



Jet Propulsion Laboratory
California Institute of Technology



Resource Allocation Review Board



February 10, 2004



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TO: Distribution

FROM: Eugene S. Burke

SUBJECT: February 10, 2004, Resource Allocation Review Board (RARB) Meeting Minutes

The following are the Minutes of the NASA/JPL Deep Space Network (DSN) Resource Allocation Review Board (RARB) Meeting held at JPL on February 10, 2004. The purpose of this Review is to address the oversubscription of the DSN 26/34/70-meter tracking assets. The Review Board consists of Project Managers, Project Scientists, and key JPL Interplanetary Network Directorate (IND) Deep Space Mission System (DSMS) Managers or their representatives. The Board is responsible for reviewing new or changed requirements, adopting recommendations to reduce periods of heavy contention, and for controlling changes to the requirements. This Review addressed contention in 2005, 2006, and 2007.

Review Board Members

The following Review Board Members or their representatives were in attendance:

Peter Doms	JPL	Chairman
Gene Burke	JPL	Resource Allocation Planning & Scheduling Office Manager
Allen Berman	JPL	DSMS Operations Office Deputy Manager
Pat Carr	ITT	ITT DSN O&M Contract Program Manager
Albert Chang	JPL	Hayabusa, Lunar-A Project Representative
Chad Edwards	JPL	IND Mars Network Office Manager
Bob Farquhar	APL	MESSENGER, New Horizons Project Representative
Tom Frascchetti	JPL	DAWN Project Manager
Roger Gibbs	JPL	Mars 2001 Odyssey Project Manager
Jim Graf	JPL	Mars Reconnaissance Orbiter Project Manager
Ed Hirst	JPL	Genesis Project Representative
Dwight Holmes	JPL	INTEGRAL Project Representative
Richard Horrtor	JPL	Mars Express Orbiter U.S. Project Manager
Mike Klein	JPL	Advanced Tracking & Observations Techniques
Ron Mahmot	GSFC	Space Science Mission Operations Project Manager (SOHO, WIND, Polar, Geotail, Cluster, ACE, Image, WMAP)
Daniel Mandl	GSFC	ST-5 Project Representative
Ed Massey	JPL	Ulysses/Voyager Project Manager
John McKenney	JPL	Deep Impact Project Representative
Rich Miller	JPL	DSMS Plans & Commitments Office Manager
Bob Mitchell	JPL	Cassini Program Manager
Dan Ossing	APL	STEREO Project Representative
Steve Ostro	JPL	GSSR Project Scientist
Jeff Plaut	JPL	Mars 2001 Odyssey Mission Project Scientist
Bob Ryan	JPL	Stardust Project Representative
Rance Skidmore	Omitron	GOES Project Representative
Martin Slade	JPL	GSSR Project Manager
Joe Statman	JPL	DSMS Engineering Program Office
Tom Thorpe	JPL	Mars Global Surveyor Project Manager
Lincoln Wood	JPL	Reference Frame Calibration Project Manager
Greg Wright	SAO	Chandra Project Representative

Opening Remarks – G. Burke, Resource Allocation Planning & Scheduling Office Manager

Mr. Burke, introduced, welcomed and thanked the Review Board and the Projects/users representatives for attending.

Introduction – P. Doms, RARB Chairman

Mr. Doms welcomed members of the Review Board and mission representatives to the RARB, and acknowledged the excellent performance of the DSN. He welcomed the new DSN O & M Contractor – ITT Industries, with Pat Carr as the Program Manager, and remarked on the flawless hand-off from CSOC on January 1, 2004. Additional capabilities will be installed in the future, i.e., Ka-Band (DSS-34 in April 2005 and DSS-54 in June 2007) along with the re-location of DSS-65 during the first half of 2006, plus additional work to be described later in this meeting. The immediate tasks for 2004 are: Rosetta Launch in March; MESSENGER Launch in May; Cassini's Saturn Orbit Insertion in July; Genesis Earth Return and Lunar Launch in September; and Deep Impact Flyby Launch in December. There is a question regarding the long-term status of the 26m subnet.

Overview, Contention Summary – G. Burke

Mr. Burke gave a brief description of the contention resolution process, and indicated that the standard format is to take notice of subnet contention for 2005 through 2014, and resolve conflicts for 2005 through 2007. He stated that since the last review, we have measured the Value Stream Mapping (VSM) accomplishment against recommendations -- Providing 26 Weeks of Conflict-free Schedules - (Schedules available for conflict resolution are out to about 25 weeks); Reduce manual intervention of submitting changes into TIGRAS - (An electronic change request [ECR] is being deployed); Automatic/manual E-mail notification of postings of all schedules and updates - (Both Resource Analysis Team and DSN Scheduling post schedules of when and for what periods the schedules are posted). He also described the charts containing projected unsupportable time summary for 2005 through 2014.

August 2003 RARB Action Items Review – D. Morris

Mr. Morris stated that all Action Items have been responded to and closed, with the exception to Action Item 5, which has a due date of 04/15/04. This open Action Item will be renumbered #1.

Action Item #1: - Closed - (aka 8/13/02 RARB A.I. #7) Multi-mission DSN Allocation and Planning (MDAP) provide a Mars Program coordinated input to Resource Allocation (Mid-Range) Planning Team (RAPT) of at least one week at least 6 months prior to the schedule week. This action will use the result of Action Item 6 (of 8/13/02 RARB) to clarify the scope of resources in which to plan to.

Response: (10/06/2003) All weeks are delivered.

Action Item #2: - Closed - Prepare Risk Assessment for Cassini because of DSS-43 Rebalance Downtime planned in June 2004. Concern is that this occurs too close to the Cassini Saturn Orbit Insertion (SOI).

Response: (9/04/03) Office 930 states that this downtime is too close to this Class A event and has requested an alternative downtime plan. The Resource Analysis Team is tasked to do this.

Action Item #3: - Closed - Evaluate whether Mars Reconnaissance Orbiter (MRO) could utilize Multiple Spacecraft per Aperture (MSPA) while in orbit around Mars prior to achieving their final science orbit. What affects this is the MRO orbit apogee, transmitting frequency, antenna beamwidth (34m and 70m) and Mars range.

Response: (11/13/2003) There is no physical restriction to utilizing MSPA capability by MRO. Due to risk and flexibility concerns, MRO does not wish to use MSPA in the first month after MOI, the last part of aerobraking, and during the transition to primary science orbit.

Action Item #4: - Closed - Investigate and propose alternative support versus the recommended deletion of Reference Frame Calibration (RFC) Catalog Enhancement and Maintenance (Cat M&E) support.

Response: (11/20/2003) The proposed alternative is to replace the nominal cat M&E request with a request for DSS 25 and DSS 55 using simultaneous X and Ka-bands.

Action Item #5: - Open -Distribute plan for 26m subnet antenna hydraulic system refurbishment. This will

then be worked by the Resource Analysis Team to coordinate DSS-16, 46 and 66 downtimes with Operations and Flight Projects. Action Item #05 was reopened as Action Item #01 (below) with a Due Date of 04/15/2004.

Response: (9/10/2003 & 1/28/2004) Changed due date as it will take extended time to plan new implementation dates.

Action Item #6: - Closed - Update mission set to show that Polar will end their mission as of October 1, 2005.

Response: (9/10/2003) Mission Set reflects this new date.

<i>AI#</i>	<i>Year/Month(s)</i>	<i>System</i>	<i>Responsible</i>	<i>Due Date</i>	<i>Status</i>
01	2004-5	DSMS Engineering	J. Cucchissi J. Osman	04/15/2004	Open

ACTION: (a.k.a. 8/13/2004 RARB A.I.#5) Distribute plan for 26m subnet antenna hydraulic system refurbishment. This will then be worked by the Resource Analysis Team to coordinate DSS-16, 46 and 66 downtimes with Operations and Flight Projects.

RESPONSE: (9/10/2003 & 1/28/2004) Changed due date as it will take extended time to plan new implementation dates.

NASA Office of Space Science Code S – B. Geldzahler and C. Holmes

After congratulating the DSN personnel on the recent success, Dr. Geldzahler opened with four topics: Science Prioritization Board; Australia Visit; DSMS Assessment Board; and DSMS Executive Management Board. For the Science Prioritization Board – NASA established a Headquarters Prioritization Board, which consists of representatives of each NASA science division, as well as G. Burke and D. Morris. The Board was established to provide prioritization guidance in the event of an irresolvable conflict. NASA Headquarters and DSMS work together to coordinate science priorities. A meeting is held usually three weeks prior to the RARB Meeting. The DSMS receives updates on missions set and science priorities to help resolve conflicting requests, and from Headquarters perspective it is working quite well. The meeting was a great help during the high activity period. All divisions were represented and scenarios were played out of possible anomalies.

The Regional Security Officer (RSO) from the US Embassy found deficiencies at Tidbinbilla. Dr. Geldzahler and representatives from Codes S and X, went to Australia to solve those issues that could not be resolved via email or by the NAR. Most issues were agreed to, however, the issues of erecting a fence around the entire Complex, and increasing the number of armed guards, remains to be resolved. The Ambassador gave us until mid-May to come to a resolution and implement a plan to fix the security problem.

The DSMS Operations Assessment Board was convened in August 2003, to assess proposed program content and to align DSMS funding with NASA priorities. On a high level, the DSMS has been reorganized. RARB Specific: The scheduling process was found to be cumbersome, in need of automation, and too many people on the mission side were required to schedule antenna usage for their spacecraft. R. Doyle formed a Tiger Team to look into automation of the scheduling process. The original goal was to have a set of requirements out by January 31, 2004. With the success of proximity links between rovers, relays and then trunk lines to the DSN, the charter has been extended to include the surface to relay links as well. The new target date for requirements is March 31, 2004.

Mr. Holmes gave an overview of the Space Science Enterprise - FY 2005 President's Budget Highlights. Details are available at <http://www.nasa.gov/budget>. He discussed the various themes in Space Science: Astronomical Search for Origins; Solar System Exploration; Mars Exploration; and the newly added theme, Lunar Exploration. Sun-Earth Connections, and Structure and Evolution of the Universe have been reduced, as priorities have been re-focused. See his Budget Presentation for additional information.

JPL DSMS Plans & Commitments Program Office (920) – R. Miller

The Interplanetary Network Directorate is developing a set of Level 1 Requirements for the Deep Space Mission Systems. The requirements are analogous to Project Level 1 requirements, high level short list, approved (and change controlled) by NASA Headquarters, and used to “measure success”. Operability requirements, from a customer perspective, will be included. A draft candidate set has been generated using TMS Managers’ input and a work session with the DSMS Executive Management Board. Input from the customers is needed.

A draft list of Candidate Operability Requirements from Customer Perspective follows: **Visibility:** R1 - The DSMS Operations visibility and accountability; R2 - Visibility of current and planned DSMS capabilities; R3 - Plan for and implement new capabilities; R4 – Support mission design trades; R5 – Enable “test as you will fly”.

Controllability: R6 – Simple, standard, procedures and interfaces; R7 – DSMS shall maintain sufficient capacity margin. **Other Areas:** R8 – Metrics that are meaningful to the customers; R9 – Define the information systems operations concepts.

JPL DSMS Operations Program Office (930) – A. Berman for J. Wackley

Mr. Berman indicated that the DSN Operations has maintained an exceptionally high level of functional availability in supporting MER, Stardust, and MEX, as well as MGS, and M010 relays, during the Activity Contention Period (ACP). Performance for MER, Stardust and MEX is higher than for other missions because of extraordinary preparation and planning, extended Level 1 support, and flexibility to allow rapid recovery from failures and/or anomalies. Level 1 is the most critical support and requires extra maintenance and operations staffing. Performance for MER is particularly notable given the very dynamic operations environment.

Mr. Berman discussed the DSN ACP Performance: For Radio Metric Data: MER Navigation Team Chief’s assessment: Approach radio metric data quality for both MER spacecraft was so good they cancelled the last two TCM’s. Radio Metric Data Conditioning Team provided excellent performance. One of the contributors stated “...*outstanding tracking from the DSN...*” DDOR experience was that “...*measurements have had an extremely high success rate and have been extremely accurate, typically better than 0.085 nsec (3.2 nrad).*” Navigation Section Manager radio metric data quality assessment: From DOY 274/2003 (date of last NSP delivery) to date of last significant event (EDL, encounter): Stardust: 97%; MER 2: 97%; MER 1: 98% (percentage of good data). Typical radio metric data quality for MER is: Two-way Doppler accuracy: 1-2 MHz; Ranging: 1-2 Range Units DDOR 0.05-0.12 nsec “These missions especially MER, *got the best ... DSN tracking data in history.*”

For SDU & MEX: DSN provided extremely high quality support of the Stardust Wild 2 Comet Encounter - Playback of recorded science data was accomplished in one attempt, plus two gap fill playbacks; originally planned were three full playbacks - Supported Stardust maneuvers, most recently TCM 15 on 3 February. DSN provided extremely high quality support of the MEX Mars approach, Mars Orbit Insertion and continuing orbital operations support. Three of 9 planned apocenter maneuvers have been supported (others were over ESA sites); all at MDSCC (DSS 54, 55, 65).

Through the remainder of the designated ACP (1 March): DSN stays under modified configuration control. Triage process (not yet needed/invoked) remains in force. Level 3 (routine) support began on February 6. It will revert to Level 1/2 for the Spirit/Opportunity software uploads. Operations will attempt to maintain current level of vigilance to compliment the historic highs already set.

Following the ACP, Operations will continue to attempt to maintain performance levels. Benefits from some ACP preparations will continue (e.g. sparing process; [new] Tracking Support Specialist positions). Operations Working Group Meetings planned for April will focus on lessons learned and maintaining performance. Possible Spirit/Opportunity extended missions will extend a heavy operational burden on the DSN, well into Calendar year 2004. Excluding the Mars Missions, 2004 is a very busy DSN Operations period in its own right with the Rosetta Launch; Messenger Launch; and Venus Flyby; Cassini SOI; Titan Encounters; and Huygens Probe Release; Lunar-A Launch; GENESIS Recovery Phase; NOAA-N Launch; & Deep Impact Launch. DSN Operations is now redeploying attention and resources from the very long ACP preparation phase, and actual ACP execution phase, to the new 2004 key operational events and critical phases.

At 00 PST on January 1, 2004, the DSN M&O Contract passed from CSOC to ITT: Including all DSN Pasadena area operations and Goldstone (approximately 450) personnel. The contract transition between CSOC and ITT was essentially seamless, with excellent performance in terms of filling critical positions (100% on January 1), and

incumbent personnel retention in general. The great success of the contract transition was due to outstanding planning and preparation on the part of ITT, outstanding cooperation and dedication of CSOC to ensure the success of the transition, and very dedicated DSMS leadership.

JPL DSMS Engineering Program Office – J. Statman

Mr. Statman discussed recently completed tasks before the ACP, as well as tasks to be completed after the ACP.

20kW Transmitter upgrades have been completed and are operational at all of the BWG subnet (DSS-24, 34, 25, and 54). The 20kW transmitters replace the 4kW transmitters providing a more powerful and better uplink capability, as well as providing standardization to all 34-meter antennas, giving missions more scheduling flexibility.

The Network Simplification Project (NSP) version 3.2.7, is now available at all DSN stations with the exception of DSS-27, but preparations are in place to upgrade DSS-27 (January 2005) after the ACP. NSP software was upgraded to version 4.1.1. The NSP 4.1 upgrade provides ST-5 command capability, Turbo-Code, which will add a new error-correcting method, and miscellaneous anomaly fixes.

The Delta-DOR capability is installed and operational providing Navigators with an additional tool to aid in more precise targeting.

X/X/Ka Feeds have been installed at DSS-26 and DSS-55. This upgrade provides Ka-band downlink capability, and improved X-band BWG downlink sensitivity at 0.5-2.5 dB depending on the operations mode and reference antenna. 4-meter antenna arraying is available at Goldstone and at the overseas DSCCs. The ability to array 34-meter antennas provides users 70-meter performance when the 70-meter antennas are unavailable.

Mr. Statman described some of the work to be completed after the ACP: The X/X/Ka-band feed for the remaining BWGs; Beginning in 2004 the HEF and 70-meter antennas are planned to have a significant amount of downtime for refurbishment and replacement of the antenna controllers; The installation of the NMC 1.6 (repair anomalies, add remote monitor capability); plus NSP 5.3 (increase turbo code rate to meet STEREO needs, and add features committed to MRO).

Mr. Statman summarized that Section 940 depends on the customers to: (a) Take advantage of the capabilities (SLE, TDN's, arraying); (b) Define what capabilities should be put in place (beyond sustaining of current capabilities); (c) Help select the capabilities that are currently least cost-efficient, which could be candidates for de-commissioning.

New or Modified Project Requirements

Genesis Return to Earth Requirements – E. Hirst

The Genesis Earth Return requirements of September 2004, are not within the scope of this RARB (2005 – 2007), but Mr. Burke, the Resource Allocation Planning & Scheduling Office Manager, requested that a report be submitted. Genesis was launched on August 8, 2001 and the Earth Return is planned for September 8, 2004. The spacecraft is in good health, navigation exceptional, budgets and consumables were more than sufficient for the return flight.

Mr. Hirst remarked that Genesis submission of the 1-year backup orbit requirements were not accepted by RAPSO, because it was not considered the most probable outcome. The Project submitted the back-up requirements because they represent the bigger load for the projects/users, and not accepting/analyzing the backup orbit requirements leaves the user community blind to the possible impacts. Genesis' presentation resulted in two Action Items – 02a and 02b.

<i>AI#</i>	<i>Year</i>	<i>Month(s)</i>	<i>System</i>	<i>Responsible</i>	<i>Due Date</i>	<i>Status</i>
02a	2004- 2005	September- February	Genesis	S. Waldherr G. Burke	04/24/2004	Open

ACTION: Presentation by Genesis on mission requirement changes resulted in an Action on HQ to provide direction regarding DSN support for Genesis’ post-Earth Flyby spacecraft disposal orbit. It is important that consultation with impacted users (e.g., Chandra and ISTP missions) is part of this Action, if DSN coverage is to be used. Per the request of NASA HQ (03/, DSMS and Project are working on a compromise. The goal of the compromise is to minimize scheduling impact to other DSMS customers, yet still address risk mitigation for the Genesis mission (disposal orbit/first 60 days of backup orbit). Note: The disposal orbit and backup orbit are concurrent for the first 60 days.

<u>AI#</u>	<u>Year</u>	<u>Month(s)</u>	<u>System Responsible</u>	<u>Due Date</u>	<u>Status</u>
02b	2004- 2005	September- February	Genesis S. Waldherr E. Hirst	03/24/2004	Open

ACTION: Presentation by Genesis on mission requirement changes resulted in an Action to investigate alternate antenna support (non-DSN) for Genesis’ post-Earth Flyby spacecraft disposal orbit.

MESSENGER – B. Farquhar

Dr. Farquhar gave an overview of the MESSENGER mission to Mercury. He noted a launch slip of about two months as MESSENGER is now scheduled to launch May 11, 2004, aboard a Delta-2. The MESSENGER spacecraft uses gravity assists from both Venus and Mercury to lower its speed relative to Mercury at orbit insertion. MESSENGER will use three Venus Flybys (November 2004, August 2005, and October 2006) and two Mercury Flybys (October 2007 and July 2008) prior to the Mercury orbit in July 2009. The spacecraft design includes three-axis stabilized with a total weight of 1130 kg (propellant – 612 kg and experiments – 40 kg). The Science Payload: Dual imaging system; Gamma-ray and neutron spectrometer; X-ray spectrometer; Magnetometer; Laser altimeter; Atmospheric and surface composition spectrometer; Energetic particle and plasma spectrometer; and Radio science. The Baseline Launch Window is 12 days, May 11 through 22, 2004, and the secondary launch backup dates are July/August 2004 and July/August 2005.

NEW HORIZON – B. Farquhar

Dr. Farquhar indicated that New Horizons is scheduled to launch January 6, 2006, swing past Jupiter for a gravity boost and scientific studies in February 2007, and reach Pluto and its moon, Charon, in July 2015. Then the spacecraft would head deeper into the Kuiper Belt area. The Science Payload for New Horizon will include the following: PERSI: Visible mapping, IR spectroscopic mapping, and UV imaging spectroscopy; REX: Radio science and radiometry; PAM: Solar wind ion and energetic particle spectrometry; LORRI: Long-range and high-revisable mapping; Three-axis and spin-stabilized attitude control modes; X-band communications (768 bps at Pluto); RTG power (220 watts at Pluto); and Data storage (128 GB). The Baseline Launch Window is 35 days, January 11 through February 14, 2006 with the Pluto / Charon Encounter planned for July 14, 2015. There is a penalty to launching late in the launch period with a delayed arrival at Pluto...the secondary launch wouldn’t be until February 2007 with a Pluto / Charon arrival in August, 2019.

STEREO – D. Ossing

An overview was presented of STEREO Ahead and Behind spacecraft’s 2-year mission to measure the causes and mechanisms of CME initiation and characterization of their propagation through the heliosphere. Organizations affiliated with the Project are: NASA GSFC, JHU/APL, Naval Research Laboratory, University of California at Berkeley, University of New Hampshire, University of Minnesota, and Observatoire de Paris. Mission Description: Two functionally identical spacecraft in heliocentric orbits at 1 AU. The STEREO launch is scheduled for February 11, 2006, on a Delta 7925-10L. Both spacecraft are launched simultaneously on this launch vehicle.

STEREO Development Status is as follows: Currently in various stages of flight fabrication; software development

and assembly of ground support equipment; Some flight hardware has been delivered; All subsystems except propulsion are on schedule to support current I & T approach; Instrument delivery schedules are in advance of need dates; and a schedule of major reviews are planned (Observatory Mission Operations Review – 11/10/04, Observatory Flight Operations Review – 09/14/05, and Observatory Flight Readiness Review – 02/06/06).

Resource Contention Summary – N. Lacey

Presentations were made regarding the Loading Study Initial Conditions, and the Changes in Project Requirements. The approach used in identifying and evaluating contentions for this Review has changed. For the years addressed at this Review, each month is evaluated for contentions. There is a description of critical events, an analysis of potential problems, and proposed recommendations listed for each month. Background/source information is also shown (view the “*Red Book*” by clicking the link).

Following are the results from the RARB negotiations described in detail, which will be used as the new baseline for DSN resource allocation.

February 10, 2004 - RARB Contention Resolution Minutes

2005 Contention Period – January – Weeks 01 – 04

DSS previously agreed to reduce DSS-15 maintenance from 8 hours to 6 hours in weeks 01 and 02.

GBRA previously agreed to reduce M-Wave Spectroscopy and Planetary Radio Astronomy from 9 hours to 6 hours, delete support for New Proposals in all weeks, and move DSS-43 Host Country from week 03 to one 8-hour support in week 07 and two 8-hour supports in week 08.

GSSR previously agreed to reduce GODR supports from 8 hours to 4 hours in weeks 01 and 03, move week 03 support to week 04, and reduce Mercury Radar support from 5.2 hours to 4 hours in week 01.

M01O previously agreed to move 3 of 6 standalone passes from the 70M to DSS-43 and MSPA with MGS in weeks 01 and 02. Move the remaining standalone 70M passes in weeks 01 and 02 to DSS-14, 63 and MSPA with MEX. Move the 2 standalone passes in weeks 03 and 04 to DSS-43 and MSPA with MGS and delete the 4-hour standalone passes at DSS-43. Maximize MSPA capability, MSPA 2 - 3 passes per week with MGS at DSS-25, 34, 55 and 2 passes per week with MEX at DSS-14,65 to meet tracking requirements.

MEX previously agreed to reduce 3 of 7 DSS-14, 65 passes from 10.8 hours to 10 hours and move to DSS-14, 63 to MSPA with M01O in weeks 01 and 02. Reduce remaining 4 passes in weeks 01 and 02 at DSS-14,65 from 10.8 hours to 6 hours and move 2 passes per week to DSS-14 only. Reduce 3 of 7 DSS-14,65 passes from 10.8 hours to 6 hours in weeks 03 and 04 and move 2 of the 3 passes in week 03 to DSS-14 only. Maximize MSPA capability; MSPA 2 passes per week with M01O at DSS-14,65 to meet M01O tracking requirements.

MGS previously agreed to move the three 70M standalone passes to DSS-43, decrease pass duration from 14 hours to 10 hours, and MSPA with M01O in weeks 01 and 02. Move 3 passes in week 03 and 2 passes in week 04 from DSS-24,34,65 to DSS-43 and MSPA with M01O. Move 1 of 3 passes in week 04 from DSS-25,34,65 to DSS-43; reduce pass duration from 14 hours to 10 hours, and MSPA with M01O. Move remaining standalone passes, 2 in weeks 01 and 02, 3 in week 03, and 2 in week 04 from DSS-25,34,65 to DSS-25,34,55 and MSPA with M1O to meet tracking requirements. Add an additional three 4-hour passes in weeks 01 and 02 and one 4-hour pass in week 04 to maintain MGS contiguous 14-hour support requirement.

2005 Contention Period – February - Weeks 05 - 08

DSS-34 downtime approval for X/X-Ka Band installation was uncontested by the projects/users.

Chandra previously agreed to move 14 of 21 in weeks 07 and 08 from the 34BWG1 subnet to DSS-24,54, move the remaining 7 passes on the 34BWG1 to the 26M subnet and increase pass duration from 1 hour to 2 hours.

Cluster previously agreed to delete request for DSS-34 in weeks 07 and 08 for SSO supports and use DSS-46/45/43.

Deep Impact Flyby previously agreed to move weeks 07 and 08 cruise supports from DSS-15,34,54 to DSS-15,45,54 and move TCM support in week 08 from DSS-26,34,54 to DSS-26,45,54.

GBRA previously agreed to reduce M-Wave Spectroscopy, New Proposals, and Planetary Radio Astronomy from 9 hours to 4.5 hours. Change RA500 SOC-M4 event from 24 hours to three 8-hour supports and move supports from week 06 to week 08 and delete VLBA SOC-M4 in week 05.

GSSR previously agreed to reduce GODR support from 8 hours to 4 hours and move week 05 support to week 07.

IMAG previously agreed to move routine and science load supports in weeks 07 and 08 from the 34BWG1 to DSS-24,45/46,54.

M01O previously agreed to move 2 - 3 MSPA passes with MGS from the 70M to DSS-43 in weeks 05 and 06. Move two of five 70M standalone passes in weeks 05 and 07, and 1 of 4 passes in week 06 to DSS-43. Move 3 remaining standalone passes from the 70M to DSS-14,63 and MSPA with MEX in weeks 05 and 06. MSPA 5 of 7 standalone 70M passes with MGS and move the remaining 2 of 7 passes to DSS-43 in week 08.

MEX previously agreed to MSPA 3 of 7 DSS-14,63 orbital science and occultation passes with M01O and reduce the remaining 2 passes per week from 10.5 hours to 6 hours in weeks 05 and 06.

MGS previously agreed to move 2 - 3 MSPA passes with M01O from the 70M to DSS-43 in weeks 05 and 06. Move 3 of 7 mapping and beta supplement passes from DSS-15,45,63 to DSS-43, reduce pass duration from 14 hours to 10 hours, and MSPA with M01O, to maintain MGS contiguous 14-hour support, add three 4-hour passes on the 34BWG2 in week 08. Move remaining 4 standalone 14-hour passes from DSS-15,45,63 to DSS-15,45,55. Move mapping and beta supplement passes in week 08 from the 34BWG1 to DSS-24,45,54.

MSGR previously agreed to move routine support in weeks 07 and 08 from DSS-24,34,55 to DSS-24, 45,55.

ULYS previously agreed to move supports in weeks 07 and 08 from the 34BWG1 to DSS-24,54,45 and reduce support from 10 hours to 8 hours.

VGR2 previously agreed to move supports in weeks 07 and 08 from DSS-43,34 to DSS-43,45 and reduce pass duration from 8 hours to 6 hours.

WIND previously agreed to move all passes in weeks 07 and 08 from the 34BWG1 subnet to DSS-24,54.

2005 Contention Period – March – Weeks 09 – 13

DSS-34 downtime approval for X/X-Ka Band installation was uncontested by the projects/users.

Chandra previously agreed move 14 of 21 from the 34BWG1 subnet to DSS-24,54, move the remaining 7 passes on the 34BWG1 to the 26M subnet and increase pass duration from 1 hour to 2 hours.

CLU2 previously agreed delete request for DSS-34 for SSO supports and use DSS-46/45/43.

Deep Impact Flyby previously agreed move cruise supports from DSS-15,34,54 to DSS-15,45,54 and move TCM support in weeks 09 - 12 from DSS-26,34,54 to DSS-26,45,54.

DSN previously agreed to delete DSS-34 Antenna Calibration support in week 10 and reschedule support in week 15.

GBRA previously agreed to reduce M-Wave Spectroscopy support from 9 hours to 6 hours and use DSS-43 only in weeks 10 – 12. Reduce Planetary Radio Astronomy support from 9 hours to 6 hours in weeks 09, 11 – 13, and delete support in week 10. Delete Host Country at DSS-63 in week 10 and move VLBA support from week 10 to week 09.

GSSR previously agreed to reduce all GODR support from 8 hours to 4 hours and move 2 Asteroid 1999RR28 supports from week 13 to week 12.

Hayabusa (MUSES-C) previously agreed move rendezvous passes in week 13 from DSS-25,34,55 to DSS-25,45,54.

IMAGE previously agreed to move routine and science load supports from the 34BWG1 to DSS-24,45/46,54.

M01O previously agreed to move 2 standalone mapping passes from the 70M to DSS-43, reduce pass duration from 10 hours to 8 hours in week 09 and 10 and MSPA 2 additional passes with MGS in weeks 09 and 10 at DSS-24,45,54. MSPA 5 of 7 mapping passes at the 70M with MEX orbital science in week 11. Move 5 of 7 passes from the 70M to DSS-14,63 and MSPA with MEX in weeks 12 and 13. Move remaining two 70M mapping passes to DSS-43, reduce pass duration from 10 hours to 8 hours in weeks 11 – 13 and MSPA 2 additional passes per week with MGS on the 34BWG2 subnet .

MEX previously agreed to reduce 2 standalone passes at DSS-14,63 from 6 hours to 5 hours and use DSS-63 only in weeks 09 - 11. Move 5 passes at DSS-24,54 to the 70M, increase pass duration from 6 hours to 10 hours and MSPA with M01O in week 11. MSPA 5 of 7 orbital science/occultation passes at DSS-14,63 with M01O in weeks 12 and 13 and reduce remaining 2 passes from 10 hours to 6 hours in weeks 11 - 13.

MGS previously agreed to move mapping and beta supplement passes, 2 in week 09 and 3 in week 10, from the 34BWG1 to DSS-24,45,54 and MSPA 2 passes per week with M01O. Move the 2 – 3 mapping and beta supplement passes in weeks 11 – 13 from DSS-25,34,55 to the 34BWG2 and MSPA with M01O.

MSGR previously agreed to move support in weeks 09 -13 from DSS-24,34,55 to DSS-24,45,55.

RFC previously agreed to move one 24-hour CAT M&E support from DSS-14\63 to DSS-25\55 in week 12 and use for X/Ka-band catalog development. Move Clock Sync support in week 09 from DSS-14\63 to DSS-15\63 and in weeks 11 and 13 from DSS-14\63 to DSS-15\65.

SOHO previously agreed to reduce 70M/26M keyhole supports from 10 passes to 7 passes in week 10 and from 14 passes to 10 passes in week 11. Move keyhole supports in weeks 09, 10, 12, and 13 from the 34BWG1 to DSS-24,54,45/46.

ULYS move support from DSS-63,15 to DSS-14,43 and reduce pass duration from 10 hours to 8 hours in weeks 09 and 10. Move routine support in weeks 11 – 13 from the 34BWG1 to DSS-24,54,45, move the 4 passes in week 12 from DSS-34,54 to DSS-24,54,45 and reduce support from 10 hours to 6 hours.

VGR1 previously agreed to delete two 8-hour DSS-63 passes in each week.

WIND previously agreed to move all passes from the 34BWG1 to DSS-24,54.

2005 Contention Period - April - Weeks 14 - 17

DSS-34 downtime approval for X/X-Ka Band installation ending in week 14 was uncontested by projects/users.

Chandra previously agreed to move 14 of 21 from the 34BWG1 subnet to DSS-24,54, move the remaining 7 passes on the 34BWG1 to the 26M subnet and increase pass duration from 1 hour to 2 hours in week 14.

CLU2 previously agreed to delete request for DSS-34 for SSO supports and use DSS-46/45/43 in week 14 and delete request for DSS-15 support in week 17 and use DSS-16/27/24 only.

DIF previously agreed to move cruise supports from DSS-15,34,54 to DSS-15,45,54 in week 14 and delete request for DSS-15 in week 17 for TCM support and use DSS-26,34,54.

DSN previously agreed to delete Antenna Calibration week 17 support and reschedule support in week 19.

Hayabusa (MUSES-C) previously agreed to move rendezvous passes in week 14 from DSS-25,34,55 to DSS-25,45,54.

IMAG previously agreed to move routine and science load supports from the 34BWG1 to DSS-24,45/46,54 in week 14.

GBRA move M-Wave Spectroscopy from the 70M to DSS-43 only and delete New Proposals in weeks 09 and 10. Reduce Planetary Radio Astronomy from 9 hours to 6 hours.

M01O previously agreed to move 3 of 7 mapping passes per week from the 70M and MSPA with MEX at DSS-14,63. Move remaining 4 mapping passes from the 70M to DSS-43 and MSPA 4 passes in week 17 with MGS.

MEX previously agreed to MSPA 3 of 7 orbital science and occultation passes per week at DSS-14,63 with M01O, reduce 3 of the 4 remaining DSS-14,63 passes in weeks 14, 15 and 17 from 10.8 hours to 5 hours and use DSS-63 only. Reduce 3 of the 4 remaining DSS-14,63 passes in week 16 from 10.8 hours to 6 hours and use DSS-14 only. Delete the remaining 1 pass per week at DSS-14,63.

MGS previously agreed to move 4 of 7 mapping and beta supplement passes in week 17 from DSS-15,45,54 to DSS-43, reduce pass duration from 14 hours to 10 hours, and MSPA with M01O. Add an additional four 4-hour supports in week 17 to maintain MGS contiguous 14-hour support on the 34BWG2.

MSGR previously agreed to move support in week 14 from DSS-24,34,55 to DSS-24,45,55.

SDU previously agreed to move passes in week 17 from DSS-15,45 to DSS-24,45.

ULYS previously agreed to move routine support in week 14 from the 34BWG1 to DSS-24,54,45 and reduce support from 10 hours to 6 hours.

VGR1 previously agreed to delete two 8-hour DSS-63 passes in each week and move week 17 DTR playback support from DSS-14/15 to DSS-14/24,25.

WIND previously agreed to move all passes from the 34BWG1 to DSS-24,54 in week 14.

2005 Contention Period – May – Weeks 18 -21

DSS-15 downtime approval for microwave subsystem controller was uncontested by projects/users.

CAS previously agreed to delete request for DSS-15 in week 18 for Tour support and use DSS-24,25,26,54,55.

CLU2 previously agreed to delete request for DSS-15 in week 18 for SSO support and use DSS-16/27/24 only.

DIF previously agreed to delete request for DSS-15 in week 18 for TCM support and use DSS-26,45,54.

DSN previously agreed to reduce 8-hour antenna calibrations at 70M to 4 hours in weeks 18 – 20.

GBRA previously agreed to reduce two 9-hour M-Wave Spectroscopy observations per week to 6 hours. Reduce one 9-hour New Proposal support per week to 6 hours. Reduce one 9-hour Planetary Radio Astronomy support per week to 6 hours. Move 24-hour RA500 array support at DSS-14\63 from week 21 to week 22 and split into three 8-hour supports. Delete 8-hour VLBA array support at DSS-14\63 in week 19.

GPB previously agreed to move BR088N 70M observations from week 20 to week 19.

M01O previously agreed to reduce four of seven 10-hour mapping passes at DSS-14,63 to 7 hours and move all support to DSS-43. Maximize MSPA capability, MSPA with MGS all remaining MGS passes in week 18 at DSS-24,45,54 and at DSS-15,45,55 and 4 to 5 passes per week in weeks 19 -21 at DSS-15,45,55.

MEX previously agreed to reduce one to three 10.8-hour Orbital Science/Occultation passes per week at the 70M to 6 hours.

MGS previously agreed to move 4 of 7 mapping and beta supplement passes in week 18 from DSS-15,45,55 to DSS-43, reduce pass duration from 14 hours to 10 hours and MSPA with M01O. To maintain MGS 14 hour contiguous support, add four 4-hour passes in week 18 on the 34BWG2 and maximize MSPA capability, MSPA with M01O all remaining MGS passes in week 18 at DSS-24,45,54 and at DSS-15,45,55 and 4 to 5 passes per week in weeks 19 -21 at DSS-15,45,55.

SDU previously agreed to move week 18 passes from DSS-15,45 to DSS-24,45.

STF previously agreed to move week 18 passes from DSS-15,45,55 to DSS-25,45,54.

ULYS previously agreed to move passes in week 18 from DSS-63,15 to DSS-63,24,54.

VGR2 previously agreed to reduce seven 8-hour passes at DSS-43 to 6 hours and use DSS-43,45.

2005 Contention Period – June – Weeks 22 - 26

DSS-25 downtime approval for microwave subsystem controller was uncontested by projects/users.

DSS-65 downtime extension approval for antenna controller replacement, life extension and relocation was uncontested by projects/users.

CAS previously agreed to delete request for DSS-25 in weeks 22 and 23 and use DSS-24,26,54,55,65 and change antenna selection for DSS-14/25 array to DSS-14/26. Move one to two 9-hour tour array passes from DSS-14/25,63/65 to DSS-14/25,63/55 in weeks 23 and 25. Move three to nine 9-hour tour passes per week from DSS-15,24,25,26,54,55,65 and DSS-15,25,26,54,65 to DSS-15,24,25,26,54,55 in weeks 22 - 25 and to DSS-15,25,26,54,55 in week 26.

DSN previously agreed to move DSS-65 antenna calibration from week 23 to week 27.

Hayabusa (MUSES-C) previously agreed to change antenna selection for week 22 rendezvous and for week 23 TRIM-5 support from DSS-25,45,54 to DSS-26,45,54.

MSGR previously agreed to change allocated resources from DSS-26,34,55 to DSS-26,55 in week 26.

RFC previously agreed to move CAT M&E support from weeks 23 and 24 to weeks 26 and 27; perform the DSS-15\45 support in week 26 and the DSS-15\65 support in week 27. Change DSS-15\65 Clock Sync support to use DSS-14\63 and move from weeks 23 and 25 to weeks 22 and 24.

ULYS previously agreed to reduce 4 DSS-15,63 passes from 10 hours to 8 hours and move to DSS-14,63 in week 26.

2005 Contention Period – July – Weeks 27 - 30

DSS-54 downtime approval for microwave subsystem controller in week 28 was uncontested by Projects/Users.

DSS-55 downtime approval for microwave subsystem controller in week 27 was uncontested by Projects/Users.

CAS previously agreed to move nine 9-hour tour passes from DSS-15,24,25,26,54,55,65 to DSS-15,24,25,26,54,65 in week 27 and three 9-hour tour passes from DSS-15,24,25,26,54,55,65 to DSS-15,24,25,26,55,65 in week 28.

CHDR previously agreed to change fourteen 1-hour passes allocated at 34BWG1 to DSS-24,34 and move seven passes to 26M and increase to 2 hours in week 28.

DSN previously agreed to reduce 70M antenna calibrations from 8 hours to 4.5 hours in week 27 – 30.

GBRA previously agreed to change one 24-hour Host Country support to three 8-hour supports in week 28. Reduce M-Wave Spectroscopy support from 9 hours to 4 hours in all weeks. Reduce New Proposals support from 9 hours to 4 hours in all weeks. Planetary Radio Astronomy from 9 hours to 4 hours in all weeks.

IMAG previously agreed to move one 1.5-hour science load pass and thirteen 0.8-hour passes from the 34BWG1 to DSS-24,34 in week 28.

M01O previously agreed to previously agreed to reduce seven 10-hour passes from DSS-14,63 to 8 hours and move to DSS-63 only in weeks 29 and 30. Maximize MSPA capability, MSPA an additional 7 passes in weeks 29 and 30 with MGS on the 34HEF subnet.

MEX previously agreed to move seven 6-hour passes from DSS-24,54 to DSS-26,55 in week 28. Reduce all 7 orbital science and occultation passes from 10.8 hours to 8 hours in weeks 29 and 30.

MGS previously agreed to move two 10-hour 34BWG1 mapping and beta supplement passes to DSS-24,34,65 in week 28. Maximize MSPA capability, MSPA an additional 7 passes in weeks 29 and 30 with M01O on the 34HEF subnet.

MSGR previously agreed to move allocated support from DSS-24,34,55 to DSS-24,34,54 in week 27.

STF previously agreed to move allocated support from DSS-15,45,55 to 34HEF in week 27.

ULYS previously agreed to move 4 passes from 34BWG1 to DSS-24,34 in week 28.

WIND previously agreed to move allocated support from 34BWG1 to DSS-24,34 in week 28.

VGR1 previously agreed to move seven 8-hour passes from DSS-55 to DSS-54 in week 27.

VGR2 previously agreed to reduce 6 passes from 16-hours to 8-hours in week 27 and 28.

2005 Contention Period – August – Week 31 - 34

CAS previously agreed to move DSS-24,25,26,54,55,65 passes to DSS-24,25,54,55 in weeks 33 and 34.

DIF previously agreed to move the pass in week 31 from DSS-15,34,54 to DSS-26,34,54.

DSN previously agreed to reduce DSS-14 and DSS-63 Antenna Calibration support from 8 hours to 5 hours.

DSS previously agreed to reduce 1 of 2 DSS-14 routine maintenance supports per week from 8 hours to 6 hours in weeks 31 – 33. Reduce DSS-63 routine maintenance from 9.5 hours to 8 hours in weeks 32 and 33.

GBRA previously agreed to delete M-Wave Spectroscopy at DSS-63 in week 31 and delete support at DSS-14,63 in week 33. Delete New proposals at DSS-14,63 and Planetary Radio Astronomy at DSS-14 in weeks 31 and 33. Reduce remaining M-Wave Spectroscopy and New Proposals at DSS-14,63 and Planetary Radio Astronomy at DSS-14 from 9 hours to 5 hours in weeks 32 and 34.

GSSR previously agreed to reduce 4 Asteroid 1992UY4 supports from 6 hours to 4 hours and move Mercury support with Arecibo from week 31 to week 33.

M01O previously agreed to move the 4 standalone passes from DSS-63 to DSS-14,63 and MSPA with MEX, reduce the three standalone passes at DSS-14,63 from 10 hours to 8 hours, and move to DSS-63 only in week 31. Reduce the 7 DSS-14,63 standalone passes from 10 hours to 8 hours and MSPA 4 of the 7 passes per week with MEX in weeks 32 - 34. M01O maximize MSPA capability, MSPA 7 additional passes with MGS on the 34BWG1 and 34BWG2 subnets.

MEX previously agreed to reduce all 7 orbital science and occultation passes from 10.8 hours to 8 hours, move passes from DSS-14,65 to DSS-14,63, and MSPA 4 of the 7 passes per week with M01O.

MGS previously agreed to move the seven 14-hour passes from the 34H to DSS-25,34,54. MGS maximize MSPA capability, MSPA 7 passes with M01O on the 34BWG1,34BWG2 subnets.

MSGR previously agreed to move Venus flyby passes from the 34HEF to DSS-26,55,34 in weeks 33 and 34.

SDU previously agreed to move passes from the 34H to the 34BWG1 in weeks 31, 33, and 34.

2005 Contention Period – September – Weeks 35 - 39

CAS previously agreed to change the resources allocated on 5 - 6 passes at DSS-15,24,25,26,54,55,65 to DSS-24,25,26,54,55 in weeks 35 and 36 and change the 1 pass allocated at DSS-14,63 to DSS-63 only in week 38.

Action Item #03 opened during the RARB was closed on 02/17/04

<i>AI#</i>	<i>Year</i>	<i>Month(s)</i>	<i>System Responsible</i>	<i>Due Date</i>	<i>Status</i>
03	2005	September	Cassini D. Seal	2/17/2004	Closed

ACTION: Identify the 70M antenna that Cassini needs in week 38. The recommendation is to use DSS-63 while DSS-43 is in approved downtime.

RESPONSE: (02/10/2004) Cassini clarified that they have no issue with the recommendation as they are specifically requesting DSS-63 (twice) for 70M coverage in week 38.

DSN previously agreed to reduce DSS-14 and DSS-63 antenna calibrations in weeks 36 and 38 and the DSS-65 calibration in week 36 from 8 hours to 4.5 hours.

DSS previously agreed to move the DSS-14 bearing maintenance from week 38 to week 39 and move the Monday DSS-14 routine maintenance to Friday and move DSS-27 maintenance to Monday in week 39.

GBRA previously agreed to reduce Microwave Spectroscopy, New Proposals, and Planet Radio Astronomy support from 9 hours to 4 hours per support in all weeks. Reduce the week 36 VLBA SOC M-4 support from 9 hours to 4 hours and move to week 35.

GSSR previously agreed to reduce the Asteroid 1999RQ36 supports requested in weeks 37 - 38 from 8 hours to 4 hours per support and delete the GODR support in week 38. Change Asteroid 1998R01 request to DOY 267 – DOY 269 with 2 passes requested in week 38 and 1 pass requested in week 39.

M01O previously agreed to reduce the pass duration on all DSS-14,63 standalone and on 3 MSPA tracks with MGS from 10 hours to 8 hours in all weeks and use DSS-63 only. Change 3 standalone passes in weeks 37 - 39 to MSPA with MGS. Maximize MSPA capability, MSPA an additional 6 - 7 passes per week with MGS on the 34BWG2 in weeks 35 and 36 and on the 34BWG1 in weeks 37 - 39.

MEX previously agreed to reduce the pass duration on all DSS-14,65 tracks from 10.8 hours to 8 hours in all weeks.

MGS previously agreed to reduce 3 DSS-14,63 MSPA passes with M01O from 10 hours to 8 hours and use DSS-63 only in week 36. In weeks 37 - 39 reduce three 34HEF passes from 14 hours to 8 hours and MSPA the 3 passes with M01O at DSS-63. Maximize MSPA capability, MSPA the remaining 6 – 7 passes per week with M01O on the 34BWG2 in weeks 35 and 36 and on the 34BWG1 in weeks 37 - 39. Add three 4-hour passes in weeks 37 - 39 on the 34BWG2 to maintain MGS 14-hour contiguous support requirement.

MRO previously agreed to change the launch support allocated at 34H to DSS-15,45,55 in weeks 35 and 36.

RFC previously agreed to move the 24-hour CAT M&E pair from weeks 35 and 36 to weeks 37 and 38.

SOHO, following a modification of the recommendation, previously agreed to reduce the 70M keyhole request from 12 - 14 passes per week to 7 passes per week in weeks 36 and 37 and from 5 passes to 2 passes in week 38. Reduce the 34BWG1 request from 8 passes to 5 passes in week 38.

Additional support for the SOHO keyhole period will be added on a best effort basis at the 70M/26M, 34BWG1 and/or 34HEF/26M subnets during the Mid-Range Scheduling Process.

ULYS previously agreed to reduce 5 passes at 34BWG1 from 10 hours to 6 hours in week 38.

2005 Contention Period – October – Weeks 40 - 43

DSN previously agreed to reduce antenna calibrations at DSS-14 and DSS-63 from 8 hours to 4.5 hours in weeks 40 and 43.

GBRA previously agreed to reduce DSS-63 Host Country, Microwave Spectroscopy, New Proposals, and Planet Radio Astronomy support from 8 - 9 hours to 5 hours per support in all weeks. Reduce the VLBA SOC-M4 support from 8 hours to 4 hours in week 40 and the DSS-45 Host Country from 12 hours to 8 hours in week 43.

GSSR previously agreed to reduce 2 DSS-14/25 Mars supports per week from 8 hours to 4 hours.

M01O previously agreed to reduce 7 passes per week from 10 hours to 8 hours and change the allocated resources on the 7 passes from DSS-14,63 to DSS-63 only. Change 2 standalone passes to MSPA at DSS-63 with MGS in week 42. Maximize MSPA capability, MSPA 5 - 7 passes per week with MGS on the 34HEF and 2 passes on the 34BWG1 in week 42.

MEX previously agreed to reduce 7 DSS-14/65 passes per week from 10.8 hours to 8 hours.

MGS previously agreed to reduce seven 34HEF passes per week from 14 hours to 12 hours in weeks 40, 41, and 43. In week 42, reduce five 34HEF passes to 12 hours and 2 passes to 8 hours; change the two 8-hour passes to MSPA with M01O at DSS-63. Maximize MSPA capability, MSPA 5 - 7 passes per week with M01O on the 34HEF and 2 passes on the 34BWG1 in week 42.

2005 Contention Period – November – Weeks 44 - 47

DSN previously agreed to reduce the DSS-14 and DSS-63 antenna calibrations from 8 hours to 4.5 hours in weeks 45 and 47.

EVN previously agreed to move the calibration pass from week 46 to week 45.

GBRA previously agreed to reduce the Host Country, M-wave Spectroscopy, New Proposals, and Planet Radio Astronomy supports from 8 - 9 hours to 4 hours per support in all weeks.

GSSR previously agreed to reduce 5 Asteroid 1862 Apollo supports from 8 hours to 4 hours in week 44 and move three supports to week 45, reduce the DSS-14/25 Mars supports from 7 hours to 4 hours in weeks 44 - 46, and reduce the GODR support in weeks 44 and 46 from 8 hours to 4 hours.

M01O previously agreed to change the allocated resources on 7 standalone passes in weeks 44, 45 and 47 and on 7 MSPA passes with MGS in week 46 from DSS-14 to DSS-63.

MEX previously agreed to reduce 7 DSS-14,65 passes per week from 10.8 hours to 8 hours.

MGS previously agreed to change the allocated resources on 7 MSPA passes with M01O from DSS-14 to DSS-63 in week 46.

MRO previously agreed to change the allocated resources on six 34HEF passes and use DSS-15,45 only in weeks 46

and 47.

RFC previously agreed to move the week 47 CAT M&E to week 50.

ULYS previously agreed to reduce seven 34BWG1 passes from 10 hours to 6 hours in week 45.

VGR2 previously agreed to reduce 7 DSS-34,45 passes per week from 8 hours to 5 hours in weeks 46 and 47.

2005 Contention Period – December – Weeks 48 - 52

DSN previously agreed to reduce antenna calibration at DSS-14 in week 49 and DSS-63 in week 51 from 8 hours to 4.5 hours.

GBRA previously agreed to reduce VLBA SOC-M4 support from 8 hours to 6 hours in week 49 and reduce New Proposals and Planet Radio Astronomy supports from 9 hours to 4.5 hours in weeks 49 and 50. Reduce DSS-63 Host Country support from 8 hours to 4.5 hours in week 50 and DSS-45 supports from 12 hours to 6 hours in weeks 49 and 52. Reduce M-wave Spectroscopy support from 9 hours to 4.5 hours in weeks 50 and 51.

GSSR previously agreed to reduce the GODR support from 8 hours to 4 hours in week 50.

M01O previously agreed to change 4 - 7 passes per week from 10 hours to 7 hours, change the resources from DSS-14,63 to DSS-63 only, and MSPA 7 passes per week with MGS. Maximize MSPA capability, MSPA 6 passes in week 48 and 7 passes per week in weeks 49 – 52 with MGS on the 34HEF.

MEX previously agreed to reduce 7 passes per week at DSS-14\65 from 10.8 hours to 8 hours.

MGS previously agreed to change four 14-hour and three 10-hour 34HEF passes to 7 hours, MSPA the 7 passes with M01O at DSS-63, and reduce the remaining 10-hour pass at the 34HEF to 8 hours in week 48. In weeks 49 – 53, reduce 2 - 3 passes per week to 8 hours, reduce the remaining 7 passes per week to 7 hours and MSPA with M01O at DSS-63. Maximize MSPA capability, MSPA 6 passes in week 48 and 7 passes per week in weeks 49 – 52 with M01O on the 34HEF. Add an additional four 4-hour passes in week 48 and two 4-hour passes in weeks 49 – 52 on the 34BWG1, 34BWG2 subnets to maintain MGS contiguous 14-hour and 10-hour support requirement.

2006 Contention Period – January – Weeks 01 - 04

DSS previously agreed to reduce maintenance in week 04 at DSS-24 from 8 hours to 6 hours.

CHDR previously agreed to move 10 passes in weeks 03 and 04 from the 34BWG1 to the 26M subnet and increase pass duration to 2 hours.

M01O previously agreed to change three 70m standalone passes per week in weeks 01, 02, and 04 to MSPA 1 of 3 passes with MGS on the 70M and MSPA 2 of 3 passes with MEX at DSS-14,63.

MEX previously agreed to MSPA 1 of 7 passes with M01O and 2 of 7 passes with MGS in weeks 01, 02, and 04 at DSS-14, 63.

MGS previously agreed to change three 70M standalone passes per week in weeks 01, 02, and 04 to MSPA 1 of 3 passes on the 70M with M01O and 2 of 3 passes with MEX at DSS-14, 63. Move remaining 70M passes, 1 in week 01 and 3 in week 04, to the 34BWG2.

MSGR previously agreed to move passes from DSS-26,55 to DSS-26,65 in weeks 02 – 04.

NHPC previously agreed to move 7 of 21 early ops passes from the 34BWG1 subnet to the 34HEF.

ULYS previously agreed to reduce pass duration from 10 hours to 8 hours using DSS-43,34,45.

VGR 2 previously agreed to reduce 4 DSS-43 passes in week 01 from 8 hours to 6 hours and 3 DSS-43 passes in

weeks 02 and 03 from 8 hours to 4 hours.

WIND previously agreed to move 5 of 7 passes from the 34BWG1 subnet to DSS-24,54.

2006 Contention Period – February – Weeks 05 - 08

EVN previously agreed to move one of two supports from week 08 to week 07 and change each support from 16 hours to two 8-hour supports.

GBRA previously agreed to change RA500 SOC-M4 24-hour support in week 07 to three 8-hour supports and move 2 supports to week 06.

M01O previously agreed to change all 70M standalone passes to MSPA with MGS.

MGS previously agreed to change 3 standalone passes per week at 70M,34BWG2 to MSPA 3 passes with M01O on the 70M. Move the remaining 70M,34BWG2 passes, 1 in week 05, 3 in week 07, and 2 in week 08 to the 34BWG2 only. Move the 4-hour passes in weeks 05 and 06 from the 34BWG1 to the 34BWG2.

MSGR previously agreed to move support from DSS-26,54 to DSS-26,55.

NHPC previously agreed to move 3 early operations passes in weeks 05 - 07 from the 34BWG1 to the 34HEF.

ULYS previously agreed to move all supports from the 34BWG1 to DSS-43 and reduce pass duration from 10 hours to 6 hours.)

2006 Contention Period – March Weeks 09 - 13

DSN previously agreed to reduce 70M antenna calibrations from 8 hours to 4.5 hours.

GBRA previously agreed to move week 09 DSS-14\63 VLBA support to week 12. Reduce M-Wave Spectroscopy, New Proposals, and Planetary Radio Astronomy from 9 hours to 4.5 hours.

M01O previously agreed to change 3 standalone passes per week at 70M in weeks 09 - 12 to MSPA with MEX at DSS-14,63 and change 3 standalone 70M passes to MSPA with MGS in week 13.

MEX previously agreed to reduce 3 of 7 orbital science passes at DSS-14,63 from 10.8 hours to 10 hours and MSPA with M01O and reduce the remaining 4 passes from 10.8 hours to 8 hours in weeks 09 - 12.

MGS previously agreed to move 5 passes from the 70M,34B1 to DSS-45,34B2 in week 12 and change 3 standalone passes at 70M,34B1 in week 13 to MSPA with M01O on the 70M.

SOHO, following modification of the recommendation, previously agreed to reduce 70M keyhole supports from 12 – 13 passes to 8 passes in weeks 09 and 10. Additional support for the SOHO keyhole period will be added on a best effort basis at the 70M/26M, 34BWG1 and/or 34HEF/26M subnets during the Mid-Range Scheduling Process.

2006 Contention Period – April – Weeks 14 - 17

DSN previously agreed to reduce 70M antenna calibrations from 8 hours to 4.5 hours.

GBRA previously agreed to reduce M-Wave Spectroscopy, New Proposals, and Planetary Radio Astronomy from 6 hours to 4.5 hours. Reduce all DSS-63 Host Country supports from 8 hours to 6 hours, and reduce VLBA support from 10 hours to 8 hours and move from week 15 to week 14.

GSSR GODR previously agreed to reduce weeks 15 and 16 supports from 8 hours to 4 hours and move week 16 support to week 14.

MEX previously agreed to reduce 3 of 7 DSS-14,63 orbital science and occultation passes from 10.8 hours to 6 hours.

VGR2 previously agreed to reduce 3 of 6 – 7 passes at DSS-45,45,34 from 8 hours to 6 hours.

2006 Contention Period – May Weeks 18 - 21

GSSR previously agreed to move Mercury support from week 18 to week 19.

M01O previously agreed to change 3 standalone 70M passes in weeks 18, 20, and 21 to MSPA with MEX in week 18 at DSS-14,63, and MSPA in weeks 20 and 21 with MGS at the 70M.

MEX previously agreed to change 3 standalone orbital science DSS-14,63 passes to MSPA with M01O in week 18.

MGS previously agreed to change 3 standalone DSS-14,43,65 passes in week 20 and 3 passes in week 21 from the 34BWG1 to MSPA with M01O at the 70M.

ULYS previously agreed to reduce pass duration from 10 hours to 6 hours and move support from DSS-43 to DSS-43,34 in week 18.

VGR2 previously agreed to reduce 2 passes in week 18 from 8 hours to 6 hours and move from DSS-43,45,34 to DSS-45,34. In week 21, move 3 passes from DSS-43,45,34 to DSS-43,34 and reduce pass duration from 8 hours to 6 hours.

2006 Contention Period – June – Weeks 22 -26

DSN previously agreed to reduce 70M and 34BWG1 antenna calibrations from 8 hours to 4.5 hours.

CHDR previously agreed to move 7 of 21 passes per week from the 34BWG1 to the 26M subnet in weeks 22 – 25 and increase pass duration from 1 hour to 2 hours.

GBRA previously agreed to reduce M-Wave Spectroscopy, New Proposals, and Planetary Radio Astronomy from 6 hours to 4.5 hours.

MGS previously agreed to reduce pass duration for 2 to 3 standalone passes per week from 10 hours to 8 hours and use split passes of 4 hours each on the 34BWG1 and at DSS-45,34B2.

NHPC previously agreed to move 2 cruise passes in week 24 from the 34BWG1 to DSS-26,55.

VGR2 previously agreed to reduce 3 to 4 passes in weeks 22 – 25 from 8 hours to 6 hours.

2006 Contention Period – July Weeks 27 - 30

GBRA previously agreed to delete all New Proposal support and VLBA SOC-M4 support in week 23, change DSS-43 Host Country support in week 29 from three 8-hour to four 6-hour supports, and move 2 of the 4 supports to week 30.

M01O previously agreed to reduce one MSPA pass per week with MGS in weeks 28 – 30 from 12 hours to 8 hours and move support from DSS-14 to DSS-43. Maximize MSPA capability in weeks 28 – 30, MSPA 2 passes per week with MGS on the 34BWG1 subnet to meet tracking support requirements.

MGS previously agreed to MSPA 2 passes per week on the 34BWG1 subnet with M01O in weeks 28 – 30. RFC reduce CAT M&E supports from 24 hours to 18 hours.

ULYS previously agreed to reduce pass duration on all supports from 10 hours to 6 hours and move from DSS-43 to DSS-34.

2006 Contention Period – August – Weeks 31 - 35

ATOT previously agreed to delete Imagery support at DSS-43 in week 35.

CHDR previously agreed to move 7 of 21 passes per week from the 34BWG1 to the 26M subnet in weeks 22 – 25 and increase pass duration from 1 hour to 2 hours.

GBRA previously agreed to delete M-Wave Spectroscopy in week 31, New Proposal support in weeks 31 and 33, planet Radio Astronomy in week 33, and VLBA support in week 33.

GSSR previously agreed to Mercury Radar reduce support in weeks 33 and 35 from 5.2 hours to 3 hours and move week 35 support to week 34.

M01O previously agreed to Maximize MSPA capability MSPA 2 standalone passes per week with MGS at DSS-43, one pass per week with MGS at DSS-14,43, and add an additional 1 to 2 passes per week on the 34BWG2 subnet and MSPA with MGS to meet tracking support requirements.

MGS previously agreed to change 2 standalone 10-hour passes per week at DSS-43,26,55 to DSS-43, reduce to 8 hours and MSPA with M01O. Move 1 pass per week from the 34BWG1 to DSS-14,43 in week in weeks 31 – 33, one pass per week from DSS-43,26,55 to DSS-14,43 and MSPA with M01O. Move the remaining 1 to 2 standalone passes from the 34BWG1 and from DSS-43,26,55 to the 34BWG2 and MSPA with M01O.

SOHO reduce keyhole support at the 70M in week 35 from 14 passes to 9 passes. Additional support for the SOHO keyhole period will be added on a best effort basis at the 70M/26M, 34BWG1 and/or 34HEF/26M subnets during the Mid-Range Scheduling Process.

VGR1 previously agreed to delete two 6-hour passes at DSS-24,54,15,65 in weeks 32 - 35 and four 6-hour passes at DSS-15,65,54 in weeks 34 and 35. (2)

VGR2 previously agreed to reduce 3 of 7 passes per week in weeks 32 – 35 from 8 hours to 6 hours.

2006 Contention Period – September – Weeks 36 - 39

M01O previously agreed to MSPA two standalone passes per week with MGS at DSS-43.

MGS previously agreed to change 2 standalone 70M passes per week to MSPA with M01O at DSS-43 and move remaining 1 - 2 passes per week from the 70M to the 34HEF.

MSGR previously agreed to move TCM support from DSS-26, 34, 54 to the 34HEF.

ROSE previously agreed to move Mars swingby passes from DSS-15,26,54 to DSS-15,65.

SOHO, after modification of the recommendation, previously agreed to reduce 34BWG1 keyhole support from 10 to 5 passes in week 37. Additional support for the SOHO keyhole period will be added on a best effort basis at the 70M/26M, 34BWG1 and/or 34HEF/26M subnets during the Mid-Range Scheduling Process.

ULYS previously agreed to reduce three to four 10-hour split passes at DSS-34,54 and DSS-45,65 to three to four 6-hour passes at DSS-34,45.

VGR2 previously agreed to change 2 of 6 passes in weeks 36 and 37 and 2 of 7 passes in weeks 38 and 39 at DSS-34, 45 from 8 hours to 6 hours.

2006 Contention Period – October – Weeks 40 - 43

DSS-45 downtime approval for antenna controller replacement beginning in week 41 was uncontested by the

projects/users.

DSS previously agreed to reduce all DSS-15 maintenance from 8 hours to 6 hours, and reduce DSS-24 maintenance from 8-hours to 6-hours in week 43.

DAWN previously agreed to change allocated requirement from the 34HEF to DSS-15,65 in weeks 41 - 43.

GBRA previously agreed to delete Host country at DSS-63 in weeks 40 and 41 and M-wave Spectroscopy in weeks 40 - 42.

GSSR previously agreed to move 2 Asteroid CB21 supports from week 40 to week 39.

M01O previously agreed to reduce DSS-43 MSPA passes with MGS from 10 hours to 8 hours. Maximize MSPA capability, MSPA 6 - 7 passes per week with MGS on the 34HEF and at DSS-26,55 to meet tracking support requirements.

MGS previously agreed to reduce DSS-43 MSPA passes with M01O from 10 hours to 8 hours. Move the 3 - 4 standalone passes at DSS-25,34,65 to DSS-26,55 and MSPA with M01O at DSS-26,55 and on the 34HEF subnet.

MSGR previously agreed to change Delta DOR support from DSS-15\45 to DSS-15\34 and move Venus flyby-3 passes from the 34HEF to DSS-15,34,65 in weeks 41 and 42.

NHPC previously agreed to move two passes in week 43 from DSS-24,34 to DSS-15,65.

2006 Contention Period – November Weeks – 44 - 48

DSS previously agreed to reduce one DSS-14 routine maintenance support per week from 8 hours to 6 hours.

GBRA previously agreed to delete Host Country supports at DSS-63, delete all support for New Proposals, and move the DSS-14\63 VLBA array from week 44 to week 48.

GSSR previously agreed to reduce Mercury supports from 5.2 hours to 4 hours.

M01O previously agreed to maximize MSPA capability, MSPA 1 DSS-43 mapping pass with MGS in week 44.

MGS previously agreed to move 2 DSS-15,25,65 mapping and beta supplement passes in week 44 to DSS-43 and MSPA with M01O, move 2 - 3 passes per week from the 34BWG1 to DSS-15,26,55.

SOHO, following modification of the recommendation, previously agreed to reduce six 34BWG1 keyhole supports in week 47 from 6 to 4 and in week 48, reduce 70M keyhole supports from 14 to 8. Additional support for the SOHO keyhole period will be added on a best effort basis at the 70M/26M, 34BWG1 and/or 34HEF/26M subnets during the Mid-Range Scheduling Process.

ULYS previously agreed to reduce the pass duration for 7 passes per week from 10 hours to 6 hours. Delete one 10-hour pass in week 47.

2006 Contention Period – December Weeks 49 - 52

DSS previously agreed to reduce DSS-15, 24, and 26 maintenance in week 49 from 8 hours to 6 hours.

M01O previously agreed to MSPA 3 standalone passes at the 70M with MGS.

MGS previously agreed to change 3 passes per week allocated at 70M,26,55 to MSPA with M01O on the 70M and move the remaining passes to DSS-15,26,65 in weeks 49, 51 and 52.

ULYS previously agreed to reduce 7 DSS-45,34 passes per week from 10 hours to 6 hours and delete the 10-hour

ranging pass in week 51.

VGR2 previously agreed to reduce 7 DSS-43 passes from 8 hours to 6 hours in week 49.

2007 Contention Period – January Weeks 01 - 04

DSS previously agreed to move the DSS-14 bearing maintenance from week 03 to week 04 and reduce DSS-14 to 1 routine support in week 03.

GBRA previously agreed to reduce the DSS-45 Host Country in week 02 from 12 hours to 8 hours.

GSSR previously agreed to reduce the asteroid observations from 4 to 3 tracks and delete the GODR support in week 03.

M01O previously agreed to MSPA 2 - 3 passes per week with MGS on the 70M. In week 03 also reduce two 70M passes from 10 hours to 6 hours. M01O maximize MSPA capability, MSPA 7 passes with MGS at DSS-25,26,55 in week 03 to meet tracking support requirements..

MGS previously agreed to change 2 - 3 standalone passes per week at the 34HEF to MSPA with M01O on the 70M. MGS maximize MSPA capability, MSPA 7 passes with M01O at DSS-25,26,55 in week 03 to meet M01O tracking support requirements.

ROSE previously agreed to change allocated resources from DSS-15,34,54 to DSS-26,34,54.

SOHO previously agreed to reduce the TSO 5-day continuous support to 3 days in week 01.

ULYS previously agreed to reduce 7 DSS-34 passes from 10 hours to 6 hours.

2007 Contention Period – February Weeks 05 - 08

GBRA previously agreed to reduce the DSS-45 Host Country in week 07 from 12 hours to 8 hours.

M01O previously agreed to MSPA 2 - 3 passes per week with MGS on the 70M in weeks 05 - 07.

MGS previously agreed to change 2 - 3 passes per week allocated on the 34HEF to MSPA with M01O on the 70M.

MRO previously agreed to change allocated resources on two 34HEF passes to DSS-24,54 in weeks 05 - 07.

ROSE previously agreed to change allocated resources from DSS-15,34,54 to DSS-26,34,54.

SOHO previously agreed to reduce the TSO 5-day continuous support to 3 days in week 05.

ULYS previously agreed to reduce 7 DSS-34 passes from 10 hours to 6 hours.

2007 Contention Period – March Weeks 09 - 13

GBRA previously agreed to move the DSS-14 VLBA SOC-M4 support from week 10 to week 09 and delete the week 10 DSS-45 Host Country.

M01O previously agreed to MSPA 2 - 3 passes per week with MGS on the 70M. In weeks 10 and 11 also reduce 2 passes from 10 hours to 6 hours. M01O maximize MSPA capability, MSPA 7 passes with MGS at DSS-25,26,55 in weeks 10 and 11 to meet tracking support requirements.

MGS previously agreed to change 2 - 3 passes per week allocated on the 34HEF to MSPA with M01O on the 70M. MGS maximize MSPA capability, MSPA 7 passes with M01O at DSS-25,26,55 in weeks 10 and 11 to meet M01O tracking support requirements.

MRO previously agreed to change allocated resources from 70M to DSS-14,63 in week 11. (1)

RFC previously agreed to move the week 11 CAT M&E to week 13.

ROSE previously agreed to change allocated resources from DSS-15,34,54 to DSS-26,34,54 in weeks 09 - 12.

SOHO previously agreed to reduce the TSO 5-day continuous support to 3 days in weeks 09 and 13.

ULYS previously agreed to reduce 7 DSS-34 passes per week from 10 hours to 6 hours.

VGR2 previously agreed to reduce 7 DSS-45 passes in weeks 10 and 11 and 3 - 4 DSS-45 passes in week 09 and 12 from 8 hours to 5 hours.

2007 Contention Period – April Weeks 14 - 17

GBRA previously agreed to reduce the DSS-45 Host Country from 12 hours to 6 hours in week 14.

M01O previously agreed to change 2 - 3 of seven 70M passes to MSPA with MGS in weeks 14 - 16 and MSPA 3 passes with MEX and 3 passes with MGS in week 17.

MEX previously agreed to MSPA 3 passes with M01O at the 70M in week 17.

MGS previously agreed to MSPA two to three 34HEF passes per week with M01O at the 70M.

RFC previously agreed to move the CAT M&E support in week 17 to DSS-25\55 and use for X/Ka-band catalog development.

SOHO previously agreed to reduce the TSO 5-day continuous request to 3 days in week 17.

ULYS previously agreed to reduce seven 34BWG1 passes per week from 10 hours to 6 hours.

VGR2 previously agreed to reduce 7 DSS-45 passes per week from 8 hours to 5 hours.

2007 Contention Period – May Week 18 - 22

EVN previously agreed to move the 16-hour E-500 J-M4 support from week 22 to week 23.

GBRA previously agreed to reduce the DSS-45 Host Country from 12 hours to 6 hours in week 20 and after the RARB (Thursday Email) agreed to reduce the 24-hour RA500 SOC-M4 support in Week 21 to 12 hours.

Action Item #04 opened during the RARB was closed on 02/17/04:

<i>AI#</i>	<i>Year</i>	<i>Month(s)</i>	<i>System</i>	<i>Responsible</i>	<i>Due Date</i>	<i>Status</i>
04	2007	May	GBRA	P. Wolken	02/17/2004	Closed
			EVN			

ACTION: Review EVN and GBRA events in the month based upon the recommendations and determine what is acceptable to both.

RESPONSE: (02/10/2004) Both the GBRA RA500 and the EVN need to occur before June 10, but not sooner than May 20. The RA500 activity will remain in Week 21 and agree to reduce support duration from 24 hours to 12 hours.

M01O previously agreed to change six of seven 70M passes to MSPA 2 - 3 passes with MGS and 3 passes with MEX in weeks 19, 20 and 22 and in weeks 18 and 21, MSPA 3 passes with MGS and 3 passes with MEX.

MEX previously agreed to MSPA 3 passes per week with M01O at the 70M.

MGS previously agreed to MSPA 2 - 3 passes per week with M01O at the 70M in weeks 19, 20 and 22 and 3 passes in weeks 18 and 21.

RFC previously agreed to change the allocated resources from DSS-15\45,15\65 to DSS-25\34,25\55 in week 18.

SOHO previously agreed to reduce the TSO 5-day continuous request to 3 days in week 21.

VGR2 previously agreed to reduce 7 DSS-43,45 passes per week from 8 hours to 6 hours.

2007 Contention Period – June Weeks 23 - 26

DSS-54 downtime approval for X/X Ka-band installation beginning in week 23 was uncontested by the projects/users.

CAS previously agreed to change the resources allocated on 4 to 7 tour passes from DSS-15,24,25,26,54,55,65 to DSS-15,24,25,26,55,65.

CHDR previously agreed to change resources allocated on 21 routine passes from 34BWG1 to 14 passes at DSS-24,34 and seven 2-hour passes on the 26M.

GBRA reduce the DSS-45 Host Country from 12 hours to 8 hours in week 25.

MUSC (Hayabusa) previously agreed to change the resources allocated on re-entry support in week 23 from DSS-25,34,54 to DSS-25,34,65.

IMAG previously agreed to change the resources allocated on 1 SCI load and 13 routine passes per week from 34BWG1 to DSS-24,34.

M01O previously agreed to MSPA four 70M passes per week with MGS.

MGS previously agreed to reduce four 14-hour mapping and beta supplement passes per week allocated at 34BWG1 to 10 hours and MSPA the 4 passes with M01O on the 70M. Change the resources allocated on the remaining 2 - 3 passes from 34BWG1 to DSS-24,34,55.

MSGR previously agreed to change the resources allocated on routine and TCM support from DSS-26,34,54 to DSS-26,34,55.

NHPC previously agreed to change the resources allocated for beacon support from 34BWG1 to DSS-24,34.

RFC previously agreed to move the CAT M&E pair in weeks 23 and 24 to weeks 25 and 26.

STB previously agreed to change the resources allocated for prime science support from DSS-26,34,54 to DSS-26,34,65.

WIND previously agreed to change the resources allocated on 7 routine passes per week from 34BWG1 to DSS-24,34. (2)

2007 Contention Period – July Weeks 27 - 30

DSS-54 approve downtime for X/X Ka-band installation

CAS previously agreed to change the resources allocated on 4 to 7 tour passes per week from DSS-15,24,25,26,54,55,65 to DSS-15,24,25,26,55,65.

CHDR previously agreed to change the resources allocated on 21 routine passes per week from 34BWG1 to 14 passes at DSS-24,34 and seven 2-hour passes on the 26M.

IMAG previously agreed to change resources allocated on 1 SCI load 13 routine and passes per week from 34BWG1 to DSS-24,34

M01O previously agreed to MSPA four 70M passes per week with MGS.

MGS previously agreed to reduce four 14-hour mapping and beta supplement passes per week allocated at 34BWG1 to 10 hours and MSPA the 4 passes with M01O on the 70M. Change the resources allocated on the remaining 2-3 passes allocated at 34BWG1 to DSS-24,34,55.

MSGR previously agreed to change the resources allocated on routine support from DSS-26,34,54 to DSS-26,34,55.

NHPC previously agreed to change the resources allocated for beacon support from 34BWG1 to DSS-24,34.

STB previously agreed to change the resources allocated for prime science support from DSS-26,34,54 to DSS-26,34,65.

WIND previously agreed to change the resources allocated on 7 routine passes from 34BWG1 to DSS-24,34.

2007 Contention Period – August Weeks 31 - 35

DSS previously agreed to reduce DSS-27, DSS-16 and DSS-66 maintenance to 6 hours per support.

M01O previously agreed to MSPA 6 - 7 passes per week on the 70M with MGS in weeks 32 - 34.

MSGR previously agreed to change the allocated resources in week 32 - 34 from DSS-26,34,54 to DSS-26,55.

MGS previously agreed to change 4 standalone 14-hour 34BWG1 passes per week to 10 hours in weeks 32 - 34.

MSPA six to seven 10-hour passes per week with M01O on the 70M in weeks 32 - 34.

PHX previously agreed to move 3 passes per week from the 34BWG1 to the 34HEF in weeks 33 and 34.

STA previously agreed to change the allocated resources on 7 prime science passes from DSS-26,34,55 to 6 passes at DSS-26,55 and 1 pass at DSS-43 in weeks 32 - 34.

ULYS previously agreed to reduce 7 - 8 passes per week from 10 hours to 8 hours and change the allocated resources from 34BWG1 to 70M,34H (assumes 4 hours of U/L on 70M and 4 hours of D/L on the 34HEF) in weeks 32 - 34.

2007 Contention Period – September Weeks 36 - 39

DSS previously agreed to reduce DSS-27, 16 and 66 preventative maintenance in each week to 6 hours and move DSS-14 bearing maintenance from week 39 to week 40.

M01O previously agreed to MSPA 6 passes on the 70M with MGS.

MSGR previously agreed to change the allocated resources in week 37 from DSS-26,34,54 to DSS-25,65.

MGS previously agreed to delete six 10-14 hour 34BWG1 passes and MSPA six 10-hour passes with M01O on the 70M in week 37.

PHX previously agreed to move 3 passes from the 34BWG1 to the 34HEF in week 37.

STA previously agreed to change the allocated resources on 7 passes in week 37 from DSS-26,34,55 to 6 passes at DSS-26,55 and 1 pass at DSS-43.

ULYS previously agreed to reduce 8 passes from 10 hours to 8 hours and change the allocated resources from 34BWG1 to 70M,34H (assumes 4 hours of U/L on 70M and 4 hours of D/L on the 34HEF) in week 37.

2007 Contention Period – October Weeks 40 – 43

M01O previously agreed to MSPA 6 passes on the 70M with MGS in week 40.

MGS previously agreed to delete six 10 - 14 hour 34BWG1 passes and MSPA six 10-hour passes with M01O on the 70M in week 40.

MSGR previously agreed to change cruise and TCM allocated resources from DSS-26,34,54 to DSS-25,45,65 in weeks 40, 41 and 43.

STB previously agreed to change the allocated resources on 7 prime science passes in weeks 40 and 41 from DSS-26,34,54 to 6 passes at DSS-25,55 and 1 pass at DSS-43.

2007 Contention Period – October Weeks 44 - 48

No Recommendations Required.

2007 Contention Period – October Weeks 49 - 52

No Recommendations Required.

Action Items

<i>AI#</i>	<i>Year</i>	<i>Month(s)</i>	<i>System Responsible</i>	<i>Due Date</i>	<i>Status</i>
01	2004-5		DSMS Engineering J. Osman J. Cucchisi	04/15/2004	Open

ACTION: (a.k.a. 8/13/2004 RARB A.I.#5) Distribute plan for 26m subnet antenna hydraulic system refurbishment. This will then be worked by the Resource Analysis Team to coordinate DSS-16, 46 and 66 downtimes with Operations and Flight Projects.

RESPONSE: (9/10/2003 & 1/28/2004) Changed due date as it will take extended time to plan new implementation dates.

<i>AI#</i>	<i>Year</i>	<i>Month(s)</i>	<i>System Responsible</i>	<i>Due Date</i>	<i>Status</i>
02a	2004- 2005	September- February	Genesis B. Geldzahler	02/24/2004	Open

ACTION: Presentation by Genesis on mission requirement changes resulted in an action on HQ to provide direction regarding DSN support for Genesis' post-Earth Flyby spacecraft disposal orbit. It is important that consultation with impacted users (e.g., Chandra and ISTP missions) is part of this action if DSN coverage is to be used. Per the request of NASA HQ (03/, DSMS and Project are working on a compromise. The goal of the compromise is to minimize scheduling impact to other DSMS customers, yet still address risk mitigation for the Genesis mission (disposal orbit/first 60 days of backup orbit). Note: The disposal orbit and backup orbit are concurrent for the first 60 days.

<i>AI#</i>	<i>Year</i>	<i>Month(s)</i>	<i>System Responsible</i>	<i>Due Date</i>	<i>Status</i>
02b	2004- 2005	September- February	Genesis S. Waldherr E. Hirst	03/24/2004	Open

ACTION: Presentation by Genesis on mission requirement changes resulted in an action to investigate alternate antenna support (non-DSN) for Genesis' post-Earth Flyby spacecraft disposal orbit.

<i>AI#</i>	<i>Year</i>	<i>Month(s)</i>	<i>System Responsible</i>	<i>Due Date</i>	<i>Status</i>
03	2005	September	Cassini D. Seal	2/17/2004	Closed

ACTION: Identify the 70M antenna that Cassini needs in week 38. The recommendation is to use DSS-63 while DSS-43 is in approved downtime.

RESPONSE: (02/10/2004) Cassini clarified that they have no issue with the recommendation as they are specifically requesting DSS-63 (twice) for 70M coverage in week 38.

<i>AI#</i>	<i>Year</i>	<i>Month(s)</i>	<i>System Responsible</i>	<i>Due Date</i>	<i>Status</i>
04	2007	May	GBRA P. Wolken EVN	02/17/2004	Closed

ACTION: Review EVN and GBRA events in the month based upon the recommendations and determine what is acceptable to both.

RESPONSE: (02/10/2004) Both the GBRA RA500 and the EVN need to occur before June 10, but not sooner than May 20. The RA500 activity will remain in Week 21 and agree to reduce support duration from 24 hours to 12 hours.



Resource Allocation Review Board

Jet Propulsion Laboratory
California Institute of Technology

Agenda

- **Introduction** **P. Doms** **8:30**
- **Overview, Contention Summary** **G. Burke** **8:40**
 - **Action Item Status from August 2003 RARB** **D. Morris**
- **NASA Headquarters Perspective – Code S** **B. Geldzahler** **8:50**
- **JPL DSMS Plans & Commitments Program Office (920)** **R. Miller** **9:10**
- **JPL DSMS Operations Program Office (930)** **J. Wackley** **9:30**
- **JPL DSMS Engineering Program Office (940)** **J. Statman** **9:50**
- **New Or Modified Project Requirements**
 - **Genesis Return to Earth Requirements** **E. Hirst** **10:10**
 - **MESSENGER &** **R. Farquhar** **10:30**
 - **New Horizon**
 - **STEREO** **D. Ossing** **10:50**
- **Resource Contentions**
 - **Analysis & Recommendations** **N. Lacey** **10:50**
 - **Responses** **Projects**
 - **Discussion / Decisions** **All**
- **New Action Items & Summary** **G. Burke**



Resource Allocation Review Board

Jet Propulsion Laboratory
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Review Board Members

Peter Doms	JPL	Acting Chairman
Gene Burke	JPL	Resource Allocation Planning & Scheduling Office Mgr
Claudia Alexander	JPL	ROSETTA U.S. Project Manager
Donald Burnett	Caltech	Genesis Project Scientist
Pat Carr	ITT	ITT JPL Program Manager
Albert Chang	JPL	Lunar-A Project Representative
Alan Cummings	Caltech	Voyager Project Scientist Representative
Chad Edwards	JPL	IND Mars Network Office Manager
Bob Farquhar	APL	MESSENGER, New Horizons Project Representative
Tom Fraschetti	JPL	DAWN Project Manager
David Gallagher	JPL	Spitzer Space Telescope Project Manager
Roger Gibbs	JPL	Mars 2001 Odyssey Project Manager
Jim Graf	JPL	Mars Reconnaissance Orbiter Project Manager
Dwight Holmes	JPL	INTEGRAL Project Representative



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Mike Klein	JPL	Radio Astronomy Project Manager
Ron Mahmot	GSFC	Space Science Mission Operations Project Manager (SOHO, WIND, Polar, Geotail, Cluster II, ACE, IMAGE, WMAP)
Daniel Mandl	GSFC	ST-5 Project Representative
Ed Massey	JPL	Ulysses/Voyager Project Manager
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John McNamee	JPL	Deep Impact Project Representative
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Bob Ryan	JPL	Stardust Project Representative



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Pete Theisinger	JPL	Mars Exploration Rover Project Manager
Tom Thorpe	JPL	Mars Global Surveyor Project Manager
Phil Varghese	JPL	Planetary Flight Projects Mission Management Office
Joe Wackley	JPL	DSMS Operations Office Program Manager
Lincoln Wood	JPL	Reference Frame Calibration Project Manager
Greg Wright	MSFC	Chandra Project Representative
Richard Zurek	JPL	Mars Reconnaissance Orbiter Project Scientist



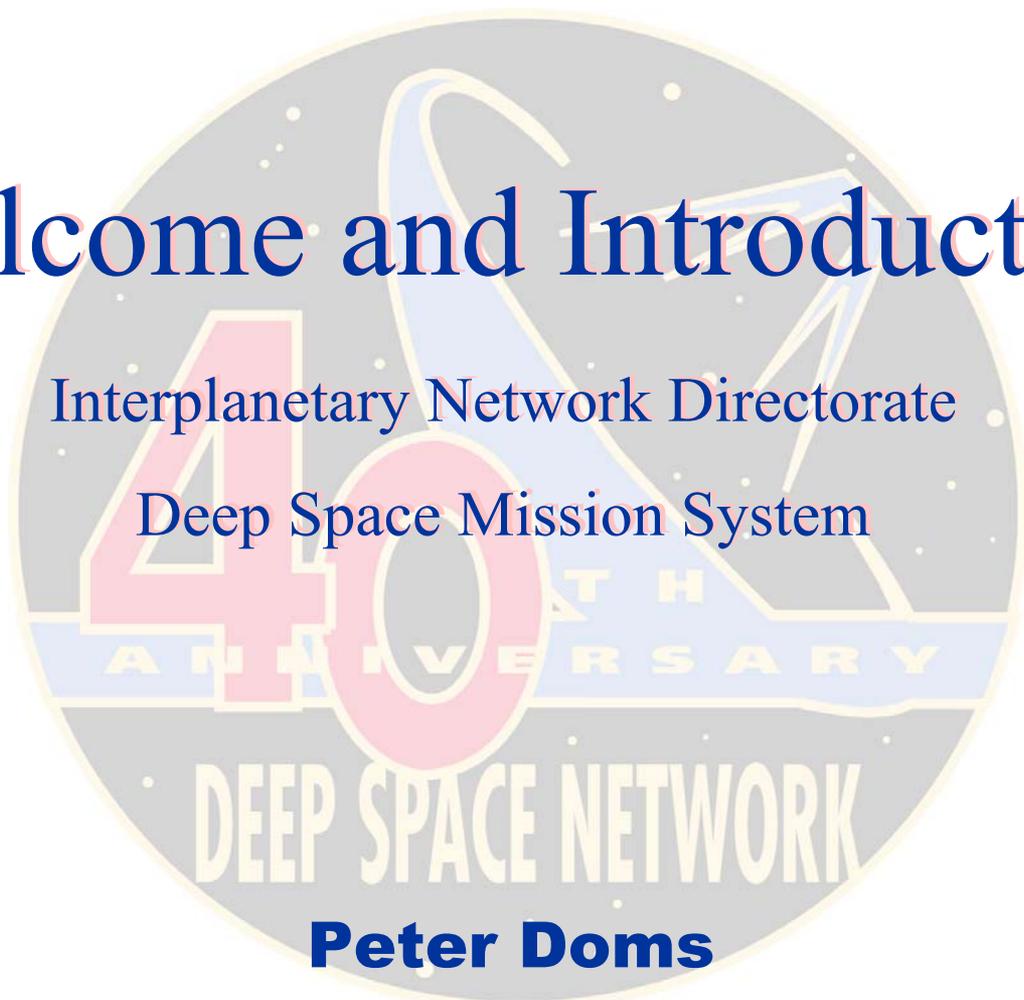
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Welcome and Introduction

Interplanetary Network Directorate

Deep Space Mission System



Peter Doms





Resource Allocation Review Board

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Agenda

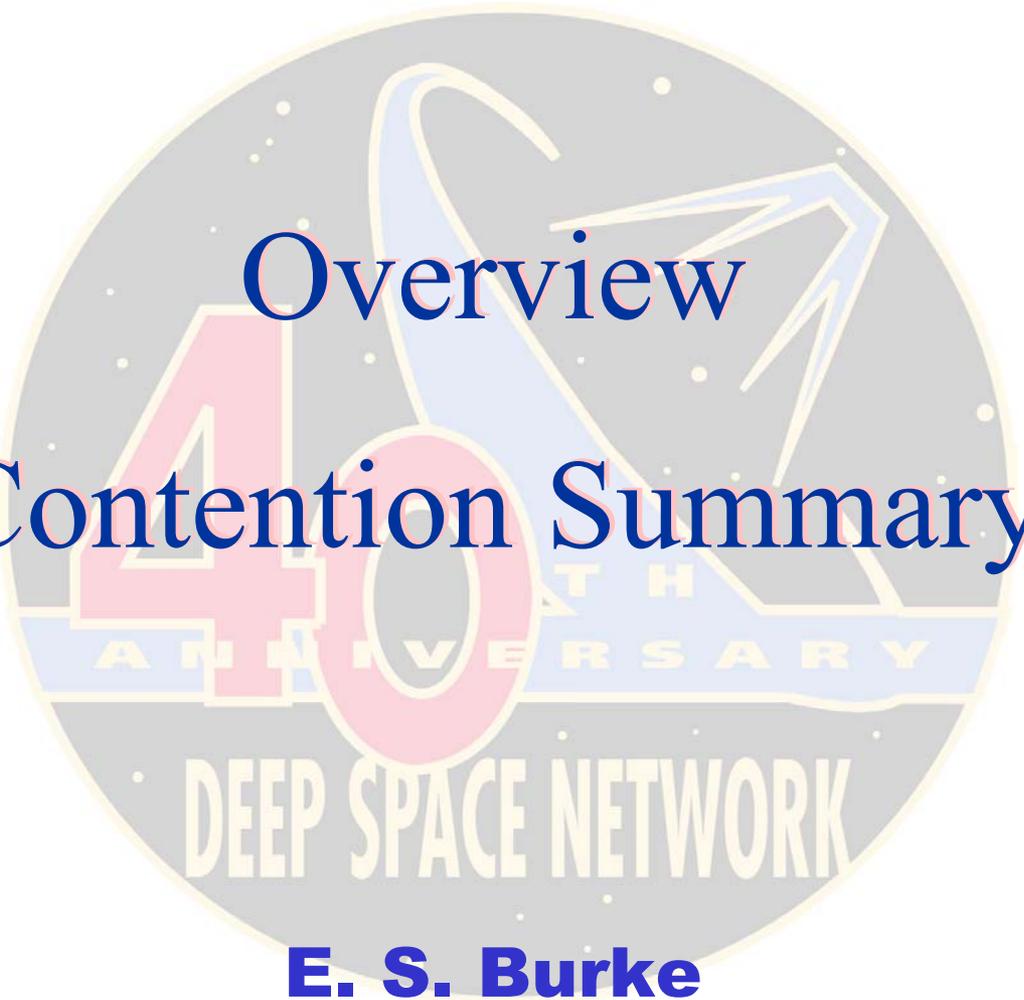
- Welcome
- Long-Range Plan & Key Decisions for DSMS Assets: Baseline
 - Decisions
 - Thrusts
 - Reviews
 - Executive Management Board – June 17-19, 2003 (Code SE)
 - DSMS Operations Assessment Board – August 18-20, 2003 (Code S)
- New DSN O&M Contractor
- 03/04 Operations Readiness Review – October 22-23, 2003
- Mid-Term Scheduling Process



Resource Allocation Review Board

Jet Propulsion Laboratory
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Overview Contention Summary



E. S. Burke





Resource Allocation Review Board

Jet Propulsion Laboratory
California Institute of Technology

Introduction

- **Welcome To The Resource Allocation Review**
 - **Board was Established to Provide Control of Tracking Requests 26, 34, & 70-Meter Subnets**
 - **Recommend Resource Allocation and Assist in Capacity Planning**
- **Requirements 2005 Through 2014**
- **Conflicts in 2005 Through 2007 Needing Resolution**



Resource Allocation Review Board



Contention Resolution Process

- **Contention Explanation**
- **Resource Analysis Team (Rat) Recommendations**
- **Project Response To Recommendations**
- **Review Board Discussions**
- **Review Board Decisions**

Mid-Range Scheduling Activities

Value-Stream Mapping Accomplishments Against Recommendations:

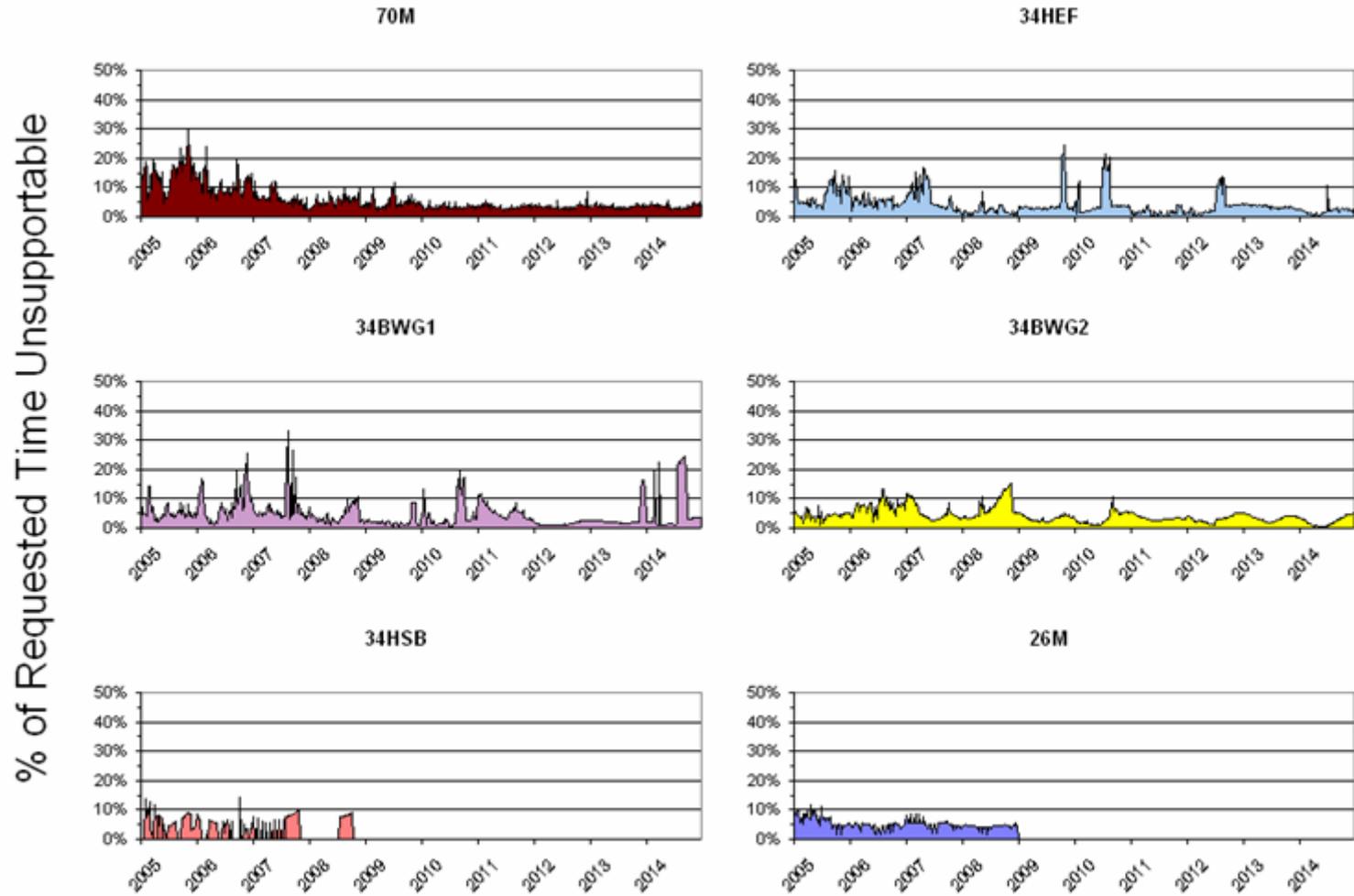
- Provide 26 Weeks of Conflict-free Schedules:
 - Status: Schedules Available For Conflict Resolution Out To ~25 Weeks.
 - Equipment Conflict Information Is Provided to Project Schedulers To Resolve As Requested and Prior to Schedule Transfer to DSN Scheduling.
- Reduce Manual Intervention Of Submitting Changes Into TIGRAS
 - Status: An Electronic Change Request (ECR) Capability With Equipment Conflict Checking (ECC) Is Being Deployed
 - The First Delivery of a Basic ECR With an Improved ECC Occurred on January 15, 2004.
 - A Second Delivery of the ECR Is Planned in April 2004 That Will Incorporate Improved User Notification and Status Reporting on Changes.
- Automatic/manual E-mail Notification Of Postings Of All Schedules And Updates
 - Status: Both Resource Analysis Team and DSN Scheduling Posts Schedule of When And For What Periods Schedules Are Posted.
 - Currently, the 7-day Is Posted Twice Daily, Monday - Friday.
 - Use of the Web-based ECR for Network Support System (NSS) Generates Automatic E-mail to Submitters.



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Projected Unsupportable Time Summary



$$\text{Projected Unsupportable Time} = \frac{\text{Total Expected Unsupportable Time}}{\text{Total Requested Resource Usage Time}}$$

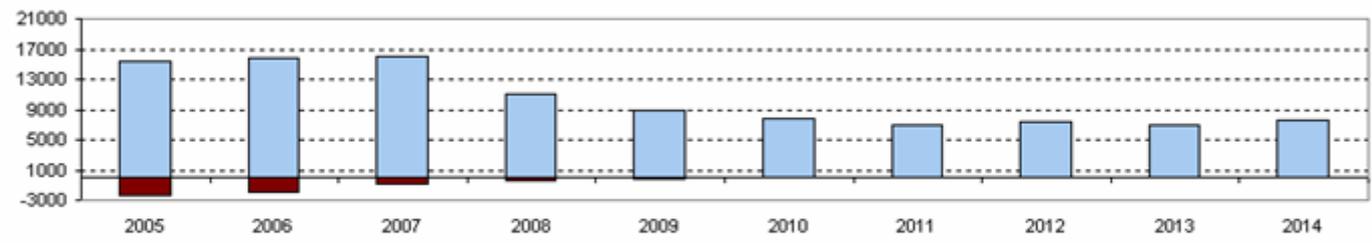


Resource Allocation Review Board

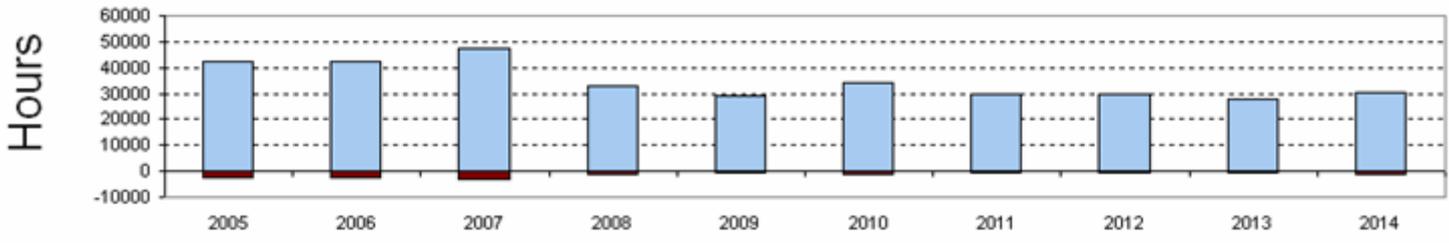
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Projected Yearly Supportable Time Summary

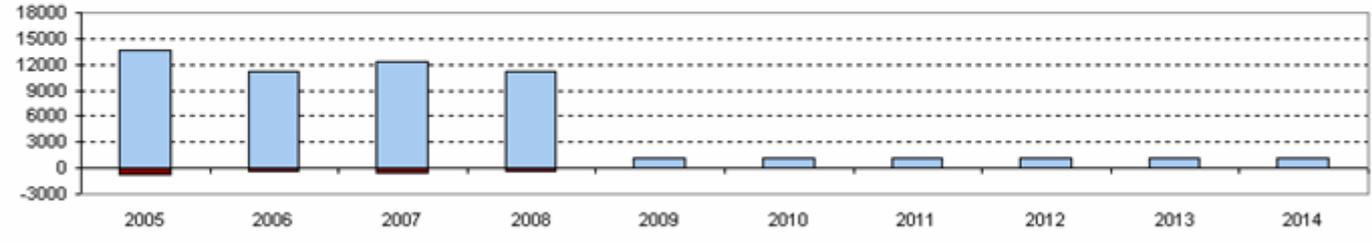
70M



34M



26M



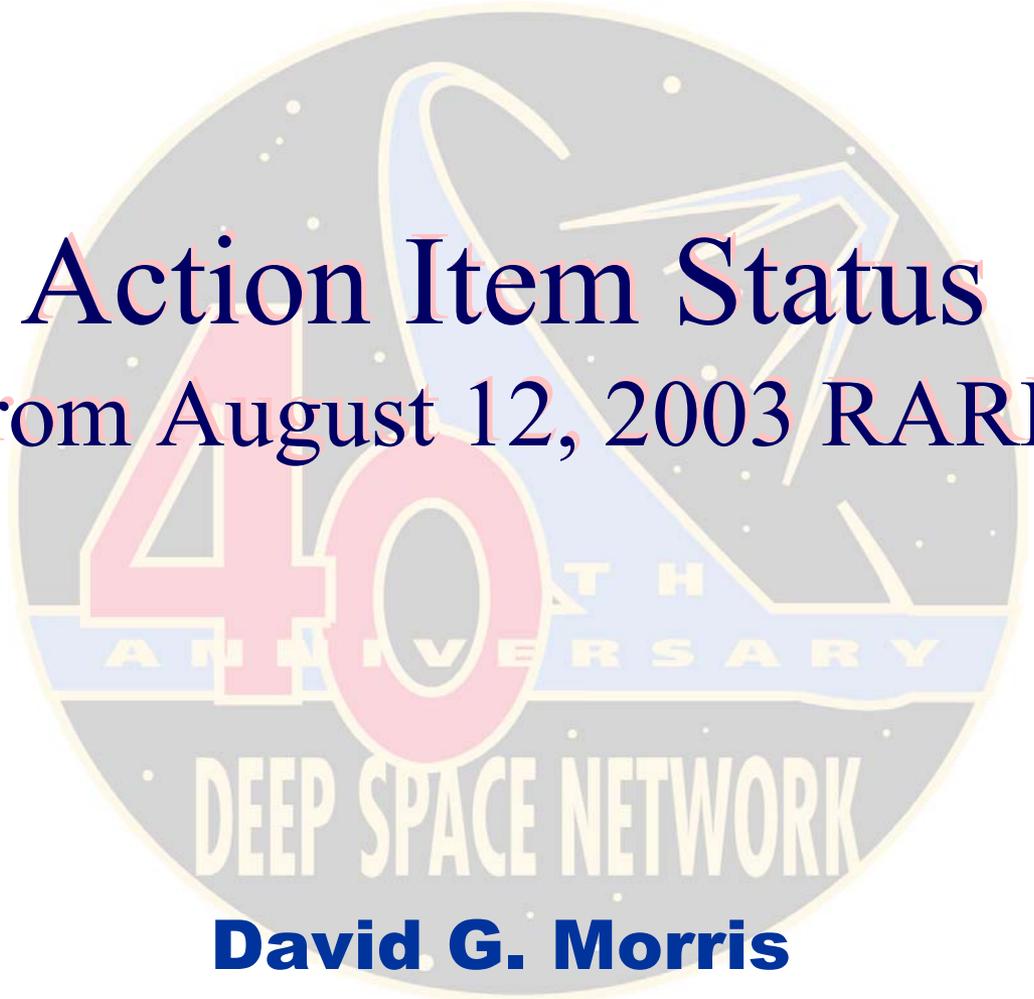
Unshaded Area = Supportable
Shaded Area = Unsupportable



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Action Item Status From August 12, 2003 RARB



David G. Morris





Resource Allocation Review Board

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Action Item Summary

<i>AI#</i>	<i>Year</i>	<i>Month(s)</i>	<i>System</i>	<i>Responsible</i>	<i>Due Date</i>	<i>Status</i>
01	2003-2004	December-April	Mars Program	B. Arroyo	06/01/2003	Closed

ACTION: (aka 8/13/02 RARB A.I. #7) Multi-mission DSN Allocation and Planning (MDAP) provide a Mars Program coordinated input to Resource Allocation (Mid-Range) Planning Team (RAPT) of at least one week per week at least 6 months prior to the schedule week. This action will use the result of Action Item 6 (of 8/13/02 RARB) to clarify the scope of resources in which to plan to.

RESPONSE: (10/06/2003) All weeks are delivered.

<i>AI#</i>	<i>Year</i>	<i>Month(s)</i>	<i>System</i>	<i>Responsible</i>	<i>Due Date</i>	<i>Status</i>
02	2004	June - July	Cassini	R. Gillette/ D. Seal	09/12/2003	Closed

ACTION: Prepare Risk Assessment for Cassini because of DSS-43 Rebalance Downtime planned in June 2004. Concern is that this occurs too close to the Cassini Saturn Orbit Insertion (SOI).

RESPONSE: (9/04/03) Office 930 states that this downtime is too close to this Class A event and has requested an alternative downtime plan. The Resource Analysis Team is tasked to do this.



Resource Allocation Review Board

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Action Item Summary

<i>AI#</i>	<i>Year</i>	<i>Month(s)</i>	<i>System</i>	<i>Responsible</i>	<i>Due Date</i>	<i>Status</i>
03	2006	July	MRO	R. Lock J. Hodder	11/09/2003	Closed

ACTION: Evaluate whether Mars Reconnaissance Orbiter (MRO) could utilize Multiple Spacecraft per Aperture (MSPA) while in orbit around Mars prior to achieving their final science orbit. What affects this is the MRO orbit apogee, transmitting frequency, antenna beamwidth (34m and 70m) and Mars range.

RESPONSE: (11/13/2003) There is no physical restriction to utilizing MSPA capability by MRO. Due to risk and flexibility concerns, MRO does not wish to use MSPA in the first month after MOI, the last part of aerobraking, and during the transition to primary science orbit.

<i>AI#</i>	<i>Year</i>	<i>Month(s)</i>	<i>System</i>	<i>Responsible</i>	<i>Due Date</i>	<i>Status</i>
04	2006	July & Sept.	RFC	C. Jacobs	09/12/2003	Closed

ACTION: Investigate and propose alternative support versus the recommended deletion of Reference Frame Calibration (RFC) Catalog Enhancement and Maintenance (Cat M&E) support.

RESPONSE: (11/20/2003) The proposed alternative is to replace the nominal cat M&E request with a request for DSS 25 and DSS 55 using simultaneous X and Ka-bands.



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Action Item Summary

<i>AI#</i>	<i>Year</i>	<i>Month(s)</i>	<i>System</i>	<i>Responsible</i>	<i>Due Date</i>	<i>Status</i>
05	2004-5		DSMS Engineering	J. Osman J. Cucchissi	04/15/2004	Open

ACTION: Distribute plan for 26m subnet antenna hydraulic system refurbishment. This will then be worked by the Resource Analysis Team to coordinate DSS-16, 46 and 66 downtimes with Operations and Flight Projects.

RESPONSE: (9/10/2003 & 1/28/2004) Changed due date as it will take extended time to plan new implementation dates.

<i>AI#</i>	<i>Year</i>	<i>Month(s)</i>	<i>System</i>	<i>Responsible</i>	<i>Due Date</i>	<i>Status</i>
06	2005	October	Polar	N. Lacey	09/12/2003	Closed

ACTION: Update mission set to show that Polar will end their mission as of October 1, 2005.

RESPONSE: (9/10/2003) Mission Set reflects this new date.



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News From Office of Space Science



Dr. Barry Geldzahler



News From Office of Space Science



Topics:

- Science Prioritization Board
- Australia visit
- DSMS Assessment Board
- DSMS Executive Management Board

Dr. Barry Geldzahler
Program Executive for Space Operations
Code S Spectrum Manager
202-358-0512
bgeldzah@hq.nasa.gov

Science Prioritization Board

- HQ/DSMS coordination of science priorities
- Meets ~3 weeks before the RARB
- DSMS receives latest updates on missions set and science priorities to help resolve conflicting requests
- From HQ perspective it's working quite well
- Great help during the high activity period; all divisions represented, played out scenarios should there have been an anomaly

Australia visit

- RSO from US Embassy found deficiencies at Tid
- Representatives from Codes S, X, I went to Australia to solve those issues that could not be resolved via email or by the NAR
- Most issues were agreed to, 1 remains to resolve.
- Ambassador gave us until mid-May to come to resolution and begin implementation

DSMS Operations Assessment Board

- Convened in August 2003 to assess proposed program content and to align DSMS funding with NASA priorities
- High Level: DSMS has been reorganized:
 - Thinking part; doing part; enabling technologies in the middle
 - System Engineering will determine high level requirements from which all tasks/funding will flow
- RARB Specific: Found the scheduling process to be cumbersome, in need of automation, and that too many people on the mission side were required to schedule antenna for their s/c
- Rich Doyle has formed a Tiger Team to look into automation of the scheduling process
- Original goal was to have a set of requirements out by Jan 31, 2004.
- With the success of proximity links between rovers, relays and then trunk lines to the DSN, I asked that the charter be extended to include the surface to relay links as well.
- New target date for requirements is 3/31/04 so as to feed into the POP

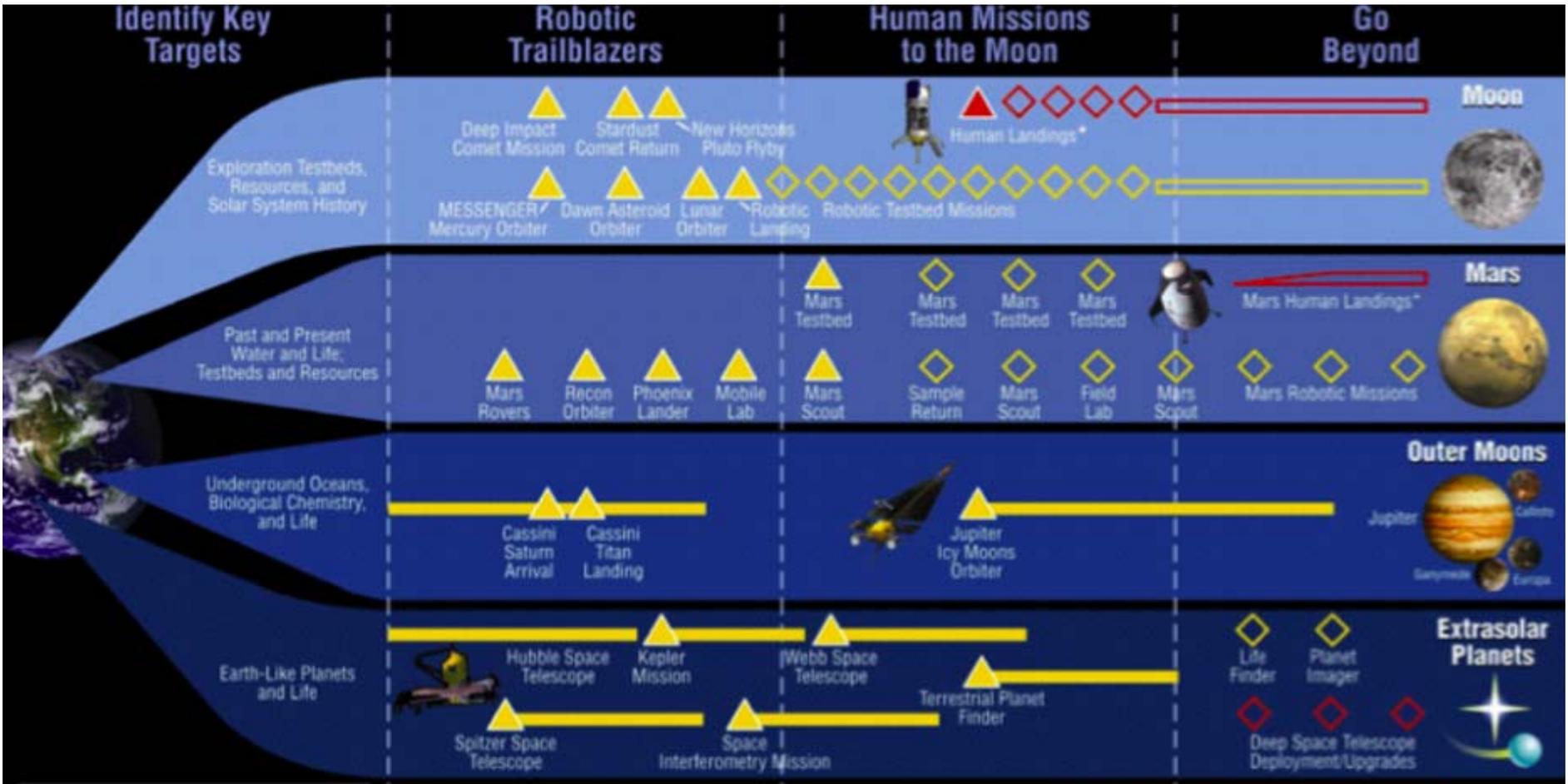
DSMS Executive Management Board

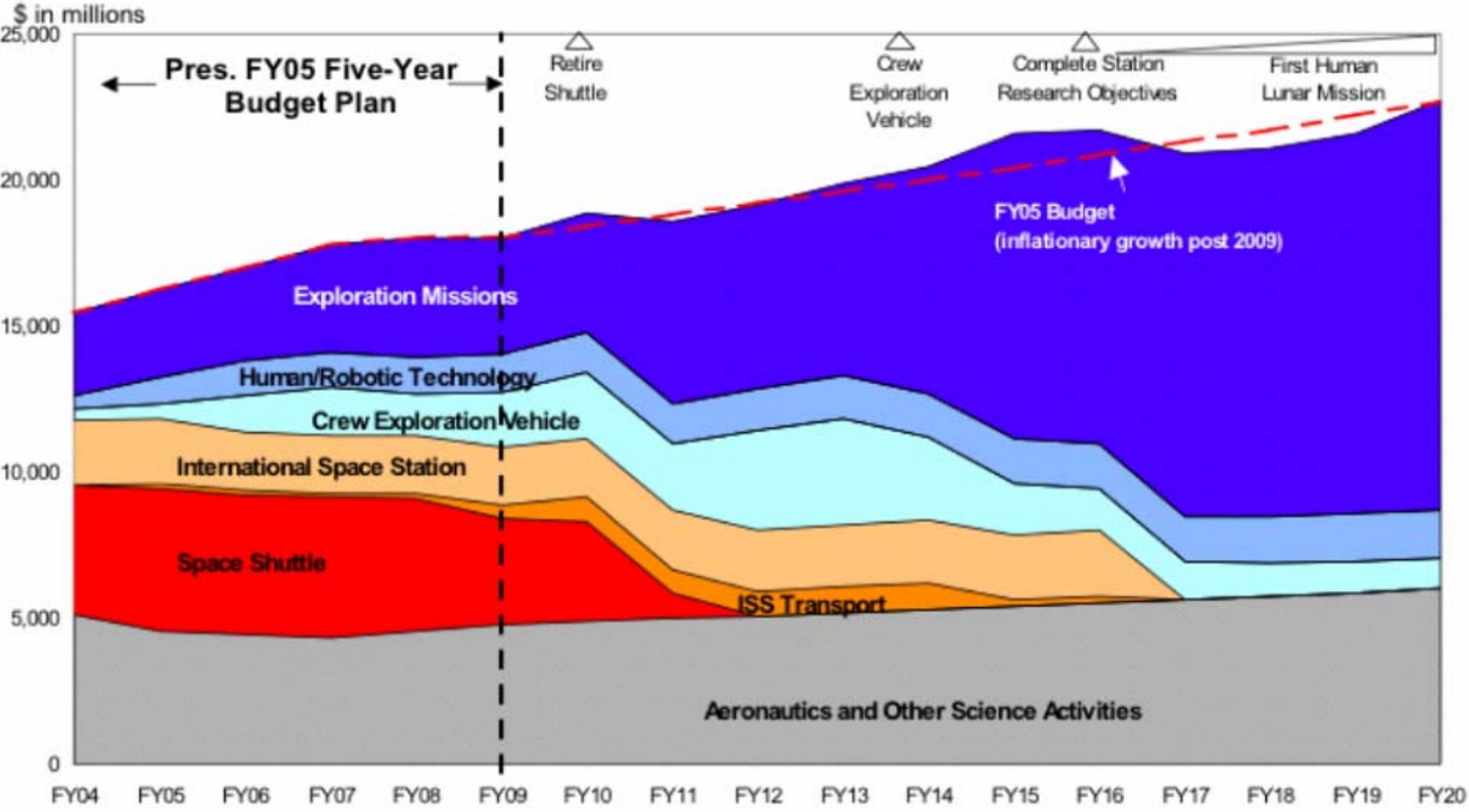
- The new commitment to improvements by orders of magnitude in space telemetry and navigation in the future must be sustained.
- The EMB requests a definitive schedule for completing a Strategic Plan be presented at its mid-2004 meeting.
- Continue to re-align the DSMS budget so that "mission specific" costs are paid for by the benefiting mission.
- The Deep Space Network's three 70-meter antennas should be maintained well enough to support S- and X-band operations reliably only until the end of 2010.
- The DSN site at each longitude needs a 34-meter antenna capable of Ka-band operation by early 2005.
- NASA should consider whether a single Mars Telecommunications Orbiter in 2009 can adequately serve the likely expanded exploration program of that planet.
- Defining and implementing international standards and protocols for seamless and reliable communications between spacecraft, probes on solar system bodies, and Earth is critically important.
- Arrays distributed in longitude of multiple small antennas capable of Ka-band operation seem the best way to increase data rates by the orders of magnitude needed for future space exploration.
- A plan and corresponding schedule that lead to the replacement of the 70 m antennas within 10 years should be developed.
- Required data rates for routine uplinks will continue to be far smaller than for required downlinks; if the latter can be met, then presumably the former can as well. The outstanding issue is performance of arrays of small antennas for uplinks.
- Autonomous navigation of space probes, be they orbiters or landers, will enable new scientific capabilities.
- Delta DOR VLBI should be retained as a critical navigation technique, and significant improvements in accuracy and sensitivity should be implemented
- Since NASA JPL's team producing planetary ephemerides may soon be the sole U.S. team assigned this task so basic to solar system navigation, the team must be continued indefinitely and a succession plan for its personnel put in place.

Space Science Enterprise

FY 2005 President's Budget Highlights

See details at <http://www.nasa.gov/budget>





NOTE: Exploration missions – Robotic and eventual human missions to Moon, Mars, and beyond
 Human/Robotic Technology – Technologies to enable development of exploration space systems
 Crew Exploration Vehicle – Transportation vehicle for human explorers
 ISS Transport – US and foreign launch systems to support Space Station needs especially after Shuttle retirement

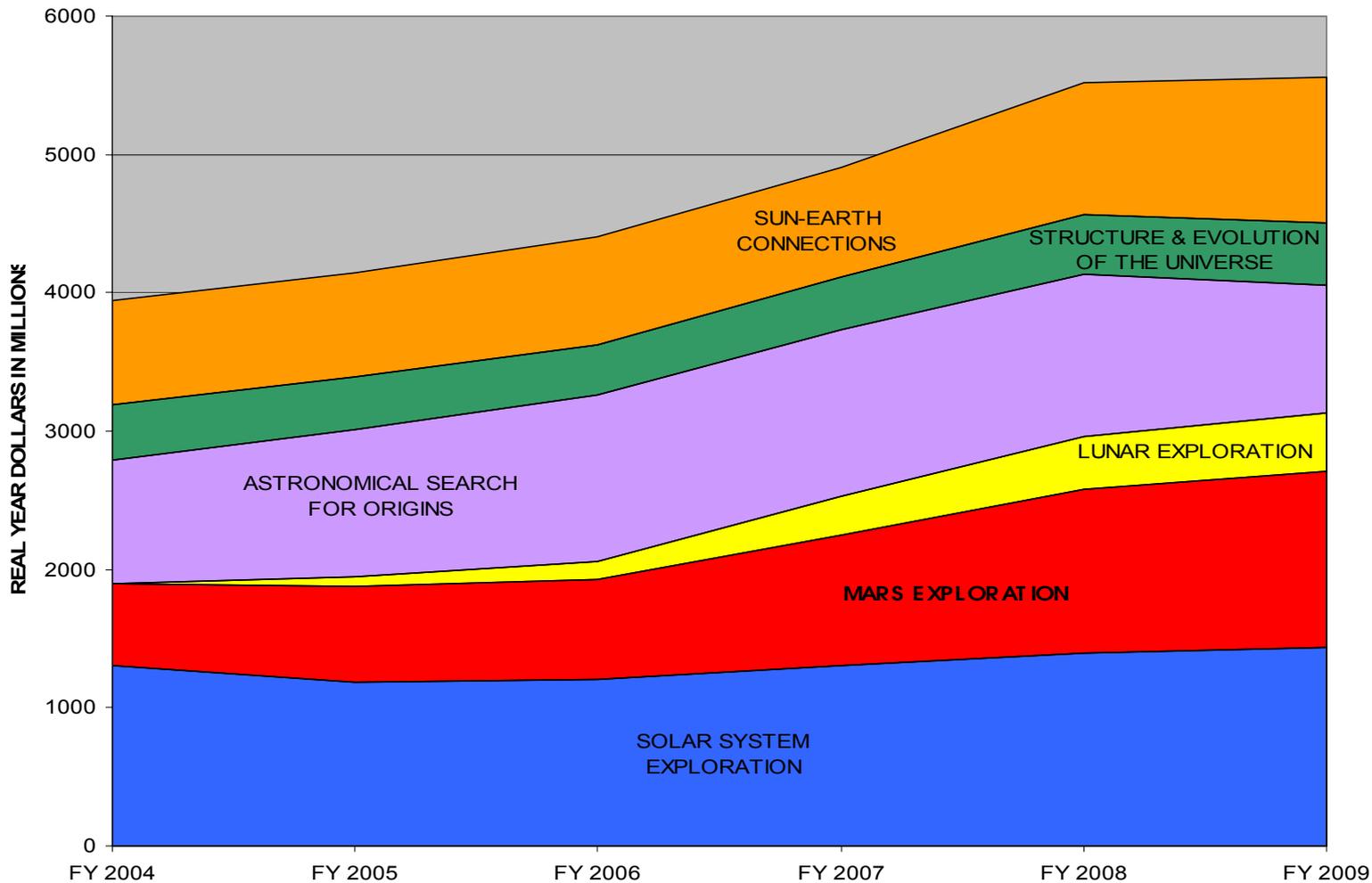
Space Science Enterprise

FY 2005 President's Budget Highlights

Space Science's Role in the Exploration Initiative

- New theme has been added: Lunar Exploration
- Space Science themes included in Exploration:
 - Astronomical Search for Origins
 - Solar System Exploration
 - Mars Exploration
 - Lunar Exploration
- Sun-Earth Connections and Structure and Evolution of the Universe have been reduced as priorities have been re-focused

SPACE SCIENCE ENTERPRISE: FY 2005 PRESIDENT'S BUDGET BY THEME



Space Science Enterprise

FY 2005 President's Budget Highlights

Major Changes: Solar System Exploration

- Most elements of Project Prometheus are transferred to the Office of Exploration (Code T)
 - RPS/RTG work retained in OSS
 - JIMO fundamental science and instrument technology development/risk reduction retained in OSS
 - No funding identified at this time for post-phase A instrument development

Space Science Enterprise

FY 2005 President's Budget Highlights

Major Changes: Mars Exploration Program

- Funds added to support next decade of Mars Exploration
 - “The first in a series of precursor missions to Mars”
 - Additional Mars Scout in 2011
 - Mars Testbed Lander in 2011
 - “Safe on Mars”
 - In-situ resource utilization
 - Technology for post-2010 Mars science pathways
 - Sample return as early as 2013
 - Technology for post-2013 Mars testbeds

Space Science Enterprise

FY 2005 President's Budget Highlights

Major Changes: Lunar Exploration

- A new theme that is an element of the new Agency vision
 - “Responsible for preliminary demonstration and operation of systems to be employed in future human-robotic exploration...”
- Supports robotic exploration of the Moon as precursors to human missions
 - 2008 Lunar Robotic Recon Orbiter
 - 2009 Lunar Robotic Lander
 - Future Lunar Robotic Testbeds
- Managed in OSS's Solar System Exploration division
 - With 'requirements' derived from the Code T
- Funding begins in FY 05 (70M); \$1.3B through FY 09

Space Science Enterprise

FY 2005 President's Budget Highlights

Major Changes: Sun-Earth Connections

- Solar Terrestrial Probes significantly reduced and stretched out
- Solar Probe is not 'visible'
- SEC R&A/Operations (non-LWS) frozen at FY 04 Level
- LWS and NMP fully funded

- Future Explorers delayed one year
 - May consider making fewer selections and keeping AO's on schedule



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Customer View of Operability A Portion of DSMS Level 1 Requirements



- **Rich Miller**
- **IND Plans and Commitments Office**
- **04 February 2004**



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Customer View of Operability: DSMS Level 1 Requirements

- **The Interplanetary Networks Directorate is developing a set of Level 1 Requirements for the Deep Space Mission Systems**
 - Analogous to Project Level 1 Requirements
 - High Level short list
 - Approved (and change controlled) by NASA HdQts
 - Used to “measure success”
- **Operability Requirements, from a Customer perspective, will be included**
- **A draft candidate set has been generated using TMS Mangers input and a work session with the DSMS Executive Management Board**
- **We need input from the Customers**



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Draft List of Candidate Operability Requirements *from Customer Perspective*

- **VISIBILITY:**
- R1: The DSMS Operations visibility and accountability
- R2: Visibility of current and planned DSMS capabilities
- R3: Plan for and implement new capabilities
- R4: Support mission design trades
- R5: Enable “test as you will fly”

- **CONTROLLABILITY:**
- R6: Simple, standard, procedures and interfaces
- R7: DSMS shall maintain sufficient capacity margin

- **OTHER AREAS:**
- R8: Metrics that are meaningful to the Customers
- R9: Define the information systems operations concepts

• *Note: List will likely need to be consolidated (shortened)*



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R1: The DSMS Operations visibility and accountability

R1: “The DSMS operational systems shall have visibility and accountability for the core project information system, and notify the project of status (without requiring Project input).” **This is a Phase E statement**

- **Metrics:**

- **How many times/tracks does the project find fault.**

- **Now:**
- **5 yrs:**
- **15 yrs:**
- **25 yrs:**

- **Timeliness/latency in notifying the project**

- **Now:**
- **5 yrs:**
- **15 yrs:**
- **25 yrs**

R2: Visibility of current and planned DSMS capabilities

R2: “Visibility of current and planned DSMS capabilities that may be used to provide a core project information system supporting missions in a simple, logical set of capabilities and services.”

- **Metrics:**
 - Establish an up to date catalog
 - Response time to “fill an order” for each mission phase
 - User evaluation of catalog usefulness
 - Document of the customer use of logic elements
- **Other comments**
 - Make costing understandable and traceable
 - Include a decommissioning plan
 - Include a timeframe: start and end



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R3: Plan for and implement new capabilities required for possible future missions

R3: “Plan for and implement new capabilities required for possible future missions.” (Emphasis is on items that take longer than a typical project life cycle.) Includes concept of leading and enabling.

- **Metrics:**

- The number of new capabilities defined but not yet utilized/requested
- The number of projected users of new capabilities
- Cost estimate of new capabilities; ratio of new capabilities to total DSMS development costs



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R4: Support mission design trades

R4: “Support mission design trades that drive new ground capabilities that enable new mission/science capabilities.”

- **Metrics:**
 - The number missions able to be supported at any one time.
 - Design trades that include capabilities that have not been planned for.



R5: Enable “test as you will fly”

R5: “The design, development and testing (including ‘test as you will fly’) of the core info system shall be done by the Project and DSMS in an integrated and seamless manner.”

- **Metrics:**
 - Total time spent integrating the project core information system.
 - Total cost of I&T



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R6: Simple, standard, procedures and interfaces

R6: “The DSMS shall provide simple, standard, procedures and interfaces for missions to schedule and capture required data.”

- **Metrics:**
 - **The number of dedicated people involved with DSMS interactions (on the Project side and DSMS side).**

- **Other comments**
 - **Streamlined commitment process**
 - **Improve efficiency of scheduling process**
 - **Deliver fully tested systems**



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R7: DSMS shall maintain sufficient capacity margin

R7: “In order to enable mission flexibility and serendipitous discoveries, and science enhancing opportunities, the DSMS shall maintain sufficient capacity margin.”

- **Metrics:**
 - Capacity versus requirements.

- **Other comments**
 - Demand access as it effects automation
 - To provide capability to allow for last minute changes on the spacecraft
 - Increase availability

R8: Metrics that are meaningful to the Customers

R8: “The DSN shall establish a set of reliability metrics that are meaningful to the Customers. Report them to the customers and evolve and improve the metrics with time.”

- **Metrics:**
 - ?
- **Other comments**
 - (Assuming data related metrics related to up- and down-links)
 - e.g., number of service interruptions/track (pre-ACP ~ 1 in 5 tracks)



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R9: Define the information systems operations concepts

R9: “Define, establish, and maintain the information systems operations concepts for categories of space science exploration missions.”

- **Definition of Core Project Information System:**
 - A Core Project Information System (spacecraft and ground) is one that includes data acquisition, storage, transmission, reception, processing, and accountability of mission data and the control of the spacecraft.
- **List partners/collaborators**
 - TBD (reps from other Directorates, a few Projects, reps from non-JPL customers)
- **Metrics:**
 - Number of missions that agree to use the information systems ops concept
 - Number of partners/collaborators involved in developing the ops concept
 - Cost estimate for implementing the ops concept.



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We Need your input:

- We felt the topic worthy of a DSMS-Flight Project Workshop....but missions activities are too intense right now for that to be practical
- Instead, our plan is to schedule one-on-one meetings with a selection of Project Managers, and staff members they choose
- We also welcome input by any other means
 - Richard.B.Miller@JPL.NASA.GOV, 818 354-1515
 - Gary.L.Spradlin@JPL.NASA.GOV, 818 354-0383
 - Your TMS Manager
- Interest?
- Suggestions?

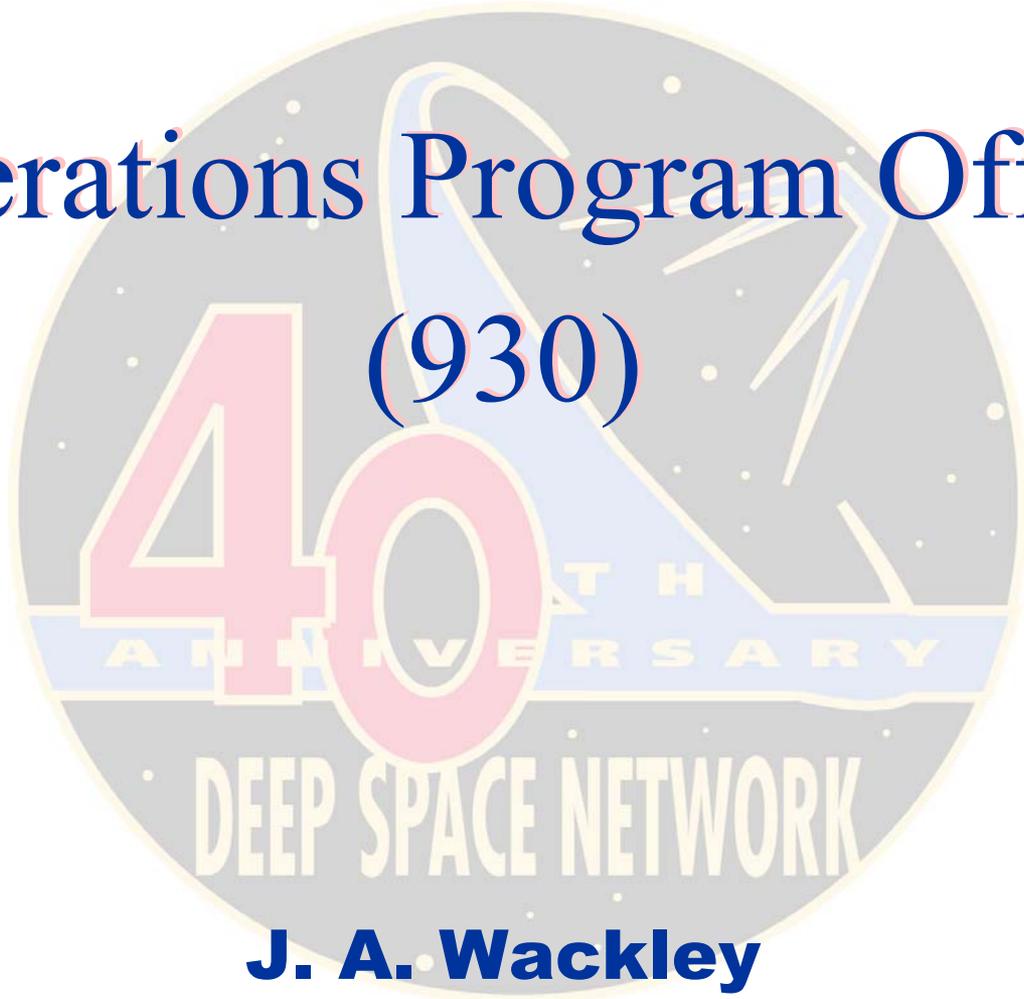


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Operations Program Office

(930)



J. A. Wackley





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DSN ACP Performance: Metrics

- DSN Operations has maintained an exceptionally high level of functional availability in supporting MER, Stardust and MEX, as well as, MGS and M01O relays

	TLM*	CMD	TRK
Spirit (1/1-1/25)	99.9%	99.5%	98.6%
Opportunity (1/1-1/25)	99.6%	99.3%	99.7%
M01O (1/1-1/25)	99.8%	98.6%	99.2%
MGS (1/1-1/25)	99.8%	99.9%	99.5%
Stardust (1/1-1/13)	99.2%	99.7%	100%
MEX (12/24-1/25)	99.5%	99.9%	98.6%
All Missions (2003)	98.1%	98.3%	97.7%

* Generic DSMS commitment is 95%



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DSN ACP Performance: Metrics (2)

- Performance for MERs, Stardust and MEX is higher than for other missions because of extraordinary preparation and planning, extended Level 1 support, and flexibility to allow rapid recovery from failures and/or anomalies
 - Level 1 is most critical support and requires extra maintenance and operations staffing
- Performance for MER is particularly notable given the very dynamic operations environment



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DSN ACP Performance: Radio Metric Data

- MER Navigation Team Chief's assessment:
 - Approach radio metric data quality for both MER spacecraft was so good as to allow cancellation of last two TCM's
 - Radio Metric Data Conditioning Team provided excellent performance
 - One of the contributors was “...*outstanding tracking from the DSN...*”
 - DDOR experience was that “...*measurements have had an extremely high success rate and have been extremely accurate, typically better than 0.085 nsec (3.2 nrad).*”
- Navigation Section Manager radio metric data quality assessment:
 - From DOY 274/2003 (date of last NSP delivery) to date of last significant event (EDL, encounter):
 - Stardust: 97%; MER 2: 97%; MER 1: 98% (percentage of good data)
 - Typical radio metric data quality for MER is:
 - Two-way Doppler accuracy: 1-2 mHz; Ranging: 1-2 Range Units
 - DDOR 0.05-0.12 nsec
 - “These missions especially MER, *got the best ... DSN tracking data in history.*”



DSN ACP Performance: SDU & MEX

- Provided extremely high quality support of the Stardust Wild 2 Comet Encounter
 - Playback of recorded science data was accomplished in 1 attempt plus 2 gap fill playbacks; originally planned three full playbacks
 - Supported Stardust maneuvers, most recently TCM 15 on 3 February
- Provided extremely high quality support of the MEX Mars approach, Mars Orbit Insertion and continuing orbital operations support
 - Have supported 3 of 9 planned apocenter maneuvers (others were over ESA sites); all at MDSCC (DSS 54, 55 and 65)



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DSN ACP Performance: Next (1)

- Through the remainder of the designated ACP (1 March):
 - DSN stays under modified configuration control
 - Triage process (not yet needed/invoked) remains in force
 - Level 3 (routine) support begins on 6 February
 - Will revert to Level 1/2 for the Spirit/Opportunity software uploads
 - Operations will attempt to maintain current level of vigilance but there may be some roll off from the historic highs already set
- Following the ACP:
 - Operations will continue to attempt to maintain performance levels
 - Benefits from some ACP preparations will continue (e.g. sparing process; [new] Tracking Support Specialist positions)
 - Operations Working Group Meetings planned for April will focus on lessons learned and maintaining performance



DSN ACP Performance: Next (2)

- Possible Spirit/Opportunity extended missions will extend a heavy operational burden on the DSN, well into Calendar 2004
- Excluding the Mars Missions, 2004 is a very busy DSN Operations period in its own right
 - Rosetta Launch
 - Messenger Launch and Venus Flyby
 - Cassini SOI, Titan Encounters, and Huygens Probe Release
 - Lunar-A Launch
 - GENESIS Recovery Phase
 - NOAA-N Launch
 - Deep Impact Launch
- DSN Operations is now redeploying attention and resources, from the very long ACP preparation phase, and actual ACP execution phase, to the new 2004 key operational events and critical phases.



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DSN M&O Contract Transition

- At 00 PST on January 1, 2004, the DSN M&O Contract passed from CSOC to ITT
 - Includes all DSN Pasadena area operations and Goldstone (approximately 450 personnel)
- The contract transition between CSOC and ITT was essentially seamless, with excellent performance in terms of filling critical positions (100% on January 1), and, incumbent personnel retention in general
 - The great success of the contract transition was due to outstanding planning and preparation on the part of ITT, outstanding cooperation and dedication of CSOC to ensure the success of the transition, and, very dedicated DSMS leadership

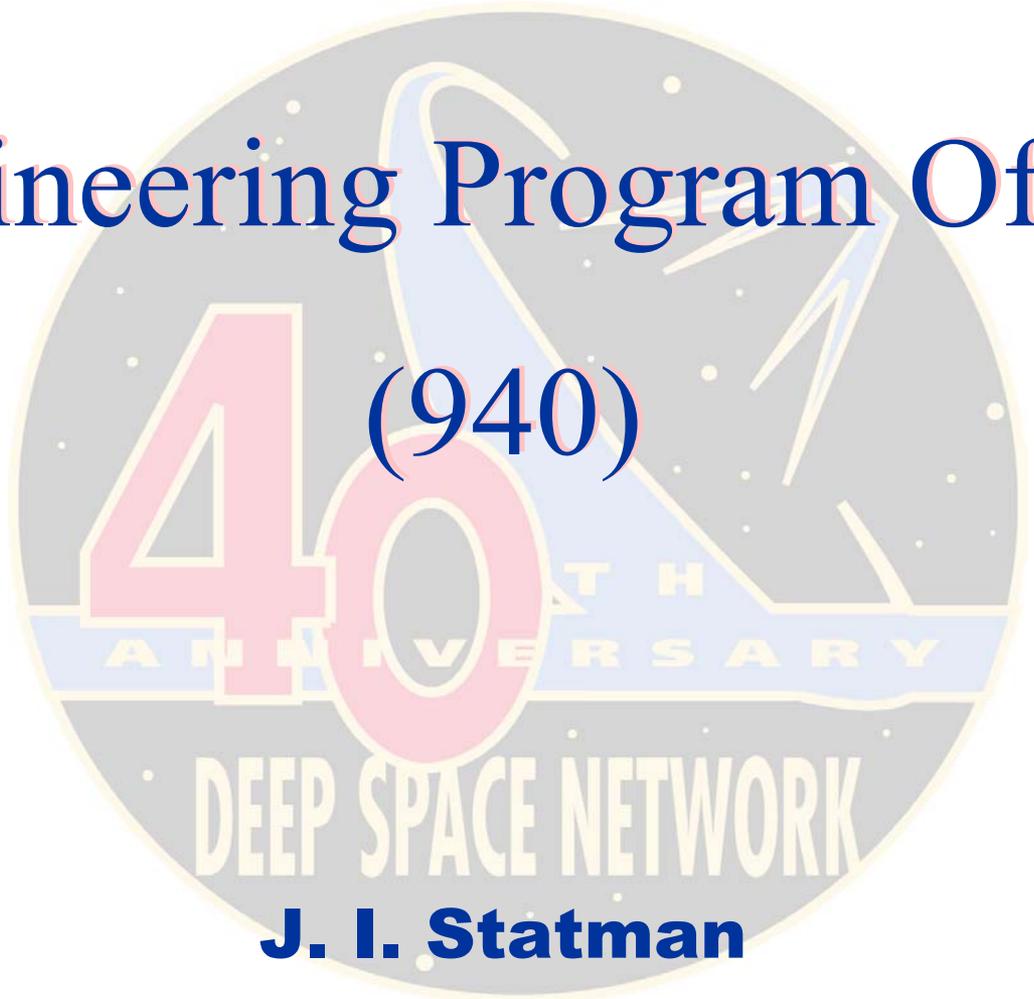


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Engineering Program Office

(940)



J. I. Statman





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Agenda

- Tasks to be completed before ACP
- Tasks to be completed after ACP

Consult your TMS Manager for details of schedule and functional capabilities

Tasks completed before ACP

- 20 kW Tx on BWG
- NSP (Network Simplification Project) V4.1.1
 - Includes Turbo decoding for MESSENGER
- DDOR (Delta Differenced One-way Range)
- X/X/Ka-Feed
 - Operational at DSS-26 and DSS-55
- DSS-55
- 2-MSPA Automation
- Arraying at Overseas DSCC's



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Key Tasks to be completed after ACP

- X/X/Ka-band feeds
 - For the remaining BWG
- Antenna controllers for the 70m and HEF
 - Will require significant downtime
- NMC 1.6
- NSP 5.3



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X/X/Ka feeds

- WHAT:
 - Replace the X/X feeds at the BWG's with X/X/Ka-band feeds

- WHEN:
 - Next installation is at DSS-34, June 2005

- IMPACT ON CUSTOMERS:
 - Ka-band downlink capability
 - Improved X-band BWG downlink sensitivity at X-band
 - 0.5-2.5 dB depending on the operations mode and reference antenna



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70m/HEF Antenna Controllers

- **WHAT:**
 - Replace the aging APA's (MODCOMP computers)
- **WHEN:**
 - Next installation is at DSS-15 (April 2004), then DSS-14
- **IMPACT ON CUSTOMERS:**
 - Improved reliability
 - Long downtimes



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NMC 1.6

- WHAT:
 - Repair anomalies, add remote monitor capability
- WHEN:
 - DDR is planned for June 2004
- IMPACT ON CUSTOMERS:
 - Improved reliability



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NSP 5.3

- WHAT:
 - Replace the legacy formatter card, throughput rate up to 10 mbps
 - Increase turbo code rate to meet STEREO needs
 - Add features committed to MRO
 - Add operability features and anomaly fixes
 - Replace the exciter controller (OS-2 box)
- WHEN:
 - DDR in November 2004
- IMPACT ON CUSTOMERS:
 - New features and improved reliability/operability



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Summary

- We depend on the customers to:
 - Take advantage of the capabilities we have put in place
 - SLE, TDN's, arraying
 - Define what capabilities we should put in place
 - Beyond sustaining of current capabilities
 - Help us to select capabilities that are least cost-efficient that could be candidates for decommissioning
- Your input is priceless!

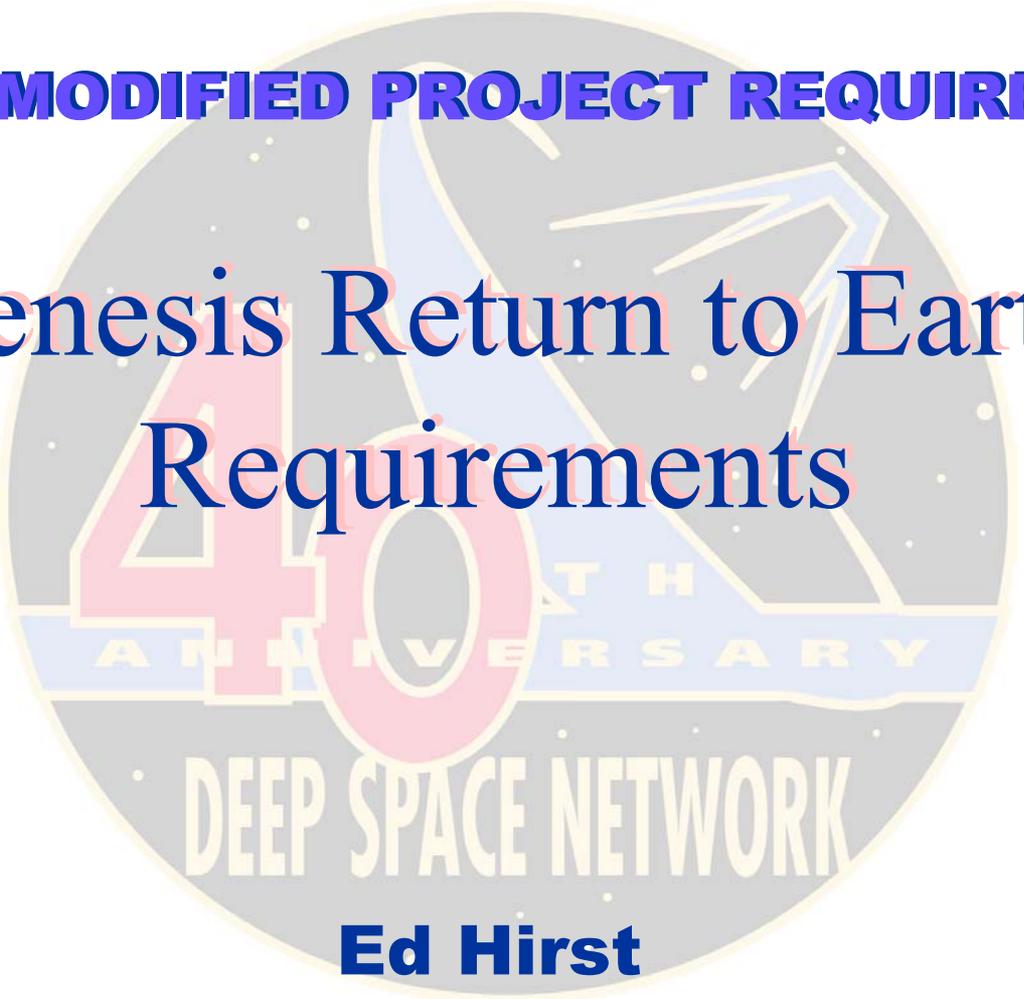


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NEW OR MODIFIED PROJECT REQUIREMENTS

Genesis Return to Earth Requirements



Ed Hirst



Mission Overview

- Genesis is a solar wind sample return mission. The spacecraft is currently at L1.
- Launch: Aug. 8, 2001. Earth Return: Sept. 8, 2004
- Have completed ~24.8 months of collection. Minimum required was 22 months.
- End of solar wind collection is Apr. 1, 2004, start of Earth return operations.
- Spacecraft in good health, Navigation exceptional, budgets and consumables more than sufficient for return flight.
 - Flight has experienced two significant anomalies (thermal, H⁺ rejection), both now settled.



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GENESIS TRAJECTORY OVERVIEW

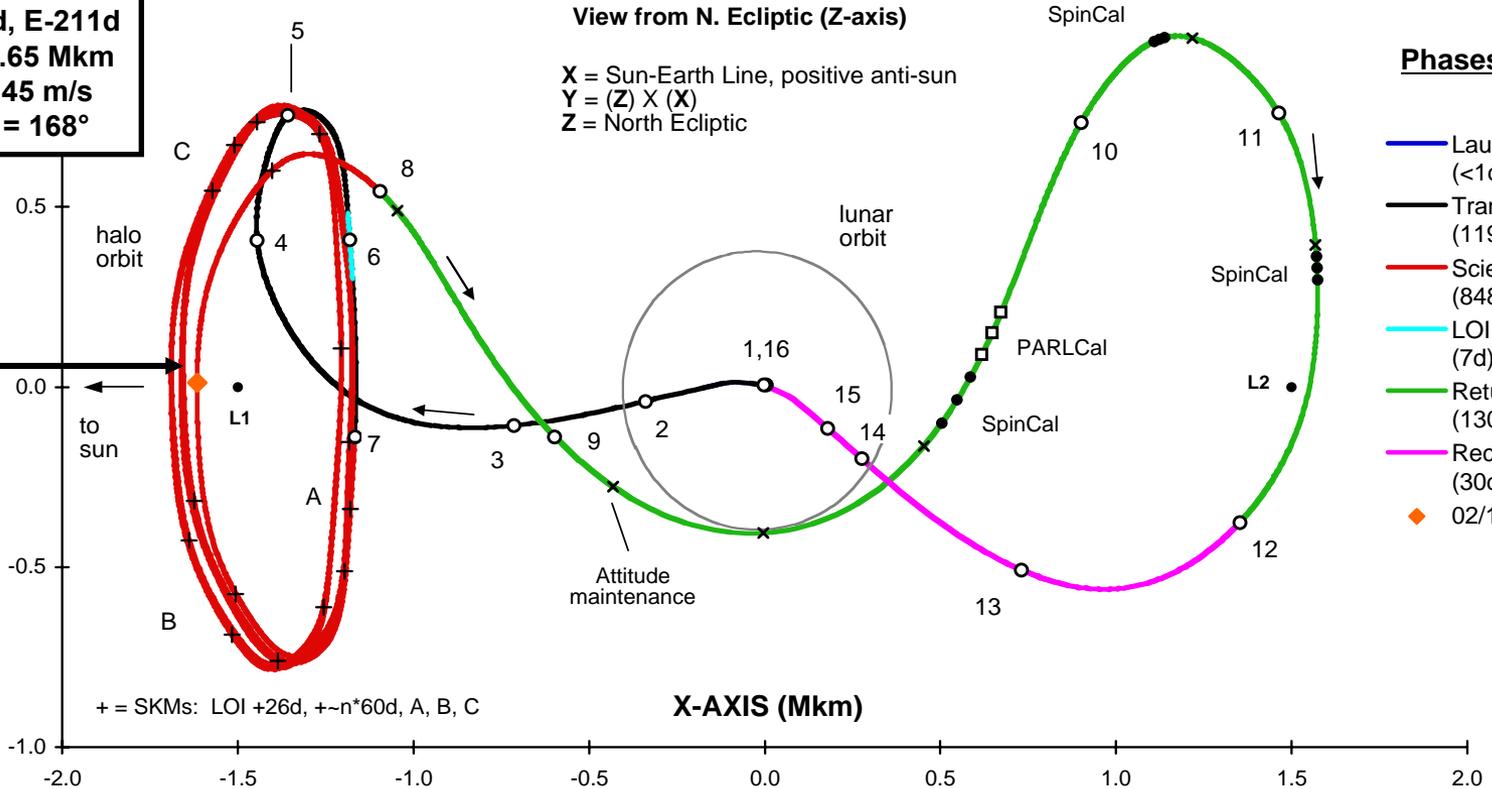
Halo #5 (of 5)
02/10/04
L+916d, E-211d
Re = 1.65 Mkm
Ve = 45 m/s
SPE = 168°

View from N. Ecliptic (Z-axis)

X = Sun-Earth Line, positive anti-sun
Y = (Z) X (X)
Z = North Ecliptic

Phases

- Launch (<1d)
- Transfer (119d)
- Science (848d)
- LOI (7d)
- Return (130d)
- Recovery (30d)
- ◆ 02/10/04



+ = SKMs: LOI +26d, +-n*60d, A, B, C

Key Events

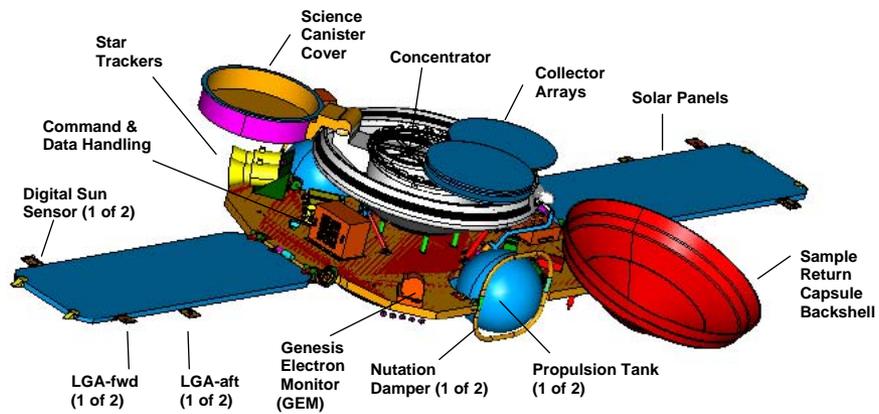
1. Launch	08aug01/000	6. LOI (TCM-5)	16nov01/100	11. TCM-8	30jun04/1057	16. Entry	08sep04/1127
2. TCM-1	10aug01/002	7. Start Science	05dec01/119	12. TCM-9	09aug04/1097	Divert	08sep04/1127
(3. TCM-2	15aug01/007)	8. End Science	01apr04/967	13. TCM-10	29aug04/1117		
(4. TCM-3	18sep01/041)	9. TCM-6	22apr04/988	14. TCM-11	06sep04/1125		
(5. TCM-4	03oct01/065)	10. TCM-7	25may04/1021	15. TCM-12	07sep04/1126		



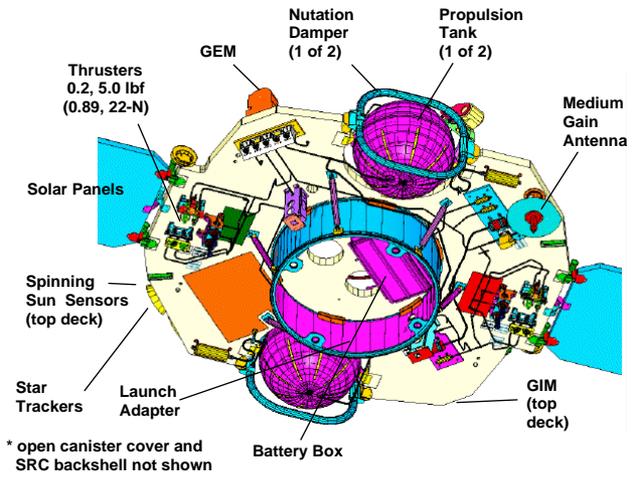
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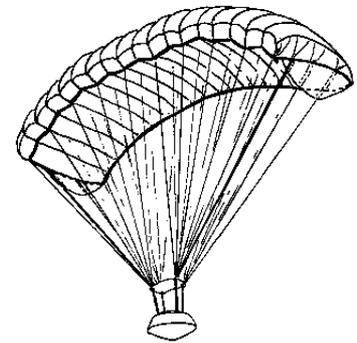
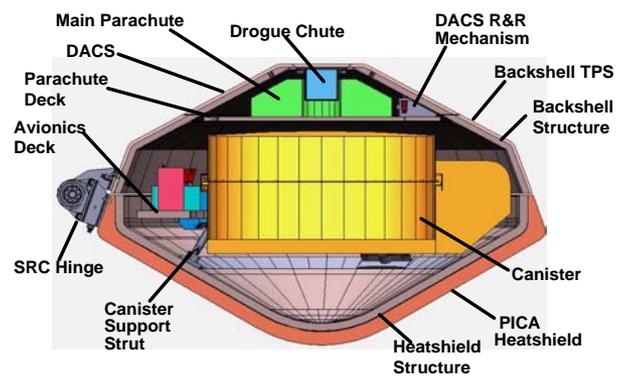
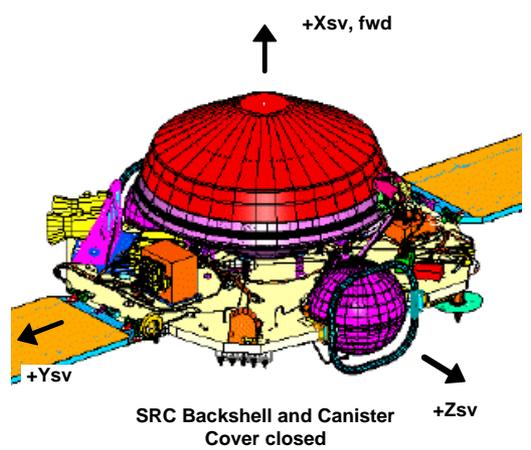
Spacecraft Overview



* Genesis Ion Monitor (GIM) is caddy corner GEM, on +Xsv deck (fwd)
 * MGA and thrusters on -Xsv deck, towards -Xsv-axis (aft)



* open canister cover and SRC backshell not shown





Resource Allocation Review Board

Earth Return Requirements: Primary Return

- Near-Earth S-band telecom: One 34-m, 26-m station per complex.
- Bulk of the mission conducted with 34-m.
- Have spent significant amount of time and Project/DSMS resources to get 26-m to be a reliable backup.
 - Now waiting for D5 delivery, scheduled for ~April 2004.
- Several time critical events and decisions during last three days: TCMs at E-2d, -1d, Go/No-Go Decision at E-8hrs, Release at E-4hrs.
- Change to primary Earth return requirements: formalize 26-m
 - From now: 1 trk per wk to maintain lessons learned
 - E-2 wk: 1 trk per complex, dual with 34-m
 - E-3 d: Continuous, dual with 34-m



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Earth Return Requirements: Backup/Disposal

- Backup Orbit allows for 2nd chance to complete return.
- Backup orbit has evolved from “short duration” (Pre-launch, 2-loop, 24 day/loop) to “long duration” backup orbit (~1 year).
 - Short duration orbit provides insufficient time to investigate.
- Loading study for 1-year option requested and completed.
 - In 2004/ wk 37-38 : 60-75% of requested support
 - In 2004/ wk 41-46 : 73-85% of requested support
 - In 2004/ wk 47-53 : 87-100% of requested support
 - In 2005/ wk 01-39 : 92-100% of requested support
 - In 2005/ wk 40-41 : 80% of requested support

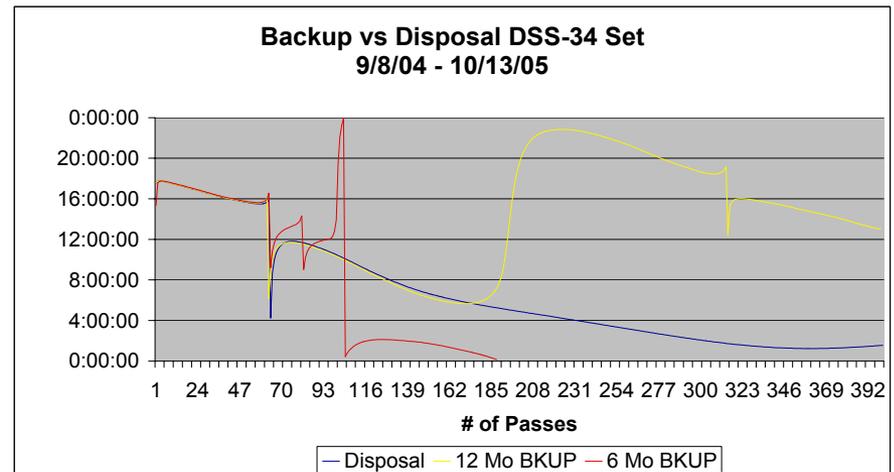
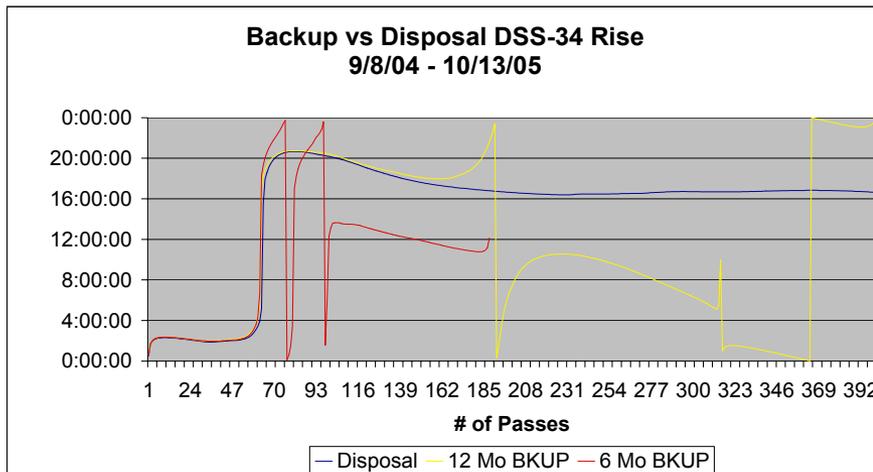


Resource Allocation Review Board

Jet Propulsion Laboratory
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Earth Return Requirements: Backup/Disposal

- Until recently, after Go/No-Go Decision, sample was either delivered to Utah, or dumped into Pacific Ocean.
 - Have changed from “ditch to Ocean” to “divert to Space/Backup”.
 - Requires disposal of bus into heliocentric orbit and s/c decommissioning.
- Also in process: new ~6 month backup orbit.
 - Shorter and restores daylight return.
 - Loading study will be requested/completed in next few weeks.
- First few months of 1-year backup, 6-month backup, and disposal orbit is almost exact same trajectory (i.e. same view periods). See DSS-34:

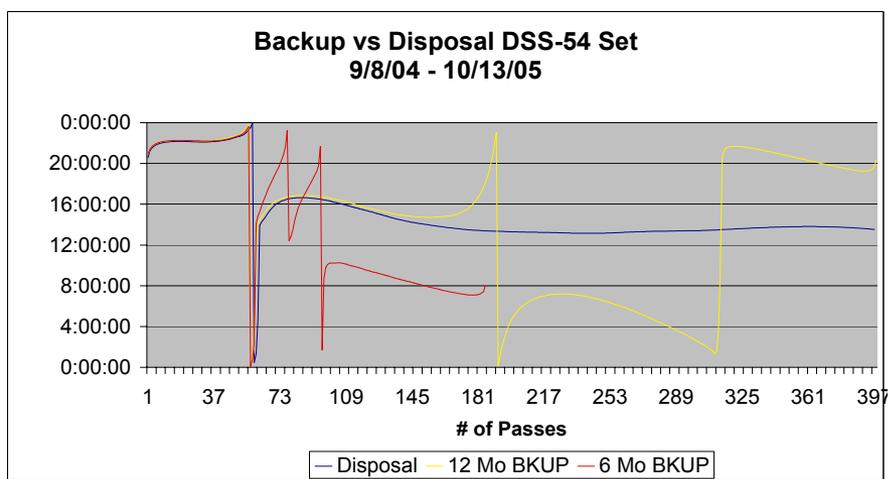
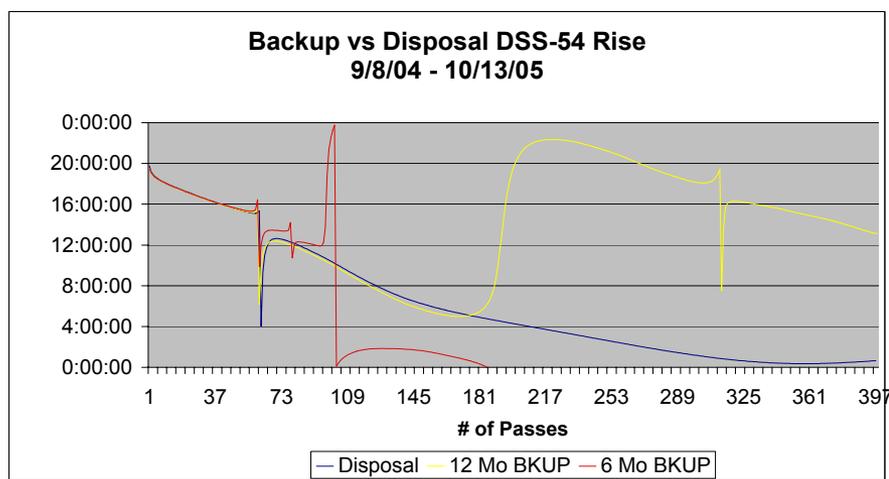
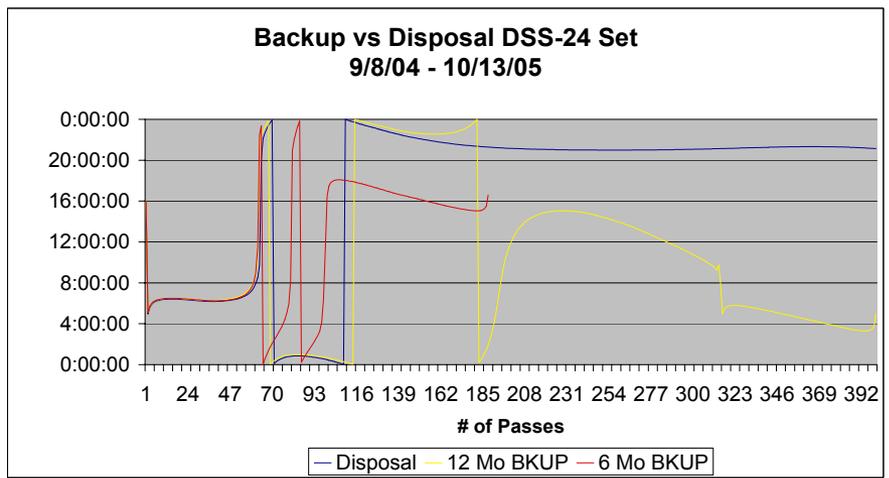
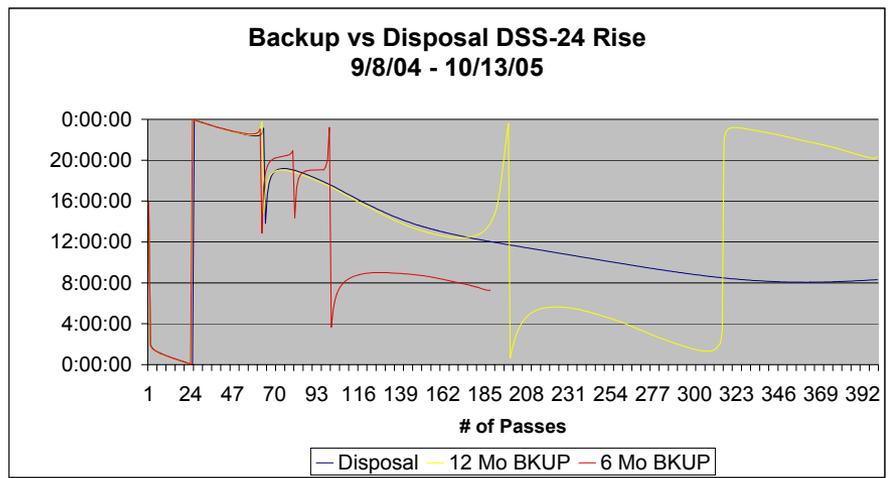




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DSS-24 and DSS-54

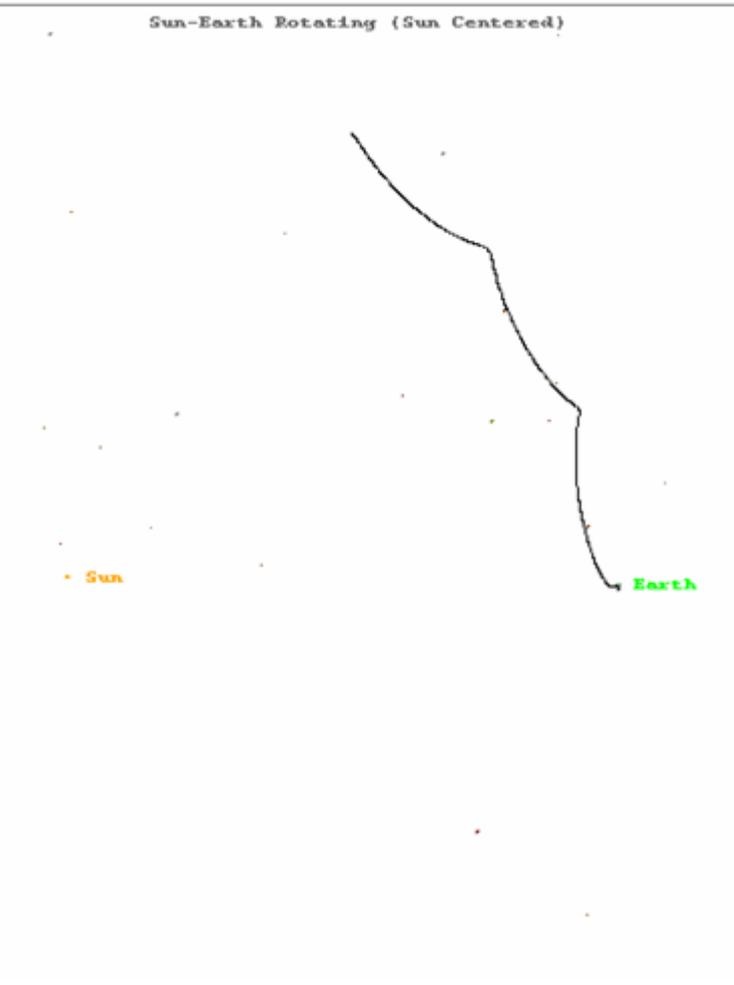
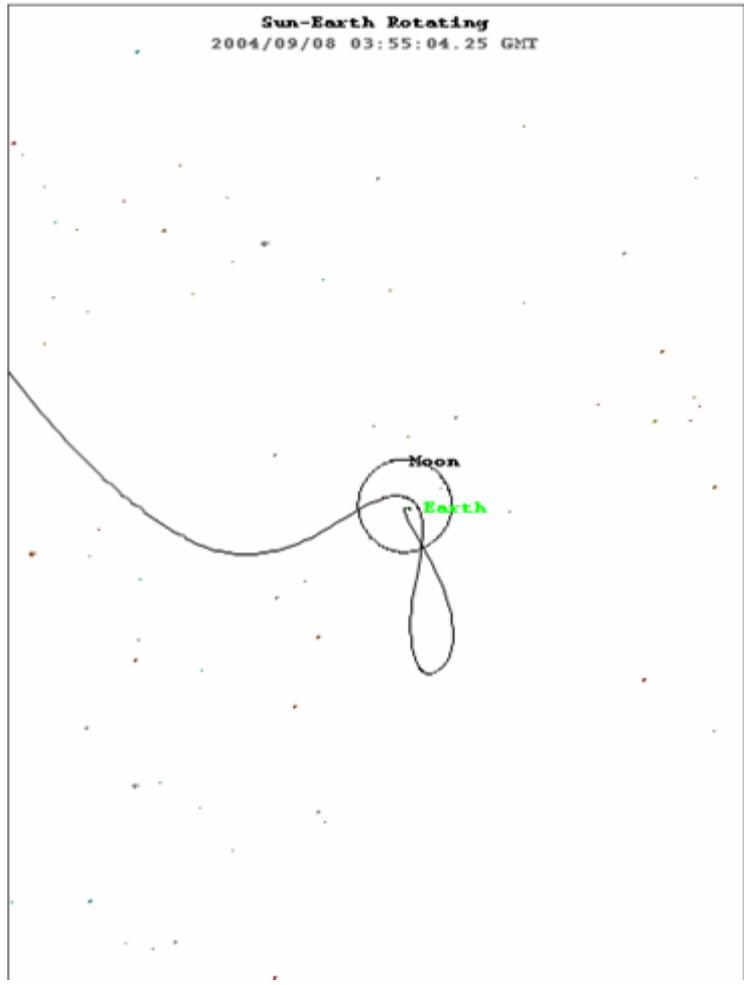




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Disposal Orbit

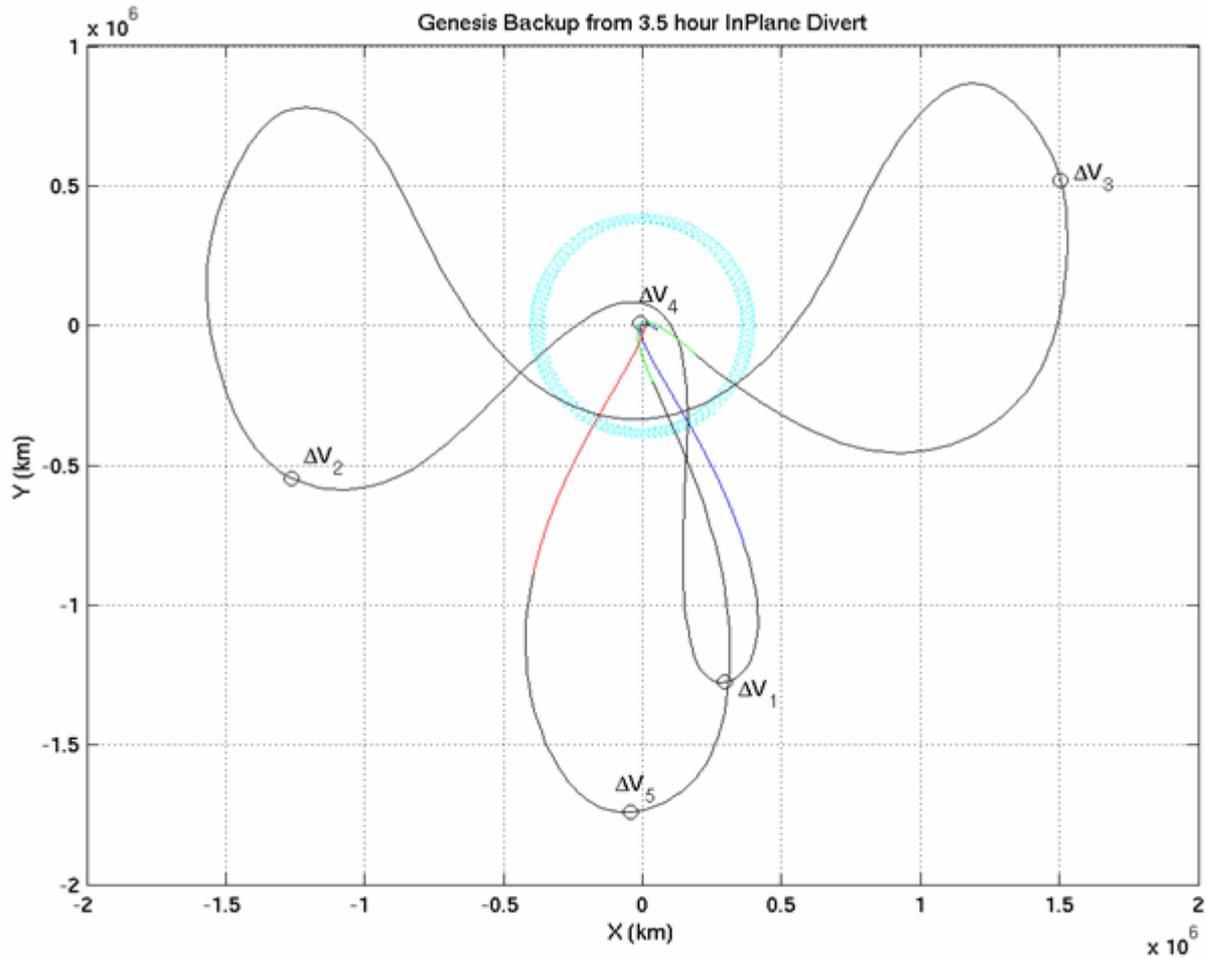




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1-year Backup Orbit



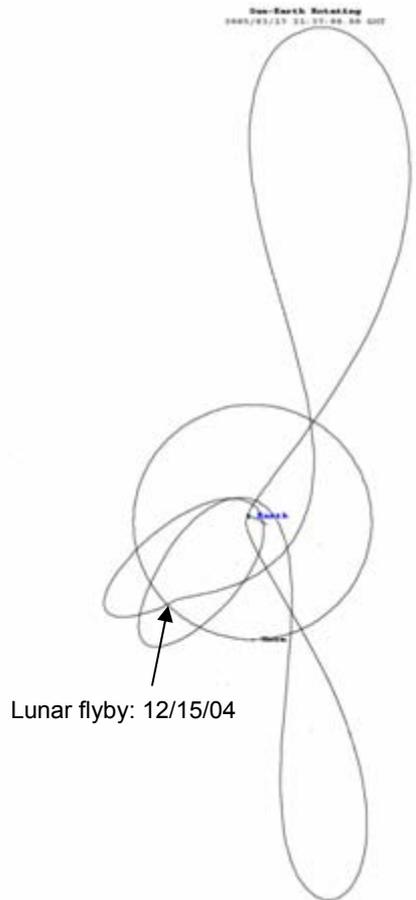


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6-month Backup Orbit



Lunar flyby: 12/15/04



Earth Return Requirements: Backup/Disposal

- Up through August 2003 RARB, GNS ULP contained 2-loop, 24 day/loop backup orbit option: Continuous 34-m coverage.
- Submitted changes to ULP in support of 1-year backup:
 - Continuous 34-m coverage for ~ 2 months, then more typical profile of ~12 hrs/wk, ~90 hrs/TCM, Earth Return similar to Primary return.
- Disposal requirements (subset of 1-year backup):
 - Continuous 34-m coverage for ~ 1 week, daily for ~2 wks, and 1/wk for as much as 3 months (TBR).
 - Required to ensure on correct trajectory. Goal to shut down spacecraft.
- Project will make a decision on 6-month backup orbit in next few weeks.
- Will NOT know which of disposal or backup orbit we are in until Earth Return on 9/8/04.

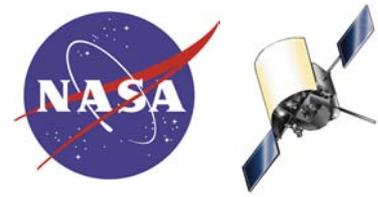


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Earth Return Requirements: Backup/Disposal

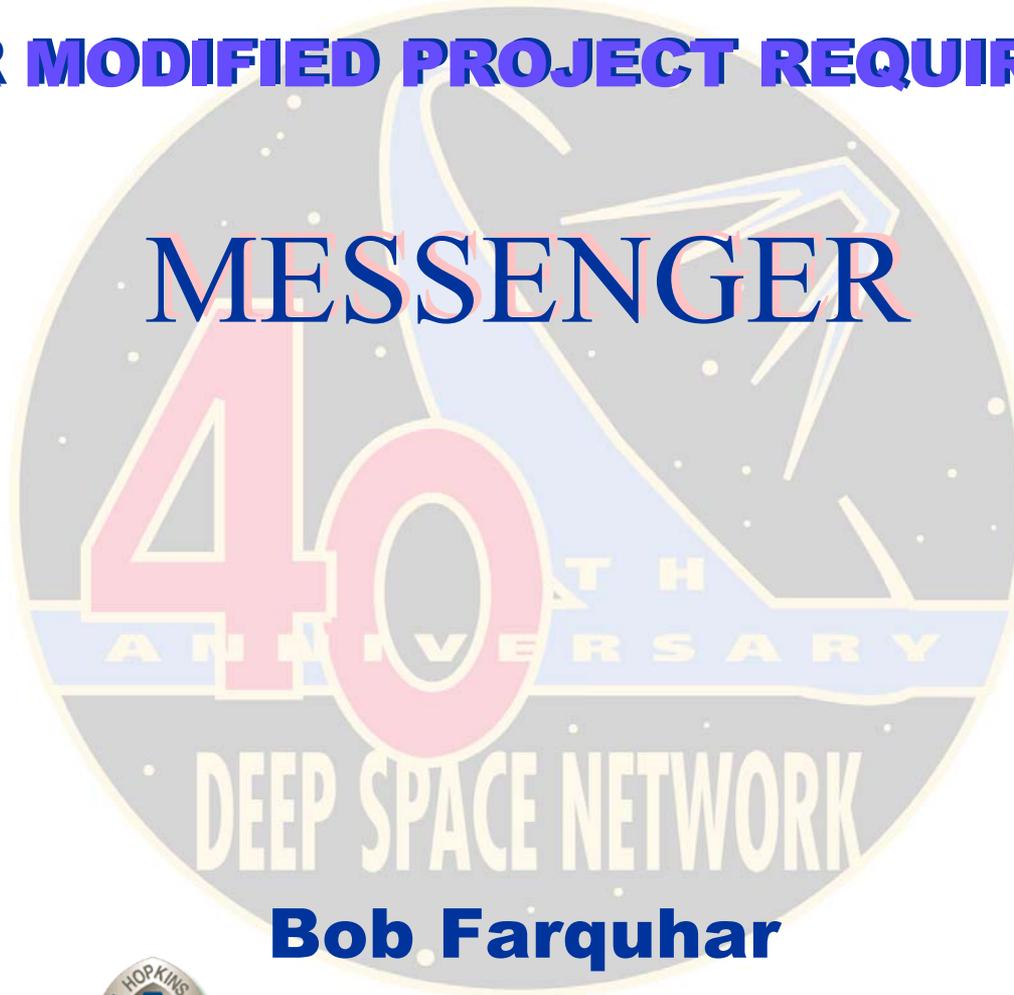
- Submission of 1-year backup orbit requirements not accepted, not analyzed due to not being the most probable of outcome.
- Project submitted these requirements because they represent the bigger load for users.
- Not accepting/analyzing the backup orbit requirements leaves the user community blind to the possible impacts.
- Pre-negotiating backup orbit requirements will minimize the real-time impact to the user community. We all lose if on 9/9/04 Genesis dumps a continuous coverage request into the system.
- At a minimum, a contingency plan should be developed the same way launch slips are handled.
- Genesis is requesting user community concurrence/support for acceptance of the project's backup orbit requirements.

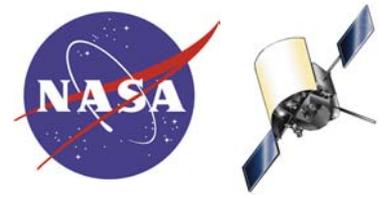


MESSENGER



NEW OR MODIFIED PROJECT REQUIREMENTS





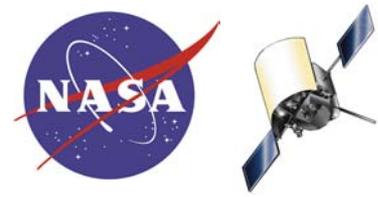
MESSENGER



Introduction

- **MESSENGER**
 - ◆ Launch date: May 2004
 - ◆ Launch vehicle: Delta-2 (heavy)
 - ◆ Venus flybys: November 2004, August 2005 & October 2006
 - ◆ Mercury flybys: October 2007 & July 2008
 - ◆ Mercury orbit: July 2009

- *New Horizons*
 - ◆ Launch date: January 2006
 - ◆ Launch vehicle: Atlas-5
 - ◆ Jupiter flyby: February → March 2007
 - ◆ Pluto/Charon flyby: July 2015
 - ◆ Kuiper-Belt objects: 2017→ 2021

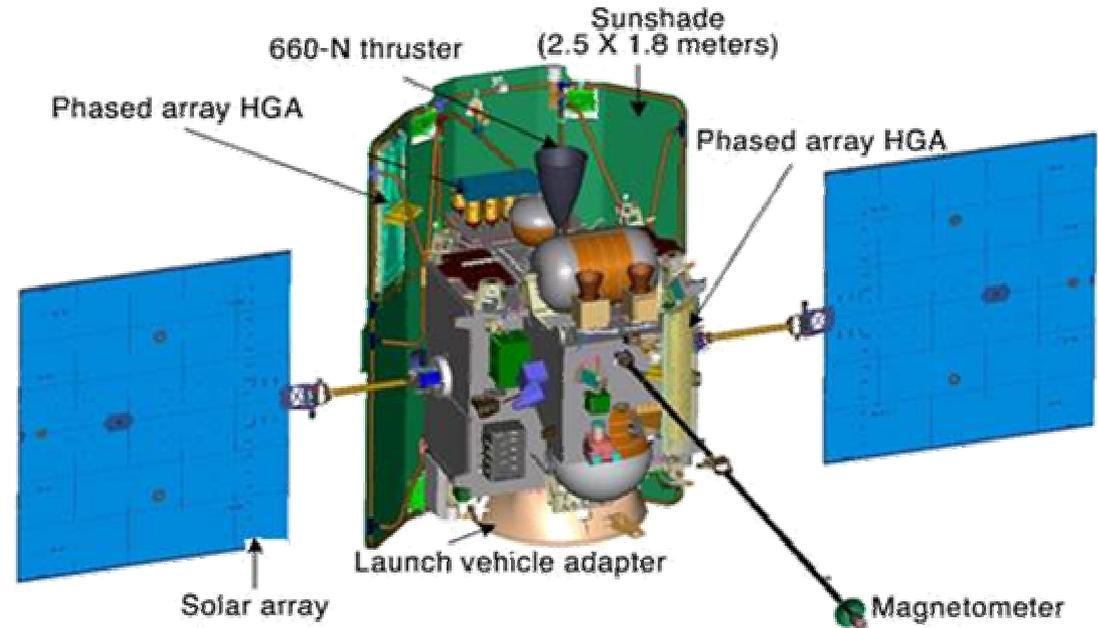


MESSENGER



MESSENGER Spacecraft

- Three-axis stabilized
- Total weight: 1130 kg
 - Propellants: 612 kg
 - Experiments: 40 kg
- Science Payload
 - Dual imaging system
 - Gamma-ray and neutron spectrometer
 - X-ray spectrometer
 - Magnetometer
 - Laser altimeter
 - Atmospheric and surface composition spectrometer
 - Energetic particle and plasma spectrometer
 - Radio science
- Dual-mode propulsion system [ΔV capability ~ 2300 m/sec]
- Solar panels [30% cells, 70% mirrors]
- Passive thermal design





MESSENGER



Payload Summary

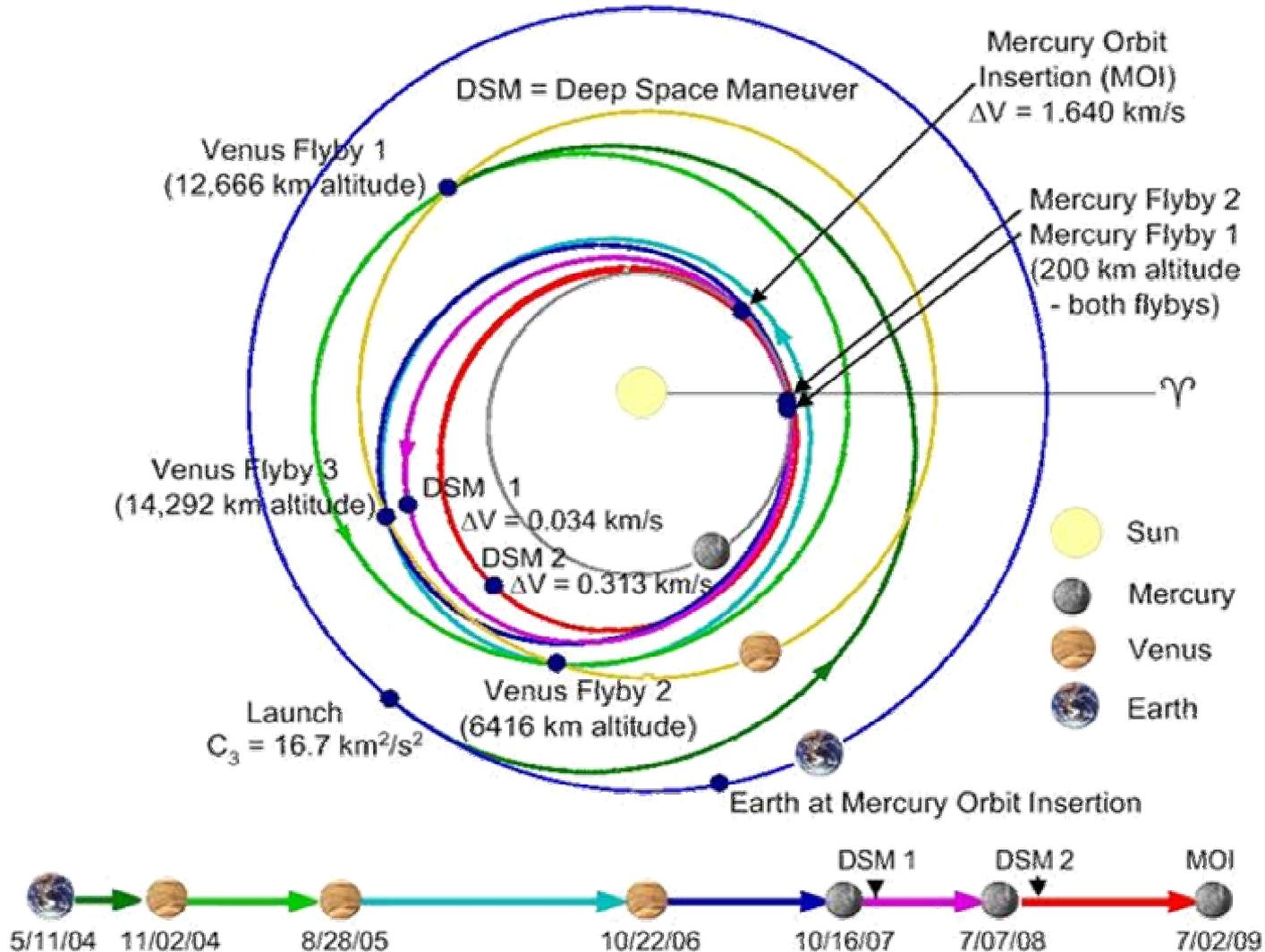
Science Instrument Name	Major Objectives
Mercury Dual Imaging System	map Mercury's surface in visible to near-infrared wavelengths
Gamma-Ray and Neutron Spectrometer <ul style="list-style-type: none">- Gamma-Ray Spectrometer- Neutron Spectrometer	measure surface elemental abundances; characterize polar deposits
X-Ray Spectrometer	determine element composition of Mercury's surface by solar-induced X-ray fluorescence
Magnetometer	measure magnetic field of Mercury
Mercury Laser Altimeter	measure libration of Mercury and topography of northern hemisphere
Mercury Atmospheric and Surface Composition Spectrometer <ul style="list-style-type: none">- Ultraviolet-Visible Spectrometer- Visible-Infrared Spectrograph	measure surface reflectance and exospheric particle emissions during Mercury limb scans
Energetic Particle and Plasma Spectrometer <ul style="list-style-type: none">- Fast Imaging Plasma Spectrometer- Energetic Particle Spectrometer	examine ion species in and around Mercury's magnetosphere
Radio Science <ul style="list-style-type: none">- X-band Transponder	measure Mercury's gravity field; support laser altimetry



MESSENGER



Baseline Trajectory Profile





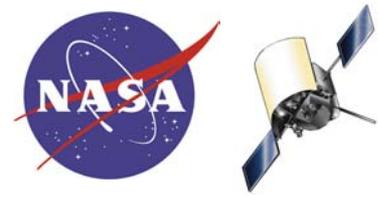
MESSENGER



Baseline Launch Window ΔV Budget

Launch Dates (2004)	May 11-22
Maximum launch C_3 (km^2/s^2)	17.472
Launch Window \rightarrow	12 days
L/V PCS	95%
Deep space maneuvers	347
Mercury orbit insertion (MOI)*	15
MOI finite-burn penalty	72
Orbit maintenance (1 year)	87
Navigation (ΔV_{99})	190
Margin	<u>47</u>
Total ΔV (m/s)	2300

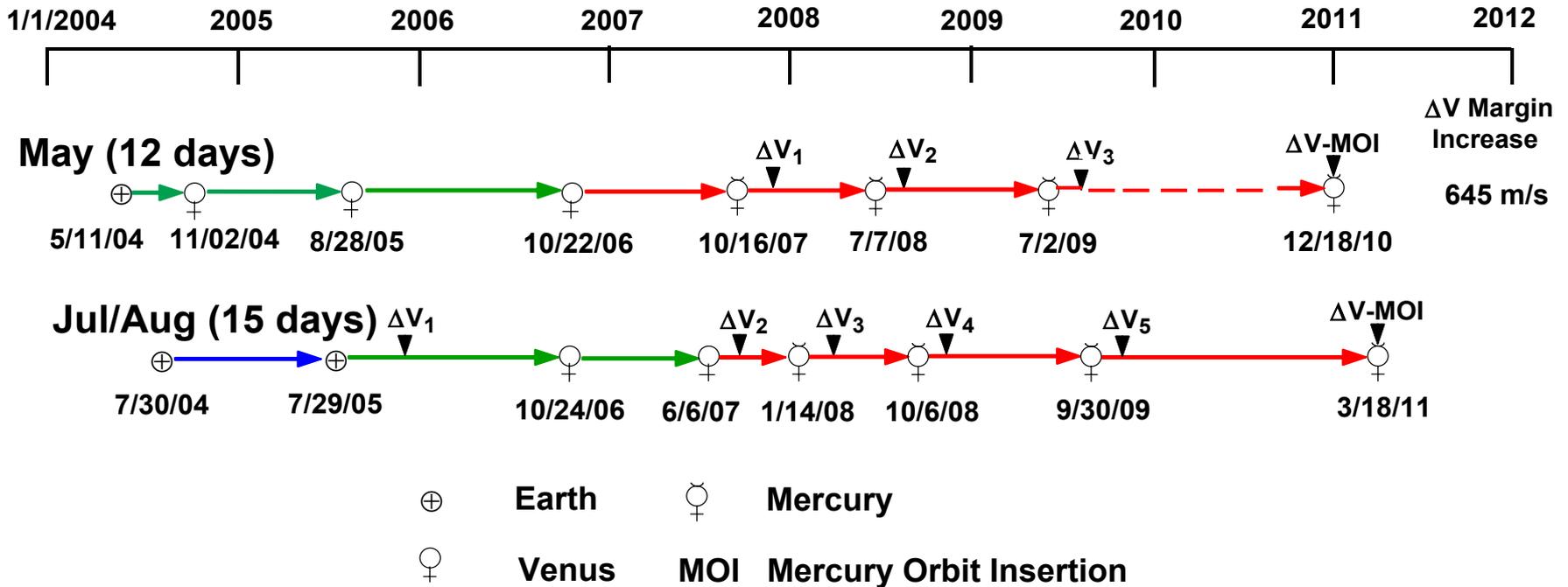
* MOI (MOI-1 + MOI-2) = 1629 m/s for 3 phasing orbits (1640 m/s for 4 phasing orbits)



MESSENGER



3rd Mercury Flyby as Contingency Recovery Option for May 2004 Launch



* ΔV margin increase based on maximum use of LVA thruster – 100% utilization of usable oxidizer



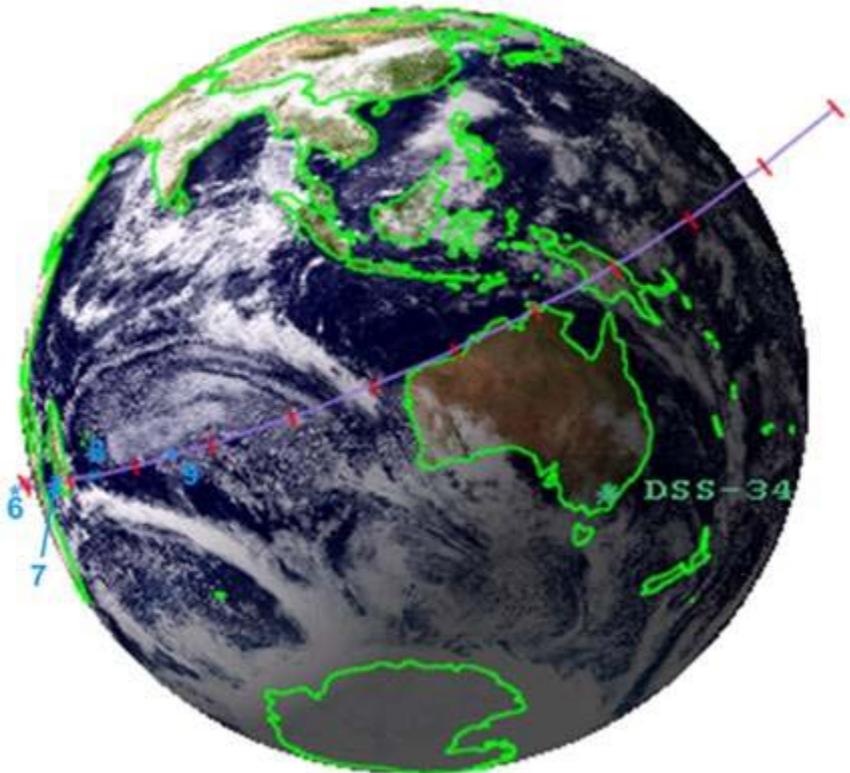
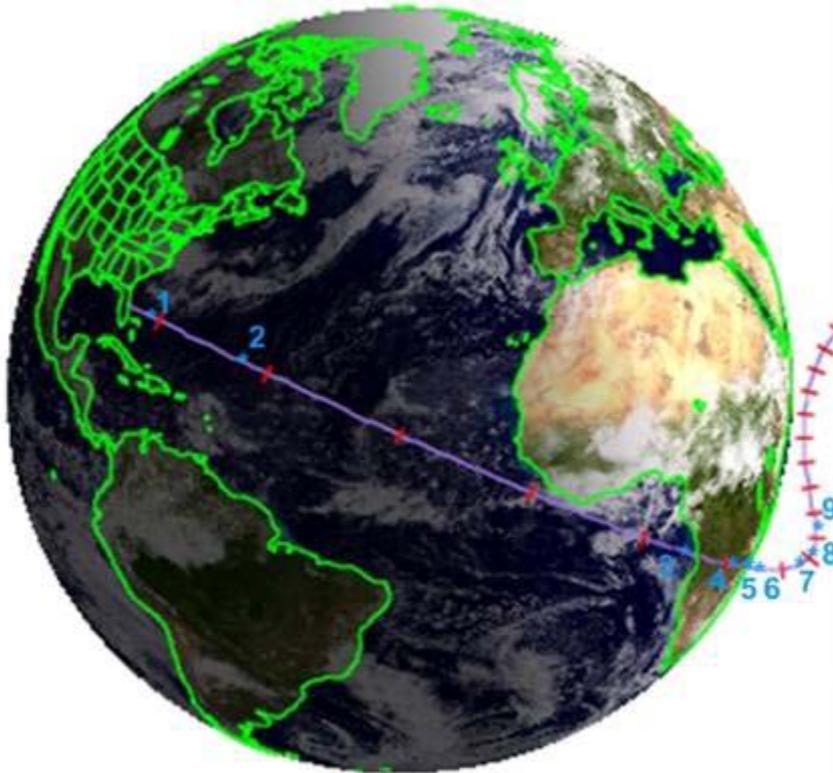
MESSENGER

Baseline Launch Trajectory Key Events



93° Launch Azimuth Primary Launch Events Legend (time in seconds from launch)

- | | | |
|------------------------------|-------------------------------|----------------------------------------------|
| (1) MECO (263.5) | (4) SECO2 (1805.7) | (7) Stage 3 jettison (S/C separate) (2277.1) |
| (2) SECO1 (526.2) | (5) Stage 3 ignition (1887.6) | (8) Perth, Australia 6° elev AOS (2487.6) |
| (3) Restart stage 2 (1635.8) | (6) Stage 3 burnout (1972.8) | (9) Canberra DSS-34 6° elev AOS (2847.6) |



time ticks every 5 minutes until launch + 90 minutes

SECO = Second Stage Engine Cutoff
MECO = Main Engine (1st stage) Cutoff

AOS = Acquisition of Signal
 DSS = Deep Space Station

Delta II 7925H-9.5 launch vehicle

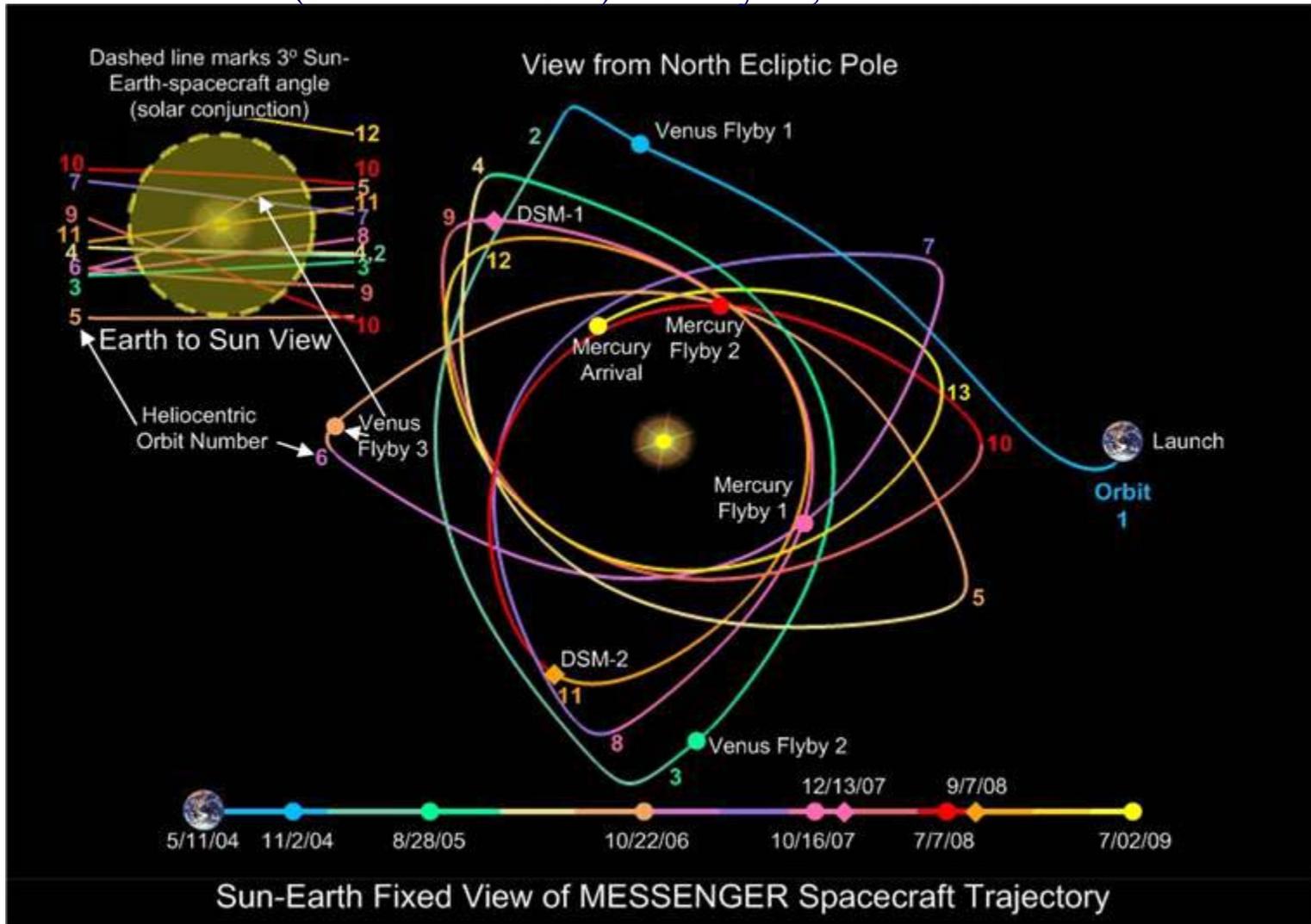
May 11, 2004 launch 06:26:14 UTC, 2:26:14 am EDT



MESSENGER



Cruise Phase Solar Conjunctions (3° Sun-Earth-S/C) for May 11, 2004 Launch

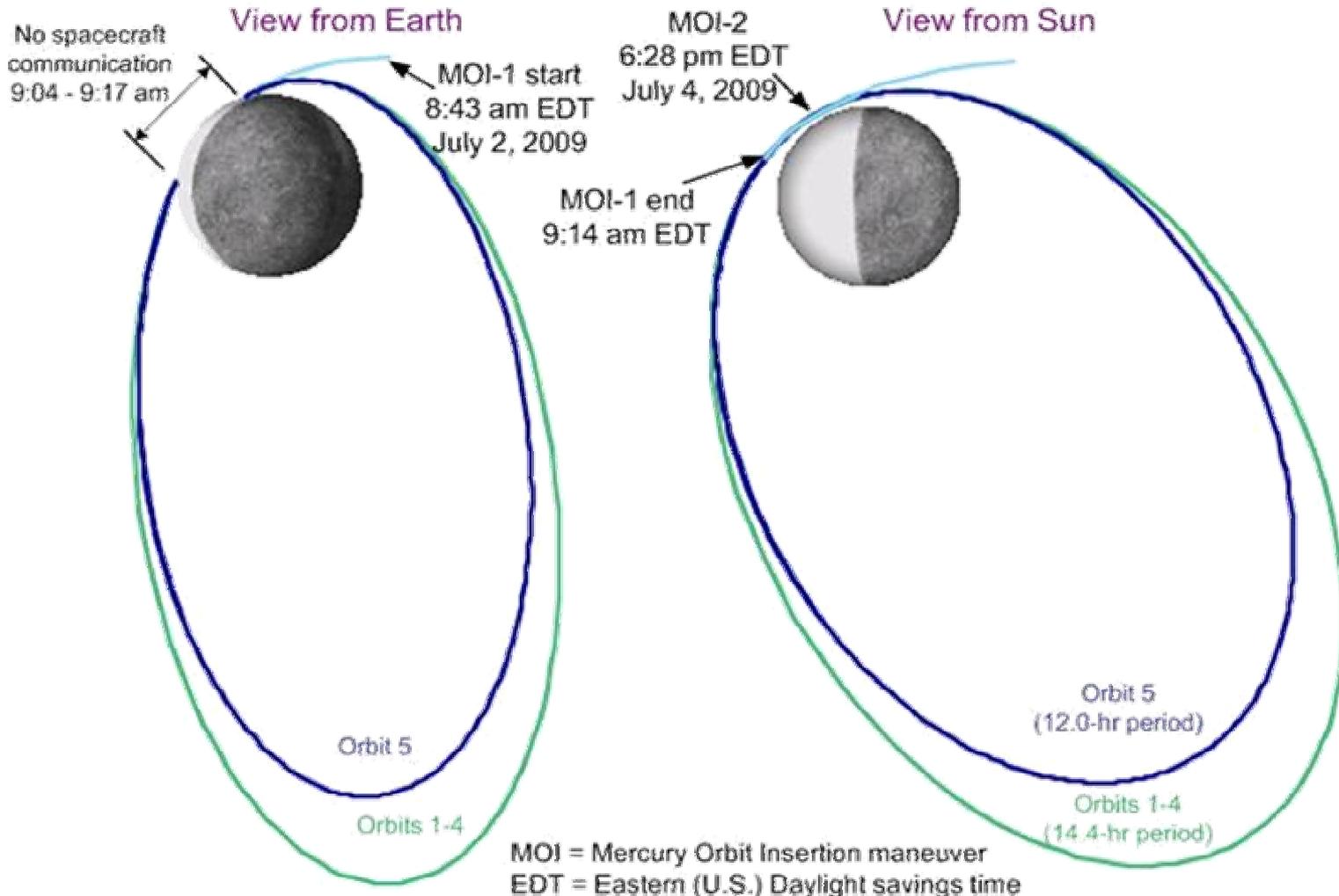




MESSENGER

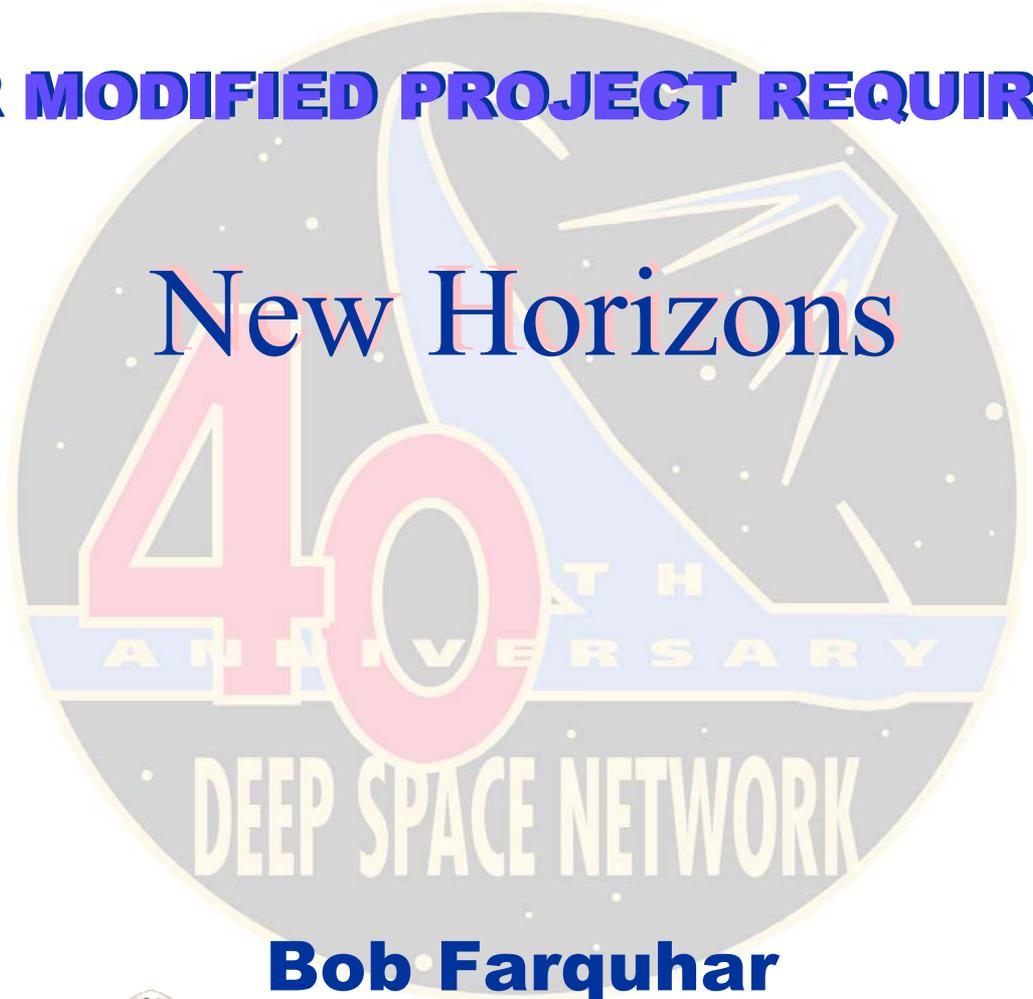


Mercury Orbit Insertion for 5/11/04 Launch





NEW OR MODIFIED PROJECT REQUIREMENTS



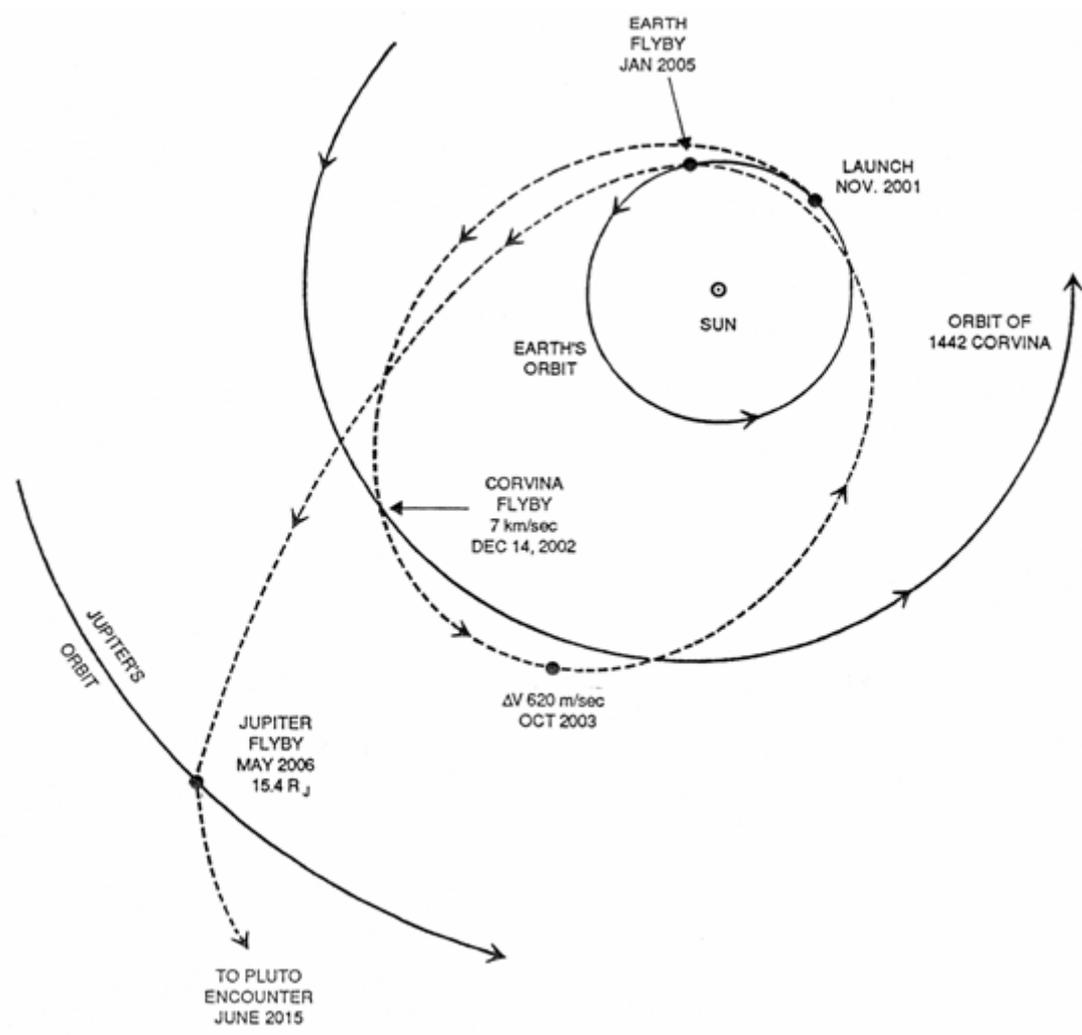
Bob Farquhar



APL JHU Applied Physics Laboratory

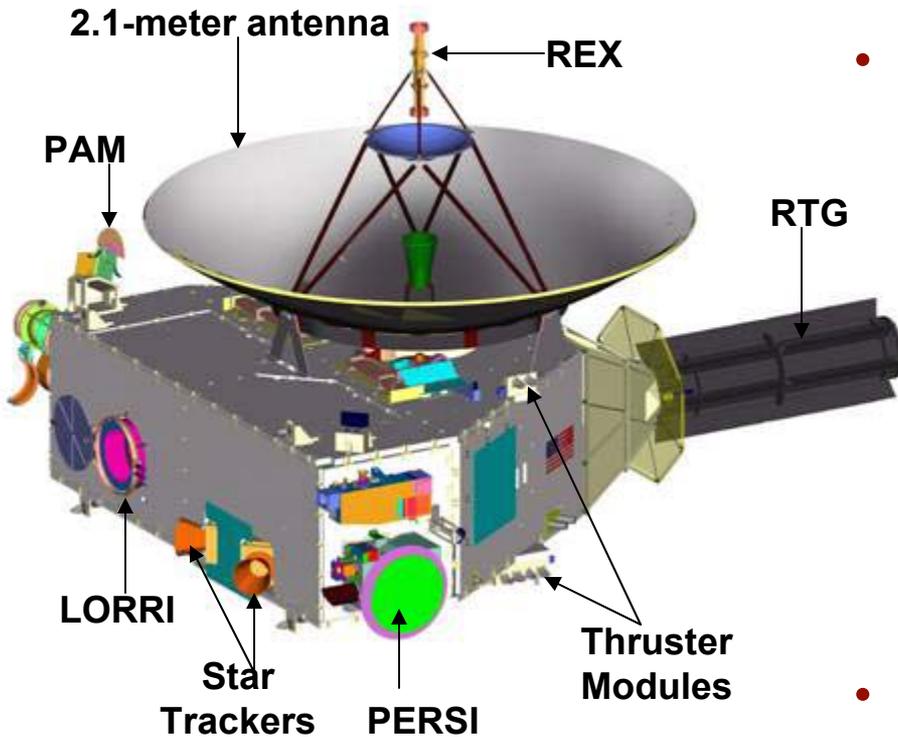


1989 Mission Concept





New Horizons Spacecraft



- Science Payload
 - PERSI: Visible mapping, IR spectroscopic mapping, and UV imaging spectroscopy
 - REX: Radio science and radiometry
 - PAM: Solar wind ion and energetic particle spectrometry
 - LORRI: Long-range and high-res visible mapping
- Three-axis and spin-stabilized attitude control modes
- X-band communications [768 bps at Pluto]
- RTG power [220 watts at Pluto]
- Data storage: 128 GB

Total Weight:	465 kg
Hydrazine Fuel [$\Delta V \sim 400$ m/s]	80 kg
Experiments	27 kg



Mission Timeline

Year 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023

Baseline



Year 2007 2009 2011 2013 2015 2017 2019 2021 2023 2025 2027 2029

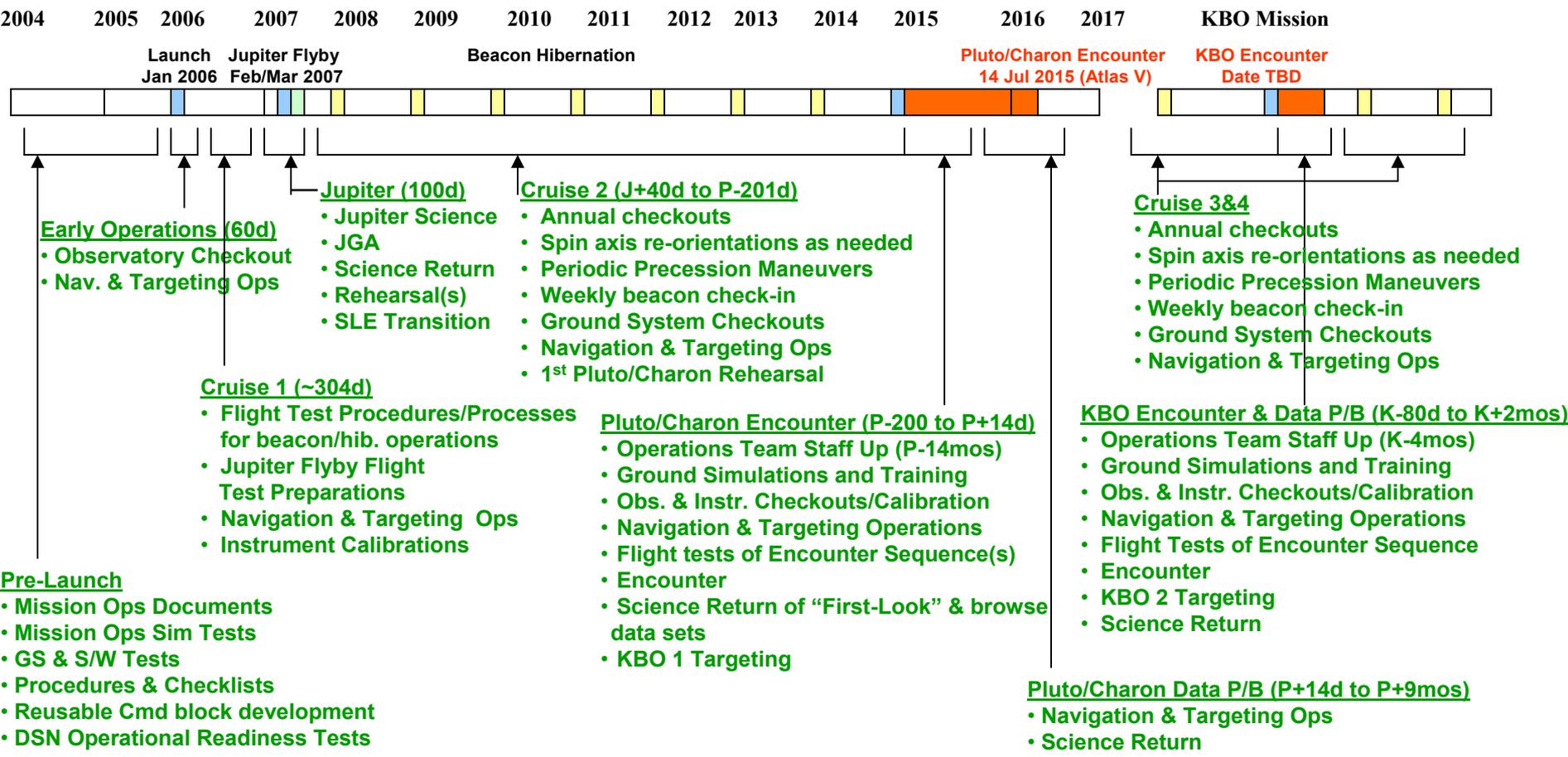
Backup



Earth
 Jupiter
 Pluto
 Mission to Pluto
 Mission to KBOs



Mission Timeline & Phases Overview

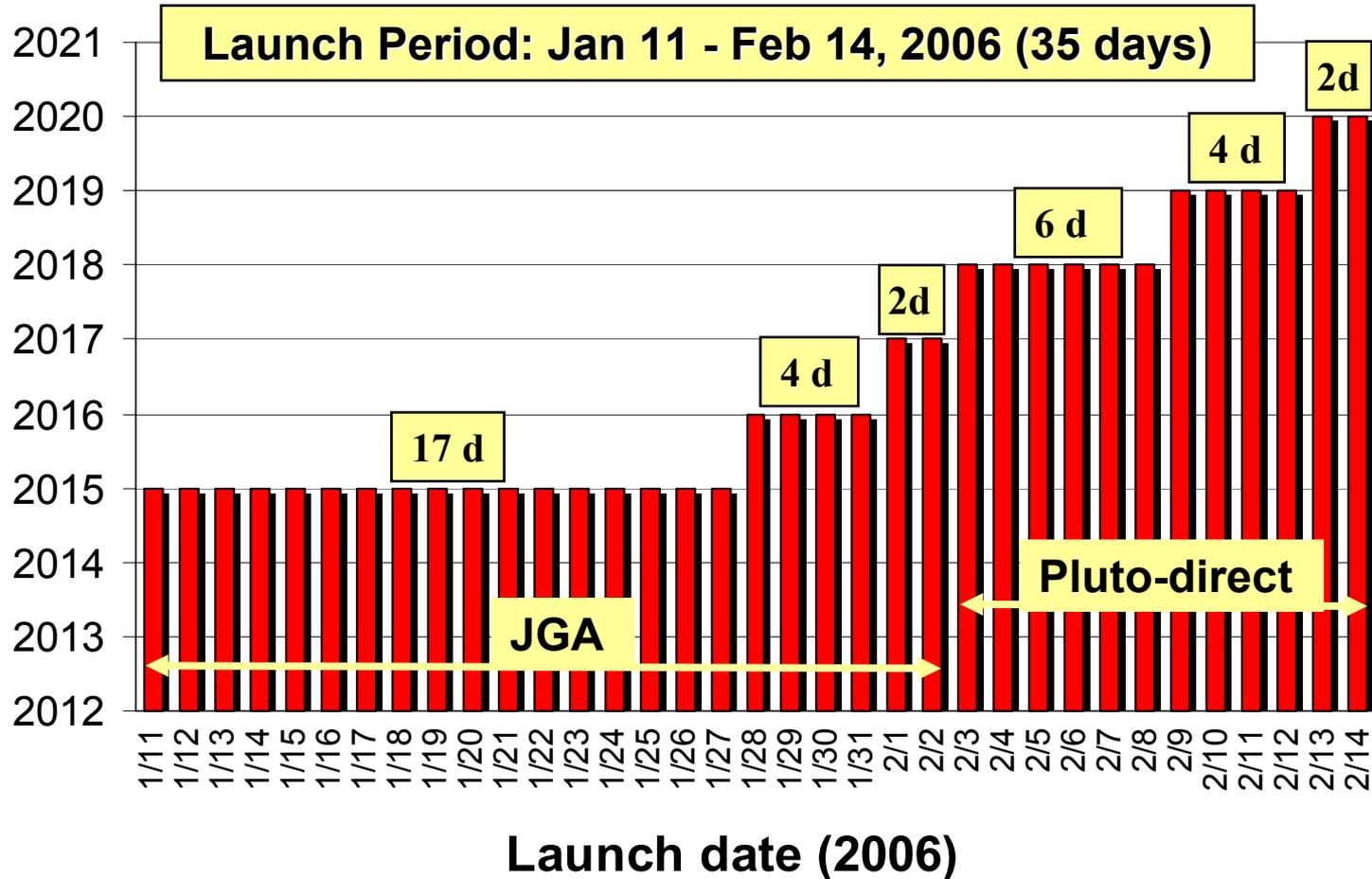




2006 Baseline Mission Design



Pluto arrival year





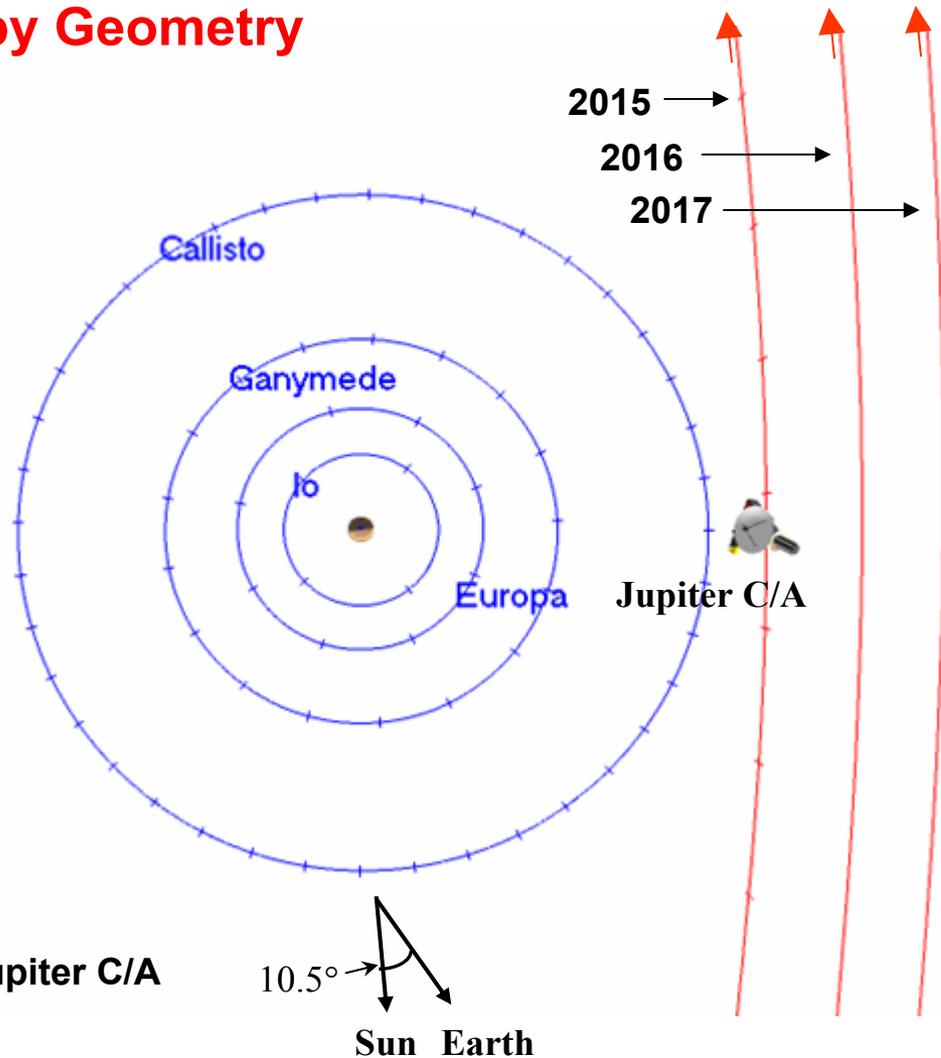
2006 Baseline Mission Design



Jupiter Flyby Geometry

Jupiter Flyby Parameters

Pluto Arrival	2015	2016	2017
Jupiter C/A Date	Feb 26 - Mar 2, 2007	Mar 14 - 15, 2007	Mar 25, 2007
Jupiter C/A Distance	32 R _J	39 R _J	45 R _J
Jupiter Flyby Speed	21 km/s	20 km/s	19 km/s



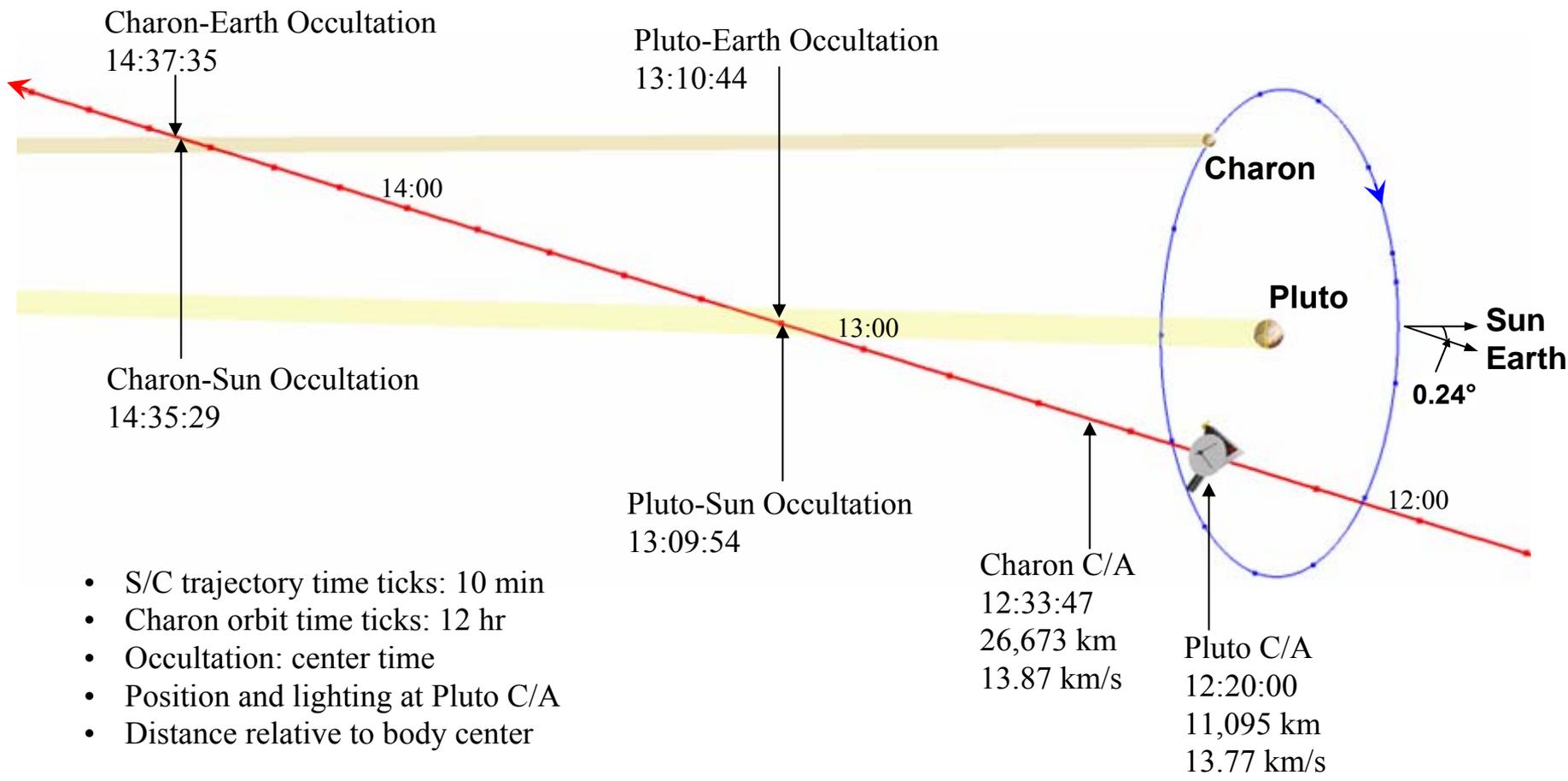
Time ticks every 10 hr
 Satellite position at Jupiter C/A



2006 Baseline Mission Design



Pluto-Charon Encounter Geometry – Arrival July 14, 2015

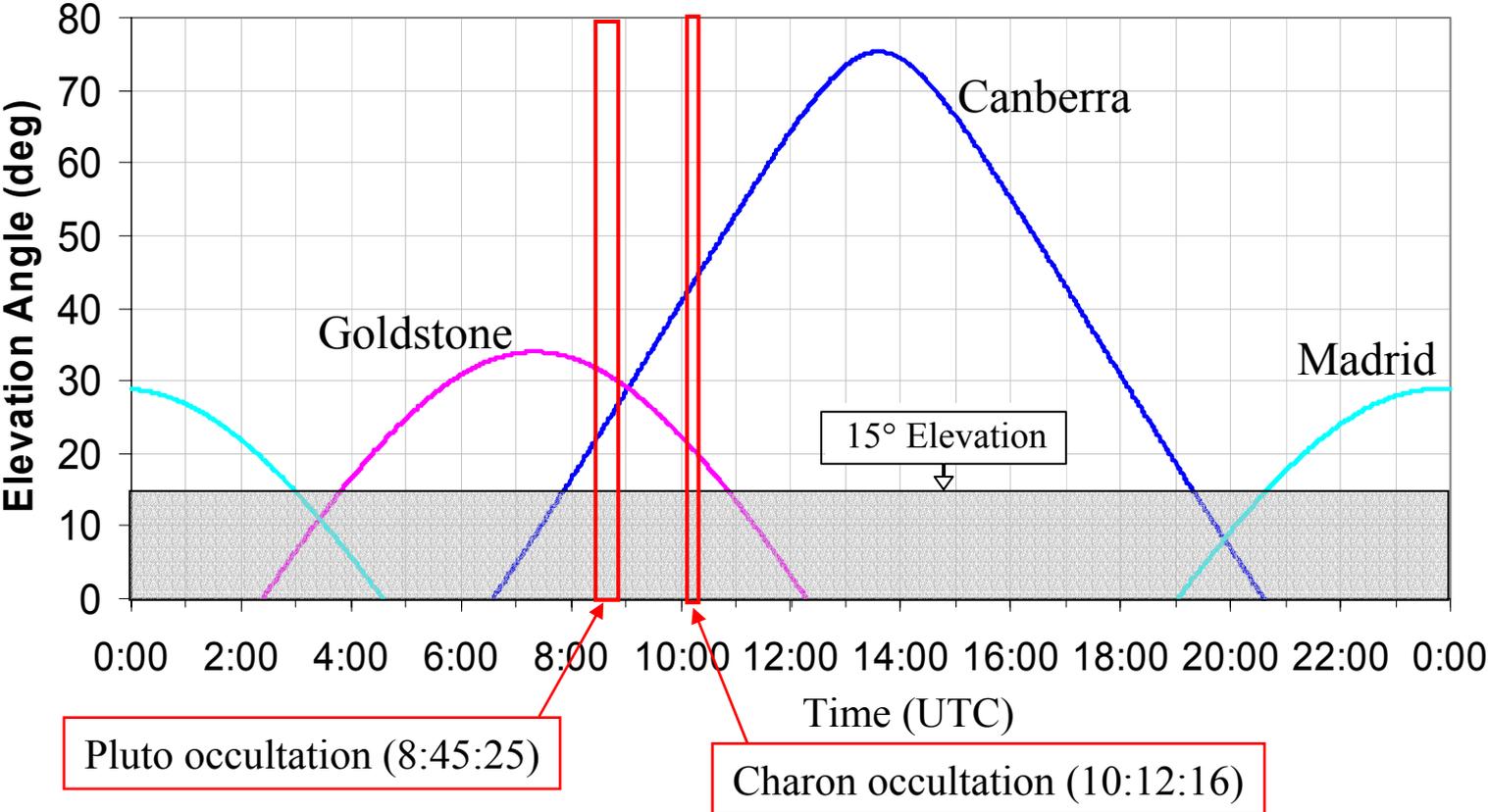




2006 Baseline Mission Design



DSN Profile at Pluto-Charon Encounter on July 14, 2015



One-way light time delay: 4 hours 25 minutes 19 seconds



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Jet Propulsion Laboratory
California Institute of Technology

NEW OR MODIFIED PROJECT REQUIREMENTS

STEREO Mission Status



Dan Ossing

240-228-8319

Daniel.Ossing@jhuapl.edu



APL JHU Applied Physics Laboratory



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STEREO Overview

Mission Objectives: 2-year mission to measure the causes and mechanisms of CME initiation and characterization of their propagation through the heliosphere. 1-year extended data analysis.

Organizations: NASA GSFC, JHU/APL, Naval Research Laboratory, University of California at Berkeley, University of New Hampshire, University of Minnesota, Observatoire de Paris.

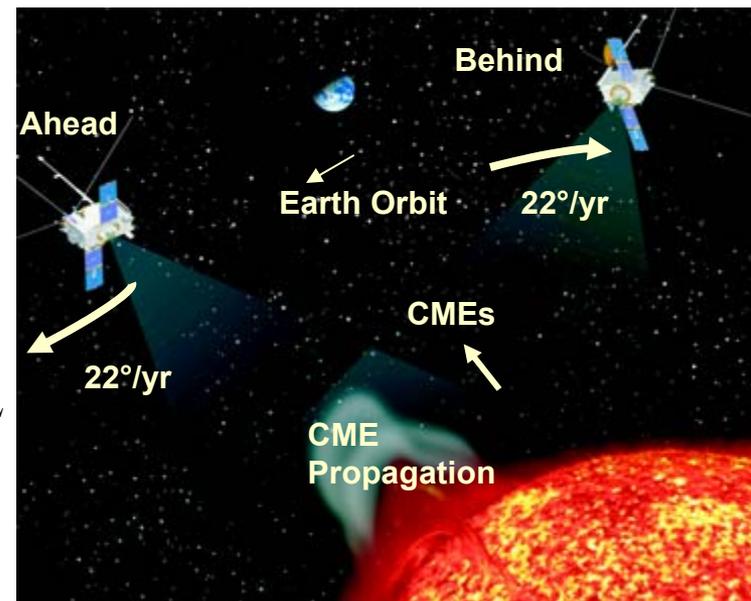
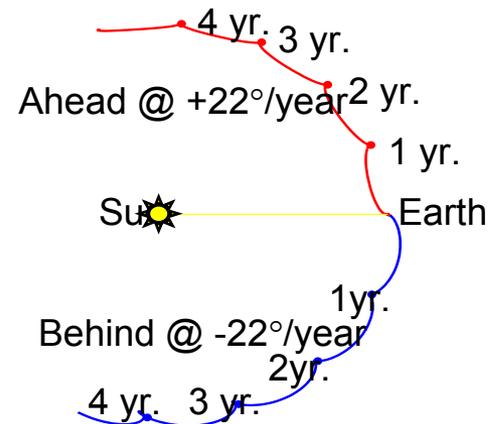
Mission Description: Two functionally identical spacecraft in heliocentric orbits at 1 AU ($22^\circ/\text{yr}$ drift from Earth orbit leading/lagging configuration).

Each Observatory:

- Volume: 1.2 w x 2.0 l x 1.5 h meters
- Mass: 520 kg (dry mass)
- Power: 453 W (EOL)

Launch: To be launched from KSC on a Delta 7925-10L in February 2006.

Website: <http://stereo.gsfc.nasa.gov>





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STEREO Phasing Orbit

Mission Timeline

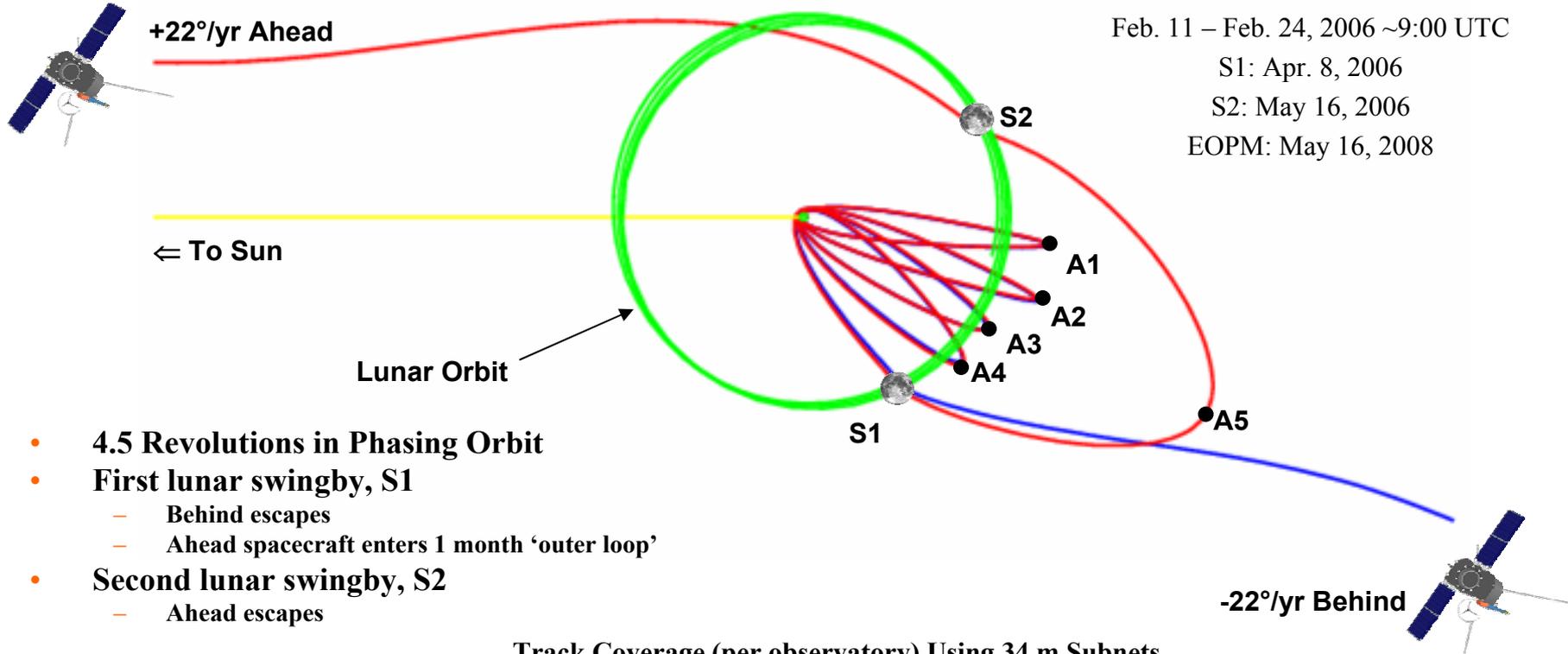
Launch:

Feb. 11 – Feb. 24, 2006 ~9:00 UTC

S1: Apr. 8, 2006

S2: May 16, 2006

EOPM: May 16, 2008



- 4.5 Revolutions in Phasing Orbit
- First lunar swingby, S1
 - Behind escapes
 - Ahead spacecraft enters 1 month 'outer loop'
- Second lunar swingby, S2
 - Ahead escapes

Track Coverage (per observatory) Using 34 m Subnets

- Launch + 7 days = Continuous support
- Phasing orbits = 3 hrs/day
- Maneuvers = 24 hrs
- Heliocentric orbit = 3.5 to 5 hrs/day

STEREO Development Status

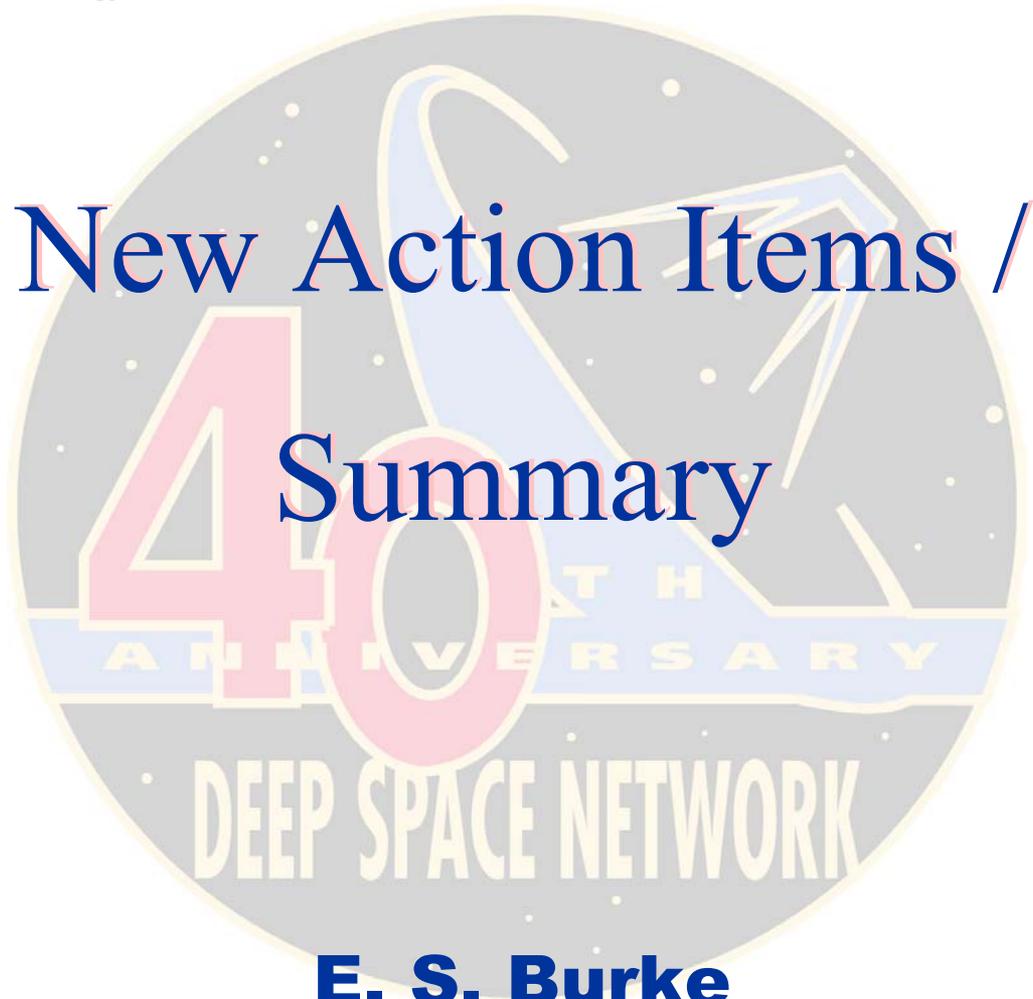
- **Currently in various stages of flight fabrication, software development and assembly of ground support equipment**
- **Some flight hardware has been delivered**
- **All subsystems but propulsion are on schedule to support current I&T approach**
 - Recent issue with thruster valves requiring rework
- **Instrument delivery schedules in advance of need dates**
- **Schedule of major reviews planned**
 - **Observatory Mission Operations Review: 11/10/04**
 - **Observatory Flight Operations Review: 9/14/05**
 - **Observatory Flight Readiness Review: 2/6/06**



Resource Allocation Review Board

Jet Propulsion Laboratory
California Institute of Technology

New Action Items / Summary



E. S. Burke





Resource Allocation Review Board

Jet Propulsion Laboratory
California Institute of Technology

Resource Allocation Review

2005 - 2014

TIMELINE FOR NEXT REVIEW

August 10, 2004

Calendar Date	Milestones
May 4, 2004	Distribute Mission Set, Major Events and User Loading Profiles to Projects/Users for verification.
May 28, 2004	Deadline for Projects/User's responses to Mission Set, Major Events, and User's Loading Profiles; and last day for trajectory or viewperiod updates or submissions.
July 8, 2004	NASA Headquarters Science Review
July 9, 2004	Publish preliminary Contentions and Recommendations on the RAPWEB for Projects/User's review.
July 23, 2004	Complete the review of RAPWEB published contentions with Projects/Users
August 10, 2004	RESOURCE ALLOCATION REVIEW BOARD

Advance Composition Explorer (ACE)

Afkhami, F. GSFC
 Rhoads, L.L. GSFC
 Snell, J. M. GSFC
 Sodano, R. J. GSFC

Canberra DSCC

Churchill, P. CDSCC
 Jacobsen, R. CDSCC
 Newman, N. R. Code I
 Ricardo, L. CDSCC
 Robinson, A. CDSCC
 Wiley, B. CDSCC

Cassini

Chin, G. E 230-310
 Doody, D. F. 230-310
 Frautnick, J. C. 230-301
 Gustavson, R. P. 230-301
 Iovu, T. C. 230-310
 Matson, D. L. (PS)¹ 230-205
 Maize, E. H (DPM) 230-104
 Mitchell, R. T. (PM)² 230-205
 Miyoshi, T. 230-310
 Sakamoto, L. L. 230-104
 Seal, D. A. 230-205
 Webster, J. L. 230-104
 Weld, K. 230-260

Chandra

Digesu, S. MSFC
 Gage, K. R. SAO³
 Hefner, W. K. (PM) MSFC
 Marsh, K. SAO
 O'Dell, S. L. MSFC
 Weisskopf, M. C. (PS) MSFC
 Wicker, D. SAO
 Williams, B. SAO
 Wright, G. M. MSFC

Cluster II

Abramo, C. A. ITT
 Christensen, J. L. GSFC

Dutilly, R. N. GSFC
 Gurnett, D. UI⁴
 Pickett, J. UI

Dawn

Bryant, L. B. 230-305
 Fraschetti, T. C. (PM) 180-500
 Rayman, M.D. T1722

Deep Impact Flyby

A'Hearn, M. F. Univ. of MD
 Blume, W. H. 301-140L
 Grammier, R. S. 301-320
 McKinney, J. C. 301-350
 McNamee, J. B. 264-459
 No, S. M. 264-235
 Seybold, C. 301-140L
 Spencer, D. A. (PM) 264-850

Discovery & New Frontiers Prog Office

Mc Namee, J. B. (PM) 264-850

DSN Antenna Calibration

Ward, C. ITT
 Wert, M. ITT

DSN M&O (ITT)

Carr, P. ITT
 Cole, S. ITT
 Covate, J. ITT
 Dillard, D. E. ITT
 Gugel, R. ITT
 Hayes, M. ITT
 Hewitt, A. E. ITT
 Jones, R. E. ITT
 Martinez, G. ITT
 Medina, M. ITT
 Riley, S. L. ITT
 Wallick, J. ITT
 Wolken, P. R. ITT

European VLBI Network

Altunin, V. I. 303-402
 Wolken, P. R. ITT
 Ward, C. P. ITT

Explorers Program Office

Barrowman, J. S. (PM) GSFC

¹ Project Scientist

² Project Manager

³ Smithsonian Astrophysical Observatory

⁴ University of Iowa

Genesis

Burnett, D. S.	CIT 170-25
Hirst, E. A.	264-379
Jones, B. B.	264-235
Mainland, N.	264-235
No, Sophia	264-235
Sweetnam, D. N. (PM).....	264-370

GEOTAIL/POLAR/SOHO/WIND

Abramo, C. A.	ITT
Alexander, H.	ITT
Acuna, M. H. (PS).....	GSFC
Bush, R. I.	Stanford
Carder, M. E.	GSFC
Desch, M. D.	GSFC
Dutilly, R. N.	GSFC
Fairfield, D. H. (PS).....	GSFC
Gurman, J. B.	GSFC
Hearn, S. P.	GSFC
Hesse, M. (PS)	GSFC
Hoffman, R. A. (PS)	GSFC
Kelly, T. M.	GSFC
Leventry, G. A.	GSFC
Machado, M. J.	GSFC
Mahmot, R. E. (PM)	GSFC
Milasuk-Ross, J.	GSFC
Miller, K. A.	GSFC
Odendahl, S. K.	GSFC
Ogilvie, K. W. (PS).....	GSFC

GOES⁵

Bors, J.	Boeing
Catena, J. J.	GSFC
Skidmore, R. W.	Omitron

Goldstone Complex

Duran, A.	GDSCC-57
Giroux, S.	GDSCC-37
Massey, K.	GDSCC-61
Massey, M.	GDSCC-37
McCoy, J.	GDSCC-25
McMahon, R.	GDSCC-37
Millard, T.	GDSCC-37

Goldstone Solar System Radar (GSSR)

Haldemann, A. F.	238-420
-----------------------	---------

Hills, D. L.	238-420
Ostro, S. J. (PS).....	300-233
Slade, III, M. A. (PM).....	238-420
Wolken, P. R.	ITT

Gravity Probe B

Keiser, M. (PS)	Stanford
Shapiro, Prof. I. I.	SAO
Tay, P. W.	230-301
Wolken, P. R.	ITT

Ground Based Radio Astronomy

Klein, M. J. (PM)	303-402
Kuiper, T. B. (PS)	169-506
Martinez, G.	ITT
VanAllen, J. A.	UI
Wolken, P. R.	ITT

Hayabusa/MUSES-C

Bryant, L. W.	230-305
Kawaguchi, J.	JAXA ⁶
Mottinger, N. A.	301-125J
Peters, S.	JAXA
Ryne, M. S.	301-276
Smith, J. G. (PM)	264-828

IMAGE

Abramo, C. A.	ITT
Alexander, H.	ITT
Burch, J.	SwRI ⁷
Burley, R. J.	GSFC
Gibson, W. C.	SwRI
Green, J. L.	GSFC
Tapley, M. B.	SwRI

IND⁸ Gen'l

Deutsch, L. J.	303-400
Doms, P. E.	303-400
Downen, A. Z.	303-400
Edwards, C. D.	301-340
Pellazar, M. B.	303-400
Rafferty, W.	303-400

⁶ Japanese Aerospace Exploration Agency

⁷ Southwest Research Institute

⁸ Interplanetary Network Directorate, JPL

⁵ Geostationary Operational Environmental Sat'lte

Rodrigues, M. J.....303-400
 Stelzried, C. T.....303-407
 Tai, W. S.303-402
 Weber, III, W. J.....303-400

IND / DSMS Engineering

Freiley, A. J.....303-210
 Kimball, K. R.....303-404
 Klose, J. C.....303-404
 Kurtik, S. C.....303-210
 Law, E. S.T1716
 Markley, R. W.303-210
 Osman, J. W.....303-210
 Preheim, L. E.168-527
 Reichert, R. J.303-210
 Sible, Jr., R. W.....303-404
 Statman, J. I.....303-404
 Wood, L. J.301-125J

IND / DSMS Operations

Berman, A. L.303-403
 Black, C. A.....303-403
 Buckley, J. L.303-403
 Hodder, J. A.....303-403
 Recce, D. J.....303-403
 Salazar, A. J.....303-403
 Wackley, J. A.....303-403

IND / DSMS Plans & Commitments

Abraham, D. S.....303-402
 Altunin, V. I.....303-402
 Benson, R. D.....303-402
 Beyer, P. E.....303-402
 Cesarone, R. J.303-402
 Chang, A. F.....303-402
 Finnerty, D. F.303-402
 Gillette, R. L.303-402
 Holmes, D. P.....303-402
 Kwok, A.303-402
 Luers, E. B.....303-402
 Manshadi, F.303-402
 Martin, W. L.303-402
 McLaughlin, F. D.....303-402
 Miller, R. B.303-402
 Moyd, K.303-402
 Peng, T. K.303-402
 Poon, P. T.....303-402
 Slusser, R. A.303-402
 Spradlin, G.303-402
 Waldherr, S.303-402

Yetter, B. G.....303-402

IND / DSMS RAPSO

Andujo, A. E.ITT
 Baldwin, J. R.301-240
 Bartoo, R. H.....171-350
 Borden, C. S.....301-165
 Burke, E. S.....303-403
 Dillard, D.ITT
 Guduru, S.ITT
 Hampton, E.ITT
 Lacey, N.....ITT
 Martinez, K. A.ITT
 Medina, M.ITT
 Morris, D. G.....303-403
 Satterlee, N.ITT
 Wang, Y-F.....301-165
 Zendejas, S. C.....301-165

INTEGRAL

Bryant, L. W.230-305
 Clausen, K. (PM) ESA/ESTEC
 Comberiate, A. B. GSFC
 Kenney, E. J.....264-235
 Schmidt, M.....ESA/ESOC⁹
 Smith, A.ESOC

JPL / Director's Office

Elachi, C.....180-904
 Tattini, E.180-904

JPL / General

Acton, C. H.....301-125L
 Chien, S. A.....126-347
 Frederick, S. Y.....180-202
 Kahr, B. E.301-385
 Randolph, J. E.....301-170U
 Thurman, S. W.....301-422
 Toyoshima, B.....301-276
 Woo, H. W.....126-110
 Yuen, J. H.238-540

Jupiter Icy Moons Orbiter Project

Casani, J. R. (PM).....301-370
 McKinney, J. C.264-850

⁹ European Space Operations Center

James Webb Space Telescope

Gal-Edd, J. GSFC

Lunar-A

Bryant, L. W. 230-305

Mizutani, H. JAXA

Nakajima, T. JAXA

Ryne, M. S. 301-276

Madrid DSCC

Martin, A. MDSCC

Gimeno, J. MDSCC

Gonzalez, C. MDSCC

Pasero, G. MDSCC

Watkins, M. A. Code SS

Mars Program Office

Cutts, J. A. 301-345

Edwards, C. 301-340

Jordan, Jr., J. F. 301-340

McCleese, D. J. 301-345

Naderi, F. M. 301-335A

Whetsel, C.W. 301-340

Mars Exploration Rover (MER A & B)

Adler, M. T1723

Bryant, L. W. 230-305

Compton, B. 230-102

Cook, R. A. (PM) 264-870

Crisp, J. A. (PS) T1722

Erickson, J. K. T1723

Ludwinski, J. M. T1722

Roncoli, R. B. 301-125

Mars Express (MEX) Orbiter

Horttor, R. L. (PM) 238-540

McKay, M. ESOC

No, S. M. 264-235

Schmidt, R. (PM) ESTEC

Thompson, T. W. 300-227

Mars Global Surveyor (MGS)

Albee, A. (PS) 264-282

Brower, E. E. 264-235

Khanampornpan, T. 264-235

Thorpe, T. E. (PM) 264-214

Mars 2001 Odyssey Mission (M01O)

Call, J. A. 264-235

Gibbs, R. G. (PM) T1723-100

Harris, J. A. 301-455

Mase, R. A. 264-380

Plaut, J. J. (PS) 183-501

Spencer, D. A. 264-255

Varghese, P. (PM) 264-255

Mars Reconnaissance Orbiter (MRO)

Bryant, L. W. 230-305

Graf, J. E. (PM) 301-420

Jai, B. 301-420

Johnston, M. D. 301-420

Kenney, E. J. 264-235

Lock, R. E. 301-420

Zurek, R. (PS) 301-420

Mars Science Laboratory

Theisinger, P. C. T1723-118

Mars Phoenix Scout Orbiter 2007

Matousek, S. E. 264-472

Mars Telecom Orbiter

Gibbs, R. G. T1723

Matousek, S. E. 301-170S

Mars Telesat 2009

Komarek, T. A. 301-370

MEGA¹⁰

Altunin, V. I. 303-402

MESSENGER

Farquhar, R. (PM) APL

Grant, D. APL

Jones, B. B. 264-235

Microwave Array Project

J. I. Statman 303-404

NASA Headquarters

Albright, G. G. Code SZ

Bergstrahl, J. T. Code SE

Bogan, D. Code SE

Brody, S. Code SE

Costrell, J. A. Code M-3

¹⁰ Mission Enhancement by Ground-Based Astronomy

Dahl, M. R. Code SM
 Figueroa, O. Code SM
 Geldzahler, B. Code SE
 Hayes, J. J. E. Code SZ
 Hertz, P. Code SZ
 Holmes, C. P. Code SS
 Jones, W. V. Code SE
 Lavery, D. B. Code SM
 Ledbetter, K. W. Code S
 Lindstrom, K. Code SE
 Meyer, M. A. Code SE
 Morgan, T. H. Code SE
 Spearing, R. E. Code M3
 Thronson, H. Code S
 Watson, W. A. Code YF
 Williams, R. L. 180-300

NASA/GSFC/General

Achey, R. A. GSFC
 Ambardekar, S. P. GSFC
 Ambrose, L. L. GSFC
 Barbehenn, G. M. GSFC
 Barbehenn, M. B. GSFC
 Buczkowski, V. R. GSFC
 Carlisle, C. GSFC
 Crouse, P. GSFC
 Davenport, D. G. GSFC
 Davis, A. D. GSFC
 Hunter, R. A. GSFC
 Levine, A. J. GSFC
 Martin, J. B. GSFC
 Mateik, D. E. GSFC
 Mathis, E. S. GSFC
 Quint, K. B. GSFC
 Schaub, M. B. GSFC
 Williams, A. K. GSFC

New Horizons

Farquhar, R. APL
 Fountain, G. APL
 Holdridge, M. APL
 Jones, B. B. 264-235

PFPD / Mission Management Office

Morris, R. B. 264-235
 Varghese, P. 264-235

Reference Frame Calibration

Altunin, V. I. 303-402

Cangahuala, A. 301-125J
 Jacobs, C. S. 238-600
 Ward, C. ITT
 Wood, L. J. 301-125J

Rosetta (ROSE)

Alexander, C. J. (PS) 169-237
 Ellwood, J. (PM) ESTEC
 Kenney, E. J. 264-235
 Schwehm, G. H. (PS) ESA/ESTEC
 Warhaut, M. ESA/ESOC

Space Geodesy

Ma, C. GSFC
 Vandenberg, N. R. GSFC
 Ward, C. ITT

Spitzer Space Telescope

Gallagher, D. B. (PM) 264-767
 Garcia, M. D. 264-767
 Werner, M. W. (PS) 264-767
 Wilson, R. K. 264-767
 Yetter, K. ITT

ST-5

Abramo, C. ITT
 Mandl, D. J. GSFC

Stardust

Call, J. A. 264-235
 Duxbury, T. C. (PM) 264-379
 Hirst, E. 264-379
 Ryan, R. E. 301-285
 Tay, P. 264-235

STEREO Ahead & Behind

Bucher, S. APL
 Driesman, A. S. APL
 Eichstedt, J. APL
 Mueller, J. T. (PM) APL
 Ossing, D. A. APL

Ulysses / Voyager

Angold, N. G. 264-114
 Beech, P. 264-801
 Brymer, B. F. 264-114
 Cummings, A. C. CIT 220-47
 Espinueva, R. 264-235
 Hall, Jr., J. C. 600-100

Massey, E. B. (PM).....264-801
Smith, E. J. (PS-ULYS) 169-506
Stone, E. C. (PS-VGR) CIT 220-47

U.S. Space VLBI

Altunin, V. I.303-402
Miller, K. J.264-828
Preston, R. A. (PS).....238-332
Smith, J. G. (PM)264-828

Wilkinson MAP¹¹

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Bennett, C. L. (PS)..... GSFC
Coyle, S. E. GSFC
Dew, H. C. GSFC
Powers, M. K. GSFC

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¹¹ Microwave Anisotropy Probe