



Jon Christie



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This presentation follows up from the BDA proposition paper
'Cable Percussion Drilling'



The background



- 29th October 2015
- Single snatch block
- Safety swivel SWL of 3.15 tonnes
- Safety swivel proof loaded to 6.3 tonnes
- The rig can only generate 2.0 tonnes





- · Human error, and or
- The Cable Percussion Drilling Rig



Accessories



- Approved and reputable supplier
- Fully audited
- No previous issues with quality
- Supplier keen to be involved in the investigation
- SWL 3.15 tonnes
- Proof loaded and certified to 6.3 tonnes
- The loads, as specified by the manufacturer, should not have compromised the safety swivel



Human Error



- Fully BDA Accredited
- NVQ Level 2
- 10 years cable percussion drilling experience
- Good reputation
- Self reported



The Cable Percussion Drilling Rig



- No obvious failings in composition of the accessories
- Reputable Lead Driller
- Manufacturer specification implies compliance
- Question over load generation



Load testing



Establish the load generated by the cable percussion drilling rig in comparison to the manufacturers specification document

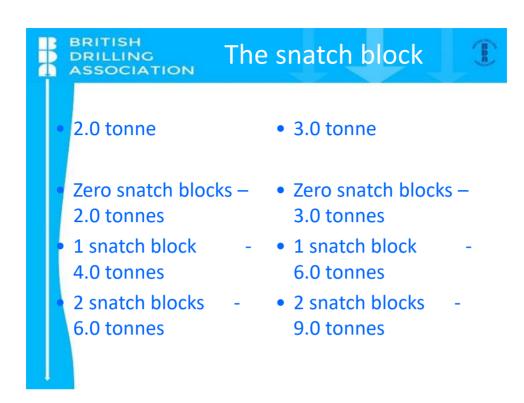


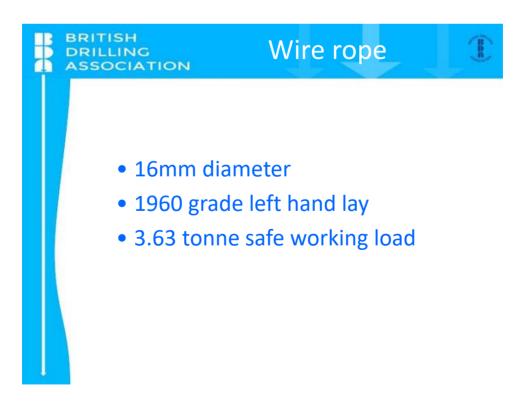


- 18hp or 13kW at 1800rpm
- 100Nm at 1770rpm
- 2 tonne single line pull
- 8 tonne derrick S.W.L
- 20 tonnes derrick failure load
- 40m
- European Certificate of Declaration

BRITISH 3.0 tonne CP specification RASSOCIATION

- 25.9hp or 19.3kW at 1870rpm
- 100Nm at 1870rpm
- 3 tonne single line pull
- 10 tonnes derrick SWL
- 23.7 tonne derrick failure load
- 61m
- European Certificate of Declaration







Accessories



- Safety swivel, SWL 3.15 tonnes;
- Conventional 'D' shackle, SWL 4.75 tonnes;
- Rod swivel, SWL 5.00 tonne;
- Sinker bar, SWL 5.00 tonne;
- Recovery tool, SWL 5.00 tonne;
- Snatch block, SWL 8.00 tonne, and;
- 'D' shackle, SWL 6.00 tonnes (when implementing a snatch block).



The results



2.0 tonne capacity cable percussion rig

	No sn	atch blo	ock	One sna	atch block	Two snatch blocks	
Attempt	1		2	1	2	1	2
Steady Pull (tonnes)	Data missing		Data missing	4.21	4.35	6.1	7.46
	2.7		2.85	6.39	7.2	7.11	7.27
Snatch	4		4.3	6.6	7.05	11.12*	11.6*
Pull (tonnes)	4.01		Abandoned	8.6*	Abandoned	8.2*	Abandoned
		_					

DERRICK SWL 8 tonnes



3.0 tonne capacity cable percussion rig

		No snatch block			One sna	tch block	Two snatch blocks	
Attempt		1		2	1	2	1	2
Steady Pull (tonnes)		3.84		3.91	8.53	9.3	12*	Abandoned
		3.4		3.58 6.84		7.25	10.1*	10.6*
Snatch	H	6		5.9	9.6	Abandoned	Abandoned	Abandoned
Pull (tonnes)		5		Abandoned	8.85	Abandoned	13.8*	Abandoned
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DERRICK SWL 10 tonnes



Accessories



- Wire rope SWL 3.63 tonnes
- Wire rope with grips SWL 2.90 tonnes
- Safety swivel, SWL 3.15 tonnes;
- Conventional 'D' shackle, SWL 4.75 tonnes;
- Rod swivel, SWL 5.00 tonne;
- Sinker bar, SWL 5.00 tonne;
- Recovery tool, SWL 5.00 tonne;
- Snatch block, SWL 8.00 tonne, and;
- 'D' shackle, SWL 6.00 tonnes (when implementing a snatch block).



Legislative review



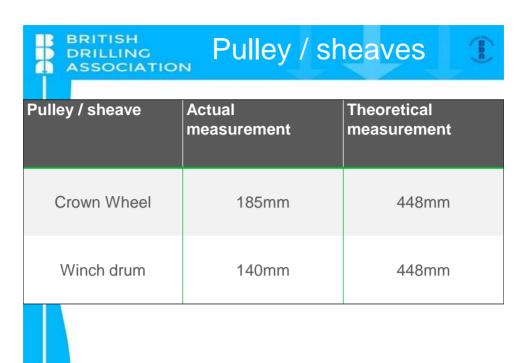
- LIFTING OPERATIONS AND LIFTING EQUIPMENT REGULATIONS 1998
- THE PROVISION AND USE OF WORK EQUIPMENT REGULATIONS 1998
- BS ISO 4308-1:2003 CRANES AND LIFTING APPLIANCES—SELECTION OF WIRE ROPES—PRT 1:GENERAL
- BS ISO 4301-1:2016 CRANES-CLASSIFICATION-PRT1 GENERAL
- BS EN 292-1:1991 SAFETY OF MACHINERY-BASIC CONCEPTS, GENERAL PRINCIPALS FOR DESIGN-PRT 1: BASIC TERMINOLOGY, METHODOLOGY
- BS EN 292-2:1991 SAFETY OF MACHINERY-BASIC CONCEPTS, GENERAL PRINCIPALS FOR DESIGN-PRT2: TECHNICAL PRINCIPLES AND
- BS EN 16228-1:2014 DRILLING AND FOUNDATION EQUIPMENT-SAFETY PRT 1 COMMON REQUIREMENTS



The wire rope

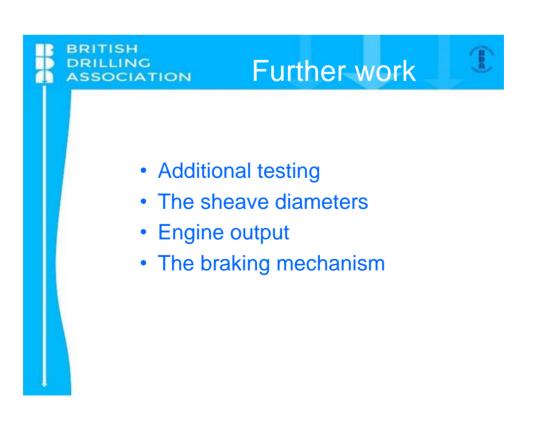


- Factor of safety of 5
- SWL 3.63 tonnes
- With wire rope grips SWL 2.90 tonnes
- With a snatch block SWL 2.61 tonnes











Closing thoughts



- Bulletin No.9 BDA/AGS
- "Some of the prevailing practices in the UK GI industry are no longer 'fit for purpose'."
- 38% agreed
- 45% cite Cable Percussion Drilling
- The most commonly used method for borehole formation in the UK
- The BDA is working with the manufacturers and industry to address these concerns

