

PARLIAMENT QUESTION:MATSYA-6000

Posted On: 19 MAR 2025 4:26PM by PIB Delhi

Matsya-6000 is India's flagship human submersible aimed to carry three persons to a depth of 6000 meters, developed by the National Institute of Ocean Technology (NIOT), Chennai, under the Ministry of Earth Sciences, as part of the Samudrayaan project of the Deep Ocean Mission launched by the Government of India in 2021.

Matsya- 6000 (2.1-meter diameter personnel sphere) which houses the crew is made of a Titanium alloy and maintains an inside pressure of 1 atmosphere (atm). Further, the personnel sphere spherical pressure hull is tested to bear 720 bars of pressure, which is 1.2 times more than the pressure expected at 6000 meters. All human safety parameters are continuously monitored during the operations and are communicated to the ship-based Mission Control Centre through an acoustic modem, with the pilot communicating updates through the Underwater Acoustic Telephone every 30 minutes. It is designed for operations of up to 12 hours, with an emergency endurance of up to 96 hours, supported by a DNV-certified Human Support and Safety System (HSSS). DNV (Det Norske Veritas) is an internationally accredited registrar and classification society headquartered in Norway. The HSSS maintains the oxygen level at 20 per cent, the CO₂ level at less than 1000 ppmv (part per million by volume), and controls humidity by measurement sensors to ensure human life comfort and safety.

The submersible is designed to perpetually float unless made to dive through water filling in its ballast tanks. It has three different combinations of weight drop mechanisms for ascending to the surface to maintain the safety. It has additional emergency power, control, and communication devices for emergency scenarios.

Matsya-6000 is equipped with an Underwater Acoustic Telephone that has been operated and tested for operations up to 10,000 meters depth of human operation vehicles, in addition to a sub-phone rated for 500-meter depth operations. The voice communication is designed to be utilized every 30 minutes with the submersible pilot and the Mission Control Centre so that continuous communication is ensured.

NIOT has signed MoU with the IFREMER (French Research Institute for Exploitation of the Sea), France, facilitating scientific knowledge exchange and participation with the French human scientific submersible for 6000 meters depth named NAUTILE.

This information was given by Dr. Jitendra Singh, Minister of State (Independent Charge) of the Ministry of Science & Technology and Earth Sciences, in a written reply in the Lok Sabha today.

NKR/PSM

(Release ID: 2112793)