

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*

MODU, DPS B, Ice Strengthening Class IB, M0, BWM

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.....	59,286 tons
Helicopter deck.....	EH-101

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.....	510 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
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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, 2.85 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)

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	4 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, 4.0"ID 7,500 psi WP booster line and 3.0"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-silter / adjustable linear shaker.
Degasser	2 sets	Burgress, 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.