

**GOVERNMENT OF INDIA
SPACE
LOK SABHA**

UNSTARRED QUESTION NO:4054

ANSWERED ON:18.08.2010

GSLV TECHNOLOGY

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Will the Minister of SPACE be pleased to state:

- (a) whether the technology to send human beings in space through GSLV technology is available with India;
- (b) if so, the details thereof and if not, the manner in which foreign help is required;
- (c) whether any action plan is being prepared by India to send human beings in space in near future;
- (d) if so, the details thereof including the funds required for the purpose;
- (e) whether the country is dependant on foreign countries for cryogenic engine required for launching GSLV;
- (f) if so, whether any action plan is proposed to be prepared for manufacturing indigenous cryogenic engine; and
- (g) if so, the details thereof?

Answer

MINISTER OF STATE IN THE PRIME MINISTER'S OFFICE, MINISTRY OF PERSONNEL, PUBLIC GRIEVANCES & PENSIONS, MINISTRY OF PARLIAMENTARY AFFAIRS , MINISTRY OF SCIENCE & TECHNOLOGY AND MINISTRY OF EARTH SCIENCES (SHRI PRITHVIRAJ CHAVAN):

(a)&(b) The Geo-synchronous Satellite Launch Vehicle (GSLV) has the plan for carrying an orbital module with two-member crew to low earth orbit. However, to send humans to space, GSLV would require human rating of the vehicle with higher levels of safety and reliability, development of environment control and life support system, thermal protection system, flight suit, crew escape system, crew module and service module, crew training, space medicine, etc.

(c) ISRO has carried out detailed study on the feasibility of undertaking indigenous manned space missions to low earth orbit, in about 8 to 10 years time frame. Towards this, studies covering various aspects of design and development of manned capsule, man rating of launch vehicle, safety and reliability, crew training, establishment of critical long term facilities etc., have been worked out.

(d) The detailed cost estimates for the manned space mission has been made. The preliminary assessment is that the programme for the manned space mission to low earth orbit may need about Rs. 12,400 Crores spread over a period of nearly 8 to 10 years.

(e) ISRO has already procured from Russia, seven Cryogenic Stages for the GSLV Programme. Of these, five Cryogenic Stages have already been utilized. The remaining two stages will be used in the forthcoming flights of GSLV.

(f) & (g) ISRO took up development of indigenous Cryogenic Stage in 1994. The Cryogenic Engine and Stage have been successfully realized and put to several levels of ground qualification tests. The recent flight GSLV-D3 (on April 15, 2010) used this indigenous Cryogenic Stage for its flight testing.