

From: Shaughnessy, John M.
Sent: Tue Aug 25 15:31:05 2009
To: Burns, Tim A
Subject: Rig Info
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Attachments: Horizon Specs.doc; Transocean Marianas Specs.doc; Deepwater Horizon
Specs from Web Site.doc; Development Driller II Specs.doc; Discoverer Enterprise
Specs.doc

Transocean Deepwater Horizon Specifications

The DEEPWATER HORIZON is a Reading & Bates Falcon RBS8D design semi-submersible drilling unit capable of operating in harsh environments and water depths up to 10,000 ft using 18³/₄in 15,000 psi BOP and 21in OD marine riser.

Rig Type	5th Generation Fleet
Design	Reading & Bates Falcon RBS-8D
Builder	Hyundai Heavy Industries Shipyard, Ulsan, South Korea
Year Built	2001
Classification	ABS
Flag	Panama
Accommodation	130 berths
Helideck	Rated for S61-N helicopter
Moonpool	21 ft x 93 ft



Station Keeping	Dynamically Positioned
Max Drill Depth	35,000 ft / 10,668 m
Max Water Depth	10,000 ft / 3,048 m
Operating Conditions	Significant Wave: 29 ft; @ 10.1 sec; Wind: 60 knots; Current: 3.5 knots
Storm Conditions	Significant Wave: 41 ft @ 15 sec; Wind: 103 knots; Current: 3.5 knots

Technical Dimensions

Length	396 ft	121 m
Breadth	256 ft	78 m
Depth	136 ft	41 m
Operating Draft	76 ft	23 m
Ocean Transit Draft	29 ft	9 m
VDL – Operating	8,816 st	8,000 mt

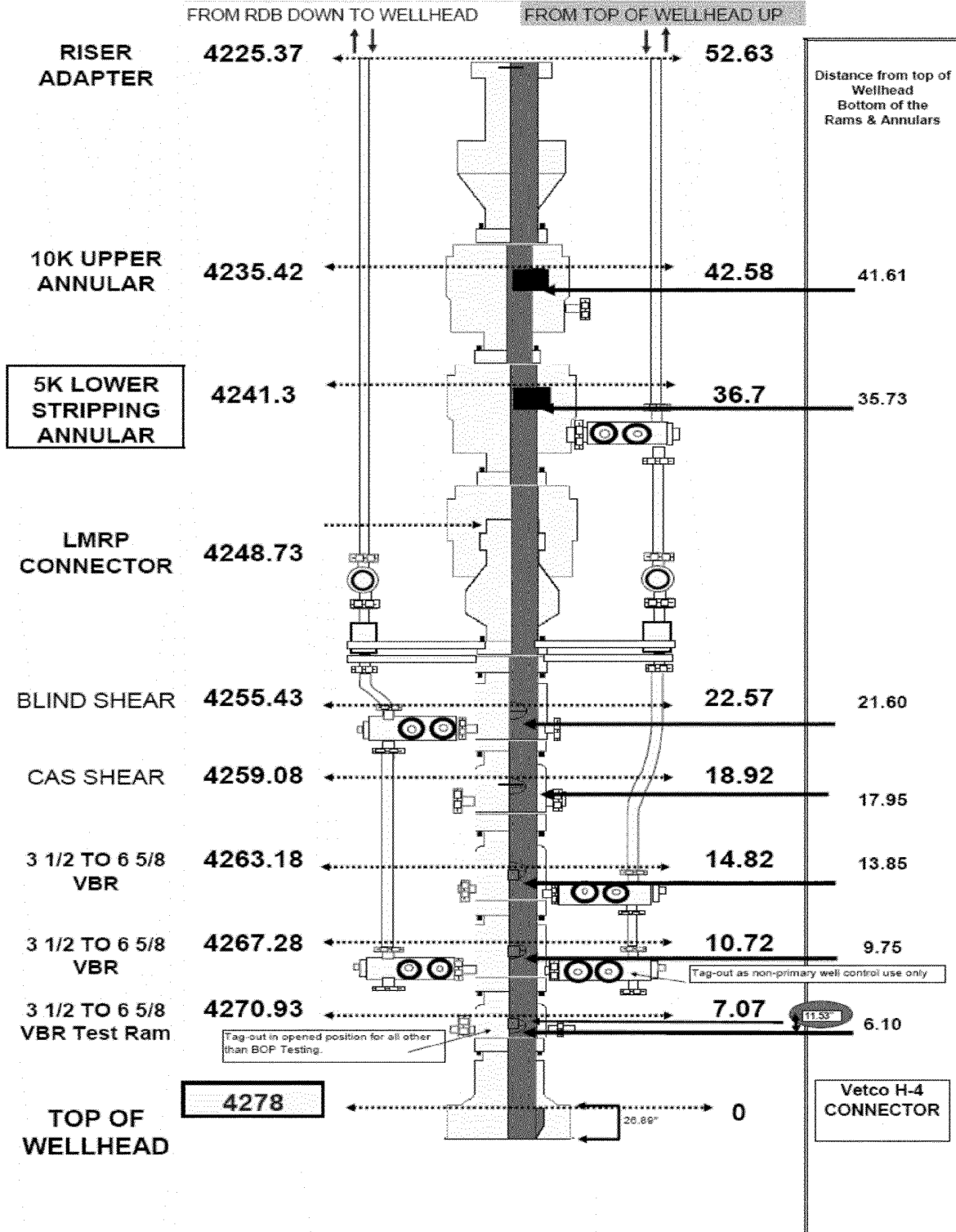
Capacities

Liquid Mud	4,435 bbls	Fuel Oil	27,855 bbls
Drill Water	13,076 bbls	Bulk Mud	13,625 cu ft
Potable Water	7,456 bbls	Bulk Cement	8,175 cu ft

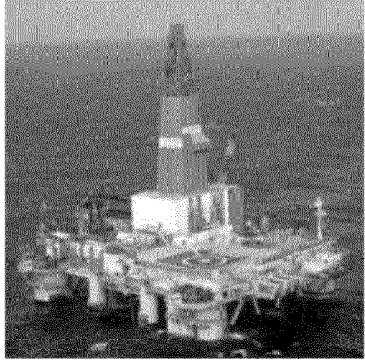
Drilling Equipment (Transocean Deepwater Horizon Specifications Continued)	
Derrick	Draco 242 ft x 48 ft x 48 ft, 2000 kips GNC
Drawworks	Hitec active heave compensating drawworks, 6900 hp rated input power continuous, 2in drilling line
Motion Compensator	Hitec ASA Active Heave Compensator, 13.7 ft stroke, 500 st operating, 1000 st locked
Top Drive	Varco TDS-8S, 750 st, 1150 hp with PH-100 pipe handler
Rotary	Varco RST, 60.5in opening, 1000 st
Pipe Handling	2 x Varco PRS-6i Pipe Packers; Varco AR-3200 Iron Roughneck
Mud Pumps	4 x Continental Emsco FC-2200, 7500 psi
Shale Shakers	7 x Brandt LCM-2D CS linear motion / cascading shakers
Desander	2 x Brandt SRS-3 with 6 x 12in cones
Desilter	Brandt LCM-2D/LMC with 40 x 4in cones over one linear motion shaker, 2400 gpm
Mud Cleaner	See Desilter
BOP	2 x Cameron Type TL 18 $\frac{3}{4}$ in 15K double preventers; 1 x Cameron Type TL 18 $\frac{3}{4}$ in 15K single preventer; 1 x Cameron DWHC 18 $\frac{3}{4}$ in 15K wellhead connector
LMRP	2 x Cameron DL 18 $\frac{3}{4}$ in 10K annular; 1 x Cameron HC 18 $\frac{3}{4}$ in 10K connector
Diverter	Hydril 60 with 21 $\frac{1}{4}$ in max bore size, 500 psi WP and 18in flowline and two outlets
Control System	Cameron Multiplex Control System
Riser	Vetco HMF-Class H 21in OD riser, 90 ft long joints with C&K and booster and hydraulic supply lines
Riser Tensioners	6 x Hydralift Inline, 50ft stroke, 800 kips each
Choke & Kill	Stewart & Stevenson 3-1/16in, 15K, with 2 x adjustable chokes and 2 x hydraulic power chokes
Cementing	Halliburton (third party equipment)
Machinery	
Main Power	6 x Wartsila 18V32 rated 9775 hp each, driving 6 x ABB AMG 0900xU10 7000 kW 11,000 volts AC generators
Emergency Power	1 x Caterpillar 3408 DITA driving 1 x Caterpillar SR4 370 kW 480 volts AC generator
Power Distribution	8 x ABB Sami-Megastar Thruster Drives, 5.5 MW and 6 x GE Drilling Drive Lineups 600 V 12 MW
Deck Cranes	2 x Liebherr, 150 ft boom, 80 mt @ 35 ft
Thrusters	8 x Kamewa rated 7375 hp each, fixed propeller, full 360 deg azimuth
Propulsion	See Thrusters

BOP Stack Test Space Out Measurements - Pre Drill Estimate

Assumptions: 4216ft WD, 75ft air gap, 10ft stickup 36" and 13ft stickup 18-3/4" HP WHH



BP GC 823 #2 Puma 4 Prospect

Transocean Marianas		
The TRANSOCEAN MARIANAS is a Sedco 700 design semi-submersible drilling unit capable of operating in harsh environments and water depths up to 7,000 feet using a 18¾in, 15,000 psi BOP and a 21in OD marine riser.		
Rig Type	Other Deepwater	
Design	Earl & Wright Sedco 700 Series Enhanced	
Builder	Mitsubishi (original hull) FELS (Conversion), Singapore; AMFELS (Brownsville, TX)	
Year Built	1998	
Classification	ABS A1 Column Stabilized Unit; AMS; ACCU; DP S2	
Flag	Marshall Islands	
Accommodation	150 berths	
Helideck	72ft x 72ft, rated for Sikorsky S-92	
Moonpool	23 feet x 69 feet	
Station Keeping	Moored	
Max Drill Depth	25,000 ft / 7,620 m	
Max Water Depth	7,000 ft / 2,134 m	
Operating Conditions	Significant Wave: 25ft; Wind: 50 knots; Current: 2.0 knots	
Storm Conditions	Maximum Wave: 103.7ft; Wind: 80 knots; Current: 2.5 knots	

Technical Dimensions

Length	264 ft	80 m
Breadth	197 ft	60 m
Depth	122 ft	37 m
Operating Draft	81 ft	25 m
Ocean Transit Draft	30 ft	9 m
VDL - Operating	4,107 st	3,727 mt

Capacities

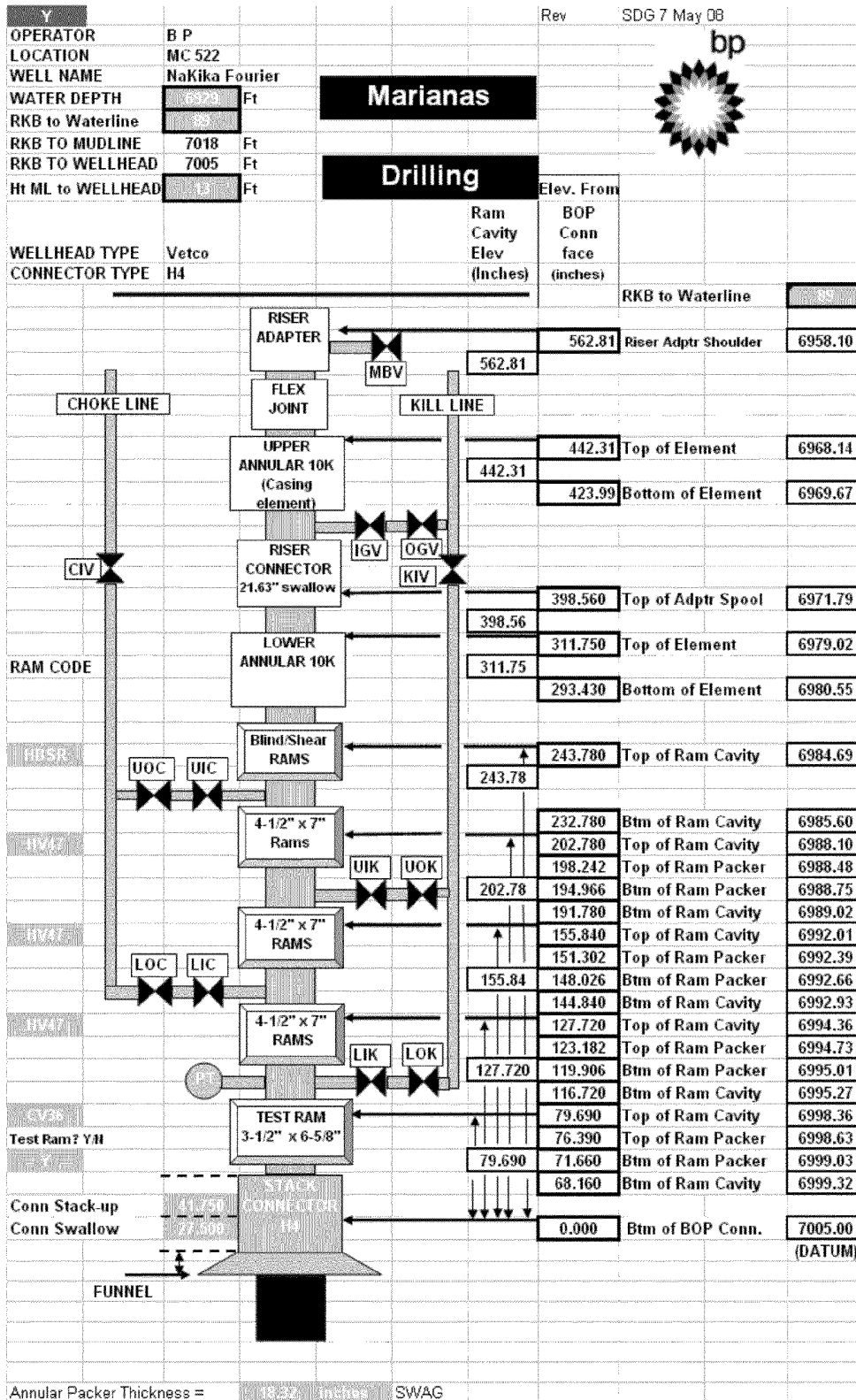
Liquid Mud	10,000 bbls	56,145 cu ft	1,589 cu m
Drill Water	10,914 bbls	61,277 cu ft	1,734 cu m
Potable Water	2,924 bbls	16,417 cu ft	465 cu m
Fuel Oil	18,507 bbls	103,908 cu ft	2,941 cu m
Bulk Mud		7,800 cu ft	221 cu m
Bulk Cement		7,800 cu ft	221 cu m
Sack Material	0 sacks		

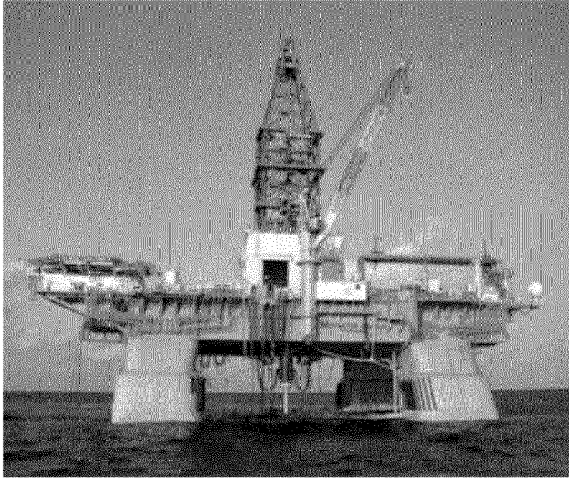
Drilling Equipment

Derrick	Pyramid; 174 feet x 40 feet x 40 feet; 680mt nominal capacity, National 1625 UDBE; 3000hp -1¾in drill line, , , , , , , ,
Drawworks	National Model 1625 UDBE, Disc Brakes, 3 GE 752 Motors
Motion Compensator	Maritime Hydraulics(crown mounted) 272mt operating (680mt pinned).
Top Drive	Varco TDS-4S, 750mt
Rotary	Continental Emsco with 49½in opening (KT Housing 48 5/8in)
Pipe Handling	Maritime Hydraulics racking arm
Mud Pumps	3 x Continental Emsco, triplex pumps-2200 hp and 1X1600 Contn/Emsco
Shale Shakers	6 x Derrick 4 panel Hi-G
Desander	See desilter
Desilter	1 x Derrick w/ (16) 4in cones (882gpm)
Mud Cleaner	2 x Derrick Flowline Primers
BOP	Shaffer 10,000psi 18¾in annular, 2 x Hydril 18¾in 15,000 psi double rams; Vetco H4 15,000 psi wellhead connector; 1 x Cameron 18 3/4in 15,000 psi inverted single ram
LMRP	Shaffer 10,000psi 18¾in annular, Vetco HA-H4 15,000 psi riser connector
Diverter	Vetco, 5,000 psi w/ 3 x 12in OD flowlines
Control System	Hydril multiplex BOP control system
Riser	94 x Vetco 21in OD riser; 75ft joints with 15,000psi 4 1/2in ID C&K lines
Riser Tensioners	725mt max. tensioning capacity
Guideline Tensioners	Not Required
Podline Tensioners	Not Required
Choke & Kill	WOM 15,000 psi system with 2 x super and 2 x power chokes
Cementing	Halliburton VIP diesel driven 22,000 psi unit

Machinery

Main Power	6 x EMD MD-20 3,600hp, 6 x 2,500 generator, 1 x EMD-MD-16 1,950hp, 1400 generatorgenerator	
Emergency Power	1 x Detroit diesel driving 1 x Gulf Electric 1500 kw AC generator	
Power Distribution	Siemens SCR system	
Deck Cranes	1 x Bucrus Erie 120ft booms, 75mt @ 30deg; MH Bridge Crane, 2 x 18.5mt; 1 Seatrax 160 foot Boom, 75mt	
Mooring	Winches	4 x Amclyde CTW-375 winches
	Wire/Chain	8 x 9,400ft x 3¼in cable; 8 x 2,500ft x 3¼in K4 chain
	Anchors	8 x 18mt Stevpris anchors
Propulsion		



Deepwater Horizon		
The DEEPWATER HORIZON is a Reading & Bates Falcon RBS8D design semi-submersible drilling unit capable of operating in harsh environments and water depths up to 8,000 ft (upgradeable to 10,000 ft) using 18 $\frac{1}{2}$ in 15,000 psi BOP and 21in OD marine riser.		
Rig Type	5th Generation Deepwater	
Design	Reading & Bates Falcon RBS-8D	
Builder	Hyundai Heavy Industries Shipyard, Ulsan, South Korea	
Year Built	2001	
Classification	ABS	
Flag	Marshall Islands	
Accommodation	130 berths	
Helideck	Rated for S61-N helicopter	
Moonpool	21 ft x 93 ft	
Station Keeping	Dynamically Positioned	
Max Drill Depth	30,000 ft / 9,144 m	
Max Water Depth	8,000 ft / 2,438 m	
Operating Conditions	Significant Wave: 29 ft; @ 10.1 sec; Wind: 60 knots; Current: 3.5 knots	
Storm Conditions	Significant Wave: 41 ft @ 15 sec; Wind: 103 knots; Current: 3.5 knots	

Technical Dimensions

Length	396 ft	121 m
Breadth	256 ft	78 m
Depth	136 ft	41 m
Operating Draft	76 ft	23 m
Ocean Transit Draft	29 ft	9 m
VDL - Operating	8,816 st	8,000 mt

Capacities

Liquid Mud	4,435 bbls	24,900 cu ft	705 cu m
Drill Water	13,076 bbls	73,415 cu ft	2,078 cu m
Potable Water	7,456 bbls	41,862 cu ft	1,185 cu m
Fuel Oil	27,855 bbls	156,392 cu ft	4,426 cu m
Bulk Mud		13,625 cu ft	386 cu m
Bulk Cement		8,175 cu ft	231 cu m
Sack Material	10,000 sacks		

Drilling Equipment

Derrick	Dreco 242 ft x 48 ft x 48 ft, 2000 kips GNC
Drawworks	Hitec active heave compensating drawworks, 6900 hp rated input power continuous, 2in drilling line
Motion Compensator	Hitec ASA Active Heave Compensator, 13.7 ft stroke, 500 st operating, 1000 st locked
Top Drive	Varco TDS-8S, 750 st, 1150 hp with PH-100 pipe handler
Rotary	Varco RST, 60.5in opening, 1000 st
Pipe Handling	2 x Varco PRS-6i Pipe Packers; Varco AR-3200 Iron Roughneck
Mud Pumps	4 x Continental Emsco FC-2200, 7500 psi
Shale Shakers	7 x Brandt LCM-2D CS linear motion / cascading shakers
Desander	2 x Brandt SRS-3 with 6 x 12in cones
Desilter	Brandt LCM-2D/LMC with 40 x 4in cones over one linear motion shaker, 2400 gpm
Mud Cleaner	See Desilter
BOP	2 x Cameron Type TL 18¾in 15K double preventers; 1 x Cameron Type TL 18¾in 15K single preventer; 1 x Cameron DWHC 18¾in 15K wellhead connector
LMRP	2 x Cameron DL 18¾in 10K annular; 1 x Cameron HC 18¾in 10K connector
Diverter	Hydril 60 with 21¼in max bore size, 500 psi WP and 18in flowline and two outlets
Control System	Cameron Multiplex Control System
Riser	Vetco HMF-Classs H 21in OD riser; 90 ft long joints with C&K and booster and hydraulic supply lines
Riser Tensioners	6 x Hydralift Inline, 50f t stroke, 800 kips each
Guideline Tensioners	N/A
Podline Tensioners	N/A

Choke & Kill	Stewart & Stevenson 3-1/16in, 15K, with 2 x adjustable chokes and 2 x hydraulic power chokes
Cementing	Halliburton (third party equipment)

Machinery

Main Power	6 x Wartsila 18V32 rated 9775 hp each, driving 6 x ABB AMG 0900xU10 7000 kW 11,000 volts AC generators
Emergency Power	1 x Caterpillar 3408 DITA driving 1 x Caterpillar SR4 370 kW 480 volts AC generator
Power Distribution	8 x ABB Sami-Megastar Thruster Drives, 5.5 MW and 6 x GE Drilling Drive Lineups 600 V 12 MW
Deck Cranes	2 x Liebherr, 150 ft boom, 80 mt @ 35 ft
Thrusters	8 x Kamewa rated 7375 hp each, fixed propeller, full 360 deg azimuth
Propulsion	See Thrusters

DATE Revisd by SDG 7 May 08
 OPERATOR B P
 LOCATION MC 129
 WELL NAME King South
 WATER DEPTH [] Ft
 RKB to Waterline [] Ft
 RKB TO MUDLINE 5675 Ft
 RKB TO WELLHEAD 5661 Ft
 Ht ML to WELLHEAD [] Ft

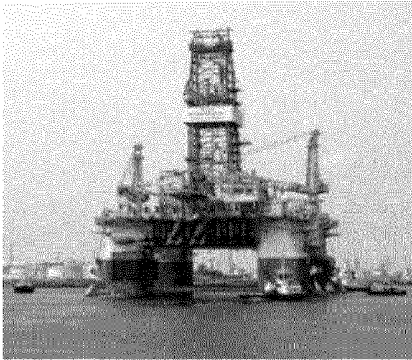
**Horizon
 From Cameron
 Rig Book**



WELLHEAD TYPE		DWHC		Elev. From		RKB to Waterline	
CONNECTOR TYPE	DWHC	Ram Cavity Elev (Inches)	Spaceouts (Inches)	BOP Conn face (Inches)	Elev. From RKB (ft)		
					with Tree	W/O Tree	
					RKB to Waterline		
					Riser Adptr Shoulder		
					Top of Flex Joint	5599.87	5608.68
					Top of Element	5609.38	5618.20
					Bottom of Element	5610.88	5619.70
					Top of Element	5615.25	5624.06
					Bottom of Element	5616.75	5625.56
					LMRP Connector	5623.17	5631.99
					Top of Ram Cavity	5629.94	5638.76
					Btm of Ram Cavity	5630.90	5639.72
					Top of Ram Cavity	5633.58	5642.40
					Btm of Ram Cavity	5634.54	5643.36
					Top of Ram Packer	5637.96	5646.77
					Btm of Ram Packer	5638.35	5647.17
					Top of Ram Packer	5641.75	5650.57
					Btm of Ram Packer	5642.44	5651.25
					Top of Ram Packer	5645.40	5654.21
					Btm of Ram Packer	5646.06	5654.88
					Btm of Ram Cavity	5646.36	5655.17
					Btm of BOP Conn.	5652.19	5661.00
					Stack-up of Tree	105.75	
					Top of Wellhead	5661.00	5661.00

GSF Development Driller II	Semisubmersible Drilling Unit
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General Description

Design	Friede & Goldman, Ltd.	
Delivered	2004	
Quarters capacity	176 persons	
Operating water depth	7,500 ft. (2,286 m)	
Drilling depth	37,500 ft. (11,430 m)	
Maximum drilling variable deck load	15,432 kips	
Maximum survival variable deck load	15,432 kips	
Maximum transit payload	5,000 tonnes	
Heliport	Equipped to handle MI8 or EH101 15mt	

Vessel Dimensions/Displacement

Overall length	324.2 ft. (98.82 m)	
Overall width	258.1 ft. (78.68 m)	
Main deck length	244.2 ft. (74.42 m)	
Main deck width	244.2 ft. (74.42 m)	
Depth to main deck	28.2 ft. (8.6 m)	
Column dimension	52.0 x 59.0 ft. (15.86 x 17.98 m)	
Draft - drilling	65.6 ft. to 55.8 ft. (20.0 m to 17.0 m)	
Draft - survival	49.2 ft. (15.0 m)	
Draft - transit (Nominal)	27.2 ft. (8.3 m)	
Displacement at drilling draft	20.0 m = 46,507 tonnes	
Displacement at survival draft	15.0 m = 40,936 tonnes	
Displacement at transit draft	8.3 m = 32,804 tonnes	

Station Keeping

Mooring System	Simrad SDPM 32 + SDP11 Mooring system – 8/12/16 point chain/wire
Traction winches	API 9A EEEIP 6 x 49 WS 3-1/2 in. wire
Windlasses	3-1/4 in. K4 chain

Storage reels	10,500 ft. wire
Chain lockers 8 each (max. capacity)	8 x 5,260 ft. chain
Chain on board	8 x 250 ft. chain
DP Thrusters	8 x 4,300 hp
Position Reference	DGPS, HiPap 350, LBL Multipurpose

Cranes

Deck crane (port)	165 st @ 71 ft. static / 165 st @ 70 ft. dynamic
Deck crane (stbd)	165 st @ 71 ft. static / 165 st @ 70 ft. dynamic
Knuckle boom	1 x 11 st @ 115 ft. pipe/casing handling
Riser gantry crane	1 x 44 st – vertical riser handling

Rig Power Systems

Engines	8 x Cat 3612
Alternators	11 kv

Drilling Equipment

Derrick	52 ft. x 57 ft. x 228 ft. (15.85 m x 17.37 m x 69.49 m)
Clear working height	200 ft (61.00 m)
Drill floor dimensions	56 ft. x 77 ft. (17.1 m x 23.5 m)
Tubular setback capacity	1,000 short tons
Rotary supporting capacity	2,000,000 lbs. static
Piperacking systems	2 Redundant Bridge Crane Type Rackers
Mud pumps	4 x 2,200 HP x 7,500 psi

Hoisting Equipment

Drawworks (Main)	6,900 HP x AHD 1000 st AC drive
Drawworks (Auxiliary)	4,500 HP x AHD 500 st AC drive
Traveling block (Main)	1,000 short tons
Traveling block (Auxiliary)	500 short tons
Top drive (Main) (in line)	1,000 short tons
Top drive (Auxiliary) (in line)	500 short tons

Storage Capacities

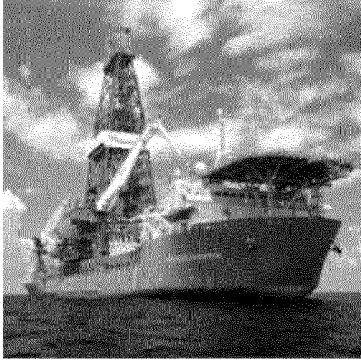
Liquid storage (upper hull)	7,050 bbls. (1,088 cu. m)
Liquid storage (columns)	11,900 bbls (1,892 cu. m)
Brine	4,868 bbls. (775 cu. m)
Base oil	4,535 bbls. (730 cu. m)
Potable water	4,750 bbls. (755 cu. m)
Drill water	14,490 bbls. (2,304 cu. m)
Fuel oil	20,290 bbls. (3,226 cu. m)
Sack mud storage (on pallets)	5,200 sacks
-Barite/Bentonite	10,445 cu. ft. (295 cu. m)
-Surge tanks	150 cu. ft. (4.25 cu. m)
-Cement	16,950 cu. ft. (480 cu. m)
-Surge tank	150 cu. ft. (4.25 cu. m)

Mud Conditioning Equipment

Gumbo / Scalper conveyor	2
Balanced Elliptical Motion shakers	7
Mud cleaners	2 x Integrated Hydro cyc pkgs(s)
Vacuum degassers	2 x Swaco Hurricane

Well Control Equipment

BOP stack	18-3/4 in. 15,000 psi H ₂ S service
Two remote control panels	Driller's House/ Bridge
Two stack mounted pods	4th Generation Mux
Mux cable reels	11,000 ft. (±3,353 m)
Marine riser	21 in. CLIP (Kaverner)
Quantity	100 x 75 ft. x 54 in. (flotation/OD)
Slip joints	2 each w/60 ft. stroke
Suspension ring	Fluid Bearing Type
BOP Transporter	Elevator with 400 mt capacity
Auxiliary Cart	750 mt capacity
LMRP / SS Tree gantry crane	2 x 100 t + 25 t Aux. Winches
Tensioners	12 each x 250 k, 3,000 kips total
Diverter	Vetco CSO, 20 in., 500/1000 psi, 16 in. outlets

Discoverer Enterprise		
The DISCOVERER ENTERPRISE is a double hulled dynamically positioned drillship (Astano FPSO design), capable of operating in moderate environments and water depths up to 3,049 m (10,000 ft) using a 18¾in 15,000 psi BOP and a 21 in OD marine riser.		
Rig Type	5th Generation Deepwater	
Design	Transocean Offshore Enterprise Class Enhanced, double hull, dual activity drilling.	
Builder	Astano, Spain	
Year Built	1999	
Classification	DNV Drill Class 1A1, EO DYNPOS, AUTR, DRIL, HELDK, CRANE, BIS, OIL STORAGE VESSEL	
Flag	Marshall Islands	
Accommodation	200 berths, with one and two-person cabins. 6 TOI offices and 2 client offices.	
Helideck	Sized for Sikorsky S-61 or Chinook 234 helicopter.	
Moonpool		
Station Keeping	Dynamically Positioned	
Max Drill Depth	35,000 ft / 10,668 m	
Max Water Depth	10,000 ft / 3,048 m	
Operating Conditions	Wind 80 knots, Wave 40 ft significant	
Storm Conditions	Wind 100 knots, Wave 50 ft significant, 2.2 knot current	

Technical Dimensions

Length	835 ft	255 m
Breadth	125 ft	38 m
Depth	62 ft	19 m
Operating Draft	40 ft	12 m
Ocean Transit Draft	0 ft	0 m
VDL - Operating	22,040 st	20,000 mt

Capacities

Liquid Mud	15,400 bbls	86,463 cu ft	2,447 cu m
Drill Water	13,700 bbls	76,919 cu ft	2,177 cu m
Potable Water	5,000 bbls	28,072 cu ft	794 cu m
Fuel Oil	25,000 bbls	140,363 cu ft	3,972 cu m
Bulk Mud		16,000 cu ft	453 cu m
Bulk Cement		16,000 cu ft	453 cu m
Sack Material	16,000 sacks		

Drilling Equipment

Derrick	Dreco 4mm lb dual activity derrick 80x80x226
Drawworks	(2) Continental Emsco EH V 5000 hp w/ 2in line, gear driven
Motion Compensator	2 x Varco/Shaffer CM-25-1000-DA crown mounted 907mt static
Top Drive	(2) Varco TDS-8S 560mt, AC drive
Rotary	(2) 60.5in Varco Hydraulic
Pipe Handling	(2) Varco PRS-5 Pipe Racking Systems. (1) Varco Riser and Casing Tailing Head.
Mud Pumps	(4) National 14-P-220, 7500 psi, 2200 hp
Shale Shakers	8 x Brandt LCM-2D/CM-2 cascade shakers
Desander	2 x SRS-3 w/ (3) 12in cones - (1500 gpm)
Desilter	2 x Brandt SE-20 w/ (20) 4in cones (1200 gpm)
Mud Cleaner	1 x Brandt mud shear pump kit
BOP	Hydril 18¾in 15,000 psi, 6-ram system (4) VBRs, (1) blind, (1) shear; Cameron 15,000 psi wellhead connector.
LMRP	Hydril 18¾in 10,000 psi Annuflex annular preventer; Vetco HD-H4 15,000 psi riser connector
Diverter	Vetco CSO 60in bore support housing rate at 500 psi wp.
Control System	Hydril electric multiplex system.
Riser	112 x Vetco 21 in OD, 75ft joints with 15,000 psi 4½in ID C&K lines
Riser Tensioners	2400mt maximum tensioning capacity
Choke & Kill	(1) W.O.M. 15,000 psi wp choke and kill manifold
Cementing	Third Party Equipment

Machinery

Main Power	4 x Wartsila 18V32 LNE, 9,772 hp plus (2) 12V32 LNEhp Wärtsilä engines. Generators: 6 x 8700 kva 11,000v
Emergency Power	1 x Wartsila 6R32 LNE (3257 hp)
Power Distribution	18 x Baylor/Cegelec 2000A, 750 VDC SCR Drives
Deck Cranes	4 x HydraLift OKMCV 4000 knuckleboom cranes, lift radius 6.5m to 45m, 60mt @ 14m.
Thrusters	Used for propulsion, 6x Aquamaster 7000 hp
Propulsion	6 x Cegelec 5500kw, 1260vac, driving six AC motors; 6 x Aquamaster 7000hp thrusters.