



Unit : Bluewhale I (# H1277)
Type: : UDW Semi Submersible Drilling Unit / D90-5
Flag : Liberia
Class : DnV
Built : 2016
Rig Operator : Bluewhale Offshore
IMO Number : IMO 9684081
Email : marketing@bluewhaleoffshore.com



Unit Specifications

Registered Name	Bluewhale I
Rig Type	Ultra Deepwater Column Stabilised Unit
Unit/Design/Shape	Semi-Submersible Drilling unit, Frigstad D90-5
Unit Flag	Liberia
Unit Classification	DNV ✕A1 Column Stabilized Drilling Unit; DYNPOS AUTRO (DP3); POSMOOR ATA; CRANE; HELDK-SH; ECO; F-AM; DRILL; BWM-T
IMO Certification	IMO 9684081
Year of Construction	2016
Construction Yard	Yantai CIMC Raffles Offshore Ltd
Type of Positioning System	DP3 and Pre-set Automatic Thruster Assist

Main Dimensions/Technical Description

Weight (light ship)	43,725 tonnes
Displacement at Loadline	69,768 tonnes @ 24 m draft
Draft at Loadline	24 m
Hull Length	402 ft (123 m)
Hull Width	304 ft (93 m)
Moon Pool	44 m x 9 m
Transit Draft	Draft 12.1 m; Displacement 51,379 t
Survival Draft and Airgap	Draft 18 m; Displacement 61,477 t; Airgap 16.5 m

Storage Capacities

Fuel	4,924 m ³
Drilling Water	4,796 m ³
Potable Water	1,256 m ³
Active Liquid Mud	1,418 m ³
Mud Processing Tank	50 m ³
Reserve Brine	575 m ³
Reserve Liquid Mud	1,694 m ³
Base Oil	653 m ³
Bulk Bentonite/Barite	504 m ³ (432 m ³ operating volume)
Bulk Cement	504 m ³ (432 m ³ operating volume)
Sack Storage	9,168 sacks

Propulsion/Thrusters

Thrusters	Eight (8) Wartsila / FS3510 NU azimuth thrusters; 4.5 MW @ 720 rpm
Dynamic Positioning	Kongsberg DP3 and Automatic Thruster Assist Position Reference: DGPS / GLONASS and HIPAP Acoustic with HAIN

Operational Capabilities

Maximum Water Depth	12,000 ft (3,660 m)
Maximum Drilling Depth	50,000 ft (15,240 m)
Transit Speed	Up to 10 knots; Self-propelled

Variable Loading

Variable Load Capacity	Payload capacity of 15,700 tonnes at operating (24 m) and survival (18 m) drafts. Stability booklet for the various operational scenarios available upon request
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Environmental Limits

Environmental Limits	<u>Drilling</u> Air gap below main deck: 10.5 m Maximum wave height: 8.2 m Maximum wave period: 14 sec Maximum heave (double amplitude): 4 m Maximum pitch (double amplitude): 3 degrees Maximum roll (double amplitude): 3 degrees
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Mooring System

Anchor Winches & Anchors	Four (4) double drum (4 x 2) NOV-BLM / MW325 winches; Leroy Somer / Emerson motors; 525 kW per winch; Rated pulling capacity (1 st layer) @ 240 tonnes (2,355 kN) Eight (8) fairleads; NOV-BLM Two (2) towing anchors; High holding power; Stevpris MII type; each weighing 18 tonnes
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Marine Loading Hoses

ML System	Two (2) loading stations; Hymek with hydraulically driven reel. Twelve (12) pre-mounted reels with 60 m long hoses
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Cranes, Hoist And Material Handling

Cranes	Two (2) Liebherr / MTC 6000-100 Lit deck cranes; 100 t @ 11.5 m; With 150 t upgrade option; Boom length 207 ft (63 m) Two (2) NOV / C2201PCE knuckle boom tubular handling cranes; Gripper yokes for 20" Casing / 3.5 t; Max. load 14 t @ 17 m; 6 t @ 29 m NOV gantry crane for BOP handling; 600 t NOV gantry crane for XT handling; 120 t NOV gantry crane for Riser handling; 50 t Four (4) NOV man/riding winches in derrick/moonpool; each with 150 kg capacity Ingersoll Rand monorails for material handling; Pneumatic / manual / electric. SWL ratings 1 to 10 t
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Helicopter Landing Deck

Dimensions	Octagon shaped helideck; 83 ft diameter
Deck Load Capacity	15.6 tonne; UK CAP 437
Refueling System	WILMAX refueling system; Three (3) portable heli-fuel tanks; 3 x 750 = 2250 US Gallons (8,400 litre)
Designed For Helicopter Type	EH101; Sikorsky S92A; MI-8; Sikorsky S16N

Auxiliary Equipment

Water Maker	Two (2) Hattenboer-Water / Demitec SW8040-05; Each with a capacity of 377 bbls/day (60 m ³ /day)
Cargo Transfer Pumps	Two (2) fuel oil transfer pumps in each pontoon; each with a capacity of 40 m ³ /h; 600 kPa Two (2) potable water transfer pumps; each with a capacity of 75 m ³ /h; 600 kPa One (1) potable water storage tank in upper hull; 60 m ³



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Derrick and Substructure

Derrick/Mast	NOV Cylinder Hoisting System (CHS) 1250/48 Base and Crown: 70 ft x 52 ft (21.4 m x 15.8 m) Maximum 2,800 kips (1,270 tonnes) each DC
Racking Platform	NOV / Quad racking platform 5 1/2" DP: 176 stands x 120 ft 6 3/4" DP: 75 stands x 135 ft 5 1/2" HWDP: 26 stands x 135 ft 9 1/2" DC: 5 stands x 124 ft 8" DC: 7 stands x 124 ft 6 3/4" DC: 8 stands x 124 ft Casing (14"/13 1/2"/ 13 1/4"): 40 joints x 120 ft Casing (10 3/4" / 9 1/2" / 7"): 67 joints x 120 ft Drill Pipe Riser 6 3/4": 84 joints x 120 ft Production String (3 1/2" / 7"): 111 joints x 120 ft 2 sets of NOV / HydraRacker IV racking arm NOV Casing stabbing board (combined fingerboard served by racking system) Hernis CCTV; Zone 1 rated; zoom / tilt Two (2) fingerboards; Two (2) riser setback areas; Two (2) catwalks; Two (2) drill floors; Two (2) pipe handling cranes; One (1) XT gantry; One (1) BOP gantry; Five (5) Hydraracker arms
Maximum Setback Load	Riser setback: 4,500 tonne Pipe setback: 1,800 tonne
Derrick Hoisting Equipment	Two (2) hydraulic Cylinder Hoisting System (CHS) Towers; NOV- DHT 1250/48 Two (2) crown blocks; NOV Sheave Cluster / CHR-1250-SW; Rated capacity of 1,250 st; 6 sheaves for hoisting; 5 m diameter and 83 mm sheave groove Two (2) swivels integrated in NOV Topdrive / TDX 1250; Rated capacity of 1,250 st; 7,500 psi Two (2) NOV dead line anchors; Hydraulic and electric load cell NOV drill string motion compensator; Stroke length of 25 ft; Capacity - compensated of 1,500 kips (680 t); Capacity - locked of 2,800 kips (1,275 t)
Rotating System	NOV / RT 755 rotary table; Max. opening of 75 1/2"; Static load cap 2,750 kips; Vertical rotating load cap of 1,000 st @ 5 rpm; Max. cont. 45,000 ft-lbs
Top Drive	NOV electric TD - PS and SB; 2,500 kips; Test/working pressure of 7,500 psi; Reliance AC motor 2 x 1,340 hp; Max. continuous torque of 105,000 ft-lbs @ 130 rpm; Max. 275 rpm

Power Supply Systems

Rig Power Plant	Eight (8) Wartsila Diesel Engines / 12V32; Max. continuous power 5,760 kW @ 720 rpm Eight (8) ABB AC generators / ABB-AMG 0900 LT10 LAE; Continuous power 5,530 kW @ 720 rpm; 11 kV output
Compressed Air Systems	Two (2) high pressure starting air compressors; Sperre / HV2-200; each with a capacity of 177 m³/hr; Working pressure of 30 bar; Electric prime mover; Continuous power 37 kW Two (2) high pressure cold start compressors; Sperre / HL2-120; each with a capacity of 74 m³/hr; Working pressure of 30 bar; Diesel prime mover; Continuous power 40 kW Four (4) medium pressure rig air compressors; TMC / 235-13 EWNA FW; each with a capacity of 1,560 m³/hr; Working pressure of 12 bar; Electric prime mover; Continuous power 208 kW Two (2) air dryers; TMC / A-1200; each with a capacity of 1,560 m³/hr

Power Supply Systems

Emergency Generator	Two (2) of the main generators are assigned as emergency generators
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Drillstring Equipment

Tubulars	Detailed specification and inventory available upon request
Handling Tools	NOV drill pipe elevators / BX-3; BX-4; BX-5; BX-7 NOV / HGG-500 Manual Centre latched 18° NOV drill collar elevator / BX-4-75 NOV drill pipe hand slips / SDXL (various dims) NOV automatic DP slips / PS-30 (two sets) DCS-L drill collar slips (various dims) NOV drill pipe spinner / SSW NOV mud saver bucket / HMB-H (two sets) NOV hydraulic make-up/breakout machine / Cathead P15 (two sets) HT-65 and HT-100 rotary rig tongs NOV iron roughneck / Hydra Tong MPT 200 Detailed specification and inventory available upon request

Well Control/Subsea Equipment

Primary BOP Stack	Complete BOP stack with guide/frame/pick up attachment/transport base; 18 3/4"; 15,000 psi; H ₂ S service Hydraulic wellhead connector; Drill-Quip / DX-DW; 18 3/4"; 15,000 psi; Hot tap for underwater intervention; One (1) identical spare connector Ram type preventers (7 each); NOV / NXT; 18 3/4"; 15,000 psi; 1 single / 2 treble ram locks Mandrel; Vetco / H4; 18 3/4"; 15,000 psi; VX / VT groove up Fail-safe hydraulic valves (kill and choke); NOV / Dual HB; 15,000 psi; Solid block
Primary Lower Marine Riser Pkg.	Hydraulic connector; Drill-Quip / DX10; 18 3/4"; 10,000 psi; Hot tap for underwater intervention; One (1) identical spare connector Annular type preventer (LMRP); NOV / SBOP; 18 3/4"; 10,000 psi Flex joint; Oilstates / 6K; 18 3/4"; Max. deflection ± 10° Riser adapter; NOV / HT-HB; 18 3/4" Two (2) off 15,000 psi connection lines (choke and kill rigid loops) Subsea accumulators; 2 off 80 USG; Piston type non-compensated; Bottle working pressure 7,500 psi Detailed LMRP specification available upon request
Secondary BOP Stack	Hydraulic wellhead connector; Drill-Quip / DX-DW; 18 3/4"; 15,000 psi Ram type preventers; NOV / NXT Mandrel; Vetco / H4; 18 3/4"; 15,000 psi; VX / VT groove up Fail-safe hydraulic valves (kill and choke); Shaffer / HB Duals; 6 off 3 1/16"; 15,000 psi Subsea accumulators; Piston type non-compensated; 2 off 15 USG and 3 off 120 USG with working pressure 7,500 psi; Depth compensated bottles: 6 off 28 USG with working pressure 5,000 psi 2 off hydraulic control pod / receptacles



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Well Control/Subsea Equipment

Primary Marine Riser System	Currently equipped for \approx 10,000 ft water depth Marine riser and pup joints: NOV / FT-HB and HT-HB; OD 21" / ID 19 1/4" Telescopic joint: NOV / FT-HB; ID 18 3/4"; 55 ft stroke; Closed length 71.4 ft; Double seals; Onboard spare; NOV rotating support ring for riser tensioners with 5 connection points Kill/Choke Lines: OD 6 1/2" / ID 4 1/2"; 15,000 psi Booster Line: OD 5" / ID 4"; 7,500 psi Hydraulic supply lines: OD 2 3/4" / ID 2 1/2"; 5,000 psi Upper ball (flex) joint: Oilstates / Intermediate 4; 18 3/4"; Max. deflection \pm 10°
Diverter BOP	NOV / 21-500-75-EXT; Max. bore size: 21 1/4"; 500 psi; Three (3) diverter outlets with OD 16" / 14" / 10"; Insert packet size ID 21" annular Diverter flow line to overboard; OD 16"; 500 psi; Piper ball valves Hydraulic remote control valve from Drillers and Toolpushers control panels
Subsea Support System	Six (6) N-Line riser tensioners; each with 800,000 lbs capacity; Max. stroke of 50 ft Tensioner/Compensator Air Pressure Vessels: 36 vessels with total capacity of 3,304 ft ³ ; Working pressure of 3,000 psi
BOP Control System	Surface Accumulator Unit: NOV / Twin Triplex Pump HPU; Soluble oil reservoir capacity of 383 USG; Oil/water mix capacity of 1,064 USG; Glycol reservoir capacity of 383 USG; 64 bottles with working pressure of 5,000 psi Accumulator Hydraulic Pumps: Two (2) NOV / Triplex 165 T5H; 150 hp electric drive; Each pump with flow rate of 44 USG/min @ minimum operating pressure of 5000 psi Graphic control panel at driller's position showing subsea functions with controls for the BOP stack Remote Control Panels: NOV / HMI; Ability to operate main closing unit valves directly
Subsea Control System	One (1) Radoil hose reel in hoist tower; Storage length of 14,000 ft; Pneumatic motor driven Two (2) multiplex cable reels in hoist tower; each with storage length of 14,000 ft Hose/cable OD of 1.12"
Choke and Kill Manifold	Choke Manifold: NOV; Min ID 3 1/16"; 15,000 psi; H ₂ S service Flexible Choke & Kill Lines (riser to drilling unit): Two (2) Coflexip line; ID 3"; 15,000 psi

Mud System/Bulk System

High Pressure Mud System	Four (4) NOV / 14-P-2200 Triplex mud pumps; 6" liners; Each pump with 2 AC induction motors 1,220 hp @ 690 V; Max. working pressure 7,500 psi Discharge/Suction line ID 5 1/4" / 8" Matco / SP140 7500CS pulsation dampener Retsco Titan Class relief valves Working flowrate @ 100% volumetric output: 540 USG/min Three (3) transfer pumps; NOV / 2500 Supreme; Centrifugal; ABB motors Three (3) mixing pumps; NOV / 2500 Supreme; Centrifugal; ABB motors Two (2) standpipe manifolds; welded connections Two (2) rotary hoses; Continental; ID 4" x 162 ft long with snubbing lines Two (2) cementing hoses; Techflow; ID 3" x 162 ft long; 15,000 psi
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Mud System/Bulk System

Low Pressure Mud System	Ten (10) active mud tanks; Total capacity of 7,745 bbls Three (3) active brine tanks; Total capacity of 2,300 bbls One (1) base oil tank; Total capacity of 4,030 bbls Three (3) slug tanks; Total capacity 805 bbls One (1) overflow tank; Total capacity of 220 bbls Five (5) processing tanks; Total capacity of 320 bbls Two (2) trip tanks; Total capacity of 144 bbls One (1) stripping tank; Total capacity of 5 bbls Four (4) Brandt / VSM 300 shale shakers; 25 bbls/min Two (2) Brandt hydrocyclone desilters; 20 cones x 4"; With NOV / Mission 2500 Supreme centrifugal pump; 36 bbls/min One (1) NOV mud gas Separator (Poor Boy); 15 MMSCF/day
Cuttings Storage	Cuttings handling system with 600 m ³ storage capacity in column tanks
Bulk System	Four (4) NOV barite silos; Each with an operating volume of 72 m ³ ; 87 psi Two (2) NOV bentonite silos; Each with an operating volume of 72 m ³ ; 87 psi Six (6) NOV cement silos; Each with an operating volume of 72 m ³ ; 87 psi All silos equipped with Thames Side / CV3500 weight load cells

Casing/Cementing Equipment

Casing Equipment	Side door casing elevator; NOV; 20" / 250 t Single joint casing elevators; NOV; 7" - 20" range Casing slips; NOV / CMS-XL; 13 3/4" - 20" range Casing tongs; NOV / HT-50 & 65 & CMS-XL; 3 1/2" - 20" range Power casing tongs; NOV / KT 2000 & 8625; 50,700 ft-lbs Additional casing equipment mobilized as per contract agreement
Cementing Equipment	Cementing Manifold: Working pressure 15,000 psi; Cement pump discharge lines min. ID 4" Additional cementing equipment mobilized as per contract agreement

Instrumentation/Communication

Drilling Instrumentation	PS / SB side DCR NOV / Smart Drilling Instrumentation System (Sdi) Weight Indicator: NOV; Digital type sensors Standpipe Pressure Gauges: Two (2) NOV analogue gauges; 0 - 10,000 psi; Two (2) NOV digital gauges; 0 - 7,500 psi Choke Manifold Pressure Gauges: NOV / digital and analogue; 0 - 20,000 psi; 0 - 12,000 psi Rotary Speed Tachometer: NOV / Cyberbase HMI; 0 to 15 rpm Rotary Torque Indicator: NOV / Cyberbase HMI; 0 - 5000 ft-lbs
Rig Communication System	Telephone System: 180 stations in total; IMCOS / Models 5310 & 5362 & 7452; and Gitiessie (sound powered) Public Address System: Gitiessie; Explosion proof Drillers Talkback: Three (3) Gitiessie stations (BOP CR; DCC; Bridge) Handheld VHF Radios: McMurdo / R5; 9 sets



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Instrumentation/Communication

Environmental Instrumentation Temperature: Air (Vaisala) and seawater (Kongsberg Marine) temperatures; with recorders
 Barometric Pressure: Vaisala / PWD-22; with recorder
 Humidity Sensing: Vaisala / PTU-303; with recorder
 Wind Speed/Direction: Gill Wind Observer II / Wind Observer OMC-160; with recorder
 Wave Profile: Kongsberg / MRU5 and MRU5+; with recorder

MODU Specific Instrumentation Roll/Pitch/Heave: Kongsberg / MRU5 and MRU5+; with recorder
 Gyro Compass: Kongsberg / Navigat X Mk 1; 3 units
 Echo Sounder: Skipper / GDS-102; 24 hr memory and printer
 Current Indicator: Kongsberg / Doppler DL850; with recorder
 Weather Facsimile Recorder: Furuno / FAX-30 Backbox type; with recorder
 S-band Radar: Kongsberg / 703041; Bandwidth of 3050 MHz (± 10 MHz)
 X-band Radar: Two (2) Kongsberg / 703038 units; Bandwidth of 9410 MHz (± 30 MHz)

Radio Equipment SSB Transceiver and Watch Receiver: Furuno / FS-5075 & FS-2575; 500 W and 250 W; 1.6 to 30 MHz; Synthesized; Telex capable
 EPIRB: McMurdo / E5 Smart Find; One (1) auto and seven (7) manual units
 VHF Radio Telephone: Three (3) FM / 8900S units; 25 W; All international channels
 VHF Radio Transceiver: Three (3) ICOM / IC-M45A units; 25 W
 Radio Beacon Transmitter: Nautel / VR-125D; 125 W
 Aeronautical VHF Transceiver: Two (2) ICOM / A-110; 36 W PEP; 118 to 137 MHz; Synthesized
 Satellite Communication System: Furuno / Felcom-500; Inmarsat Fleet Broadband; with facsimile link, telephone link and other data capabilities
 V-Sat System: Comtech Seatel / 5012

Production Test Equipment

Burner Boom Two (2) horizontal TSC burner booms; 85 ft long; 51 ft above sea level at drilling draft
 Maximum wind speeds: 36 m/s for operation and 55 m/s in stowed position
 Burner platform size: 2940 mm x 2330 mm
 Regulatory approval by DnV

Workover Tools

Workover Tools As per contract agreement

Accommodation

Offices Bridge / CCR on 6th deck
 Company Reps: Three (3) offices on 5th deck
 BWO Team: Five (5) offices on 5th deck
 BWO Team: Three (3) offices on 6th deck
 Catering: One (1) office on 2nd deck
 3rd Party Reps: Two (2) offices on 3rd deck

Living Quarters 200 PAX capacity; 12 one-man cabins; 94 two-man cabins (shared wetunit / separate bunk enclosures)

Safety Equipment

Gas/Fire/Smoke Detection H₂S monitoring system: Autronica / GT 3000; 158 detection points
 Six (6) portable H₂S detectors; MSA / Altair
 Combustible gas monitoring system: Autronica / HC 2000; 176 detection points
 Two (2) portable CO₂ gas detectors; MSA / Altair
 Six (6) explosimeters; MSA / Altair
 Autronica / BH 500 F&G detection system in LQ

Fire Fighting Two (2) firewater pumps; Shinko / RUP 250 M;
 Vertical centrifugal pumps; Each with an output of 1,409 USG/min (320 m3/hr)

Survival Equipment Four (4) Fassmer / CLX11.7 lifeboats; each with 100 PAX capacity
 16 each Viking / 25DK life rafts; each with 25 PAX capacity; Davit launched; Throw overboard
 Two (2) Fassmer / FRR 6.2 ID rescue boats

Pollution Prevention Equipment

Sewage Treatment EVAC / MBR 160C; Biological type system; in compliance with Marpol / Annex IV / MEPC159(55)

Garbage Compaction/Disposal Delitek / DT-500MC electro-hydraulic waste compactor
 Disperator / 510 BS food waste disposer (grinder)

Oily Water Separator GEA Westfalia / CD 305-00-02 and WSE 50-01-937 solids and oily water separation system

Reviewer's Notes:

