BOREHOLE: BQLA-04

SHEET: 1 OF 10

CLIENT: SMEC
PROJECT: Pioneer Burdekin PHES GI
LOCATION: Netherdale
JOB NO: 23117.000.001

COORDS: 658001.9 m 7662061.6 m GDA 2020 MGA Zone 55
SURFACE RL: 205.05 m DATUM: AHD
INCLINATION: -88° DIRECTION: 184°
HOLE DIA: 96/100 mm HOLE DEPTH: 40.07 m

DRILL RIG: Hanjin D&B
CONTRACTOR: Twin Hills
LOGGED: ENGEO DATE: 2/9/23
CHECKED: SF DATE: 25/10/23

Drilling					Sampling		Field Material Description					
METHOD / SUPPORT	PENETRATION RESISTANCE	WATER	LENGTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
	EP		0.0	205.05 *0.10*				CI	TOPSOIL: CLAY with sand and silt medium plasticity, dark brown, with silt, with fine to coarse grained sand, trace rootlets (<2mm)	w<PL	St	TOPSOIL
				204.95				SC	Clayey SAND with gravel fine to coarse grained, well graded, sub-rounded to sub-angular, dark brown mottled white, low plasticity clay, with fine to medium grained, sub-angular gravel			RESIDUAL SOIL
			0.5							D	MD	
			1.0									Coring water returns were not recorded.
			1.5	*1.50* 203.55	Soil Particle Density (t/m³) = 2.56 SPT 1.50-1.95 m 13, 15, 25 N=40			SW-SC	SAND with silt fine to coarse grained, well graded, sub-angular to angular, brown mottled off-white, with clay, trace fine grained, sub-angular gravel, (Extremely Weathered Granite)			EXTREMELY WEATHERED MATERIAL
SSA	MP		2.0								D	
			2.5									
			3.0		SPT 3.00-3.35 m 17, 31, 19/50mm HB					D		
			3.5								VD	
			4.0									
			4.5	*4.50* 200.55	Soil Particle Density (t/m³) = 2.61 SPT 4.50-4.90 m 18, 28, 26/100mm HB			SW-SC	SAND with clay fine to coarse grained, well graded, sub-angular to angular, brown mottled off-white, with clay, trace silt, (Extremely Weathered Granite)			
	DP		5.0							D	VD	

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ENGEO 2.00.2.2 LIB.GLB Log ENGEO NON-CORED FULL PAGE PIONEER BURDEKIN -MASTERBHT03 REWORK-AUSLAPTOP008.GPJ <<DrawingFile>> 30/10/2024 20:59 10.03.00.09 Datgel Tools

BOREHOLE: BQLA-04

SHEET: 2 OF 10

CLIENT: SMEC
PROJECT: Pioneer Burdekin PHES GI
LOCATION: Netherdale
JOB NO: 23117.000.001

COORDS: 658001.9 m 7662061.6 m GDA 2020 MGA Zone 55
SURFACE RL: 205.05 m DATUM: AHD
INCLINATION: -88° DIRECTION: 184°
HOLE DIA: 96/100 mm HOLE DEPTH: 40.07 m

DRILL RIG: Hanjin D&B
CONTRACTOR: Twin Hills
LOGGED: ENGEO DATE: 2/9/23
CHECKED: SF DATE: 25/10/23

Drilling					Sampling		Field Material Description				
METHOD / SUPPORT	PENETRATION RESISTANCE	WATER	LENGTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
SSA			5.0					SW-SC	SAND with clay fine to coarse grained, well graded, sub-angular to angular, brown mottled off-white, with clay, trace silt, (Extremely Weathered Granite)	D	VD	
			5.5									
			6.0		SPT 6.00-6.22 m 25, 30/70mm HB					M	VD	
			6.5									
			7.0									
				7.50 197.56								
WB	DP	29/08/23	7.5		Soil Particle Density (t/m³) = 2.62 SPT 7.50-7.75 m 20, 32/100mm HB			SW	SAND with silt fine to coarse grained, well graded, sub-angular to angular, brown mottled off-white, with low plasticity silt, trace clay, (Extremely Weathered Granite)			
			8.0									
					SPT 8.35-8.44 m 32/90mm HB					M	VD	
			8.5									
			9.0									
		30/08/23	9.5									
				9.85 195.21	Soil Particle Density (t/m³) = 2.64			SW		M	VD	
			10.0									

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BOREHOLE: BQLA-04

SHEET: 3 OF 10

CLIENT: SMEC
PROJECT: Pioneer Burdekin PHES GI
LOCATION: Netherdale
JOB NO: 23117.000.001

COORDS: 658001.9 m 7662061.6 m GDA 2020 MGA Zone 55
SURFACE RL: 205.05 m DATUM: AHD
INCLINATION: -88° DIRECTION: 184°
HOLE DIA: 96/100 mm HOLE DEPTH: 40.07 m

DRILL RIG: Hanjin D&B
CONTRACTOR: Twin Hills
LOGGED: ENGEO DATE: 2/9/23
CHECKED: SF DATE: 25/10/23

Drilling					Sampling		Field Material Description					
METHOD / SUPPORT	PENETRATION RESISTANCE	WATER	LENGTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
WB	DP		10.0		Soil Particle Density (t/m³) = 2.64 SPT 9.85-10.22 m 4, 12, 25/70mm HB Possibly material caved in first 300mm.			SW	Gravelly SAND fine to coarse grained, well graded, sub-angular to angular, brown mottled off-white, fine grained, sub-angular gravel, trace low plasticity fines, (Extremely Weathered Granite)	M	VD	
			10.5									
			11.0									
			11.5									
			12.0		SPT 11.85-11.88 m 35/30mm HB							
			12.5									
			13.0									
			13.5		SPT 13.35-13.46 m 32/110mm HB							
			14.0									
			14.5									
			15.0		SPT 14.85-14.87 m 25/20mm HB							

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BOREHOLE: BQLA-04

SHEET: 4 OF 10

CLIENT: SMEC
PROJECT: Pioneer Burdekin PHES GI
LOCATION: Netherdale
JOB NO: 23117.000.001

COORDS: 658001.9 m 7662061.6 m GDA 2020 MGA Zone 55
SURFACE RL: 205.05 m DATUM: AHD
INCLINATION: -88° DIRECTION: 184°
HOLE DIA: 96/100 mm HOLE DEPTH: 40.07 m

DRILL RIG: Hanjin D&B
CONTRACTOR: Twin Hills
LOGGED: ENGEO DATE: 2/9/23
CHECKED: SF DATE: 25/10/23

Drilling					Sampling		Field Material Description					
METHOD / SUPPORT	PENETRATION RESISTANCE	WATER	LENGTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
WB	DP		15.0					SW	Gravelly SAND fine to coarse grained, well graded, sub-angular to angular, brown mottled off-white, fine grained, sub-angular gravel, trace low plasticity fines, (Extremely Weathered Granite)	M	VD	
	PR		15.5									
									For Continuation Refer to Sheet 5			
			16.0									
			16.5									
			17.0									
			17.5									
			18.0									
			18.5									
			19.0									
			19.5									
			20.0									

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BOREHOLE: BQLA-04

SHEET: 5 OF 10

CLIENT: SMEC
PROJECT: Pioneer Burdekin PHES GI
LOCATION: Netherdale
JOB NO: 23117.000.001

COORDS: 658001.9 m 7662061.6 m GDA 2020 MGA Zone 55
SURFACE RL: 205.05 m DATUM: AHD
INCLINATION: -88° DIRECTION: 184°
HOLE DIA: 96/100 mm HOLE DEPTH: 40.07 m

DRILL RIG: Hanjin D&B
CONTRACTOR: Twin Hills
LOGGED: ENGEO DATE: 2/9/23
CHECKED: SF DATE: 25/10/23

Drilling						Field Material Description					Defect Information	
METHOD / SUPPORT	WATER	TCR	RQD	DRILLED LENGTH (metres)	DEPTH RL	GRAPHIC LOG	MATERIAL DESCRIPTION	DETAILED WEATHERING	INFERRED STRENGTH I_{s50} (MPa) (AS1726:2017) VL 0.03, L 0.1, M 0.3, H 1.0, VH 3.0, EH 10	MEASURED STRENGTH: UCS & I_{s50} (MPa) (A.D.I.)	DEFECT DESCRIPTION Mechanical Discontinuities / non-intact defects shown only. See attached Detailed Defect Log for all recorded discontinuities and defects	AVERAGE DEFECT SPACING (mm) (ISO14689:2017) EC 20, VC 60, C 200, M 600, W 2000, VW
				15.0								
				15.5								
					15.65 189.41		Continuation of Sheet 4					
HQ3	95% RETURN	100	25	16.0	189.39		GRANITE Medium to coarse grained, igneous plutonic. White, grey and black. Crystalline, subhedral to euhedral hornblende and biotite crystals, equigranular feldspars and quartz. Poorly developed, indistinct foliation. Few mafic inclusions, fine grained, dark grey, mm to cm scale, comprised hornblende (?) and biotite (?), <20 mm. Very weak / subtle pink (potassic alteration (?) of orthoclase (?), becoming less noticeable with depth. Some defects fresh and clean, some with FeO staining. Mechanical Defects Js; gentle moderate, (5-8/m), Und - Cvd, Sm, FeO Std Js; very steep, (1-2/m), Und - Stp, Sm - Ro, FeO Std. 15.65 m - 15.83 m: Distinctly weathered, recovered as GRAVEL; fine to medium grained, sub-rounded. (Likely disaggregated by drilling). 16.50 m: VWP installed 05/09/2023	HW MW			15.96-16.05 m: J, 79°, Und, Sm, FeO Std 15.97-15.97 m: J, 15°, Und, Sm, FeO Std 16.28-16.29 m: J, 36°, Stp, Sm, FeO Std 16.30-16.31 m: J, 25°, Und, Ro, FeO Std	
	95% RETURN	100	73	16.5	16.50 188.56						16.67-16.68 m: J, 26°, Stp, Sm, MnO Std 16.71-16.72 m: J, 53°, Und, Sm, MnO Std 16.74-16.74 m: J, 19°, Und, Sm, FeO Std 16.80-16.81 m: J, 11°, Und, Sm, Cn 16.87-16.88 m: J, 26°, Cvd, Sm, FeO Std 16.92-16.92 m: J, 14°, Und, Sm, FeO Std 16.92-16.96 m: J, 45°, Und, Sm, FeO Std 16.95-17.07 m: J, 79°, Pln, Sm, FeO Std 17.26-17.28 m: J, 44°, Cvd, Sm, FeO Std 17.39-17.40 m: J, 35°, Stp, Sm, FeO Std 17.50-17.62 m: J, 87°, Cvd, Sm, FeO Std 17.63-17.66 m: J, 46°, Stp, Sm, FeO Std	
				17.0								
				17.5				FR				
	95% RETURN	100	83	18.0						I_{50}(A)>5.83 UCS=111	18.10-18.14 m: J, 44°, Und, Sm, FeO Std 18.19-18.22 m: J, 44°, Und, Sm, FeO Std	
				18.5							18.62-18.66 m: J, 43°, Und, Sm, FeO Std	
				19.0							18.97-19.05 m: J, 46°, Und, Sm, FeO Std	
	95% RETURN	100	97	19.5							19.49-19.57 m: J, 54°, Und, Sm, Cn	
					19.92 185.14							
				20.0	20.00		19.92 m - 19.94 m: Mafic inclusion; fine grained, dark					

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It has been prepared for geotechnical purposes only.

ENGEO 2.00.2.2 LIB.GLB Log ENGEO CORED BOREHOLE PIONEER BURDEKIN -MASTERBHT03 REWORK-AUSLAPTOP008.GPJ <<DrawingFile>> 30/10/2024 18:07 10.03.00.09 Datgel Tools

BOREHOLE: BQLA-04

SHEET: 6 OF 10

CLIENT: SMEC
PROJECT: Pioneer Burdekin PHES GI
LOCATION: Netherdale
JOB NO: 23117.000.001

COORDS: 658001.9 m 7662061.6 m GDA 2020 MGA Zone 55
SURFACE RL: 205.05 m DATUM: AHD
INCLINATION: -88° DIRECTION: 184°
HOLE DIA: 96/100 mm HOLE DEPTH: 40.07 m

DRILL RIG: Hanjin D&B
CONTRACTOR: Twin Hills
LOGGED: ENGEO DATE: 2/9/23
CHECKED: SF DATE: 25/10/23

Drilling						Field Material Description				Defect Information	
METHOD / SUPPORT	WATER	TCR	RQD	DRILLED LENGTH (metres)	DEPTH RL	GRAPHIC LOG	MATERIAL DESCRIPTION	DETAILED WEATHERING	INFERRED STRENGTH Is_{50} (MPa) (AS1726:2017) VL 0.03 L 0.1 M 0.3 H 1.0 VH 3.0 EH 10	MEASURED STRENGTH: UCS & I_{s50} (MPa) (A.D.I.)	DEFECT DESCRIPTION	AVERAGE DEFECT SPACING (mm) (ISO14689:2017) EC 20 VC 60 C 200 M 600 W 2000 VW
HQ3	95% RETURN	100	97	1.50	185.06		grey, concentration of hornblende and mica, sub-rounded, sharp margins. GRANITE Medium to coarse grained, igneous plutonic. White, grey and black. Crystalline, subhedral to euhedral hornblende and biotite crystals, equigranular feldspars and quartz. Poorly developed, indistinct foliation. Few mafic inclusions, fine grained, dark grey, mm to cm scale, comprised hornblende (?) and biotite (?), <20 mm. Very weak / subtle pink (potassic alteration (?) of orthoclase (?), becoming less noticeable with depth. Some defects fresh and clean, some with FeO staining. Mechanical Defects Js; gentle moderate, (5-8/m), Und - Cvd, Sm, FeO Std Js; very steep, (1-2/m), Und - Stp, Sm - Ro, FeO Std. From 20.00 m: Rock generally pale grey with faint pink orthoclase throughout, most noticeable when wet Defects become planar to undulating, rough, clean.	FR			20.00-20.04 m: J, 39°, Stp, Sm, Feld Std	
											20.49-20.52 m: J, 26°, Stp, Ro, Cn	
											20.89-20.90 m: J, 9°, Und, Ro, Cn	
											21.03-21.03 m: J, 12°, Stp, Ro, Cn	
	95% RETURN	100	100	1.40	21.40 183.66		From 21.40 m: Pink-brown potassic alteration (?) halos associated with defects.	SA			21.49-21.51 m: J, 51°, Und, Sm, Feld Std	
											21.70-21.73 m: J, 51°, Pln, Sm, Feld Std	
								FR			21.79-21.80 m: J, 21°, Und, Sm, Cn	
	90% RETURN	100	100	1.58	22.98 182.08		22.98 m - 23.96 m: With pink k-spar (potassic ?) alteration.			UCS=157 I_{50}(A)>5.78	22.78-22.85 m: J, 71°, Stp, Ro, Cn	
					23.25 181.82 181.81		Below 23.25 m: With some thin zones of grey discolouration of groundmass from 50 mm up to 100 mm wide, along joints. 23.26 m - 23.40 m and 23.45 m - 23.50 m: Grey discolouration, likely silicic (?) alteration.				23.23-23.24 m: J, 21°, Und, Ro, Feld Std	
											23.46-23.49 m: J, 42°, Und, Ro, Cn	
	95% RETURN	100	93	1.40	24.40 180.67		24.40 - 24.90 m: Pink potassic (?) alteration halos from 10mm to 40 mm wide along felsic veins at 75° (1 mm - 5mm thick).	SA			24.12-24.14 m: J, 34°, Und, Sm, CA Std	
											24.56-24.56 m: J, 2°, Und, Sm, Cn 24.59-24.59 m: J, 1°, Und, Sm, Cn 24.68-24.70 m: J, 34°, Stp, Ro, Feld Std 24.74-24.74 m: J, 4°, Cvd, Sm, Feld Std 24.78-24.82 m: J, 67°, Stp, Sm, Feld Std	
					25.00							

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BOREHOLE: BQLA-04

SHEET: 7 OF 10

CLIENT: SMEC
PROJECT: Pioneer Burdekin PHES GI
LOCATION: Netherdale
JOB NO: 23117.000.001

COORDS: 658001.9 m 7662061.6 m GDA 2020 MGA Zone 55
SURFACE RL: 205.05 m DATUM: AHD
INCLINATION: -88° DIRECTION: 184°
HOLE DIA: 96/100 mm HOLE DEPTH: 40.07 m

DRILL RIG: Hanjin D&B
CONTRACTOR: Twin Hills
LOGGED: ENGEO DATE: 2/9/23
CHECKED: SF DATE: 25/10/23

Drilling						Field Material Description					Defect Information	
METHOD / SUPPORT	WATER	TCR	RQD	DRILLED LENGTH (metres)	DEPTH RL	GRAPHIC LOG	MATERIAL DESCRIPTION	DETAILED WEATHERING	INFERRED STRENGTH I_{s50} (MPa) (AS1726:2017) VL 0.03 L 0.1 M 0.3 H 1.0 VH 3.0 EH 10	MEASURED STRENGTH: UCS & I_{s50} (MPa) (A.D.L.)	DEFECT DESCRIPTION	AVERAGE DEFECT SPACING (mm) (ISO14689:2017) EC 20 VC 60 C 200 M 600 W 2000 VW
HQ3	95% RETURN	100	95	25.0	180.07		GRANITE Medium to coarse grained, igneous plutonic. White, grey and black. Crystalline, subhedral to euhedral hornblende and biotite crystals, equigranular feldspars and quartz. Poorly developed, indistinct foliation. Few mafic inclusions, fine grained, dark grey, mm to cm scale, comprised hornblende (?) and biotite (?), <20 mm. Very weak / subtle pink (potassic alteration (?) of orthoclase (?), becoming less noticeable with depth. Some defects fresh and clean, some with FeO staining. Mechanical Defects Js; gentle moderate, (5-8/m), Und - Cvd, Sm, FeO Std Js; very steep, (1-2/m), Und - Stp, Sm - Ro, FeO Std. From 25.00 m: Occasional orange pink veins with possible carbonate infill, soft, white streak (calcite ?).	FR				
				25.5							25.41-25.43 m: J, 19°, Und, Ro, Feld Std	
											25.60-25.64 m: J, 45°, Stp, Sm, Cn 25.67-25.67 m: J, 9°, Und, Sm, Cn 25.68-25.69 m: J, 0°, Und, Sm, Cn	
				26.0							25.83-25.86 m: J, 48°, Und, Sm, Feld Std	
											26.14-26.17 m: J, 43°, Und, Sm, Feld Std	
	95% RETURN	100	100	26.5								
				27.0						UCS=144		
										I_{50}(A)>4.90		
					27.40							
					177.67		27.38 m - 27.41 m: Mafic (hornblende and mica) inclusion: fine grained, dark grey, sub-rounded, sharp margins.					
				27.5								
				28.0							27.91-27.91 m: J, 39°, Stp, Sm, Feld Std	
	95% RETURN	100	100	28.5							28.66-28.67 m: J, 27°, Und, Sm, Cn 28.69-28.71 m: J, 32°, Und, Sm, Cn	
											28.88-28.89 m: J, 12°, Und, Sm, Cn 28.90-28.92 m: J, 34°, Stp, Ro, Feld Std	
				29.0							29.03-29.04 m: J, 14°, Pln, Sm, Cn	
				29.5							29.44-29.45 m: J, 11°, Und, Sm, Cn	
	95% RETURN	100	100	30.0								

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BOREHOLE: BQLA-04

SHEET: 8 OF 10

CLIENT: SMEC
PROJECT: Pioneer Burdekin PHES GI
LOCATION: Netherdale
JOB NO: 23117.000.001

COORDS: 658001.9 m 7662061.6 m GDA 2020 MGA Zone 55
SURFACE RL: 205.05 m DATUM: AHD
INCLINATION: -88° DIRECTION: 184°
HOLE DIA: 96/100 mm HOLE DEPTH: 40.07 m

DRILL RIG: Hanjin D&B
CONTRACTOR: Twin Hills
LOGGED: ENGEO DATE: 2/9/23
CHECKED: SF DATE: 25/10/23

Drilling						Field Material Description				Defect Information	
METHOD / SUPPORT	WATER	TCR	RQD	DRILLED LENGTH (metres)	DEPTH RL	GRAPHIC LOG	MATERIAL DESCRIPTION	DETAILED WEATHERING	INFERRED STRENGTH Is_{50} (MPa) (AS1726:2017) VL 0.03 L 0.1 M 0.3 H 1.0 VH 3.0 EH 10	MEASURED STRENGTH: UCS & I_{s50} (MPa) (A.D.L.)	DEFECT DESCRIPTION	AVERAGE DEFECT SPACING (mm) (ISO14689:2017) EC 20 VC 60 C 200 M 600 W 2000 VW
HQ3	95% RETURN	100	100	0.5	30.0 30.46 174.61		GRANITE Medium to coarse grained, igneous plutonic. White, grey and black. Crystalline, subhedral to euhedral hornblende and biotite crystals, equigranular feldspars and quartz. Poorly developed, indistinct foliation. Few mafic inclusions, fine grained, dark grey, mm to cm scale, comprised hornblende (?) and biotite (?), <20 mm. Very weak / subtle pink (potassic alteration (?) of orthoclase (?), becoming less noticeable with depth. Some defects fresh and clean, some with FeO staining. Mechanical Defects Js; gentle moderate, (5-8/m), Und - Cvd, Sm, FeO Std Js; very steep, (1-2/m), Und - Stp, Sm - Ro, FeO Std. 30.43 m - 30.58 m: Grey silicic (?) alteration, 120 mm wide, possible silification or annealing. Increased concentration of quartz. From 30.80m: Common orange to pink orthoclase (?) throughout, generally associated with defects though can persist in absence of defects. Possibly a subtle magmatic chemistry variation.	FR SA FR			30.05-30.07 m: J, 41°, Stp, Sm, Feld Std 30.61-30.63 m: J, 19°, Stp, Ro, Cn 30.90-30.90 m: J, 5°, Irr, Ro, Cn 31.07-31.07 m: J, 2°, Und, Ro, Feld Std 31.28-31.32 m: J, 44°, Stp, Sm, Feld Std 31.58-31.61 m: J, 34°, Und, Sm, Cn 31.94-31.98 m: J, 34°, Und, Sm, Cn 32.22-32.23 m: J, 16°, Und, Sm, Feld Std 32.49-32.53 m: J, 40°, Und, Sm, Cn 32.83-32.87 m: J, 54°, Und, Sm, Cn 32.90-32.94 m: J, 44°, Und, Sm, Cn 33.40-33.40 m: J, 1°, Cvd, Sm, Cn 34.07-34.19 m: J, 20°, Pln, Ro, Pinkish stains along joint, 10mm wide each side. 34.17-34.21 m: J, 40°, Pln, Ro 34.70-34.71 m: J, 10°, Cvd, Ro	
				1.0	30.80 174.27							
				1.0	31.0							
	95% RETURN	100	91	1.0	32.0							
				0.5	32.40 172.67		From 32.40 m: Noticeable increase in brass on core, possible core deformation.					
				1.0	33.0							
	90% RETURN	95	71	0.5	33.50 171.57		33.50 m - 33.60 m: Drilling induced breaks, multiple attempts to break and recover core.			I_{50}(A)>5.59		
	95% RETURN	100	100	0.5	34.0							
	95% RETURN	100	85	0.5	34.10 170.97		From 34.10 m: Defects typically become undulating to planar, rough, slightly altered, pale pink with calcite.					
		100	100	0.5	34.5 35.0							

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ENGEO 2.00.2.2 LIB.GLB Log ENGEO CORED BOREHOLE PIONEER BURDEKIN -MASTERBHT03 REWORK-AUSLAPTOP008.GPJ <<DrawingFile>> 30/10/2024 18:07 10.03.00.09 Datgel Tools

BOREHOLE: BQLA-04

SHEET: 9 OF 10

CLIENT: SMEC
PROJECT: Pioneer Burdekin PHES GI
LOCATION: Netherdale
JOB NO: 23117.000.001

COORDS: 658001.9 m 7662061.6 m GDA 2020 MGA Zone 55
SURFACE RL: 205.05 m DATUM: AHD
INCLINATION: -88° DIRECTION: 184°
HOLE DIA: 96/100 mm HOLE DEPTH: 40.07 m

DRILL RIG: Hanjin D&B
CONTRACTOR: Twin Hills
LOGGED: ENGEO DATE: 2/9/23
CHECKED: SF DATE: 25/10/23

Drilling						Field Material Description					Defect Information	
METHOD / SUPPORT	WATER	TCR	RQD	DRILLED LENGTH (metres)	DEPTH RL	GRAPHIC LOG	MATERIAL DESCRIPTION	DETAILED WEATHERING	INFERRED STRENGTH Is_{50} (MPa) (AS1726:2017) VL 0.03, L 0.1, M 0.3, H 1.0, VH 3.0, EH 10	MEASURED STRENGTH: UCS & I_{s50} (MPa) (A.D.L)	DEFECT DESCRIPTION Mechanical Discontinuities / non-intact defects shown only. See attached Detailed Defect Log for all recorded discontinuities and defects	AVERAGE DEFECT SPACING (mm) (ISO14689:2017) EC 20, VC 60, C 200, M 600, W 2000, VW
HQ3	95% RETURN	100	100	35.0			GRANITE Medium to coarse grained, igneous plutonic. White, grey and black. Crystalline, subhedral to euhedral hornblende and biotite crystals, equigranular feldspars and quartz. Poorly developed, indistinct foliation. Few mafic inclusions, fine grained, dark grey, mm to cm scale, comprised hornblende (?) and biotite (?), <20 mm. Very weak / subtle pink (potassic alteration (?) of orthoclase (?), becoming less noticeable with depth. Some defects fresh and clean, some with FeO staining. Mechanical Defects Js; gentle moderate, (5-8/m), Und - Cvd, Sm, FeO Std Js; very steep, (1-2/m), Und - Stp, Sm - Ro, FeO Std.	FR			35.05-35.07 m: J, 15°, Pln, Ro	
				35.5							35.38-35.43 m: J, 45°, Pln, Ro 35.51-35.58 m: J, 45°, Pln, Ro 35.68-35.70 m: J, 35°, Pln, Ro, Cn	
	95% RETURN	100	95	36.0						UCS=169 I_{50}(A)>4.94	35.88-35.90 m: J, 15°, Pln, Ro, Cn 35.96-35.96 m: J, 0°, Pln, Ro, Cn	
				36.5							36.45-36.50 m: J, 44°, Pln, Ro	
				37.0							36.87-36.90 m: J, 33°, Pln, Ro 36.99-37.00 m: J, 19°, Cvd, Ro	
	95% RETURN	100	95	37.5							37.44-37.46 m: J, 21°, Pln, FeO Std 37.60-37.62 m: J, 25°, Pln, Ro, FeO Std 37.66-37.68 m: J, 25°, Pln, Ro, FeO Std	
				38.0							37.92-37.93 m: J, 21°, Pln, Std 37.98-37.99 m: J, 15°, Pln, Ro, FeO Std	
				38.5							38.52-38.54 m: J, 20°, Pln, Ro 38.69-38.69 m: J, 0°, Pln, Ro	
	95% RETURN	100	100	39.0	*39.00* 166.07		39.00 m: Majority of steep defects intact.				39.00-39.03 m: J, 20°, Pln, Ro	
				39.5							39.41-39.43 m: J, 20°, Pln, Ro 39.70-39.72 m: J, 25°, Und, Ro	
				40.0								

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It has been prepared for geotechnical purposes only.

BOREHOLE: BQLA-04

SHEET: 10 OF 10

CLIENT: SMEC
PROJECT: Pioneer Burdekin PHES GI
LOCATION: Netherdale
JOB NO: 23117.000.001

COORDS: 658001.9 m 7662061.6 m GDA 2020 MGA Zone 55
SURFACE RL: 205.05 m DATUM: AHD
INCLINATION: -88° DIRECTION: 184°
HOLE DIA: 96/100 mm HOLE DEPTH: 40.07 m

DRILL RIG: Hanjin D&B
CONTRACTOR: Twin Hills
LOGGED: ENGEO DATE: 2/9/23
CHECKED: SF DATE: 25/10/23

Drilling						Field Material Description					Defect Information	
METHOD / SUPPORT	WATER	TCR	RQD	DRILLED LENGTH (metres)	DEPTH RL	GRAPHIC LOG	MATERIAL DESCRIPTION	DETAILED WEATHERING	INFERRED STRENGTH Is_{50} (MPa) (AS1726:2017) VL 0.03 L 0.1 M 0.3 H 1.0 VH 3.0 EH 10	MEASURED STRENGTH: UCS & I_{s50} (MPa) (A.D.I.)	DEFECT DESCRIPTION	AVERAGE DEFECT SPACING (mm) (ISO14689:2017) EC 20 VC 60 C 200 M 600 W 2000 VW
		100	100	40.0	~~40.07~~ 165.04 165.01	+ +	40.04 m - 40.06 m: Mafic (hornblende and mica) inclusion; fine grained, dark grey, sub-angular, sharp margins. END OF BOREHOLE @ 40.07 m TARGET DEPTH VIBRATING WIRE PIEZOMETER INSTALLED, SINGLE SENSOR AT 16.50 M DEPTH Borehole relocated due to limited access. Coordinate taken by hand-held GPS				Mechanical Discontinuities / non-intact defects shown only. See attached Detailed Defect Log for all recorded discontinuities and defects	

40.5
41.0
41.5
42.0
42.5
43.0
43.5
44.0
44.5
45.0

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ENGEO 2.00.2.2 LIB.GLB Log ENGEO CORED BOREHOLE PIONEER BURDEKIN -MASTERBHT03 REWORK-AUSLAPTOP008.GPJ <<DrawingFile>> 30/10/2024 18:07 10.03.00.09 Datgel Tools

JOB No.:	30032772
Client:	Queensland Hydro
Site:	Pioneer-Burdekin

Borehole ID:	BQLA-04
Termination Depth:	40.07

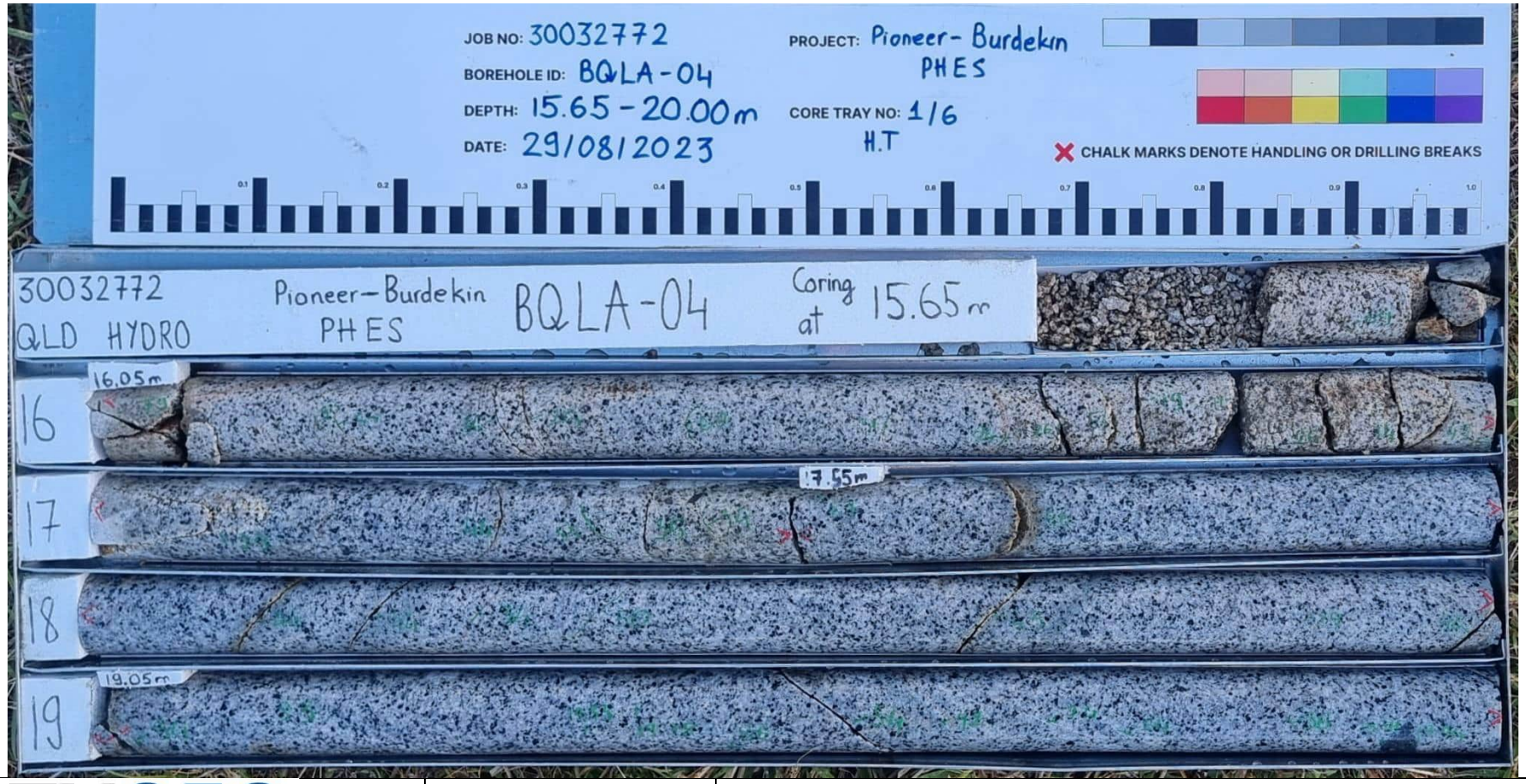
Depth (m)			Type	Angle (°)	Roughness	Shape	Infill	Weathering	Nature	Comments
From	To	Midpoint								
15.88	15.94	15.91	Joint	69	Rough	Undulating	FeO	Slightly Weathered	Intact	
15.96	16.05	16.01	Joint	79	Smooth	Undulating	FeO	Moderately Weathered	Stain	
15.97	15.97	15.97	Joint	15	Smooth	Undulating	FeO	Moderately Weathered	Stain	
16.16	16.16	16.16	Joint	30	Smooth	Undulating	FeO	Moderately Weathered	Intact	
16.17	16.18	16.18	Joint	55	Smooth	Undulating	FeO	Moderately Weathered	Intact	
16.28	16.29	16.29	Joint	36	Smooth	Stepped	FeO	Moderately Weathered	Stain	
16.30	16.31	16.31	Joint	25	Rough	Undulating	FeO	Moderately Weathered	Stain	
16.42	16.44	16.43	Joint	60	Rough	Undulating	FeO	Moderately Weathered	Intact	
16.56	16.58	16.57	Joint	31	Smooth	Undulating	FeO	Moderately Weathered	Intact	
16.63	16.64	16.64	Joint	24	Smooth	Undulating	FeO	Moderately Weathered	Intact	
16.67	16.68	16.68	Joint	26	Smooth	Stepped	MnO	Moderately Weathered	Stain	
16.71	16.72	16.72	Joint	53	Smooth	Undulating	MnO	Moderately Weathered	Stain	
16.74	16.74	16.74	Joint	19	Smooth	Undulating	FeO	Moderately Weathered	Stain	
16.80	16.81	16.81	Joint	11	Smooth	Undulating		Slightly Weathered	Clean	
16.87	16.88	16.88	Joint	26	Smooth	Curved	FeO	Moderately Weathered	Stain	
16.92	16.92	16.92	Joint	14	Smooth	Undulating	FeO	Moderately Weathered	Stain	
16.92	16.96	16.94	Joint	45	Smooth	Undulating	FeO	Moderately Weathered	Stain	
16.95	17.07	17.01	Joint	79	Smooth	Planar	FeO	Moderately Weathered	Stain	
16.98	16.98	16.98	Joint	59	Smooth	Curved	FeO	Moderately Weathered	Intact	
17.26	17.28	17.27	Joint	44	Smooth	Curved	FeO	Moderately Weathered	Stain	
17.34	17.37	17.36	Joint	55	Smooth	Curved	FeO	Moderately Weathered	Intact	
17.39	17.40	17.40	Joint	35	Smooth	Stepped	FeO	Moderately Weathered	Stain	
17.41	17.43	17.42	Vein	34	Smooth	Curved	Calcite	Slightly Altered	Intact	
17.50	17.62	17.56	Joint	87	Smooth	Curved	FeO	Moderately Weathered	Stain	
17.63	17.66	17.65	Joint	46	Smooth	Stepped	FeO	Moderately Weathered	Stain	
18.10	18.14	18.12	Joint	44	Smooth	Undulating	FeO	Slightly Weathered	Stain	
18.19	18.22	18.21	Joint	44	Smooth	Undulating	FeO	Slightly Weathered	Stain	
18.26	18.29	18.28	Joint	34	Smooth	Undulating	FeO	Slightly Weathered	Intact	
18.33	18.38	18.36	Joint	50	Smooth	Undulating	FeO	Slightly Weathered	Intact	
18.62	18.66	18.64	Joint	43	Smooth	Undulating	FeO	Slightly Weathered	Stain	
18.84	18.88	18.86	Joint	29	Smooth	Undulating	FeO	Slightly Weathered	Intact	
18.97	19.05	19.01	Joint	46	Smooth	Undulating	FeO	Slightly Weathered	Stain	
19.01	19.05	19.03	Vein	34	Smooth	Undulating	Feldspar (Ca/Na)	Slightly Altered	Intact	
19.04	19.28	19.16	Vein	83	Smooth	Undulating	Calcite	Slightly Altered	Intact	
19.34	19.53	19.44	Joint	86	Smooth	Undulating	FeO	Slightly Weathered	Intact	
19.49	19.57	19.53	Joint	54	Smooth	Undulating		Slightly Weathered	Clean	
19.55	19.62	19.59	Vein	42	Smooth	Undulating	Calcite	Slightly Altered	Intact	
19.59	19.73	19.66	Vein	74	Smooth	Undulating	Calcite	Slightly Altered	Intact	
19.69	19.82	19.76	Vein	64	Smooth	Undulating	Calcite	Slightly Altered	Intact	
19.82	19.87	19.85	Vein	36	Smooth	Undulating	Feldspar (Ca/Na)	Slightly Altered	Intact	
20.00	20.04	20.02	Joint	39	Smooth	Stepped	Feldspar (Ca/Na)	Slightly Altered	Stain	
20.20	20.22	20.21	Joint	32	Smooth	Undulating	Feldspar (Ca/Na)	Slightly Altered	Intact	
20.25	20.28	20.27	Joint	44	Smooth	Undulating	Feldspar (Ca/Na)	Slightly Altered	Intact	
20.28	20.35	20.32	Vein	69	Smooth	Stepped	Calcite	Slightly Altered	Intact	
20.30	20.34	20.32	Joint	44	Smooth	Undulating	Feldspar (Ca/Na)	Slightly Altered	Intact	
20.45	20.48	20.47	Joint	44	Smooth	Undulating	Feldspar (Ca/Na)	Slightly Altered	Intact	
20.49	20.52	20.51	Joint	26	Rough	Stepped		Slightly Weathered	Clean	
20.72	20.77	20.75	Joint	36	Rough	Stepped	Feldspar (Ca/Na)	Moderately Altered	Intact	
20.80	21.02	20.91	Joint	81	Rough	Undulating	Feldspar (Ca/Na)	Moderately Altered	Intact	
20.89	20.90	20.90	Joint	9	Rough	Undulating		Slightly Weathered	Clean	
21.03	21.03	21.03	Joint	12	Rough	Stepped		Slightly Weathered	Clean	
21.07	31.11	26.09	Joint	57	Smooth	Undulating	Unidentifed mineral	Slightly Altered	Intact	
21.18	21.20	21.19	Joint	44	Rough	Curved	Feldspar (Ca/Na)	Slightly Altered	Intact	
21.38	21.40	21.39	Joint	31	Smooth	Stepped	Feldspar (Ca/Na)	Slightly Altered	Intact	
21.45	21.68	21.57	Vein	81	Rough	Undulating	Feldspar (Ca/Na)	Moderately Altered	Intact	

Depth (m)			Type	Angle (°)	Roughness	Shape	Infill	Weathering	Nature	Comments
From	To	Midpoint								
21.49	21.51	21.50	Joint	51	Smooth	Undulating	Feldspar (Ca/Na)	Slightly Altered	Stain	
21.70	21.73	21.72	Joint	51	Smooth	Planar	Feldspar (Ca/Na)	Slightly Altered	Stain	
21.79	21.80	21.80	Joint	21	Smooth	Undulating			Clean	
21.81	21.80	21.81	Joint	21	Smooth	Undulating		Slightly Weathered	Clean	
21.90	21.93	21.92	Joint	43	Smooth	Undulating	Feldspar (Ca/Na)	Slightly Altered	Intact	
22.55	22.57	22.56	Vein	39	Smooth	Undulating	Feldspar (Ca/Na)	Slightly Altered	Intact	Hydrothermal
22.78	22.85	22.82	Joint	71	Rough	Stepped		Slightly Weathered	Clean	
23.21	23.31	23.26	Vein	74	Smooth	Undulating	Quartz	Slightly Altered	Intact	
23.23	23.24	23.24	Joint	21	Rough	Undulating	Feldspar (Ca/Na)	Slightly Altered	Stain	
23.30	23.33	23.32	Vein	44	Smooth	Undulating	Calcite	Slightly Altered	Intact	
23.46	23.49	23.48	Joint	42	Rough	Undulating		Slightly Weathered	Clean	
23.75	23.79	23.77	Joint	72	Rough	Curved	Calcite	Slightly Altered	Intact	
23.77	23.80	23.79	Joint	64	Smooth	Undulating	Calcite	Slightly Altered	Intact	
24.07	24.10	24.09	Joint	39	Smooth	Undulating	Feldspar (Ca/Na)	Moderately Altered	Intact	
24.12	24.14	24.13	Joint	34	Smooth	Undulating	Calcite	Slightly Altered	Stain	
24.16	24.18	24.17	Vein	20	Smooth	Undulating	Feldspar (Ca/Na)	Slightly Altered	Intact	
24.25	24.28	24.27	Joint	42	Smooth	Undulating	Feldspar (Ca/Na)	Slightly Altered	Intact	
24.30	24.36	24.33	Vein	52	Smooth	Undulating	Quartz	Slightly Altered	Intact	
24.55	24.80	24.68	Vein	75	Smooth	Undulating	Calcite	Moderately Altered	Infilled	Hydrothermal
24.56	24.56	24.56	Joint	2	Smooth	Undulating		Slightly Weathered	Clean	
24.59	24.59	24.59	Joint	1	Smooth	Undulating		Slightly Weathered	Clean	
24.68	24.70	24.69	Joint	34	Rough	Stepped	Feldspar (Ca/Na)	Moderately Altered	Stain	
24.74	24.74	24.74	Joint	4	Smooth	Curved	Feldspar (Ca/Na)	Moderately Altered	Stain	
24.78	24.82	24.80	Joint	67	Smooth	Stepped	Feldspar (Ca/Na)	Moderately Altered	Stain	
24.82	24.96	24.89	Joint	75	Smooth	Stepped	Calcite	Moderately Altered	Intact	
25.06	25.25	25.16	Other... Refer Comments	68	Smooth	Undulating	Feldspar (Ca/Na)	Moderately Altered	Intact	Hydrothermal
25.34	25.42	25.38	Joint	62	Smooth	Undulating	Calcite	Slightly Altered	Intact	
25.41	25.43	25.42	Joint	19	Rough	Undulating	Feldspar (Ca/Na)	Slightly Altered	Stain	
25.42	25.48	25.45	Vein	53	Smooth	Undulating	Calcite	Moderately Altered	Intact	
25.51	25.56	25.54	Joint	44	Smooth	Undulating	Calcite	Slightly Altered	Intact	
25.60	25.64	25.62	Joint	45	Smooth	Stepped		Slightly Weathered	Clean	
25.67	25.67	25.67	Joint	9	Smooth	Undulating		Slightly Weathered	Clean	
25.68	25.69	25.69	Joint	0	Smooth	Undulating		Slightly Weathered	Clean	
25.71	25.77	25.74	Joint	49	Smooth	Undulating	Calcite	Slightly Altered	Intact	
25.83	25.86	25.85	Joint	48	Smooth	Undulating	Feldspar (Ca/Na)	Slightly Altered	Stain	
25.93	25.96	25.95	Joint	40	Smooth	Undulating	Feldspar (Ca/Na)	Slightly Altered	Intact	
26.14	26.17	26.16	Joint	43	Smooth	Undulating	Feldspar (Ca/Na)	Moderately Altered	Stain	
26.33	26.37	26.35	Joint	41	Rough	Undulating	Feldspar (Ca/Na)	Slightly Altered	Intact	
26.59	26.63	26.61	Joint	39	Smooth	Stepped		Slightly Weathered	Clean	Drill break¿
26.86	26.98	26.92	Vein	72	Smooth	Undulating	Calcite	Highly Altered	Intact	
27.40	27.42	27.41	Other... Refer Comments							Mafic inclusion
27.52	27.72	27.62	Vein	68	Smooth	Undulating	Feldspar (Ca/Na)	Highly Altered	Intact	
27.74	27.76	27.75	Joint	25	Smooth	Undulating	Unidentifed mineral	Slightly Altered	Intact	Dark grey colour
27.91	27.91	27.91	Joint	39	Smooth	Stepped	Feldspar (Ca/Na)	Moderately Altered	Stain	
28.16	28.18	28.17	Vein	40	Smooth	Stepped	Calcite	Moderately Altered	Filled	
28.24	28.25	28.25	Joint	6	Smooth	Undulating	Calcite	Slightly Altered	Intact	
28.35	28.37	28.36	Joint	38	Smooth	Undulating		Slightly Altered	Intact	
28.49	28.55	28.52	Joint	58	Smooth	Undulating	Feldspar (Ca/Na)	Slightly Altered	Intact	
28.66	28.67	28.66	Joint	27	Smooth	Undulating			Clean	
28.67	28.88	28.78	Weathered Zone		Smooth	Undulating		Slightly Weathered	Clean	
28.69	28.71	28.70	Joint	32	Smooth	Undulating		Slightly Weathered	Clean	
28.76	28.67	28.72	Joint	27	Smooth	Undulating		Slightly Weathered	Clean	
28.88	28.89	28.89	Joint	12	Smooth	Undulating		Slightly Weathered	Clean	
28.90	28.92	28.91	Joint	34	Rough	Stepped	Feldspar (Ca/Na)	Moderately Altered	Stain	
28.91	28.96	28.94	Vein	40	Smooth	Undulating	Calcite	Moderately Altered	Intact	
29.03	29.04	29.04	Joint	14	Smooth	Planar		Slightly Weathered	Clean	
29.44	29.45	29.45	Joint	11	Smooth	Undulating		Slightly Weathered	Clean	
29.73	29.75	29.74	Joint	19	Smooth	Undulating	Feldspar (Ca/Na)	Slightly Altered	Intact	
29.88	29.61	29.75	Joint	44	Smooth	Undulating	Calcite	Slightly Altered	Intact	
29.93	29.96	29.95	Vein	21	Smooth	Undulating	Calcite	Moderately Altered	Infilled	

Depth (m)			Type	Angle (°)	Roughness	Shape	Infill	Weathering	Nature	Comments
From	To	Midpoint								
30.05	30.07	30.06	Joint	41	Smooth	Stepped	Feldspar (Ca/Na)	Slightly Altered	Stain	
30.49	30.53	30.51	Joint	39	Smooth	Stepped		Slightly Altered	Intact	
30.49	30.56	30.53	Joint	72	Rough	Undulating	Calcite	Slightly Altered	Intact	
30.54	30.57	30.56	Joint	36	Rough	Undulating	Calcite	Slightly Altered	Intact	
30.61	30.63	30.62	Joint	19	Rough	Stepped		Slightly Weathered	Clean	
30.72	30.84	30.78	Joint	81	Smooth	Undulating	Feldspar (Ca/Na)	Moderately Altered	Intact	
30.86	30.60	30.73	Vein	63	Smooth	Undulating	Calcite	Moderately Altered	Intact	
30.90	30.90	30.90	Joint	5	Rough	Irregular		Slightly Weathered	Clean	
30.92	30.93	30.93	Joint	26	Smooth	Undulating		Slightly Weathered	Intact	
31.07	31.07	31.07	Joint	2	Rough	Undulating	Feldspar (Ca/Na)	Slightly Weathered	Stain	
31.28	31.32	31.30	Joint	44	Smooth	Stepped	Feldspar (Ca/Na)	Moderately Altered	Stain	
31.33	31.36	31.35	Joint	34	Smooth	Undulating	Pyrite	Slightly Altered	Intact	
31.36	31.60	31.48	Sheared - Zone	89	Smooth	Undulating	Calcite	Moderately Altered	Intact	SZ, 89°, Und, Sm, CA, IT, 240mm aperture. 8x healed joints within the zone.
31.58	31.61	31.60	Joint	34	Smooth	Undulating		Slightly Weathered	Clean	
31.62	31.95	31.79	Sheared - Zone	89	Smooth	Undulating	Calcite	Moderately Altered	Intact	SZ, 89°, Und, Sm, CA, IT, 330mm aperture. 7x healed joints within the zone.
31.94	31.98	31.96	Joint	34	Smooth	Undulating		Slightly Weathered	Clean	
32.02	32.25	32.14	Vein	76	Smooth	Undulating	Calcite	Moderately Altered	Intact	
32.22	32.23	32.23	Joint	16	Smooth	Undulating	Feldspar (Ca/Na)	Slightly Altered	Stain	
32.22	32.55	32.39	Joint	83	Smooth	Undulating	Feldspar (Ca/Na)	Moderately Altered	Intact	
32.24	32.43	32.34	Joint	60	Smooth	Undulating	Feldspar (Ca/Na)	Slightly Altered	Intact	
32.49	32.53	32.51	Joint	40	Smooth	Undulating		Slightly Altered	Clean	
32.55	32.70	32.63	Joint	83	Smooth	Undulating	Calcite	Moderately Altered	Intact	
32.63	32.67	32.65	Joint	26	Smooth	Undulating	Feldspar (Ca/Na)	Moderately Altered	Intact	
32.70	32.72	32.71	Joint	21	Smooth	Undulating	Feldspar (Ca/Na)	Moderately Altered	Intact	
32.77	33.01	32.89	Joint	79	Smooth	Undulating	Calcite	Slightly Altered	Intact	
32.83	32.87	32.85	Joint	54	Smooth	Undulating		Slightly Weathered	Clean	
32.90	32.94	32.92	Joint	44	Smooth	Undulating		Slightly Weathered	Clean	
33.02	33.08	33.05	Joint	59	Smooth	Undulating	Pyrite	Slightly Altered	Intact	
33.03	33.40	33.22	Joint	89	Smooth	Irregular	Pyrite	Slightly Altered	Intact	
33.38	33.60	33.49	Drilling Break							Non-intact
33.40	33.40	33.40	Joint	1	Smooth	Curved		Slightly Weathered	Clean	
33.60	34.00	33.80	Vein	89	Smooth	Undulating	Calcite	Moderately Altered	Intact	
33.88	33.91	33.90	Joint	25	Smooth	Undulating	Pyrite	Slightly Altered	Intact	
34.07	34.19	34.13	Joint	20	Rough	Planar		Slightly Altered		Pinkish stains along joint, 10mm wide each side.
34.14	34.59	34.37	Joint	90	Rough	Undulating			Intact	
34.17	34.21	34.19	Joint	40	Rough	Planar		Slightly Altered		
34.26	34.33	34.30	Joint	40	Rough	Planar			Intact	
34.44	34.52	34.48	Joint	59	Rough	Planar			Intact	
34.44	34.54	34.49	Joint	71	Rough	Planar			Intact	
34.53	34.59	34.56	Joint	44	Rough	Planar			Intact	
34.70	24.70	34.70	Joint	10	Rough	Curved		Slightly Altered		
35.05	35.07	35.06	Joint	15	Rough	Planar				
35.38	35.43	35.41	Joint	45	Rough	Planar		Slightly Altered		
35.51	35.58	35.55	Joint	45	Rough	Planar		Slightly Altered		
35.57	35.63	35.60	Joint	50	Rough	Planar			Intact	
35.58	35.65	35.62	Joint	50	Rough	Planar		Slightly Altered	Intact	
35.68	35.70	35.69	Joint	35	Rough	Planar			Clean	
35.88	35.90	35.88	Joint	15	Rough	Planar			Clean	
35.96	35.96	35.96	Joint	0	Rough	Planar			Clean	
36.45	36.50	36.48	Joint	44	Rough	Planar		Slightly Altered		
36.87	36.90	36.89	Joint	33	Rough	Planar		Slightly Altered		
36.99	37.00	37.00	Joint	19	Rough	Curved		Slightly Altered		
37.44	37.46	37.45	Joint	21		Planar	FeO	Slightly Weathered	Stain	
37.60	37.62	37.61	Joint	25	Rough	Planar	FeO	Slightly Weathered	Stain	
37.66	37.68	37.67	Joint	25	Rough	Planar	FeO	Slightly Weathered	Stain	
37.92	37.93	37.93	Joint	21		Planar		Slightly Weathered	Stain	
37.95	38.42	38.19	Joint	80		Planar		Slightly Weathered	Intact	
37.98	37.99	37.99	Joint	15	Rough	Planar	FeO	Slightly Weathered	Stain	
38.41	40.07	39.24	Joint	90	Rough	Planar		Slightly Altered	Intact	Continues beyond base of hole.
38.52	38.54	38.53	Joint	20	Rough	Planar		Slightly Altered		

Depth (m)			Type	Angle (°)	Roughness	Shape	Infill	Weathering	Nature	Comments
From	To	Midpoint								
38.69	38.69	38.69	Joint	0	Rough	Planar		Slightly Altered		
38.72	38.79	38.76	Joint	45	Rough	Planar			Intact	
39.00	39.03	39.00	Joint	20	Rough	Planar		Slightly Altered		
39.22	39.26	39.24	Joint	30	Rough	Planar		Slightly Altered	Intact	
39.25	39.27	39.26	Joint	20	Rough	Planar		Slightly Altered	Intact	
39.41	39.43	39.41	Joint	20	Rough	Planar		Slightly Altered		
39.54	39.57	39.56	Joint	25	Rough	Planar		Slightly Altered	Intact	
39.62	39.63	39.63	Joint	10	Rough	Planar		Slightly Altered	Intact	
39.70	39.72	39.70	Joint	25	Rough	Undulating		Slightly Altered		
39.88	40.05	39.97	Joint	70	Rough	Planar		Slightly Altered	Intact	

Borehole No.: BQLA-04	**Depth Range:** 15.65-20.00	**Box:** 1 / 6



ENGEO	**Geotechnical Investigation Borehole Photos**	**Client:** SMEC		
		Project: Pioneer-Burdekin PHES	**Drawn:** HG	**Page No.** 1/6
		Project No. 23117.000.001	**Checked:** SF	**Size:** A4
		Date Drilled: 29/08/23	**Revision:** 0	**Scale:** N/A

Borehole No.: BQLA-04	**Depth Range:** 20.00-25.00	**Box:** 2 / 6

ENGEO	**Geotechnical Investigation Borehole Photos**	**Client:** SMEC		
		Project: Pioneer-Burdekin PHES	**Drawn:** HG	**Page No.** 2/6
		Project No. 23117.000.001	**Checked:** SF	**Size:** A4
		Date Drilled: 29/08/23	**Revision:** 0	**Scale:** N/A

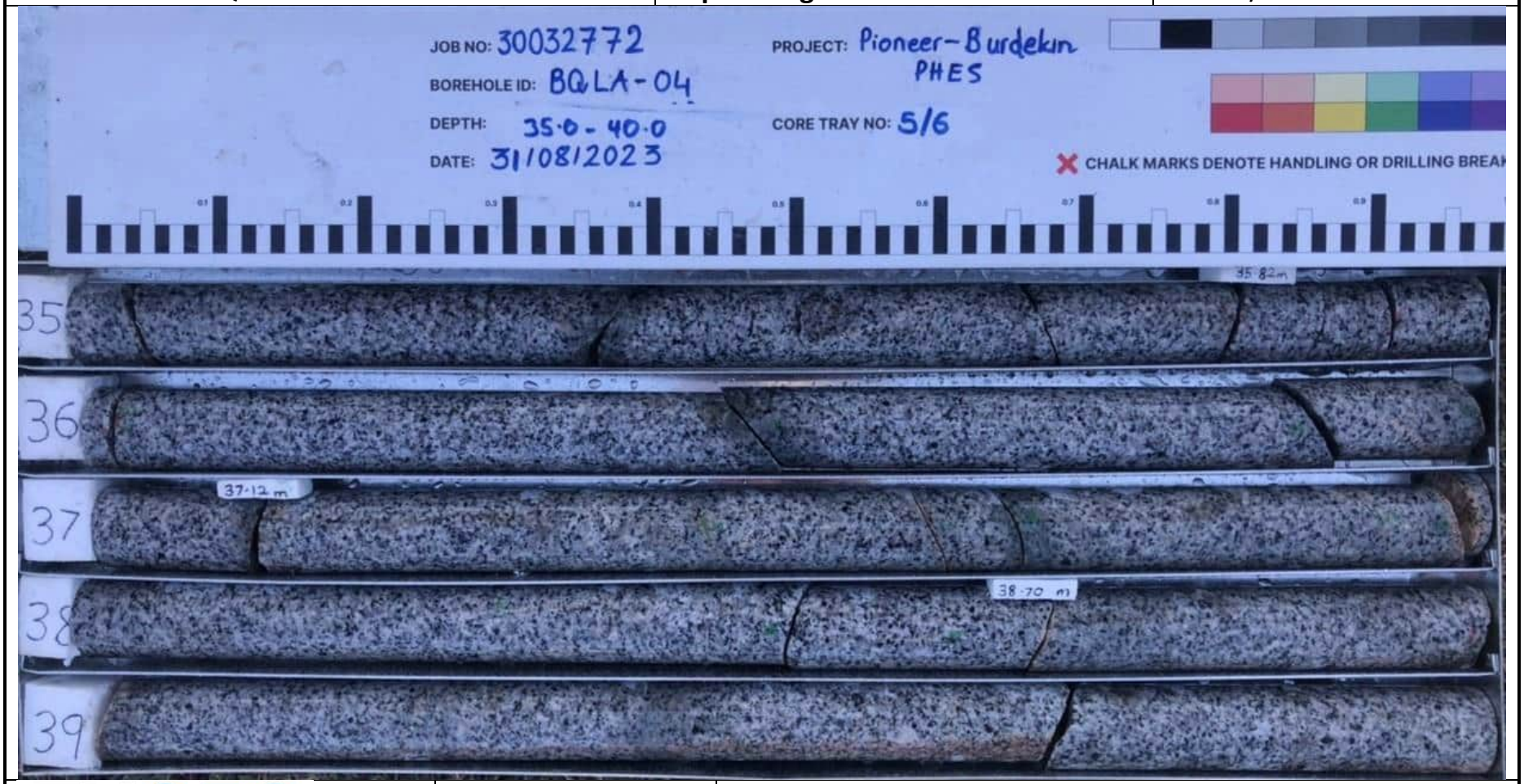
Borehole No.: BQLA-04	**Depth Range:** 25.00-30.00	**Box:** 3 / 6

ENGEO	**Geotechnical Investigation Borehole Photos**	**Client:** SMEC		
		Project: Pioneer-Burdekin PHES	**Drawn:** HG	**Page No.** 3/6
		Project No. 23117.000.001	**Checked:** SF	**Size:** A4
		Date Drilled: 30/08/23	**Revision:** 0	**Scale:** N/A

Borehole No.: BQLA-04	**Depth Range:** 30.00-35.00	**Box:** 4 / 6

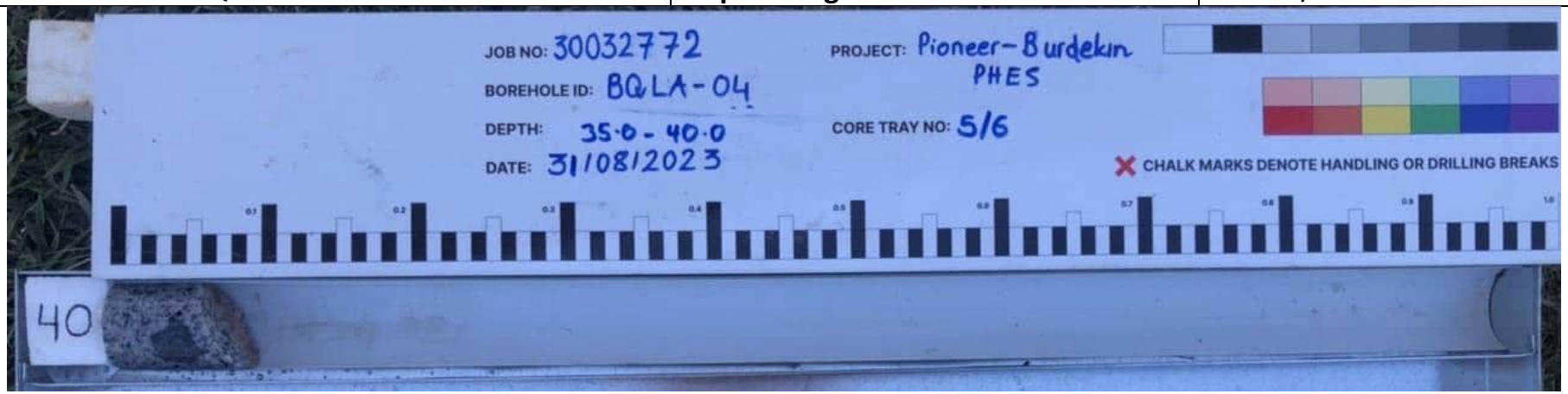
ENGEO	**Geotechnical Investigation Borehole Photos**	**Client:** SMEC		
		Project: Pioneer-Burdekin PHES	**Drawn:** HG	**Page No.** 4/6
		Project No. 23117.000.001	**Checked:** SF	**Size:** A4
		Date Drilled: 30/08/23	**Revision:** 0	**Scale:** N/A

Borehole No.: BQLA-04	**Depth Range:** 35.00-40.00	**Box:** 5 / 6



ENGEO	**Geotechnical Investigation Borehole Photos**	**Client:** SMEC		
		Project: Pioneer-Burdekin PHES	**Drawn:** HG	**Page No.** 5/6
		Project No. 23117.000.001	**Checked:** SF	**Size:** A4
		Date Drilled: 31/08/23	**Revision:** 0	**Scale:** N/A

Borehole No.: BQLA-04	**Depth Range:** 40.00-40.07	**Box:** 6 / 6



ENGEO	**Geotechnical Investigation Borehole Photos**	**Client:** SMEC		
		Project: Pioneer-Burdekin PHES	**Drawn:** HG	**Page No.** 6/6
		Project No. 23117.000.001	**Checked:** SF	**Size:** A4
		Date Drilled: 31/08/23	**Revision:** 0	**Scale:** N/A

COMPOSITE LOG

BOREHOLE TELEVIEWER AND FULL WAVEFORM SONIC LOGS AND ADVANCED ANALYSIS

Epiroc

Hole Name	BQLA_04	**Drill Depth**	40.00m	**Grid Name**		**Logging Unit**	SV013
Field	EUNGELLA	**Bit Size**	96mm	**Collar Easting**	658002m	**Engineer**	JORDAN TEICHRIB
Log Date	17/07/2023	**Casing Type**	STEEL	**Collar Northing**	7662057m	**Client Representative**	TIM HARDIGAN
Location	PIONEER-BURDEKIN	**Casing Depth**	14.6m	**Reduced Level**		**Service Type**	Televiewer Interpretation

TELEVIEWER LOGS

Amplitude	ATV Amplitude Image
TT-CENT	Centralised ATV Travel Time Image
3D TV LOG	3D Televiewer Image
Caliper TT-CENT	Acoustic Travel Time Caliper
OTV Picture	Optical Televiewer Image

FULL WAVFORM SONIC LOG & MECHANICAL PROPERTIES

STC-MP	Monopole Slowness-Time-Coherence Projection
DTC	Compressional wave slowness
DTS	Shear wave slowness
VP	Compressional wave velocity
VS	Shear wave velocity
VPVS	Compressional to Shear wave velocity ratio
UCS	Uniaxial (Unconfined) Compressive Strength
Poisson's Ratio	Indicator of material elastic deformation
Young's Modulus	Material length change by applied stress
Bulk Modulus	Change in material volume by applied stress
Shear Modulus	Transverse material displacement by applied stress

STRUCTURAL LOGS

DIPA	Apparent Dip Feature Picks (Sinusoid Presentation)
DIPT	True Dip Feature Picks (Tadpole Presentation)
RD - STRIKE	Rose Diagram - Strike Open Fract. (Arrows represent Mean Vector)
PP - DIP	Polar Projection - Dip (Schmidt) (Lower Hemisphere)

STRUCTURAL ANALYSIS LOGS

RQD	Rock Quality Designation
AFD	(Partial) Open Apparent Fracture Density
TFD	(Partial) Open True Fracture Density
RHI	Rock Hardness Index

GEOPHYSICAL AND VERTICALITY LOGS

Density	Density Log
GAMMA	Natural Gamma Ray
Tilt	Hole Inclination (0 = Vertical Down)
Azimuth	Hole Azimuth
CALIPER	Mechanical Caliper

FEATURES & TADPOLES

Partially Open Fracture | Closed Fracture | Foliation/Banding/Bedding | Healed Fracture/Vein

COMMENTS

Image and azimuth data are presented oriented to True north. The magnetic declination correction is +8.12 degrees.

Rock Quality Designation (RQD) is the (Sum of length of image interval sections of more than 10 cm length unaffected by open fractures, faults & breakouts) divided by the (Total length of the interval) times (100%). RQD has been calculated for one meter intervals.

The STC-MP track was produced by processing the RX1-1A (60 cm), RX2-1A (80 cm), RX3-1A (100 cm) and RX4-1A (120 cm) receiver data after applying a moving average filter, stacking and a frequency filter.

Uniaxial Compressive Strength (UCS) was calculated using an exponential trendline between DTC and UCS (McNally, 1987): UCS = 1200 * exp(-0.036 * DTC) , with UCS in MPa and DTC in µs/m units.

Poisson's Ratio was calculated from DTC & DTS. Young's, Bulk & Shear Modulus were calculated from DTC, DTS & Density estimated as ρ = 0.31.Vp exp(1/4)

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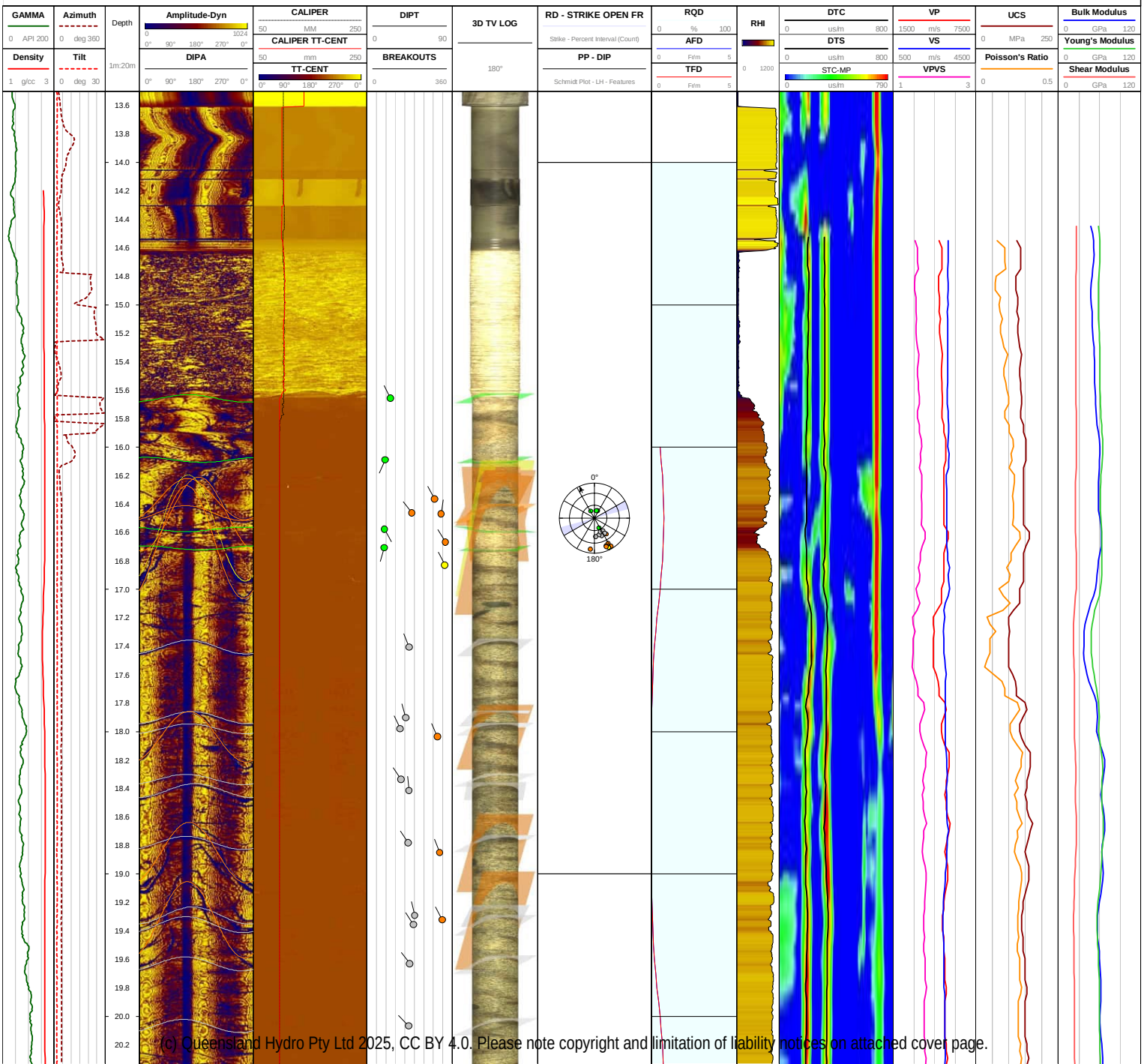
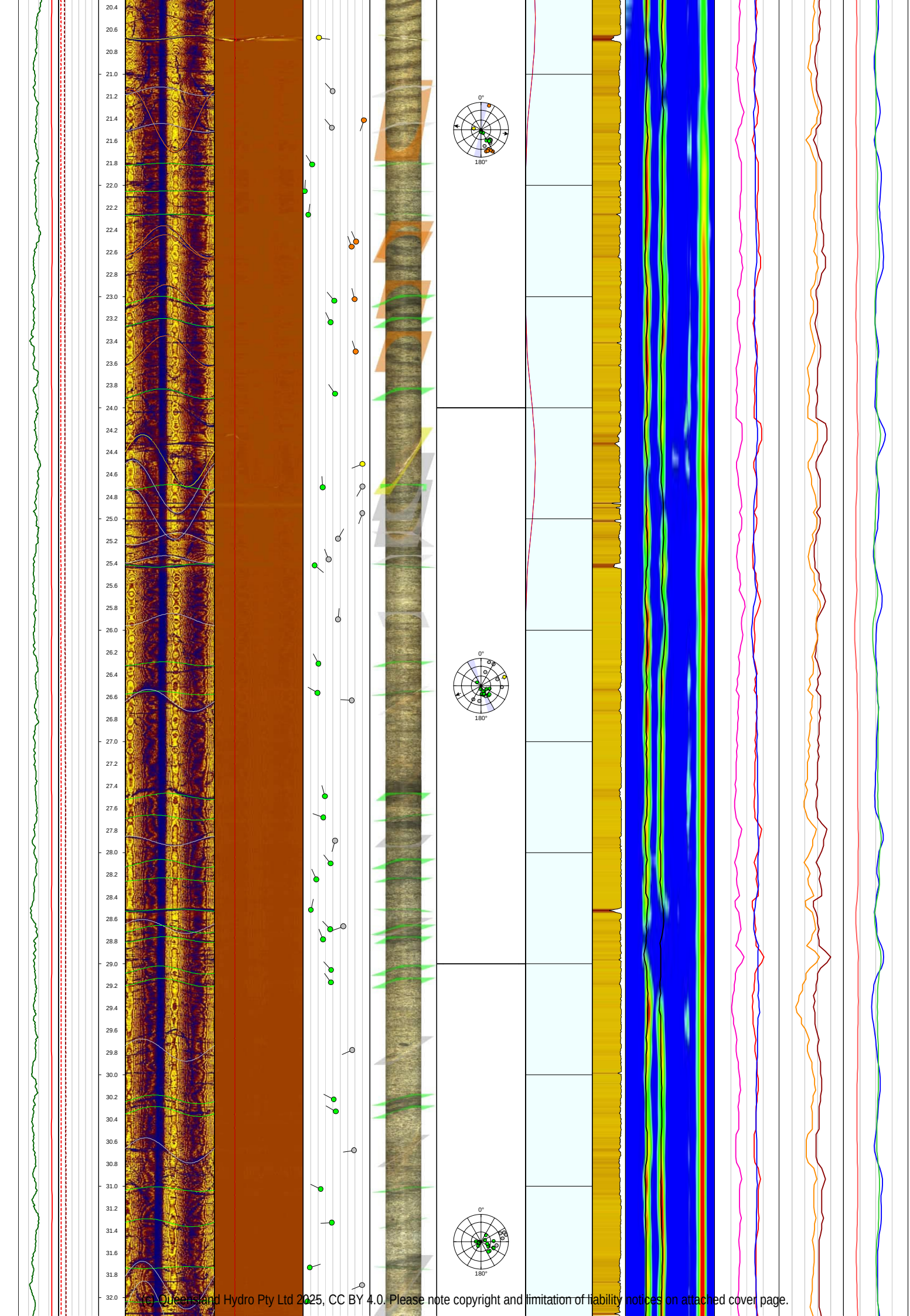
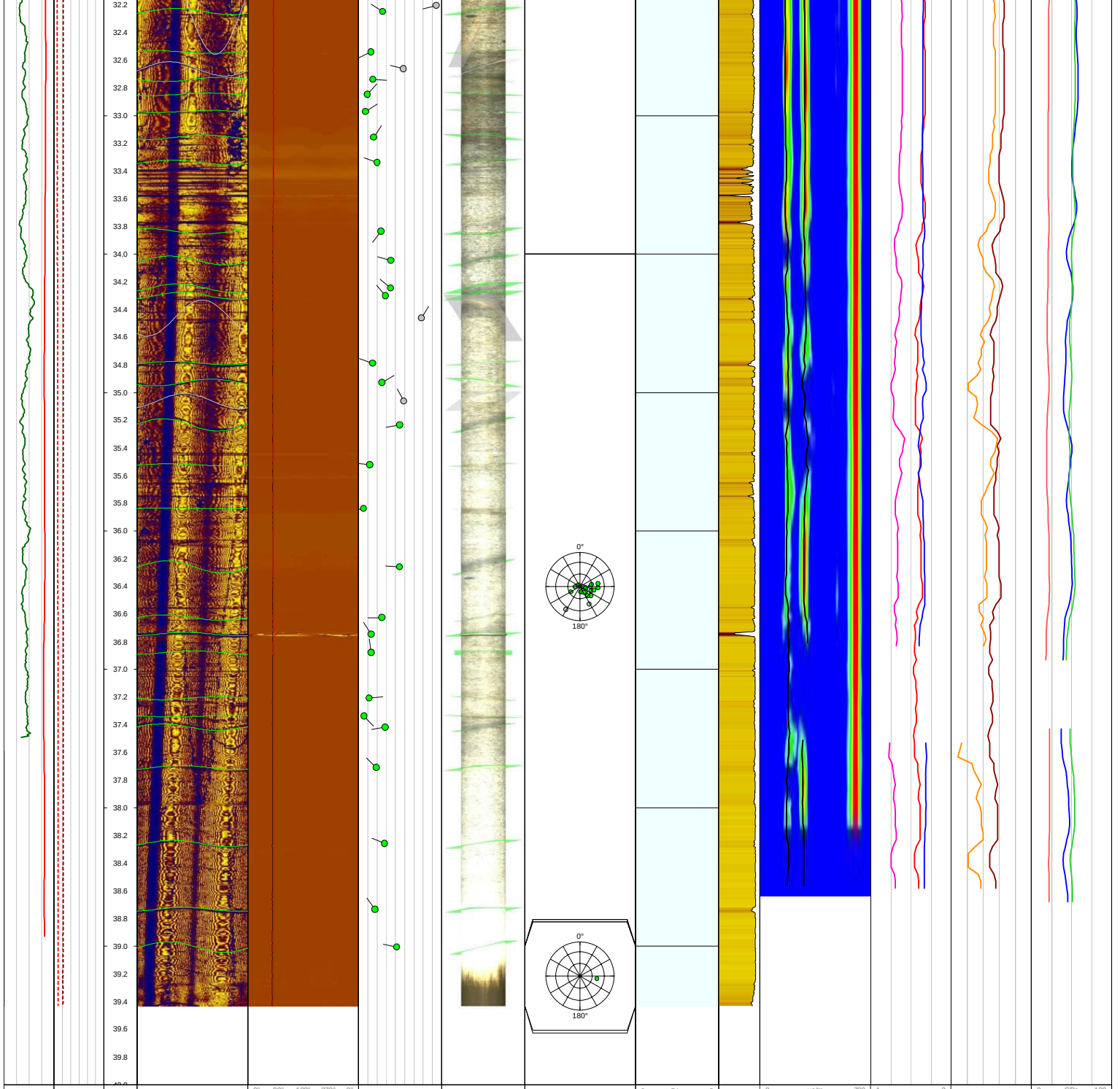
Therefore, Epiroc Kinetic Logging Services shall not be liable or responsible for any loss, damage, cost or expense incurred or sustained by anyone resulting from any interpretations.







1 g/cc 3	0 deg 30	1m:20m	0° 90° 180° 270° 0°	0° 90° 180° 270° 0°	0 360	180°	Schmidt Plot - LH - Features	0 Ft/m 5	0 1200	0 us/m 790	1 3	0 0.5	0 GPa 120	
Density	Tilt		DIPA	TT-CENT	BREAKOUTS		PP - DIP	TFD		STC-MP	VPVS	Poisson's Ratio	Shear Modulus	
0 API 200	0 deg 360		0° 90° 180° 270° 0° 0 1024	50 mm 250	0 90		Strike - Percent Interval (Count)	0 Ft/m 5		0 us/m 800	500 m/s 4500	0 MPa 250	0 GPa 120	
GAMMA	Azimuth	Depth	Amplitude-Dyn	CALIPER TT-CENT	DIPT	3D TV LOG	RD - STRIKE OPEN FR	AFD	RHI	DTS	VS	UCS	Young's Modulus	
				50 MM 250				0 % 100		0 us/m 800	1500 m/s 7500		0 GPa 120	
				CALIPER				RQD		DTC	VP		Bulk Modulus	

BQLA_04 Televiewer Structures

Feature Depth	Depth	Azimuth	Dip	Aperture	Visible Azimuth Ranges	Type	Features
m	m	deg	deg	mm	deg		
15.66	15.66	333.94	25	0		4	Foliation/Banding/Bedding
16.09	16.09	203.89	19.25	0		4	Foliation/Banding/Bedding
16.37	16.37	331.55	71.33	0		3	Closed Fracture
16.46	16.46	323.47	47.54	0		3	Closed Fracture
16.47	16.47	7.58	78.23	0		3	Closed Fracture
16.58	16.58	152.04	18.6	0		4	Foliation/Banding/Bedding
16.67	16.67	329.17	82.8	0		3	Closed Fracture
16.71	16.71	196.52	18.21	0		4	Foliation/Banding/Bedding
16.83	16.57	334.21	82.34	0	271.58-352.58	2	Partially Open Fracture
17.41	17.41	336.56	44.61	0		5	Healed Fracture/Vein
17.9	17.9	343.77	40.95	0		5	Healed Fracture/Vein
17.98	17.98	335.75	35	0		5	Healed Fracture/Vein
18.04	18.04	336.77	74.29	0		3	Closed Fracture
18.34	18.34	326.17	36	0		5	Healed Fracture/Vein
18.41	18.41	354.94	44.27	0		5	Healed Fracture/Vein
18.78	18.78	325.56	43.58	0		5	Healed Fracture/Vein
18.85	18.85	337.2	76.72	0		3	Closed Fracture
19.29	19.29	347.59	50.46	0		5	Healed Fracture/Vein
19.32	19.32	331.56	79.51	0		3	Closed Fracture
19.36	19.36	325.3	49.31	0		5	Healed Fracture/Vein
19.63	19.63	323.18	45.42	0		5	Healed Fracture/Vein
20.07	20.07	316.29	44.24	0		5	Healed Fracture/Vein
20.67	20.67	98.97	21.34	0	9.30-288.30	2	Partially Open Fracture
21.15	21.15	317.67	39.96	0		5	Healed Fracture/Vein
21.41	21.41	198.62	81.77	0		3	Closed Fracture
21.48	21.48	320.96	38.81	0		5	Healed Fracture/Vein
21.81	21.81	327.24	12.15	0		4	Foliation/Banding/Bedding
22.05	22.05	3.75	2.25	0		4	Foliation/Banding/Bedding
22.26	22.26	9.14	6.94	0		4	Foliation/Banding/Bedding
22.51	22.51	335.1	71.27	0		3	Closed Fracture
22.55	22.55	339.25	65.5	0		3	Closed Fracture
23.02	23.02	346.31	69.5	0		3	Closed Fracture
23.04	23.04	319.78	41.9	0		4	Foliation/Banding/Bedding
23.23	23.23	333.42	37.09	0		4	Foliation/Banding/Bedding
23.49	23.49	342.42	70.84	0		3	Closed Fracture
23.87	23.87	325.02	43.09	0		4	Foliation/Banding/Bedding
24.51	24.48	249.4	80.08	0	220.43-107.93	2	Partially Open Fracture
24.71	24.71	209.86	80.1	0		5	Healed Fracture/Vein
24.72	24.72	355.88	26.37	0		4	Foliation/Banding/Bedding
24.95	24.95	199.34	79.86	0		5	Healed Fracture/Vein
25.18	25.18	29.42	47.17	0		5	Healed Fracture/Vein
25.36	25.36	336.05	34.59	0		5	Healed Fracture/Vein
25.42	25.42	129.15	15.61	0		4	Foliation/Banding/Bedding
25.9	25.9	6.05	47.14	0		5	Healed Fracture/Vein
26.3	26.3	331.11	20.65	0		4	Foliation/Banding/Bedding

Feature Depth	Depth	Azimuth	Dip	Aperture	Visible Azimuth Ranges	Type	Features
m	m	deg	deg	mm	deg		
26.56	26.56	300.83	19.61	0		4	Foliation/Banding/Bedding
26.63	26.63	274.17	65.62	0		5	Healed Fracture/Vein
27.49	27.49	344.2	29.39	0		4	Foliation/Banding/Bedding
27.68	27.68	289.5	27.33	0		4	Foliation/Banding/Bedding
27.89	27.89	197.54	43.21	0		5	Healed Fracture/Vein
28.1	28.1	321.63	37.24	0		4	Foliation/Banding/Bedding
28.24	28.24	335.63	17.67	0		4	Foliation/Banding/Bedding
28.52	28.52	11.25	10.56	0		4	Foliation/Banding/Bedding
28.66	28.66	248.6	54.19	0		5	Healed Fracture/Vein
28.69	28.69	315.88	36.74	0		4	Foliation/Banding/Bedding
28.78	28.78	338.03	27.1	0		4	Foliation/Banding/Bedding
29.06	29.06	316.59	37.94	0		4	Foliation/Banding/Bedding
29.17	29.17	323.24	37.62	0		4	Foliation/Banding/Bedding
29.78	29.78	246.44	66.28	0		5	Healed Fracture/Vein
30.22	30.22	296.8	41.32	0		4	Foliation/Banding/Bedding
30.33	30.33	298.14	44.02	0		4	Foliation/Banding/Bedding
30.68	30.68	261.04	68.74	0		5	Healed Fracture/Vein
31.03	31.03	294.99	23.68	0		4	Foliation/Banding/Bedding
31.33	31.33	266.11	38.61	0		4	Foliation/Banding/Bedding
31.73	31.73	72.7	9	0		4	Foliation/Banding/Bedding
31.89	31.89	248.24	79.42	0		5	Healed Fracture/Vein
32.04	32.04	79.72	6.14	0		4	Foliation/Banding/Bedding
32.2	32.2	254.63	84.24	0		5	Healed Fracture/Vein
32.25	32.25	302.56	25.98	0		4	Foliation/Banding/Bedding
32.54	32.54	244.46	13.44	0		4	Foliation/Banding/Bedding
32.66	32.66	284.33	48.71	0		5	Healed Fracture/Vein
32.74	32.74	94.21	15.62	0		4	Foliation/Banding/Bedding
32.85	32.85	41.26	9.56	0		4	Foliation/Banding/Bedding
32.97	32.97	59.01	7.59	0		4	Foliation/Banding/Bedding
33.16	33.16	33.49	16.49	0		4	Foliation/Banding/Bedding
33.34	33.34	290.39	20.12	0		4	Foliation/Banding/Bedding
33.84	33.84	218.23	24.37	0		4	Foliation/Banding/Bedding
34.05	34.05	285.28	35.22	0		4	Foliation/Banding/Bedding
34.25	34.25	310.09	34.72	0		4	Foliation/Banding/Bedding
34.3	34.3	319.46	29.14	0		4	Foliation/Banding/Bedding
34.46	34.46	31.38	68.21	0		5	Healed Fracture/Vein
34.79	34.79	288.66	15.38	0		4	Foliation/Banding/Bedding
34.93	34.93	59.32	25.4	0		4	Foliation/Banding/Bedding
35.06	35.06	332.07	48.78	0		5	Healed Fracture/Vein
35.23	35.23	261.34	44.67	0		4	Foliation/Banding/Bedding
35.52	35.52	277.43	12.42	0		4	Foliation/Banding/Bedding
35.84	35.84	260.4	5.43	0		4	Foliation/Banding/Bedding
36.26	36.26	274.54	44.33	0		4	Foliation/Banding/Bedding
36.63	36.63	269.86	25.16	0		4	Foliation/Banding/Bedding
36.75	36.75	327.52	13.89	0		4	Foliation/Banding/Bedding
36.88	36.88	351.29	13.71	0		4	Foliation/Banding/Bedding

Feature Depth	Depth	Azimuth	Dip	Aperture	Visible Azimuth Ranges	Type	Features
m	m	deg	deg	mm	deg		
37.21	37.21	84.61	11.25	0		4	Foliation/Banding/Bedding
37.34	37.34	136.77	6.03	0		4	Foliation/Banding/Bedding
37.42	37.42	260.55	28.68	0		4	Foliation/Banding/Bedding
37.71	37.71	314.71	19.12	0		4	Foliation/Banding/Bedding
38.26	38.26	292.16	28.29	0		4	Foliation/Banding/Bedding
38.73	38.73	325.65	17.69	0		4	Foliation/Banding/Bedding
39.01	39.01	279.87	41.55	0		4	Foliation/Banding/Bedding

BQLA_04

SMEC - Pioneer-Burdekin

Acoustic and Optical Televiewer image log Schmidt Stereonet evaluation for interpreted log interval

Log Date: 17 July 2023

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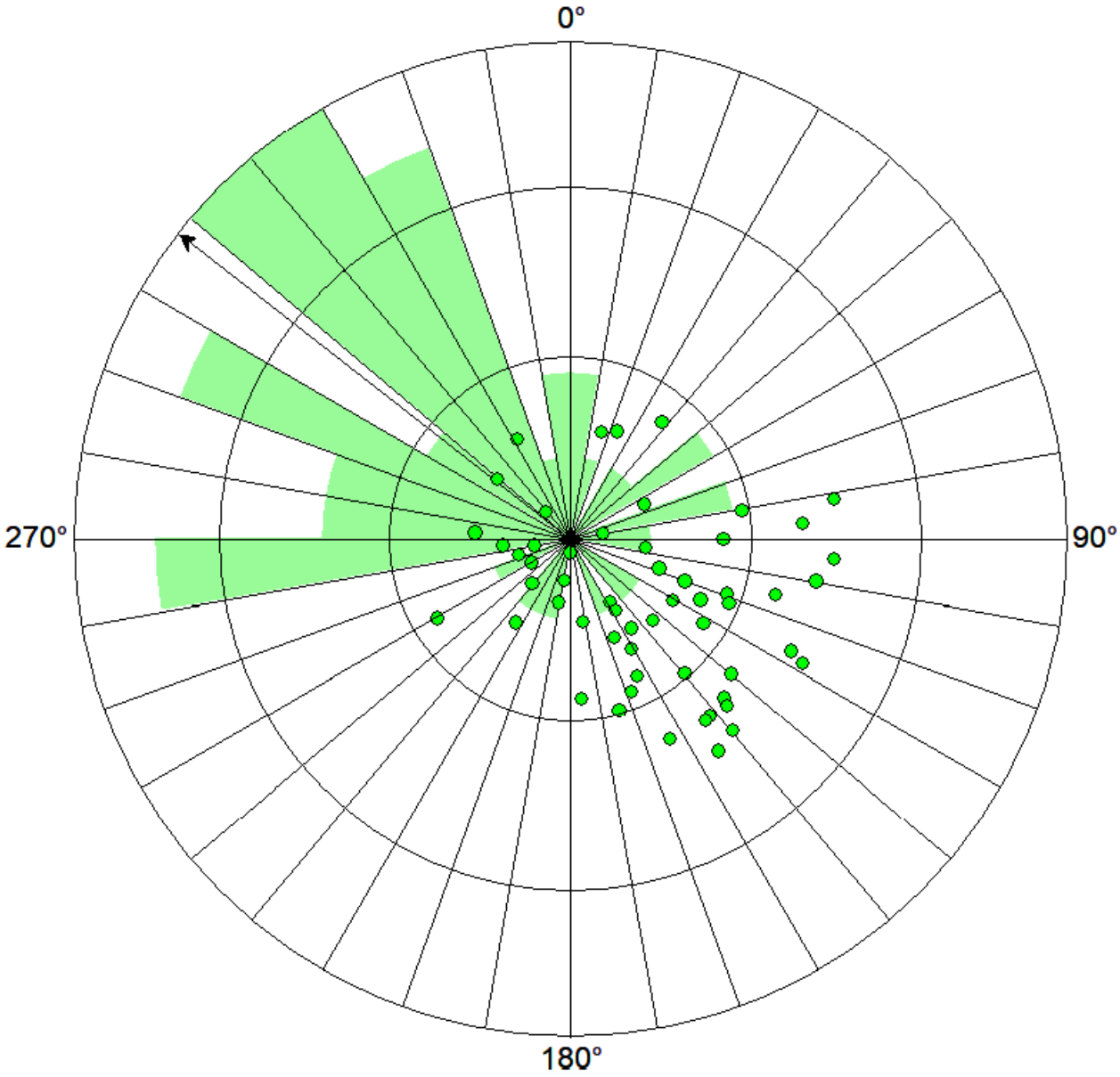
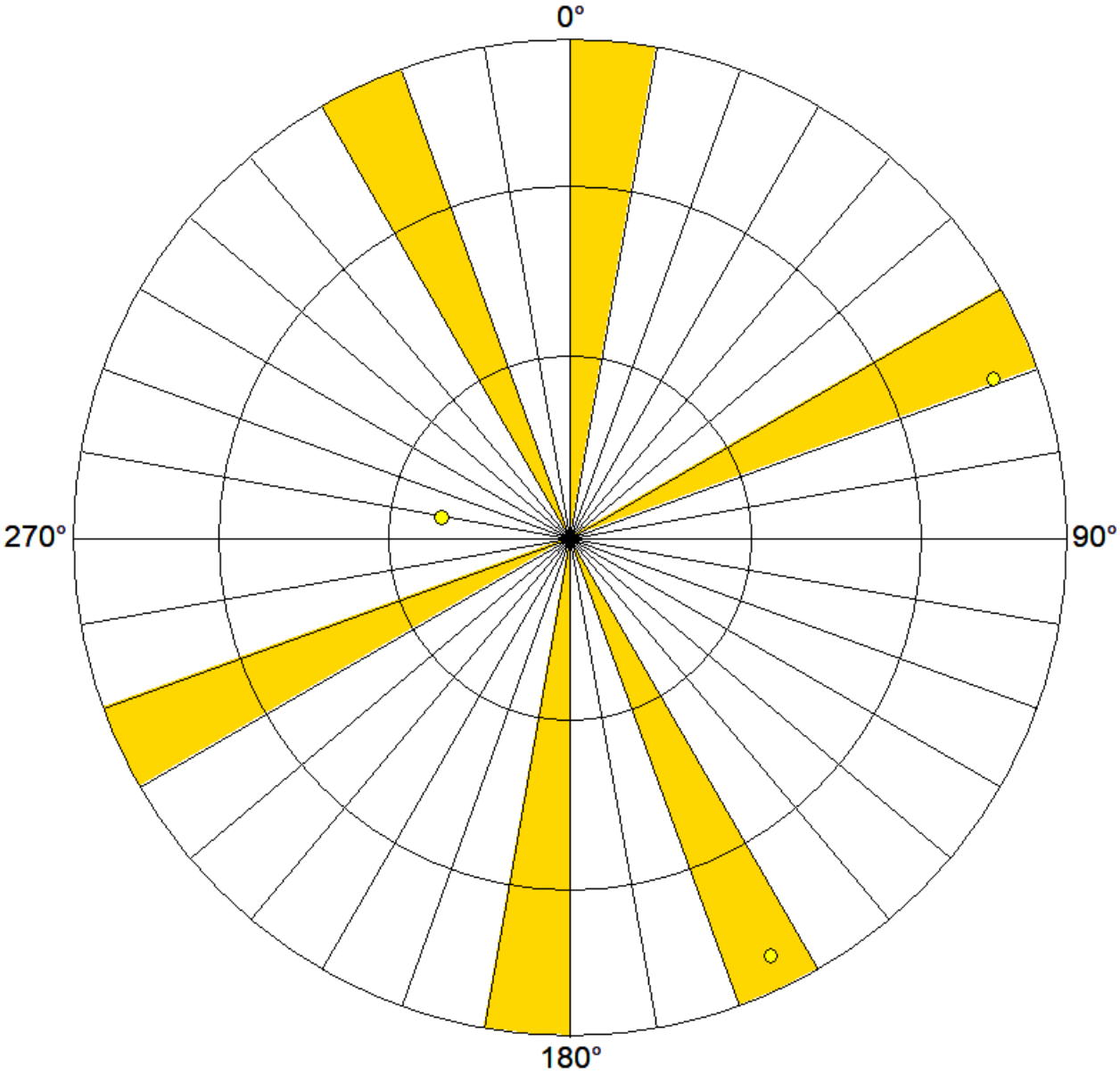
FOLIATIONS – 14.6 TO 39.4 M



	Counts	Dip [deg]	Azimuth [deg]	Strike [deg]
Mean	56	16.49	307.82	37.82 - 217.82

Foliations: Scattered dip azimuth directions with a broad preference in the W to NNW dip azimuth directions

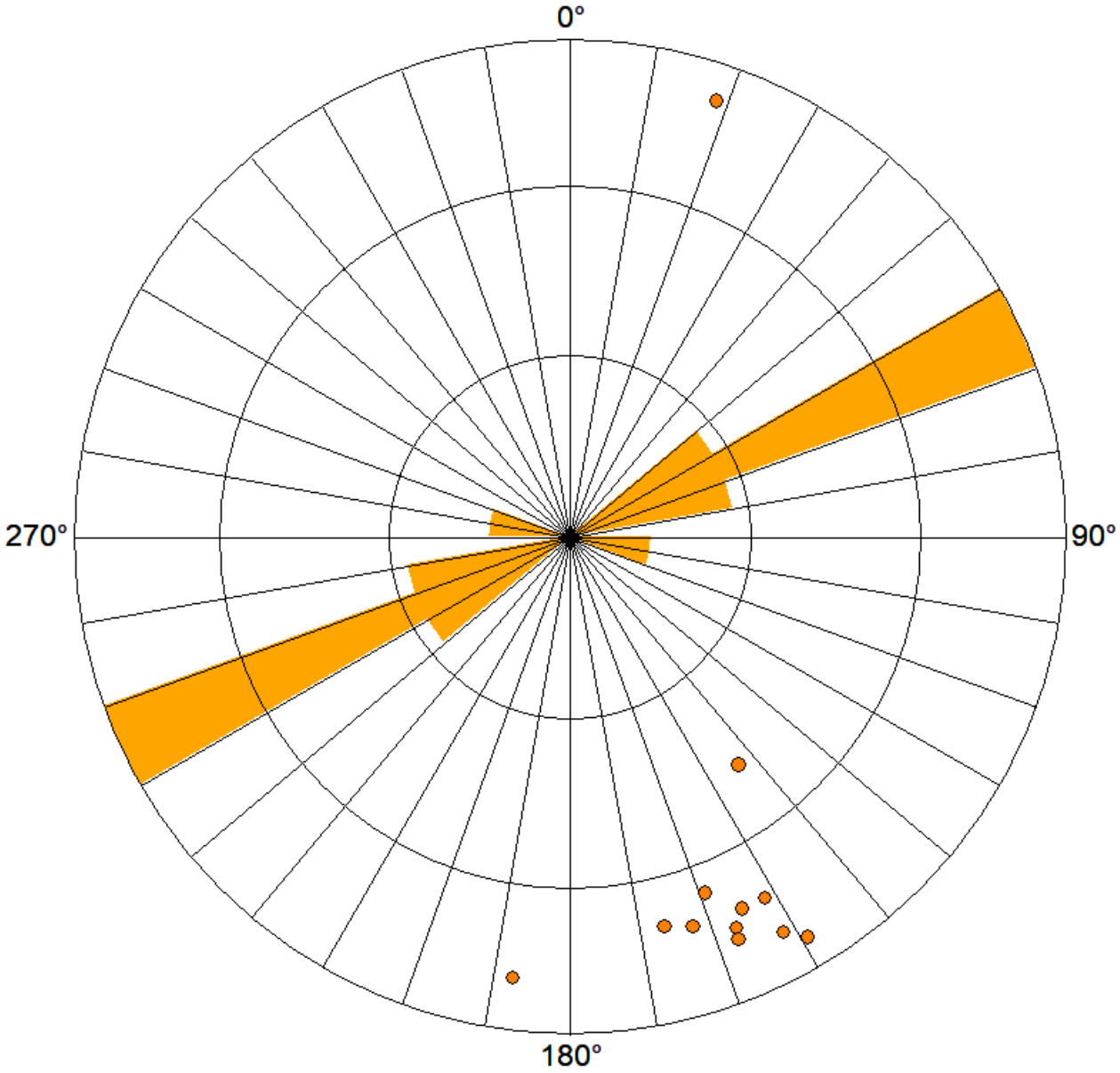
PARTIAL OPEN FRACTURES – 14.6 TO 39.4 M



	Counts	Dip [deg]	Azimuth [deg]	Strike [deg]
Mean	3	70.39	104.93	14.93 - 194.93

Partial Open Fractures: Scattered strike directions (caution: small number of picks)

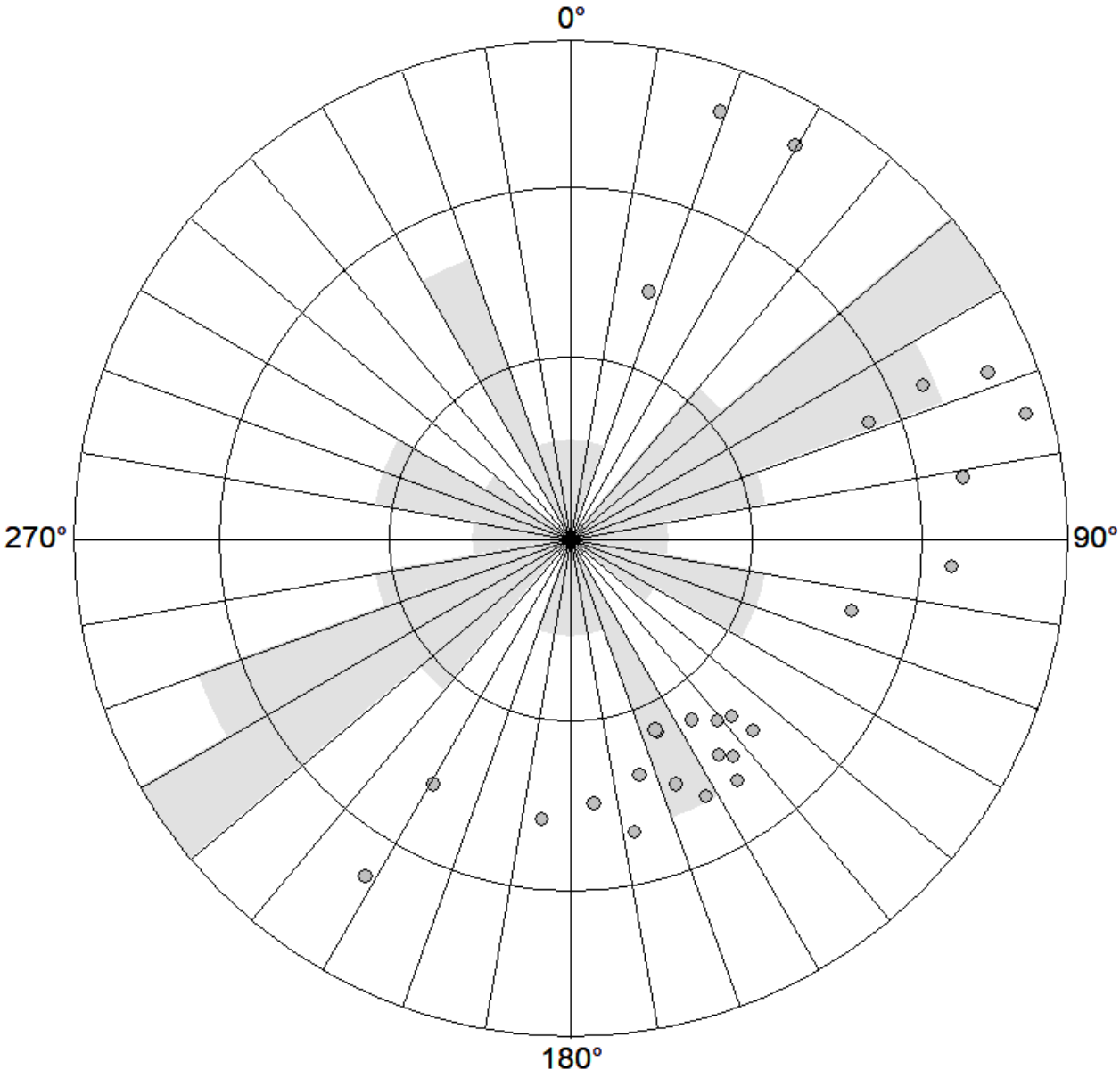
CLOSED FRACTURES – 14.6 TO 39.4 M



	Counts	Dip [deg]	Azimuth [deg]	Strike [deg]
Mean	12	72.94	340.82	70.82 - 250.82

Open Fractures: Preferred ENE to WSW strike direction

HEALED FRACTURES AND VEINS – 14.6 TO 39.4 M



	Counts	Dip [deg]	Azimuth [deg]	Strike [deg]
Mean	27	41.08	323.16	53.16 - 233.16

Healed Fractures and Veins: Scattered strike directions with a preference in the ENE to WSW strike direction

OPTV & BHTV LOG

BQLA_04

WELL	BQLA_04	**DRILL DEPTH**	40m	**DATE**	17/07/2023
FIELD	PIONEER-BURDEKIN	**BIT SIZE**	96mm	**CLIENT REP**	TIM HARDIGAN
LOCATION	EUNGELLA	**CASING WEIGHT**	STEEL	**ENGINEER**	JRT
UWI	SV013	**CASING SIZE**	101mm	**EASTING**	658002
COUNTRY	AUSTRALIA	**CASING BOTTOM**	10m	**NORTHING**	7662057

TELEVIEWER LOGS

GAMMA	Televiewer Gamma Ray	**INC**	Borehole Inclination (0 deg = Vertical Down)
OPTV	OPTV RGB Image	**AZIM**	Borehole Magnetic Azimuth
AMP	BHTV Amplitude	**HGDELTA**	Potential Field
TT	BHTV Travel Time	**TMAG**	Televiewer Magnetic Field

COMMENTS

All image log data is oriented to true north. The applied magnetic declination correction is 8.12 degrees.

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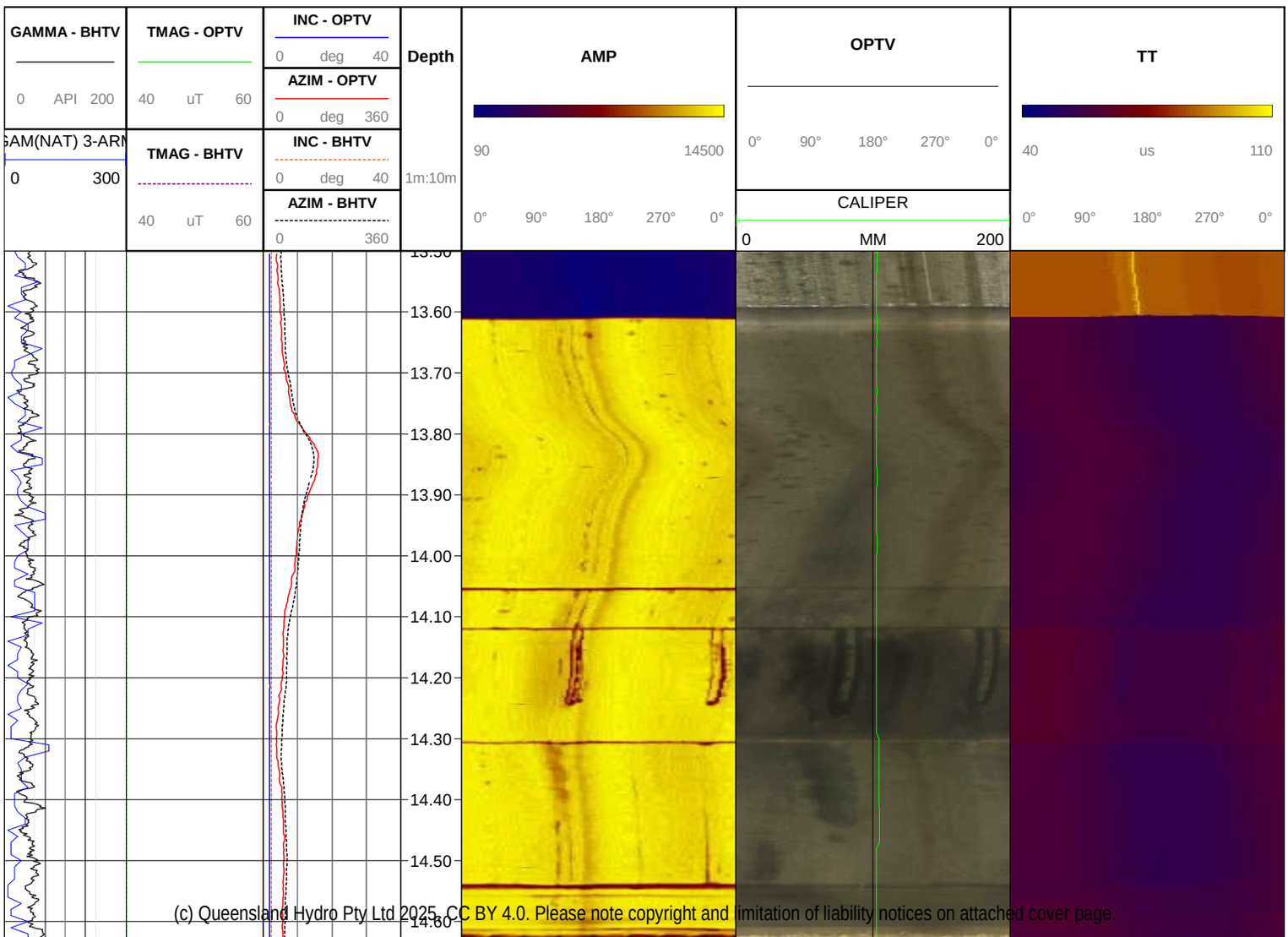
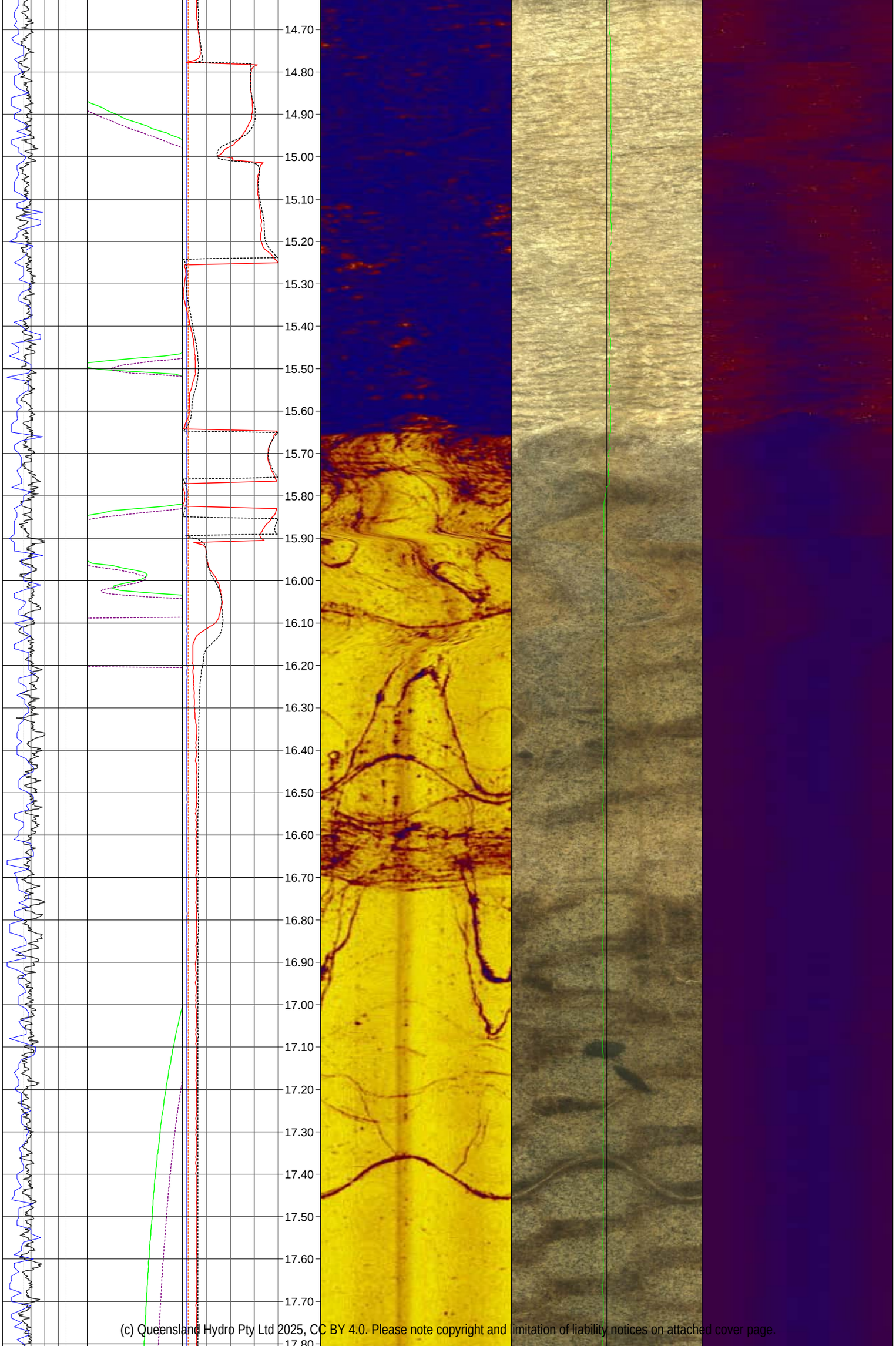
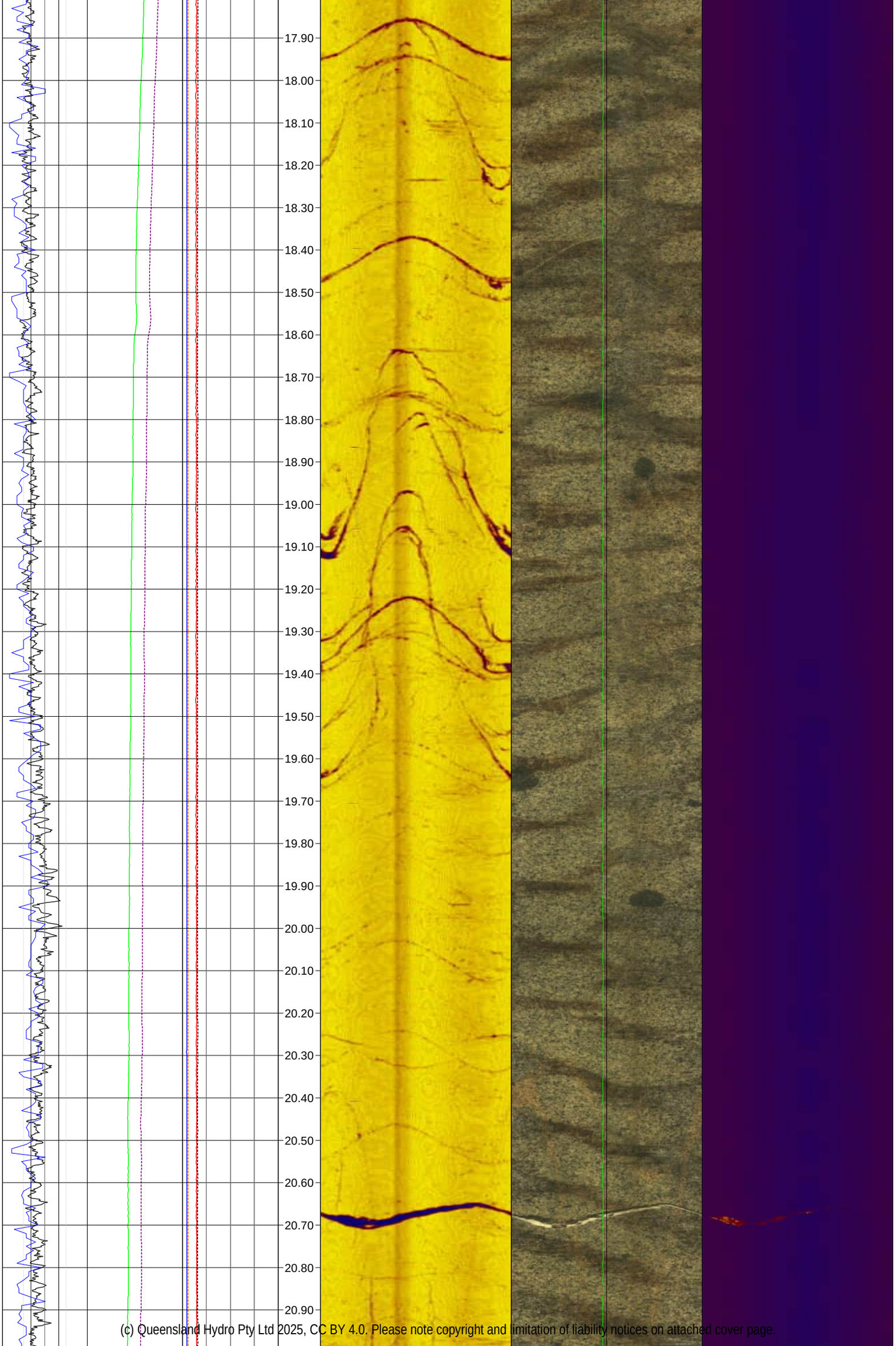
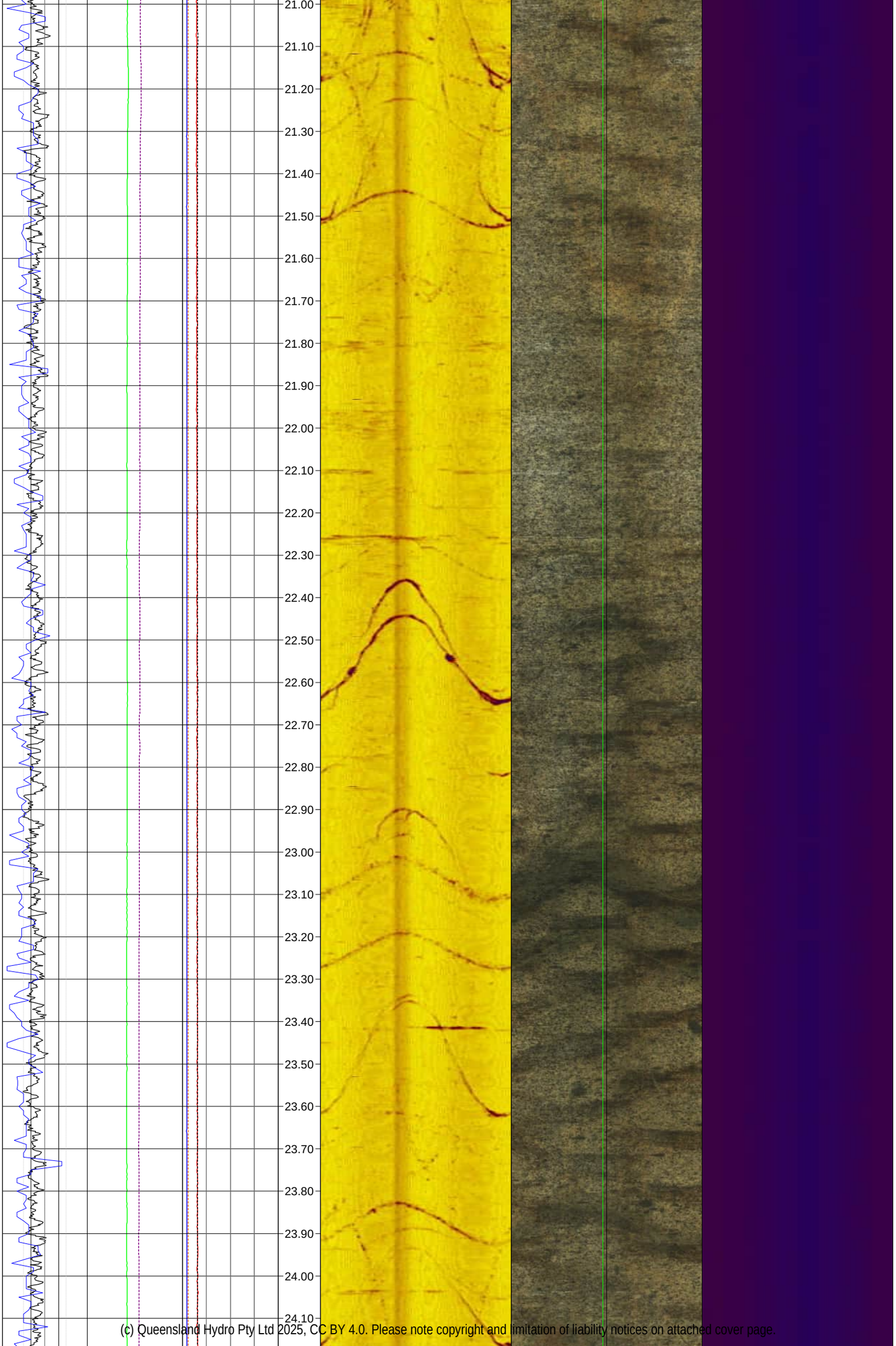
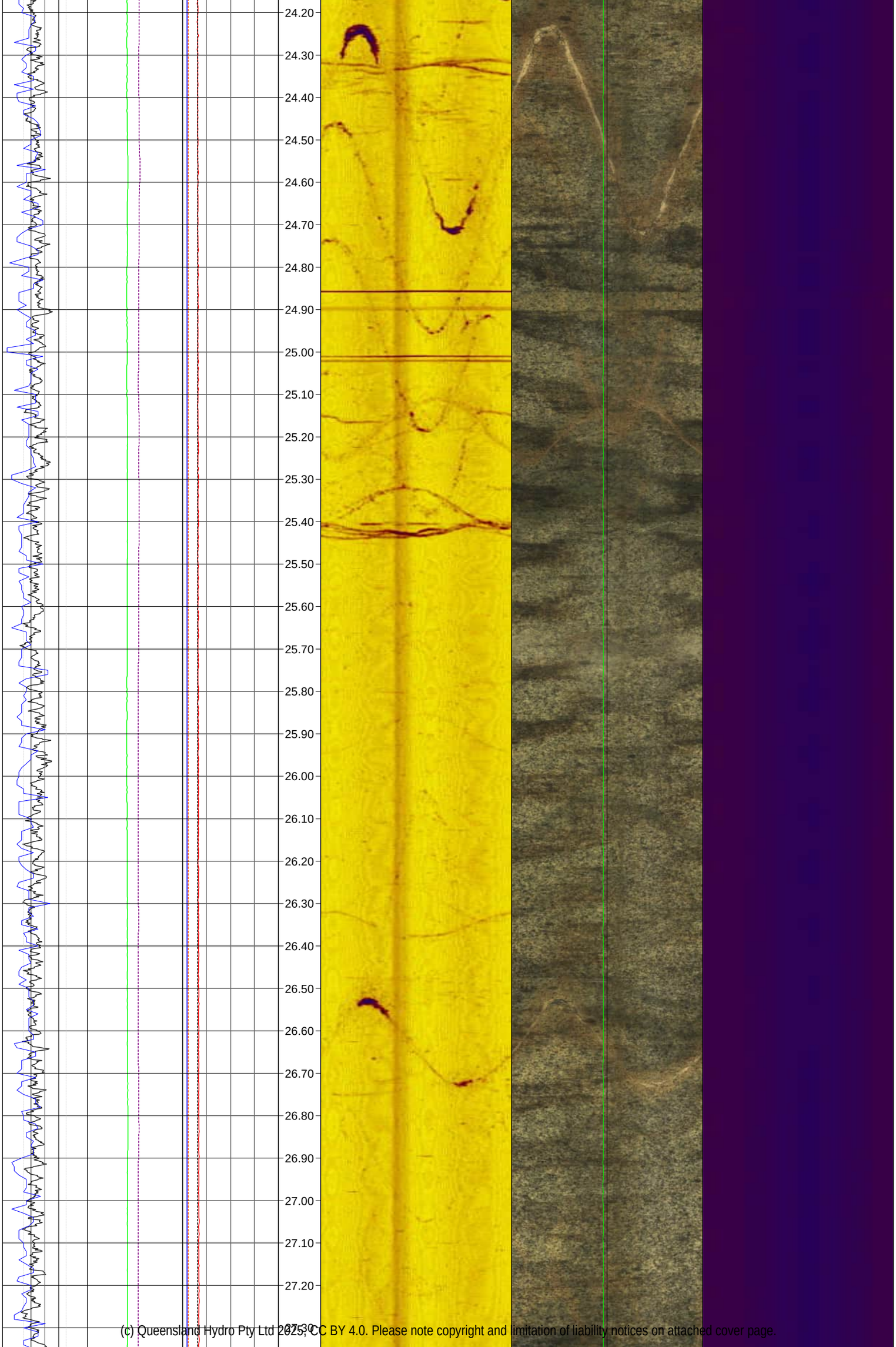
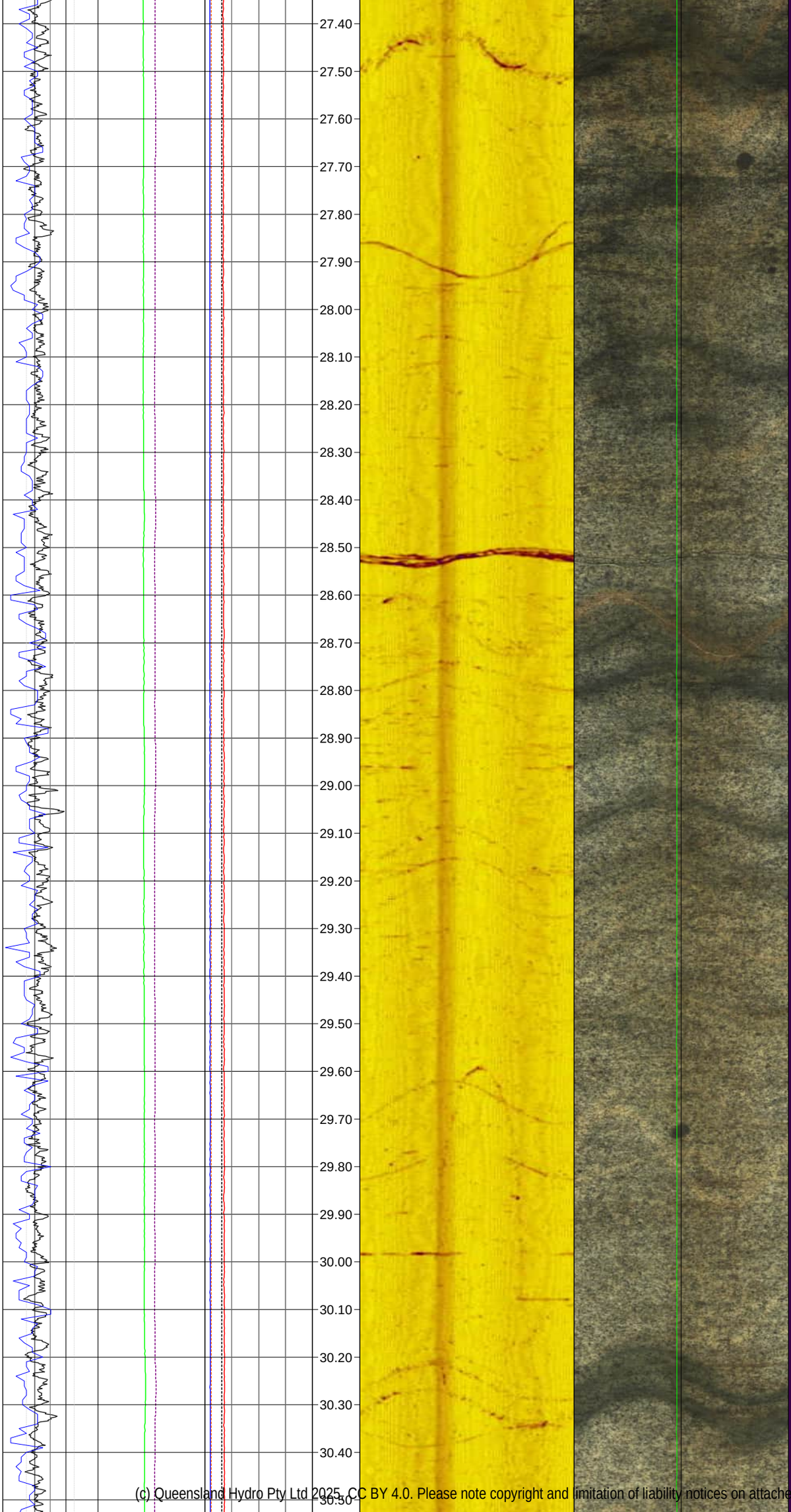


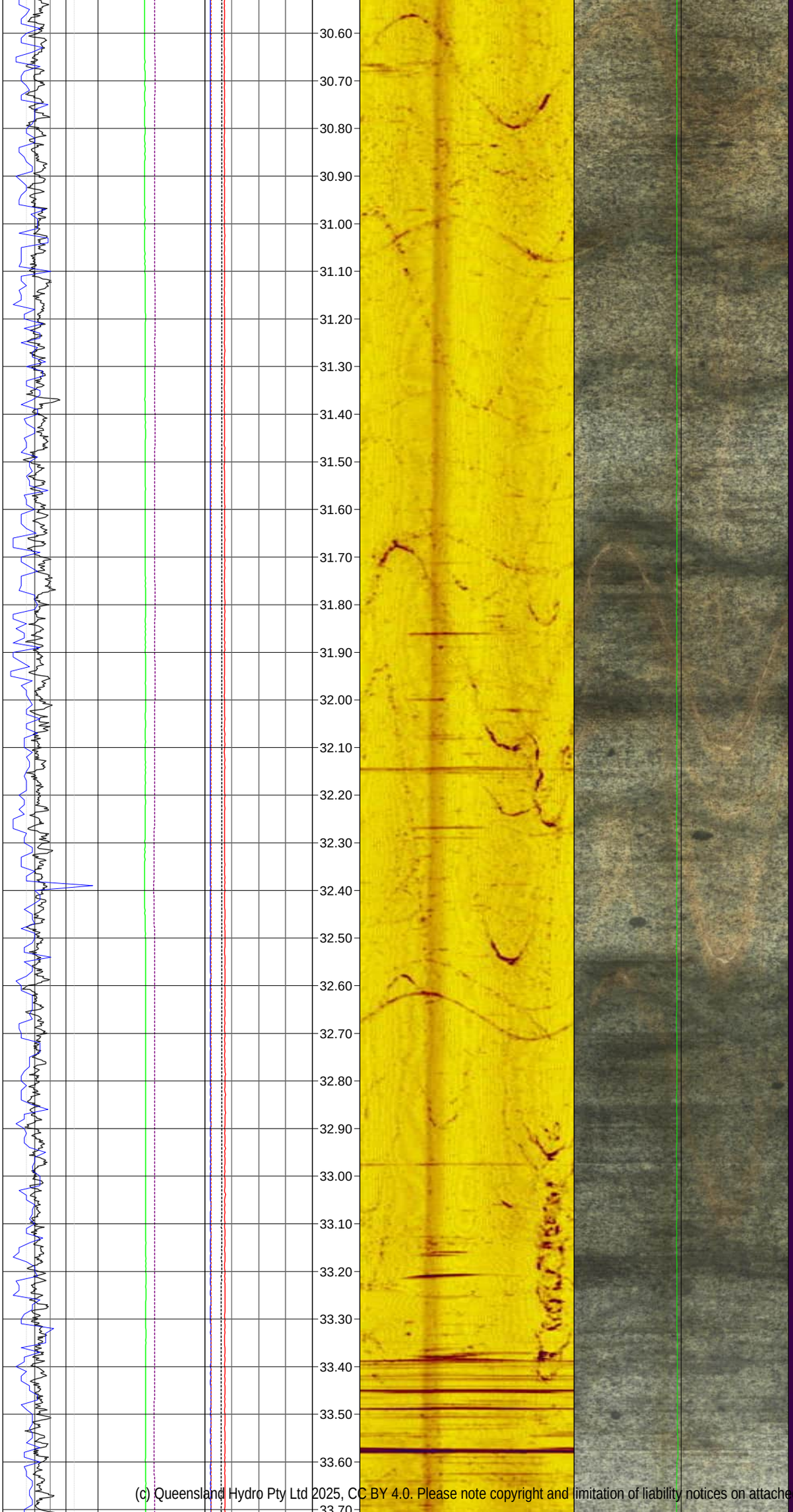


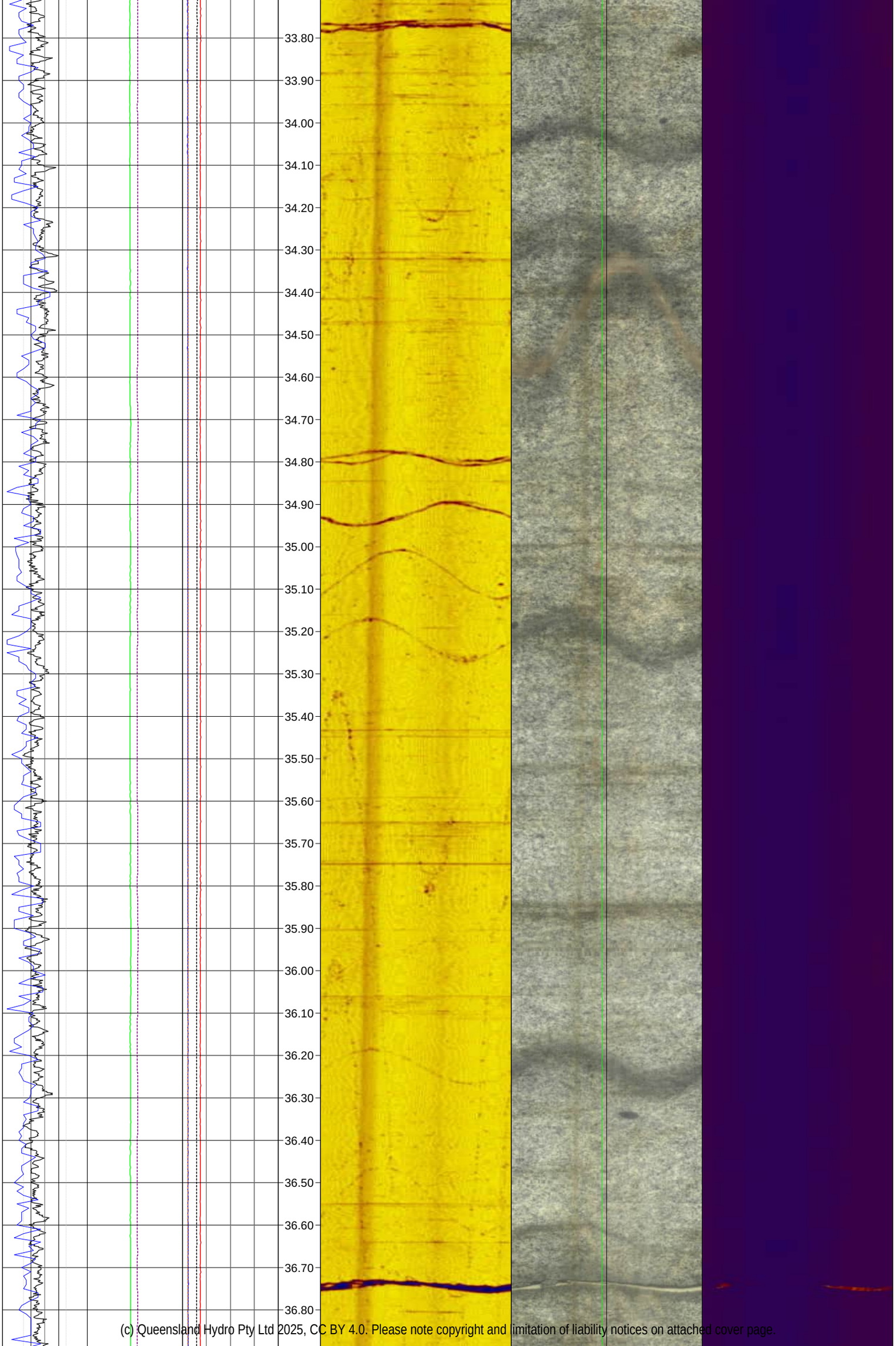


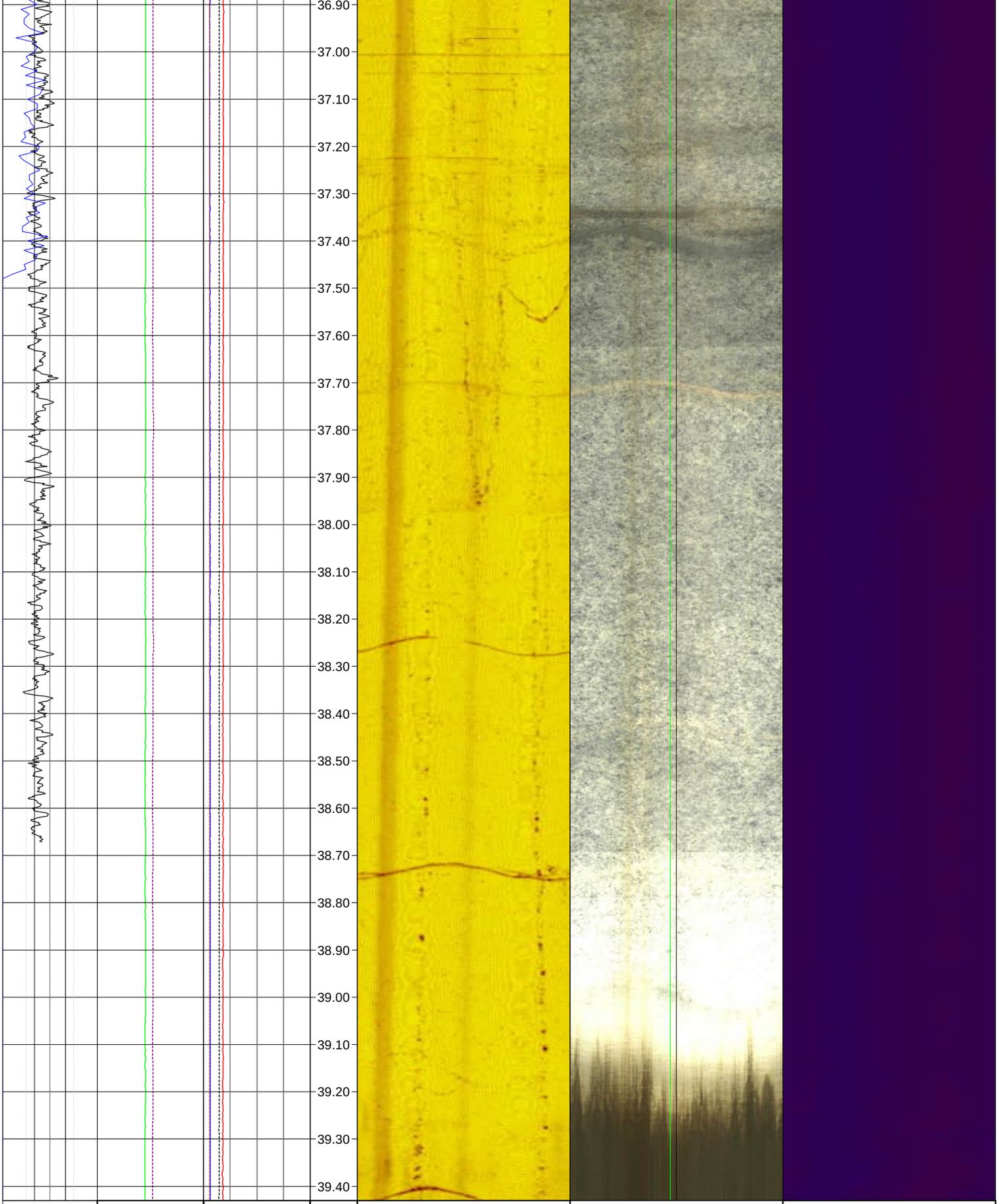












WELL BQLA_04	**LOCATION** EUNGELLA	**DATE** 17/07/2023
FIELD PIONEER-BURDEKIN	**DRILL DEPTH** 40m	**ENGINEER** JRT

MULTI-RES LOG

BQLA_04

COMPANY	SMEC	**FIELD**	PIONEER-BURDEKIN	**STATE**	QLD
WELL	BQLA_04	**LOCATION**	EUNGELLA	**COUNTRY**	AUSTRALIA

LOCATION: EUNGELLA
FIELD: PIONEER-BURDEKIN
STATE: QLD
WELL: BQLA_04
COMPANY: SMEC

LOG MEASURED FROM	GL	ELEVATIONS:	OTHER SERVICES:
DRILLING MEASURED FROM	GL	KB	1.
PERMANENT DATUM		DF	2.
PERMANENT DATUM ELEVATION		GL	3.

LICENSE	SECTION	TOWNSHIP	RANGE	MAGNETIC DECLINATION
				8.12deg

DATE	01-09-2023			RECORDED BY	JRT		
TIME	15-44			WITNESSED BY			
RUN NUMBER	1			LOGGING UNIT	V013		
DEPTH-DRILLER	40.00m			RIG NUMBER			
DEPTH-LOGGER	39.85m			TOOL TYPE	6074A		
BIT SIZE	96mm			TOOL SERIAL NO.	2796		
CASING TYPE	STEEL			EASTING	658002		
CASING ID	101mm			NORTHING	7662057		
CASING BOTTOM	14.60m			SAMPLE INT.	.01m		
FLUID TYPE	0			LOG DIRECTION	U		
TRUCK CAL NO.	0.09778			FEET OR METER	M		
WATER LEVEL	10m			SOURCE TYPE		SOURCE ID	

LOGGER COMMENTS:

1.

2.

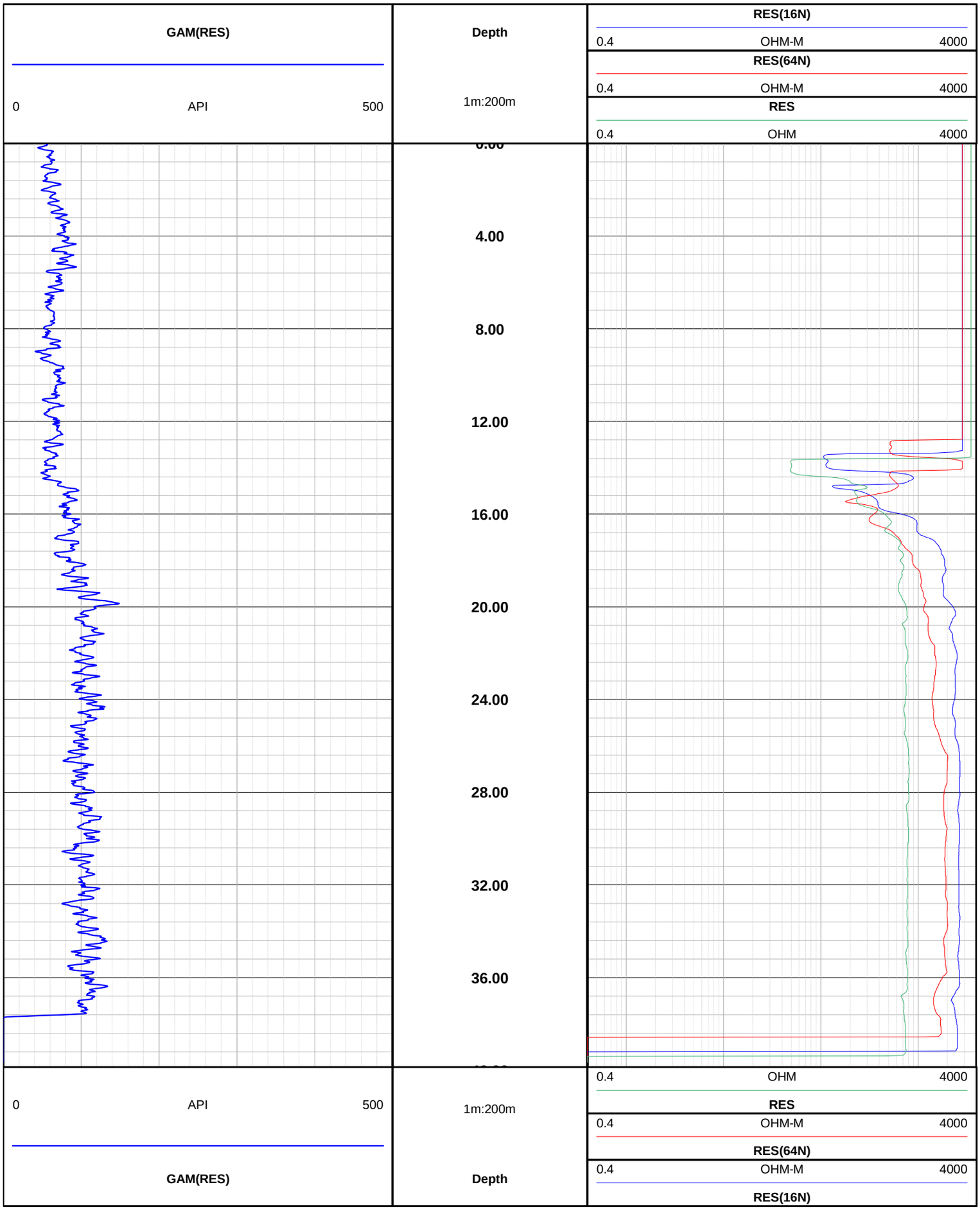
3.

MNEMONICS

GAM(RES)	NATURAL GAMMA FROM MULTI-RES TOOL
RES(16N)	16" NORMAL RESISTIVITY
RES(64N)	64" NORMAL RESISTIVITY
RES	SINGLE POINT RESISTIVITY

IMPORTANT NOTE	The following interpretations are opinions based upon inferences from borehole logs, Epiroc Kinetic Logging Services cannot and does not guarantee the correctness or accuracy of any interpretations. Therefore, Epiroc Kinetic Logging Services shall not be liable or responsible for any loss, damage, cost or expense incurred or sustained by anyone resulting from any interpretations.

DEPTH SCALE 1:200



DEPTH SCALE 1:200

VERTICALITY ANALYSIS

BQLA_04

COMPANY	SMEC	**FIELD**	PIONEER-BURDEKIN	**STATE**	QLD
WELL	BQLA_04	**LOCATION**	EUNGELLA	**COUNTRY**	AUSTRALIA

LOCATION: EUNGELLA
FIELD: PIONEER-BURDEKIN
STATE: QLD
WELL: BQLA_04
COMPANY: SMEC

PERMANENT DATUM	ELEVATIONS:	REMARKS:
PERMANENT DATUM ELEVATION	KB	1.
LOG MEASURED FROM GL	DF	
DRILLING MEASURED FROM GL	GL	2.

LICENSE	SECTION	TOWNSHIP	RANGE	MAG DECL.
				8.12deg

DATE	01-09-2023			RECORDED BY	JRT		
TIME	16-01			WITNESSED BY			
RUN NUMBER	1			LOGGING UNIT	V013		
DEPTH-DRILLER	40.00m			RIG NUMBER			
DEPTH-LOGGER	39.67m			TOOL TYPE	9057A		
BIT SIZE	96mm			TOOL SERIAL NO.	361		
CASING TYPE	STEEL			EASTING	658002		
CASING OD	101mm			NORTHING	7660257		
CASING BOTTOM	14.60m			SAMPLE INT.	.01m		
FLUID TYPE	0			LOG DIRECTION	U		
TRUCK CAL NO.	0.09778			FEET OR METER	M		
WATER LEVEL	10m			SOURCE TYPE		SOURCE ID	

DEVIATION LIST

MNEMONIC DESCRIPTORS

SANGB	SAMPLE ANGLE BEARING	**NORTH**	BOREHOLE NORTH DEVIATION
SANG	SAMPLE SLANT ANGLE (0 DEG = VERTICAL DOWN)	**CDIST**	DEVIATED CLOSURE DISTANCE
TVD	TRUE VERTICAL DEPTH	**CANGB**	DEVIATED CLOSURE ANGLE BEARING
EAST	BOREHOLE EAST DEVIATION		

ALL CO-ORDINATES ARE PRESENTED ORIENTED TO TRUE NORTH   MAGNETIC DECLINATION **8.12deg**

Depth	SANGB	SANG	EAST	NORTH	CDIST	CANGB	TVD
m	DEG	DEG	[m]	[m]	[m]	deg	
0.00	55.6886	1.69533	-999.25	-999.25	-999.25	-999.25	0
1.00	11.5208	1.98764	0.0117747	0.0294641	0.0317298	21.7831	0.999467
2.00	0.672206	2.05717	0.010373	0.0639522	0.064788	9.2131	1.99886
3.00	1.43992	2.16893	0.00973787	0.100037	0.100509	5.55983	2.9982
4.00	352.345	2.12382	0.00708443	0.136893	0.137076	2.96251	3.99752
5.00	346.638	2.23992	0.000778562	0.174405	0.174407	0.255773	4.9968
6.00	349.718	2.16065	-0.00673836	0.211858	0.211965	358.178	5.99606
7.00	341.435	2.18931	-0.0154429	0.24889	0.249369	356.449	6.99534
8.00	337.069	2.17325	-0.0271666	0.285221	0.286511	354.559	7.9946
9.00	332.571	2.23445	-0.0445918	0.319245	0.322344	352.048	8.99386
10.00	331.406	2.25436	-0.0622822	0.354379	0.35981	350.032	9.99309
11.00	328.233	2.2727	-0.0831101	0.387518	0.39633	347.895	10.9923
12.00	334.911	2.16412	-0.102448	0.420793	0.433085	346.317	11.9916
13.00	337.494	2.19245	-0.118215	0.454852	0.469963	345.431	12.9909
14.00	326.608	2.64264	-0.138086	0.490734	0.509792	344.284	13.99
15.00	292.638	2.70936	-0.173254	0.519432	0.547564	341.554	14.9889
16.00	53.588	2.77501	-0.170784	0.546974	0.573016	342.66	15.9878
17.00	55.2001	2.73967	-0.131384	0.57522	0.590034	347.134	16.9866
18.00	56.0576	2.75367	-0.0919421	0.601890	0.608881	351.316	17.9855

19.00	56.2294	2.71656	-0.0524305	0.62845	0.630633	355.231	18.9843
20.00	55.3694	2.66519	-0.0130264	0.6545	0.654629	358.86	19.9832
21.00	70.8073	2.52748	0.0279321	0.675346	0.675923	2.36839	20.9822
22.00	72.6301	2.50922	0.0697307	0.688696	0.692218	5.78151	21.9812
23.00	73.9493	2.4633	0.111331	0.701657	0.710435	9.01584	22.9802
24.00	73.5572	2.46884	0.152788	0.714009	0.730173	12.0783	23.9793
25.00	73.53	2.45608	0.19392	0.726039	0.751491	14.9542	24.9784
26.00	74.1739	2.44778	0.234926	0.737789	0.774289	17.6624	25.9775
27.00	73.9027	2.42949	0.275882	0.749379	0.798549	20.2111	26.9766
28.00	74.1925	2.42017	0.316785	0.76074	0.824062	22.6077	27.9757
29.00	73.7841	2.42507	0.357693	0.77203	0.850866	24.859	28.9748
30.00	74.5473	2.42096	0.398376	0.783376	0.878852	26.9551	29.9739
31.00	75.1579	2.41954	0.43908	0.794403	0.907672	28.9302	30.973
32.00	75.8223	2.4216	0.479865	0.805304	0.937435	30.7899	31.9721
33.00	75.0676	2.42246	0.520472	0.816259	0.968075	32.5228	32.9712
34.00	75.5655	2.39812	0.561126	0.826961	0.999363	34.1585	33.9703
35.00	74.597	2.38005	0.601619	0.837537	1.03122	35.6904	34.9695
36.00	75.7888	2.39022	0.64211	0.848156	1.0638	37.1281	35.9686
37.00	75.8923	2.36105	0.682228	0.858537	1.0966	38.4721	36.9677
38.00	76.0116	2.36061	0.722279	0.868798	1.12982	39.7386	37.9669
39.00	76.0015	2.37012	0.762347	0.878704	1.16331	40.9443	38.966

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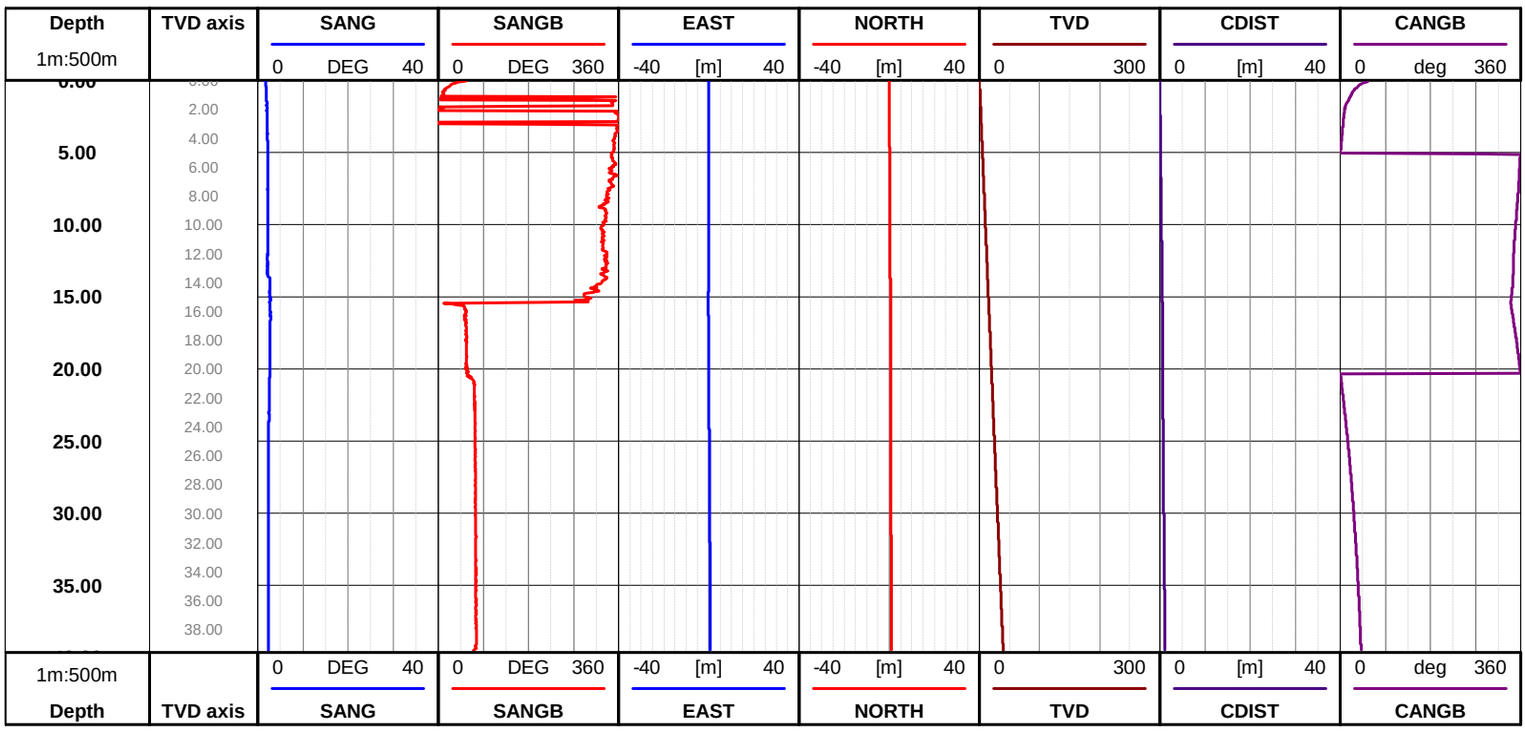

NOTES ON VERTICALITY PLOTS

1. The following verticality plots are scaled automatically to obtain the best visual effect within the default page size.
2. All co-ordinates are presented oriented to True North.

DEVIATION PLOT