA-02	27.13				hJ		20				PR						
BGUA-02	27.15	27.16			hJs	x2	60				PR						
BGUA-02	27.19				hJ		25				PR						
BGUA-02	27.30				hJ		45				PR						
BGUA-02	27.34				J		55		bk mi	SN	PR	SM					
BGUA-02	27.36				hJ		40				PR						
BGUA-02	27.42				hJ		50				PR						
BGUA-02	27.45				hJ		30				PR						
BGUA-02	27.50				hJ		45				PR						
BGUA-02	27.54				hJ		55				PR						
BGUA-02	27.58				hJ		40				PR						
BGUA-02	27.63				hJ		45				PR						
BGUA-02	27.67	27.70			hJs	x2	55				PR						
BGUA-02	27.73	27.93			hJs	x4	30				PR						
BGUA-02	27.80				hJ		80				PR	RF					
BGUA-02	27.90				J		60			CN	PR						
BGUA-02	28.04	28.07			hJs	x2	30				PR						
BGUA-02	28.08	28.16			hJs	x2	70				PR						
BGUA-02	28.09	28.17			hJs	x4	40				PR						
BGUA-02	28.11				J		10			CN	ST	RF					
BGUA-02	28.24				hJ		60				PR						
BGUA-02	28.26				hJ		65				PR						
BGUA-02	28.34				hJ		70				PR						

Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BGUA - 02 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
BGUA-02	28.35				hJ		65				IR						
BGUA-02	28.37	28.39			hJs	x2	30				PR						
BGUA-02	28.39				J		40			CN	PR	SM					
BGUA-02	28.42	28.66			hJs	x15	45				PR						
BGUA-02	28.88				J		20		bk mi	SN	PR	SM					
BGUA-02	28.90	28.97			hJs	x3	30				PR						
BGUA-02	28.91	28.95			hJs	x2	40				PR						
BGUA-02	28.99				J		15			CN	PR	SM					
BGUA-02	29.03				J		55			CN	PR	SM					
BGUA-02	29.17				hJ		10				PR						
BGUA-02	29.20				hJ		50				PR						
BGUA-02	29.21	29.24			hJs	x3	35				PR						
BGUA-02	29.29				hJ		60				PR						
BGUA-02	29.35	29.66			hJs	x4	10				PR						
BGUA-02	29.50	29.62			hJs	x8	75				PR						
BGUA-02	29.58	29.65			SZ		70		gn-bk mi	VN	UN	RF					10-20mm vertical displacement
BGUA-02	29.69				J		25			CN	PR	SM					
BGUA-02	29.73				J		25			CN	PR	SM					
BGUA-02	29.81				J		70		bk mi	SN	PR	SM					
BGUA-02	29.89				hJ		55				PR						
BGUA-02	29.97				hJ		70				PR						
BGUA-02	30.00				J		20			CN	PR	SM					
BGUA-02	30.15				J		30		br mi	SN	CU	SM					
BGUA-02	30.20	30.22			hJs	x2	50				PR						
BGUA-02	30.21				hJ		65				PR						
BGUA-02	30.25				hJ		55				PR						
BGUA-02	30.30				J		30		br mi	SN	PR	SM					
BGUA-02	30.38	30.42			hJs	x2	70				PR						
BGUA-02	30.43				J		20		br mi	SN	IR	SM					
BGUA-02	30.60				J		10		bk mi	SN	PR	SM					
BGUA-02	30.62				J		60			CN	PR	SM					
BGUA-02	30.66				J		10			CN	PR	SM					
BGUA-02	30.76				hJ		60				PR						
BGUA-02	30.84				J		10			CN	PR	SM					
BGUA-02	30.89				hJ		70				PR						
BGUA-02	30.92				hJ		70				PR						
BGUA-02	30.95				hJ		60				PR						
BGUA-02	31.03				hJ		70				PR						
BGUA-02	31.06				J		60		br mi	VN	PR	RF					
BGUA-02	31.08				J		10		br mi	SN	PR	RF					
BGUA-02	31.11				hJ		30				PR						
BGUA-02	31.15	31.17			V		65		wh mi		IR		<	20			
BGUA-02	31.30				J		10		br mi	SN	PR	RF					
BGUA-02	31.31	31.37			hJs	x2	20				PR						
BGUA-02	31.34				hJ		70				PR						
BGUA-02	31.44				hJ		30				PR						
BGUA-02	31.47				J		45		br mi	SN	PR						
BGUA-02	31.48				hJ		40				PR						
BGUA-02	31.58				J		25		br mi	SN	PR						
BGUA-02	31.65	31.69			hJs	x5	45				PR						
BGUA-02	31.70				J		35		br mi	SN	PR	SM					
BGUA-02	31.98				J		15		bk mi	SN	PR	SM					
BGUA-02	32.03				hJ		60				PR						
BGUA-02	32.05				hJ		30				PR						
BGUA-02	32.14				hJ		10				PR						
BGUA-02	32.17	32.19			hJs	x2	30				PR						
BGUA-02	32.33	32.35			hJs	x2	10				PR						
BGUA-02	32.40				hJ		30				PR						
BGUA-02	32.48	32.53			hJs	x3	10				IR						
BGUA-02	32.56				hJ		60				PR						
BGUA-02	32.56	32.57			hJs	x3	70				PR						
BGUA-02	32.60				V		30		dk gy mi	SN	PR		<	5			
BGUA-02	32.70				hJ		90				IR						
BGUA-02	32.75	32.77			V		10		dk gy mi	SN	IR		<	15			
BGUA-02	32.81	32.86			hJs	x3	10				PR						
BGUA-02	32.82	32.85			hJs	x3	30				PR						
BGUA-02	32.92				V		30				PR		<	2			
BGUA-02	33.17				J		70		dk gy mi	VN	PR	SM					
BGUA-02	33.18				J		60		dk gy mi	CT	PR	SM					
BGUA-02	33.40				hJ		20				PR						
BGUA-02	33.50				hJ		75				PR						
BGUA-02	33.60				hJ		80				PR						
BGUA-02	33.84				hJ		50				PR						
BGUA-02	33.91				J		45			CN	PR	SM					
BGUA-02	33.92	33.96			hJs	x2	80				PR						
BGUA-02	34.18				hJ		30				PR						
BGUA-02	34.28				J		15		br mi	SN	PR	RF					
BGUA-02	34.28	34.34			hJs	x4	20				IR						
BGUA-02	34.40				V		70				PR		<	3			

Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BGUA - 02 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
BGUA-02	34.48				hJ		50				PR						
BGUA-02	34.51				hJ		20				PR						
BGUA-02	34.53				hJ		30				PR						
BGUA-02	34.54				J		30		br mi	SN	PR	SM					
BGUA-02	34.58				hJ		20				PR						
BGUA-02	34.60				hJ		50				CU						
BGUA-02	34.62				J		5		bk mi	SN	PR	SM					
BGUA-02	34.69	34.70			hJs	x3	10				PR						
BGUA-02	34.80				hJ		30				PR						
BGUA-02	34.81	34.88			hJs	x3	80				IR						
BGUA-02	34.93				J		20			CN	IR	RF					
BGUA-02	34.98				hJ		60				PR						
BGUA-02	35.04	35.14			hJs	x3	80				IR						
BGUA-02	35.07				J		10			CN	PR	SM					
BGUA-02	35.14				J		40			CN	IR	RF					
BGUA-02	35.15				J		10			CN	PR	SM					
BGUA-02	35.20	36.10			SZ		0		clay and fine to coarse grained angular gravel								
BGUA-02	36.00	37.00			Js	x12	50		gy mi	SN	PR	RF					
BGUA-02	36.00	37.40			AZ				wh-gy mi		IR						multiple defects, various angles, generally sub-horizontal, 10-30mm spacing
BGUA-02	37.00				hJ		40				ST						
BGUA-02	37.00	37.40			Js	x7	50		gy mi		PR	RF					
BGUA-02	37.74				J		40			CN	IR	SM					
BGUA-02	37.79				J		40			CN	IR	SM					
BGUA-02	37.85	37.90			J		20			CN	IR	SM					
BGUA-02	37.94				hJ		10		wh mi		PR						
BGUA-02	37.95				hJ		20		wh mi		PR						
BGUA-02	38.10				J		30		wh mi	CT	PR	RF					
BGUA-02	38.18				J		30			CN	PR	RF					
BGUA-02	38.19	38.24			hJs	x6	40				PR						
BGUA-02	38.26	38.30			hJs	x3	20				PR						
BGUA-02	38.34				J		30			CN	PR	SM					
BGUA-02	38.36				hJ		40				PR						
BGUA-02	38.37				J		30			CN	IR	SM					
BGUA-02	38.39	38.43			hJs	x3	20				PR						
BGUA-02	38.46	38.56			hJs	x7	40				PR						
BGUA-02	38.57				hJ		20				PR						
BGUA-02	38.62				hJ		50				PR						
BGUA-02	38.68	38.71			hJs	x4	50				PR						
BGUA-02	38.73				hJ		20				PR						
BGUA-02	38.79				hJ		40				PR						
BGUA-02	38.80	38.84			hJs	x4	30				PR						
BGUA-02	38.86				J		15			CN	IR	RF					
BGUA-02	38.93	38.97			hJs	x5	30				PR						
BGUA-02	39.02	39.18			hJs	x6	60				PR						
BGUA-02	39.03				J		30			CN	IR	RF					
BGUA-02	39.15				V		40		dk gy		IR		<	2			
BGUA-02	39.20				J		40			CN	PR	SM					
BGUA-02	39.24				V		40		dk gy		PR		<	2			
BGUA-02	39.31	39.32			hJs	x2	30				PR						
BGUA-02	39.34				J		60			CN	IR	SM					
BGUA-02	39.37				J		20			CN	PR	SM					
BGUA-02	39.48				hJ		10				PR						
BGUA-02	39.53				J		10			CN	PR	SM					
BGUA-02	39.57				hJ		20				PR						
BGUA-02	39.60				hJ		40				PR						
BGUA-02	39.77				hJ		90				IR						
BGUA-02	39.89				hJ		80				IR						
BGUA-02	39.91				hJ		55				IR						
BGUA-02	39.93				hJ		60				IR						
BGUA-02	39.96				J		30			CN	PR	SM					
BGUA-02	40.05	40.06			hJs	x2	20				PR						
BGUA-02	40.09				J		20			CN	ST	SM					
BGUA-02	40.11	40.12			hJs	x2	70				PR						
BGUA-02	40.15	40.21			hJs	x5	40				PR						
BGUA-02	40.17				J		40				ST	SM					
BGUA-02	40.24				hJ		70				IR						insipient
BGUA-02	40.33	40.36			hJs	x3	65				PR						
BGUA-02	40.37				J		30			CN	UN	SM					
BGUA-02	40.59				J		40			CN	IR	RF					
BGUA-02	40.79				J		55			CN	IR	RF					
BGUA-02	40.83				hJ		80				IR						
BGUA-02	40.86				hJ		35				IR						
BGUA-02	40.90	40.92			hJs	x3	20				IR						
BGUA-02	40.95				J		50			CN	IR	RF					
BGUA-02	41.10				J		40				IR						
BGUA-02	41.12				hJ		80				IR						
BGUA-02	41.26				hJ		50				PR						
BGUA-02	41.27				J		10			CN	PR	RF					

Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BGUA - 02 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
BGUA-02	41.27	47.38			hJs	x4	20				PR						
BGUA-02	41.42	42.47			hJs	x3	30				PR						
BGUA-02	41.50				hJ		5				PR						
BGUA-02	41.59				hJ		20				PR						
BGUA-02	41.63				J		30			CN	PR	RF					
BGUA-02	41.72				hJ		20.4				PR	RF					
BGUA-02	41.82				J		5				IR						
BGUA-02	41.89				hJ		80				IR	RF					
BGUA-02	41.93				hJ		35				PR						
BGUA-02	42.25	42.50			hJs	x4	45				PR						
BGUA-02	42.55				J		15		br mi	SN	PR	RF					
BGUA-02	42.71	42.72			hJs		35				PR						
BGUA-02	42.80				V		80		br-bk mi	SN	PR	RF					
BGUA-02	42.92	42.95			hJs	x3	50				IR						
BGUA-02	43.02	43.10			Js	x2	30			CN	PR	SM					
BGUA-02	43.05				hJ		45				PR						
BGUA-02	43.18	43.20			hJs	x3	35				IR						
BGUA-02	43.20				hJ		30										
BGUA-02	43.26				J		20			CN	IR	RF					
BGUA-02	43.28				hJ		20				PR						
BGUA-02	43.31				J		40			CN	ST	SM					
BGUA-02	43.32				hJ		20				PR						
BGUA-02	43.33				hJ		40				PR						
BGUA-02	43.37				hJ		60				PR						
BGUA-02	43.44				hJ		90				IR						
BGUA-02	43.55				J		20			CN	IR	RF					
BGUA-02	43.55	43.59			hJs	x2	50				PR						
BGUA-02	43.71	43.78			hJs	x2	80				IR						
BGUA-02	43.79				V	x2	70				PR						
BGUA-02	43.83				hJ		10				PR						
BGUA-02	44.06				hJ		50				IR						
BGUA-02	44.21	44.26			Js	x2	30			CN	PR	SM					
BGUA-02	44.39	44.76			hJs	x4	80				PR						
BGUA-02	44.44				J		40			CN	PR	SM					
BGUA-02	44.89				J		60			CN	PR	SM					
BGUA-02	45.06	45.16			hJs	x9	45				IR						
BGUA-02	45.10				hJ		90				IR						
BGUA-02	45.26				J		50			CN	PR	SM					
BGUA-02	45.36	45.47			hJs	x4	65				PR						
BGUA-02	45.46				hJ		10				PR						
BGUA-02	45.53				hJ		35				PR						
BGUA-02	45.57				J		40			CN	PR	RF					
BGUA-02	45.79				hJ		10				IR						
BGUA-02	45.83	45.96			hJs	x3	65				PR						
BGUA-02	46.02				J		55			CN	PR	RF					
BGUA-02	46.06				J		20			CN	ST	RF					
BGUA-02	46.16				J		20			CN	IR	RF					
BGUA-02	46.20				hJ		65				IR						
BGUA-02	46.42				J		40			CN	IR	RF					
BGUA-02	46.50				hJ		90				IR						
BGUA-02	46.55	46.94			hJs	x9	20				PR						
BGUA-02	46.56				hJ		90				IR						
BGUA-02	47.26				J		40			CN	PR	RF					
BGUA-02	47.33	47.34			hJs	x2	40				PR						
BGUA-02	47.36				J		15			CN	ST	RF					
BGUA-02	47.41				hJ		30				PR						
BGUA-02	47.46	47.48			hJs	x3	60				PR						
BGUA-02	47.55	47.85			hJs	x12	5				PR						
BGUA-02	47.86				J		10			CN	CU	SM					
BGUA-02	47.90				hJ		30				PR						
BGUA-02	47.93				hJ		20				IR						
BGUA-02	47.98				J		40			CN	PR	RF					
BGUA-02	48.02	48.05			hJs	x3	10				PR						
BGUA-02	48.09				J		15			CN	PR	SM					
BGUA-02	48.25	48.40			hJs	x4	60				IR						
BGUA-02	48.27	48.34			hJs	x4	10				PR						
BGUA-02	48.47				hJ		70				PR						
BGUA-02	48.55				J		10			CN	PR	SM					
BGUA-02	48.63				hJ		90				IR						
BGUA-02	48.63	48.80			hJs	x7	10				PR						
BGUA-02	48.67				J		30			CN	PR	SM					
BGUA-02	48.80				J		30				PR	SM					
BGUA-02	48.91	48.93			hJs		40				PR						
BGUA-02	49.05	49.42			hJs	x5	50				PR						
BGUA-02	49.14				hJ		20				PR						
BGUA-02	49.23				hJ		50				PR						
BGUA-02	49.37				hJ		30				PR						
BGUA-02	49.48				hJ		20				PR						
BGUA-02	49.61				hJ		55				PR						

Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BGUA - 02 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
BGUA-02	49.91				V		50				PR						
BGUA-02	50.04				hJ		20				PR						
BGUA-02	50.08				J		5				IR	RF					
BGUA-02	50.31				J		15				IR	RF					
BGUA-02	50.41				V		30				IR						
BGUA-02	50.47				hJ		40				PR						
BGUA-02	50.60				J		40			CN	PR	SM					
BGUA-02	50.84				hJ		90				PR						
BGUA-02	50.93				hJ		40				PR						
BGUA-02	51.23				hJ		70				PR						
BGUA-02	51.27				hJ		50				PR						
BGUA-02	51.33				hJ		60				PR						
BGUA-02	51.40				hJ		30				PR						
BGUA-02	51.59				hJ		60				PR						
BGUA-02	51.92				hJ		50				PR						
BGUA-02	51.95				hJ		50				PR						
BGUA-02	52.20				hJ		70				PR						
BGUA-02	52.41	52.42			hJs	x2	70				IR						
BGUA-02	52.59	52.64			hJs	x2	60				IR						
BGUA-02	52.65				hJ		70				PR						
BGUA-02	52.66				J		30			CN	IR	SM					
BGUA-02	52.69	52.71			hJs	x3					IR						
BGUA-02	52.76				V		60		wh mi		PR		<	2			
BGUA-02	52.78				J		40			CN	PR	RF					
BGUA-02	52.81	52.88			hJs	x5	50				IR						
BGUA-02	52.84	52.88			hJs	x2	90				IR						
BGUA-02	52.92				V		30		wh mi		IR		<	2			
BGUA-02	52.97				J		5			CN	PR	RF					
BGUA-02	53.03	53.04			hJs	x2	90				PR						
BGUA-02	53.07				J		10			CN	CU	SM					
BGUA-02	53.10	53.11			hJs	x2	20				IR						
BGUA-02	53.13				hJ		30				IR						
BGUA-02	53.14				hJ		70				IR						
BGUA-02	53.22	53.23			hJs	x2	40				PR						
BGUA-02	53.23				J		40			CN	PR	RF					
BGUA-02	53.27				hJ		50				PR						
BGUA-02	53.29				hJ		30				PR						
BGUA-02	53.31				hJ		70				IR						
BGUA-02	53.34				hJ		40				PR						
BGUA-02	53.40				J		20			CN	IR	RF					
BGUA-02	53.46	53.51			hJs	x4	50				PR						
BGUA-02	53.53				J		10			CN	PR	RF					
BGUA-02	53.58	53.65			hJs	x8	40				IR						
BGUA-02	53.65				J		10			CN	IR	RF					
BGUA-02	53.68	53.78			hJs	x8	40				PR						
BGUA-02	53.84				hJ		10				PR						
BGUA-02	53.89	53.99			hJs	x9	30				IR						
BGUA-02	53.92				J		40			CN	PR	RF					
BGUA-02	54.02	54.16			hJs	x13	30				PR						
BGUA-02	54.03				hJ		65				PR						
BGUA-02	54.15				J		50			CN	IR	RF					
BGUA-02	54.15	54.20			hJs	x3	20				PR						
BGUA-02	54.22				hJ		10				PR						
BGUA-02	54.24				hJ		10				PR						
BGUA-02	54.27				hJ		20				PR						
BGUA-02	54.30				J		50			CN	ST	RF					
BGUA-02	54.36				hJ		60				IR						
BGUA-02	54.38				J		35			CN	ST	RF					
BGUA-02	54.40				hJ		60				PR						
BGUA-02	54.41	54.46			hJs	x4	30				PR						
BGUA-02	54.48				hJ		70				PR						
BGUA-02	54.50				J		25			CN	ST	RF					
BGUA-02	54.52	54.56			hJs	x4	60				PR						
BGUA-02	54.63				hJ		80				PR						
BGUA-02	54.71				J		45			CN	PR	RF					
BGUA-02	54.77	54.82			hJs	x4	30				PR						
BGUA-02	54.80				J		25	35		SN	UN	RF					
BGUA-02	54.89				J		35		pale br	SN	UN	RF					
BGUA-02	54.90				J		25		br	SN	PR	RF					
BGUA-02	55.43				hJ		40				PR						
BGUA-02	55.57				J		10			SN	PR	SM					
BGUA-02	55.60				hJ		90				UN						
BGUA-02	55.70				hJ		15				PR	SM					
BGUA-02	55.75				CO		25			VN	PR	RF					
BGUA-02	55.78				CO		25			CN	PR	SM					
BGUA-02	55.84				hJ		75				UN						
BGUA-02	55.98				hJ		55				PR						
BGUA-02	56.03				V		40				IR						
BGUA-02	56.06				V		20				IR						

Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BGUA - 02 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
BGUA-02	56.12				hJ		85				PR						
BGUA-02	56.18				hJ		15				PR						
BGUA-02	56.22				hJ		10				PR						
BGUA-02	56.27				hJ		75				PR						
BGUA-02	56.30				hJ		40				PR						
BGUA-02	56.35	56.37			Vs	x2	50				PR						
BGUA-02	56.52				hJ		60				PR						
BGUA-02	56.56				J		40			CN	PR	SM					
BGUA-02	56.61				V		55				PR						
BGUA-02	56.92				V		85				PR						
BGUA-02	57.23				hJ		85				PR						
BGUA-02	57.25				hJ		10				PR						
BGUA-02	57.48				hJ		60				PR						
BGUA-02	57.66	57.67			hJs	x2	75				PR						
BGUA-02	57.85	58.11			hJs	x3	30				UN						
BGUA-02	57.95				V		70		wh mi		UN						
BGUA-02	58.31				hJ		75				PR						
BGUA-02	58.36				hJ		15				PR						
BGUA-02	58.77				hJ		50				PR						
BGUA-02	58.84				V		65		wh mi		UN						
BGUA-02	58.86				V		70		wh mi		UN						
BGUA-02	58.91	58.92			hJs	x2	50				UN						
BGUA-02	58.94				hJ		60				PR						
BGUA-02	59.03				V		5		wh mi		UN		<	15			
BGUA-02	59.06				V		30		yl mi		UN		<	10			
BGUA-02	59.07				hJ		60				IR						
BGUA-02	59.13				J		5			CN	UN	SM					
BGUA-02	59.22				V		80		wh mi		UN						
BGUA-02	59.31				V		80		wh mi		UN		<	5			
BGUA-02	59.38				V		80				UN						
BGUA-02	59.48				V		80		rd mi		UN		<	5			
BGUA-02	59.52				J		5			SN	UN	SM					
BGUA-02	59.58				V		90		wh mi		UN		<	3			
BGUA-02	59.60				V		60		yl mi		IR						
BGUA-02	59.67				J		20			CN	ST	RF					
BGUA-02	59.79	59.81			hJs	x2	35				PR						
BGUA-02	59.80				hJ		35				PR						
BGUA-02	59.86				hJ		50		yl mi		IR						
BGUA-02	59.88				J		15			CN	ST	RF					
BGUA-02	60.03				hJ		70				PR						
BGUA-02	60.08				hJ		20				PR						
BGUA-02	60.12				J		30			CN	UN	SM					
BGUA-02	60.14	60.15			hJs	x2	65				ST						
BGUA-02	60.17				J		65			CN	PR	SM					
BGUA-02	60.22				hJ		50				ST						
BGUA-02	60.25				J		75			CN	PR	SM					
BGUA-02	60.27				hJ		10				PR						
BGUA-02	60.32				hJ		70				PR						
BGUA-02	60.40				V		65		yl mi		UN		<	3			
BGUA-02	60.52				J		40			CT	PR	SM					
BGUA-02	60.54	60.60			Vs	x3	40		yl mi		IR		<	5			
BGUA-02	60.61				V		70		yl mi		IR		<	3			
BGUA-02	60.63	60.71			V		90		yl mi		IR		<	3			
BGUA-02	60.65	60.66			V		60		yl mi		UN		<	3			
BGUA-02	60.83				V		45				PR		<	5			
BGUA-02	60.85				hJ		70				PR						
BGUA-02	60.86	60.89			Vs	x2	80		yl mi		UN		<	8			
BGUA-02	60.92	60.93			Vs	x2	30		yl mi		UN		<	5			
BGUA-02	60.96				hJ		70				PR						
BGUA-02	60.98				hJ		80				PR						
BGUA-02	61.06				V		45		Bk mi		PR		<	3			
BGUA-02	61.13				V		15		wh mi		UN		<	3			
BGUA-02	61.18	61.20			V		50		wh rd mi		IR		<	25			
BGUA-02	61.22				J		60		rd wh yl	SN	UN	SM					
BGUA-02	61.24	61.27			V		60				UN						
BGUA-02	61.33	61.34			hJs	x2	80				PR						
BGUA-02	61.39				hJ		20				PR						
BGUA-02	61.41				hJ		40				Cu						
BGUA-02	61.45				hJ		65				Cu						
BGUA-02	61.51				hJ		50				Un						
BGUA-02	61.52	61.54			hJs	x2	90				Un						
BGUA-02	61.78				J		75				PR						
BGUA-02	61.83				hJ		75		yl mi		UN		<	3			
BGUA-02	61.86				hJ		20				UN						
BGUA-02	61.90				hJ		35				PR						
BGUA-02	62.02				hJ		85				UN						
BGUA-02	62.06				hJ		20				UN						
BGUA-02	62.06	62.12			hJs	x2	10				UN						
BGUA-02	62.15				hJ		40				PR						

Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BGUA - 02 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
BGUA-02	62.17				hJ		90				PR						
BGUA-02	62.23				hJ		60				PR						
BGUA-02	62.24				hJ		15				PR						
BGUA-02	62.27				hJs	x2	75				PR						
BGUA-02	62.32				hJ		70				UN						
BGUA-02	62.33				hJ		90				PR						
BGUA-02	62.37	62.39			hJs	x2	60				PR						
BGUA-02	62.42				hJ		30				UN						
BGUA-02	62.47	62.54			hJs	x2	60				UN						
BGUA-02	62.48				hJ		85				UN						
BGUA-02	62.51				hJ		80				UN						
BGUA-02	62.57				J		20			CN	PR	SM					
BGUA-02	62.59				hJ		30				PR						
BGUA-02	62.62				hJ		10				PR						
BGUA-02	62.63				J		60			CN	PR	SM					
BGUA-02	62.63	62.67			V		60		wh mi		PR		<	50			
BGUA-02	62.72				hJ		20				Cu						
BGUA-02	62.73				hJ		70				UN						
BGUA-02	62.76				hJ		50				UN						
BGUA-02	62.80				hJ		45				PR						
BGUA-02	62.81				J		10			CN	PR	SM					
BGUA-02	62.87	62.92			hJs	x3	60				PR						
BGUA-02	63.02				hJ		10				PR						
BGUA-02	63.06	63.08			hJs	x2	5				PR						
BGUA-02	63.14				hJ		40				UN						
BGUA-02	63.24				hJ		45				PR						
BGUA-02	63.28				hJ		15				PR						
BGUA-02	63.46				J		20			CN	PR	SM					
BGUA-02	63.46	63.49			hJs	x2	20				PR						
BGUA-02	63.47				hJ		85				PR						
BGUA-02	63.63				J		10			CN	PR	SM					
BGUA-02	63.67				hJ		5				PR						
BGUA-02	63.81				hJ		70				PR						
BGUA-02	63.84				hJ		65				PR						
BGUA-02	63.85				hJ		20				PR						
BGUA-02	63.88				hJ		30				PR						
BGUA-02	63.97				J		55			CN	PR	RF					
BGUA-02	64.03				V		70		wh mi		UN		<	4			
BGUA-02	64.04				hJ		20				PR						
BGUA-02	64.10				V		70				PR		<	8			
BGUA-02	64.22				hJ		90				PR						
BGUA-02	64.30	64.32			hJs	x3	5				PR						
BGUA-02	64.33	64.35			hJs	x5	10				PR						
BGUA-02	64.36	64.38			hJs	x2	20				PR						
BGUA-02	64.40				J		20			SN	UN	SM					
BGUA-02	64.44	64.46			Vs	x2	60		yl mi		UN		<	3			
BGUA-02	64.50				hJ		80				UN						
BGUA-02	64.56	64.58			hJs	x2	30				PR						
BGUA-02	64.60	64.61			hJs	x2	90				PR						
BGUA-02	64.62				hJ		75				PR						
BGUA-02	64.70				hJ		70				PR						
BGUA-02	64.71	64.72			Js	x2	90				PR	RF					
BGUA-02	64.73				hJ		80				PR						
BGUA-02	64.74	64.75			hJs	x6	30				PR						
BGUA-02	64.78				hJ		80				PR						
BGUA-02	64.81				hJ		75				PR						
BGUA-02	64.87				J		50			CN	PR	RF					
BGUA-02	64.94	64.95			hJs	x2	60				PR						
BGUA-02	65.11				hJ		65				UN						
BGUA-02	65.21				hJ		80				UN						
BGUA-02	65.22				hJ		40				UN						
BGUA-02	65.25				hJ		35				ST						
BGUA-02	65.27				J		30			CN	PR	RF					
BGUA-02	65.32	65.99			hJs	x2	50				PR						
BGUA-02	65.36				V		10				PR						
BGUA-02	65.37	65.40			hJ		30				PR						
BGUA-02	65.48				hJ		40				PR						
BGUA-02	65.52				J		10			CN	PR	SM					
BGUA-02	65.56				hJs	x2	15				PR						
BGUA-02	65.62	65.65			hJs	x2	40				PR						
BGUA-02	65.67				hJ		80				PR						
BGUA-02	65.82				hJ		70				UN						
BGUA-02	65.84				hJ		5				UN						
BGUA-02	65.90				hJ		85				ST						
BGUA-02	65.91				hJ		10				ST						
BGUA-02	65.94				J		20			CN	PR	SM					
BGUA-02	65.97				hJ		80				PR						
BGUA-02	66.03				hJ		30				PR						
BGUA-02	66.05				V		10				PR						

Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BGUA - 02 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
BGUA-02	66.09				hJ		65				PR						
BGUA-02	66.14	66.36			hJs	x6	50				PR						
BGUA-02	66.20				J		55			CN	PR	SM					
BGUA-02	66.22	66.33			Js	x2	50			CN	PR	SM					
BGUA-02	66.36				hJ		90				PR						
BGUA-02	66.42				hJ		90				PR						
BGUA-02	66.53	66.61			hJs	x4	30				PR						
BGUA-02	66.62				hJ		75				PR						
BGUA-02	66.64				J		10			CN	PR	SM					
BGUA-02	66.65				J		45			SN	PR	RF					
BGUA-02	66.68				hJ		90				UN						
BGUA-02	66.70	66.76			hJs	x4	5				PR						
BGUA-02	66.78				J		90			CN	PR	SM					
BGUA-02	66.80				hJ		80				PR						
BGUA-02	66.82				hJ		75				PR						
BGUA-02	66.83	66.93			hJ		25				PR						
BGUA-02	66.84				hJ		90				PR						
BGUA-02	66.85				hJ		75				PR						
BGUA-02	66.92				J		35			CN	PR	SM					
BGUA-02	66.94				J		75			CN	PR	SM					
BGUA-02	66.95				J		25			CN	PR	SM					
BGUA-02	66.96	66.97			Js	x2	75			CN	PR	SM					
BGUA-02	67.04				J		70			CN	PR	SM					
BGUA-02	67.05	67.07			hJs	x2	15				PR						
BGUA-02	67.08	67.09			hJs	x2	20				PR						
BGUA-02	67.12				hJ		50				PR						
BGUA-02	67.14				J		60			CN	UN	SM					
BGUA-02	67.19				hJ		90				PR						
BGUA-02	67.20				hJ		60				PR						
BGUA-02	67.25				hJ		60				PR						
BGUA-02	67.28				hJ		25				PR						
BGUA-02	67.30				hJ		65				PR						
BGUA-02	67.35	67.42			hJs	x2	40				PR						
BGUA-02	67.44				J		40			CN	UN	SM					
BGUA-02	67.52				hJ		50				PR						
BGUA-02	67.53				hJ		70				PR						
BGUA-02	67.59				hJ		40				PR						
BGUA-02	67.60				hJ		50				PR						
BGUA-02	68.00	69.50			SZ					CN	IR	RF					multiple defects, generally sub-vertical, numerous closely spaced joints and sections of fragmented rock
BGUA-02	68.01				hJ		30				PR						
BGUA-02	68.05				hJ		70				PR						
BGUA-02	68.08				J		70			CN	PR	SM					
BGUA-02	68.25				V		40				UN						
BGUA-02	68.25	68.30			V		40		wh pk mi		PR		<	10			
BGUA-02	68.38				hJ		15				PR						
BGUA-02	68.39				hJ		50				PR						
BGUA-02	68.44				hJ		60				PR						
BGUA-02	68.45				hJ		20				PR						
BGUA-02	68.52				hJ		10				PR						
BGUA-02	68.58	68.59			hJs	x2	50				PR						
BGUA-02	68.62				J		60			CN	PR	SM					
BGUA-02	68.68	69.70			SZ				bk mi	SN	IR	RF					multiple defects, generally sub-vertical, numerous closely spaced joints and sections of fragmented rock
BGUA-02	69.00	69.23			SZ				bk-gy mi	SN	IR	RF					highly fractured rock, part of 68.62-72.40m SZ
BGUA-02	69.34	69.50			SZ				bk-gy mi	SN	IR	RF					highly fractured rock, part of 68.62-72.40m SZ
BGUA-02	69.70	69.90			SZ				bk-gy mi	SN	IR	RF					highly fractured rock, part of 68.62-72.40m SZ
BGUA-02	69.78				J		70			CT	PR	SM					
BGUA-02	69.83				J		50			CT	ST	RF					
BGUA-02	69.92				hJ		70				UN						
BGUA-02	69.98				hJ		35				IR						
BGUA-02	70.03				hJ		90				IR						
BGUA-02	70.11				hJ		60				UN						
BGUA-02	70.26	70.34			hJs	x3	70				UN						
BGUA-02	70.37				J		5			CT	ST	RF					
BGUA-02	70.40				J		50				ST	RF					
BGUA-02	70.46				J		45			VN	ST	RF					
BGUA-02	70.57				J		60				PR	RF					
BGUA-02	70.62				J		75			CN	PR	RF					
BGUA-02	70.67				J		50			CN	PR	RF					
BGUA-02	70.69				J		55			CN	PR	RF					
BGUA-02	70.71				J		55			CN	UN	RF					
BGUA-02	70.75				hJ		30				PR						
BGUA-02	70.77				J		30			CN	PR	RF					
BGUA-02	70.82				J		70			SN	ST	RF					
BGUA-02	71.00	71.27			SZ				bk-gy mi	SN	IR	RF					highly fractured rock, part of 68.62-72.40m SZ
BGUA-02	71.17				hJ		40				PR						
BGUA-02	71.20				J		55			CT	PR	RF					
BGUA-02	71.22				J		30			CT	ST	RF					
BGUA-02	71.27				J		60			CN	PR	RF					
BGUA-02	71.32	71.34			hJs	x2	35				UN						

Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BGUA - 02 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
BGUA-02	71.40				hJ		60				UN						
BGUA-02	71.42				J		30			CN	PR	RF					
BGUA-02	71.46				J		70			CN	PR	RF					
BGUA-02	71.55				hJ		55				PR						
BGUA-02	71.57				hJ		20				PR						
BGUA-02	71.66				J		45			CN	PR	RF					
BGUA-02	71.68	71.71			CS		35										
BGUA-02	71.70	72.50			SZ				bk-gy mi	SN	IR	RF					highly fractured rock, part of 68.62-72.40m SZ
BGUA-02	71.77				J		60			CN	PR						
BGUA-02	71.82	71.87			Js	x2	40			CN	UN	RF					
BGUA-02	71.90	72.00			CS		40										
BGUA-02	71.94				hJ		40				PR						
BGUA-02	72.15				J		70			SN	PR	RF					
BGUA-02	72.28				J		80			CN	PR	SM					
BGUA-02	72.31				J		60			CN	PR	SM					
BGUA-02	72.35				J		30			CN	PR	SM					
BGUA-02	72.40				J		60			CN	PR	SM					
BGUA-02	72.42				hJ		70				PR						
BGUA-02	72.44				hJ		60				IR						
BGUA-02	72.63				hJ		50				PR						
BGUA-02	72.72				V		50		br mi		PR		<	4			
BGUA-02	72.73				hJ		80				PR						
BGUA-02	72.74				hJ		60				PR						
BGUA-02	72.80				J		65			CT	PR	SM					
BGUA-02	72.83				J		60				PR	RF					
BGUA-02	72.86				J		60				PR	RF					
BGUA-02	72.92				hJ		60				PR						
BGUA-02	72.95				hJ		30				PR						
BGUA-02	73.08				hJ		75				PR						
BGUA-02	73.13	73.21			hJs	x4	55				PR						
BGUA-02	73.24				hJ		70				PR						
BGUA-02	73.29	73.31			hJs	x2	40				PR						
BGUA-02	73.34				hJ		25				PR						
BGUA-02	73.41				J		65			CN	PR	RF					
BGUA-02	73.44				hJ		65				PR						
BGUA-02	73.59				hJ		70				PR						
BGUA-02	73.61				hJ		65				PR						
BGUA-02	73.71				J		50			CN	PR	RF					
BGUA-02	73.80				J		30			CN	PR	RF					
BGUA-02	73.87				J		50			CN	ST	RF					
BGUA-02	73.94				hJ		55				UN						
BGUA-02	73.95				hJ		40				PR						
BGUA-02	74.05				hJ		60				PR						
BGUA-02	74.14				hJ		50				PR						
BGUA-02	74.26	74.29			hJs	x2	45				PR						
BGUA-02	74.39				hJ		75				PR						
BGUA-02	74.50				J		60			CN	UN	RF					
BGUA-02	74.54				hJ		65				UN						
BGUA-02	74.59				hJ		75				UN						
BGUA-02	74.65				hJ		65				PR						
BGUA-02	74.71				hJ		65				PR						
BGUA-02	74.79				hJ		55				PR						
BGUA-02	74.86	74.89			J		70				UN		<	50			
BGUA-02	75.04				hJ		30				PR						
BGUA-02	75.14				J		45			CT	PR	RF					
BGUA-02	75.20	75.50			AZ												numerous healed joints
BGUA-02	75.23	75.30			CZ		35				UN	RF					
BGUA-02	75.34				J		70			SN	UN	RF					
BGUA-02	75.43				hJ		55				PR						
BGUA-02	75.45				J		65			SN	PR	RF					
BGUA-02	75.56				hJ		90				PR						
BGUA-02	75.59				hJ		70				PR						
BGUA-02	75.66				hJ		90				PR						
BGUA-02	75.71	75.75			hJs	x2	50				PR						
BGUA-02	75.85				J		60			CN	PR	RF					
BGUA-02	75.99				hJ		40				PR						
BGUA-02	76.08				hJ		80				PR						
BGUA-02	76.11				hJ		40				PR						
BGUA-02	76.23				hJ		45				PR						
BGUA-02	76.27				J		25			CN	PR	RF					
BGUA-02	76.30				hJ		30				PR						
BGUA-02	76.40				hJ		90				PR						
BGUA-02	76.47				hJ		55				PR						
BGUA-02	76.51				J		65			CT	PR	RF					
BGUA-02	76.57				V		50		rd mi		PR		<	4			
BGUA-02	76.60				hJ		50				PR						
BGUA-02	76.61	76.90					40										
BGUA-02	76.64				hJ		40				PR						
BGUA-02	76.90				CO		45										

Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BGUA - 02 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
BGUA-02	76.92				V		85				PR						
BGUA-02	76.93				hJ		65				UN						
BGUA-02	76.94				V		70		wh mi		UN		<	4			
BGUA-02	76.96	76.97			Vs	x2	45		contact		PR		<	15			
BGUA-02	77.05				V		60		br mi		PR		<	3			
BGUA-02	77.09				V		30		wh mi		UN		<	7			
BGUA-02	77.10				hJ		5				PR						
BGUA-02	77.13				V		85		br mi		UN		<	4			
BGUA-02	77.15				hJ		5				PR						
BGUA-02	77.16				J		50			CN	PR	RF					
BGUA-02	77.20				CO		60				UN						
BGUA-02	77.25				hJ		5				PR						
BGUA-02	77.31				hJ		20				UN						
BGUA-02	77.35				J		30			CN	UN	RF					
BGUA-02	77.40				CO		45				UN						
BGUA-02	77.41				V		60		wh mi		UN		<	3			
BGUA-02	77.43				hJ		30				UN						
BGUA-02	77.45				V		70		wh mi		UN		<	3			
BGUA-02	77.46				hJ		20				PR						
BGUA-02	77.51				hJ		60				PR						
BGUA-02	77.55				hJ		85				PR						
BGUA-02	77.69				hJ		40				PR						
BGUA-02	77.73				V		70		wh mi		PR		<	3			
BGUA-02	77.78				V		50		wh mi		PR		<	3			
BGUA-02	77.95				hJ		60				UN						
BGUA-02	78.05				J		25			CN	UN	RF					
BGUA-02	78.18				hJ		50				UN						
BGUA-02	78.21				hJ		75				PR						
BGUA-02	78.37				J		80			CN	PR						
BGUA-02	78.42				J		60			CN	PR						
BGUA-02	78.69				hJ		55				PR						
BGUA-02	78.73				hJ		50				PR						
BGUA-02	78.81				V		80		wh mi		PR		<	7			
BGUA-02	78.88				V		30		wh mi		UN		<	3			
BGUA-02	78.94				V		40		wh mi				<	3			
BGUA-02	78.96				V		90		wh mi		UN		<	4			
BGUA-02	79.08				V		70		rd mi		UN		<	3			
BGUA-02	79.18				J		30			CN	PR	RF					
BGUA-02	79.23	79.25			hJs	x2	30				PR						
BGUA-02	79.25	79.29			hJs	x2	20				PR						
BGUA-02	79.59				hJ		5				PR						
BGUA-02	80.08				hJ		80				PR						
BGUA-02	80.14				hJ		20				UN						
BGUA-02	80.17				hJ		25				PR						
BGUA-02	80.25				hJ		60				PR						
BGUA-02	80.29				hJ		20				PR						
BGUA-02	80.50				J		5			CN	UN	RF					
BGUA-02	80.54				V		80		wh mi		UN		<	5			
BGUA-02	80.64				J		60			CN	PR	RF					
BGUA-02	80.69				J		30			CN	PR	RF					
BGUA-02	80.81				hJ		90				PR						
BGUA-02	80.93				V		90		wh mi		UN		<	3			
BGUA-02	80.94				V		85		wh mi		UN		<	3			
BGUA-02	80.99				V		10		wh mi		PR		<	4			
BGUA-02	81.09				V		90		wh mi		PR		<	4			
BGUA-02	81.10				hJ		40				PR						
BGUA-02	81.13				V		90		wh mi		PR		<	3			
BGUA-02	81.14				hJ		75				PR						
BGUA-02	81.22				hJ		75				PR						
BGUA-02	81.33				V		90		wh mi		PR		<	10			
BGUA-02	81.49				J		50			CN	PR	RF					
BGUA-02	81.60				hJ		70				PR						
BGUA-02	81.81	81.82			Vs	x3	85		wh mi		UN		<	3			
BGUA-02	82.10				V		65		wh mi		UN		<	3			
BGUA-02	82.18				V		80		wh mi		UN		<	4			
BGUA-02	82.31				V		70		wh mi		UN		<	3			
BGUA-02	82.52				J		30			CN	PR	RF					
BGUA-02	82.88				hJ		20				PR						
BGUA-02	82.89				hJ		60				PR						
BGUA-02	83.07				V		70		wh mi		IR		<	4			
BGUA-02	83.25				V		80		wh mi		PR		<	2			
BGUA-02	83.31				J		0			CN	PR	RF					
BGUA-02	83.41				V		65		wh mi		PR		<	2			
BGUA-02	83.53				hJ		75				PR						
BGUA-02	83.55				hJ		30				PR						
BGUA-02	83.60				hJ		40				ST						
BGUA-02	83.63				hJ		50				PR						
BGUA-02	83.67				hJ		90				PR						
BGUA-02	83.83				hJ		70				PR						

Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BGUA - 02 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
BGUA-02	83.85				hJ		35				PR						
BGUA-02	83.88				hJ		65				PR						
BGUA-02	83.89				hJ		20				PR						
BGUA-02	84.11				hJ		45				PR						
BGUA-02	84.14				hJ		30				PR						
BGUA-02	84.35				V		90		wh mi		IR		<	7			
BGUA-02	84.38				hJ		35				PR						
BGUA-02	84.41				V		75		wh mi		PR		<	4			
BGUA-02	84.47				J		10			CT	PR	Sm					
BGUA-02	84.60				J		55			CT	PR	Sm					
BGUA-02	84.61				V		70		wh mi		PR		<	3			
BGUA-02	84.70	84.75			hJs	x2	90				PR						
BGUA-02	84.72				hJ		85				PR						
BGUA-02	84.76				hJ		60				UN						
BGUA-02	84.80				V		20		wh mi		UN		<	3			
BGUA-02	84.93				hJ		75				PR						
BGUA-02	84.95				V		90		wh mi		PR		<	5			
BGUA-02	84.97				V		75		wh mi		PR		<	4			
BGUA-02	85.05				V		90		wh mi		PR		<	5			
BGUA-02	85.06				V		80		wh mi		PR		<	4			
BGUA-02	85.07				V		75		wh mi		UN		<	5			
BGUA-02	85.11				J		60			SN	ST	SS					
BGUA-02	85.13				J		55			SN	PR	SS					
BGUA-02	85.18				hJ		55				ST						
BGUA-02	85.20	88.60			AZ				yl-wh mi		UN						multiple healed defects, generally sub-vertical, 1-20mm width, 30-100mm defect spacing
BGUA-02	85.22				J		30			SN	ST	RF					
BGUA-02	85.26				hJ		75				UN						
BGUA-02	85.30				V		90		yl mi		IR		<	10			
BGUA-02	85.32				V		80		wh mi		PR		<	5			
BGUA-02	85.37				V		80		yl mi		PR		<	5			
BGUA-02	85.44				hJ		65				PR						
BGUA-02	85.48				V		90		yl wh mi		IR		<	10			
BGUA-02	85.50				V		65		yl wh mi		IR		<	25			
BGUA-02	85.58				V		80		yl mi		PR		<	5			
BGUA-02	85.62				V		80		yl mi		PR		<	10			
BGUA-02	85.64				V		75		wh mi		UN		<	7			
BGUA-02	85.70				J		5			SN	ST	SM					
BGUA-02	85.82				V		60		or mi		PR		<	10			
BGUA-02	85.89				J		65			CN	ST	SM					
BGUA-02	85.92				V		70		yl mi		UN		<	10			
BGUA-02	86.04				J		80			CT	PR	SM					
BGUA-02	86.08				J		20			CT	PR	SM					
BGUA-02	86.12				J		60			CN	PR	SM					
BGUA-02	86.22				V		80		yl mi		PR		<	15			
BGUA-02	86.26				hJ		70				PR						
BGUA-02	86.36				J		10			CN	PR	SM					
BGUA-02	86.44				V		80		yl mi		PR		<	4			
BGUA-02	86.45	86.46			Vs	x2	40		yl mi		PR		<	4			
BGUA-02	86.50				V		90		yl mi		IR		<	15			
BGUA-02	86.57				V		90		yl mi		IR		<	4			
BGUA-02	86.70				V		80		yl mi		UN		<	3			
BGUA-02	86.74				V		90		yl mi		IR		<	25			
BGUA-02	86.82				CO		70				PR						
BGUA-02	86.89				V		60		wh mi		UN		<	7			
BGUA-02	86.93				V		90		wh mi		UN		<	10			
BGUA-02	86.98				hJ		85				PR						
BGUA-02	87.08				V		60		yl mi		IR		<	20			
BGUA-02	87.11				V		70		yl mi		IR		<	30			
BGUA-02	87.20				V		80		yl mi		IR		<	5			
BGUA-02	87.24	87.26			hJ		25				PR		<	2			
BGUA-02	87.44				hJ		50				UN						
BGUA-02	87.49				J		25			CN	ST	RF					
BGUA-02	87.55				hJ		90				UN						
BGUA-02	87.63	87.65			hJs	x2	90				UN						
BGUA-02	87.71				J		15			CN	ST	RF					
BGUA-02	87.79				V		80		yl mi		UN		<	20			
BGUA-02	87.80				hJ		70				PR						
BGUA-02	87.87				V		90		yl mi		UN		<	5			
BGUA-02	87.92				V		75		yl mi		UN		<	2			
BGUA-02	87.95				hJ		50				PR						
BGUA-02	87.96				V		75		yl mi		UN		<	20			
BGUA-02	88.15				V		90		yl mi		UN		<	7			
BGUA-02	88.22				Vs	x2	40		yl mi		Cu		<	4			
BGUA-02	88.25	88.28			V		75		yl mi		Cu		<	3			
BGUA-02	88.31				CO		90		wh bk mi		IR		<	5			
BGUA-02	88.34				V		90		yl mi		UN		<	7			
BGUA-02	88.43				V		80		yl mi		UN		<	20			
BGUA-02	88.63				CO		90		yl or mi		UN		<	3			
BGUA-02	88.64				hJ		90				UN						

Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BGUA - 02 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
BGUA-02	88.81				hJs	x3	90				PR						
BGUA-02	88.91				V		90		or br mi		PR		<	3			
BGUA-02	88.95				J		80		br mi	SN	UN	RF					
BGUA-02	89.07				J		85		br mi	SN	PR						
BGUA-02	89.18				CO		80		br mi		UN		<	7			
BGUA-02	89.18	89.20			Js	x2	50				PR						
BGUA-02	89.22				hJ		70				PR						
BGUA-02	89.33				hJ		60				PR						
BGUA-02	89.34	89.43			hJs	x2	65				PR						
BGUA-02	89.54				hJ		40				PR						
BGUA-02	89.55				hJ		65				PR						
BGUA-02	89.61				hJ		65				PR						
BGUA-02	89.65				CO		70		wh mi		UN		<	2			
BGUA-02	89.73				hJ		10				PR						
BGUA-02	89.88				hJ		10				PR						
BGUA-02	89.94				hJ		10				PR						
BGUA-02	90.02				hJ		50				PR						
BGUA-02	90.15				J		70				PR						
BGUA-02	90.20				CO		75				PR						
BGUA-02	90.26				hJ		75				PR						
BGUA-02	90.33				J		65			CN	PR	SM					
BGUA-02	90.35				hJ		60										
BGUA-02	90.40				V		75				PR						
BGUA-02	90.61				J		10			CN	PR	SM					
BGUA-02	90.74				hJ		65				PR						
BGUA-02	90.78				J		40			CN	PR	SM					
BGUA-02	91.14				J		10			CN	PR	SM					
BGUA-02	91.22				hJ		45				UN						
BGUA-02	91.35				J		60			CN	PR	SM					
BGUA-02	91.50				J		55			CN	PR	SM					
BGUA-02	91.88				hJ		80				PR						
BGUA-02	92.17				J		60			CT	PR	SM					
BGUA-02	92.19				hJ		80				PR						
BGUA-02	92.66				J		70			CN	PR	SM					
BGUA-02	92.70				J		70			CT	PR	SM					
BGUA-02	92.77				hJ		70				UN						
BGUA-02	92.80				J		20			CN	PR	SM					
BGUA-02	93.10				hJ		70				PR						
BGUA-02	92.77				hJ		70				UN						
BGUA-02	92.80				J		20			CN	PR	SM					
BGUA-02	93.10				hJ		70				PR						
BGUA-02	93.11				hJ		80				UN						
BGUA-02	93.30				J		10			CN	PR	SM					
BGUA-02	93.35				hJ		60				UN						
BGUA-02	93.36				hJ		60				UN						
BGUA-02	93.50				J		10				PR	SM					
BGUA-02	93.60				hJ		80				PR						
BGUA-02	93.76				V		35		wh mi		PR		<	4			
BGUA-02	94.42				hJ		50				PR						
BGUA-02	94.61				hJ		15				PR						
BGUA-02	94.63				J		15			CN	PR	SM					
BGUA-02	94.75				J		20			CN	PR	SM					
BGUA-02	94.97				hJ		55				PR						
BGUA-02	94.98				V		75		yl mi		PR		<	7			
BGUA-02	95.09				hJ		55				PR						
BGUA-02	95.27	95.60			hJs	x2	70				PR						
BGUA-02	96.28				hJ		70				PR						
BGUA-02	96.75				J		60			CN	PR	SM					
BGUA-02	96.78				V		60			CN	PR						
BGUA-02	97.46				hJ		60				PR						
BGUA-02	97.74	97.93			hJs	x2	80				PR						
BGUA-02	98.34				hJ		40				PR						
BGUA-02	98.51				J		55			CN	PR	SM					
BGUA-02	98.72				J		60			CN	PR	SM					
BGUA-02	98.86				hJ		50				PR						
BGUA-02	98.91	98.92			Vs	x2	70				PR						
BGUA-02	98.97				hJ		60				UN						
BGUA-02	99.13				hJ		80				PR						
BGUA-02	99.14				hJ		30				UN						
BGUA-02	99.21	99.28			hJs	x3	80				PR						
BGUA-02	99.22				hJ		25				PR						
BGUA-02	99.27				hJ		50				PR						
BGUA-02	99.39				J		45			SN	PR	RF					
BGUA-02	99.40				CO												
BGUA-02	99.54				hJ		45				PR						
BGUA-02	99.60				V		5				UN						
BGUA-02	99.63				J		50			CN	PR	RF					
BGUA-02	99.66				J		5			CN							
BGUA-02	99.76				hJ		60				PR						
BGUA-02	99.77				hJ		30				PR						
BGUA-02	99.80				hJ		45				PR						
BGUA-02	99.82				J		60			CN	PR	SM					

Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BGUA - 02 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
BGUA-02	99.86				hJ		70				PR						
BGUA-02	99.92				J		40			CN	PR	SM					
BGUA-02	99.95				hJ		40				PR						
BGUA-02	100.06				J		30			CN	ST	SM					
BGUA-02	100.09				J		75			SN	ST	SM					
BGUA-02	100.14				hJ		35				PR						
BGUA-02	100.17				V		25		wh mi		PR		<	5			
BGUA-02	100.20				hJ		30				PR						
BGUA-02	100.22				V		80		wh mi		PR		<	4			
BGUA-02	100.24				hJ		30				PR						
BGUA-02	100.29				J		30			CN	PR	SM					
BGUA-02	100.34				hJ		20				PR						
BGUA-02	100.36				J		20			CN	PR	SM					
BGUA-02	100.40				V		40		wh mi		PR		<	4			
BGUA-02	100.45				hJ		80				PR						
BGUA-02	100.46				hJ		30				PR						
BGUA-02	100.50				hJ		40				PR						
BGUA-02	100.52				V		15		wh mi		PR		<	7			
BGUA-02	100.56				hJ		60				PR						
BGUA-02	100.59				hJ		5				PR						
BGUA-02	100.62				J		5			CN	PR	SM					
BGUA-02	100.64	100.67			hJs	x2	10				PR						
BGUA-02	100.73				hJ		10				PR						
BGUA-02	100.74				J		50			CN	PR	SM					
BGUA-02	100.86				J		60			CT	PR	SM					
BGUA-02	100.94				hJ		20				PR						
BGUA-02	101.03				hJ		60				PR						
BGUA-02	101.06				hJ		80				PR						
BGUA-02	101.11	101.13			J		50			CT	PR	SM					
BGUA-02	101.14				hJ		50				PR						
BGUA-02	101.25				hJ		90				PR						
BGUA-02	101.27				J		60			CN	PR	SM					
BGUA-02	101.41				V		20		br mi		PR		<	3			
BGUA-02	101.44				hJ		50				PR						
BGUA-02	101.45				J		10			CN	PR						
BGUA-02	101.50	101.52			hJs	x4	55				PR						
BGUA-02	101.55				hJ		55				PR						
BGUA-02	101.57				J		5			CN	PR	SM					
BGUA-02	101.71	101.73			Vs	x3	25		br mi		UN		<	4			
BGUA-02	101.75				hJ		40				PR						
BGUA-02	101.83				V		60		wh br mi		UN		<	6			
BGUA-02	101.88				V		55		wh br mi		UN		<	6			
BGUA-02	101.92	101.95			Vs	x2	55		yl wh mi		UN		<	40			
BGUA-02	102.06				hJ		25				PR						
BGUA-02	102.07				hJ		75				UN						
BGUA-02	102.13				V		30		wh mi		PR		<	5			
BGUA-02	102.21				hJ		30				PR						
BGUA-02	102.22				hJ		40				PR						
BGUA-02	102.26				hJ		60				PR						
BGUA-02	102.28	102.36			Js	x2	20			CN	PR						
BGUA-02	102.31				hJ		20				PR						
BGUA-02	102.37				V		20		wh br mi		PR		<	20			
BGUA-02	102.40				J		60		br mi	CN	PR		<	3			
BGUA-02	102.47				hJ		40				PR						
BGUA-02	102.48	102.58			V		5		wh br mi		PR		<	100			
BGUA-02	102.58				J		15			CN	PR						
BGUA-02	102.61				J		5			CN	PR						
BGUA-02	102.62				V		5		br mi		PR		<	5			
BGUA-02	102.71	102.73			Vs	x2	30		br yl		PR		<	10			
BGUA-02	102.80				hJ		65				PR						
BGUA-02	102.83	102.85			hJ		30				PR						
BGUA-02	103.05				J		10			CN	PR						
BGUA-02	103.31				hJ		20				PR						
BGUA-02	103.36				hJ		60				PR						
BGUA-02	103.39				hJ		55				PR						
BGUA-02	103.40				J		40			CN	PR						
BGUA-02	103.45	103.47			hJ		60				PR						
BGUA-02	103.50																
BGUA-02	103.50	103.52			Vs	x3	30		wh mi		PR		<	4			
BGUA-02	103.58				hJ		50				PR						
BGUA-02	103.62				J		20			CN	PR						
BGUA-02	103.65				V		20		rd mi		PR		<	3			
BGUA-02	103.70	103.71			hJs	x2	70				PR						
BGUA-02	103.81				hJ		10				PR						
BGUA-02	103.89				J		20			CN	PR	SM					
BGUA-02	104.12				hJ		50				PR						
BGUA-02	104.16				hJ		90				PR						
BGUA-02	104.20	104.41			Js	x2	35			CN	PR	SM					
BGUA-02	104.37				hJ		65				PR						

Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BGUA - 02 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
BGUA-02	104.48				hJ		55				PR						
BGUA-02	104.51				J		5			CN	PR	SM					
BGUA-02	104.53				J		30		bk mi	SN	PR	SM					
BGUA-02	104.80	104.84			hJs	x3	60				PR						
BGUA-02	104.83				J		60			CN	PR	SM					
BGUA-02	104.85	104.86			hJs	x3	60				PR						
BGUA-02	105.03				J		15			CN	PR	RF					
BGUA-02	105.08				hJ		80				ST						
BGUA-02	105.11				hJ		70				UN						
BGUA-02	105.17				hJ		90				UN						
BGUA-02	105.25				hJ		30				PR						
BGUA-02	105.37				J		60			CT	PR	SM					
BGUA-02	105.39				hJ		70				PR						
BGUA-02	105.41	105.42			hJs	x2	15				PR						
BGUA-02	105.53				J		10			SN	UN	RF					
BGUA-02	105.57				hJ		5				ST						
BGUA-02	105.58				hJ		10				PR						
BGUA-02	105.61				J		50			CN	PR	RF					
BGUA-02	105.75				hJ		30				UN						
BGUA-02	105.79				hJ		25				UN						
BGUA-02	105.82				hJ		50				PR						
BGUA-02	105.83				hJ		40				PR						
BGUA-02	105.87				hJ		80				PR						
BGUA-02	105.88				hJ		5				PR						
BGUA-02	105.91				hJ		65				PR						
BGUA-02	105.93				hJ		70				PR						
BGUA-02	106.04				hJ		30				PR						
BGUA-02	106.08				hJ		55				PR						
BGUA-02	106.12				J		40			CN	PR	SM					
BGUA-02	106.16				hJ		60				PR						
BGUA-02	106.25				hJ		60				PR						
BGUA-02	106.26				hJ		15				PR						
BGUA-02	106.27	106.29			hJs	x4	10				PR						
BGUA-02	106.43				J		30			CT	PR	RF					
BGUA-02	106.54	106.74			Js	x2	50			CT	PR	RF					
BGUA-02	106.62				hJ		10				PR						
BGUA-02	106.71				hJ		66				ST						
BGUA-02	106.97				J		10			CN	PR	SM					
BGUA-02	107.09				hJ		60				PR						
BGUA-02	107.12				J		85			CN	PR	SM					
BGUA-02	107.21				J		10			CN	PR	RF					
BGUA-02	107.36				hJ		85				UN						
BGUA-02	107.39				J		40			CN	PR	SM					
BGUA-02	107.41				J		10			CN	PR	SM					
BGUA-02	107.52				hJ		5				PR						
BGUA-02	107.61	108.06			Js	x4	50			CN	PR	SM					
BGUA-02	107.76	107.77			hJs	x2	50				PR						
BGUA-02	107.82				hJ		10				PR						
BGUA-02	107.87	107.89			hJs	x2	60				PR						
BGUA-02	107.96				hJ		55				PR						
BGUA-02	108.22				J		60			VN	PR	SM					
BGUA-02	108.37				J		10			CN	PR	SM					
BGUA-02	108.40				J		80			CN	PR	SM					
BGUA-02	108.51				hJ		10				PR						
BGUA-02	108.70				hJs	x2	60				PR						
BGUA-02	108.76				hJ		45				PR						
BGUA-02	108.80				hJ		10				PR						
BGUA-02	108.87				J		15			CN	PR	SM					
BGUA-02	108.90				hJ		45				PR						
BGUA-02	108.92	108.96			hJs	x2	5		yl		PR						
BGUA-02	109.05	109.11			hJs	x2	5		bk		PR						
BGUA-02	109.12	109.16			hJs	x2	5		bk		PR						
BGUA-02	109.34				J		5			CN	PR	SM					
BGUA-02	109.63				J		20			CN	PR	SM					
BGUA-02	109.72	109.73			hJs	x2	20		bk		PR						
BGUA-02	109.74				J		20			CN	PR	SM					
BGUA-02	109.86				hJ		5				PR						
BGUA-02	109.89				hJ		25				PR						
BGUA-02	109.91				hJ		25		bk		PR						
BGUA-02	109.94				hJ		20		bk		PR						
BGUA-02	109.96				hJ		10		bk		PR						
BGUA-02	110.09				V		90		wh mi		PR						
BGUA-02	110.14				J		50			CN	PR	SM					
BGUA-02	110.17	110.23					20		basalt intrusion		PR						
BGUA-02	110.25	110.29			hJs	x2	5		yl		PR						
BGUA-02	110.32				hJ		85		bk yl		UN						
BGUA-02	110.41				hJ		5		gr yl		PR						
BGUA-02	110.43				hJ		10		gr yl		PR						
BGUA-02	110.47				hJ						IR						

Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BGUA - 02 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
BGUA-02	110.52	110.56			hJs	x2	5		gr		PR						
BGUA-02	110.62				J		5			CN	PR	SM					
BGUA-02	110.67				hJ		0		yl		PR						
BGUA-02	110.73				hJ		10		gr		PR						
BGUA-02	110.81				hJ		5		gr		PR						
BGUA-02	110.85				hJ		10		yl		PR						
BGUA-02	110.86	110.88			hJs	x2	5		yl		PR						
BGUA-02	110.91				hJ		15		yl		PR						
BGUA-02	110.93	110.96			hJs	x3	15		bk		PR						
BGUA-02	111.03				hJ		5				PR						
BGUA-02	111.07				J		10			CN	PR	SM					
BGUA-02	111.11				hJ		5		yl		PR						
BGUA-02	111.13				hJ		30		wh		PR						
BGUA-02	111.17	111.22			hJs	x2	30		bk yl		PR						
BGUA-02	111.27				hJ		60		yl		PR						
BGUA-02	111.31	111.35			hJs	x2	5		yl		PR						
BGUA-02	111.36	111.46			hJs	x2	45		yl		PR						
BGUA-02	111.38				hJ		60		yl		PR						
BGUA-02	111.41	111.44			hJs	x3	5		yl		PR						
BGUA-02	111.52				hJ		10		wh yl		PR						
BGUA-02	111.58				J		20			CN	PR	RF					
BGUA-02	111.61				hJ		55		yl		PR						
BGUA-02	111.64	111.69			hJs	x2	5		yl		PR						
BGUA-02	111.85				J		45			CN	PR	RF					
BGUA-02	111.92				hJ		45				PR						
BGUA-02	112.03				hJ		15				PR						
BGUA-02	112.04	112.06			hJs	x2	10				PR						
BGUA-02	112.16				J		45			CN	PR	SM					
BGUA-02	112.25				hJ		60				PR						
BGUA-02	112.29				J		20			CN	PR	SM					
BGUA-02	112.36				hJ		30				PR						
BGUA-02	112.39	112.47			hJs	x2	5		bk		PR						
BGUA-02	112.41				J		60			CN	PR	SM					
BGUA-02	112.53	112.90			hJs	x6	15	20			PR						
BGUA-02	113.04				V		30		yl		PR		<	2			
BGUA-02	113.13				V		25		yl		PR		<	2			
BGUA-02	113.16				V		40		yl		PR		<	2			
BGUA-02	113.21	114.41			Vs	x8	30		yl		PR		<	2			
BGUA-02	113.28	114.53			Vs	x12	35		yl		PR		<	2			
BGUA-02	113.48				J		40			CN	PR						
BGUA-02	113.53				J		45			CN	PR						
BGUA-02	113.92				V		25				PR						
BGUA-02	114.11				J		40			CN	PR	RF					
BGUA-02	114.60				V		85		bk/gr		PR		<	30			
BGUA-02	114.65				J		20			CN	PR	RF					
BGUA-02	114.68				J		40			CN	PR	RF					
BGUA-02	114.72				hJ		40				PR						
BGUA-02	114.82				V		30		yl		PR		<	3			
BGUA-02	114.90				V		90		bk		UN		<	15			
BGUA-02	115.08				J		5		yl mi	CN	PR	RF	<	3			
BGUA-02	115.09				V		25				UN						
BGUA-02	115.13	115.14			Vs	x2	20				PR						
BGUA-02	115.17				V		45				PR						
BGUA-02	115.23				V		55		yl mi		PR		<	4			
BGUA-02	115.24				J		5			CN	PR	RF					
BGUA-02	115.33				hJ		10				PR						
BGUA-02	115.36				hJ		60				PR						
BGUA-02	115.42				hJ		25				PR						
BGUA-02	115.43	115.57			Vs	x3	70		bk mi		PR		<	3			
BGUA-02	115.55				J		35			CN	PR	RF					
BGUA-02	115.62	115.64			J		60			CN	PR	RF					
BGUA-02	115.70				J		50			CN	PR	RF					
BGUA-02	115.78	115.85			Js	x2	65			CN	PR	RF					
BGUA-02	115.79				V		65		gn mi		PR		<	3			
BGUA-02	115.83	115.99			Js		20	70	bk mi	SN	PR	SM					multiple defects, 10-30mm spacing
BGUA-02	116.03	116.07			V	x3	60		gn mi		PR		<	20			
BGUA-02	116.15	116.18			J	x2	45			CN	PR						
BGUA-02	116.21				J		20				PR						
BGUA-02	116.22				J		60			CN	PR	RF					
BGUA-02	116.30	116.36			J	x2	20		bk-gy mi	SN	PR	RF					
BGUA-02	116.42	116.47			hJ	x3	10				PR						
BGUA-02	116.50				hJ		45				PR						
BGUA-02	116.54	116.60			V		5		gn mi		PR		<	70			
BGUA-02	116.57				J		35			CN	ST	RF					
BGUA-02	116.61	116.70			V	x5	30		gn mi		PR		<	4			
BGUA-02	116.77				J		5			CN	PR	RF					
BGUA-02	116.87				J		20			CN	PR	RF					
BGUA-02	116.97				V		65				PR						
BGUA-02	117.04	117.07			hJs	x2	20		wh mi		PR		<	3			

Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BGUA - 02 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
BGUA-02	117.10	117.22			Js	x2	5			CN	PR	RF					
BGUA-02	117.34				J		65			CN	PR	RF					
BGUA-02	117.46				J		30			CN	PR	RF					
BGUA-02	117.53	117.55			Vs	x2	10		yl mi		PR		<	5			
BGUA-02	117.77				J		5			CN	PR	RF					
BGUA-02	117.83				V		5		wh mi		PR		<	4			
BGUA-02	117.98				J		50			CN	PR	SM					
BGUA-02	118.03				V		40		wh mi		PR		<	6			
BGUA-02	118.05				J		0			CN	UN	SM					
BGUA-02	118.08				J		20		bk, gr mi	SN	UN	RF					
BGUA-02	118.25	118.35			Vs	x3	0				PR						
BGUA-02	118.29				V		10		bk mi		PR		<	40			
BGUA-02	118.31				hJ		25				UN						
BGUA-02	118.39				hJ		60				PR						
BGUA-02	118.42				J		60			CN	PR	SM					
BGUA-02	118.54	118.57			hJs	x2	60				PR						
BGUA-02	118.55				hJ		5				PR						
BGUA-02	118.61	118.67			hJs	x2	5				PR						
BGUA-02	118.71	118.75			hJs	x2	50				PR						
BGUA-02	118.83				J		5			CN	PR	SM					
BGUA-02	118.88				hJ		5			CN	PR						
BGUA-02	118.99				J		15			CN	PR	SM					
BGUA-02	119.06				hJ		20				PR						
BGUA-02	119.18	119.68			Vs	x3	5		yl mi		PR		<	2			
BGUA-02	119.25				V		60		bk mi		PR		<	5			
BGUA-02	119.29	119.39			Vs	x4	10		yl mi		PR		<	2			
BGUA-02	119.45				V		55		yl mi		PR		<	3			
BGUA-02	119.64				V		65		yl mi		PR		<	2			
BGUA-02	119.73				V		30				PR						
BGUA-02	119.78				J		0			CN	UN	RF					

PointID : BGUA-02 Depth Range: 1.00 - 5.00 m

PointID : BGUA-02 Depth Range: 5.00 - 9.00 m

wsp	TITLE: Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BGUA-02	DRAWN: RC	DATE: 13/11/2024
		CHECKED: GEM	DATE: 4/12/2024
		SCALE: Not To Scale	A4
		PROJECT No: PS138693	FIGURE No: 1/15

PointID : BGUA-02 Depth Range: 9.00 - 13.00 m

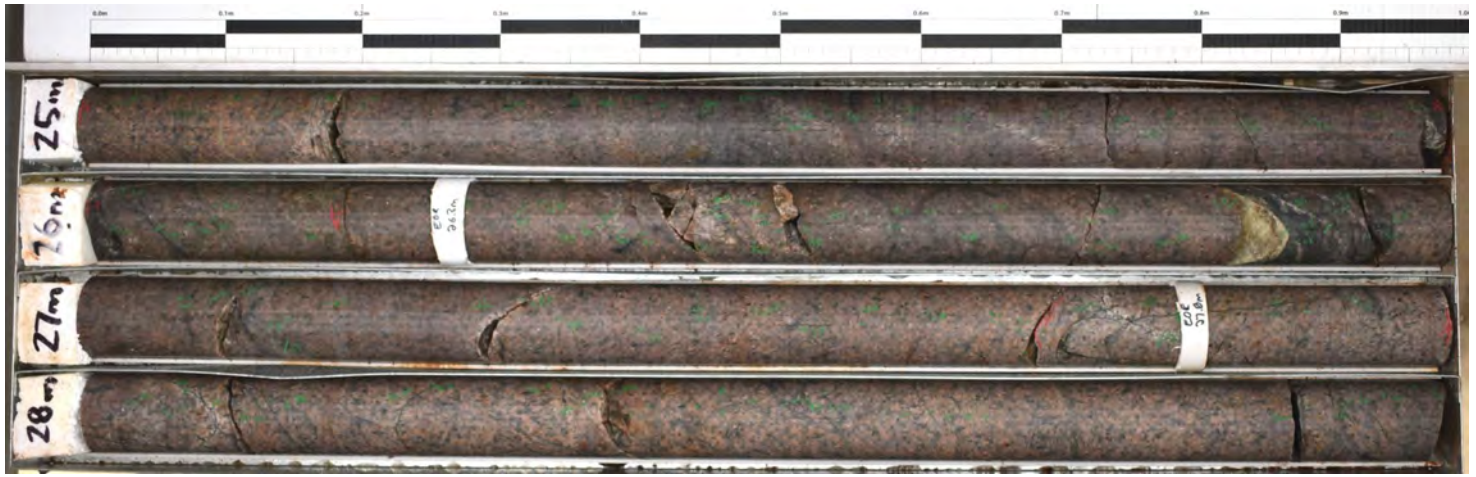
PointID : BGUA-02 Depth Range: 13.00 - 17.00 m

wsp	TITLE: Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BGUA-02	DRAWN: RC	DATE: 13/11/2024
		CHECKED: GEM	DATE: 4/12/2024
		SCALE: Not To Scale	A4
		PROJECT No: PS138693	FIGURE No: 2/15

PointID : BGUA-02 Depth Range: 17.00 - 21.00 m

PointID : BGUA-02 Depth Range: 21.00 - 25.00 m

wsp	TITLE: Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BGUA-02	DRAWN: RC	DATE: 13/11/2024
		CHECKED: GEM	DATE: 4/12/2024
		SCALE: Not To Scale	A4
		PROJECT No: PS138693	FIGURE No: 3/15



PointID : BGUA-02 Depth Range: 25.00 - 29.00 m

PointID : BGUA-02 Depth Range: 29.00 - 33.00 m

wsp	TITLE: Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BGUA-02	DRAWN: RC	DATE: 13/11/2024
		CHECKED: GEM	DATE: 4/12/2024
		SCALE: Not To Scale	A4
		PROJECT No: PS138693	FIGURE No: 4/15

PointID : BGUA-02 Depth Range: 33.00 - 37.00 m

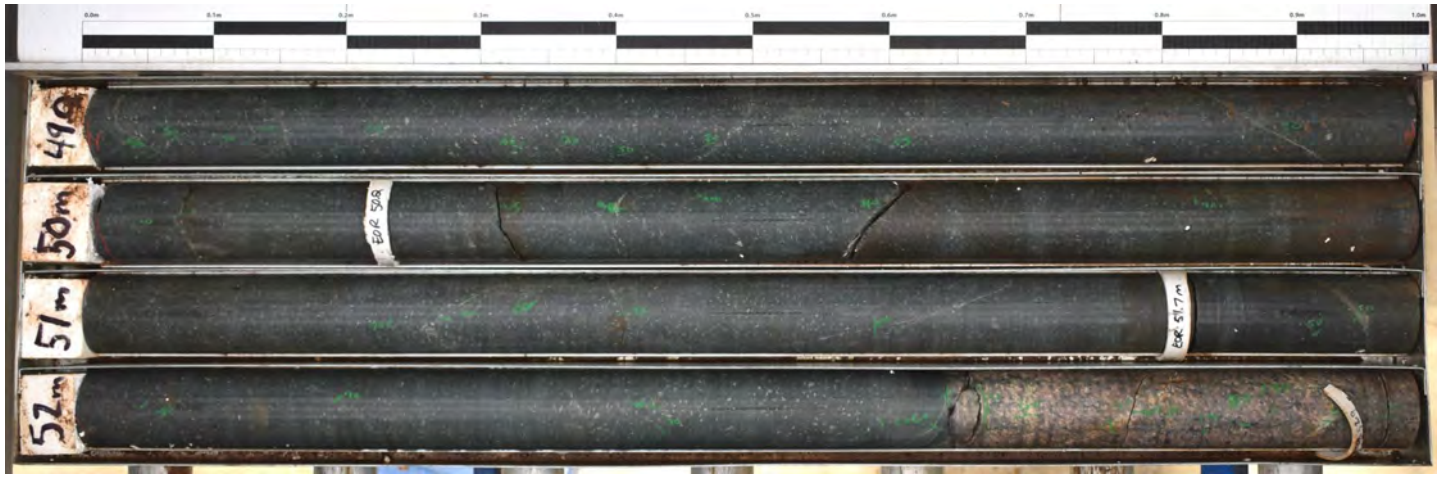
PointID : BGUA-02 Depth Range: 37.00 - 41.00 m

wsp	TITLE: Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BGUA-02	DRAWN: RC	DATE: 13/11/2024
		CHECKED: GEM	DATE: 4/12/2024
		SCALE: Not To Scale	A4
		PROJECT No: PS138693	FIGURE No: 5/15

PointID : BGUA-02 Depth Range: 41.00 - 45.00 m

PointID : BGUA-02 Depth Range: 45.00 - 49.00 m

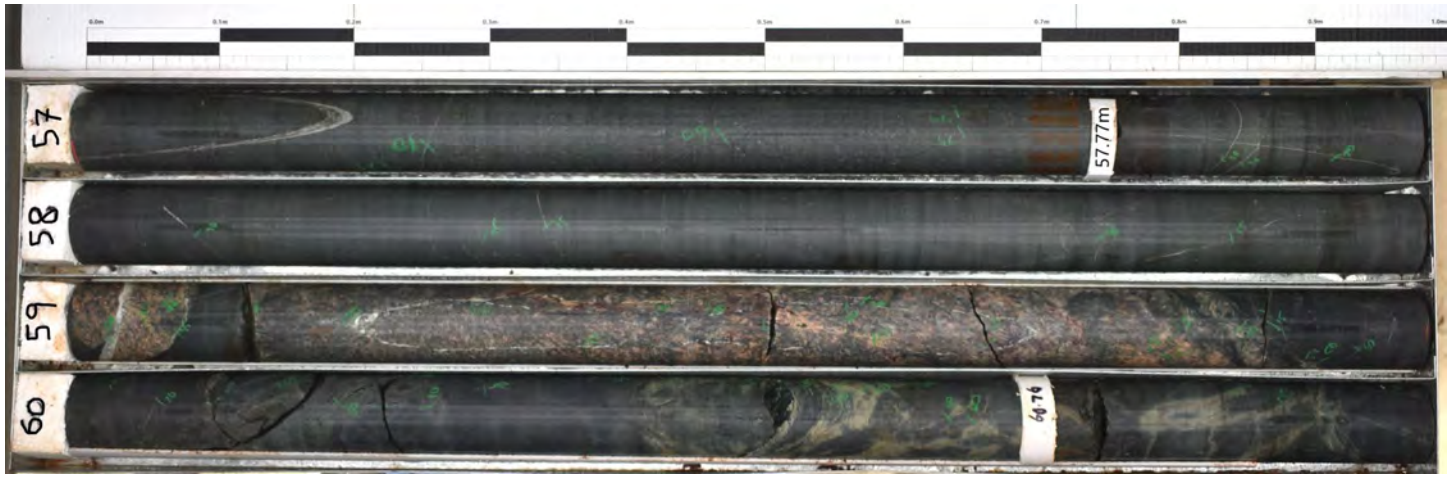
wsp	TITLE: Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BGUA-02	DRAWN: RC	DATE: 13/11/2024
		CHECKED: GEM	DATE: 4/12/2024
		SCALE: Not To Scale	A4
		PROJECT No: PS138693	FIGURE No: 6/15



PointID : BGUA-02 Depth Range: 49.00 - 53.00 m

PointID : BGUA-02 Depth Range: 53.00 - 57.00 m

wsp	TITLE: Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BGUA-02	DRAWN: RC	DATE: 13/11/2024
		CHECKED: GEM	DATE: 4/12/2024
		SCALE: Not To Scale	A4
		PROJECT No: PS138693	FIGURE No: 7/15

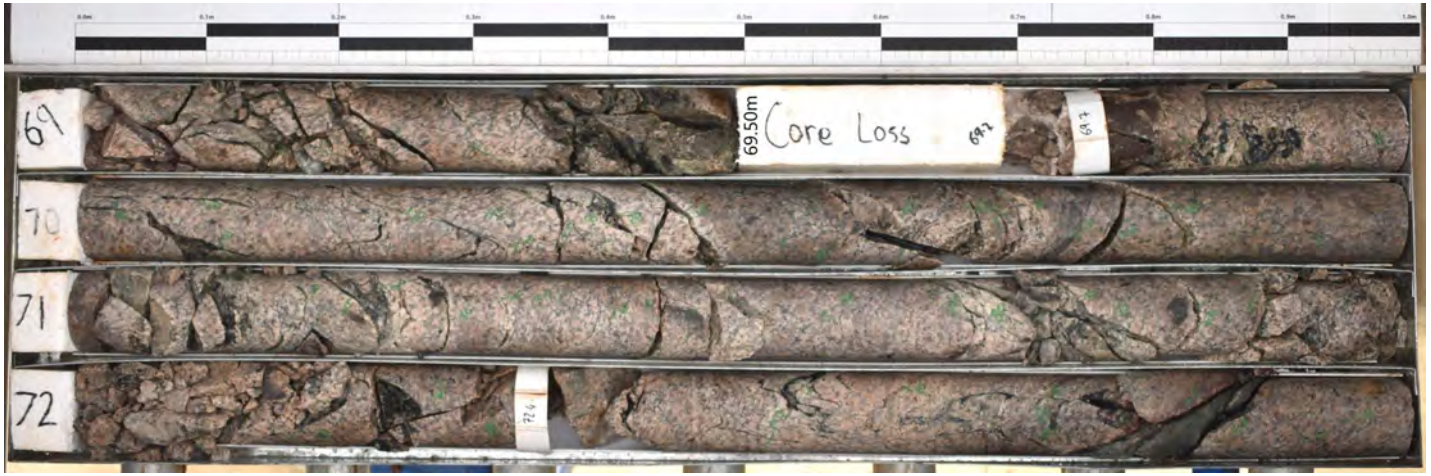


PointID : BGUA-02 Depth Range: 57.00 - 61.00 m

PointID : BGUA-02 Depth Range: 61.00 - 65.00 m

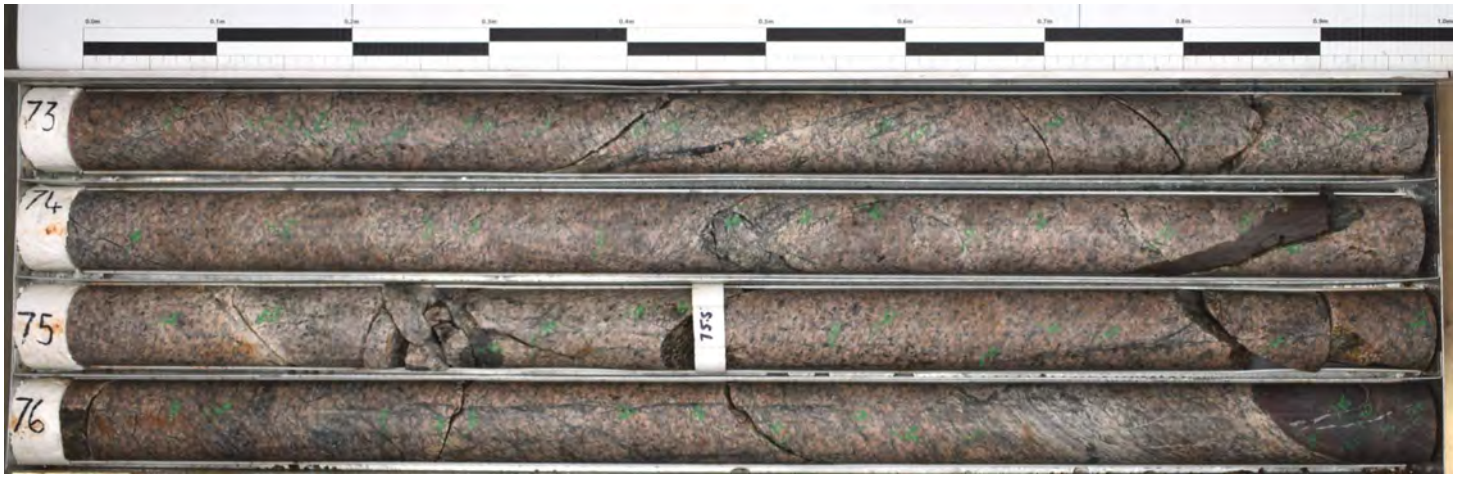
wsp	TITLE: Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BGUA-02	DRAWN: RC	DATE: 13/11/2024
		CHECKED: GEM	DATE: 4/12/2024
		SCALE: Not To Scale	A4
		PROJECT No: PS138693	FIGURE No: 8/15

PointID : BGUA-02 Depth Range: 65.00 - 69.00 m



PointID : BGUA-02 Depth Range: 69.00 - 73.00 m

wsp	TITLE: Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BGUA-02	DRAWN: RC	DATE: 13/11/2024
		CHECKED: GEM	DATE: 4/12/2024
		SCALE: Not To Scale	A4
		PROJECT No: PS138693	FIGURE No: 9/15



PointID : BGUA-02 Depth Range: 73.00 - 77.00 m

PointID : BGUA-02 Depth Range: 77.00 - 81.00 m

wsp	TITLE: Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BGUA-02	DRAWN: RC	DATE: 13/11/2024
		CHECKED: GEM	DATE: 4/12/2024
		SCALE: Not To Scale	A4
		PROJECT No: PS138693	FIGURE No: 10/15

PointID : BGUA-02 Depth Range: 81.00 - 85.00 m

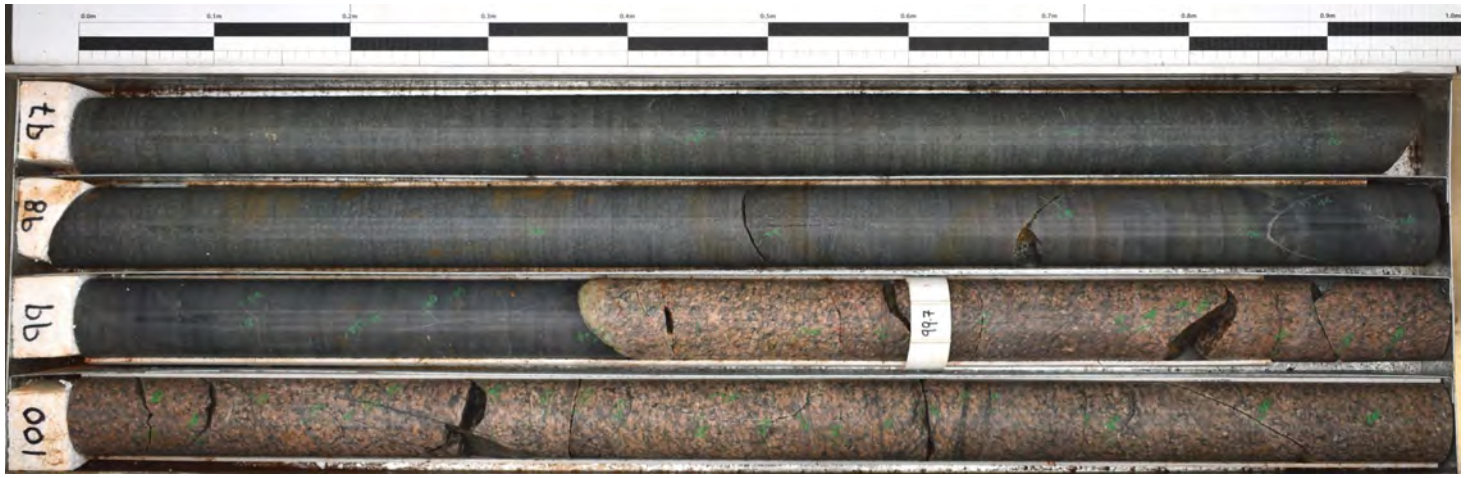
PointID : BGUA-02 Depth Range: 85.00 - 89.00 m

wsp	TITLE: Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BGUA-02	DRAWN: RC	DATE: 13/11/2024
		CHECKED: GEM	DATE: 4/12/2024
		SCALE: Not To Scale	A4
		PROJECT No: PS138693	FIGURE No: 11/15

PointID : BGUA-02 Depth Range: 89.00 - 93.00 m

PointID : BGUA-02 Depth Range: 93.00 - 97.00 m

wsp	TITLE: Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BGUA-02	DRAWN: RC	DATE: 13/11/2024
		CHECKED: GEM	DATE: 4/12/2024
		SCALE: Not To Scale	A4
		PROJECT No: PS138693	FIGURE No: 12/15



PointID : BGUA-02 Depth Range: 97.00 - 101.00 m

PointID : BGUA-02 Depth Range: 101.00 - 105.00 m

wsp	TITLE: Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BGUA-02	DRAWN: RC	DATE: 13/11/2024
		CHECKED: GEM	DATE: 4/12/2024
		SCALE: Not To Scale	A4
		PROJECT No: PS138693	FIGURE No: 13/15

PointID : BGUA-02 Depth Range: 105.00 - 109.00 m

PointID : BGUA-02 Depth Range: 109.00 - 113.00 m

wsp	TITLE: Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BGUA-02	DRAWN: RC	DATE: 13/11/2024
		CHECKED: GEM	DATE: 4/12/2024
		SCALE: Not To Scale	A4
		PROJECT No: PS138693	FIGURE No: 14/15

PointID : BGUA-02 Depth Range: 113.00 - 117.00 m

PointID : BGUA-02 Depth Range: 117.00 - 120.13 m

wsp	TITLE: Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BGUA-02	DRAWN: RC	DATE: 13/11/2024
		CHECKED: GEM	DATE: 4/12/2024
		SCALE: Not To Scale	A4
		PROJECT No: PS138693	FIGURE No: 15/15

BGUA-02 Structural Logs

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

GEOPHYSICAL RECORD OF BOREHOLE: BGUA-02

PROJECT: Pioneer-Burdekin PHES | JOB # PS138693
CLIENT: Queensland Hydro | DATE: 19 September 2024

BOREHOLE DETAILS

LOCATION:	Lower Reservoir	BH DEPTH:	120.00
EASTING:	657838.58 m E	BH DIAMETER:	96 mm (HQ)
NORTHING:	7667647.08 m E	BH AZIMUTH:	078°
ELEVATION:	853.477 m	BH PLUNGE:	-69°
COORD SYSTEM:	MGA2020-55	CASING DEPTH:	8.74 m
LOGGING DATUM:	Ground Level	CASING TYPE:	HWT

DOCUMENT DETAILS

LOGGED BY:	GH/JH
LOGGED DATE:	04-05/04/2024
DRAWN BY:	SB
REVIEWED BY:	GH
FILE:	BGUA-02_Struct_RevC
LOGGED DEPTH:	116.77 m

NOTES

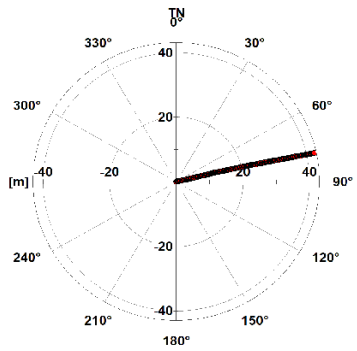
Image logs are oriented relative to borehole high side. Final structures corrected to true north using magnetic declination of 8.2 deg East.

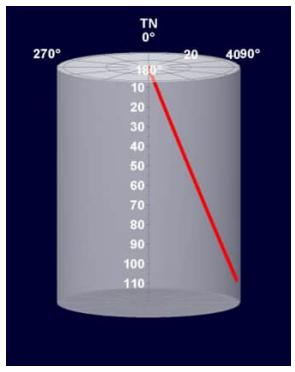
Mechanical calliper log used for structure dip corrections.

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

Fall-in at bottom of hole reduced final depth and wedged against some tools. Calliper tool briefly stuck at 116.6 m.

BOREHOLE DEVIATION

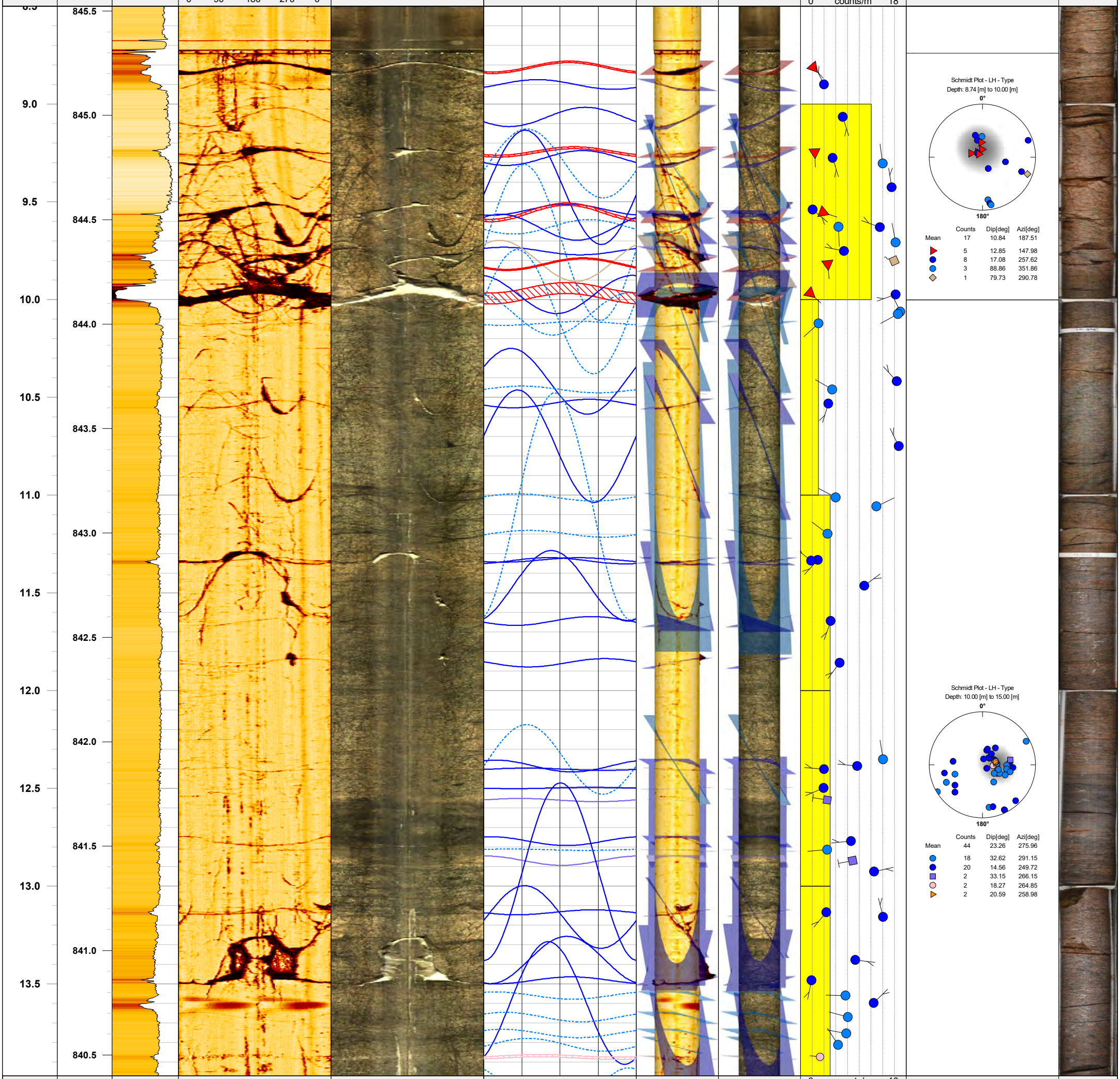




INTERPRETED STRUCTURES

Contact | Crushed Seam | Extremely Weathered Seam | Joint | Shear Seam | Sheared Surface
Shear Zone | Vein | Healed Joint | Drilling-Induced Fracture

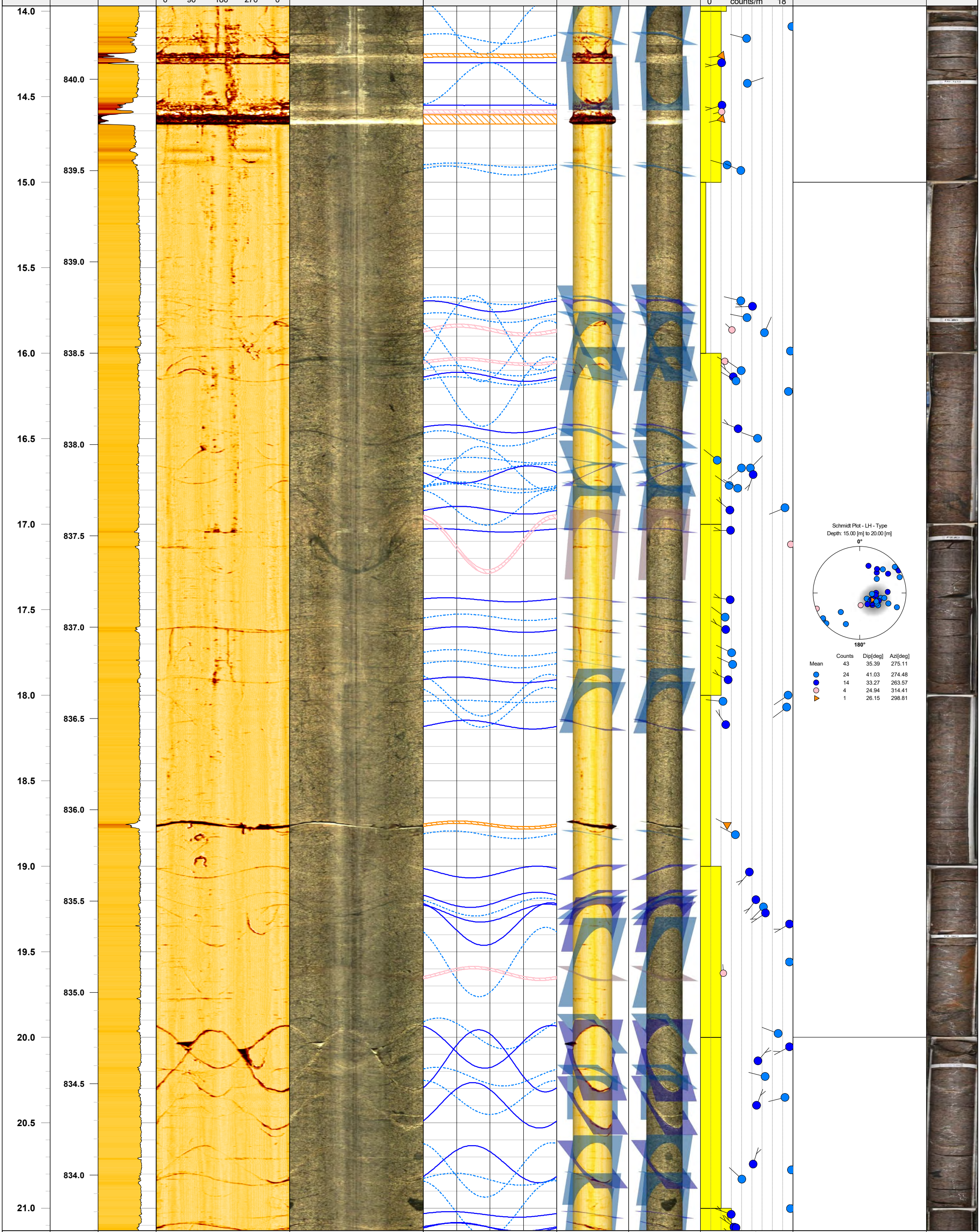
BGUA-02



BGUA-02

BGUA-02

Depth		Image Logs			Structural Data					Core
Depth	RL m	Reflectivity	Amplitude-HS HPF	Image-HS PROC	Apparent Structures	3D ATV	3D OTV	Structures - TN	Stereoplots	Core Photo
1m:20m	AHD	0 9000	0 6000 0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	-0°	-0°	0 90 Freq/metre 0 counts/m 18	Schmidt Plot - LH - Type	



Schmidt Plot - LH - Type
Depth: 15.00 [m] to 20.00 [m]

0°

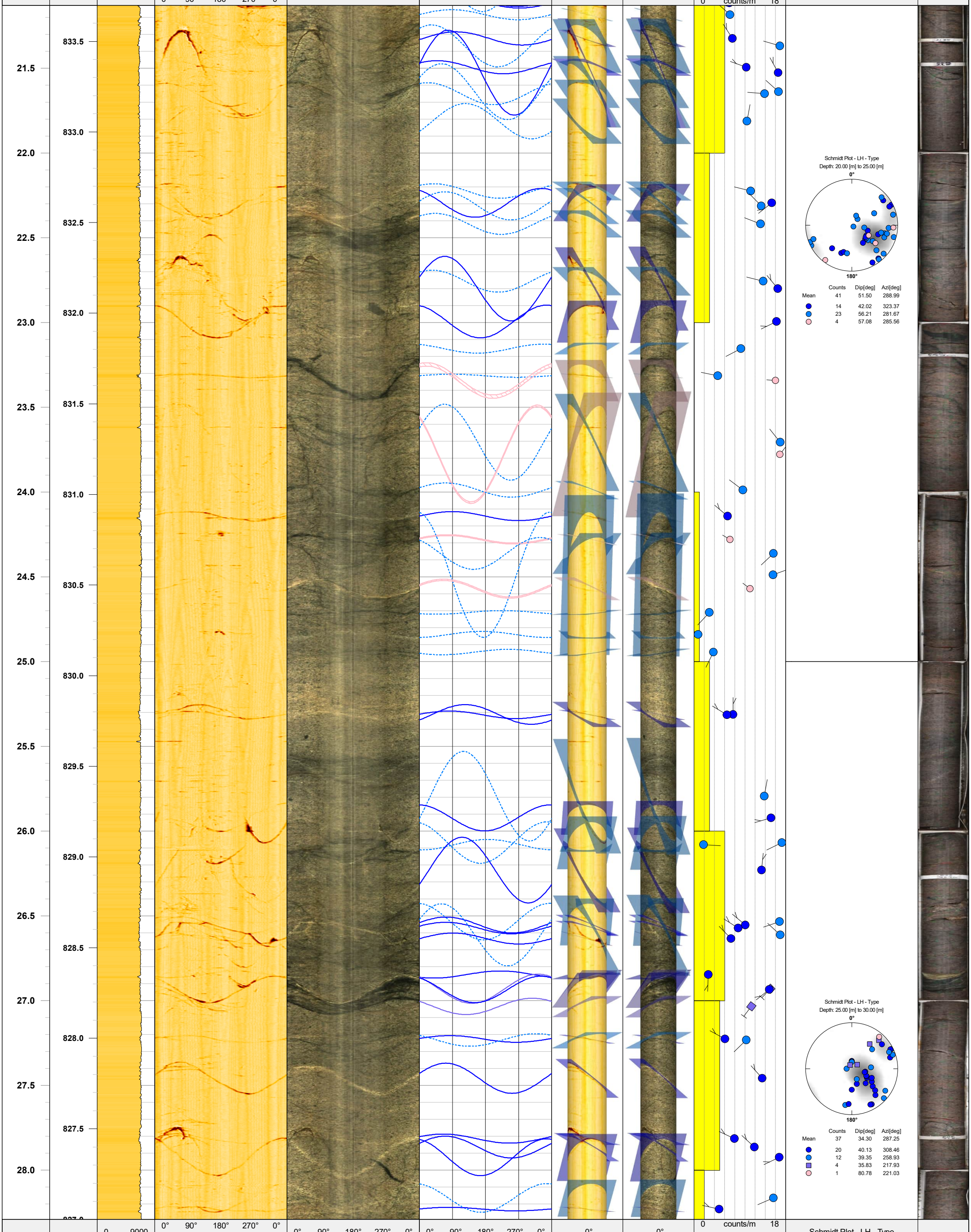
180°

	Counts	Dip[deg]	Azi[deg]
Mean	43	35.39	275.11
	24	41.03	274.48
	14	33.27	263.57
	4	24.94	314.41
	1	26.15	298.81

1m:20m	AHD	0 9000	0° 90° 180° 270° 0° 0 6000	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	-0°	-0°	0 counts/m 18 Freq/metre 0 90	Schmidt Plot - LH - Type	Core Photo
Depth	RL m	Reflectivity	Amplitude-HS HPF	Image-HS PROC	Apparent Structures	3D ATV	3D OTV	Structures - TN	Stereoplots	
Depth		Image Logs			Structural Data					Core
BGUA-02										

BGUA-02

Depth		Image Logs			Structural Data					Core
Depth 1m:20m	RL m AHD	Reflectivity 0 9000	Amplitude-HS HPF 0 6000 0° 90° 180° 270° 0°	Image-HS PROC 0° 90° 180° 270° 0°	Apparent Structures 0° 90° 180° 270° 0°	3D ATV -0°	3D OTV -0°	Structures - TN 0 90 Freq/metre 0 counts/m 18	Stereoplots Schmidt Plot - LH - Type	Core Photo

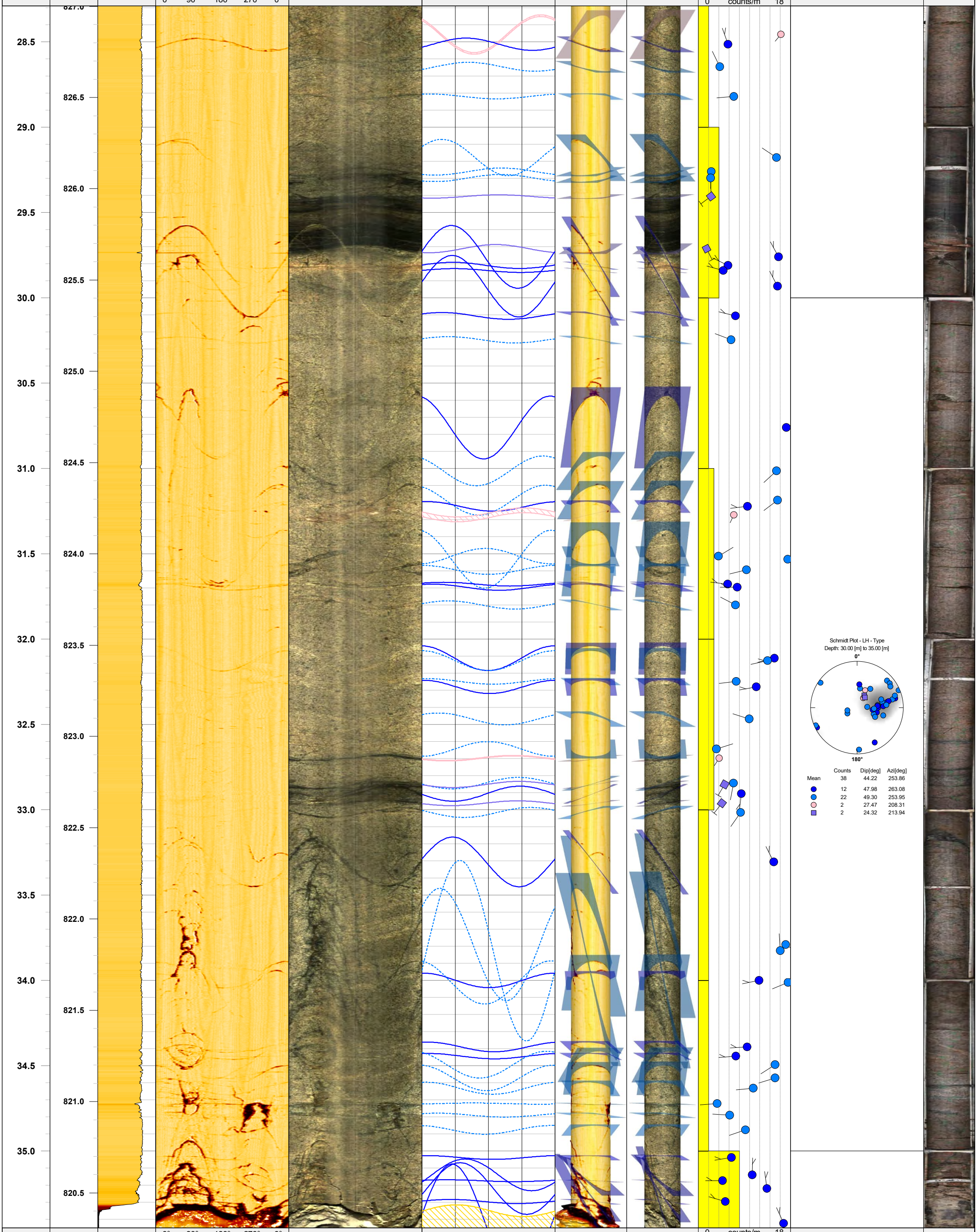


Depth		Image Logs			Structural Data					Core
1m:20m Depth	AHD RL m	0 9000 Reflectivity	0° 90° 180° 270° 0° 0 6000 Amplitude-HS HPF	0° 90° 180° 270° 0° Image-HS PROC	0° 90° 180° 270° 0° Apparent Structures	-0° 3D ATV	-0° 3D OTV	0 counts/m 18 Freq/metre 0 90 Structures - TN	Schmidt Plot - LH - Type Stereoplots	Core Photo

BGUA-02

BGUA-02

Depth		Image Logs			Structural Data					Core
Depth	RL m	Reflectivity	Amplitude-HS HPF	Image-HS PROC	Apparent Structures	3D ATV	3D OTV	Structures - TN	Stereoplots	Core Photo
1m:20m	AHD	0 9000	0 6000 0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	-0°	-0°	0 90 Freq/metre 0 counts/m 18	Schmidt Plot - LH - Type	



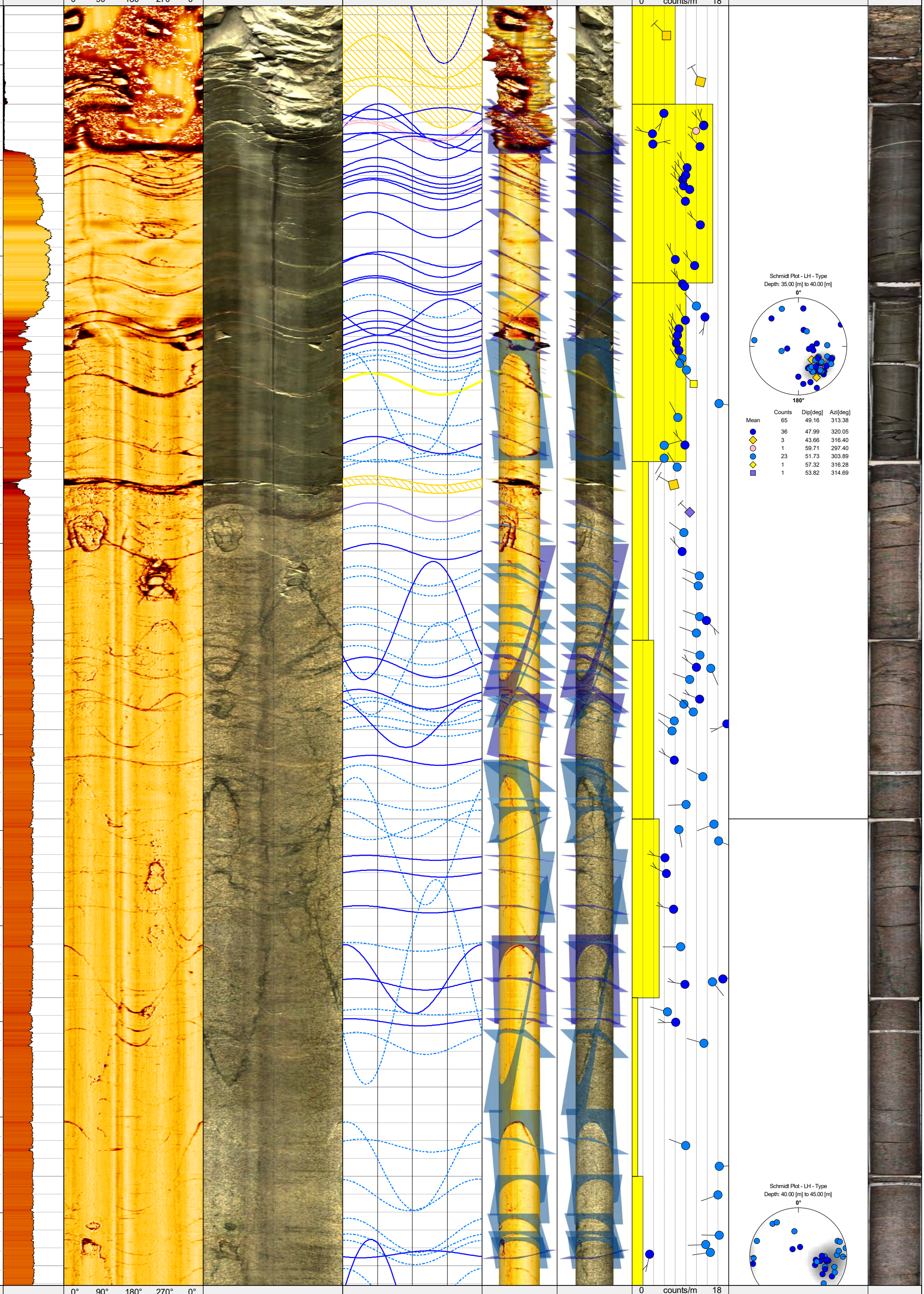
Depth		Image Logs			Structural Data					Core
Depth	RL m	Reflectivity	Amplitude-HS HPF	Image-HS PROC	Apparent Structures	3D ATV	3D OTV	Structures - TN	Stereoplots	Core Photo
1m:20m	AHD	0 9000	0 6000 0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	-0°	-0°	0 90 Freq/metre 0 counts/m 18	Schmidt Plot - LH - Type	

BGUA-02

BGUA-02

Depth		Image Logs			Structural Data					Core
Depth	RL m	Reflectivity	Amplitude-HS HPF	Image-HS PROC	Apparent Structures	3D ATV	3D OTV	Structures - TN	Stereoplots	Core Photo
1m:20m	AHD	0 9000	0 6000 0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	-0°	-0°	0 90 Freq/metre 0 counts/m 18	Schmidt Plot - LH - Type	

35.5 820.0 36.0 819.5 36.5 819.0 37.0 818.5 37.5 818.0 38.0 817.5 38.5 817.0 39.0 816.5 39.5 816.0 40.0 815.5 40.5 815.0 41.0 814.5 41.5 814.0 42.0 42.5

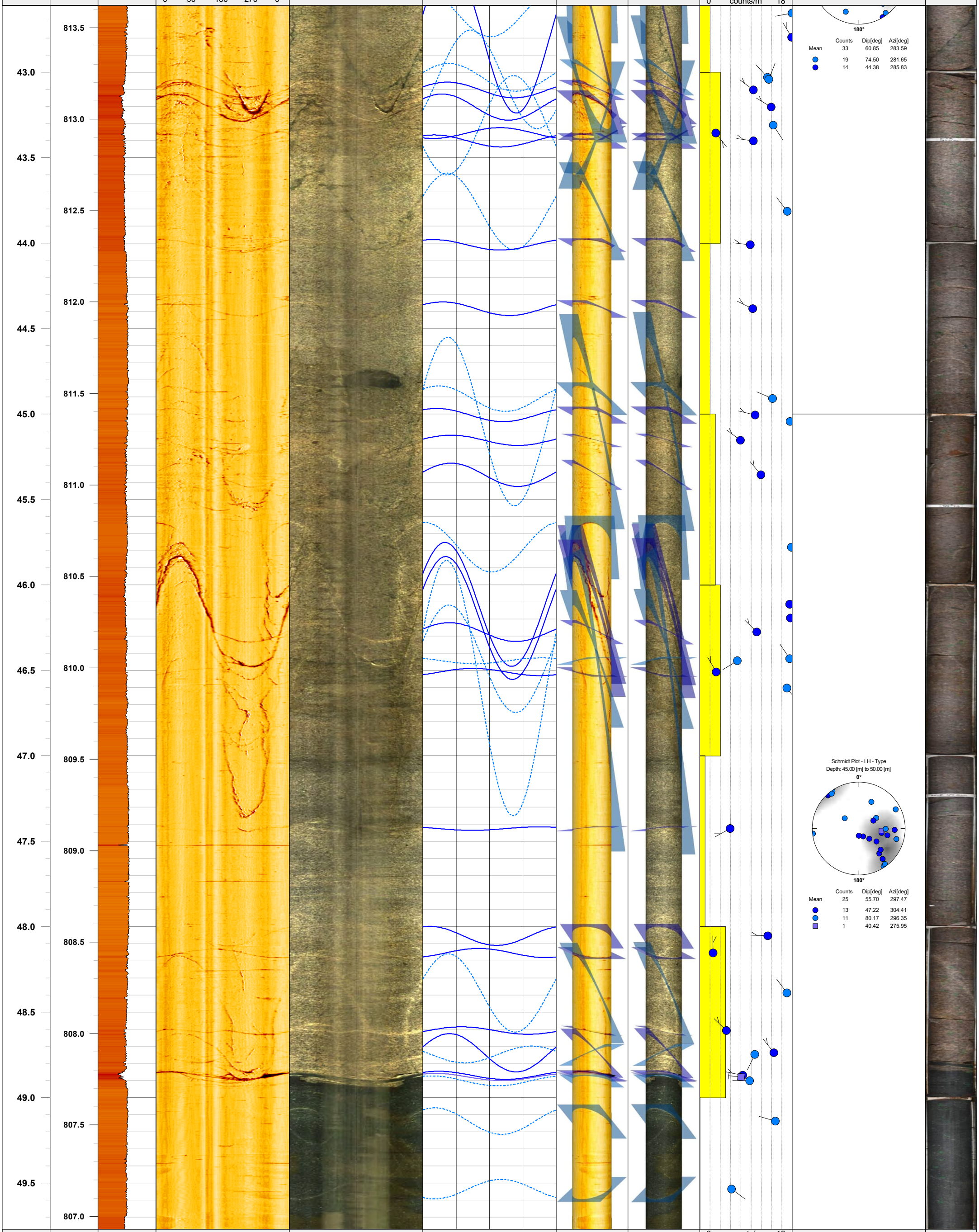


1m:20m	AHD	0 9000	0° 90° 180° 270° 0° 0 6000	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	-0°	-0°	0 counts/m 18 Freq/metre 0 90	Schmidt Plot - LH - Type	
Depth	RL m	Reflectivity	Amplitude-HS HPF	Image-HS PROC	Apparent Structures	3D ATV	3D OTV	Structures - TN	Stereoplots	Core Photo
Depth		Image Logs			Structural Data					Core

BGUA-02

BGUA-02

Depth		Image Logs			Structural Data					Core
Depth	RL m	Reflectivity	Amplitude-HS HPF	Image-HS PROC	Apparent Structures	3D ATV	3D OTV	Structures - TN	Stereoplots	Core Photo
1m:20m	AHD	0 9000	0 6000 0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	-0°	-0°	0 90 Freq/metre 0 counts/m 18	Schmidt Plot - LH - Type	

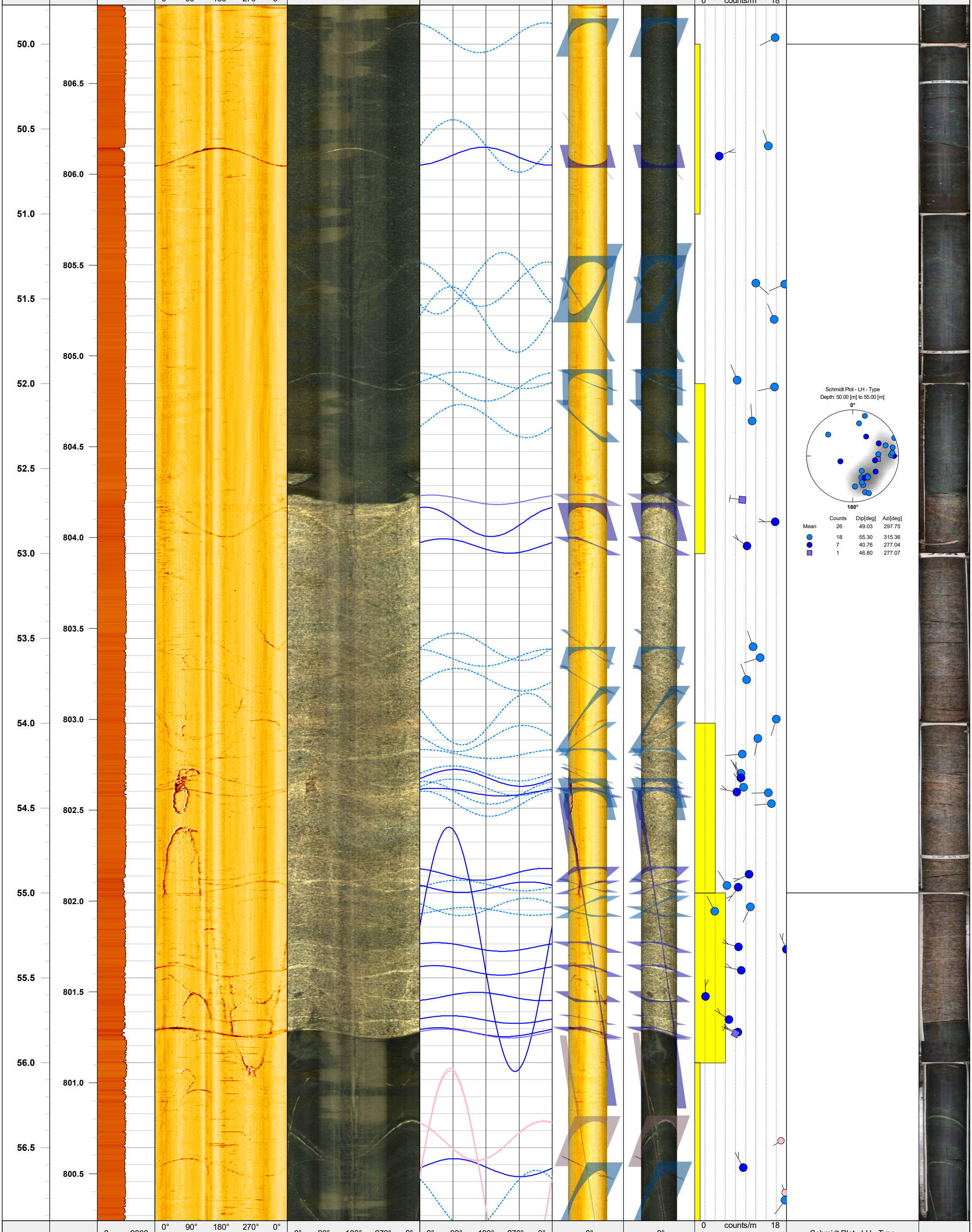


1m:20m	AHD	0 9000	0° 90° 180° 270° 0° 0 6000	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	-0°	-0°	0 counts/m 18 Freq/metre 0 90	Schmidt Plot - LH - Type	
Depth	RL m	Reflectivity	Amplitude-HS HPF	Image-HS PROC	Apparent Structures	3D ATV	3D OTV	Structures - TN	Stereoplots	Core Photo
Depth		Image Logs			Structural Data					Core

BGUA-02

BGUA-02

Depth		Image Logs			Structural Data					Core
Depth 1m:20m	RL m AHD	Reflectivity 0 9000	Amplitude-HS HPF 0 6000 0° 90° 180° 270° 0°	Image-HS PROC 0° 90° 180° 270° 0°	Apparent Structures 0° 90° 180° 270° 0°	3D ATV -0°	3D OTV -0°	Structures - TN 0 90 Freq/metre 0 counts/m 18	Stereoplots Schmidt Plot - LH - Type	Core Photo

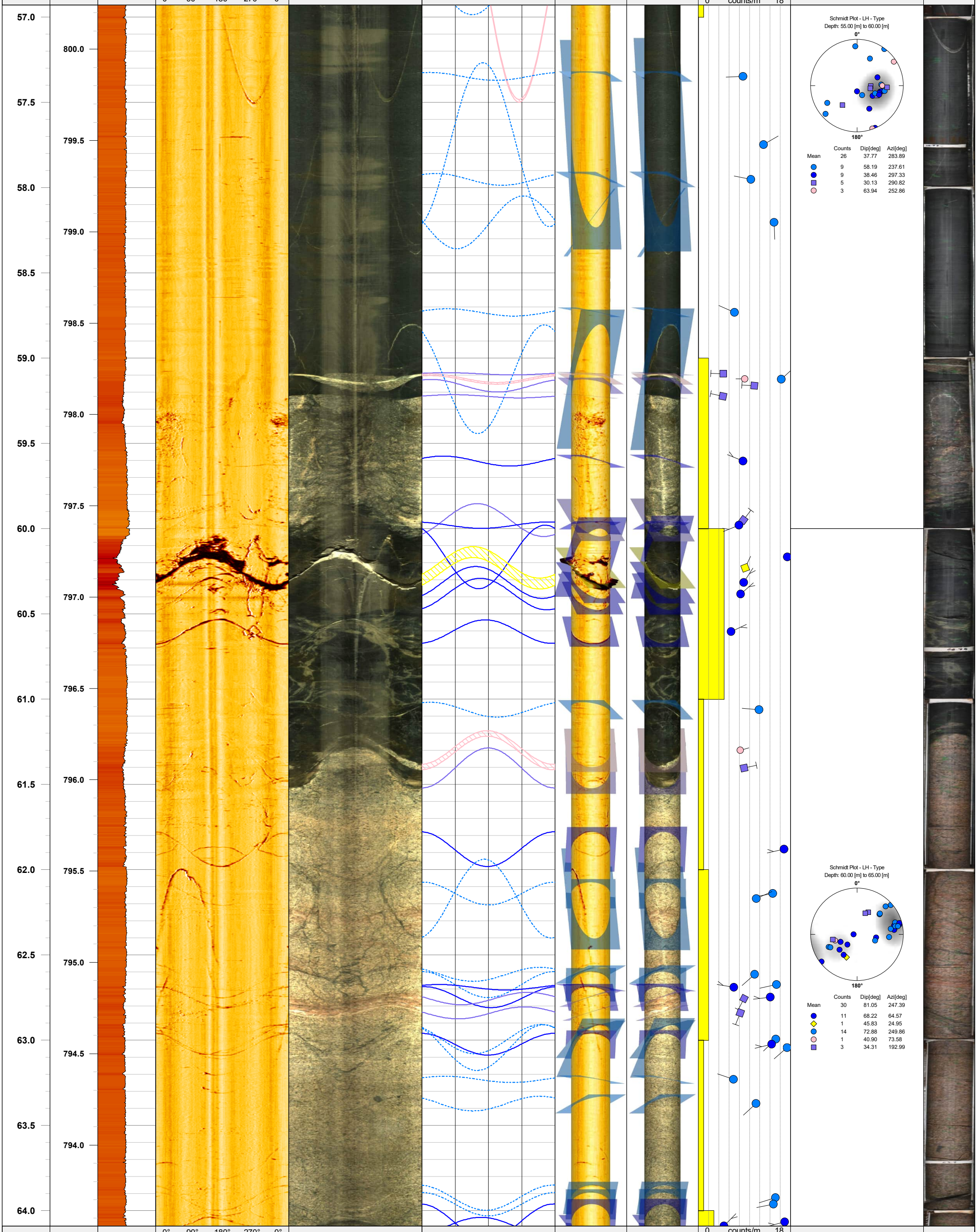


1m:20m	AHD	0 9000	0° 90° 180° 270° 0° 0 6000	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	-0°	-0°	0 counts/m 18 Freq/metre 0 90	Schmidt Plot - LH - Type	Core Photo
Depth	RL m	Reflectivity	Amplitude-HS HPF	Image-HS PROC	Apparent Structures	3D ATV	3D OTV	Structures - TN	Stereoplots	
Depth		Image Logs			Structural Data					Core

BGUA-02

BGUA-02

Depth		Image Logs			Structural Data					Core
Depth	RL m	Reflectivity	Amplitude-HS HPF	Image-HS PROC	Apparent Structures	3D ATV	3D OTV	Structures - TN	Stereoplots	Core Photo
1m:20m	AHD	0 9000	0 6000 0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	-0°	-0°	0 90 Freq/metre 0 counts/m 18	Schmidt Plot - LH - Type	



1m:20m	AHD	0 9000	0° 90° 180° 270° 0° 0 6000	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	-0°	-0°	0 counts/m 18 Freq/metre 0 90	Schmidt Plot - LH - Type	
Depth	RL m	Reflectivity	Amplitude-HS HPF	Image-HS PROC	Apparent Structures	3D ATV	3D OTV	Structures - TN	Stereoplots	Core Photo
Depth		Image Logs			Structural Data					Core

BGUA-02

BGUA-02

Depth		Image Logs			Structural Data					Core
Depth	RL m	Reflectivity	Amplitude-HS HPF	Image-HS PROC	Apparent Structures	3D ATV	3D OTV	Structures - TN	Stereoplots	Core Photo
1m:20m	AHD	0 9000	0 6000	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	-0°	-0°	0 90 Freq/metre 0 counts/m 18	Schmidt Plot - LH - Type	

Depth (1m:20m) / RL m (AHD): 64.5 / 793.5; 65.0 / 793.0; 65.5 / 792.5; 66.0 / 792.0; 66.5 / 791.5; 67.0 / 791.0; 67.5 / 790.5; 68.0 / 790.0; 68.5 / 789.5; 69.0 / 789.0; 69.5 / 788.5; 70.0 / 788.0; 70.5 / 787.5; 71.0 / 787.0

Schmidt Plot - LH - Type
Depth: 65.00 [m] to 70.00 [m]
0°
180°

	Counts	Dip[deg]	Azi[deg]
Mean	43	61.03	270.32
	9	57.02	277.69
	30	63.67	266.91
	1	12.11	352.31
	2	67.60	262.00
	1	65.14	270.83

Depth | Image Logs | Structural Data | Core
Depth | RL m | Reflectivity | Amplitude-HS HPF | Image-HS PROC | Apparent Structures | 3D ATV | 3D OTV | Structures - TN | Stereoplots | Core Photo
1m:20m | AHD | 0 9000 | 0 6000 | 0° 90° 180° 270° 0° | 0° 90° 180° 270° 0° | -0° | -0° | 0 90 Freq/metre 0 counts/m 18 | Schmidt Plot - LH - Type
BGUA-02

BGUA-02

Depth		Image Logs			Structural Data					Core
Depth	RL m	Reflectivity	Amplitude-HS HPF	Image-HS PROC	Apparent Structures	3D ATV	3D OTV	Structures - TN	Stereoplots	Core Photo
1m:20m	AHD	0 9000	0 6000 0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	-0°	-0°	0 90 Freq/metre 0 counts/m 18	Schmidt Plot - LH - Type	

71.5 786.5
72.0 786.0
72.5 785.5
73.0 785.0
73.5 784.5
74.0 784.0
74.5 783.5
75.0 783.0
75.5 782.5
76.0 782.0
76.5 781.5
77.0 781.0
77.5 780.5
78.0

Schmidt Plot - LH - Type
Depth: 70.00 [m] to 75.00 [m]
0°
180°

	Counts	Dip[deg]	Azi[deg]
Mean	49	70.08	273.44
	40	67.79	272.94
	2	74.97	276.60
	2	67.08	78.93
	5	83.19	280.09

Schmidt Plot - LH - Type
Depth: 75.00 [m] to 80.00 [m]
0°
180°

	Counts	Dip[deg]	Azi[deg]
Mean	38	89.12	78.02
	15	69.81	256.56
	1	47.37	68.50
	1	63.60	257.02
	18	11.79	28.10
	3	42.19	73.90

1m:20m	AHD	0 9000	0° 90° 180° 270° 0° 0 6000	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	-0°	-0°	0 counts/m 18 Freq/metre 0 90	Schmidt Plot - LH - Type	
Depth	RL m	Reflectivity	Amplitude-HS HPF	Image-HS PROC	Apparent Structures	3D ATV	3D OTV	Structures - TN	Stereoplots	Core Photo
Depth		Image Logs			Structural Data					Core

BGUA-02

BGUA-02

Depth		Image Logs			Structural Data					Core
Depth	RL m	Reflectivity	Amplitude-HS HPF	Image-HS PROC	Apparent Structures	3D ATV	3D OTV	Structures - TN	Stereoplots	Core Photo
1m:20m	AHD	0 9000	0 6000	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	-0°	-0°	0 90 Freq/metre 0 counts/m 18	Schmidt Plot - LH - Type	

78.5 780.0 79.0 779.5 79.5 779.0 80.0 778.5 80.5 778.0 81.0 777.5 81.5 777.0 82.0 776.5 82.5 776.0 83.0 775.5 83.5 775.0 84.0 774.5 84.5 774.0 85.0 85.5

Schmidt Plot - LH - Type
Depth: 80.00 [m] to 85.00 [m]

0° 180°

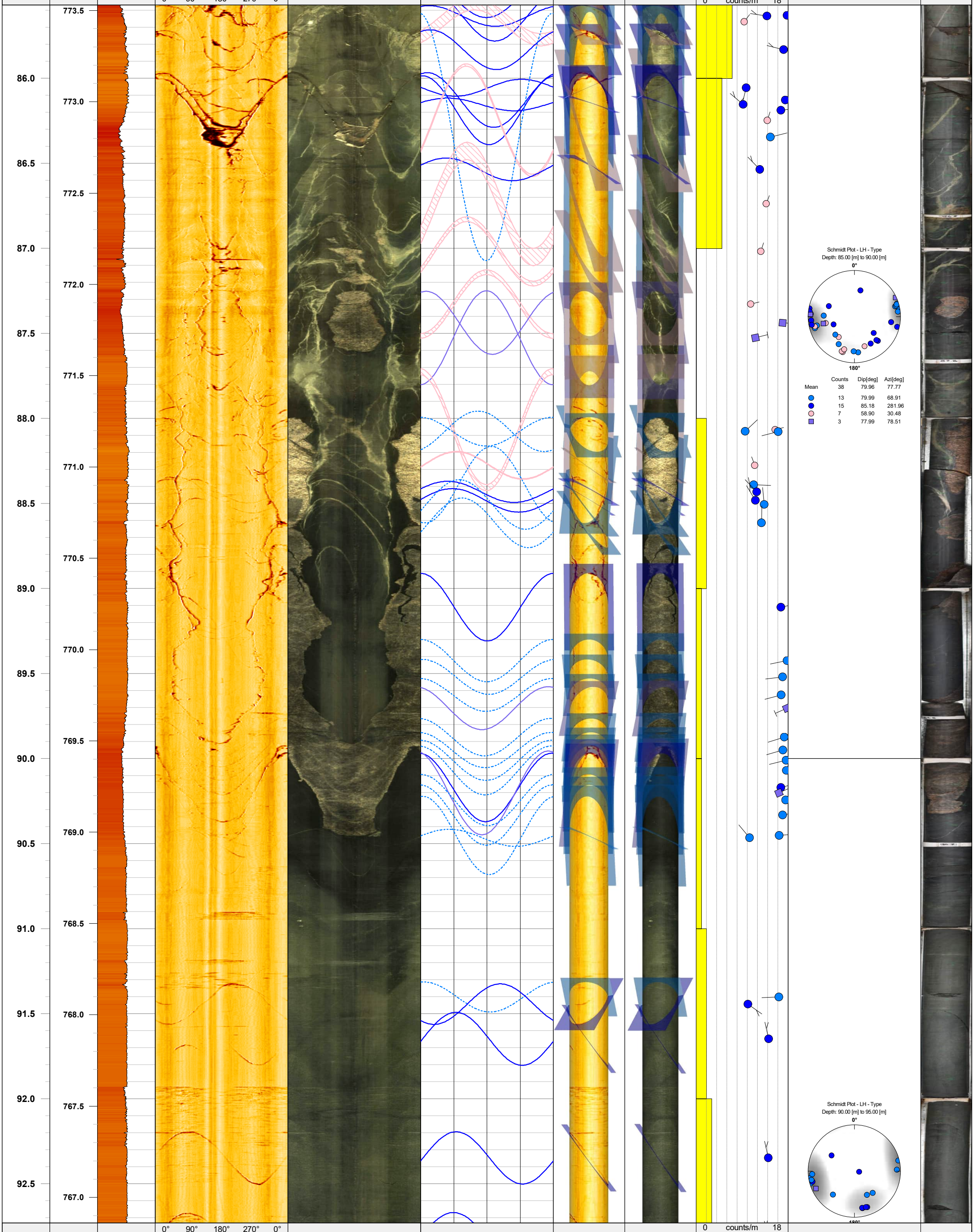
	Counts	Dip[deg]	Azi[deg]
Mean	21	72.16	60.09
	15	75.59	52.82
	5	45.06	285.25
	1	54.50	56.78

Depth		Image Logs			Structural Data					Core
Depth	RL m	Reflectivity	Amplitude-HS HPF	Image-HS PROC	Apparent Structures	3D ATV	3D OTV	Structures - TN	Stereoplots	Core Photo
1m:20m	AHD	0 9000	0 6000	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	-0°	-0°	0 90 Freq/metre 0 counts/m 18	Schmidt Plot - LH - Type	

BGUA-02

BGUA-02

Depth		Image Logs			Structural Data					Core
Depth 1m:20m	RL m AHD	Reflectivity 0 9000	Amplitude-HS HPF 0 6000 0° 90° 180° 270° 0°	Image-HS PROC 0° 90° 180° 270° 0°	Apparent Structures 0° 90° 180° 270° 0°	3D ATV -0°	3D OTV -0°	Structures - TN 0 90 Freq/metre 0 counts/m 18	Stereoplots Schmidt Plot - LH - Type	Core Photo



Depth		Image Logs			Structural Data					Core
1m:20m Depth	AHD RL m	0 9000 Reflectivity	0° 90° 180° 270° 0° 0 6000 Amplitude-HS HPF	0° 90° 180° 270° 0° Image-HS PROC	0° 90° 180° 270° 0° Apparent Structures	-0° 3D ATV	-0° 3D OTV	0 counts/m 18 Freq/metre 0 90 Structures - TN	Schmidt Plot - LH - Type Stereoplots	Core Photo

BGUA-02

Depth		Image Logs			Structural Data					Core
Depth	RL m	Reflectivity	Amplitude-HS HPF	Image-HS PROC	Apparent Structures	3D ATV	3D OTV	Structures - TN	Stereoplots	Core Photo
1m:20m	AHD	0 9000	0 6000 0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	-0°	-0°	0 90 Freq/metre 0 counts/m 18	Schmidt Plot - LH - Type	

93.0 / 766.5
93.5 / 766.0
94.0 / 765.5
94.5 / 765.0
95.0 / 764.5
95.5 / 764.0
96.0 / 763.5
96.5 / 763.0
97.0 / 762.5
97.5 / 762.0
98.0 / 761.5
98.5 / 761.0
99.0 / 760.5
99.5

Stereoplots (Schmidt Plot - LH - Type):

	Counts	Dip[deg]	Azi[deg]
Mean	17	87.96	86.33
	9	89.40	81.34
	7	70.46	340.23
	1	80.99	65.73

Schmidt Plot - LH - Type
Depth: 95.00 [m] to 100.00 [m]

0° / 180°

	Counts	Dip[deg]	Azi[deg]
Mean	15	53.82	309.68
	8	54.69	327.60
	6	54.20	302.73
	1	67.19	273.98

1m:20m | AHD | Reflectivity | Amplitude-HS HPF | Image-HS PROC | Apparent Structures | 3D ATV | 3D OTV | Structures - TN | Stereoplots | Core Photo
Depth | RL m | Image Logs | Structural Data | Core
BGUA-02

BGUA-02

Depth		Image Logs			Structural Data					Core
Depth	RL m	Reflectivity	Amplitude-HS HPF	Image-HS PROC	Apparent Structures	3D ATV	3D OTV	Structures - TN	Stereoplots	Core Photo
1m:20m	AHD	0 9000	0 6000	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	-0°	-0°	0 90 Freq/metre 0 counts/m 18	Schmidt Plot - LH - Type	

Schmidt Plot - LH - Type
Depth: 100.00 [m] to 105.00 [m]

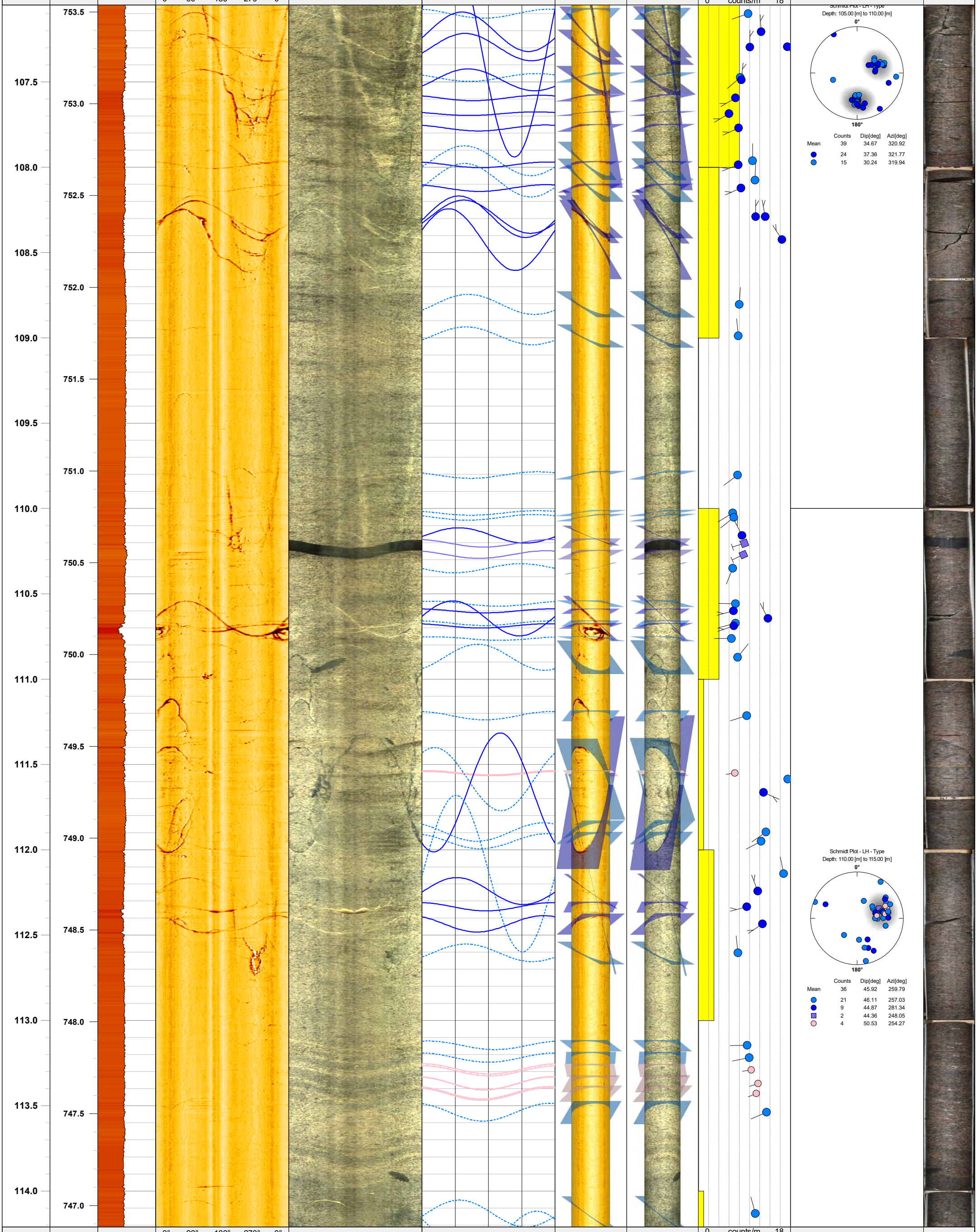
	Counts	Dip[deg]	Azi[deg]
Mean	39	60.02	277.90
	20	57.12	282.45
	17	69.41	265.80
	1	70.66	282.16
	1	87.28	324.06

Depth	RL m	Reflectivity	Amplitude-HS HPF	Image-HS PROC	Apparent Structures	3D ATV	3D OTV	Structures - TN	Stereoplots	Core Photo
1m:20m	AHD	0 9000	0 6000	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	-0°	-0°	0 90 Freq/metre 0 counts/m 18	Schmidt Plot - LH - Type	
Depth		Image Logs			Structural Data					Core

BGUA-02

BGUA-02

Depth		Image Logs			Structural Data					Core
Depth 1m:20m	RL m AHD	Reflectivity 0 9000	Amplitude-HS HPF 0 6000 0° 90° 180° 270° 0°	Image-HS PROC 0° 90° 180° 270° 0°	Apparent Structures 0° 90° 180° 270° 0°	3D ATV -0°	3D OTV -0°	Structures - TN 0 90 Freq/metre 0 counts/m 18	Stereoplots Schmidt Plot - LH - Type	Core Photo

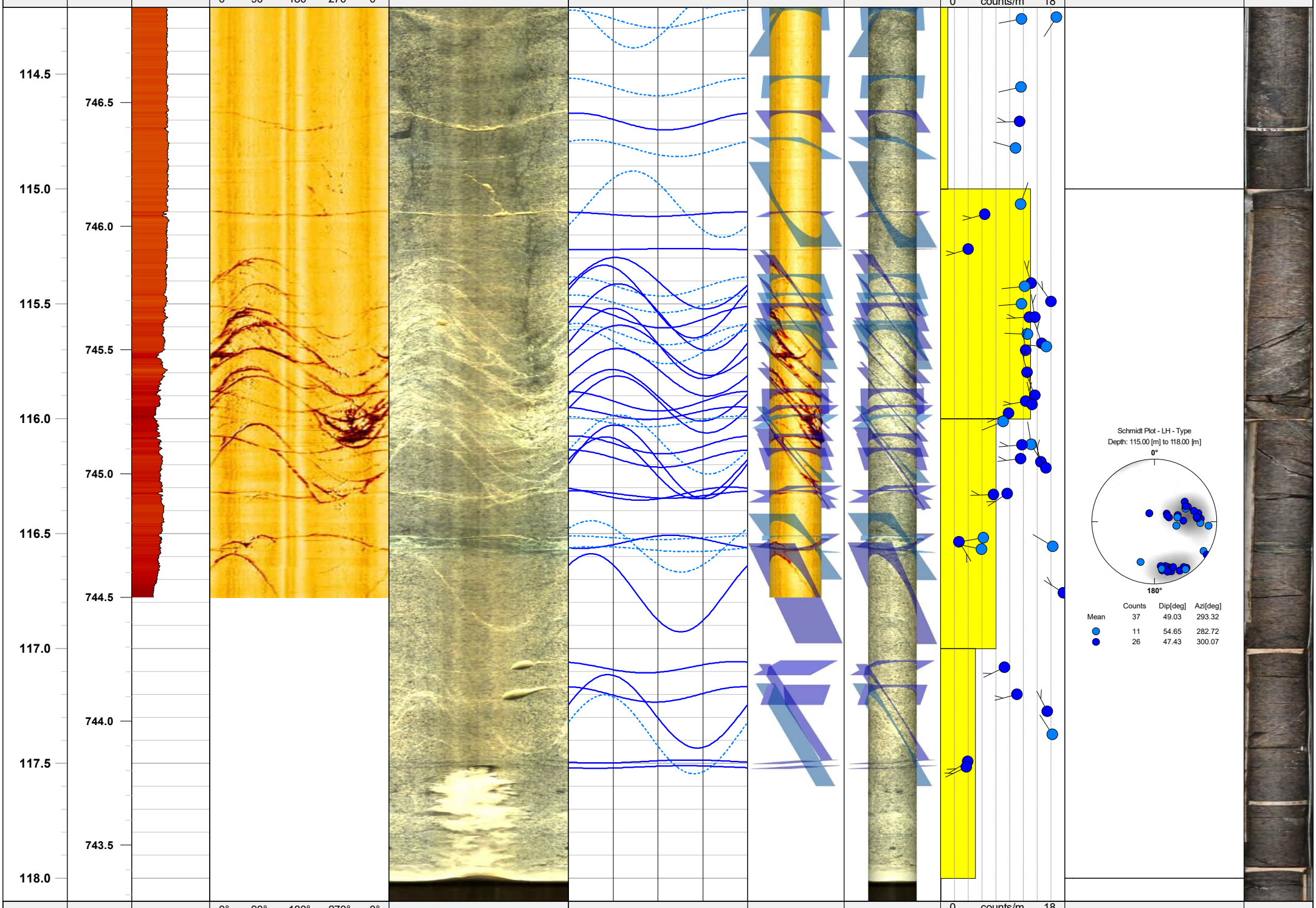


Depth		Image Logs			Structural Data					Core
1m:20m Depth	AHD RL m	0 9000 Reflectivity	0° 90° 180° 270° 0° 0 6000 Amplitude-HS HPF	0° 90° 180° 270° 0° Image-HS PROC	0° 90° 180° 270° 0° Apparent Structures	-0° 3D ATV	-0° 3D OTV	0 counts/m 18 Freq/metre 0 90 Structures - TN	Schmidt Plot - LH - Type Stereoplots	Core Photo

BGUA-02

BGUA-02

Depth		Image Logs			Structural Data					Core
Depth	RL m	Reflectivity	Amplitude-HS HPF	Image-HS PROC	Apparent Structures	3D ATV	3D OTV	Structures - TN	Stereoplots	Core Photo
1m:20m	AHD	0 9000	0 6000	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	-0°	-0°	0 90 Freq/metre 0 counts/m 18	Schmidt Plot - LH - Type	



1m:20m	AHD	0 9000	0° 90° 180° 270° 0° 0 6000	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	-0°	-0°	0 counts/m 18 Freq/metre 0 90	Schmidt Plot - LH - Type	
Depth	RL m	Reflectivity	Amplitude-HS HPF	Image-HS PROC	Apparent Structures	3D ATV	3D OTV	Structures - TN	Stereoplots	Core Photo
Depth		Image Logs			Structural Data					Core

BGUA-02

BGUA-02 Composite Logs

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

GEOPHYSICAL RECORD OF BOREHOLE: BGUA-02

PROJECT: Pioneer-Burdekin PHES | JOB # PS138693
CLIENT: Queensland Hydro | DATE: 19 September 2024

BOREHOLE DETAILS

LOCATION:	Lower Reservoir	BH DEPTH:	120.00
EASTING:	657838.58 m E	BH DIAMETER:	96 mm (HQ)
NORTHING:	7667647.08 m E	BH AZIMUTH:	078°
ELEVATION:	853.477 m	BH PLUNGE:	-69°
COORD SYSTEM:	MGA2020-55	CASING DEPTH:	8.74 m
LOGGING DATUM:	Ground Level	CASING TYPE:	HWT

DOCUMENT DETAILS

LOGGED BY:	GH/JH
LOGGED DATE:	04-05/04/2024
DRAWN BY:	SB
REVIEWED BY:	GH
FILE:	BGUA-02_Struct_RevC
LOGGED DEPTH:	119.63 m

NOTES

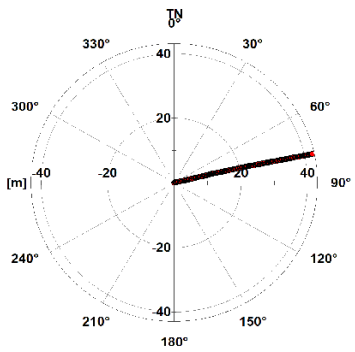
Image logs are oriented relative to borehole high side. Final structures corrected to true north using magnetic declination of 8.2 deg East.

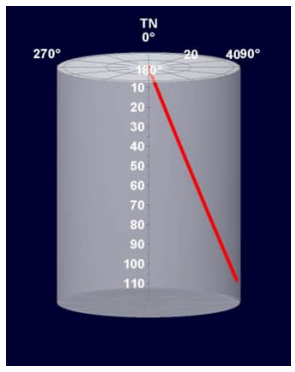
Mechanical calliper log used for structure dip corrections.

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

Fall-in at bottom of hole prevented use of centralised tools to TD. Calliper tool briefly stuck at 116.6 m.

BOREHOLE DEVIATION



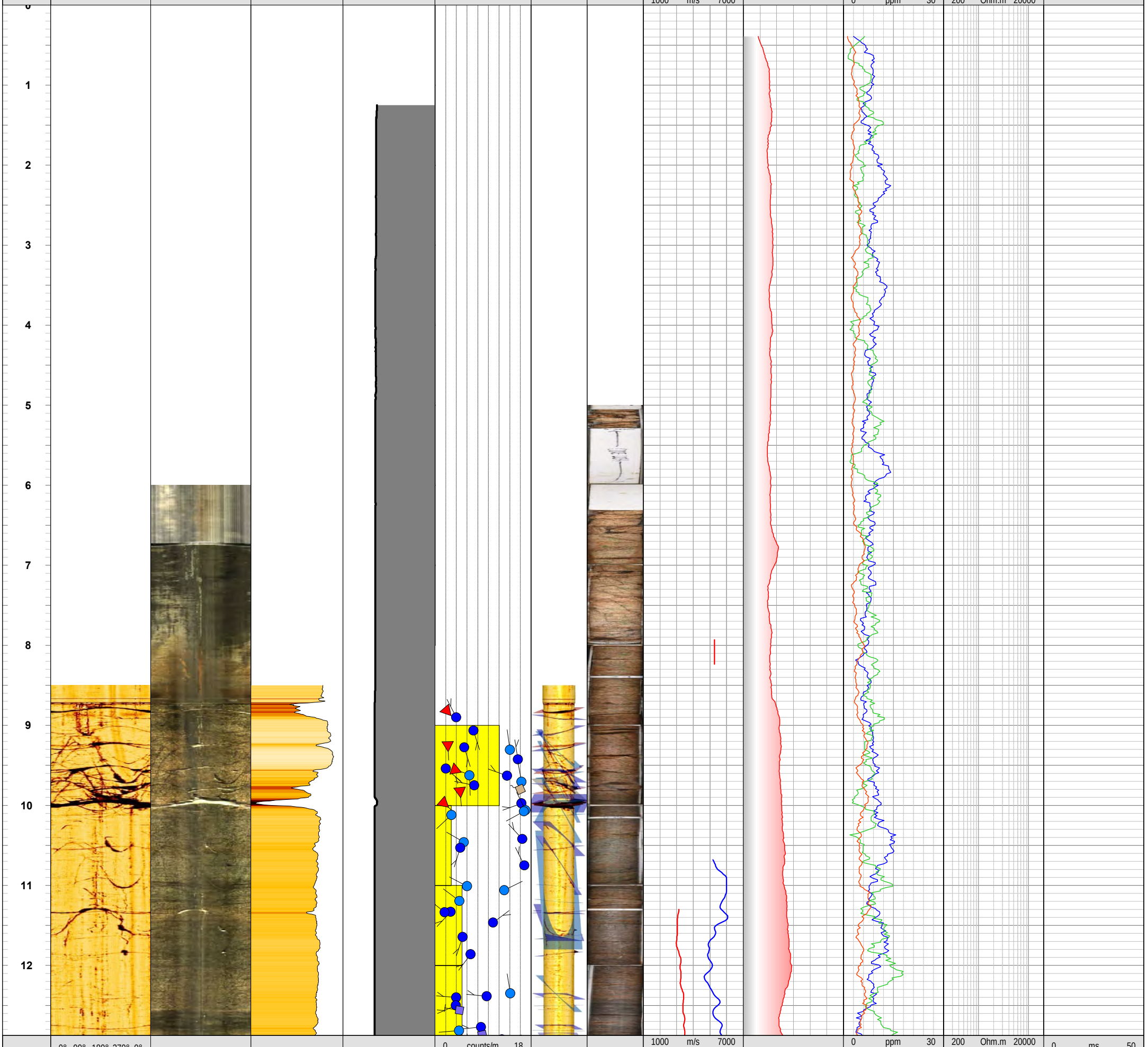


INTERPRETED STRUCTURES

Contact | Crushed Seam | Extremely Weathered Seam | Joint | Shear Seam | Sheared Surface
Shear Zone | Vein | Healed Joint | Drilling-Induced Fracture

BGUA-02

Depth	Image Logs			Calliper	Structural Logs			Sonic Logs	Gamma Logs		Electrical Logs	
Depth	Amplitude-HS HPF	Image-HS PROC	Reflectivity	CAL	Structures - TN	3D ATV	Core	Vs	GR	U	N16	Ma16
1m:50m	500 6000	0° 90° 180° 270° 0°	0 9000	80 mm 160	0 90	-0°		1000 m/s 7000	0 API 300	0 ppm 10	200 Ohm.m 20000	0 ms 50
	0° 90° 180° 270° 0°				Freq/metre			Vp (Rx1-Rx4)		K	N32	Ma64
					0 counts/m 18			1000 m/s 7000		0 % 10	200 Ohm.m 20000	0 ms 50
								Vp		Th	N8	
								1000 m/s 7000		0 ppm 30	200 Ohm.m 20000	



Depth	Image Logs			Calliper	Structural Logs			Sonic Logs	Gamma Logs		Electrical Logs	
Depth	Amplitude-HS HPF	Image-HS PROC	Reflectivity	CAL	Structures - TN	3D ATV	Core	Vs	GR	U	N16	Ma16
1m:50m	500 6000	0° 90° 180° 270° 0°	0 9000	80 mm 160	0 90	-0°		1000 m/s 7000	0 API 300	0 ppm 10	200 Ohm.m 20000	0 ms 50
	0° 90° 180° 270° 0°				Freq/metre			Vp (Rx1-Rx4)		K	N32	Ma64
					0 counts/m 18			1000 m/s 7000		0 % 10	200 Ohm.m 20000	0 ms 50
								Vp		Th	N8	
								1000 m/s 7000		0 ppm 30	200 Ohm.m 20000	

BGUA-02

BGUA-02

Depth	Image Logs			Calliper	Structural Logs			Sonic Logs	Gamma Logs	Electrical Logs	
Depth	Amplitude-HS HPF	Image-HS PROC	Reflectivity	CAL	Structures - TN	3D ATV	Core	Vs	GR	U	N16
								Vp (Rx1-Rx4)		K	N32
1m:50m	500 6000		0 9000	80 mm 160	0 90	-0°		1000 m/s 7000	0 API 300	0 ppm 10	200 Ohm.m 20000
	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°			Freq/metre			Vp		Th	N8
					0 counts/m 18			1000 m/s 7000		0 % 10	200 Ohm.m 20000
										0 ppm 30	200 Ohm.m 20000

Ma16	Ma64
0 ms 50	0 ms 50

13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

Depth	Image Logs			Calliper	Structural Logs			Sonic Logs	Gamma Logs	Electrical Logs	
Depth	Amplitude-HS HPF	Image-HS PROC	Reflectivity	CAL	Structures - TN	3D ATV	Core	Vs	GR	U	N16
								Vp (Rx1-Rx4)		K	N32
1m:50m	500 6000		0 9000	80 mm 160	0 90	-0°		1000 m/s 7000	0 API 300	0 ppm 10	200 Ohm.m 20000
	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°			Freq/metre			Vp		Th	N8
					0 counts/m 18			1000 m/s 7000		0 % 10	200 Ohm.m 20000
										0 ppm 30	200 Ohm.m 20000

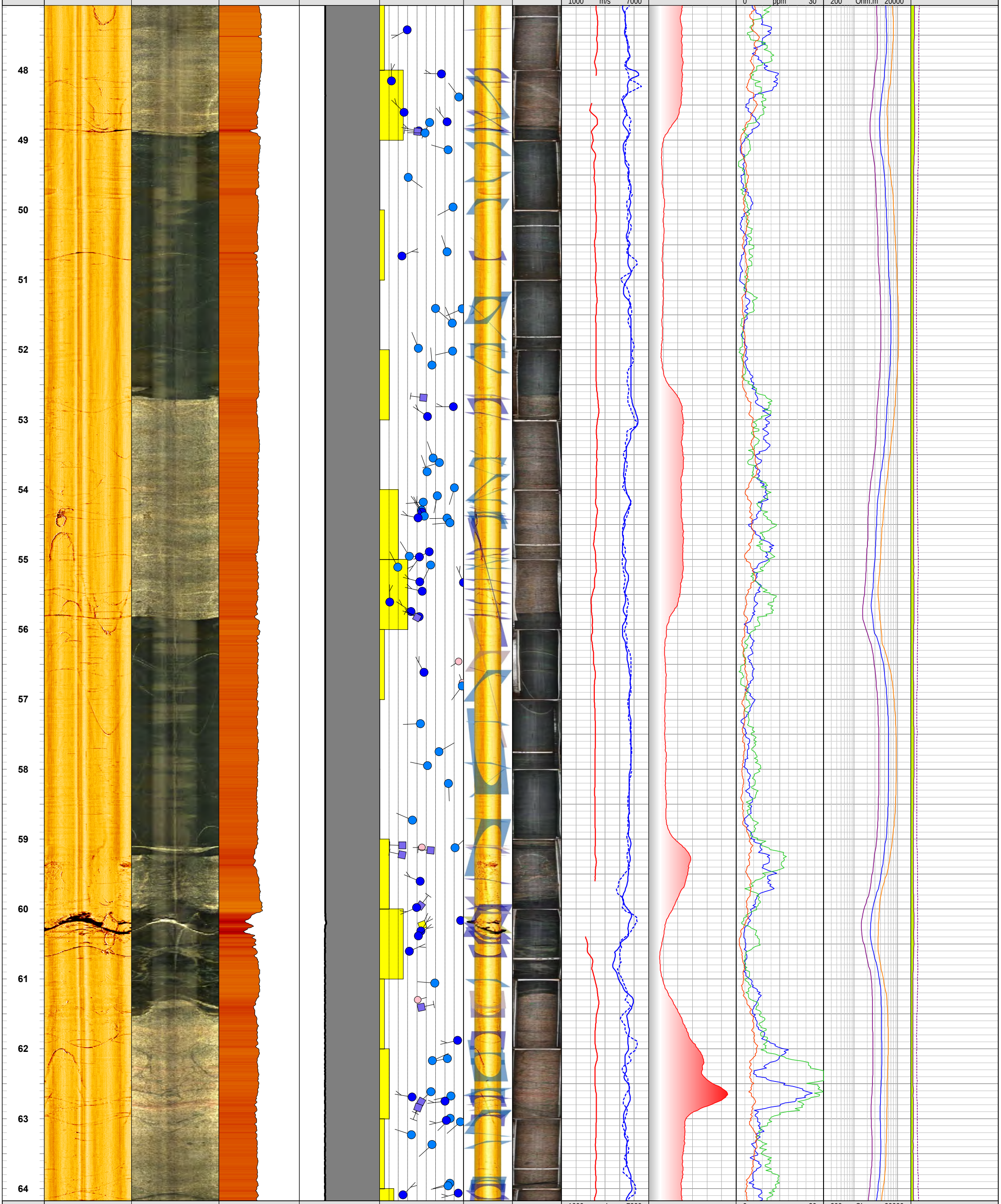
Ma16	Ma64
0 ms 50	0 ms 50

BGUA-02

Depth	Image Logs			Calliper	Structural Logs			Sonic Logs	Gamma Logs		Electrical Logs	
Depth	Amplitude-HS HPF	Image-HS PROC	Reflectivity	CAL	Structures - TN	3D ATV	Core	Vs	GR	U	N16	Ma16
1m:50m	500 6000	0° 90° 180° 270° 0°	0 9000	80 mm 160	0 90	-0°		1000 m/s 7000	0 API 300	0 ppm 10	200 Ohm.m 20000	0 ms 50
	0° 90° 180° 270° 0°				Freq/metre			Vp (Rx1-Rx4)		K	N32	Ma64
					0 counts/m 18			1000 m/s 7000		0 % 10	200 Ohm.m 20000	0 ms 50
								Vp		Th	N8	
								1000 m/s 7000		0 ppm 30	200 Ohm.m 20000	

BGUA-02

Depth	Image Logs			Calliper	Structural Logs			Sonic Logs	Gamma Logs		Electrical Logs	
Depth	Amplitude-HS HPF	Image-HS PROC	Reflectivity	CAL	Structures - TN	3D ATV	Core	Vs	GR	U	N16	Ma16
	500 6000		0 9000	80 mm 160	0 90	-0°		1000 m/s 7000	0 API 300	0 ppm 10	200 Ohm.m 20000	0 ms 50
1m:50m	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°			Freq/metre			Vp (Rx1-Rx4)		K	N32	Ma64
					0 counts/m 18			1000 m/s 7000		0 % 10	200 Ohm.m 20000	0 ms 50
								Vp		Th	N8	
								1000 m/s 7000		0 ppm 30	200 Ohm.m 20000	



Depth	Image Logs			Calliper	Structural Logs			Sonic Logs	Gamma Logs		Electrical Logs	
Depth	Amplitude-HS HPF	Image-HS PROC	Reflectivity	CAL	Structures - TN	3D ATV	Core	Vp	GR	Th	N8	Ma64
	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	0 9000	80 mm 160	0 90	-0°		1000 m/s 7000	0 API 300	0 ppm 30	200 Ohm.m 20000	0 ms 50
1m:50m	500 6000				Freq/metre			Vp (Rx1-Rx4)		K	N32	Ma16
					0 counts/m 18			1000 m/s 7000		0 % 10	200 Ohm.m 20000	0 ms 50
								Vs		U	N16	
Depth	Image Logs			Calliper	Structural Logs			Sonic Logs	Gamma Logs		Electrical Logs	

BGUA-02

BGUA-02

Depth	Image Logs			Calliper	Structural Logs			Sonic Logs	Gamma Logs		Electrical Logs	
Depth	Amplitude-HS HPF	Image-HS PROC	Reflectivity	CAL	Structures - TN	3D ATV	Core	Vs	GR	U	N16	Ma16
1m:50m	500 6000	0° 90° 180° 270° 0°	0 9000	80 mm 160	0 90	-0°		1000 m/s 7000	0 API 300	0 ppm 10	200 Ohm.m 20000	0 ms 50
	0° 90° 180° 270° 0°				Freq/metre			Vp (Rx1-Rx4)		K	N32	Ma64
					0 counts/m 18			1000 m/s 7000		0 % 10	200 Ohm.m 20000	0 ms 50
								Vp		Th	N8	
								1000 m/s 7000		0 ppm 30	200 Ohm.m 20000	

65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81

Depth	Image Logs			Calliper	Structural Logs			Sonic Logs	Gamma Logs		Electrical Logs	
1m:50m	0° 90° 180° 270° 0° 500 6000	0° 90° 180° 270° 0°	0 9000	80 mm 160	0 counts/m 18	-0°		1000 m/s 7000 Vp	0 API 300	0 ppm 30 Th	200 Ohm.m 20000 N8	0 ms 50 Ma64
					Freq/metre			1000 m/s 7000 Vp (Rx1-Rx4)		0 % 10 K	200 Ohm.m 20000 N32	0 ms 50
					0 90			1000 m/s 7000 Vs		0 ppm 10 U	200 Ohm.m 20000 N16	Ma16
Depth	Amplitude-HS HPF	Image-HS PROC	Reflectivity	CAL	Structures - TN	3D ATV	Core		GR			
Depth	Image Logs			Calliper	Structural Logs			Sonic Logs	Gamma Logs		Electrical Logs	
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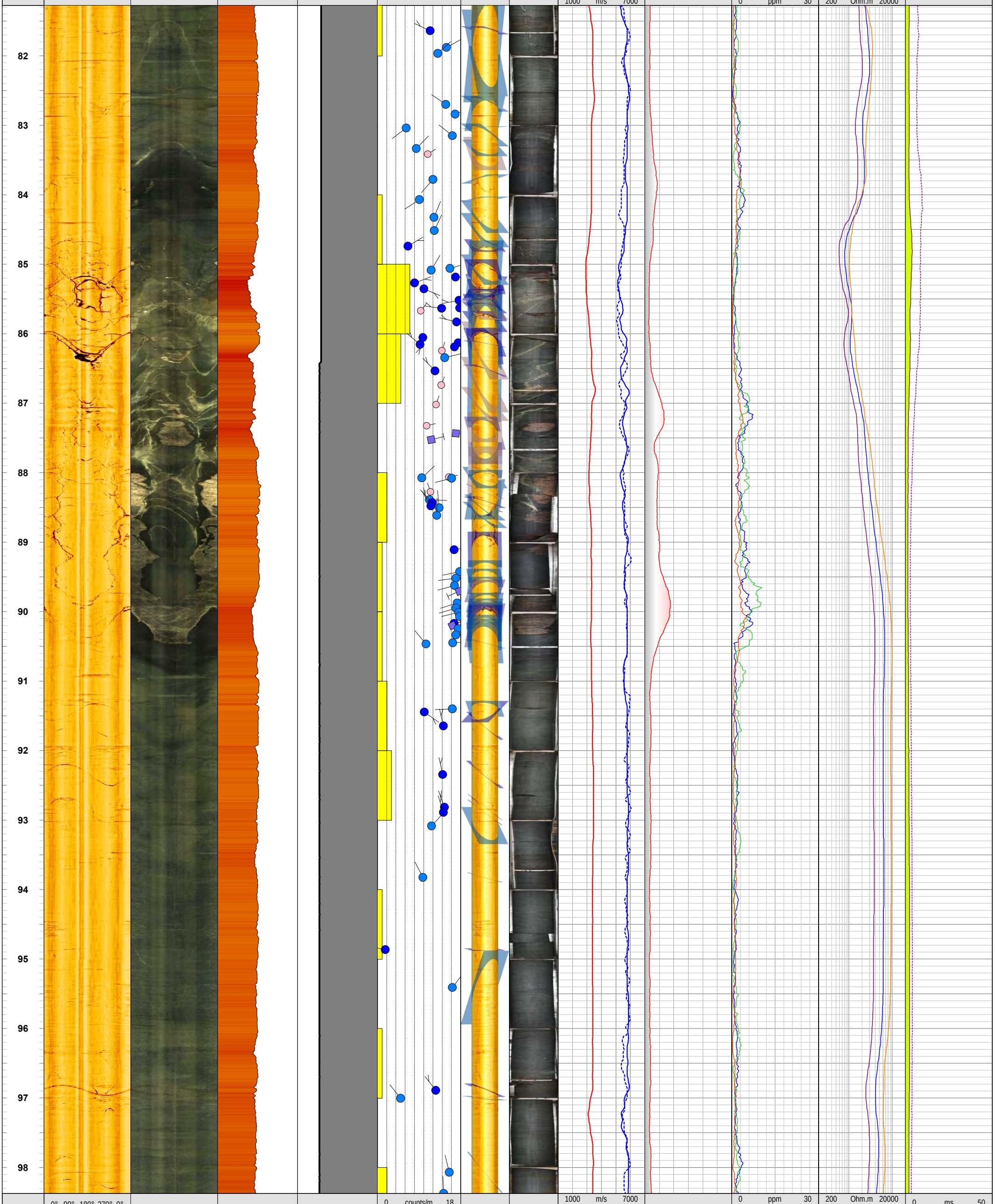
BGUA-02

Depth	Image Logs			Calliper	Structural Logs			Sonic Logs	Gamma Logs		Electrical Logs	
Depth	Amplitude-HS HPF	Image-HS PROC	Reflectivity	CAL	Structures - TN	3D ATV	Core	Vs	GR	U	N16	Ma16
1m:50m	500 6000	0° 90° 180° 270° 0°	0 9000	80 mm 160	0 90	-0°		1000 m/s 7000	0 API 300	0 ppm 10	200 Ohm.m 20000	0 ms 50
	0° 90° 180° 270° 0°				Freq/metre			Vp (Rx1-Rx4)		K	N32	Ma64
					0 counts/m 18			1000 m/s 7000		0 % 10	200 Ohm.m 20000	0 ms 50
								Vp		Th	N8	
								1000 m/s 7000		0 ppm 30	200 Ohm.m 20000	



Depth	Image Logs			Calliper	Structural Logs			Sonic Logs	Gamma Logs		Electrical Logs	
Depth	Amplitude-HS HPF	Image-HS PROC	Reflectivity	CAL	Structures - TN	3D ATV	Core	Vs	GR	U	N16	Ma16
1m:50m	500 6000	0° 90° 180° 270° 0°	0 9000	80 mm 160	0 90	-0°		1000 m/s 7000	0 API 300	0 ppm 10	200 Ohm.m 20000	0 ms 50
	0° 90° 180° 270° 0°				Freq/metre			Vp (Rx1-Rx4)		K	N32	Ma64
					0 counts/m 18			1000 m/s 7000		0 % 10	200 Ohm.m 20000	0 ms 50
								Vp		Th	N8	
								1000 m/s 7000		0 ppm 30	200 Ohm.m 20000	

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Depth	Image Logs			Calliper	Structural Logs			Sonic Logs	Gamma Logs		Electrical Logs	
Depth	Amplitude-HS HPF	Image-HS PROC	Reflectivity	CAL	Structures - TN	3D ATV	Core	Vs	GR	U	N16	Ma16
	500 6000		0 9000	80 mm 160	0 90	-0°		1000 m/s 7000	0 API 300	0 ppm 10	200 Ohm.m 20000	0 ms 50
1m:50m	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°			Freq/metre			Vp (Rx1-Rx4)		K	N32	Ma64
					0 counts/m 18			1000 m/s 7000		0 % 10	200 Ohm.m 20000	0 ms 50
								Vp		Th	N8	
								1000 m/s 7000		0 ppm 30	200 Ohm.m 20000	

99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115

Depth	Image Logs			Calliper	Structural Logs			Sonic Logs	Gamma Logs		Electrical Logs	
Depth	Amplitude-HS HPF	Image-HS PROC	Reflectivity	CAL	Structures - TN	3D ATV	Core	Vs	GR	U	N16	Ma16
	500 6000		0 9000	80 mm 160	0 90	-0°		1000 m/s 7000	0 API 300	0 ppm 10	200 Ohm.m 20000	0 ms 50
1m:50m	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°			Freq/metre			Vp (Rx1-Rx4)		K	N32	Ma64
					0 counts/m 18			1000 m/s 7000		0 % 10	200 Ohm.m 20000	0 ms 50
								Vp		Th	N8	
								1000 m/s 7000		0 ppm 30	200 Ohm.m 20000	

BGUA-02