Chikyu is a research vessel designed to investigate sub-seafloor geology and geobiology. Chikyu does this through drilling, lowering drill pipe and drill bit through the water column to the sea floor, and then drilling down to collect data and samples. The maximum operating water depth is 7,000 m (2,500 m when using riser pipe) and then the maximum drilling depth is up to 7,000 m below sea floor.

**Features of the Deep-sea Scientific Drilling Vessel Chikyu**

**Derrick & Drill floor**

The derrick is where all drill pipe is assembled and controlled, and the moon pool below is where all drilling equipment are lowered into the sea. Control of all the drilling operations is centered in the Driller’s House on the drill floor.

**Laboratory**

This is where the samples and data are analyzed and studied by scientists.

**Helicopter deck**

This is where Chikyu is commanded from; the Captain and his officers control all ship movements from here.

**Bridge**

This is where Chikyu is commanded from; the Captain and his officers control all ship movements from here.

**Tools for drilling**

- **Drill pipe**
  Special steel pipe that helps push the drill bit so it can dig deeper into the formation. It is rotated from the ship, and is hollow, so drilling mud can be pumped down through it.

- **Riser pipe**
  A large diameter tube to connect Chikyu and the seafloor. This allows for pressure control, for safety, and also enables drilling fluid circulation back to the ship.

- **Core bit**
  This special head piece, which has cutting grooves and teeth, suited for specific formations, is used to cut the rocks and sediments.

- **Casing pipe**
  This is special, large-diameter pipe designed to prevent borehole collapse.

- **Blowout Preventer (BOP)**
  This safety equipment is installed at the seafloor to control downhole pressure and prevent dangerous high-pressure kickbacks from the formation.

**Azimuth thrusters**

These large propeller pods can rotate 360°. Each of the 6 azimuth thrusters (4.6 m diameter each) on Chikyu are electrically powered, and work together, with GPS and the Dynamic Positioning System, to keep Chikyu in position, against the influence of ocean currents and winds.

**Chikyu specifications**

- **Length**: 210 m
- **Beam**: 38.0 m
- **Height**: 130 m (From ship bottom)
- **Gross tonnage**: 56,752 tons
- **Cruising speed**: 12 knots (22 km/hour)
- **Complement**: 200 people
- **Propellers**: Azimuth thruster 4,200 kW (5,710 PS) x 6
  Maximum outside diameter 4.6 m
  Bow thruster 2,550 kW (3,470 PS) x 1