

# CHIKYU

CHIKYU, deepwater drillship, was designed by Japanese government for international scientific drilling operations and built by Mitsubishi Heavy Industries and Mitsui Engineering & Shipbuilding. It was commissioned in July 2005 at Mitsubishi

Nagasaki Shipyard. CHIKYU is designed to perform drilling operations in maximum 2,500 m of water. CHIKYU has drilled several deepwater hydrocarbon wells in addition to the scientific drilling operations.

## DESIGN:

JAMSTEC (Japan Agency for Marine-earth Science and Technology)

## CLASS:

Class NK, MNS (M0), DPS B, Ice Strengthening Class IB

JG, SOLAS, MARPOL, ICLL, IMO A649, USCG (Foreign Ship), ILO No.92, No.147, ABS+CDS

## MAIN DIMENSIONS:

Length overall ..... 210.0m  
 Breadth overall ..... 38.0m  
 Depth ..... 16.2m  
 Operational draft ..... 9.2m  
 Gross Tonnage ..... 56,752 tons  
 Displacement at loadline ..... 59,627tons  
 Helicopter deck ..... Capable for EH101

## DESIGN CRITERIA:

Cruising speed ..... 10 knots with 5 thrusters (historical)  
 Max. operating water depth ..... 2,500m  
 Max. drill string length ..... 10,000m

## STORAGE CAPACITIES:

Fuel oil ..... 9,301 cu.m  
 Drill water ..... 2,554 cu.m  
 Potable water / Fresh water ..... 369 / 369 cu.m  
 Active mud ..... 560 cu.m  
 Reserve mud ..... 1,700 cu.m  
 Bulk mud ..... 697 cu.m  
 Bulk cement ..... 465 cu.m  
 Sack storage ..... 200 pallets (size ; 1.2m x 1.2 m x 1m) on 2 tiers

## VARIABLE LOAD:

Variable load ..... 21,000 tons

## ACCOMMODATION:

Air conditioned cabins for 150 persons.

## POWER EQUIPMENT:

Main generator 6 sets 5,000 KW (6,250 KVA), AC 6.6 KV, 60 Hz, 3 phase, each driven by Mitsui 12ADD30V, 5,270 KW (7,170 PS), 720 rpm engine.  
 Aux. generator 2 sets 2,500 KW (3,125 KVA), AC 6.6 KV, 60 Hz, 3 phase, each driven by Mitsui 6ADD30V, 2,640 KW (3,585 PS), 720 rpm engine.  
 Emergency generator 1 set 560 KW (700KVA), AC 450 V, 60 Hz, 3 phase, driven by Mitsubishi, 600KW, 1,800 rpm engine.

## THRUSTERS:

Azimuth thrusters 6 sets Four retractable & two fixed type, Kawasaki KSRT-320LF/AC, 4-bladed fixed pitch, variable speed, electric motor driven, 3.8 m dia. x 162.3 rpm (max.), max. 4,200 KW.  
 1 set Side thruster, Kawasaki KT-255B3F, 4-bladed fixed pitch, variable speed, electric motor driven, 3.8 m dia. x 250.8 rpm (max.), max. 2,550 KW.

## DYNAMIC POSITIONING SYSTEM:

Manufacturer Mitsui Engineering & Shipbuilding Co., Ltd.  
 Rule & Regulations Class B DPS of "Dynamic Positioning System" in part P, Chapter 10 of NK.  
 Positioning accuracy Larger one of either 1.5 % of water depth or 15 m in normal drilling condition.  
 Larger one of either 3.0 % of water depth or 30 m in stand-by condition.  
 Position reference system Four DGPS  
 One APRS (acoustic position reference system)  
 One RACS (riser angle control system).

## DRILLING EQUIPMENT:

Drilling control system NOV Hitec, DCIS, with three Cyberbase operator stations in two driller's cabins.  
 Drawworks 1 set National Oilwell, EH-V-5000, driven by four 750 VDC, 1,185 A motors  
 Derrick 1set Bailey, dual well type bolted dynamic derrick, 230' x 72' x 60'; well center spacing 32', 1,250 tons (2,756kips) maximum rated static hook load  
 Traveling block 1 set Hydralift, HTB1380, 8 x 78", capacity 1,250 ton  
 Top drive 1 set Hydralift, HPS 1000 2E AC, hoisting capacity 907 ton, continuous torque 90,800 ft-lbs, driven by two 858KW AC motors, with pipe handler, retractable dolly and rotating parking system.  
 Rotary table 1 set Varco BJ, RST 60-1/2, static capacity 1,250 ton, driven by three hydraulic motors.  
 Pipe racking system 2 sets Hydralift, Hydra Racker IV, hydraulic trolley column with three arms.  
 Hydraulic roughneck 2 sets Hydralift, HRN-166, range 3-1/2" to 9-3/4", with KT14000/25000 cassette type casing tong, range 4-1/2" to 25".  
 Pipe transfer system 1 set Hydralift, 3-1/2" to 30" pipe, SWL 20 ton  
 Riser transfer system 1 set Hydralift, 90' riser & slip joint, SWL 45 ton  
 Coring winch 1 set National Oilwell, dual drum 19mm x 10,000 m.  
 Mud pump 3 sets National Oilwell, 14-P-220, 7,500 psi WP each driven by two 820KW DC motors.  
 Heave compensator 1 set Hydralift, CMC1000-25, compensator capacity 518 ton, stroke 25', with active heave compensator.  
 Riser tensioners 6 sets Hydralift, N-line direct acting tensioner, tension capacity 800 kips each, stroke 52'.  
 BOP equipment 1 set Vetco Gray, KFDS/CSO, 21" bore, 500 psi WP.  
 1 set 18-3/4" 15,000 psi WP stack  
 LMRP: Shaffer, dual annular, 10,000 psi WP, Cameron, HC collet connector.  
 Lower stack: Cameron, double ram and Cameron, triple ram, 15,000 psi WP, Vetco, SHD H4 wellhead connector.  
 BOP Control System 1 set Vetco Gray, MUX control system with 5,000 psi WP accumulator system, one hotline and one glycol injection hoses and acoustic backup system.  
 Riser pipe 2,300 m Cameron, LoadKing 4.0, 19.5"ID x 90'/jt, Capacity 4,000 kips, with 4.25"ID 15,000 psi WP choke/kill lines, 4"ID 7,500 psi WP booster line and 3"ID 5,000 psi WP hydraulic line.

## MUD TREATMENT SYSTEM:

Mud management system Procon, system to include operation of pumps, agitators, valves, bulk mud/cement and low pressure mud system and interface to DCIS.  
 Gumbo separator 2 sets Brandt, gumbo chain cartridge  
 Shale shakers 6 sets Rigtech, VSM300 driven by two 3KW motor with frequency inverter panel.  
 Mud cleaner 2 sets Swaco, 8T4/ALS II D-sifter / adjustable linear shaker.  
 Centrifuge 3 sets Rigtech, RT HeviJet 362, 18" dia. x 64" L bowl, driven by 45KW inverter driven motor.  
 Degasser 2 sets Burgess, Magna-Vac Model 1500

## AUXILIARY EQUIPMENT:

Deck crane 2 sets Hydralift, elect.-hyd. knuckle boom crane C3426KE-45/15x35-1.33, capacity 45 ton.  
 2 sets Hydralift, elect.-hyd. knuckle boom crane C3932KE-85/20x42-1.33, capacity 85 ton.  
 B.O.P. crane 1 set Two hook type each 200 tons capacity.