

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)

MAIN DIMENSIONS:

Length overall 210.0m
 Breadth overall 38.0m
 Depth 16.2m
 Operational draft 9.2m
 Gross Tonnage 56,752 tons
 Helicopter deck Capable for EH101

DESIGN CRITERIA:

Cruising speed 11.45 knots with 5 thrusters
 Max. operating water depth 2,500m
 Max. drill string length 10,000m

STORAGE CAPACITIES:

Fuel oil 9,300 cu.m
 Drill water 2,554 cu.m
 Potable water 369 cu.m
 Active mud 511 cu.m
 Reserve mud 1,700 cu.m
 Bulk mud 753 cu.m
 Bulk cement 522 cu.m
 Sack storage (Area) 500 sq.m

VARIABLE LOAD:

Variable load 23,500 tons

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

ACCOMMODATION:

Air conditioned cabins for 200 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', Main well max. static hook load 1,250 ton
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, 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	2,500 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.