

ODFJELL RENTAL – BHA RUNNING PROCEDURE

BOULDER BUSTER – TWO-STAGE HOLE OPENER

Field & Well:

Hole Opener:

17 ½" x 28" x 42" ORS "Boulder Buster" Two-Stage Hole Opener

Type Size:

Nozzle Cutters:

42"	5 x Jets	
28"	3 x Jets	
Bit:	TBN	
Flow Split:	Approx. 55/45 bit/hole opener	

Bit:

Manuf.:

IACD Code:

Nozzle Size:

Note: Primary bit will be preassembled to the hole opener onshore.

CUSTOMERS PREPARATIONS

Safety and information meeting

Prior to start the BHA running operation a safety and information meeting is to be held with all personnel involved. Major safety topics are; lifting operations, correct communication, squeeze injuries and proper handovers during crew change.

When the Hole Opener is lifted into the rig floor, the driller supervises the operation. It is recommended using ropes to guide the lift.

Note: The weight for assembled HO and Bit is about 9 tons

All equipment to be visually checked for possible damage prior to RIH.

BHA must be as vertical as possible in well - no movement of rig after spud.

BOULDERS

Keep WOB and RPM as low as possible while drilling boulders.

If encountering boulders, the hole opener can deflect and build inclination. Use time to drill through boulders (to avoid building inclination) Use low WOB and low RPM, and ream as required. If hole angle deviates from vertical >1 degree just below template; attempt to straighten the hole by reaming. Do not increase the flow rate as this will increase the risk of wash outs.

RUNNING BHA

The objective is to drill the 42" top hole, with less than 1 deg. Inclination.

- Bit is made up to Hole opener prior to shipment.
- The Hole opener is painted yellow for easy observation by ROV.
- Pick up and run 42" BHA through rotary.
- Keep BHA centered while lowering through rotary.
- Take care when lowering BHA through the template stack. Align drill string as near vertical as possible.
- Record depth corrected for tide when the bit enters the guide.
- Break circulation and start drilling BHA into seabed as per Operators procedure, but notice BHA parameters/limitations below.

Recommended BHA parameters:

Parameters:	OWS Hole Opener
Flow Rate:	1800-7000 l/min
Rotation:	25-120 RPM
WOB:	4-9 ton pr. Cutter

- Start drilling carefully to avoid crating effects.
- The first 10-15 m is normally soft, unconsolidated formation. Control flow rate according to operators procedure (use low LPM the first 15 m to avoid washouts). Below 15 m increase flow rate as per operators procedure/BHA parameters. Consider to increase pumps up to normal flow and drill string rotations up to 70 RPM when the bit is 15 m (or more) below seabed.
- Limit WOB to max 2-3 tons for the first 10-20 m.
- Check inclination, to ensure first 25 - 30 m is below 1° inclination.
- If hole angle deviates from vertical >1 degree just below template; attempt to straighten the hole by reaming. Remember low flow rate during this kind of operation!

TD

Check template inclination reading prior to POOH.

At TD (drilling is completed), Follow operators procedure, but record as a minimum inclination and ROP for drilling the well.

Pull out of hole

Note: If Batch Drilling, visually check BHA for damage (on rig or with ROV) before RIH on the next well.

- POOH with BHA
- To prevent any dropped objects on drill floor, please check the area between cutters and tool body for rocks and pebbles.
- When Tool is OOH, visually check Tool & cutter for damage.
- After last well, lay down assembly and pack for shipment
- Please Provide OWS with a BHA performance report; trm@ows.no

SPECIFICATION SHEET

Equipment

17 1/2" X 28" X 42" HOLE OPENER T25

SPECIFICATION

Pilot Hole Diameter	17 1/2"
Pilot Hole Stabilizer Blade Length	19"
Hole Opener Diameter 1 st Stage	28"
1 st Stage Hole Stabilizer Length	14"
Hole Opener Diameter 2 nd Stage	42"
2 nd Stage Hole Stabilizer Length	27"
Cutter Quantity 1 st Stage	4
Cutter Quantity 2 nd Stage	5
Fish Neck Length	54"
Bottom Hole Length	33"
Fishing Neck Diameter	10"
ID	3"
Overall Length	196.3"
Cutter Typ./ IADC	TCl/ 5-2-5
Bearing Type	Sealed Roller
Inner Insert Shape	Chisel
Gauge Insert Shape	Dome
Jets to 1st Stage Cutters	4
Jets Under 1st Stage Cutters	0
Jets to 2nd Stage Cutters	5
Jets Under 2nd Stage Cutters	0
Jets to Reamed Hole Facing Rig	2
Weight	8251kg/ 18,190lbs

ENGINEERING FEATURES

* Interchangeable Cutting Elements
* Patented Cutter Retention System
* Interchangeable Jet Nozzles with Stainless Steel Retainers
* Under Cutter Anti-Balling Jets to Increase Cuttings Removal Around Cutters

RECOMMENDED DRILLING PARAMETERS

WEIGHT ON HOLE OPENER @ 80 to 100 RPM	Medium Soft Formation 22,046lbs per Cutter
WEIGHT ON HOLE OPENER @ 100 to 150 RPM	Soft Formation 13,227lbs per Cutter
FLOW RATE	396 – 1540 UK GPM 475 – 1849 US GPM

