

# HAKURYU-14



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HAKURYU-14 is a 400 ft operating water depth self-elevating cantilever jack-up drilling rig, built by PPL Shipyard Pte. Ltd. using the Baker Marine Design.

HAKURYU-14 is a high standard unit sized for large Variable Deck Load (VDL), useful deck space, 150 Person On Board (POB), full

## DESIGN:

PPL Pacific Class 400: 3 legs self-elevating, cantilever type mobile offshore drilling unit.

## CLASSIFICATIONS HELD:

Classified by American Bureau of Shipping (ABS 2014), Maltese Cross A1, Self-Elevating Drilling Unit, IMO Code of Construction and Equipment of Mobile Offshore Drilling Unit (MODU Code 2009). Classification of Drilling Systems (CDS 2012)

## FLAG:

Panama.

## MAIN DIMENSIONS and PARTICULARS:

Hull Overall Length (molded) .....	236.5ft (72.1m)
Hull Breadth (molded) .....	224.4ft (68.4m)
Hull Depth (molded) .....	27.9ft (8.5m)
Leg Length .....	532.5ft (162.3m)
Usable Leg Length (below hull).....	461.3ft (140.6m)
Footing Area /each Spud Can .....	2,493 sq.ft. (231.6 m <sup>2</sup> )
Max Combined Drilling Load on Cantilever .....	1,066 tons @70ft center 907 tons @70ft center
Drilling Envelope .....	70ft (21.3m) / ± 15ft (4.6m)
Displacement (Load Line) .....	45,046.52 kips (20,429.26 tons)
Helideck / D-value / t-value ... Sikorsky S-61N & S92 / 22.2m / 12.6 tons	
Accommodation .....	150 personnel

## DESIGN CRITERIA:

Max. Operating water depth .....	400ft with 50 ft air gap & 10ft penetration
Max. Rated drilling depth .....	35,000ft(10,668m)
Max. Air gap.....	100 ft (30.4m)

## MAXIMUM GROSS VARIABLE LOAD:

Jacking.....	6,921 kips (3,139 tons)
Storm.....	6,066kips (2,751 tons)
Drilling.....	8,085 kips (3,667 tons)
Hook Load.....	2,000 kips (907 tons)
Rotary Load.....	2,000 kips (907 tons)
Setback Load.....	1,250 kips (567 tons)
Conductor Tension Load.....	496 kips (225 tons)

## STORAGE CAPACITIES:

Fuel oil.....	3,642 bbls (579m <sup>3</sup> )
Drill water.....	21,913 bbls (3,450m <sup>3</sup> )
Potable water .....	3,585 bbls (560m <sup>3</sup> )
Liquid mud .....	4,500 bbls (715m <sup>3</sup> )
Base Oil.....	1,273 bbls (202m <sup>3</sup> )
Brine.....	1,291 bbls (205m <sup>3</sup> )
Bulk mud.....	7,098 ft <sup>3</sup> (201m <sup>3</sup> )
Bulk cement.....	7,098 ft <sup>3</sup> (201m <sup>3</sup> )
Sack storage .....	5,000 sacks

## POWER EQUIPMENT:

<b>Main Engines:</b>	Five (5) Caterpillar C175-16 engines, 1,930 BKW @1,200 rpm
<b>Main Generators:</b>	Five (5) Kato 6P6-3300 generators, 2,250 kVA @1,200 rpm, AC 690 V, 60 Hz
<b>Emergency Engine:</b>	Caterpillar 3508B engine, 1,298 hp @1,800 rpm
<b>Emergency Generator:</b>	Leroy Somer LSA-49.1 generator, 1,020 KVA @1,800 rpm, 480 V, 60 Hz.

## VESSEL MANAGEMENT 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 (400 ft water depth), deep drilling (35,000 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 15 ft from the centre line.

## DRILLING EQUIPMENT:

**Draw Works:** NOV ADS-30Q, 6,000hp (Four 1500 HP, 690 V AC motors) 2" diameter wire.  
**Derrick:** NOV, 40' x 40' base, Max. load: 2,200 kips. Racking capacity: 366 of 5-7/8" drill pipe + 10 stands of 9-1/2" Drill collar + 3 BHA  
**Offline Standbuilding System:** Yes  
**Vertical Pipe Handling System:** NOV Bridge Racker BR-10  
**Crown Block:** NOV CBC-1100, 2,200kips capacity, with 10 sheaves.  
**Traveling Block:** NOV HTB-1100, 2,200 kips, with 7 x 72" sheaves.  
**Top Drive:** NOV TDS-1000, 7,500 psi WP, 2,000 kips, One1,150 hp 690 V AC motor. Installed with a retractable dolly.  
**Rotary Table:** NOV 49-1/2"RT RST, hydraulic motor driven.  
**Iron Roughneck:** Two(2) NOV ST-120, Size range 3-1/2" to 10"  
**Catwalk Shuttle:** NOV / CES-P10-45, 10MT SWL / Range 2-7/8" - 36"  
**Pipe Handling Crane:** NOV Knuckle Boom Crane/ PC1891K, 12MT SWL, 3.5MT with yoke 3m to 25m, Pipe gripper 3" to 20"  
**Control System:** NOV Cyberbase™.

## WELL CONTROL EQUIPMENT:

**Diverter:** GE oil and Gas(Vetco), KFDJ 500 psi WP  
**BOPs:** 18-3/4" BOP Stack  
Cameron DL 18-3/4" 10,000 psi WP Annular.  
Two (2) Cameron TL 18-3/4" 15,000 psi WP Double Ram.  
Two (2) 3" x 15,000 psi WP Choke Line  
Two (2) 3" x 15,000 psi WP Kill Line.  
**BOP Control:** CAD Control Systems.  
**Choke Manifold:** FORUM 15,000 psi WP choke & kill manifold, sour gas service.  
Two (2) MASTER FLO manual operated choke.  
Two (2) MASTER FLO Remote operated chokes.

## MUD CIRCULATION EQUIPMENT:

**Mud Pumps:** Three (3) NOV 14-P-220, 7,500 psi WP,  
**Mud Treatment System:**  
**Gumbo Separator:** One (1) Dual gumbo separator  
**Primary Shakers:** Four (4) Brandt VSM300 shale shakers.  
**Mud Conditioner:** NOV-Brandt Desander 1,500GPM, Desileter 960 GPMdesilter cone assembly (4" x 24 cones).  
**Degasser:** One(1) Brandt DG-12 degasser.  
**Mud Gas Separator:** FORUM atmospheric mud gas separator suitable for H2S service, Ventline:12"

## JACKING EQUIPMENT:

**Jacking Units:** 36 NOV-BLM D88 jacking units with 72 active pinions.  
Normal Jacking ..... 43,632 kips (19,800 tons) || Preload Jacking ..... | 58,752 kips (26,640 tons) |
| Drilling Condition ..... | 81,288 kips (36,864 tons) |
| Storm Condition ..... | 108,288 kips (49,104 tons) |

## OTHER EQUIPMENT:

**Deck Cranes:** Three (3) Favco Diesel-Hydraulic deck cranes.  
Two(2) 75tons@7.5m, 22.4 tons @36.6m(Onboard)  
One(1) 50tons @7.5m, 10tons @36.6m(Onboard)  
**Water Makers:** Two (2) Sasakura VVC-60L-EL water makers,  
Nominal 60 KI/day each.  
**Anti-pollution Equipment:**  
Sewage Treatment.....Hamworthy / ST13-14 (Vacuum Biological Type)  
Oily water separator ..... TURBULO/TMPB-10, 10ton/hrs || Garbage Compaction..... | .....ENVIRO PAK 3000EMR Hyd Press |
| **Anchor:** | Four (4) 6 tons Flipper Delta type anchors. |
| **Anchor Winches:** | Four (4) x Brothl anchor winches. Maximum pull 89.9 kips (40.78 tons). Maximum holding 224.8 kips (101.97tons) at 1<sup>st</sup> layer. |