

Unsuccessful Chandrayaan Mission

*47. SHRI MANAS RANJAN BHUNIA: Will the PRIME MINISTER be pleased to state:

(a) whether Government had taken a step to launch Chandrayaan for a special Mission to Moon, if so, the details of the plan;

(b) what was the position; and

(c) what problems made the plan and mission incomplete and unsuccessful?

THE MINISTER OF STATE IN THE DEPARTMENT OF SPACE (DR. JITENDRA SINGH): (a) to (c) A Statement is laid on the Table of the House.

Statement

(a) to (c) Yes, Sir. The objectives of the Chandrayaan-2 Mission were

1. Scientific studies through payloads on-board the orbiter
2. Technology demonstration of soft landing and roving on the lunar surface

The indigenously developed Chandrayaan-2 spacecraft comprising of Orbiter, Lander and Rover was successfully launched on-board indigenous GSLV MK III-M1 Mission on 22nd July, 2019. After accomplishing four earth bound maneuvers and Trans Lunar Injection, the spacecraft was successfully inserted into the Lunar orbit on 20th August, 2019. A series of moon bound maneuvers were then carried out to achieve a Lunar orbit of 119x127 km. The Lander 'Vikram' was separated, as planned, from the Orbiter on 2nd September, 2019. After two successful de-orbiting maneuvers, powered descent of the Lander was initiated on 7th September, 2019 to achieve soft landing on the moon surface.

The first phase of descent was performed nominally from an altitude of 30 km to 7.4 km above the moon surface. The velocity was reduced from 1683 m/s to 146 m/s. During the second phase of descent, the reduction in velocity was more than the designed value. Due to this deviation, the initial conditions at the start of the fine braking phase were beyond the designed parameters. As a result, Vikram hard landed within 500 m of the designated landing site.

Most of the components of Technology demonstration, including the launch, orbital critical maneuvers, lander separation, de-boost and rough braking phase were

successfully accomplished. With regards to the scientific objectives, all the 8 state of the art scientific instruments of the Orbiter are performing as per the design and providing valuable scientific data. Due to the precise launch and orbital maneuvers, the mission life of the Orbiter is increased to 7 years. The data received from the Orbiter is being provided continuously to the scientific community. The same was recently reviewed in an all India user meet organized at New Delhi.

SHRI MANAS RANJAN BHUNIA: Sir, first of all, through you, I would, on behalf of all of us, congratulate the space scientists of ISRO for this Chandrayaan-2 abhiyaan. I have thoroughly studied the answer of the hon. Prime Minister. My only question through you — I am not going to ask any harsh question because it is a scientific issue — is why this Mission has failed.

DR. JITENDRA SINGH: Mr. Chairman, Sir, at the outset, I wish to acknowledge and appreciate the hon. Member's compliment for the scientific fraternity, particularly, the space scientists, who have proved to be among the best in the world. Having said that, just to add to what he initially started off with, Chandrayaan was a mission which was very keenly watched by all of us and, in fact, every Indian. Therefore, there might have been some amount of disappointment, as has been expressed by the hon. Member. But I would like to submit that it would be unfair to describe it as a failure because in the scientific pursuits like this, as the hon. Member himself started off saying, this is sometimes a matter of procedural and process incidence which happened. And, I am not saying this without evidence. When I qualify it by adding that for the entire world, there has not been a single country which has been able to successfully accomplish soft landing in less than two attempts. And, so to say, even the United States of America, which started its space journey much, much before us, many years before us, when we were still singing nursery rhymes "Chanda Mama Door Ke", could manage soft landing only in the eighth attempt. But, we, having learnt from the experience of the other nations, I am sure, we would succeed soon. Moreover, Sir, if you give me one minute...

MR. CHAIRMAN: No, please. There is scope for supplementary questions which other Members want to ask. You have given a proper answer. Now, second supplementary.

SHRI MANAS RANJAN BHUNIA: Sir, we watched in the television that the hon. Prime Minister, Narendra Modiji, was also present during that great occasion to celebrate the great launching. Vikram hard landed and there were some difficulties in scientific

[Shri Manas Ranjan Bhunia]

processes, which we witnessed. But, what about the orbiter? is it functioning properly sending all the scientific messages, information, photographs, which will give us the benefit in future planning and future landing?

DR. JITENDRA SINGH: Mr. Chairman, Sir, the question is well taken. As has been mentioned by the hon. Member, the hon. Prime Minister himself was physically present there and had a very constructive interaction. Just to quote two of his sentences, what the hon. Prime Minister said: "Despite setbacks in landing, we must remember that Chandrayaan had quite a successful journey uptill now." So, I think, that sums up the entire thing. Now, to qualify and elaborate on that, I will just take two minutes. Scientifically, there were two components of this Mission, which include the orbiter part also. One was the scientific objective and the other was technological. Now, scientific objectives have been fully accomplished, which include moon surface mapping, topographical studies, radar-based studies, etc. Technologically, the launch was successful. Entry into the earth's orbit was successful. Then, entry into the lunar orbit was successful. Orbiter is very much there, as the hon. Member has said. That means, in other words, just to add to what the hon. Member has said — I am glad that he has made us all aware of that — in the subsequent attempt, this will cut down the cost as well because the lander is also there. So, orbiter has functioned normally. It was only in the last, say, about 30 kilometres that this incident or episode took place, which I would not describe as a failure. As I said, this has made us wiser, and, as the hon. Prime Minister, in another sentence, mentions, "The setback in the landing has only made India's resolve stronger."

SHRIMATI VIJILA SATHYANANTH: Mr. Chairman, Sir, I would like to thank you for giving me this opportunity to ask a supplementary question about the unsuccessful Chandrayaan Mission. Actually, on 2nd September, 2019, the Vikram lander was separated, as planned. On 7th September, it had to land smoothly. Our hon. Prime Minister was present on that day with all the scientists and he was encouraging them. The entire world and all of us were watching the landing. As we all know, it was also the 100th day of our Government. So, successful launching had to be done. Actually, I wanted to know whether it was pushed on the scientists or there was some pressure on them to do it on that day. If some more time had been given to them, would it have been successful?

DR. JITENDRA SINGH: Mr. Chairman, Sir, I am sure all of us, this side and that side, would appreciate that the chronology and the sequence of events is determined through astronomical dates, and it is not possible to design it in the manner in which the hon. Member has tried to put it.

SHRI RIPUN BORA: Sir, of course, the entire country compliments the Government of India and our scientists. This is, of course, not a failure. We also agree to it. But I want to know from the hon. Minister that recently, our Government has set up another space organisation. This is called the New Space India Limited. It has been recently set up and it is the commercial arm of the Indian Space Research Organisation. Another space research organisation, that is, the Asian Space Agency, has also been set up. I would like to know from the hon. Member whether our Government has further plans, in collaboration with these two new space organisations, to restart this mission.

DR. JITENDRA SINGH: Mr. Chairman, Sir, the hon. Member's information is quite appropriate. It was in 2019, in fact, very recently that the New Space India Limited, a PSU, has come into being. The participation of these agencies, along with the industry, is actually guided by strict regulations. It is not exactly transferring it to the private sector; maybe, in the manufacturing of certain instruments, nuts and bolts, they come to our cooperation and help. But we must realise that in the last five-six years, there has been a very cautious effort to expand the space programme across the country. Earlier, in the initial decades, it was limited primarily to the southern part of India. This gives me an opportunity to also share with the House that in 2018 itself, we moved towards North and North-East. In Jammu, we have set up a Space Research-cum-Academic Centre in the premises of the Central University, and in the North-East, in Agartala, in the premises of NIT. Thereafter, in this year itself, we have set up two more centres - one in Jaipur and the other one in Delhi, IIT. So, in order to achieve this expansion programme, we need certain supporting organs also. Therefore, the observation of the hon. Member is well taken. But, this is well regulated by the regulatory authorities.

SHRI JAIRAM RAMESH: Sir, the entire country is one in congratulating ISRO, whose foundations go back to the mid 1960s. My question is that the nation is very excited by the Mangalyaan, Chandrayaan and many other yaans to come. The basic objective of space technology is to deepen development with regard to water, forest, environment, geology, etc. So, I want to know as to what the Government is doing to deepen that aspect of the space programme. The Brazilians, for example, use the space programme very well to monitor the state of their forests on a day-to-day basis. So, will the Minister please consider looking back at the development aspect of space?

MR. CHAIRMAN: You have the ability to put it in a very sharp manner. You did it and are again trying to add.

DR. JITENDRA SINGH: Sir, the hon. Member is knowledgeable about the subject and I am glad he would be happy to know that in the year 2017, on the directions of the Prime Minister, there was a two-day extensive brain storming exercise which took place, wherein the scientists from the Department of Space interacted separately with each of the Ministries and Departments of Government of India, in order to work out wherein the space technology could come in to provide ease of living. So, in other words, I can say that they are the extra space applications of space technology. Today, space technology is extensively being used in our housing projects, including the smart city projects, in laying of the railway tracks, manning of the railway crossings. The GEO-MGNREGA has been a very successful experiment to which, of course, as the hon. Member said that we could also add the forest part. Sir, another example is the soil health card. In North East, we have even started obtaining and procuring utilization certificates through the medium of satellite which is real time and more authentic. So, as we are going on applying space technology in various sectoral areas, we are learning about more and more applications. Therefore, it is an ongoing process. As the founding father, Dr. Vikram Sarabhai of ISRO, and Dr. Dhawan said that ultimately this has to be done for the ease of living. Likewise, for atomic energy, Dr. Bhabha said that it has to be used for peaceful purposes. So, that objective is sacrosanct to us.

MR. CHAIRMAN: Now, Question No. 48. The questioner is not present. Are there any supplementaries?

*48. [*The Questioner was absent.*]

Rejection of H-1B visa requests by the US

*48. SHRI D. KUPENDRA REDDY: Will the Minister of EXTERNAL AFFAIRS be pleased to state:

- (a) whether it is a fact that nearly a fourth of all fresh H-1B visa requests have been rejected by the US which has hit hard the IT companies of our country;
- (b) if so, the details thereof and the reasons therefor; and
- (c) the remedial steps taken/being taken by Government in this regard?

THE MINISTER OF EXTERNAL AFFAIRS (DR. SUBRAHMANYAM JAISHANKAR): (a) to (c) A Statement is laid on the Table of the House.