

GOVERNMENT OF INDIA  
DEPARTMENT OF SPACE  
**RAJYA SABHA**

**UNSTARRED QUESTION NO. 1899**

TO BE ANSWERED ON THURSDAY, MARCH 17, 2022

**GAGANYAAN PROGRAMME**

1899. SHRI M. MOHAMED ABDULLA:

Will the PRIME MINISTER be pleased to state:

- (a) whether Government has any plan to develop reusable rockets similar to SpaceS rockets, the detail thereof;
- (b) the current status of the Gaganyaan programme, the details thereof;
- (c) the current status of the spacecraft proposed to be used in the Gaganyaan programme, the details thereof;
- (d) whether the spacecraft proposed for Gaganyaan programme has been rated for humans, the details thereof; and
- (e) the tentative date of launch of India's first crewed spaceflight?

**ANSWER**

MINISTER OF STATE IN THE MINISTRY OF PERSONNEL, PG &  
PENSIONS AND IN THE PRIME MINISTER'S OFFICE

(DR. JITENDRA SINGH):

- (a) Yes sir. ISRO is planning to develop & demonstrate critical technologies for vertical take-off & vertical landing using a Test Vehicle, leading to recovery and reuse of the booster stage of a rocket in future. ISRO is also developing a winged body Reusable Launch Vehicle for which a series of technology demonstration missions are planned. The first experimental mission of Reusable Launch Vehicle – Technology Demonstrator (RLV-TD) vehicle was successfully carried out on May 23, 2016. Further missions to demonstrate autonomous runway landing & orbital re-entry are also planned.
- (b) The current status of Gaganyaan programme is as follows:
  - i. An Astronaut training facility has been commissioned in Bengaluru. Training activities are progressing well at the newly commissioned Astronaut training facility.

- ii. The design of all systems and sub-systems for Gaganyaan has been completed. Realisation of the same is in different stages of progress.
  - iii. Long duration qualification test of human rated cryogenic engine and First phase testing of human rated VIKAS Engine completed. First phase of demonstration tests for Gaganyaan service module propulsion system completed.
  - iv. Proof of concept demonstration for ground network with service providers completed. Construction of integration facility for Orbital module preparation is nearing completion.
  - v. The MoU, contracts and Implementation arrangement (IA) related activities with both national and international agencies are progressing well. The design of various human centric products has been completed and various prototypes are under realization.
  - vi. Receipt of Gaganyaan deliverables against contracts with M/s Glavkosmos (Russia) and CNES (France) commenced.
  - vii. Roles and responsibility for crew recovery operations and rehearsals finalised. Detailed operational requirements for nominal mission scenarios worked out.
  - viii. The activities related to development of microgravity experiments have commenced. The conceptual design for experiments is under review.
- (c) Orbital module/spacecraft configuration for various drop tests, test vehicle flights, unmanned missions and manned mission is finalised. Realization of hardware commenced.
- (d) Yes, Sir. As part of crew safety, various systems of Gaganyaan including the launch vehicle and Orbital module will be human rated. The human-rating philosophy includes redundancy, probabilistic risk assessment and increased margins at systems.
- (e) The major missions viz., Test vehicle flights for the validation of Crew Escape System performance are currently targeted for second half of year 2022. Subsequently, the 1st unmanned mission of Gaganyaan (G1) is targeted for the beginning of the year 2023. This will be followed by second unmanned mission and first manned mission.

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