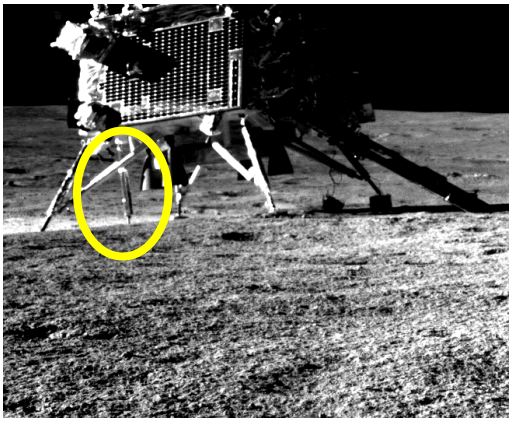
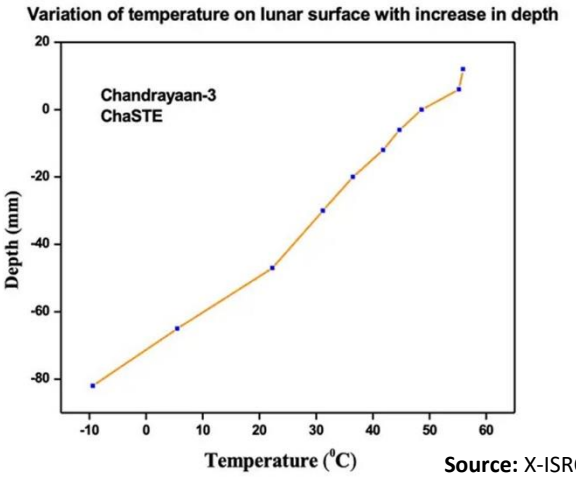
EXHIBIT for NSpD

ChaSTE Experiment onboard Chandrayaan-3's Vikram Lander

The Moon's surface thermal environment is among the most extreme of any planetary body in the solar system. The information on temperature and thermal conductivity of Lunar surface regolith is the key parameter that decides the depth of solar forcing and the loss rate of volatiles including the water ice in the polar and near polar regions, particularly in the Sun-illuminated regions. Most of the in-situ probing was conducted by Apollo missions in and around the Lunar equatorial region. No in-situ measurement is available from high-latitudes and polar regions of the Moon. To accomplish these, an experiment called **Cha**ndra's **S**urface **T**hermophysical **E**xperiment (**ChaSTE**) was flown onboard Chandrayaan-3's Vikram lander.

ChaSTE is a payload developed collaboratively by Physical Research Laboratory (PRL), Ahmedabad and Space Physics Laboratory (SPL)/VSSC, Thiruvananthapuram. The key objective of the instrument is to investigate the temperature profile and thermophysical properties within the top 100 mm of the lunar surface at a high latitude landing location. The ChaSTE payload consists of a thermal probe, electronics module for data acquisition, processing & control and a mechanism for deployment and insertion of the probe into lunar regolith. ChaSTE Probe was kept in stowed condition during the entire flight, from launch till landing. Once the Vikram lander has achieved successful landing at the designated location on the Moon, now called as Shiv Shakti point, ChaSTE probe was deployed and successfully penetrated in to the lunar soil to provide the first-ever in-situ thermal measurements at a lunar high latitude location. ChaSTE has carried out measurements for entire duration of operation of the mission and provided a very interesting data. With first-ever measurements of its kind, ChaSTE provides important insights into the parameters and processes prevailing at high latitude location of the Moon thus enhancing our understanding about the Earth's nearest neighbour.





Source: X-ISRO

Figure Caption: Chandrayaan-3 Lander on the Moon's Surface with ChaSTE Probe Penetrated. First ever thermal profile (Qualitative) of the Moon measured as the probe penetrates into the lunar surface