



1. Seventy - two hours have passed since the signal from the lander was lost: The Chandrayaan mission teaches us the importance of experimentation.

- Why Chandrayaan-2 is not a failure?**
- When contact was lost, what was the speed of Vikram? Is Vikram destroyed?**
- So, why is ISRO still trying to look for it and re-establish contact?**
- How big a setback this is to ISRO?**

GS paper 3 (Indigenization of technology and developing new technology, Achievements of Indians in science & technology..)

In this video, you can find detailed answers for all the above questions.



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The above article has been retrieved from:

Amitabh Gosh. (2019, September , 9). India, China no longer ‘developing nations’, won’t let them take WTO ‘advantage’: Trump. Indian Express. Retrieved from <https://indianexpress.com/article/explained/chandrayaan-2-moon-landing-why-experimentation-is-important-and-why-the-journey-matters-too-5978339/>



What is the context about?



India's dream of landing a spacecraft on moon lay shattered as the Vikram lander of the Chandrayaan-2 failed to make a smooth soft-landing, unable to bring down its speed to the required level.



The failure happened 13 minutes after Vikram began its descent, hoping to reduce its speed from 6048 km per hour to about 7 km per hour or lower to enable a soft landing.



ISRO chief K Sivan announced that contact with the lander had been lost at an altitude of 2.1 km from the moon's surface.



Why Chandrayaan-2 is not a failure?



The mission has not failed, although the attempt to land a spacecraft on the Moon certainly has.



The mission comprised an orbiter, a lander and rover. The orbiter part is functioning normally. Most of the scientific investigations of the mission are supposed to be carried by instruments onboard the orbiter, including studies to find more evidence of water on the Moon.



The lander and rover had a mission life of only 14 days while the orbiter will function for at least one year. Scientists insist that 80-90 per cent of the science output of the mission have to come from the orbiter, and that has not been affected at all.



When contact was lost, what was the speed of Vikram? Is Vikram destroyed?



When contact was lost, it was travelling at 50 to 60 metres per second (180 to 200 km per hour). It was decelerating, but not fast enough to slow down to a speed of 2 metres/second (7.2 km/hr) that was required for a safe landing.



Vikram was designed to absorb the shock of an impact even at 5 metres/second (18 km/hr). At the rate it was decelerating, it could not even have attained a speed of 5 metres/second before touchdown.



It is likely to have hit the Moon at a far greater speed, possibly damaging itself and instruments on board.



So, why is ISRO still trying to look for it and re-establish contact?



For very good reasons. Science would not simply accept the assumption that the lander would have been destroyed.



It would want to ascertain that, and assess the damage. Locating the lander and restoring contact is just the first step in trying to figure out what exactly happened and why.



Is it possible to re-establish contact?



The lander has already been located. ISRO eventually used the instruments on the orbiter to locate the lander. The orbiter has only taken a thermal image —possibly because it passed over the site at a time when there was not enough sunlight —and not a normal image, which too is possible.



The more difficult part is to restore contact with the lander. That would depend on how much damage it has suffered, and whether its communication unit is intact.



The individual instruments onboard the lander as well several of its components are capable of sending signals that can be picked up either through other nearby space assets or by the ground station. Every such signal will offer valuable clues to its current state and what it could have gone through.



How big a setback this is to ISRO?



ISRO, and other space agencies as well, has gone through several such setbacks in space exploration. It is most probably a good learning experience.



Even Chandrayaan-1, launched in 2008, had suffered a partial failure. It had a mission life of two years but remained functional for barely nine months.



The science produced by the Chandrayaan-2 mission, too, might remain completely unaffected by what has happened to the lander, though the hype surrounding the landing attempt might not let people forget this failure very soon. But there would also be very important learning for ISRO to be implemented in its future missions.