

**GOVERNMENT OF INDIA
DEPARTMENT OF SPACE**

Sub: Monthly Summary of Department of space for the month of July 2023

PART- I (Unclassified)

1. Important policy decisions taken and major achievements during the Month

A. Space Transportation:

- LVM3-M4 vehicle, in its seventh consecutive successful flight launched the India's third lunar mission i.e., Chandrayaan-3 spacecraft weighing 3900 kg in the intended 170 x 36500 km orbit on 14th July, 2023. Trans-Lunar Injection (TLI) has been successfully completed on July 31st, 2023.
- PSLV-C56 mission carrying DS-SAR satellite and 6 passenger satellites from Singapore successfully launched on July 30, 2023 at 06:30 hrs.
- Launch Vehicle stacking for the PSLV-C57/ Aditya-L1 mission commenced from 3rd July, 2023.
- ISRO conducted the first hot test on an intermediate configuration of the Semi-cryogenic engine, i.e., Power Head Test Article (PHTA) on July 1, 2023 at ISRO Propulsion Complex (IPRC), Mahendragiri, Tamil Nadu. The short duration ignition demonstration test was conducted for a duration of 4.5 seconds and the test proceeded as predicted till 1.9 s validating the ignition. However, at 2.0 s, an unanticipated spike in the turbine pressure and subsequent loss of turbine-speed was observed and the test was aborted. Detailed analysis is under progress.

B. Space Applications:

I. Earth Observation

- **Agriculture Technology project** (for State governments and AICIL): Kharif sown area progress mapping has been carried out at fortnightly interval for Maharashtra state. Machine learning based crop yield estimation of Wheat, Soybean and Paddy was carried out for all districts of Madhya Pradesh. Jute crop maps were prepared for West Bengal and Bihar.
- National level agriculture mask was generated and shared with MNCFC, Ministry of Agriculture & Farmers Welfare.
- International Charter was activated for **monitoring the floods in North India**. 109 flood maps/ value added products were generated and disseminated to the Central and State Disaster Management authorities/agencies.

- Bhuvan Geo-portal has been developed for Oman and populated with relevant satellite and thematic data products.
- Stable islands' database of Brahmaputra river has been generated, for Utilization of the area for productive cultivation.
- The “Fever Tracker” app developed NESAC in collaboration with ICMR-NE for Health Workers has been awarded for Best Innovation in the category ‘Technology & Innovation: Transforming Healthcare’ during the ICMR Intramural Research and Innovation Meet 2023.

II. Satellite navigation

- In-orbit testing of NVS-01 satellite completed successfully and satellite is inducted into navigation service of NavIC.
- Indigenously developed space-grade atomic clock achieves required stability for navigation service onboard NVS-01 satellite.

C. Human Spaceflight:

- Phase-2 testing of Service Module propulsion system commenced and three tests completed.
- Harbour trials at Vizag port for recovery operations commenced.
- Integration activities of crew module for TV-D1 mission completed.
- Ground Resonance Test for crew escape system and crew module (for TV-D1 mission) in base fixed system completed.
- Periodic Fitness evaluation of astronaut designates completed.

D. Capacity Building:

- Online Space Quiz & expert talks were organized as part of International Moon Day (IMD)-2023 celebration and around 14000 people participated in the programme.
- During the Month 3 patents were granted and four new patent applications are filed at Indian Patent Office.

E. Training:

1	One-week customized course titled “Hyperspectral RS for mineral and hydrocarbon exploration” (10-14 July, 2023)	8 officials participated
2	26 th Post Graduate Diploma Course by CSSTEAP on Remote Sensing & GIS was concluded	15 participants from 7 countries successfully completed the course
3	One-day workshop on ‘EOS4 Data Product and its Applications’ jointly organised by IIRS, SAC & NRSC (July 14, 2023)	Attended by more than 60 Technical staffs of Forest Survey of India at FSI HQ, Dehradun

4	ISRO START Programme: Inaugurated by Chairman, ISRO (July 20, 2023)	35000 participants from 256 institutions registered
5	'Geospatial Technology for Climate Smart Agriculture' (10-14 July, 2023)	6803 participants from 851 network institutions
6	NNRMS training course (08-week duration) on Geospatial technology	57 participants from various institutions
7	'MOOC course on advances in geospatial techniques for monitoring and modelling hydro-meteorological disasters' (17-28 July, 2023)	425 participants

F. Safe & Sustainable Space Operations

- Daily SOPA (Space Object Proximity Analysis) and re-assessment of close approach situation for 1659 Conjunction Data Messages (CDM) from CSpOC/USSPACECOM were performed for 23 LEO and 29 GSO spacecraft. No Collision Avoidance Manoeuvres (CAMs) were executed.
- Chandrayaan-3 Earth Bound Maneuver plans were analysed for close approach by space objects and cleared.
- Collision Avoidance Analysis was carried out for LVM3-M4/Chandrayaan-3 mission and the launch was delayed by 4 sec to avoid close conjunction with another space object.
- For Chandrayaan-2 Orbiter, collision avoidance manoeuvre was recommended after necessary coordination with KARI and NASA to avoid critically close conjunctions with KPLO (Korea Path Finder Lunar Orbiter) on 22 July, 2023 and mitigate close approach risks with Lunar Reconnaissance Orbiter on 21 July, 2023 the manoeuvre was executed on 18 July, 2023.
- Re-entry of large rocket bodies into the Earth's atmosphere were monitored. The semi-controlled atmospheric re-entry of Aeolus satellite by ESA is also being monitored.

G. International Cooperation:

- During the visit of the Prime Minister of India to France during July 13-14, 2023, the following documents were concluded between ISRO and CNES.
 - a. Implementing Arrangement (IA) concerning cooperation on the joint visible, short wave and thermal infra-red earth observation mission "Thermal infrared Imaging Satellite for High resolution Natural Resource Assessment – TRISHNA".
 - b. IA on Maritime Domain Awareness mission short term programme.
 - c. Agreement on CAESAR service (Conjunction Analysis and Evaluation Service: Alerts and Recommendations) and use of expert modules of JAC (Java for Assessment of Conjunctions) software.
 - d. Joint declaration on concerning joint developments in the field of launchers.

- The 4th edition of Space Economy Leaders Meeting under India's G20 Presidency was organised at Bengaluru during July 6-7, 2023. Space Agency Heads and senior representatives from space agencies of 18 G20 countries, 8 invited countries, and 1 international organization participated in the event. In addition, 32 space industries from abroad and 53 Indian space industries also actively participated in the event.
- Two-member delegation led by Director NRSC attended the 2nd Joint Committee meeting of the BRICS RSSC (Remote Sensing Satellite Constellation) Agreement during July 24-25, 2023 at Hermanus, South Africa.

H. IN-SPACE Activities

- IN-SPACE in collaboration with ISRO, has announced the opportunity to host payload on the upcoming PSLV Orbital Experimental Module (POEM) on PSLV missions tentatively scheduled during November, 2023 and June, 2024. Last Date for submission of application is August 25, 2023.
- The third meeting of the Standing Committee for Inter-Ministerial Coordination (SC-IMC) chaired by Chairman, IN-SPACE was held on July 11, 2023.
 - The committee reviewed the proposal from M/s. Galaxeye Space Solutions Pvt Ltd., for establishment & operation of remote sensing satellite constellation. An advisory note is being issued to Galaxeye for enabling ITU filing through WPC wing of DoT.
 - M/s. Anant Technologies Pvt Ltd., has been advised to identify new ITU filings for the proposed GSO satellite for space based communication under Indian Administration, after which IN-SPACE will issue advisory note for ITU filing through WPC wing of DOT.
- Non-Disclosure Agreements (NDAs) /Memorandum of Understanding (MoUs)
 - Tripartite NDA signed between M/s. GalaxEye Space Solutions Pvt. Ltd, IN-SPACE and Space Applications Centre/ISRO for providing necessary support towards Remote Sensing Satellite Design Review and Consultancy.
 - Tripartite NDA signed with M/s. Digantara Research & Technologies Pvt Ltd, ISTRAC/ISRO and IN-SPACE for providing access to historical & daily GPS ephemeris data of few Indian satellites to enable validation of SSA software analytics developed by Digantara.
 - MoU and an NDA was signed with M/s Deepflow Technologies Pvt Ltd, IN-SPACE for Access to ISRO Satellites Data and Services.
 - MoU signed between IN-SPACE and Foundation for Innovation and Social Entrepreneurship (FISE) for Spacotech Innovation Network (SpIN) Platform.
 - MoU signed between IN-SPACE & ISRO and Amazon Web Service for collaborate and provide technology & mentoring benefits to start-ups in the space-technology domain.

- A full day event "Manthan-Brainstorming Session on Decadal Vision and Strategy for Development of Indian Space Economy" organized, where more than 120 delegates participated from Industry, Academia, Startup, Associations, Government, and brainstormed in 8 verticals of space domain and ecosystem.
- Webinar on Indian Space Industry Standards was successfully conducted on 19 July 2023 with the participation of 125 registered users.
- The Expression of Interest for Small Satellite Launch Vehicle (SSLV) released in public domain. A total of 20 Indian industries have registered for participating in the Pre - Eol conference.

I. NSIL Activities:

- NSIL's Dedicated mission for Singapore, PSLV-C56/DS-SAR mission was successfully launched on 30 July, 2023, carrying DS-SAR satellite, along with 6 co-passengers from the first launch-pad of SDSC-SHAR, Sriharikota.
- NSIL conducted 2 days' familiarization session through online mode for the Industry Consortium (HAL-L&T) on Materials, Fasteners, etc., of PSLV rocket with the help of subject matter experts from ISRO.
- 5th meeting of PMC-PIC (Programme Monitoring Committee for PSLV realization through industry consortium) and 2nd meeting of AC-PIC (Apex Committee for PSLV realization through industry consortium) were conducted to discuss the modalities and review the overall status of the programme.
- NSIL has provided TTC (Telemetry, Tracking and Command) support to an International Customer for Launch and Early Orbit Phase (LEOP) support to their satellite through ISTRAC Ground Station.
- NSIL has supplied 80 nos. of Solar Cells to M/s. Aidin Tech for use in space systems.

2. No of Cases of 'Sanction of Prosecution' pending for more than three months: NIL

3. Particulars of cases in which there has been a departure from the Transaction of Business Rules or established policy of the Government: NIL

4. Status of ongoing Swachhta Abhiyan (progress under Special Campaign):

Swachhta Pakhwada – 2023 has been observed from 1st – 15th February, 2023 with mass participation from employees, housing colony residents and CISF personnel etc.

Apart from this, Swachhta Action Plan for the year 2023-24 has been finalised with an emphasis on outcome based Swachhta activities and creating awareness about cleanliness and hygiene and an amount of `470 lakhs has been allocated for Swachhta Activities. The action plan has been communicated to the DDWS.

The Action plan has been communicated to the DDWS and uploaded on Swachhta Action Plan portal of DDWS. The activities are being meticulously carried out at Centres/ Units/ ABs/ CPSEs.

5. Status of Rationalisation of Autonomous Bodies:

EMC has recommended that SCL and NARL be governmentalized out of which SCL has been transferred to MeitY during the year 2021-22. The recommendations of the committee in respect of NARL is under review.

All the AB's under the Department namely, IIST, PRL, NARL & NESAC have been brought under Treasury Single Account.

6. Information on specific steps taken for utilisation of the Space Technology based tools and applications in Governance and Development:

Support to Ministries/ Departments

- Variation in water spread area of **Glacial Lakes and the risk of GLOF** in the states of **Himachal Pradesh, Uttarakhand and Sikkim** due the heavy rainfall event from 9th to 12th July, 2023 was assessed (NDMA, MHA).
- Daily products on snow cover area, actual snowmelt rate and snowmelt rate forecast (T+3days) and simulated water balance components are generated and shared with NPMU-NHP (Ministry of Jal Shakti).

7. Vacancy position of senior level appointments in the Ministry/Department including Autonomous Bodies/PSUs:

The detailed status regarding all the posts pertaining to Department of Space has been updated on AVMS. The status of updation of vacancy as on 31.07.2023 is as follows:

- Total number of posts required to be entered on AVMS: - 24
- Number of posts filled as on date: - 21
- Number of posts totally vacant as on date: - 03
- Number of posts under premature repatriation – 00
- Number of posts under additional charge arrangement: - 02
- Number of posts that would fall vacant during the next 06 months: - 04

8. List of cases in which ACC directions have not been complied with :- NIL.

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