



IND Cubesat Briefing/Technical Exchange

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SLS Deployment/Release Considerations

Glen Elliott

This document has been reviewed and determined not to contain export controlled technical data.

SLS Deployment/Release Considerations

- EM-1 will be carrying many smallsat secondary payloads that the DSN will be supporting
- The purpose of this meeting is to facilitate the communication between the IND, DSN, and MGSS, and the smallsat flight projects manifested on EM-1
- Areas of consideration are divided in the following slides between areas of IND and flight project interest, mainly, but are not limited to those two entities
- Constant coordination to work to completion some of these considerations between the DSN, other NASA entities (SLS Secondary Payload User Forum at MSFC), and the flight projects is paramount to the success of us all

SLS Deployment/Release Considerations

Flight Project Considerations

- Frequency analysis and selection
 - This is perhaps the longest lead time item a flight project will encounter
 - The DSN Frequency Management Office will assist and provide guidance to any flight project that uses the DSN
 - Contact info:
 - » Farzin Manshadi, farzin.manshadi@jpl.nasa.gov
 - » Feiming Morgan, feiming.c.morgan@jpl.nasa.gov
- Project telecom engineer to interface with DSN MIM
 - The DSN Service Agreement (DSA) and Operational Interface Control Document (OICD) are required for all projects and have delivery milestones of PDR (DSA) and CDR (OICD)
 - The ability to ascertain the telecom essentials of a flight project are central to the mission of the DSN MIM
- RF Aperture spreadsheet and User Loading Profile (ULP)
 - Both are necessary to perform various network analyses in support of the flight project

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Deep Space Network Considerations

- Up to ten (10) secondary payload flight projects (smallsats) may need to be supported by the DSN during the release of smallsats from ICPS
- Simultaneous smallsat releases entail supporting several spacecraft within a very short period of time so as to ensure provision of sufficient telemetry and 2-way tracking time to allow a project to execute their initial acquisition strategy
- Different support scenarios are being reviewed by the DSN at this time to allow successful support for Telemetry, Tracking, and Command for every spacecraft. Some of the options are:
 - Common groupings of spacecraft by:
 - Frequency: Near Earth group and Deep Space group
 - Common uplink frequency usage for a period of time
 - Prioritization schema agreed to by all projects, e.g. – those with a TCM first, get first contact

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Deep Space Network Considerations (cont.)

- Facilitation and participation in inter-project communications at project management and engineering levels to work prioritization schemas for support groupings and testing, etc. is an area of interest, as it would influence work in other areas
- Common DSN services recommendation for our smallsat customers could minimize adaptation as well as cost considerations
- Consistent communication between the project and the DSN MIM is highly recommended so as to keep both parties current on issues and concerns

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The SLS Secondary Payload User Forum

- Information regarding the secondary payload user community of EM-1 has been handled by MSFC engineers in a monthly meeting – SLS Secondary Payload User Forum.
 - This meeting is hosted by Scott Spearing – Systems Integration Engineer for SLS secondary payloads (smallsats)
 - This meeting is the single best source of gold source information available to the smallsat community of EM-1
 - Information provided each month will help each flight project understand the intricacies of being a secondary payload and the various reviews they will need to pass to fly
 - The DSN is a part of this monthly meeting and provides input, as applicable, for the flight projects to consider in their mission planning exercises

Contact Information

- MIMs
 - Glen Elliott, gelliott@jpl.nasa.gov
 - Stefan Waldherr, stefan.waldherr@jpl.nasa.gov