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United States of America
and
India

Memorandum of Understanding between the United States National Aeronautics and Space Administration (NASA) and the Indian Space Research Organisation (ISRO) on cooperation concerning NASA's Moon Mineralogy Mapper (M3) Instrument on ISRO's Chandrayaan-1 Mission. Bangalore, 9 May 2006

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États-Unis d'Amérique
et
Inde

Mémorandum d'accord entre l'Administration nationale de l'aéronautique et de l'espace (NASA) des États-Unis et l'Organisation indienne de recherche spatiale (ISRO) relatif à la coopération concernant l'Instrument de mappage (M3) de la minéralogie lunaire de la NASA sur la mission Chandrayaan-1 de l'ISRO. Bangalore, 9 mai 2006

Entrée en vigueur : *9 mai 2006 par signature, conformément à l'article 21*

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[ENGLISH TEXT – TEXTE ANGLAIS]

Memorandum of Understanding

between the United States

National Aeronautics and Space Administration (NASA)

and the

Indian Space Research Organisation (ISRO)

on Cooperation Concerning

NASA's Moon Mineralogy Mapper (M3) Instrument

on

ISRO's Chandrayaan-1 Mission

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Preamble

The United States National Aeronautics and Space Administration (hereinafter referred to as NASA), and the Indian Space Research Organisation (hereinafter referred to as ISRO);

As the Parties to this Memorandum of Understanding (MOU) (hereinafter the Parties);

CONSIDERING that the United States and India have agreed upon a major initiative to enhance joint activities in space cooperation;

CONSIDERING ISRO's plan to fly a mission, Chandrayaan-1, designed to explore the Moon from polar lunar orbit in 2007;

CONSIDERING the release of the Announcement of Opportunity by ISRO, calling for proposals from interested foreign investigators to fly instruments on Chandrayaan-1;

CONSIDERING the selection by ISRO of the Moon Mineralogy Mapper (M3) proposal to use a visible-near infrared imaging spectrometer to map the mineralogy of the Moon;

RECOGNIZING the need for a mission to collect these data to characterize and map the lunar surface composition in the context of its geologic evolution and to assess Moon mineral resources at high spatial resolution; and

CONSIDERING that cooperation on such a mission would be beneficial to both nations and to future human activities on the Moon;

Have agreed as follows:

Article 1 - Purpose

This MOU sets forth the terms and conditions under which the Parties shall cooperate in the Chandrayaan-1 Mission with regard to the M3 instrument.

Article 2 – Definitions

As used in this MOU, the following terms shall have the specified meanings:

2.1 "ISRO Chandrayaan-1 Science Working Team" consists of scientists from ISRO and other Indian research institutions, as well as the Principal Investigators (PIs) responsible for the non-Indian instruments on the Chandrayaan-1 Mission.

2.2 "M3 Science Team" consists of only those scientists selected by the M3 PI to carry out specific tasks to meet M3 science objectives, and a Co-Investigator selected by ISRO.

2.3 "M3 Instrument Data" are data received from the payload, including sensor and

housekeeping data.

2.4 "Science Data Products" are data products resulting from the processing of the M3 instrument data.

Article 3 - Mission Description and Participation

3.1 The primary objective of the Chandrayaan-1 Mission is to map key properties of the Moon from polar orbit to better understand its history, evolution, and current state. These objectives include mapping the mineral resources of the Moon. To accomplish these science objectives, the Chandrayaan-1 Mission is to carry several ISRO remote sensing instruments and an impact probe, as well as a number of contributed instruments from foreign countries including the M3 sponsored by NASA.

3.2 The M3, selected by ISRO for flight on Chandrayaan-1 after an international solicitation and competition and after a NASA peer-reviewed selection, is a collaboration between NASA, which developed and fabricated the M3 instrument, and ISRO, which included the M3 instrument on its flight. The M3 Project is to be led by a PI of Brown University who is to have overall responsibility for project resources and mission success. The M3 instrument will be designed and developed at the Jet Propulsion Laboratory (JPL).

3.3 The Chandrayaan-1 Mission is conceived, designed, built, and flown by ISRO. The Chandrayaan-1 spacecraft, integrated and tested under ISRO responsibility, is to carry the M3 instrument designed and provided by JPL.

3.4 The requirements for the M3 instrument were developed by the M3 Science Team and the instrument team at JPL. These requirements define the spatial coverage, spectral resolution, and signal-to-noise value of the observations necessary to map the minerals of the Moon.

3.5 The Chandrayaan-1 Mission is to collect science data and products for the entire lunar surface.

3.6 ISRO plans for the Chandrayaan-1 spacecraft to operate for a nominal period of two years. ISRO is to operate the spacecraft throughout the life of the mission. NASA is to provide ISRO with a plan and procedure for commanding the M3 instrument from the ISRO satellite control center. NASA is to process M3 instrument data and science products, as defined in Article 5 – NASA Responsibilities and Article 16 – Science Data Policy, below. The Indian Space Science Data Center (ISSDC) is also to have an M3 Data Processing Subsystem (a replica of the Payload Operating Center (POC) workstation, to be delivered by NASA) to process collected raw scientific and resource related flight data.

3.7 M3 instrument data and science data products are to be made available to the