

# HAKURYU-10



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HAKURYU-10 is a 375 ft operating water depth self-elevating cantilever jack-up drilling rig, built by PPL Shipyard Pte. Ltd. using the Baker Marine Design. HAKURYU-10 was delivered in June 2008 at P.P.L. shipyard.

HAKURYU-10 is a high standard unit sized for large Variable Deck Load (VDL), useful deck space, 120 Person On Board (POB), full

## DESIGN:

Baker Marine Pacific Class 375: 3 legs self-elevating, cantilever type mobile offshore drilling unit.

## CLASSIFICATIONS HELD:

Classified by American Bureau of Shipping (ABS 2001), inclusive of all ABS amendments in force as of 2005, Maltese Cross A1, Self-Elevating Drilling Unit, 1989 Resolution A649 (16).

## FLAG:

Panama.

## MAIN DIMENSIONS and PARTICULARS:

Hull Overall Length (molded) .....	236.5' (72.1m)
Hull Breadth (molded) .....	224.4' (68.4m)
Hull Depth (molded) .....	27.9' (8.5m)
Leg Length .....	506' (154.3m)
Usable Leg Length (below hull) .....	435' (132.6m)
Footing Area /each Spud Can .....	2,493 sq.ft. (231.6 m <sup>2</sup> )
Max Combined Drilling Load on Cantilever .....	1,179 tons @41' center 703 tons @70' center
Drilling Envelope .....	15'-70' x 30'
Displacement (Load Line) .....	43,844 kips (19,884 tons)
Helideck type / D-value / t-value .....	Sikorsky S-61N / 22.2 m dia / 9.3 tons
Accommodation .....	120 personnel

## DESIGN CRITERIA:

Max. Operating water depth ..... 375' with 50' air gap & 10' penetration  
Max. Rated drilling depth ..... 9,144m with up to 5-7/8" drill pipe

## MAXIMUM GROSS VARIABLE LOAD:

Jacking.....	5,000 kips (2,268 tons)
Storm.....	6,500 kips (2,948 tons)
Drilling.....	7,500 kips (3,401 tons)
Hook Load.....	1,500 kips (680 tons)
Rotary Load.....	1,500 kips (680 tons)
Setback Load.....	900 kips (408 tons)
Conductor Tension Load.....	500 kips (225 tons)

## STORAGE CAPACITIES:

Fuel oil .....	4,606 bbls (732m <sup>3</sup> )
Drill water .....	18,224 bbls (2898m <sup>3</sup> )
Potable water .....	3,576 bbls (569m <sup>3</sup> )
Liquid mud .....	4,174 bbls (664m <sup>3</sup> )
Bulk mud .....	5,932 ft <sup>3</sup> (168 m <sup>3</sup> )
Bulk cement .....	5,826 ft <sup>3</sup> (165 m <sup>3</sup> )
Sack storage .....	5,000 sacks

## POWER EQUIPMENT:

<b>Main Engines:</b>	Five (5) Caterpillar 3516BHD DITA engines, 1,603 kW @1,200 rpm
<b>Main Generators:</b>	Five (5) Kato 6P63300 generators, 1,720 kW (2,150 KVA) @1,200 rpm, AC 690 V, 60 Hz
<b>Emergency Engine:</b>	Caterpillar 3508B DITA engine, 968 kW @1,800 rpm
<b>Emergency Generator:</b>	Leroy Somer LSA-M50 generator, 720kW (900 KVA) @1,800 rpm, 480 V, 60 Hz.

## VESSEL MAGEMENT SYSTEM:

Centralized access and control system covering Alarm monitoring system, Tank level monitoring and remote valve control for pre loading operation.

preload jacking capability, deep water drilling operation (375 ft water depth), deep drilling (30,000 ft drilling depth), High Pressure High Temperature (HPHT) drilling and zero discharge operation.

The cantilever design allows the rotary table to be skidded out to a maximum of 70 ft from the transom and 14.7 ft from the centre line.

## DRILLING EQUIPMENT:

**Draw Works:** NOV D3000AC, Three 1,350 HP, 690 V AC motors. 1-5/8" diameter wire.

**Derrick:** NOV, SSBN 750, Max. hook load: 1,500 kips. Racking capacity: 336 stands of 5-7/8" drill pipe + 8 stands of 9-1/2" Drill collar.

**Vertical Pipe Handling System:** NOV Bridge Racker™

**Crown Block:** NOV CBC-750, 1,500kips capacity, with 10 sheaves.

(2 x 60"OD Turn-over Sheaves at Dead Line Side)

(6 x 60"OD Cluster Sheaves at Center Block)

(2 x 60"OD Turn-over Sheaves at Fast Line Side)

**Traveling Block:** NOV HTB-750, 1,500 kips, with 7 x 60" sheaves.

**Top Drive:** NOV HPS-750E-AC-SG, 7,500 psi WP, 1,500 kips, 1,350 hp, 690 V AC motor. Installed with a retractable dolly.

**Rotary Table:** NOV D-495, hydraulic motor driven.

**Iron Roughneck:** NOV Hydratong MPT™, Size range: 3-1/2" to 9-3/4"

**Control System:** NOV Cyberbase™.

## WELL CONTROL EQUIPMENT:

**Diverter:** Vetco Gray, KFDJ-500 Removal Type, 49-1/2".

**BOPs:** 18-3/4" BOP Stack

NOV-Shaffer 18-3/4" 10,000 psi WP Annular.

Two (2) Cameron TL 18-3/4" 15,000 psi WP Double Ram.

Dual 3" 15,000 psi choke & kill lines.

**BOP Control:** Shaffer-Koomey Model "SS-270-3S" BOP Control Unit.

**Choke Manifold:** RB Pipetch 15,000 psi WP choke & kill manifold, sour gas service.

Two (2) Cameron H2 manual choke valves.

Two (2) Swaco Super Chokes.

## MUD CIRCULATION EQUIPMENT:

**Mud Pumps:** Three (3) NOV 14-P-220, 7,500 psi WP, Two (2) 1,350 hp AC motors driven.

## Mud Treatment System:

**Gumbo Separator:** NOV-Brandt, 6' Dual Chain Gumbo Box.

**Scalping Shakers:** Two (2) Derrick FLC-504 single deck shakers.

**Primary Shakers:** Four (4) Brandt VSM300 shale shakers.

**Desilter:** NOV-Brandt desilter cone assembly (4" x 24 cones).

**Degasser:** Brandt DG-12 degasser.

**Mud Gas Separator:** RB Pipetch mud gas separator suitable for H<sub>2</sub>S service, 150 WP, 10 mmscfd.

## JACKING EQUIPMENT:

**Jacking Units:** 36 NOV-BLM D88 jacking units with 72 active pinions.

Normal Jacking ..... 1,210 kips (549 tons)/unit

Preload Jacking ..... 1,628 kips (738 tons)/unit

Drilling Condition ..... 2,250 kips (1,021 tons)/unit

Storm Condition ..... 3,000 kips (1,361 tons)/unit

## OTHER EQUIPMENT:

**Deck Cranes:** Three (3) BMC Diesel-Hydraulic deck cranes.

BMC900: 49.0 kips (20 ton) @20', 14.0 kips (6 ton) @100'

BMC1600: 89.0 kips (40 ton) @25', 15.5 kips (7 ton) @100'

BMC2250: 110.0 kips (50 ton) @25', 28.2 kips (13 ton) @120'

**Water Makers:** Two (2) Alfa Labal DPU-36-C125 water makers, 13,209 gal/day (50 Kl/day) each.

## Anti-pollution Equip:

Hamworthy ST8VS, capable for 120 personnel.

Blohm+Voss TURBULO MPB-5 oily water separator, 22 gpm (83.3 l/min).

**anchors:** Four (4) 6 tons Flipper Delta type anchors.

**Anchor Winches:** Four (4) x Mentrade anchor winches.

Maximum pull 70.1 kips (31.8 tons).

Maximum holding 220 kips (100 tons) at 1<sup>st</sup> layer.



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