
RESOURCE
ALLOCATION
REVIEW
BOARD
14 AUGUST 2001

Jet Propulsion Laboratory
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October 12, 2001

TO: Distribution

FROM: E. S. Burke

SUBJECT: 14 August 01 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 14 August 2001. The purpose of these reviews is to address the over-subscription of the DSN 26/34/70-meter tracking assets. The Review Board consists of Project Managers, Project Scientists, and key JPL InterPlanetary Network and Information Systems Directorate (IPN-ISD) 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 requirements.

The Review addressed contention in 2002, 2003 and 2004.

Review Board Members

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

Gael Squibb	JPL	RARB Chairman / Director for IPN-ISD
Gene Burke	JPL	Resource Allocation Planning & Scheduling Office Mgr
Belinda Arroyo	JPL	Planetary Flight Projects Mission Mgmt. Office Rep.
Peter Beech	ESA (at JPL)	Ulysses Project Representative
Rock Bush	Stanford	SOHO Project Science Representative
John McKinney	JPL	Deep Impact Project Representative
Michael Ebersole	JPL	SIRTF Project Manager Representative
Robert Farquhar	JPL	MESSENGER/CONTOUR Project Representative
Richard Horttor	JPL	Mars Express JPL Project Manager
Mike Klein	JPL	Radio Astronomy Project Manager
Dwight Holmes	JPL	INTEGRAL/Rosetta Project Representative
Ron Mahmot	GSFC	Orbiting Satellites Manager (ISTP, ACE, IMAGE, MAP)
Robert Mase	JPL	Mars 2001Odyssey Mission Representative
Ed Massey	JPL	Ulysses/Voyager Project Manager
Richard Miller	JPL	DSMS Plans and Commitments Office Manager
Robert Mitchell	JPL	Cassini Project Manager
Dan Ossing	APL	JPL Stereo Project Representative
Steve Ostro	JPL	GSSR Project Scientist
Jolene Pickett	Univ. of Iowa	Cluster II Project Scientist Representative
Bob Ryan	JPL	Stardust Project Representative
Mark Ryne	JPL	Nozomi Project Representative

Armond Salazar	JPL	DSMS Operations Office Program Manager Rep.
Martin Slade	JPL	GSSR Project Manager
Joe Statman	JPL	DSMS Engineering Program Office Manager
Eileen Theilig	JPL	Galileo Project Manager
Pete Theisinger	JPL	Mars Exploration Rover (MER) Project Manager
Greg Wright	MSFC	Chandra Project Manager Representative

Review Materials

The following items, covered in these minutes, include material in the bound handout, the web-based "Red Book," as well as presentations not provided until the day of the RARB:

1. Agenda
2. Introduction B G. Squibb, RARB Chair
3. Overview, Action Items, Contention Summary – Burke
4. NASA HQ Perspective: Code S – B. Geldzahler
   NASA HQ Perspective: Code M – J. Costrell
5. JPL DSMS Plans & Commitments Program Office – R. Miller
6. JPL DSMS Engineering Program Office – J. Statman
7. JPL DSMS Operations Program Office – J. Wackley
8. New or Modified Project Requirements: SIRTF – R. Wilson
   New or Modified Project Requirements: Deep Impact – J. McKinney
9. Contention Resolution
10. Action Items

Introduction – G. Squibb, RARB Chair

After welcoming the participants, Gael announced that this would be his last RARB to chair. On May 1st, when C. Elachi became the new JPL Director, he made organizational changes that affected the former Telecommunications and Mission Operations Directorate (TMOD). TMOD is renamed InterPlanetary Network and Information Systems Directorate (IPN-ISD). All Spacecraft missions have moved to new Directorates, as shown on the charts. William Weber is the new Director for IPN-ISD and G. Squibb and R. Coffin move to the JPL Director's Staff.

Many things are newsworthy. The Senate appropriations bill that funds NASA has language in it to convert the DSN to CSOC. JPL will work with NASA HQ to try to eliminate this language. Code S is augmenting the DSN with additional equipment, and J. Statman will discuss this in depth. We also have a fragile network. DSS-14 has a problem with its azimuth bearing, while DSS-63 is being implemented with an X-band transmitter; so we presently only have one operating 70-meter antenna.

Overview, Action Items, and Contention Summary – G. Burke

The agenda was reviewed and the Review Board introduced. The Action Item from the 01 August 2000 RARB was reviewed. Action Item #1 is closed. GSFC's Flight Dynamic Facility is aware of the interface change and is funded to implement the modification. Overall loading throughout the next 10 years, as shown on the accompanying charts, indicate continued high usage of the DSN.

NASA Office of Space Science Code S – B. Geldzahler

The FY02 NASA appropriation has passed both the Senate and House. These bills are slightly different. Please see the slides for detailed differences between the two bills. The FY03 budget is being finalized for submission to OMB.

E. Weiler's Office of Space Science has undergone another organizational change and is more streamlined. Both G. Riegler and K. Ledbetter are Executive Directors and are on staff. Various divisions support this office. R. Parker leads the JPL NASA Management Office. C. Pilcher leads the Solar System Exploration Division. O. Figueroa leads the Mars Exploration Program Office. G. Withbroe leads the Sun-Earth Connection Division. A. Kinney leads the Astronomy and Physics Division. Complete staff listings of these divisions are noted on ensuing charts.

Numerous senior and peer reviews were held in the last year. The Sun-Earth-Connections mission review evaluated 14 missions. New guidance will be sent out next week. G. Riegler chaired the Science, Research, and Technology review and the results have been published. A Navigation peer review was held to evaluate JPL's navigation processes, mission system design, and their effect on DSN loading, with the report due soon. Next fiscal year, Planetary Data System will be reviewed and a science definition team will define science drivers for replacement and/or refurbishment of the 70-meter antennas.

HQ will set up a prioritization board to help resolve conflicts and provide guidance during the 2003-04 crunch period. The RAPSO process will continue to be used, and this HQ team will be there to assist in any elevated impasse.

NASA Office of Space Flight Code M – J. Costrell

SOMO Program Management will move from JSC to HQ in the next 2-3 months. In broad terms, this change will be implemented by having the three major networks managed and funded by three different areas from HQ. The DSN will be managed by Code S with B. Geldzahler the program executive. The Ground Network (GN) will be managed by Code Y. The Space Network (SN) will be managed by Code M. This distribution will be effective 1 October. There will be an Integrated Space Communications office to manage these activities, headed by B. Spearing.

S. Newberry has left SOMO and has taken a position as NASA liaison to the Air Force Space Command at Colorado Springs. J. Stiles is the acting head of the SOMO office at JSC.

Full Cost Accounting is here to stay. Project Service Level Agreements (PSLA) will be continued. The Consolidated Space Operations Contract (CSOC) has been restructured to better respond to each of the NASA Centers. The initial five-year contract of CSOC will expire in December 2003. There is one option for an additional five years. HQ will begin evaluating whether to continue with the existing contract.

There have been some international activities that should be highlighted in the Space Communications area. J. Costrell asked, "What is the Inter-Agency Consultative Group - Working Group 4 (IACG-WG4)?" The IACG is a Code S-Space-Science-chartered organization composed of four international space agencies: NASA, ESA, RASA and ISAS. Their chief goal has been to identify potential collaborative missions. The IACG-WG4 was created to deal with communications-related matters. Last year they were chartered to look at Deep Space Communications to determine whether we have enough antennas to support our missions. The Inter-Agency Operations Advisory Group

(IOAG) is composed of seven international space agencies: NASA, ESA, CNES, DLR, NASDA, ASI, and ISAS, and it looks at space communications matters. The next meeting is in December. Space Ops '02 will be held in October at JSC and A. Dowen will be the lead in organizing this event.

Commercialization within space communications has three topics to mention. The Ground Network (GN) is heading towards commercialization. Various companies are in place to support low-Earth orbiting spacecraft with polar-orbiting spacecraft support as the next phase in this area. The 26-meter subnet doesn't seem to have any viable commercial interest. TDRS is selling excess capacity to other space agencies and other commercial needs.

IPN-ISD (DSMS) Office 920 – Plans and Commitments – R. Miller

The purpose of the analysis that R. Bartoo will cover in the following presentation is to introduce our next big problem in the DSN. The next wave of Mars Exploration Missions, both from NASA and other international agencies will launch in 2007. Several international agencies are implementing a permanent presence in deep space and want to complement their spacecraft with ground communication antennas. The Japanese have established their own ground network with recent X-band transmit upgrades at Usuda. ESA is building an antenna in New Norcia near Perth, Australia. ASI, with a radio science arm of the Italian science organization, is building a 64-meter antenna in Sardinia. CNES is also interested in building ground assets. They have proposed a 34-meter-class antenna to be built at Tahiti, South Africa, or Kourou. Ka-band is planned for the CNES and ESA antennas by 2007.

DSN Loading Study – January 2007 Through December 2010 – R. Bartoo

R. Miller, back in April, requested a loading study of the DSN in the timeframe 2007-2010. Specifically, the loading on the network is presented with an emphasis towards what the demand will be on the DSN within the Mars view period. Three groups of missions are shown in the charts. Mars Missions, missions that have overlapping view with Mars, and future missions that have overlapping view with Mars, compose these groups. A number of adjustments have been logically made to assess the loading. This loading is distributed to each of the DSN complexes. The red line shows the available capacity of the combined 34- and 70-meter antennas within the Mars view period. In conclusion, the data shows peaks for the launches and the approach/arrival of these Mars missions in 2007 and 2008. Canberra shows a steady overload condition, Goldstone has momentary peak loads in this period, and Madrid has an overload for about nine months.

IPN-ISD (DSMS) Office 940 – Engineering – J. Statman

The scope of this report is focused on the changes planned for the DSN over the next couple of years. The implementations are divided into sustaining and upgrade tasks. Each of these tasks will be briefly reported on by describing the task, what equipment is involved, schedule, and the expected effect on the flight projects.

Beyond these twenty or so tasks, there are three other activities that demonstrate the fragility of the DSN. Yesterday, while DSS-63 is undergoing a 20 kW X-band transmitter upgrade during a 12-week downtime, DSS-14 is "Red" and unable to track. This leaves one 70-meter antenna, DSS-43 in Australia, available to the network. The problem identified at DSS-14 concerns preloaded Azimuth radial thrust bearings that have run off of their track. Fortunately no permanent damage was seen and we expect the antenna to return to service as early as tonight. The Beam WaveGuide (BWG) antennas are a recent addition to the network, with the first put into service in 1994. We have identified a problem in the wheel and track system used for Azimuth movement. Cracks due to stress and fatigue

have been found in the wheel axles. In each of the four wheels in each of the antennas the wheel hubs will be replaced. Each wheel replacement activity will take a 24-hour downtime. Another activity, which is beyond the scope of today's presentation, is the need to completely move DSS-65 from its present foundation to another completely new foundation sometime between 2004 - 2005, where it will be out of service for three to six months.

All of the DSN Telecommunications and Mission Services (TMS) Managers and Customer Service Representatives were briefed last week on the implications of these implementations to all of the projects. Cassini Radio-Science task implements new radio science equipment throughout the network. Network Monitor and Control and 26 meter Automation task both require good input from the project users up to 15 minutes prior to every pass. The Complex Supervisor replaces the CMC that is one of the older subsystems in the network. Service Preparation Subsystem will upgrade some of the internal systems that will have no impact to the users. The Uplink Subsystem (UPL) will replace the CPA/CMA (except DSS-27) and will add the CCSDS Space Link Extension (SLE) services for new missions. 70-meter X-band uplink task is nearing completion when all 70-meter antennas will have this capability. The 34-meter Ka-band downlink task will upgrade all the existing BWG antennas.

What is very important to all users is that this modification will allow all 34BWG antennas to have equal signal sensitivity to the 34HEF subnet. The Network Simplification Project (NSP) will remove and replace current telemetry, command, and ranging equipment for the 34/70-meter antennas (except DSS-27), and we expect shorter pre-cal time for every pass. The Antenna Controller Replacement (ACR) task replaces current controllers with modern equipment and will require significant downtime. The FTS M&C replaces old equipment. Delta-Differenced One-Way Ranging (DDOR) will add new Navigation capability. DSS-55, operational by November 2003, is a new 34BWG antenna at Madrid that will come with X-band uplink (20kW) and X/Ka-band downlink. 20 kW X-band transmitters on the 34BWG will provide equivalent uplink power to all X-band uplink antennas. By 2003, two channel MSPA will add some automation features to our current capability; four channel may come by 2007. Arraying capability will be added to both Madrid and Canberra; Goldstone is already in place. The 11-meter antennas will be decommissioned by February 2002. Turbo code is a new error-correcting code that functionally replaces the MCD3 with better gain, and will be implemented by September 2003. The next two years will be very busy.

IPN-ISD (DSMS) Office 930 – Operations – A. Salazar for J. Wackley

The performance continues to meet customer data requirements. Network Loading Observations risk is increased when infrastructure maintenance is reduced. We have one crew at each complex to perform this maintenance. The overtime cost has increased and staff is stressed. Based upon these observations, a risk mitigation plan is being developed. Some examples to be included in this plan are evaluating single points of failure, the multitude of upgrades and the effect on the Complex staff, current and future processes, and what training will be needed.

Deep Impact – J. McKinney

This is a Discovery mission. The project is managed by JPL. The spacecraft will be built by Ball Aerospace. The Principle Investigator is Dr. Michael A'Hearn of the University of Maryland. The objective of the mission is focused on the ability to travel to Comet Tempel 1 and release a small projectile to impact with the comet and create a hole in the side of the comet.

Deep Impact is a spacecraft that will communicate to Earth via X-band. Presently, the launch period begins January 2, 2004. Other than launch, it has two critical events: Earth Swingby, one year after launch, and its Encounter, planned for July 4, 2005. The Earth Swingby is an opportunity to calibrate and test the spacecraft. The Encounter timeline will release the impactor 24 hours prior to impact. An S-band relay will be used to communicate between the Impactor and Flyby part of the spacecraft. The Impact Time will be synchronized so that Hubble Space Telescope will be able to view it.

SIRTF – R. Wilson

This mission is one of NASA's Great Observatories and is the cornerstone of the Origins Program. It will be sent into an Earth-trailing orbit and will recede 0.12 AU per year. The launch date is July 15, 2002, with a 60-day in-orbit checkout overlapped by a 30-day instrument validation (~80 days). The plan is to have 2.5 years of prime science, with a goal of 5 years. Once in operation, two 1-hour passes per day supporting 2.2 Mbps telemetry rate are required.

Resource Contention – W. Hincy

This main portion of the review began with presentations of Loading Study Initial Conditions and Changes in Project Requirements. Background/source information was also shown. The following portion of the minutes describes in detail the results of RARB negotiations, and will be used as the new baseline for DSN resource allocation.

Contention Resolution – Gene Burke

<u>2002 – Contention Period #01 – 70M – Week 24</u>

DSS Maintenance agreed to reduce support to one maintenance period per antenna and keep two hours off-shift at DSS-14 and DSS-63, per February 2001 RARB agreement to accommodate Galileo and Mars 01 Odyssey. Galileo agreed to reduce seven passes to 4 hours to accommodate DSS Maintenance and Mars 01 Odyssey. Goldstone Solar System Radar will receive requested support. Mars 01 Odyssey will receive requested support. The project noted this support does not require 14 contiguous hours and it would work with maintenance in the mid-range scheduling to accommodate daylight maintenance support.

<u>2002 – Contention Period #02 – 34BWG1 – Week 12</u>

ACE will receive requested support using DSS-16 to accommodate Genesis. Cluster 1 will receive requested support using DSS-16 to accommodate Genesis. Cluster 2 will receive requested support using DSS-27 to accommodate Genesis. Cluster 4 will receive requested support using DSS-15 and DSS-45 to accommodate Genesis. Chandra agreed to move seven passes to DSS-16 and DSS-46 to accommodate Genesis. DSS Maintenance agreed to move DSS-24 maintenance to Tuesday to accommodate Genesis. Genesis will receive requested support. Nozomi will receive requested support. Voyager 1 will receive requested support using DSS-25 to accommodate Genesis. Voyager 2 will receive requested support using DSS-43 and DSS-45 to accommodate Genesis.

<u>2002 – Contention Period #03 – 34BWG1 – Week 50</u>

ACE will receive requested support using DSS-27 to accommodate Genesis. Cluster 1 will receive requested support using DSS-16 to accommodate Genesis. CLU2 will receive requested support using DSS-27 to accommodate Genesis. Genesis will receive requested support. Nozomi will receive

requested support. Space Infrared Telescope Facility will receive requested support. Voyager 1 will receive requested support using DSS-25 to accommodate Genesis. Chandra agreed to move seven passes to DSS-16 and DSS-46 to accommodate Genesis. DSS Maintenance agreed to move DSS-24 maintenance to Tuesday to accommodate Genesis.

2003 – Contention Period #04 – DSS-14, DSS-43 – Weeks 7 through 14

Note: DSS-63 is down for the Servo Drive upgrade implementation in weeks 7 through 16. Mars 01 Odyssey will receive requested DELTA DOR support in weeks 7 and 11 using DSS-14 and DSS-43 and in weeks 9 and 13 will use DSS-14 and DSS-43. SOHO agreed to move four passes to DSS-27 in week 09 and 1 pass in week 13 to DSS-24 to accommodate Mars 01 Odyssey and DSS maintenance. Cassini will receive requested support. Microwave Anisotropy Probe will receive requested maneuver support using DSS-14, DSS-43 and DSS-54. Mars Global Surveyor agreed to MSPA with Mars 01 Odyssey using DSS-14, DSS-43 and DSS-65. Voyager 1 will receive requested MAGROL support and has agreed to reduce routine support to 4-hours using the 34HEF in week 07. Voyager 1 agreed to reduce support to 4-hours using DSS-14, DSS-43 and DSS-65 in week 08. Voyager 1 agreed to use the 34HEF in week 9 and to use DSS-14, DSS-45 and DSS-63 in week 10. Voyager 1 agreed to reduce support to 4-hours using DSS-45 and DSS-65 in week 11. In addition, Voyager 1 agreed to reduce support to 4-hours using DSS-14, DSS-45 and DSS-65 in week 12 and to reduce support to 4-hours using DSS-45 and DSS-65 in week 13. Voyager 2 will receive requested support.

2003 – Contention Period #05 – DSS-14 – Week 21

DSS will receive requested support. Ground Based Radio Astronomy agreed to reduce Microwave Spectroscopy and Planetary Radio Astronomy supports to 4 hours each to aid DSS maintenance and Goldstone Solar System Radar Mercury. Goldstone Orbital Debris Radar agreed to move support to week 22 aid DSS maintenance and Goldstone Solar System Radar Mercury. Goldstone Solar System Radar agreed to reduce support to 4 hours to accommodate DSS maintenance.

2003 – Contention Period #06 – 70M – Weeks 25 through 29

DSS agreed to reduce DSS-14 and DSS-63 routine maintenance to one 8-hour and one 6-hour support at each antenna to aid Stardust, SOHO, Ulysses, and Goldstone Solar System Radar. Ground Based Radio Astronomy (GBRA) agreed to reduce Microwave Spectroscopy and Planetary Radio Astronomy supports to 4 hours and to move Radio Stars to week 30 and reduce support to 10-hours. In addition, (GBRA) agreed to split RA500 into three 8-hour supports and move to week 24. Goldstone Orbital Debris Radar agreed to reduce support to 6 hours. Goldstone Solar System Radar agreed to reduce Asteroid FH12 support to 8 hours. Stardust agreed to move four passes to DSS-25 to accommodate DSS maintenance. SOHO will receive requested support. Ulysses will receive requested support.

2003 – Contention Period #07 – 70M – Weeks 30 through 35

DSS agreed to reduce DSS-14 and DSS-63 routine maintenance to a one 8-hour and a one 6-hour support at each antenna in week 30 through 35. In addition, DSS agreed to reduce DSS-14 maintenance to a one 8-hour support period in week 33. Ground Based Radio Astronomy (GBRA) agreed to reduce Microwave Spectroscopy and Planetary Radio Astronomy supports to 4 hours each. In addition, GBRA will receive requested VLBA and Radio Stars support and requested Host Country using three 8-hour supports to aid DSS maintenance and Ulysses. Goldstone Solar System Radar will receive requested Asteroid 1994PM support and agreed to delete week 32 Mars Radar to aid Mars Exploration Rover-A and the DSS-54 downtime proposal. Mars 01 Odyssey agreed to MSPA 1 to 2 mapping supports with

Mars Global Surveyor using DSS-25, DSS-34, and DSS-63 to accommodate DSS-54 downtime proposal and Mars Express Orbiter. Mars Exploration Rover-A will receive requested support. Mar Exploration Rover-B will receive requested support. Mars Express Orbiter agreed to move DSS-14 support to DSS-26 to aid Mar Exploration Rover-B. SOHO agreed to move week 33 TSO support to week 36 to accommodate DSS-54 downtime proposal. Ulysses agreed to move two 10-hour passes to DSS-63 to aid maintenance and Goldstone Solar System Radar. Voyager 1 agreed to delete DSS-63 passes in weeks 30 through 32, but will use the planned 8-hours at DSS-26. In addition, Voyager 1 agreed to reduce weeks 33 through 35 supports to 4-hour passes and to move to DSS-34 to aid Mars Exploration Rover-B, Mars Express Orbiter and Ulysses.

2003 – Contention Period #08 – 70M – Weeks 36 through 37

DSS agreed to reduce DSS-14 routine maintenance to one 8-hour support to aid Goldstone Solar System Radar, SOHO, and Ulysses. Ground Based Radio Astronomy agreed to reduce Microwave Spectroscopy and Planetary Radio Astronomy supports to 4 hours each and to move RA500 to week 41 and split support into three 8-hour passes. In addition, GBRA agreed to reduce Radio Stars to 8 hours to aid DSS maintenance, Mars 01 Odyssey, Mar Exploration Rover-B, and Ulysses. Gravity Probe B agreed to move support to week 36 to aid Mars 01 Odyssey, Mars Exploration Rover-Agreed to, Voyager 2 and Ulysses. Goldstone Solar System Radar agreed to reduce Mars and Mercury supports to 4 hours to aid DSS maintenance and Ground Based Radio Astronomy. Mars 01 Odyssey agreed to move one DSS-43 support to the 34HEF in week 37 to accommodate Voyager 2 DTR playback. Mars Exploration Rover-A will receive requested support using DSS-15 and DSS-65. Mar Exploration Rover-B will receive requested support. Nozomi will receive requested support. SOHO agreed to move two passes to DSS-16 and DSS-27 to aid DSS maintenance, Goldstone Solar System Radar and Ulysses. Space VLBI agreed to reduce support to 4 hours to accommodate DSS maintenance, SOHO and Ulysses. Ulysses will receive requested support. Voyager 1 agreed to reduce support to 4-hour passes. Voyager 2 will receive requested support.

2003 – Contention Period # 09 – 70M – Weeks 38 through 42

DSN agreed to reduce antenna calibration to 4 hours. DSS maintenance agreed to reduce DSS-14 and 63 routine maintenance to one 8-hour support at each antenna to aid Ground Based Radio Astronomy, Goldstone Solar System Radar, Nozomi, Ulysses, Voyager 1 and Voyager 2. DSS maintenance representative A. Salazar noted a general concern with the 70M reductions in the recommendations. An Action Item (A.I.#1) was assigned to DSMS Operations (A. Salazar) to assess the overall impact of the recommendations to reduce preventative maintenance time on the 70M Subnet and to provide the Resource Analysis Team with a risk and budgeting assessment of where additional maintenance hours are needed. Ground Based Radio Astronomy (GBRA) agreed to reduce Microwave Spectroscopy and Planetary Radio Astronomy supports to 4 hours in weeks 38 through 41, and to support in week 42. In addition, GBRA agreed to split Host Country into three 8-hour supports to aid DSS maintenance, Goldstone Solar System Radar, Mars 01 Odyssey, Mars Global Surveyor, Mars Exploration Rover-A, Ulysses, Voyager 1 and Voyager 2. Goldstone Orbital Debris Radar agreed to delete support to aid DSS maintenance and Goldstone Solar System Radar Asteroid 1999CU3 observation. Goldstone Solar System Radar will receive requested support for Asteroid 1999CU3 and to reduce Mercury support to 4 hours to aid DSS maintenance and Goldstone Solar System Radar Asteroid 1999CU3 observation. Mars 01 Odyssey will receive requested MSPA and stand-alone support in week 40 and 41 using DSS-14 and DSS-63 to aid DSS maintenance, Mars Exploration Rover-A and B, Nozomi and Voyager 1. Mars Global Surveyor will receive requested MSPA with Mars 01 Odyssey. Microwave Anisotropy Probe agreed to move maneuver support to week 37. Mars Exploration Rover-A agreed to reduce one DSS-43 support to 4 hours in week 38 to accommodate Voyager 2 ASCAL support. Mars

Exploration Rover-B will receive requested minimum cruise support using DSS-15 and DSS-65 on DOY 262 to accommodate Voyager 2 MAGROL. Nozomi will receive requested support. Space VLBI agreed to reduce support to 4 hours to aid DSS maintenance, Ground Based Radio Astronomy and Goldstone Solar System Radar. Ulysses will receive requested support. Voyager 1 will receive requested support. Voyager 2 will receive requested support.

2003 – Contention Period # 10 – 70M – Weeks 43 through 46

Comet Nucleus Tour greed to requested support using two 4 hour split passes at DSS-43 and DSS-63 to aid DSS maintenance, Mars 01 Odyssey, Mars Global Surveyor and Mars Express Orbiter. DSN agreed to reduce antenna calibration support to 4 hours to aid Comet Nucleus Tour, DSS maintenance, Mars Express Orbiter, and Voyager 1. DSS agreed to reduce DSS-14 and DSS-63 maintenance to a one 8-hour support period in week 45 and to reduce DSS-63 maintenance to a one 8-hour period in week 46 to aid Comet Nucleus Tour, Mars Express Orbiter, and Voyager 1. Ground Based Radio Astronomy (GBRA) agreed to reduce Microwave Spectroscopy and Planetary Radio Astronomy Planet to 4 hours. In addition, GBRA agreed to reduce Radio Stars to 10 hours and move support to aid week 43 to aid DSS maintenance, Goldstone Solar System Radar, Mars 01 Odyssey, Mars Global Surveyor, Ulysses and Voyager 1. Goldstone Orbital Debris Radar will receive requested support. Goldstone Solar System Radar will receive requested support. Mars 01 Odyssey will receive requested stand-alone and MSPA support with Mars Global Surveyor. Mars Global Surveyor will receive requested MSPA support with Mars 01 Odyssey. Mars Exploration Rover-A agreed to reduce one support to 5.5 hours to accommodate Voyager 1 DTR playback. Mar Exploration Rover-B will receive requested support. Mars Express Orbiter will receive requested support. SPACE VLBI agreed to reduce support in weeks 43, 45 and 46 to 4 hours to aid Comet Nucleus Tour, DSS maintenance, Mars 01 Odyssey, and Mars Global Surveyor. Ulysses agreed to move two 10-hour passes to DSS-63 to aid accommodate Voyager 1. Voyager 1 agreed to use DSS-14 and DSS-43 for routine support and to use a split pass at DSS-14 and DSS-43 for the MAGROL to aid Mars 01 Odyssey and Mars Global Surveyor.

2003 – Contention Period #11 – 70M – Weeks 47 through 49

DSN agreed to reduce Antenna Calibration to 4 hours to aid DSS maintenance, Ground Based Radio Astronomy, Goldstone Solar System Radar and Space VLBI. DSS agreed to reduce DSS-14 and DSS-63 maintenance to one daylight support period per antenna to aid Mars 01 Odyssey, Mars Global Surveyor, Mars Express Orbiter, and Ulysses. Pending the results from the DSS Action Item to assess risk and budget concerns, additional hours of off-shift support may be added during these weeks. Ground Based Radio Astronomy agreed to reduce Microwave Spectroscopy and Planetary Radio Astronomy Planet to 4-hours to aid DSS maintenance, Goldstone Solar System Radar, Mars 01 Odyssey, Mars Global Surveyor, Space VLBI and Ulysses. Goldstone Orbital Debris Radar agreed to reduce support to 6-hours to aid DSS maintenance, Goldstone Solar System Radar, Mars 01 Odyssey, Mars Global Surveyor, Space VLBI and Ulysses. Goldstone Solar System Radar will receive requested support. Mars 01 Odyssey agreed to reduce MSPA support with Mars Global Surveyor to 8-passes per week with 8-10 hours per pass. In addition, Mars 01 Odyssey agreed to use DSS-14 and DSS-43 in weeks 47 and 48 for stand-alone passes to aid Mars Exploration Rover-Agreed to, Mar Exploration Rover-B, and Mars Express Orbiter. Mars Global Surveyor agreed to reduce MSPA supports with Mars 01 Odyssey to 8-passes per week with 8-10 hours per pass. Mars Express Orbiter agreed to reduce supports to 8 hours and to use two split passes at DSS-63 and DSS-65 to aid Mars 01 Odyssey, Mars Exploration Rover-A and Mars Global Surveyor. Nozomi agreed to reduce support to 6-hours to aid Mars 01 Odyssey. SVLB agreed to reduce supports to 6 hours to aid DSN antenna calibration, DSS maintenance, Ground Based Radio Astronomy, and Goldstone Solar System

Radar. Ulysses will receive requested support in week 47 and 49. In week 48, Ulysses will use four 10-hour passes at DSS-63 and DSS-54, two 10-hour passes at DSS-14 and DSS-24 and one split pass at DSS-34 and DSS-54 to aid DSS maintenance, Ground Based Radio Astronomy, and Voyager 1. Voyager 1 will receive requested support.

2003 – Contention Period #12 – 70M – Weeks 50 through 52

DSN agreed to reduce VLBI antenna calibration to 4 hours to aid DSS maintenance, Ground Based Radio Astronomy, Gravity Probe B, Goldstone Solar System Radar, Microwave Anisotropy Probe, Space Infrared Telescope Facility, and Space VLBI. DSS agreed to reduce DSS-14 and DSS-63 routine maintenance to one 8-hour daylight support per antenna and schedule one 8-hour off-shift maintenance at each antenna to aid Gravity Probe B, Mars 01 Odyssey, Mars Global Surveyor, Mars Exploration Rovers-A and B, Mars Express Orbiter, Space Infrared Telescope Facility, Ulysses and Voyager 2. Ground Based Radio Astronomy agreed to reduce support for Microwave Spectroscopy and Planetary Radio Astronomy to 4 hours and reduce Radio Stars support to 10-hours to aid DSS maintenance, Ground Based Radio Astronomy, Goldstone Solar System Radar, Microwave Anisotropy Probe, Mars Express Orbiter, Space Infrared Telescope Facility, Space VLBI, and Ulysses. Goldstone Orbital Debris Radar agreed to reduce to 4 hours in week 50 and to delete support in week 52 to aid DSS maintenance, Ground Based Radio Astronomy, Mars 01 Odyssey, Mars Global Surveyor, Mars Exploration Rover-A, Space Infrared Telescope Facility, and Ulysses. Gravity Probe B will receive requested support. Goldstone Solar System Radar agreed to delete mercury support in week 52 to aid DSS maintenance, Ground Based Radio Astronomy, Mars Exploration Rover-A, Space Infrared Telescope Facility, and Ulysses. Mars 01 Odyssey will receive requested support. Mars Global Surveyor will receive requested support. Microwave Anisotropy Probe will receive requested support. Mars Exploration Rover-A will receive requested Approach and VLBI support using the 34HEF antennas. In addition, Mars Exploration Rover-A agreed to support the Trajectory Correction Maneuver using DSS-14, DSS-45 and DSS-65 to aid Mars 01 Odyssey, Mars Exploration Rover-B, Mars Express Orbiter, Nozomi, Space Infrared Telescope Facility, and Ulysses. Mars Exploration Rover-B will receive requested support in week 52 using the 34BWG1 to aid Mars 01 Odyssey, Microwave Anisotropy Probe, Mars Exploration Rover-A, Nozomi, and Space Infrared Telescope Facility. Mars Express Orbiter will receive requested support for Mars Orbit Insertion on DOY 360 and agreed to move the remaining three passes to DSS-54 and DSS-55 to aid Mars 01 Odyssey, Mars Global Surveyor, Mars Exploration Rovers A and B, and Space Infrared Telescope Facility. Nozomi will receive requested support. Space Infrared Telescope Facility will receive requested support. Space VLBI agreed to reduce support to 4 hours to aid DSS maintenance, Ground Based Radio Astronomy, Gravity Probe B, Goldstone Solar System Radar, Mars 01 Odyssey, Mars Global Surveyor, Microwave Anisotropy Probe, Mars Express Orbiter, Space Infrared Telescope Facility, Ulysses, and Voyager 2. Ulysses will receive requested support. Voyager 2 will receive requested support.

2003 – Contention Period #13 – 34HEF – Weeks 22 through 25

Cassini agreed to change conjunction support using 5-hour passes at DSS-45 and 8-hour passes at DSS-65 to aid Mars Exploration Rover-A. Mars Exploration Rover-A will receive requested support. Mars Global Surveyor (MGS) agreed to reduce to 7-hour passes, and will MSPA with Mars 01 Odyssey using DSS-25,

DSS-34 and DSS-54 five passes in week 22 and 9 to 10 passes in weeks 23 through 25 to aid Mars Exploration Rover-A.

2003 – Contention Period #14 – 34HEF – Weeks 26 through 29

Cassini did not accept the recommendation of using 5-hour passes at DSS-45 and 8-hour passes at DSS-65 and incurring daily GAPS of 1 to 2.5 hours to accommodate Mars Exploration Rover-B (MER B) launch support. An Action Item (A.I.#3) was assigned to Cassini and MER B to study the impact of MER B launch support to Cassini's Conjunction support and to provide a response to the Resource Analysis Team for resolution of contention #14. Comet Nucleus Tour will receive requested support using 7.5 hrs at DSS-15 (view period constraint) or split into 4-hour passes using DSS-15 and DSS-45 for 8 hours of contiguous tracking to accommodate Cassini's Conjunction support. Goldstone Orbital Debris Radar agreed to reduce support to 6-hours to aid Cassini and Mars Exploration Rover-B. Mars Exploration Rover-A agreed to delete 34HEF VLBI support and to use the 70M to support 1-hour of overlap between Busy Cruise and Checkout passes to aid Mars Exploration Rover-A. Mars Exploration Rover-B agreed to delete the VLBI support and to use 1-hour of overlap between launch support passes in week 29 to aid Mars Exploration Rover-A. Mars Global Surveyor agreed to reduce to 7-hour passes starting on DOY 178 and to MSPA with Mars 01 Odyssey using DSS-25, DSS-34 and DSS-54 to accommodate Mars Exploration Rover-B.

2003 – Contention Period #15 – 34HEF – Weeks 30 through 35

Cassini will receive requested support. Cluster 4 will receive requested support using DSS-16, DSS-27 and DSS-46 in support of the DSS-54 downtime proposal. Comet Nucleus Tour will receive requested support. DSN declined the recommendation to use three 8-hour supports but instead agreed to delete the CAT M&E support in weeks 30, 32, and 34 in support of the DSS-54 downtime proposal. DSS maintenance agreed to reduce DSS-15 support to 6-hours to aid Cassini, Mars 01 Odyssey, and Mars Exploration Rovers A and B. Ground Based Radio Astronomy agreed to delete support to aid 34-meter users and the DSS-54 downtime proposal. Mars 01 Odyssey agreed to MSPA with Mars Global Surveyor and in week 35 to reduce support to 8-passes per week to accommodate Comet Nucleus Tour and Mars Exploration Rovers A and B. Mars Exploration Rover-A will receive requested support. Mars Exploration Rover-B agreed to delete the VLBI support in week 30 and 33 through 35 and to use 1-hour of overlap between Checkout and Trajectory Correction Maneuver passes to aid Mars 01 Odyssey, Mars Exploration Rover-A, and Mars Global Surveyor. Mars Global Surveyor (MGS) agreed to reduce to 7-hour passes, to reduce to 8 passes in week 35, and to MSPA all support with Mars 01 Odyssey using DSS-25, DSS-34 and DSS-63 to accommodate Comet Nucleus Tour and Mars Exploration Rovers A and B. Space Geodesy Program agreed to delete support to accommodate 34-meter users and the DSS-54 downtime proposal. Voyager 1 agreed to delete support in week 31 and 32, using 8-hour passes planned at DSS-26. In addition, Voyager 1 agreed to move week 35 support to DSS-34 and reduce passes to 4 hours each to accommodate 34-meter users and the DSS-54 downtime proposal. Voyager 2 will receive requested support using DSS-43 to aid Mars Exploration Rovers A and B.

2003 – Contention Period #16 – 34HEF – Weeks 43 through 46

Comet Nucleus Tour will receive requested support. DSS will receive requested and negotiated support. Mars Exploration Rover-A (MERA) did not accept the recommendation of moving week 44 and 46 support to DSS-25 and DSS-55. The project is concerned that this recommendation allocates too many MERA tracks to DSS-55 to aid Comet Nucleus Tour Encke encounter and Voyager 1 DTR playback. The project would like to have the support load re-allocated so that less than 20 % of MERA tracks are at DSS-55. RAP has taken an Action Item (A.I.#4) to redistribute the support load so that MERA receives no greater than 20 percent of its support using DSS-55. In addition, MER B noted that they could be scheduled on DSS-55 to support subnet overloads as necessary. Mars Exploration

Rover-B agreed to move two supports in week 44 to DSS-54 and DSS-55 and to move week 45 and 46 supports to the 34BWG2 to aid Comet Nucleus Tour encounter and Mars Exploration Rover-A TCM. Mars Express Orbiter agreed to move four passes to DSS-54 and DSS-55 to aid Comet Nucleus Tour encounter and Mars Exploration Rover-A TCM. Space Geodesy Program agreed to delete support to accommodate 34HEF users. Ulysses will receive requested support. Voyager 1 agreed to move the downlink support to DSS-55 to aid Comet Nucleus Tour, Mars Exploration Rovers A and B, and Stardust.

2003 Contention Period # 17 – HEF – Weeks 47 through 49

Comet Nucleus Tour agreed to use two 4-hour split passes at DSS-45 and DSS-65 to accommodate the Mars Exploration Rovers A and B. DSN agreed to delete week 47 and 48 Catalog M&E support to aid Comet Nucleus Tour, DSS maintenance, Mars Exploration Rovers A and B, and Stardust. DSS will receive requested and negotiated support. Ground Based Radio Astronomy agreed to delete support to aid Comet Nucleus Tour, DSS maintenance, Mars Exploration Rovers A and B, and Stardust. Goldstone Orbital Radar agreed to reduce support to 6 hours to aid DSS maintenance, Comet Nucleus Tour, Mars Exploration Rover-B, and Stardust. Mars Exploration Rover-A agreed to use DSS-34 and 34BWG2 for approach and minimum cruise to aid Comet Nucleus Tour and Mars Exploration Rover-B. Mars Exploration Rover-B agreed to delete one-hour VLBI support and to use one-hour overlap during Checkout and Busy Cruise passes to aid Comet Nucleus Tour and Mars Exploration Rover-A. Mars Express Orbiter agreed to move support to DSS-55 to aid Comet Nucleus Tour and Mars Exploration Rovers A and B. Stardust agreed to receive requested support. Space Geodesy Program agreed to delete support to aid Comet Nucleus Tour, DSS maintenance, Mars Exploration Rovers A and B, and Stardust. Ulysses receives requested support using DSS-54.

2003 – Contention Period #18 – 34HEF – Weeks 50 through 52

Cassini agreed to use full view at DSS-25 and to reduce DSS-45 support to 5 hours. In addition, Cassini agreed to use seven 4-hour split passes at DSS-65 and DSS-54 to aid the Mars Exploration Rovers A and B. Cluster 2 will receive requested simultaneous interferometer support using DSS-27. Cluster 4 will receive requested support using DSS-27 and DSS-46. DSS will receive requested support. Ground Based Radio Astronomy agreed to delete support to aid DSS maintenance, Cassini, Mars Exploration Rovers A and B, Stardust, and Ulysses. Goldstone Orbital Debris Radar agreed to reduce support to 4 hours in week 51 and to delete support in week 52 to aid DSS maintenance, Cassini, Mars Exploration Rovers A and B, Stardust, and Ulysses. Mars exploration Rover-A will receive requested support. Mars Exploration Rover-B (MERB) agreed to move 8 - 12 passes to the 70M and to move 3 - 4 passes to the 34BWG1 in week 50 and 51. In addition, MERB agreed to use 1-hour overlap between passes for VLBI support and to delete 34HEF VLBI request to aid Cassini and Mars Exploration Rover-A. MERB will receive requested support in week 52. Mars Express Orbiter agreed to move support to DSS-54 and DSS-55 to aid Cassini and Mars Exploration Rovers A and B. Space Geodesy Program agreed to delete support to aid DSS maintenance, Cassini, Mars Exploration Rovers A and B, Stardust, and Ulysses. Stardust will receive requested support. Ulysses will receive requested support.

2003 – Contention Period #19 – 34BWG1 – Week 6

Chandra agreed to move seven passes to DSS-16 and DSS-46 to accommodate Genesis. DSS agreed to move DSS-24 maintenance to Tuesday to accommodate Genesis. Genesis agreed to requested support. Mars '01 Odyssey agreed to requested support using DSS-25, DSS-34 and DSS-65 to accommodate Genesis. Nozomi will receive requested support. Rosetta will receive requested support. Genesis will receive requested support. Ulysses agreed to one 10-hour pass at DSS-63 and four

10-hour passes at DSS-14. Ulysses had concerns about the order of the two split passes recommended at DSS-45 and DSS-54. Ulysses explained that for normal operations the uplink portion of the pass should be scheduled before the downlink portion of the pass. Resource Analysis Team (RAT) was assigned an Action Item to review and clear any concerns with Ulysses. In a post RARB meeting RAT and Ulysses agreed to schedule two split passes at DSS-34 and DSS-63 with 5-hours each.

2003 – Contention Period #20 – 34BWG1 – Weeks 26 through 29

ACE agreed to receive requested support using the 26M to aid DSS maintenance, Mars 01 Odyssey, Nozomi, and Stardust. DSS agreed to reduce maintenance by 2 hours at each antenna to aid Genesis, Stardust and Ulysses. Genesis will receive requested support. Mars '01 Odyssey will receive requested support. Nozomi will receive requested support. Stardust will receive requested support. Ulysses will receive requested support. Mars Express Orbiter agreed to reduce to 10-hour passes, using the available view period at any only one antenna to aid Mars 01 Odyssey and Nozomi. Voyager 1 agreed to delete support to aid Mars 01 Odyssey, Nozomi, Ulysses, Voyager 2, and Wind. Voyager 2 will receive requested support. Wind will receive requested support.

2003 – Contention Period #21 – 34BWG1 – Weeks 30 through 35

DSS-54 downtime for the 20-Kilowatt X-band transmitter installation was approved. Chandra agreed to move 14 passes to the 26M to aid 34-meter users. Cluster 1 agreed to use DSS-16, DSS-27, and DSS-46 for requested support to aid 34-meter users during DSS-54 downtime. Cluster 2 agreed to use DSS-16, DSS-27, and DSS-46 for requested support to aid 34-meter users during DSS-54 downtime. Cluster 4 agreed to use DSS-16 and DSS-27 for requested support to aid 34-meter users during DSS-54 downtime. Genesis agreed to use DSS-24 and DSS-34 for routine support and to use DSS-24, DSS-34 and DSS-66 for the maneuver support in week 31 during DSS-54 downtime. Image agreed to the requested support using DSS-24 and DSS-34 to aid 34-meter users during DSS-54 downtime. INTEGRAL will receive requested support using DSS-16 to aid 34-meter users during DSS-54 downtime. Mars 01 Odyssey agreed to MSPA with Mars Global Surveyor using DSS-25, DSS-34, and DSS-63. In week 35 Mars 01 Odyssey agreed to reduce to eight passes per week and will use DSS-25, DSS-34, and DSS-63 during DSS-54 downtime. Mars Express Orbiter agreed to move support to DSS-26 and to reduce pass duration to 10 hours during DSS-54 downtime. Nozomi agreed to use DSS-24 and DSS-63 for the Trajectory Correction Maneuver and to use DSS-24 for routine support during DSS-54 downtime. SIRTF will receive requested support using DSS-34 and DSS-65 during DSS-54 downtime. Ulysses will receive requested routine support using DSS-65 and DSS-63. In addition, Ulysses agreed to move Datation test to week 44 to accommodate DSS-54 downtime. Wind agreed to move the Trajectory Correction Maneuver after week 35 and to use DSS-24 and DSS-34 for routine support during DSS-54 downtime.

2003 – Contention Period #22 – 34BWG1 – Weeks 43, 47

DSS agreed to delete DSS-24 maintenance in week 47 to accommodate Genesis. Genesis will receive requested support. Mars Exploration Rover-B will receive requested support. Nozomi agreed to reduce three passes in week 47 to 5 hours to aid Genesis and Mars Exploration Rover-B. Ulysses agreed to use split passes of 5 hours in duration in week 47 at DSS-24 and DSS-54, to accommodate Genesis. Voyager 2 agreed to move two passes to DSS-43 in week 43. In addition, Voyager 2 agreed to use 3 - 4 split passes of 4 hours each in week 47 at DSS-43 and DSS-45 to aid Genesis and Wind. Wind will receive requested support.

2003 – Contention Period #23 – DSS-34 – Weeks 50 through 52

Mars Global Surveyor agreed to reduce two passes to 6 hours to aid DSS maintenance, Nozomi, and Voyager 2. Voyager 2 agreed to reduce negotiated support to 5 hours to aid DSS maintenance, Mars Global Surveyor, Nozomi, and Ulysses. DSS maintenance, Nozomi, and Ulysses will receive requested support

2003 – Contention Period #24 – DSS-25 – Week 27

DSS agreed to reduce maintenance to 4 hours or move maintenance off-shift to aid Cassini. Cassini will receive requested support

2003 – Contention Period #25 – 34BWG2 – Weeks 30 through 35

Goldstone Solar System Radar agreed to delete DOY 219 observation to accommodate Mars Exploration Rover-A. Mars '01 Odyssey agreed to reduce to 3 - 4 passes per week to aid Goldstone Solar System Radar and Mars Exploration Rover-A. Mars Exploration Rover-A will receive requested support. Voyager 1 agreed to reduce support in weeks 33 through 35 to 4 hours per pass and move to DSS-24 to accommodate Mars Express Orbiter move to DSS-26 to resolve contention on the 70-meter Subnet.

2003 – Contention Period #26 – 34HSB – Weeks 30 through 35

DSS agreed to reduce maintenance to 6 hours to aid 34-meter users during DSS-54 downtime. SOHO agreed to move week 33 TSO support to week 36 to aid 34-meter users during DSS-54 downtime.

2003 – Contention Period #27 – 34HSB – Weeks 39 through 51

ACE agreed to move support in weeks 39 through 47 to DSS-16 to aid SOHO. DSS maintenance will receive negotiated support in weeks 39 through 47 and requested support in weeks 48 through 51. SOHO agreed to split one HSO pass in each of weeks 39 through 47 using 4 hours at DSS-27 and 4 hours atDSS-16. In addition, SOHO agreed to delete HSO support in weeks 48 through 51. SOHO's nominal support will replace the deleted HSO support in these weeks and SOHO agreed not to schedule a TSO in week 51. SOHO agreed to the changed support to provide coverage for users off-loading from the 70-meter and 34-meter Subnets during the Mars Exploration Rover-A approach phase. Note: SOHO requested (A.I.#5) that the deleted one-month of HSO support be rescheduled earlier in the year (see contention #31).

2003 – Contention Period #28 – 34HSB – Week 52

ACE agreed to move support to DSS-16, DSS-27 and DSS-66 to aid DSS maintenance, Cluster 2 simultaneous interferometer support, and Cluster 3. Cluster 2 will receive requested interferometer support. Cluster 3 will receive requested support. DSS maintenance will receive requested support.

2003 – Contention Period #29 – 26M – Weeks 19 through 22

DSS maintenance will receive requested support. Geotail agreed to receive requested support using DSS-16, DSS-27 and DSS-66. Polar agreed to requested Playback support using DSS-16, DSS-27 and DSS-66. In addition, Polar agreed to requested real-time support using DSS-27 and DSS-66.

2003 – Contention Period #30 – 26M – Weeks 30 through 35

DSS agreed to change or reduce maintenance to 6 hours per week at each antenna to aid 34-meter users moving to the 26M during DSS-54 downtime. SOHO agreed to move week 33 TSO support to week 36 and to reduce the 9.6-hour passes to 6 hours in week 30 through 35 to aid 34-meter users moving to the 26M during DSS-54 downtime.

2003 – Contention Period #31 – 26M – Weeks 39 through 51

DSS agreed to reduce DSS-16 maintenance to 4 hours in weeks 39 through 47 to aid ACE, INTEGRAL, and Lunar-A. INTEGRAL will receive requested support. Lunar-A agreed to reduce support to 6 hours to aid ACE, DSS maintenance, and INTEGRAL. SOHO agreed to delete HSO support in weeks 48 through 51 and replace support in these weeks with nominal tracking requirements. SOHO will not schedule TSO support in week 51. RAP took an action item (A.I.#5) to look for time to re-instate 4 weeks of HSO support earlier in the year. After the RARB, the SOHO Project was notified that weeks 25 through 28 or any 4 weeks from week 1 through 19 would accommodate the 4-week request. Project selection of the proposed weeks and activity placement into the forecast is pending.

2004 – Contention Period #32 – 70M – Week 01

DSN agreed to reduce antenna calibration support to 4 hours. DSS agreed to reduce maintenance to 8 hours per antenna. Ground Based Radio Astronomy agreed to move VLBA WCB support to week 21 and reduce remaining supports to 4 hours. Goldstone Solar System Radar agreed to delete support. Mars 01 Odyssey agreed to reduce DOY 003 and DOY 004 support to 4 hours for spacecraft health and safety and reduce remaining support to five 8-hour passes. Microwave Anisotropy Probe agreed to move Maneuver support to week 11. Mars Exploration Rover-A will receive requested support. Mars Exploration Rover-B agreed to perform approach/VLBI request before DOY 003 using the 34HEF antennas to accommodate Mars 01 Odyssey and Mars Exploration Rover-A.
Mars Express Orbiter and Mars Global Surveyor agreed to receive requested MSPA support using DSS-55. Stardust agreed to reduce three passes to 4 hours. Ulysses agreed to receive requested support using DSS-54.

2004 – Contention Period #33 – 70M – Week 02

DSS agreed to reduce maintenance to 8hours per antenna and will move support to off-shift hours. Goldstone Solar System Radar agreed to delete support. Mars '01 Odyssey and Mars Exploration Rover-A will receive requested MSPA support. Mars 01 Odyssey agreed to MSPA an additional 3 passes with Mars Express Orbiter. Mars Exploration Rover-A will receive requested support. Mars Exploration Rover-B agreed to receive requested support using the 34HEF. Mars Express Orbiter agreed to reduce to 8-hour passes and to MSPA 3 passes with Mars 01 Odyssey.

2004 – Contention Period #34 – 70M – Week 03

DSS agreed to reduce support to 8 hours per antenna and perform DSS-43 maintenance after DOY 013. Ground Based Radio Astronomy agreed to delete Host Country and to reduce Microwave Spectroscopy and Planetary Radio Astronomy supports to 6 hours. Mars '01 Odyssey will receive requested MSPA with Mars Exploration Rover-A. Mars 01 Odyssey agreed to MSPA 2 - 3 passes with Mars Express Orbiter and to reduce 4 to 5 passes to 4 hours. Mars Exploration Rover-A will receive requested MSPA support with Mars 01 Odyssey. Microwave Anisotropy Probe will receive

requested support. Mars Exploration Rover-B will receive requested support. Mars Express Orbiter agreed to reduce support to 8-hour passes and to MSPA 2 - 3 passes with Mars '01 Odyssey. Stardust will receive requested support. Voyager 1 agreed to perform uplink support after DOY 013. Voyager 2 agreed to perform uplink support after DOY 013.

2004 – Contention period #35 – 70M – Week 04

DSS agreed to reduce maintenance to one 8-hour support at each antenna. Ground Based Radio Astronomy agreed to split Host Country support into two 10-hour supports. Mars 01 Odyssey agreed to reduce two MSPA passes with Mars Exploration Rover-A to 4 hours (one on DOY 024 and one on DOY 025). In addition, Mars 01 Odyssey agreed to reduce five non-MSPA mapping passes to 4 hours. Mars Exploration Rover-A agreed to reduce two MSPA passes with Mars 01 Odyssey to 4 hours (one on DOY 024 and one on DOY 025. Mars Exploration Rover-B will receive requested support. Mars Express Orbiter agreed to reduce one MSPA pass with Mars Global Surveyor to 8 hours and one MSPA pass to 4 hours. Mars Global Surveyor agreed to reduce one MSPA pass with Mars Express Orbiter to 8 hours and one MSPA pass to 4 hours.

2004 – Contention Period #36 – 70M – Weeks 05 through 06

DSS agreed to delete one DSS-14 routine support in week 06. Ground Based Radio Astronomy agreed to reduce supports to 6 hours and delete VLBA WCB.
Goldstone Solar System Radar agreed to reduce support in week 06 to 5 hours. Mars '01 Odyssey will receive requested MSPA support with Mars Exploration Rover-A downlink. In addition, Mars 01 Odyssey shall MSPA 7 passes with Mars Exploration Rover-B. Mars Exploration Rover-A will receive requested MSPA support with Mars 01 Odyssey. Microwave Anisotropy Probe will receive requested support. Mars Express Orbiter will receive requested support. Mars Exploration Rover-B agreed to MSPA 7 passes with Mars 01 Odyssey. Voyager 1 will receive requested MAGROL using a split pass with 4 hours at DSS-63 and 4 hours at DSS-15.

2004 – Contention Period #37 – 70M – Weeks 07 through 16

DSS maintenance will receive requested support. European VLBI Network agreed to reduce support to 12 hours. Ground Based Radio Astronomy agreed to split each Host Country and RA500 WCB request into two 12-hour supports and reduce Radio Stars support to 8 hours. Goldstone Solar System Radar agreed to reduce support for each Mercury observation to 3 hours. Mars '01 Odyssey will receive requested MSPA support with Mars Exploration Rover-A downlink and agreed to MSPA 7 passes with Mars Exploration Rover-B. Mars Exploration Rover-A will receive requested MSPA support with Mars 01 Odyssey. Microwave Anisotropy Probe agreed to move Maneuver support to week 25. Mars Exploration Rover-B agreed to MSPA 7 passes with Mars 01 Odyssey. Mars Express Orbiter will receive requested support

2004 – Contention Period #38 – 70M – Weeks 28 through 40

DSS-14 antenna controller downtime was approved. DSS-14 routine and bearing maintenance will be deleted. DSS agreed to reduce DSS-43 and DSS-63 each to one 8-hour support in weeks 28 through 31 to accommodate Mars 01 Odyssey Mapping. Comet Nucleus Tour will receive requested support using DSS-43 or DSS-63. DSN agreed to delete DSS-14 antenna calibration support. European VLBI Network (EVN) will receive requested support in week 32 and reduce week 37 quarterly epoch to 8 hours and to use DSS-63 only. In addition, EVN agreed to move week 40 calibration to week 41. Ground Based Radio Astronomy agreed to reduce RA500 support to 6-8 hours and to use DSS-63 only.

In addition, GBRA agreed to delete DSS-14 Microwave Spectroscopy and Planetary Radio Astronomy support and to split each Host Country into three 8-hour requests. Goldstone Orbital Debris Radar agreed to delete support. Goldstone Solar System Radar agreed to delete Toutatis A and B and Mercury support. Mars 01 Odyssey agreed to MSPA 1 pass per week with Mars Express Orbiter Radio Science Bi-Static and move 2 passes per week to DSS-45 and DSS-65. Microwave Anisotropy Probe agreed to move week 40 maneuver to week 38 and to use DSS-43 and DSS-63. Mars Express Orbiter agreed to MSPA Radio Science Bi-Static support with Mars 01 Odyssey in weeks 28 through 31 and to use DSS-63 for Solar Corona support in weeks 32 through 40. Nozomi will receive requested support using DSS-25 and DSS-65. SIRTF will receive requested support using DSS-43 and DSS-63. Space VLBI agreed to delete DSS-14 support. Ulysses will receive requested support using DSS-54 in weeks 28 through 31 and weeks 38 through 40. Voyager 1 will receive requested Uplink support using DSS-43 and DSS-63 and the requested MAGROL support using DSS-63. Voyager 2 will receive requested ASCAL Playback and MAGROL support and agreed to reduce routine support to 8-hour passes.

2004 – Contention Period #39 – DSS-14, 63 – Week 41

DSS agreed to move DSS-14 maintenance off shift. Ground Based Radio Astronomy agreed to split the Host Country request into three 8-hour supports. Goldstone Solar System Radar agreed to reduce two Toutatis B supports to 5 hours. Mars Express Orbiter agreed to reduce two Radio Science Solar Corona passes to 5 hours. Nozomi agreed to receive requested support using DSS-15 and DSS-65. Ulysses will receive requested support using DSS-54.

2004 – Contention Period #40 – 70M – Weeks 42 through 47

DSS agreed to reduce one DSS-14 routine maintenance support to 4 hours per week. Ground Based Radio Astronomy agreed to move RA500 to week 48 and reduce VLBA support to 6 hours. Mars Express Orbiter agreed to reduce two Solar Corona passes per week to 5 hours. Nozomi will receive requested support using DSS-15 and DSS-65. Ulysses will receive requested support using DSS-34 and DSS-54. Voyager 1 will receive requested MAGROL support using one split pass of 4 hours at DSS-15 and 4 hours at DSS-63.

2004 – Contention Period #41 – 34HEF – Week 01

Cassini rejected the recommendation reducing support to 6-hour passes. Two Action Items were assigned. An action (A.I.#6) to investigate contention on Monday through Saturday (2004 DOY 263 through 2004 DOY 003) between the Mars Exploration Rovers A and B, Cassini, and Deep Impact's initial acquisition support at DSS-45, responding to RAP with resolution within 30 days. The second Action Item (A.I.#7) was assigned to study contention from DOY 004 through the end of the Cassini Gravitational Wave Experiment with Mars Exploration Rover-A and B. Resolution of this Action Item is pending Mars Exploration Rover-A and B landing site selection planned in the June 2002. Cluster 4 will receive requested support using DSS-16, DSS-27 and DSS-46. DEEP will receive requested support. DSS agreed to reduce DSS-15 maintenance to 6 hours to accommodate Mars Exploration Rovers. Mars Exploration Rover-A will receive requested support using the 70M for approach/VLBI passes. Mars Exploration Rover-B agreed to move six passes to DSS-26, DSS-34 and DSS-55. Stardust will receive requested support using DSS-15 and DSS-65. Voyager 2 agreed to reduce to 6-hour passes to accommodate Cassini and the Mars Exploration Rovers.

2004 – Contention Period #42 – 34HEF – Week 02

Cassini does not accept RAP's recommendation of reducing support to 4 to 5-hour passes to accommodate Mars Exploration Rover-B. An Action Item (A.I.#7) was assigned to investigate the contention and respond to RAP for resolution of contention # 42. Cluster 4 will receive requested support using DSS-16, DSS-27 and DSS-46. Deep Impact will receive requested support. DSN will receive requested support. DSS agreed to reduce DSS-15 maintenance to six hours. Ground Based Radio Astronomy agreed to move Host Country support to week 14. Mars Exploration Rover-A will receive requested support. Mars Exploration Rover-B will receive requested support. Stardust will receive requested support using DSS-15 and DSS-65. Voyager agreed to reduce support to 6-hour passes.

2004 – Contention Period #43 – 34HEF – Week 03

Cassini does not accept RAP's recommendation to reduce DSS-65 support to 5-hour passes to accommodate Mars Exploration Rover-B. An Action Item (A.I.#7) was assigned to investigate the contention and respond to RAP for resolution of contention # 43. Cluster 4 will receive requested support using DSS-16, DSS-27 and DSS-46. Deep Impact will receive requested support. DSS maintenance will receive requested support. Mars Exploration Rover-A agreed to use DSS-26 and DSS-55 for uplink support. Mars Exploration Rover-B will receive requested support. Stardust will receive requested support using DSS-15 and DSS-65. Space Geodesy Program agreed to move support to week 18 and 19. Voyager 2 will receive requested support.

2004 – Contention Period #44 – 34HEF – Week 04

Cassini does not accept RAP's recommendation of reducing support to 5-hour passes to accommodate Mars Exploration Rover-B. An Action Item (A.I.#7) was assigned to investigate contention and respond to RAP for resolution of contention # 44. Cluster 2 agreed to delete DSS-15 from the requested array support. Cluster 4 will receive requested support using DSS-16, DSS-27 and DSS-46. Deep Impact agreed to move four passes to DSS-26 to accommodate Mars Exploration Rover-B. DSN agreed to delete Clock Sync support. DSS agreed to reduce DSS-15 and DSS-65 maintenance to 4 hours. Mars Exploration Rover-A will receive requested support using DSS-26. Mars Exploration Rover-B will receive requested support. Stardust will receive requested support. Space Geodesy Program agreed to delete support. Voyager 2 will receive requested support.

2004 – Contention Period #45 – 34HEF – Week 20 through 26

DSS will receive requested DSS-65 downtime for the Antenna Controller Replacement (delete DSS-65 maintenance). Cassini will receive requested support using DSS-25 and DSS-45. DSN agreed to delete Catalog M&E and Clock Sync support at DSS-15\65 and will split DSS-15\45 Catalog M&E into three 8-hour supports. Goldstone Orbital Debris Radar agreed to delete support. Mars Global Surveyor (MGS) will receive requested support using 3 to 5 passes per week at DSS-15 and DSS-45 and agreed to MSPA 4 to 5 passes per week with Mars 01 Odyssey on the 70M. Stardust will receive requested support using DSS-15 and DSS-45. Space Geodesy Program agreed to split DSS-45 Crustal Dynamics into three 8-hour requests and will delete DSS-65 support. Space Infrared Telescope Facility agreed to remove DSS-65 from the set of requested antennas. Voyager 1 agreed to delete support at DSS-65. J. Hall asked for verification of Voyager 1 support at other stations. After the RARB it was affirmed that seven 8-hour passes are planned at DSS-26.

2004 – Contention Period #46 – 34BWG1 – Week 1

Chandra agreed to move 14 passes to the 26M. Cluster 1 will receive requested support using DSS-27 and DSS-46. Cluster 2 will receive requested support using DSS-27 and DSS-46. Cluster 4 will receive requested support using DSS-16 and DSS-27. Deep Impact will receive requested support. IMAGE will receive requested support. INTEGRAL will receive requested support using DSS-16. Mars Exploration Rover-A (MERA) does not accept the Resource Analysis Team (RAT) recommendation to delete DSS-24 from the EDL array support to accommodate Nozomi. An Action Item (A.I.#8) was assigned to MER A and Nozomi to study the MER A EDL multiple antenna simultaneous support (the EDL array) and understand the possibility or impact of another mission sharing uplink or using the MSPA configuration at one of the antennas supporting the EDL request. The response to this Action Item is expected about mid-October 2001. Space Infrared Telescope Facility will receive requested support using DSS-25 and DSS-55.

2004 – Contention Period #47 – 34BWG1 – Week 2

Chandra agreed to move 14 passes to the 26M. Cluster 1 will receive requested support using DSS-27 and DSS-46. Cluster 2 will receive requested support using DSS-27 and DSS-46. Cluster 4 will receive requested support using DSS-16 and DSS-27. Deep Impact did not accept RAP's recommendation to take 2-3 gaps of approximately 1-2 hours each. DEEP is concerned that there are too many major events planned during its launch support phase. Other planned major events in week 2 are Mars Express Orbiter Capture support, Mars Global Surveyor TCM support and MUSES-C TCM support. An Action Item (A.I.#9) was assigned to Deep Impact and Mars Express Orbiter to review contentions and provide a response to RAP by February 2002 for resolution. DSS maintenance will receive requested support. Genesis will receive requested support using DSS-24 and DSS-54. IMAGE will receive requested support. Mars Express Orbiter agreed to reduce support to 8-hour passes. Mars Global Surveyor agreed to reduce support to 4-hour passes. Muses-C will receive requested support. Space Infrared Telescope Facility will receive requested support using DSS-25 and DSS-55. Ulysses agreed to reduce DSS-54 support to eight hours per pass and move DSS-34 support to DSS-24 and DSS-54. Voyager 2 agreed to reduce negotiated support at DSS-34 to 6 hours per pass.

2004 – Contention Period #48 – 34BWG1 – Week 3

Chandra agreed to move 14 passes to 26M. Cluster 1 will receive requested support using DSS-27 and DSS-46. Cluster 2 will receive requested support using DSS-27 and DSS-46. Cluster 4 will receive requested support using DSS-16 and DSS-27. Deep Impact will receive requested support. DSS agreed to move DSS-24 maintenance to Tuesday and to reduce DSS-34 support to 4 hours. Genesis agreed to use DSS-24 and DSS-54 to support routine passes. IMAGE will receive requested support. Mars Express Orbiter agreed to use DSS-55 and reduce support to 8 hours per pass. Mars Global Surveyor agreed to reduce support to 4 hours per pass. Space Infrared Telescope Facility will receive requested support using DSS-25 and DSS-55. Ulysses agreed to maximize support at DSS-24 to 12 hours and to reduce support to 4-hour passes at DSS-34 and DSS-54 to equal 16 hours per day to accommodate Deep Impact. Voyager 2 agreed to reduce negotiated support to five hours per day.

2004 – Contention Period #49 – 34BWG1 – Week 4

Chandra agreed to move 14 passes to the 26M. Cluster 1 will receive requested support using DSS-27and 46. Cluster 2 will receive requested support using DSS-27 and 46. Cluster 4 will receive requested support using DSS-16 and 27. Deep Impact agreed to reduce DSS-54 passes to 6 hours to accommodate Ulysses Jupiter encounter. DSS maintenance will receive requested support. IMAGE

will receive requested support. Mars Exploration Rover-B will receive requested support. Mars Express Orbiter (MEX) will receive requested Orbital Science support using DSS-24. In addition, MEX agreed to reduce MSPA passes with Mars Global Surveyor to 6 hours or reduce passes to 8 hours and use DSS-55. Mars Global Surveyor agreed to reduce MSPA passes with Mars Express Orbiter to 6 hours or reduce passes to 8 hours and use DSS-55. Space Infrared Telescope Facility will receive requested support using DSS-25, DSS-54 and DSS-55. Ulysses declined the recommendation to reduce DSS-54 passes to 6 hours to accommodate Deep Impact launch support. An Action Item (A.I.#10) was assigned to Ulysses to investigate the possibility of using a non-DSN resource for support. Ulysses is to provide a response to Resource Analysis Team in 60 days.

2004 – Contention Period #50 – DSS-34, DSS-54 – Week 5

Deep Impact will receive requested support using 34HEF. Ulysses will receive requested support. Voyager 2 will receive requested support using DSS-43 and DSS-45.

2004 – Contention Period #51 – 34BWG1 – Week 11

Chandra will receive requested support. Cluster 1 will receive requested support using DSS-15 and DSS-45. Cluster 2 will receive requested support using DSS-15 and DSS-45. Cluster 4 will receive requested support using DSS-15. Deep Impact will receive requested support using DSS-45and DSS-65. DSS agreed to move DSS-24 maintenance day to Tuesday DOY 069 and reduce DSS-54 support to 4 hours. Genesis agreed to reduce two DSS-54 maneuver passes to 4 hours and use DSS-24 and DSS-34 only for routine support. IMAGE will receive requested support. Mars Express Orbiter agreed to reduce support to four hours per pass. MESSENGER will receive requested support. Space Infrared Telescope Facility will receive requested support using the 34HEF. Ulysses agreed to split five passes using 5 hours at DSS-14 and 5 hours at DSS-34 or DSS-43. Voyager 2 agreed to move two passes to DSS-43 and five passes to DSS-45. Wind will receive requested support using DSS-24 and DSS-54.

2004 – Contention Period #52 – 34BWG1 – Week 15

DEEP will receive requested support using DSS-15. DSS maintenance will receive requested support. Genesis will receive requested support. Mars Express Orbiter agreed to move three Orbital Science passes to the 34HEF. MESSENGER will receive requested support using DSS-45 and DSS-65. Space Infrared Telescope Facility will receive requested support. Ulysses agreed to reduce support to 9-hour passes and use DSS-34.

2004 – Contention Period #53 – 34BWG1 – Week 17

DEEP will receive requested support using DSS-15. DSS agreed to move DSS-24 maintenance to Tuesday DOY 111. Genesis agreed to reduce two routine passes to 6 hours. Mars Express Orbiter agreed to move four passes to the 34HEF. MESSENGER will receive requested support using DSS-45 and DSS-65. Ulysses agreed to move 4 passes to DSS-34 and to reduce passes to 9 hours. In addition, Ulysses agreed to split two passes using 5 hours at DSS-24 and 5 hours at DSS-34.
2004 - Contention Period #54 - 34BWG1 - Weeks 35 and 36

Cluster 1 will receive requested support using DSS-15 and DSS-45. Cluster 2 will receive requested support using DSS-15 and DSS-45. Cluster 4 will receive requested support using DSS-15. Genesis will receive requested support. MESSENGER will receive requested support in week 36 using DSS-45 and DSS-65.

2004 – Contention Period #55 – 34BWG1 – Weeks 50 through 53

Chandra agreed to move seven passes to the 26M in weeks 52 and 53. Cluster 1 will receive requested support. Cluster 2 will receive requested support. Cluster 4 will receive requested support. DEEP will receive requested support. DSS agreed to reduce to 4 hours at each antenna in week 52 and week 53. Mars 01 Odyssey will receive requested support using DSS-45. Mars Express Orbiter will receive requested support. MESSENGER will receive requested support using DSS-26. Ulysses will receive requested support using DSS-63.

2004 – Contention Period #56 – 34HSB – Weeks 01 through 04

ACE agreed to use the 26M for one pass per week to accommodate maintenance. DSS maintenance agreed to reduce to six hours to accommodate users off-loading from the 34-meter antennas during Mars Exploration Rovers Mars approach, entry, descent, and landing.

2004 – Contention Period #57 – 34HSB – Weeks 05 through 12

ACE agreed to move one pass per week to the 26M to accommodate maintenance.
DSS will receive requested support.

2004 – Contention period #58 – 34HSB – weeks 20 through 32

ACE agreed to move one pass per week to the 26M. Cluster 2 will receive requested routine tracking support using DSS-24 and DSS-34 in week 20 and agreed to delete DSS-27 from the week 20 interferometer array support.
Cluster 3 will receive requested support using DSS-16 and DSS-46 in week 20.
DSS agreed to reduce maintenance to 6 hours. SOHO agreed to reduce one pass to 4 hours in week 20.

2004 – Contention Period #59 – 34HSB – Weeks 44 through 53

ACE agreed to move one pass per week to the 26M. DSS will receive requested support.

2004 – Contention Period #60 – 26M – Weeks 01 Through 04

DSS agreed to reduce maintenance to 4-hour supports. SOHO agreed to move the week 03 TSO to week 05. In addition, SOHO agreed to reduce the 9.6-hour routine passes in weeks 1 through 4 to six hours.

2004 – Contention Period #61 – 26M – Weeks 07, 11, 15, 19

DSS agreed to reduce maintenance by two hours at each antenna. Polar agreed to move 12 Playback supports and three realtime passes to the 34-meter BWG1. SOHO agreed to move two 8-hour routine passes and one TSO pass to the 34-meter BWG1.

2004 - Contention Period #62 - 26M - Weeks 20 through 29

DSS agreed to reduce maintenance to 4 hours per week at each antenna. Lunar-A will receive requested support. Polar agreed to move 12 Playback passes and three Real-time passes each week to the 34BWG1. SOHO agreed to move two passes per week to DSS-34 and DSS-54.

2004 – Contention Period #63 – 26M – Weeks 33, 37, 41, 45, 49

DSS agreed to reduce maintenance by two hours at each antenna. INTEGRAL will receive requested support. Polar agreed to move 12 Playback passes and 3 Real-time passes per week to the 34-meter BWG1. SOHO agreed to move two playback 8-hour passes and one TSO pass per week to the 34-meter BWG1.

Action Item Summary – Gene Burke

AI#	CP#	YEAR	MONTH(S)	WEEK(S)	SUBNET	SYSTEM	RESPONSIBLE	DUE DATE	STATUS
All	**2003**	**pre-Nov '03**		**All**	**All**	**DSS**	**A. Salazar**	**10/21/2001**	***Open***

ACTION: DSMS Operations Office shall assess the overall impact of the recommendations to reduce Preventative Maintenance on the all Subnets and to provide the Resource Allocations Planning Team with a risk and budgeting assessment of whether additional maintenance hours are needed. The board noted that many of the Contentions identified in 2003 use DSS Maintenance to relieve the over-subscription and requested that they evaluate the readiness needed to prepare for the expected sustained high use in late 2003 through early 2004. This action should reference the opportunity to perform maintenance activities during extended downtime for all antennas in the nine-month period in late 2002 through early 2003.

02	**N/A**	**N/A**	**N/A**	**N/A**	**70M**	**SVLB**	**V. Altunin**	**10/21/2001**	***Open***

ACTION: Request change of name from Space VLBI to something without the word Space. The name causes confusion between two separate but required activities. One is to provide support to an orbiting spacecraft (HALCA, a.k.a. VSOP); the DSN uses 11 meter and 26 meter antennas to track the spacecraft. The second is to co-observe the same radio source as the spacecraft with ground-based radio telescopes; the DSN currently supports using 70-meter antennas at certain frequencies.

03	**14**	**2003**	**Jun - Jul**	**26-29**	**34H**	**MER-B**	**J. Erickson**	**9/21/2001**	***Open***

ACTION: MER B shall specify the launch period for the spacecraft. This will clarify the contention and may alter the recommendation for this period.

04	**16**	**2003**	**Oct - Nov**	**43-46**	**34H**	**RAT**	**N. Lacey**	**10/21/2001**	***Open***

ACTION: Resource Analysis Team shall redistribute the support load so that MER A receives no greater than 20 percent of its support using DSS-55. In addition, MER B noted that they could be scheduled on DSS-55 to support subnet overloads as necessary.

AI#	CP#	YEAR	MONTH(S)	WEEK(S)	SUBNET	SYSTEM	RESPONSIBLE	DUE DATE	STATUS
05	27,31	2003	Sep - Dec	39-51	26M	RAT SOHO	N. Lacey R. Bush	9/14/2001	*Closed*

ACTION: Due to RARB recommended and project acceptance of deletion for the last four weeks of Helio-Seismology Observation (HSO) in 2003, the SOHO project requested another 30-day period earlier in 2003 to replace this lost observation.

RESPONSE: SOHO accepted the alternate recommendation of continuous coverage during weeks 4-7 (Jan. - Feb.) in 2003.

06	41	2004	January	1	34H	CAS DEEP MER A/B	R. Mitchell J. McKinney J. Erickson	9/21/2001	*Open*

ACTION: MER A & B in their Approach phase shall resolve contention support from Canberra and Spain in the first 6 days of week 1 in 2004 with Cassini Gravitational Wave Experiment and Deep Impact's use of two 34-meter antennas for initial acquisition (Canberra).

07	41-44	2004	January	1-4	34H	MER A/B CAS	J. Erickson R. Mitchell	7/1/2002	*Open*

ACTION: Provide MER A & B Landing Site coordinates. This will allow better planning of antenna usage in January 2004 during surface operations.

08	46	2004	January	1	34B1	MER A NOZO	J. Erickson A. Chang	10/21/2001	*Open*

ACTION: MER A to study impact of either removing DSS-24 from EDL array in order to provide post MOI support to Nozomi TCM or to investigate the option of maintaining the array while providing MSPA and uplink support to Nozomi from DSS-24.

09	47	2004	January	2	34B1	DEEP MEX	J. McKinney R. Horttor	2/1/2002	*Open*

ACTION: Deep Impact shall evaluate the impact of taking regular gaps in post-launch coverage due to Mars Express Orbiter's post MOI support needs over DSS-54.

10	49	2004	January	4	34B1	ULYS	I.J. Webb	10/21/2001	*Open*

ACTION: Ulysses shall investigate the possibility of using a non-DSN antenna for support or taking a regular two hour gap at Madrid (DSS-54).

The next meeting of the Resource Allocation Review Board will be Tuesday, 12 February 2002 at 8:30 a.m. in JPL Building 180, Room 101.

ACE
Afkhami, F. . . . . GSFC m/s 428.2
Machado, M. J. . . . . GSFC m/s 428.2
Myers, D. A. . . . . GSFC m/s 428.2
Sodano, R. J. . . . . GSFC m/s 581.0

Canberra Deep Space Communications Complex
Churchill, P. . . . . CDSCC
Jacobsen, R. . . . . CDSCC
O'Brien, J. J. . . . . CDSCC
Ricardo, L. . . . . CDSCC
Robinson, A. . . . . CDSCC
Wiley, B. . . . . CDSCC

Cassini
Arroyo, B. 264-235
Chin, G. E 230-310
Doody, D. F. 230-310
Frautnick, J. C. 230-301
Gustavson, R. P. 230-301
Maize, E. H. 230-104
Matson, D. L. (PS) 230-205
Miller, L. J. 230-260
Mitchell, R. T. (PM) 230-205
Miyoshi, T. 230-310
Sakamoto, L. L. 230-104
Webster, J. L. 230-104

Chandra
Digesu, S. . . . . MSFC Org. FD32
Gage, K. R. . . . . SAO
Lavoie, A. R. (PM) . . . . . MSFC Org. FD03
Marsh, K. . . . . SAO
O'Dell, S. L. . . . . MSFC Org. SD50
Weisskopf, M. C. (PS) . . . . . MSFC Org. SD50
Wicker, D. . . . . SAO
Wright, G. M. . . . . MSFC Org. FD03

Comet Nucleus Tour (CONTOUR)
Chiu, M. C. (PM) . . . . . APL 23-208
Dunham, D. . . . . APL 4-134
Farquhar, R. . . . . APL 2-155
Reynolds, E. L. . . . . APL 23-204

Deep Impact
A'Hearn, M. F. . . . . Univ. of Md
Blume, W. H. 301-180
McKinney, J. C. 301-350
Muirhead, B. K. (PM) 301-350
Pojman, J. L. 264-538

Deep Space 1 (DS1)
Hunt, J. C. 230-207
Moyd, K. I. 230-207
Nelson, R. M. (PS) 183-501
Rayman, M. D. (PM) 230-207
Tay, P. 264-235
Yetter, K. E. 264-235

Director's Office
Dumas, L. N. 180-904
Elachi, C. 180-904
Tattini, E. 180-904

Europa
Simpson, K.A. 301-335
McNamee, J.B. (PM) 301-335

European VLBI Network
Altunin, V. I. 303-402

Explorers Program Office
Barrowman, J. S. (PM) . . . . . GSFC m/s 410.0

Galileo
Compton, B. 230-102
Huynh, J. C. 230-102
Johnson, T. V. (PS) 264-525
Medina-Gussie, M. 301-371
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Genesis
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GOES
Birnbaum, P. . . . . Boeing
Bors, J. . . . . Boeing
Criddle, K. E. 301-125J
LeBair, W. J. . . . . GSFC m/s 415.0
Settles, M. . . . . NOAA
Skidmore, R. W. . . . . Omitron

Goldstone Complex
DePriest, M. DSCC-37
Holmgren, E. DSCC-25
Massey, K. DSCC-61
McConahy, R. DSCC-33
McCoy, J. DSCC-57
Sturgis, L. DSCC-33

Goldstone Orbital Debris Radar (GODR)
Goldstein, R. M. (PM) 300-227

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. 507-105

Gravity Probe B
Keiser, M. (PS) . . . . . Stanford Univ.
Shapiro, Prof. I. I. . . . . Harvard Univ.

Host Country Radio Astronomy
Klein, M. J. (PM) 303-402
Wolken, P. R. 507-105

IMAGE
Abramo, C. A. 507-120
Burch, J. . . . . SwRI
Burley, R. J. . . . . GSFC m/s 632.0
Gibson, W. C. . . . . SwRI
Green, J. L. . . . . GSFC m/s 630
Tapley, M. B. . . . . SwRI

INTEGRAL
Beech, P. 264-801
Clausen, K. (PM) . . . . . ESA/ESTEC
Machi, D. . . . . GSFC m/s 404.0
Maldari, P. . . . . ESA/ESOC

IPN-ISD / General
Coffin, R. C. 303-400
Deutsch, L. J. 180-604
Doms, P. E. 303-400
Edwards, C. D. 264-438
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Webber, III, W. J. 180-500

IPN-ISD / DSMS Engineering
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Kimball, K. R. 303-404
Klose, J. C. 303-404
Kurtik, S. C. 303-210
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Osman, J. W. 303-210
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Bartoo, R. H. 303-403
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Hincy, W. 600-174
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Kim, K. 600-174
Lacey, N. 600-174
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Lineaweaver, S. 600-174
Martinez, K. A. 600-174
Morris, D. G. 303-403
Valencia, J. 600-174
Wang, Y-F. 301-165
Zendejas, S. C. 301-165

ISTP (Cluster II)
Abramo, C. A. 507-120
Christensen, J. L. . . . . GSFC m/s 404.0
Dutilly, R. N. . . . . GSFC m/s 581.1
Gurnett, D. . . . . U. of Iowa
Mahmot, R. E. (PM) . . . . . GSFC m/s 444.0
Martin, W. L. 303-402
Pickett, J. . . . . U of Iowa
Warhaut, M. . . . . ESA/ESOC

ISTP (GEOTAIL/POLAR/SOHO/WIND)

Abramo, C. A. 507-120
Acuna, M. H. (PS) . . . . . GSFC m/s 695.0
Alexander, H. 502-320
Bush, R. I. . . . . Stanford Univ.
Carder, M. E. . . . . GSFC 450.C
Desch, M. D. . . . . GSFC m/s 695.0
Dutilly, R. N. . . . . GSFC m/s 581.1
Fairfield, D. H. (PS) . . . . . GSFC m/s 695.0
Gurman, J. B. . . . . GSFC m/s 682.3
Hall, S. B. . . . . GSFC m/s 428.2
Hearn, S. P. . . . . GSFC m/s 450.C
Hesse, M. (PS) . . . . . GSFC m/s 696.0
Hoffman, R. A. (PS) . . . . . GSFC m/s 696.0
Johnston, S. S. . . . . GSFC m/s 444.0
Mahmot, R. E.(PM) . . . . . GSFC m/s 444.0
Milasuk-Ross, J. . . . . GSFC m/s 428.5
Miller, K. A. . . . . GSFC m/s 450.C
Mish, W. H. . . . . GSFC m/s 690.0
Nace, E. M. . . . . GSFC m/s 450.8
Ogilvie, K. W. (PS) . . . . . GSFC m/s 690.0
Pukansky, S. M. . . . . GSFC m/s 450.C

JPL/General

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Mizutani, H. . . . . ISAS
Nakajima, T. . . . . ISAS
Ryne, M. S. 301-276

Madrid Deep Space Communications Complex

Chamarro, A. . . . . MDSCC
Rosich, A. . . . . MDSCC

MAP

Abramo, C. A. 507-120
Bennett, C. L. (PS) . . . . . GSFC m/s 685.0
Citrin, E. A. (PM) . . . . . GSFC m/s 410.2
Coyle, S. E. . . . . GSFC m/s 581.0
Dew, H. C. . . . . GSFC m/s 423.0
Mims, J. . . . . GSFC m/s 586.0
Powers, M. K. . . . . GSFC m/s 567

Mars Exploration Rover (MER A & B)

Adler, M. T1723
Arroyo, B. 264-235
Crisp, J. A. (PS) 241-105
Erickson, J. K. T1723
Ludwinski, J. B. T1722
Roncoli, R. B. 301-140L
Theisinger, P. C. (PM) 301-455

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Butman, S. A. 264-255
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Olivieri, A. . . . . ASI
Schmidt, R. (PM) . . . . . ESA/ESTEC
Thompson, T. W. 300-227

Mars Global Surveyor (MGS)

Albee, A. (PS) 264-282
Arroyo, B. 264-235
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Harris, J. A. 301-455
Mase, R. A. 264-380
Saunders, R. S. (PS) 180-701
Spencer, D. A. 264-255

Mars Program Office

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Jordan, Jr., J. F. 264-472
McCleese, D. J. 264-426
Naderi, F. M. 264-438

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Arroyo, B. 264-235
Graf, J. E. (PM) 264-440
Johnston, M. D. 301-140L
Lock, R. E. 301-140L

MESSENGER

Farquhar, R. (PM) . . . . . APL 2-155
Peterson, M. . . . . APL 4-244

MUSES-C

Kawaguchi, J. . . . . ISAS
Peters, S. . . . . ISAS
Ryne,, M. S. 301-276
Smith, J. G. (PM) 264-828

NASA Headquarters

Albright, G. G. . . . . Code SD
Bergstralh, J. T. . . . . Code SR
Bogan, D. . . . . Code SR
Boyce, J. M. . . . . Code SR
Brody, S. . . . . Code SD
Costrell, J. A. . . . . Code MT
Dahl, M. R. . . . . Code SD
Geldzahler, B. . . . . Code SR
Hertz, P. . . . . Code SR
Holmes, C. P. . . . . Code SR
Jones, W. V. . . . . Code SR
LaPiana, L. S. . . . . Code SD
Lavery, D. B. . . . . Code SM
Meyer, M. A. . . . . Code SR
Morgan, T. H. . . . . Code SR
Ocampo, A. C. . . . . Code SD
Riegler, G. R. . . . . Code S
Spearing, R. E. . . . . Code M-3
Thronson, H. . . . . Code S
Wagner, W. J. . . . . Code SR
Watkins, M. A. . . . . Code SD
Williams, R. L. 180-300
Withbroe, G. L. . . . . Code S

NASA/GSFC/General

Achey, R. A. . . . . GSFC m/s 450.A
Ambardekar, S. P. . . . . GSFC m/s 450.A
Barbehenn, G. M. . . . . GSFC m/s 440.8
Barbehenn, M. B. . . . . GSFC m/s 450.S
Buczkowski, V. R. . . . . GSFC m/s 424.0
Currier, S. F. . . . . Wallops m/s 452.W
Davenport, D. G. . . . . GSFC m/s 453.7
Davis, A. D. . . . . GSFC m/s 450.A
Harris, R. N. . . . . GSFC m/s 452.0
Hunter, R. A. . . . . GSFC m/s 450.A
Marinaccio, C. A. . . . . GSFC m/s 450.C
Martin, J. B. . . . . GSFC m/s 451.0
Mateik, D. E. . . . . GSFC m/s 450.A
Mathis, E. S. . . . . GSFC m/s 450.1
Purdy, C. L. . . . . Wallops m/s 800.0
Quint, K. B. . . . . GSFC m/s 450.A
Schaub, M. B. . . . . GSFC m/s 450.A
Williams, A. K. . . . . GSFC m/s 450.A

NASA/JSC/General

Bull, Jr., G. W. . . . . JSC Code DB

NASA/SOMO

Dalton, J. T. . . . . GSFC 720.0
Davidson, W. L. . . . . JSC Code TR
Dowen, A. Z. 303-400
Hall, V. F. . . . . JSC Code TG
Morse, G. A. . . . . JSC Code TA
Thompson, E. W. . . . . JSC Code GA
Thoman, B. E. . . . . GSFC 581.0

NOZOMI (Planet B)

Hayakawa, H. . . . . ISAS
Nakatani, I. . . . . ISAS
Niemann, H. B. . . . . GSFC m/s 915.0
Ryne, M. 301-276
Tay, P. 264-235
Tsuruda, K. . . . . ISAS
Yetter, K. E. 264-235

PFPD / Mission Management Office

Rosell, S. N. 264-235
Varghese, P. 264-235

Radio Astronomy

Klein, M. J. (PM) 303-402
Kuiper, T. B. (PS) 169-506
Martinez, G. 507-120
VanAllen, J. A. . . . . U. of Iowa
Wolken, P. R. 507-105

Rosetta (ROSE)

Alexander, C. J. (PS) 169-237
Ellwood, J. (PM) . . . . . ESA/ESTEC
Klein, G. A. 233-202
Schwehm, G. H. (PS) . . . . . ESA/ESTEC
Warhaut, M. . . . . ESA/ESOC
Wellman, J. B. 233-200

Solar Stereo

Driesman, A. S. . . . . APL MD1-118
Eichstedt, J. . . . . APL 36-107
Mueller, J. T. (PM) . . . . . APL 4-282
Ossing, D. A. . . . . APL 36-107

Space Geodesy (NASA Goddard)

Clark, T. A. (PM) . . . . . GSFC m/s 920.3
Vandenberg, N. R. . . . . GSFC m/s 920.1

Space Infrared Telescope Facility (SIRTF)

Arroyo, B. 264-235
Ebersole, M. M. 264-767
Gallagher, D. B. (PM) 264-767
Kwok, J. H. 264-767
Wilson, R. K. 264-767

StarLight Mission

Deutsch, M. C. 301-250D
Livesay, L. L. (PM) 301-451
Spradlin, G. L. 301-451

Stardust

Duxbury, T. C. (PM) 264-379
Ryan, R. E. 301-285
Tay, P. 264-235
Yetter, K. E. 264-235

TDRS - I and J

Ambrose, L. L. . . . . GSFC 451.0
Gagosian, J. . . . . GSFC 571.0

Ulysses / Voyager

Angold, N. G. 264-114
Beech, P. 264-801
Bray, T. L. 264-114
Cummings, A. C. . . . . CIT 220-47
Hall, Jr., J. C. 264-801
Massey, E. B. (PM) 264-801
Nash, J. C. 264-114
Smith, E. J. (PS - ULYS) 169-506
Stone, E. C. (PS - VGR) . . . . . CIT 220-47
Webb, I. J. 264-114

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

YOHKOH

Chang, A. F. 264-844

Other Organizations

Hall, L. . . . . LMSOC
Ninomiya, K. . . . . ISAS
Sawai, S. . . . . ISAS
Yamada, T. . . . . ISAS
Yamakawa, H. . . . . ISAS
Yoshikawa, M. . . . . ISAS

Please mark any additions, deletions, or corrections to this distribution list and return to:

David G. Morris
Jet Propulsion Laboratory
4800 Oak Grove Drive, 303-403
Pasadena, CA 91109 / 818-393-3535
email: David.G.Morris@jpl.nasa.gov

RESOURCE ALLOCATION REVIEW

14 August 2001

AGENDA

• INTRODUCTION	G. Squibb	8:30
• OVERVIEW, ACTION ITEMS, CONTENTION SUMMARY	G. Burke	9:00
• NASA HQ PERSPECTIVE		
– CODE S	B. Geldzahler	9:10
– CODE M	J. Costrell	9:30
• JPL DSMS PLANS & COMMITMENTS PROGRAM OFFICE	R. Miller	10:10
• JPL DSMS ENGINEERING PROGRAM OFFICE	J. Statman	10:30
• JPL DSMS OPERATIONS PROGRAM OFFICE	J. Wackley	10:50
• NEW OR MODIFIED PROJECT REQUIREMENTS		
– SIRTF	R. Wilson	11:10
– Deep Impact	J. McKinney	11:25
• RESOURCE CONTENTIONS		
– Analysis & Recommendations	W. Hincy	11:40
– Responses	Projects	
– Discussion / Decisions	All	

REVIEW BOARD MEMBERS

Gael Squibb	JPL	Chairman
Gene Burke	JPL	DSMS Resource Allocation Planning & Scheduling Office Mgr
Arden Albee	Caltech	Mars Global Surveyor Project Scientist
Donald Burnett	Caltech	Genesis Project Scientist
Elizabeth Citrin	GSFC	MAP Project Manager
Joy Crisp	JPL	Mars Exploration Rover Project Scientist
Alan Cummings	Caltech	Voyager Project Scientist Representative
Peter Doms	JPL	Deep Space Mission System (DSMS) Manager
Tom Duxbury	JPL	Stardust Project Manager
Mike Ebersole	JPL	SIRTF Project Manager Representative
Bob Farquhar	APL	MESSENGER Mission Manager, CONTOUR
John Gagosian	GSFC	TDRS I, J Project Manager Representative
Roger Gibbs	JPL	Mars 2001 Odyssey Acting Project Manager
Ike Gillam	HTSI	CSOC JPL Site Manager
Dick Goldstein	JPL	Goldstone Orbital Debris Radar

REVIEW BOARD (Cont'd)

Dwight Holmes	JPL	INTEGRAL Representative
Richard Horttor	JPL	Mars Express Orbiter Project
Torrence Johnson	JPL	Galileo Project Scientist
Mike Klein	JPL	Radio Astronomy Project Manager
Ron Mahmot	GSFC	Space Science Mission Operations Project Mgr. (ISTP, ACE)
Ed Massey	JPL	Ulysses / Voyager Project Manager
Dennis Matson	JPL	Cassini Program Scientist
Rich Miller	JPL	DSMS Plans & Commitments Office Manager
Bob Mitchell	JPL	Cassini Project Manager
Brian Muirhead	JPL	Deep Impact Project Manager
Steve Ostro	JPL	GSSR Project Scientist
Bob Preston	JPL	U.S. Space VLBI Project Scientist

REVIEW BOARD (Cont'd)

Chet Sasaki	JPL	Genesis Project Manager
Steve Saunders	JPL	Mars 2001 Odyssey Mission Project Scientist
Rance Skidmore	Omitron	GOES Project Manager Representative
Martin Slade	JPL	GSSR Project Manager
Ed Smith	JPL	Ulysses Project Scientist
Joel Smith	JPL	Muses-C, U.S. Space VLBI Project Manager
Joe Statman	JPL	DSMS Engineering Program Office Manager
Eileen Theilig	JPL	Galileo Project Manager
Pete Theisinger	JPL	Mars Exploration Rover (MER) 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
Greg Wright	MSFC	Chandra Project Manager Representative

INTRODUCTION

Gael Squibb

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 2002 THROUGH 2011**
- **CONFLICTS IN 2002 THROUGH 2004 NEEDING RESOLUTION**

ORGANIZATION CHART

900
TELECOMMUNICATIONS AND MISSION OPERATIONS DIRECTORATE
G.F. Squibb, Director
R.C. Coffin, Deputy Director
P.E. Doms, DSMS Program Manager

900
A.Z. Dowen, SOMO Systems Engineering Advisor
A.J. Hooke, SOMO Standards Program Mgr.
Vacancy, TMOD Chief Engineer
R.G. Polansky, Assistant Chief Engineer & ISO Rep.
K.A. Blom, Align & Integrate Domain Process Engineer
J.H. Yuen, TMO Progress Reports Editor
Directorate Technical Staff:
M.J. Rodrigues
Directorate Secretarial Staff:
L.G. Deady
J.N. Pulliam

910 - BUSINESS OPERATIONS OFFICE
T.R. Scheck, Mgr.

905 - TMOD SYSTEMS ENGINEERING AND STANDARDS OFFICE
W.S. Tai, Mgr.

901 - MARS NETWORK PROJECT OFFICE
C.D. Edwards, Mgr.

902 - MISSION MANAGEMENT OFFICE
P. Varghese, Mgr.
S.N. Rosell, DM

903 - MISSION DATA SYSTEM OFFICE
A. Sacks, Mgr.

920 - DSMS PLANS AND COMMITMENTS PROGRAM OFFICE
R.B. Miller, Mgr.
D.G. Griffith, DM

930 - DSMS OPERATIONS PROGRAM OFFICE
J.A. Wackley, Mgr.
Vacancy, DM

940 - DSMS ENGINEERING PROGRAM OFFICE
J.I. Statman, Mgr.
J.C. Klose, DM

970 - TMOD TECHNOLOGY PROGRAM OFFICE
J.R. Lesh, Mgr.

907 - MARS GLOBAL SURVEYOR PROJECT OFFICE
T.E. Thorpe, Mgr.

908 - STARDUST PROJECT OFFICE
T.C. Duxbury, Mgr.

909 - DEEP SPACE 1 PROJECT OFFICE
M.D. Rayman, Mgr.

950 - GALILEO PROJECT OFFICE
J.K. Erickson, Mgr. (AD)
E.E. Theilig, DM (AD) (31)

990 - CASSINI PROGRAM OFFICE
R.T. Mitchell, Mgr.
J.M. Gunn, Asst. Pgrm. Mgr. For Development (36)

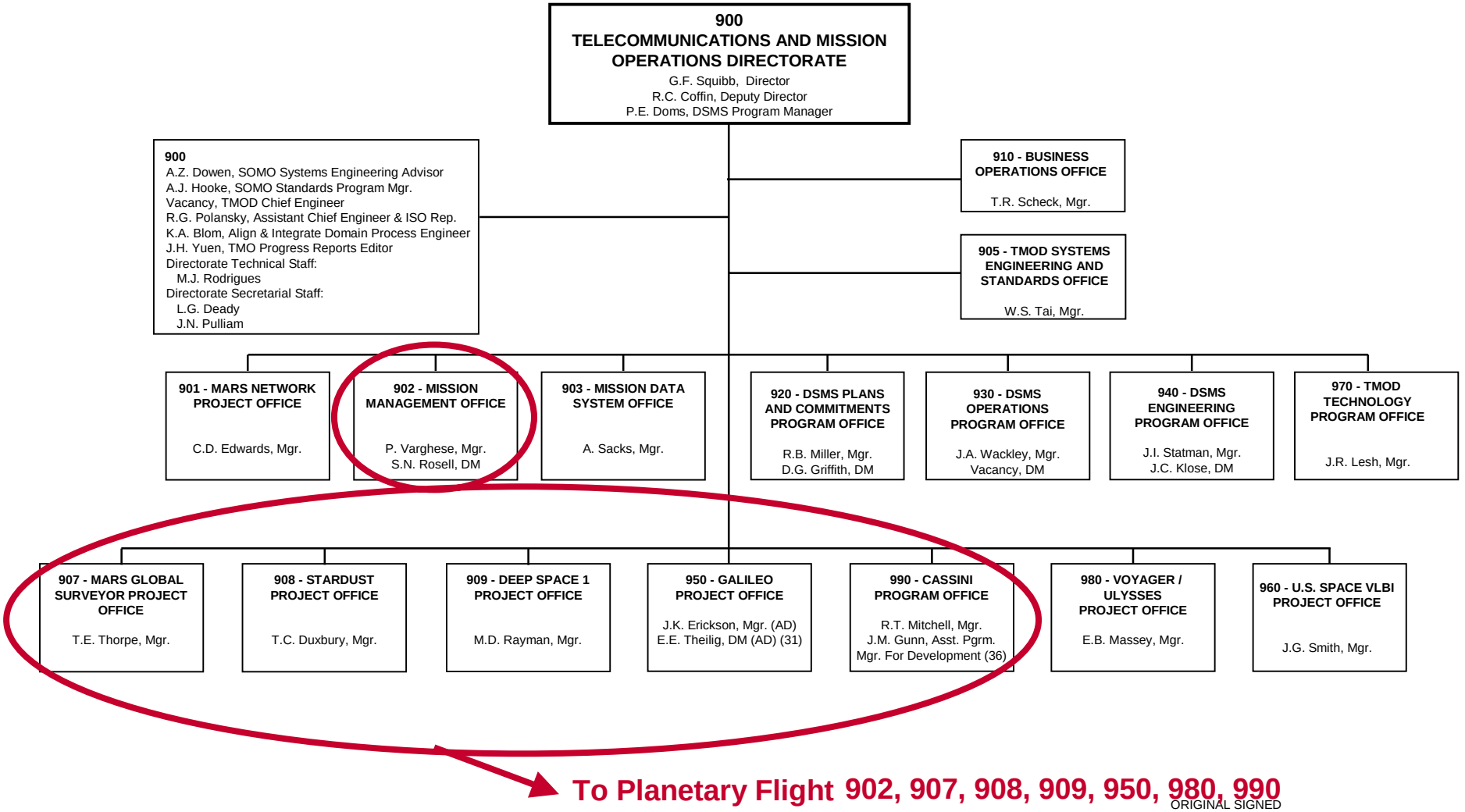
980 - VOYAGER / ULYSSES PROJECT OFFICE
E.B. Massey, Mgr.

960 - U.S. SPACE VLBI PROJECT OFFICE
J.G. Smith, Mgr.

ORIGINAL SIGNED

Legend:
DSMS = Deep Space Mission System
SOMO = Space Operations Management Office
DSN = Deep Space Network
CSOC = Consolidated Space Operations Contract
VLBI = Very Long Baseline Interferometry
DM = Deputy Manager
AD = Additional Duty

ORGANIZATION CHART CHANGES



To Planetary Flight 902, 907, 908, 909, 950, 980, 990

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TELECOMMUNICATIONS AND MISSION OPERATIONS DIRECTORATE
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R.C. Coffin, Deputy Director
P.E. Doms, DSMS Program Manager

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A.Z. Dowen, SOMO Systems Engineering Advisor
A.J. Hooke, SOMO Standards Program Mgr.
Vacancy, TMOD Chief Engineer
R.G. Polansky, Assistant Chief Engineer & ISO Rep.
K.A. Blom, Align & Integrate Domain Process Engineer
J.H. Yuen, TMO Progress Reports Editor
Directorate Technical Staff:
M.J. Rodrigues
Directorate Secretarial Staff:
L.G. Deady
J.N. Pulliam

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W.S. Tai, Mgr.

To Astrophysics 980

901 - MARS NETWORK PROJECT OFFICE
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S.N. Rosell, DM

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D.G. Griffith, DM

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Vacancy, DM

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ORGANIZATION CHART CHANGES

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INTERPLANETARY NETWORK AND INFORMATION SYSTEMS
G.F. Squibb, Director
R.C. Coffin, Deputy Director
P.E. Doms, DSMS Program Manager
TBD Chief Scientist
TBD Chief Technologist

900
A.Z. Dowen, SOMO Systems Engineering Advisor
A.J. Hooke, SOMO Standards Program Mgr.
Les Deutsch, TMOD Chief Engineer
R.G. Polansky, Assistant Chief Engineer & ISO Rep.
K.A. Blom, Align & Integrate Domain Process Engineer
J.H. Yuen, TMO Progress Reports Editor
Directorate Technical Staff:
M.J. Rodrigues
Directorate Secretarial Staff:
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L.L. Lievense
J.N. Pulliam

CHIEF INFORMATION OFFICER
Tom Renfrow

905 - TMOD SYSTEMS ENGINEERING AND STANDARDS OFFICE
W.S. Tai, Mgr.

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T.R. Scheck, Mgr.

901 - MARS NETWORK PROJECT OFFICE
C.D. Edwards, Mgr.

170 -INSTITUTIONAL COMPUTING AND INFORMATION SERVICES
J. T. Renfrow, Manager
R. R. Green, Deputy Manager

903 - MISSION DATA SYSTEM OFFICE
A. Sacks, Mgr.

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R.B. Miller, Mgr.
D.G. Griffith, DM

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J.A. Wackley, Mgr.
Vacancy, DM

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J.C. Klose, DM

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J.R. Lesh, Mgr.

170 Moved From 1X to 9X

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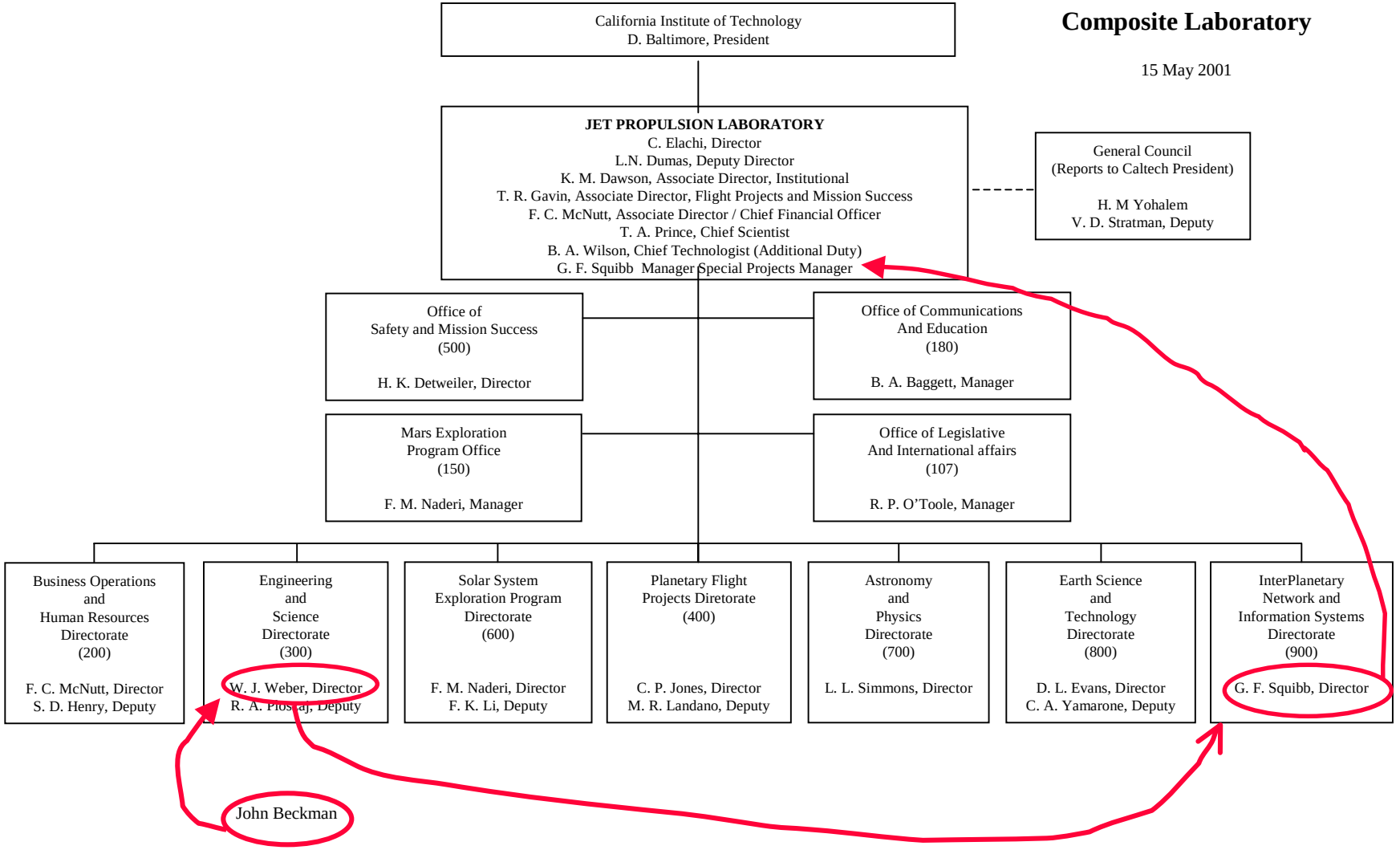
ORGANIZATION CHART



ORGANIZATION CHART

Effective: August 6, 2001

900
INTERPLANETARY NETWORK AND INFORMATION SYSTEMS DIRECTORATE
Gael Squibb, Director
Vacancy, Deputy Director
Peter Doms, DSMS Program Manager
George Resch, Acting IPN-ISD Chief Scientist
Vacancy, IPN-ISD Chief Technologist

900
Andy Dowen, SOMO Chief Engineer
Adrian Hooke, InterPlanetary Network Architect
Les Deutsch, IPN-ISD Chief Engineer
Bob Polansky, Assistant Chief Engineer & ISO Rep.
Kris Blom, Align & Integrate Domain Process Engineer
Joe Yuen (AD)(30), IPN-ISD Progress Reports Editor
Directorate Technical Staff:
Mike Rodrigues
Staff Assistant to the Director for
Lorna Deady
Directorate Secretarial Staff:
Linda Lievense
Joyce Pulliam

JPL CHIEF INFORMATION OFFICER
Tom Renfrow

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Tim Scheck, Mgr.

901 - MARS NETWORK PROJECT OFFICE
Chad Edwards, Mgr.

902 - IPN-ISD DSN SCIENCE OFFICE
Mike Klein, Mgr.

903 - MISSION DATA SYSTEM OFFICE
Al Sacks, Mgr.

905 - IPN-ISD SYSTEMS ENGINEERING AND STANDARDS OFFICE
Wallace Tai, Mgr.

920 - DSMS PLANS AND COMMITMENTS PROGRAM OFFICE
Rich Miller, Mgr.
Doug Griffith, Dep. Mgr.

930 - DSMS OPERATIONS PROGRAM OFFICE
Joe Wackley, Mgr.
Allen Berman, Dep. Mgr.

940 - DSMS ENGINEERING PROGRAM OFFICE
Joe Statman, Mgr.
Chuck Klose, Dep. Mgr.

950 - INSTITUTIONAL COMPUTING AND INFORMATION SERVICES OFFICE
Tom Renfrow, Mgr.
Rick Green, Dep. Mgr.

970 - IPN-ISD TECHNOLOGY PROGRAM OFFICE
Jim Lesh, Mgr.

Original Signed

Gael F. Squibb, Director for
InterPlanetary Network & Information Systems

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01-263A
August 6, 2001

OVERVIEW

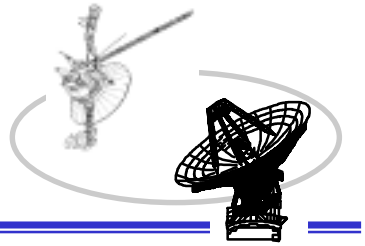
ACTION ITEM

CONTENTION SUMMARY

Gene Burke

CONTENTION RESOLUTION PROCESS

- **CONTENTION EXPLANATION**
- **RESOURCE ANALYSIS TEAM (RAT) RECOMMENDATIONS**
- **PROJECT RESPONSE TO RECOMMENDATIONS**
- **REVIEW BOARD DISCUSSIONS**
- **REVIEW BOARD DECISIONS**



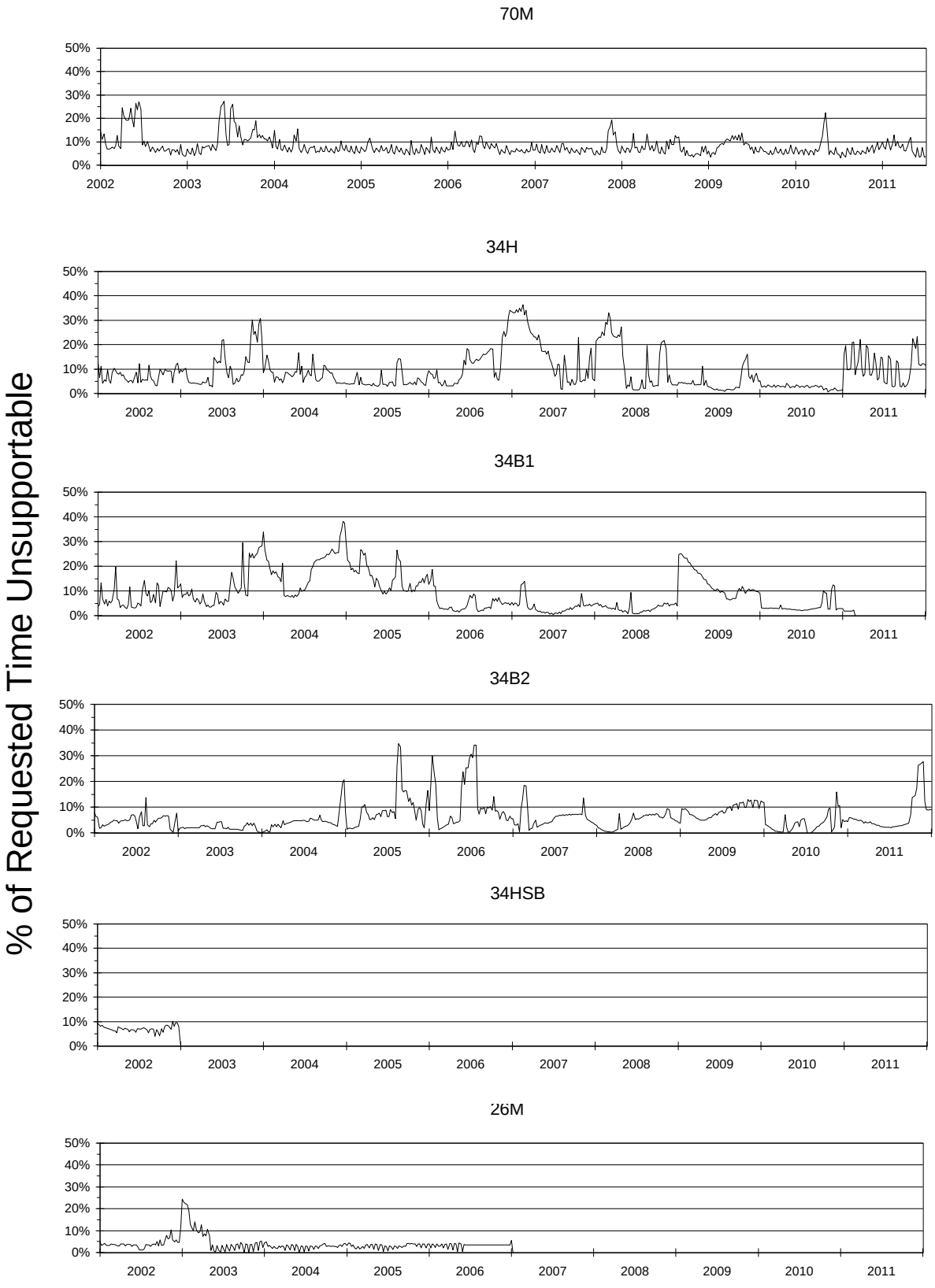
Action Item Summary

AI#	CP#	Year	Month(s)	Week(s)	System	Responsible	Due Date	Status
01	N/A	2002			NSP	S. Kurtik	4/27/2001	Closed

ACTION: Network Simplification Project (NSP) will be eliminating the TRK-2-15A interface. Action is to investigate whether any changes to the GSFC-JPL ICD are needed and to specifically verify that the Flight Dynamics Facility (FDF) at GSFC is aware and is not affected by this change.

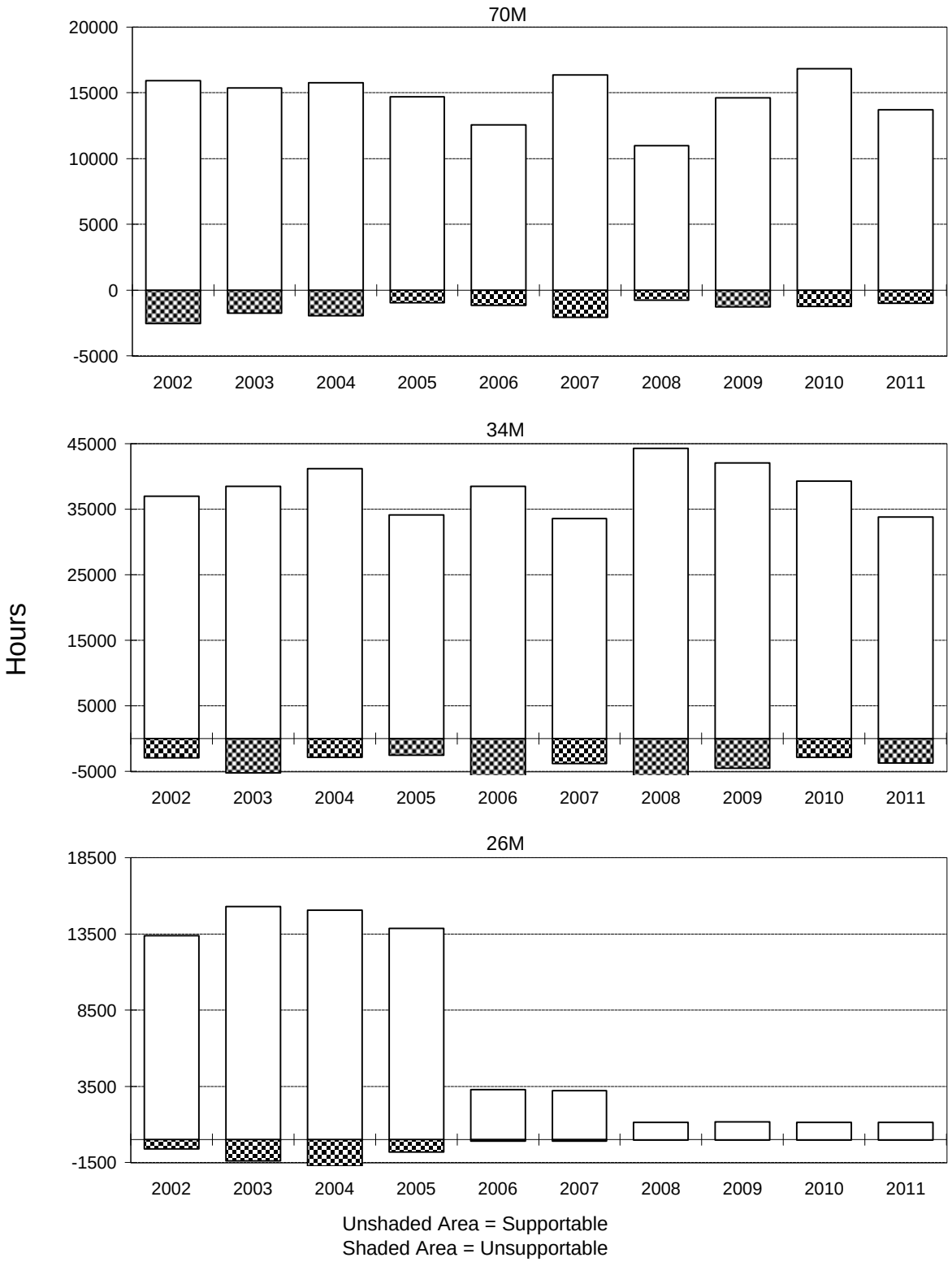
RESPONSE: GSFC's FDF is aware and affected by this change. FDF personnel have contacted NSP implementation management and noted that they had approval to implement the replacement (TRK-2-34) interface from their end. In addition, FDF has the NSP installation schedule as contained in the DSN downtime schedule.

Projected Lost Time Summary



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

Projected Yearly Supportable Time Summary
2002 - 2011



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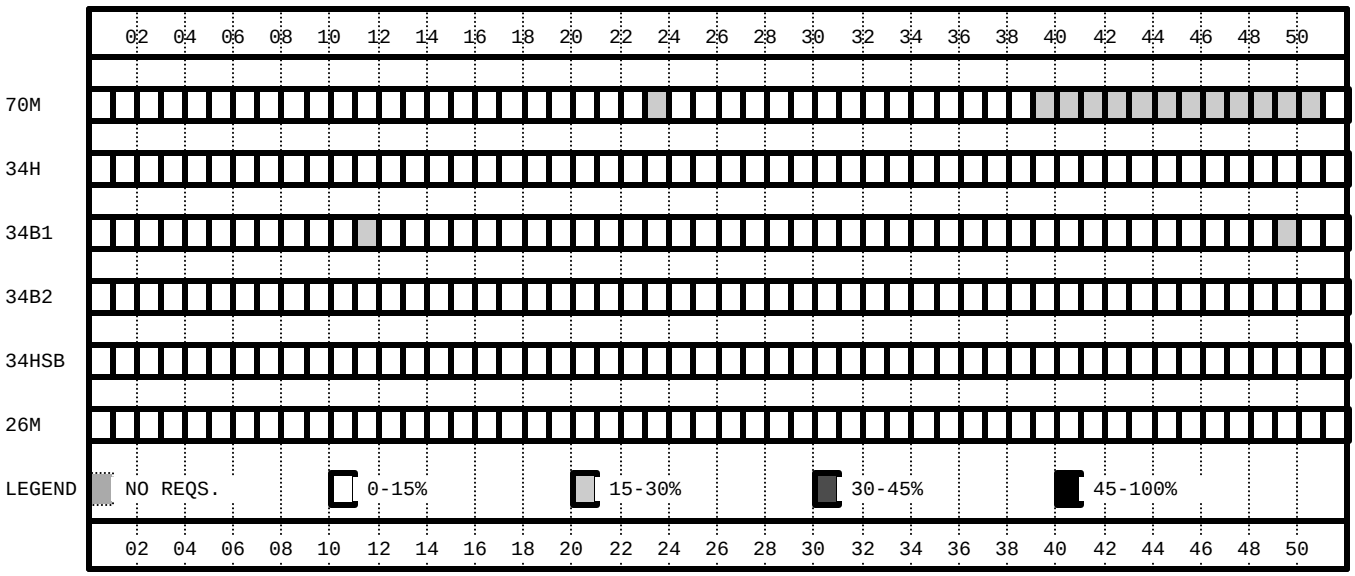
2002 DSN Subnet Contention



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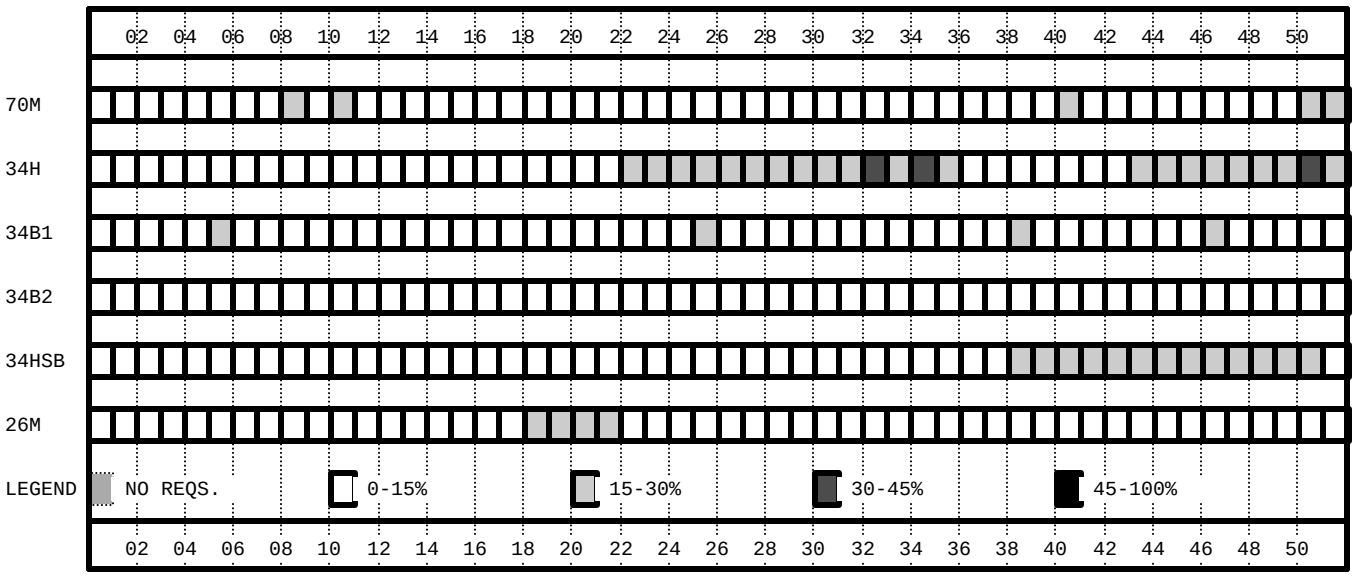
2003 DSN Subnet Contention



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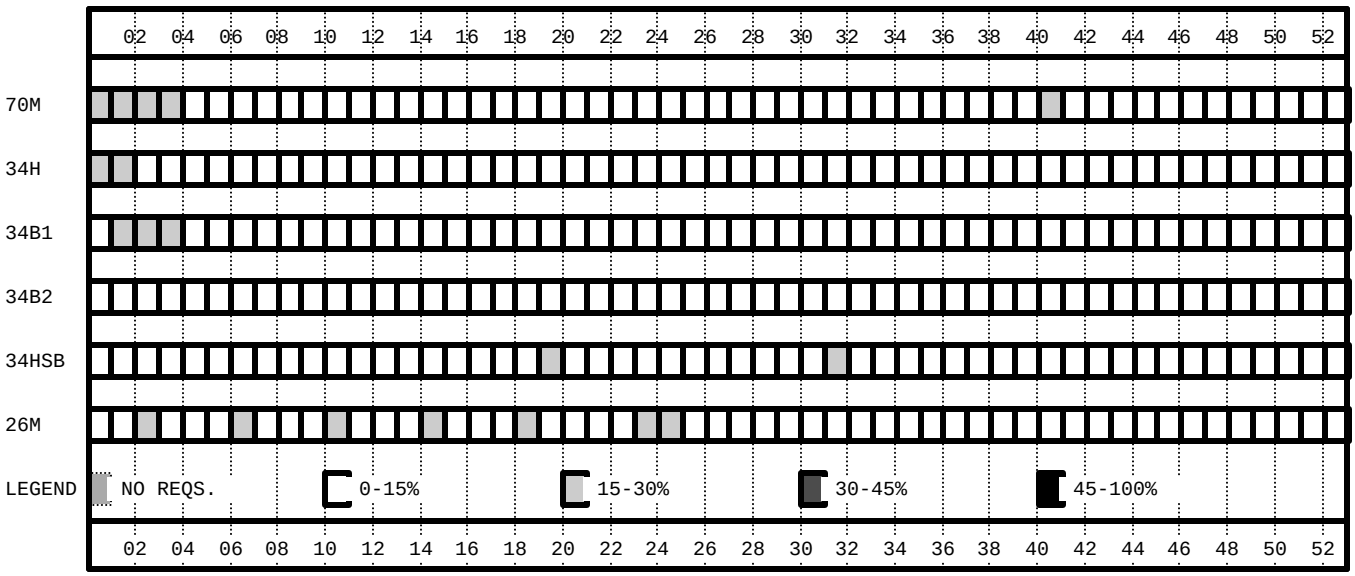
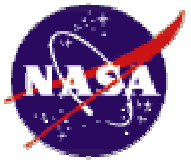
2004 DSN Subnet Contention



Nasa Headquarters Perspective

- CODE S -



Barry Geldzahler

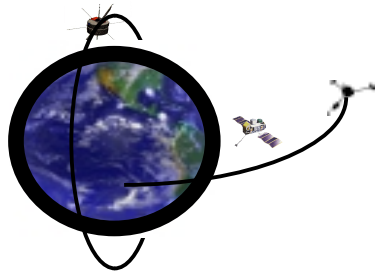
OSS News

Presentation to the
Resource Allocation Review Board
Aug 14, 2001

Dr. Barry Geldzahler
Solar System Exploration Division
Office of Space Science - NASA Headquarters
202-358-0512 bgeldzah@hq.nasa.gov

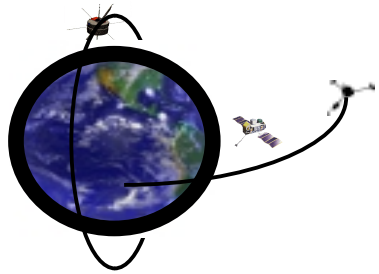
- **Intro**
- **Budget notes**
- **Organizational changes**
- **Senior reviews**
- **SOMO notes**

Budget Notes



- **FY-02 appropriation process is proceeding much smoother than last year**
  - **Both the House and Senate have passed appropriations bills**
  - **Reconciliation will not occur before September**
  - **There are significant differences between the two bills**
  - **Traditionally, the final bill is closer to the Senate's**
- **FY-03 budget is being finalized in Code B for submission to OMB**
  - **SOMO "challenges to the Enterprise" are forcing difficult decisions**

Budget Notes - 2

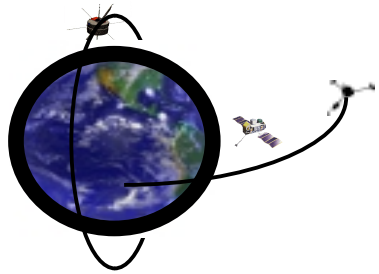


- **Senate Markup Summary**
  - **- 25.0 reduce in-space propulsion**
  - **+25.0 restore Pluto-Kuiper Belt mission**

  - **- 48.6 delete Europa baseline mission**
  - **+43.6 compete an outer planets program**
  - **+ 5.0 restore Solar Probe to Living With a Star [LWS]**

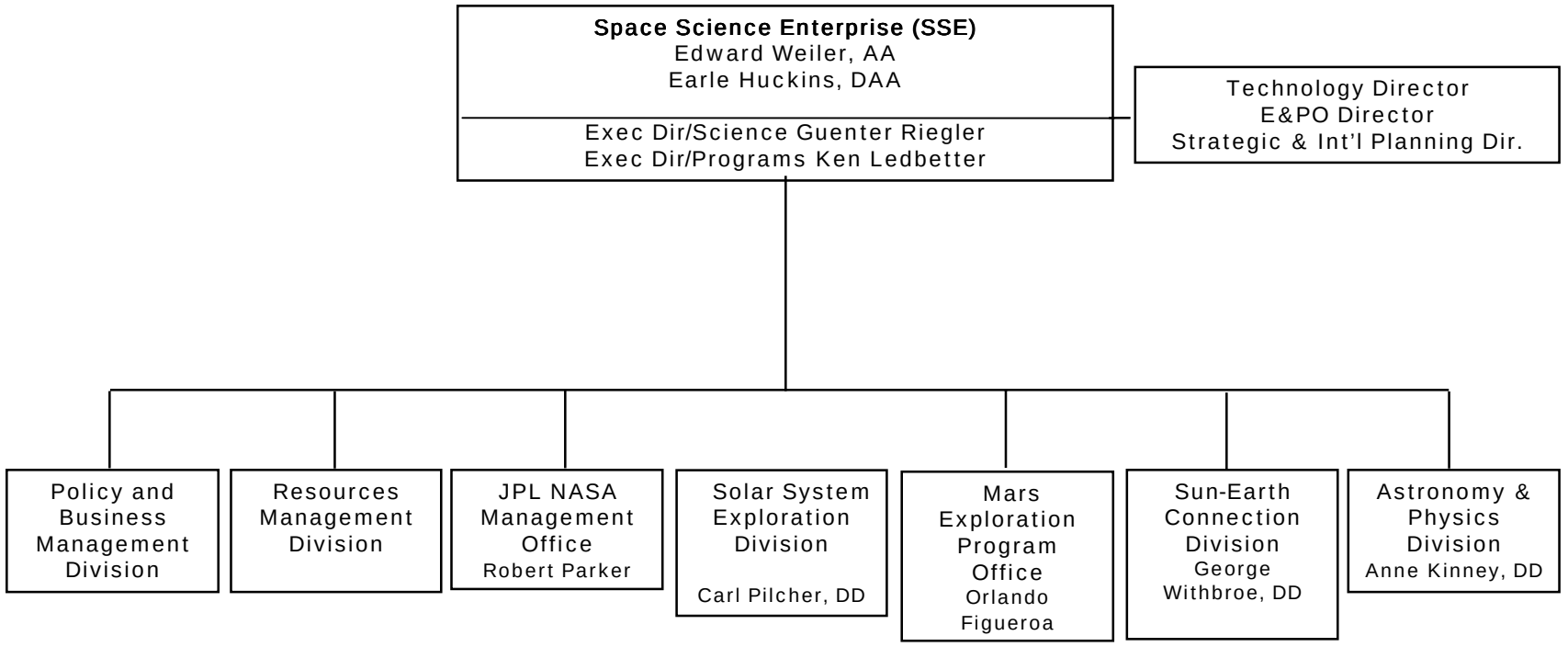
  - **- 50.0 reduce Mars program**
  - **+20.0 increase Sun-Earth Connection/LWS**
  - **+ 8.5 earmarks**
    - *** +3.0 Montana**
    - *** +2.5 JASON foundation**
    - *** +2.0 U of Missouri**
    - *** +1.0 VA Commonwealth U**

Budget Notes - 3



- **House Markup Summary**
  - **+ 1.5** **Center for Space Sciences at Texas Tech**
  - **+ 8.0** **Space Solar Power**
  - **+ 1.5** **Morehead Planetarium and Science Discovery Outreach Center**
  - **+ 2.0** **Mid-American Geospatial Information Center**
  - **+13.0** **Construction of the Propulsion Research Laboratory at Marshall Space Flight Center- taken from OSS in-space propulsion budget**
  - **- 20.0** **from Next Generation Space Telescope**
  - **- 10.0** **from New Millennium program**
  - **- 10.0** **from STEREO program**

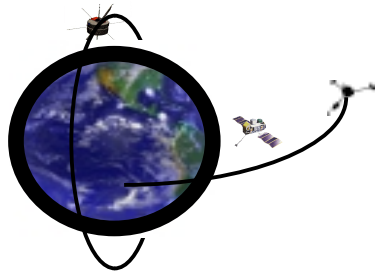
Organization Chart
Office of Space Science



S/THRONSON	S/ALLEN	S/LEDBETTER	S/HUCKINS	S/WEILER
TECHNOLOGY	*STRAT. & INT'L PLAN.*	*PROGRAMS*	*DEPUTY AA (A. Murray)*	*AA (E. Vidal)*
S/RUMMEL	**S/ROSENDHAL**	**S/RIEGLER**	**S/VanDAMME**	**S/PAO- Savage, Beasley, Reardon**
PLANETARY PROTECTION	*EDUC. & OUTREACH*	*SCIENCE*		

SE/PILCHER	SM/FIGUEROA	SP/MAIZEL	SS/WITHBROE	SZ/KINNEY
SOLAR SYSTEM EXPL	*MARS PROGRAM*	*RESOURCES MGMT*	*SUN-EARTH CONNECTION*	*ASTRONOMY & PHYSICS*
Colleen Hartman	**Mark Dahl**	**Craig Tupper**	**Marcus Watkins**	**Rick Howard**
Jay Bergstralh	**Ramon DePaula**	**Nancy Porter**	**J. Dave Bohlin**	**W. Vernon Jones**
Joe Boyce	**Dave Lavery**	**Randie Marinari**	**Joe Bredekamp**	**Paul Hertz**
Jim Garvin	**Joe Parrish**	**Jennifer Kearns**	**Mary Mellott**	**Hashima Hasan**
Mike Meyer	**Jean Magruder**	**John Lee**	**Bill Wagner**	**Lou Kaluzienski**
Barry Geldzahler		**Voleak Roeum**	**Dana Brewer**	**George Albright**
Steve Brody	OTP Personnel	**Jane Green**	**Vicki Elsbernd**	**Roger Avant**
Lisa Guerra	Alberto Behar	**Debra McNeill**	**Charlie Eastwood**	**Mel Montemerlo**
Anthony Carro		**David Lee**	**Charles Gay**	**Lia LaPiana**
Kurt Linstrom		**Dolores Holland**	**Glenn Mucklow**	**Emery Moore**
Becky Mulkey		**Carol Reid**	**Geraldine Paige**	**Steve Horowitz**
Marilynn Gillette			**Faye Brown**	**Richard Kadunc**
G. (Kay) Butzke			**Shelia Brown**	**Sheila Gorham**
Brandy Nguyen			**Peggy Evanich**	**Mary Orebeaux**
				Jane Davis
OTP Personnel			*OTP Personnel*	**Lydia Thompson**
D. Bogan			**Lika Guhathakurta**	
TomMorgan			**Chuck Holmes**	*OTP Personnel*
Dave Senske			**Jim Sharber**	**Phil Crane**
Catherine Weitz			**Todd Hoeksema**	**Dan Golombek**
John Hillman			**Willis Jenkins**	**Don Kniffen**
			Jim Spann	**Guy Stringfellow**
			Anthony Comberiate	**Adriana Ocampo**
				Mike Moore
				Trish Penga

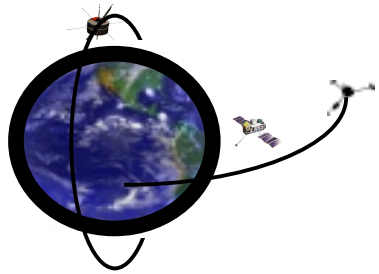
New Positions in Research Program Management Division



- **New Appointments**
  - **Carol Carroll is Program Executive for In-Space Propulsion**
  - **Barry Geldzahler is Program Executive for Space Operations**
  - **Mike Meyers ST for Astrobiology**
  - **Tom Morgan is Program Scientist for Near-Earth Objects**
  - **John Rummel ST for Planetary Protection**
  - **Mike Salamon is Program Scientist for Fundamental Physics**
  - **Eric Smith is Program Scientist for IR Astronomy**
  - **Faith Vilas is Program Scientist for Discovery**

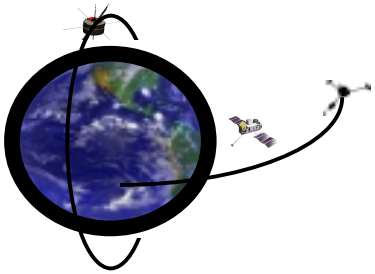
- **IPA's**
  - **Cathy Weitz [Mars]**
  - **Bruce Betts [PIDPP] has left**
  - **looking for IPA for Mars**
  - **looking for IPA for Interferometry**
- **New GS Positions are Being Advertised**
  - **Program Scientist for Living with a Star**
  - **Program Scientist for Mars**

Senior & Peer Reviews



- **Sun-Earth Connection senior review was held in July**
  - **14 missions were reviewed**
  - **The review report is being finalized**
  - **Projects will provided new guidance during the week of Aug 20**
- **Science, Research & Technology [SR&T] review was held in June**
  - **The review report has been finalized and the results released**
- **Navigation peer review was held in June**
  - **object was to validate JPL navigation processes, mission systems design, and their effect on DSN loading**
  - **The review report is being finalized**
- **Planetary Data System peer review**
  - **to be held in November 2001**
  - **will review end-to-end process and charter of PDS**
- **Science Definition Team on the refurbishment/replacement of the DSN 70m antennas**
  - **to be held in Jan/Feb 2002**
  - **get the science drivers for the replacement and refurbishment**

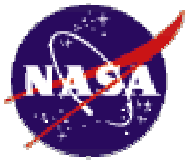
Prioritization Board



- **HQ is establishing a Prioritization Board to help resolve conflicts during the 2003/04 crunch period.**
- **The RAPSO process will be the first steps**
  - **s/c emergency**
  - **mandatory for achievement of primary object. Support essential to s/c survival**
  - **major, unique scientific event. Time critical**
  - **minimum DSS maintenance; minimum support to maintain scientific validity**
  - **mandatory to achieve primary objectives- not time critical**
  - **time critical events not essential to achieving primary objectives**
  - **repeated scientific objectives**
- **If an impasse remains, the decision will be made at HQ.**
- **The HQ group will be set up this year and will provide guidance to RAPSO**

Nasa headquarters Perspective

- CODE M -



Jim Costrell

RESOURCE ALLOCATION REVIEW BOARD

AUGUST 14, 2001

SPACE COMMUNICATIONS

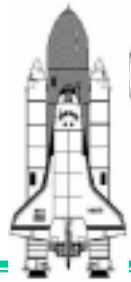
JAMES A. COSTRELL

OFFICE OF SPACE FLIGHT

SPACE COMMUNICATIONS

TOPICS

- RESTRUCTURING OF NASA SPACE COMMUNICATIONS PROGRAM
- SPACE COMMUNICATIONS BUDGET STATUS
- INTERNATIONAL ACTIVITIES
  - IACG WG-4
  - IOAG
- SPECTRUM
- COMMERCIALIZATION ACTIVITIES
- ISSUES/CONCERNS



SPACE COMMUNICATIONS DOMAIN

- DSN, GN, AND SN NETWORKS
- NISN
- CONTROL CENTERS
- DATA PROCESSING FACILITIES
- TRAJECTORY & NAVIGATION FACILITIES
- SPECTRUM MANAGEMENT
- COMMUNICATIONS TECHNOLOGY

JPL DSMS

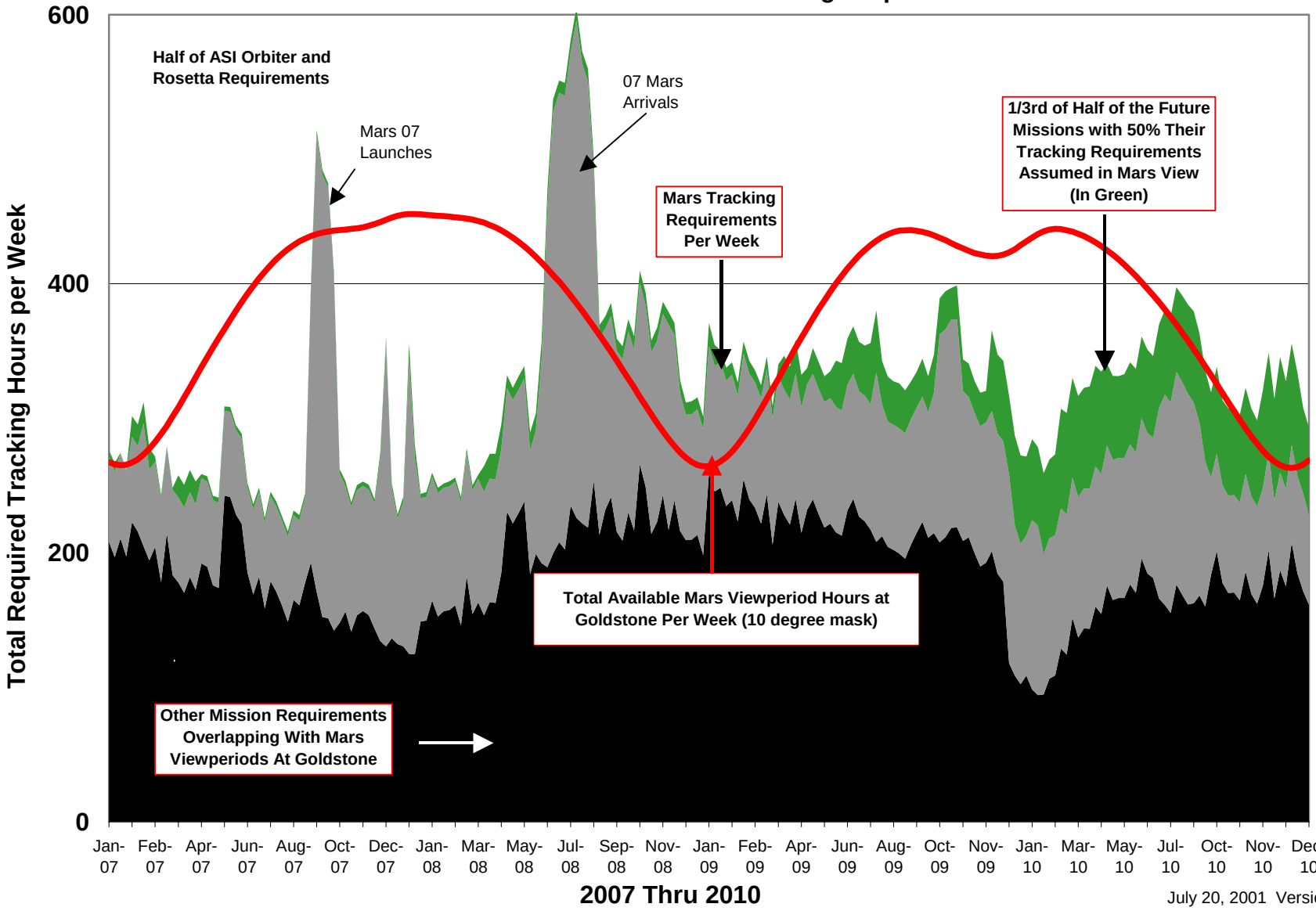
PLANS AND COMMITMENTS OFFICE

Rich Miller

JPL

RESOURCE ALLOCATION REVIEW

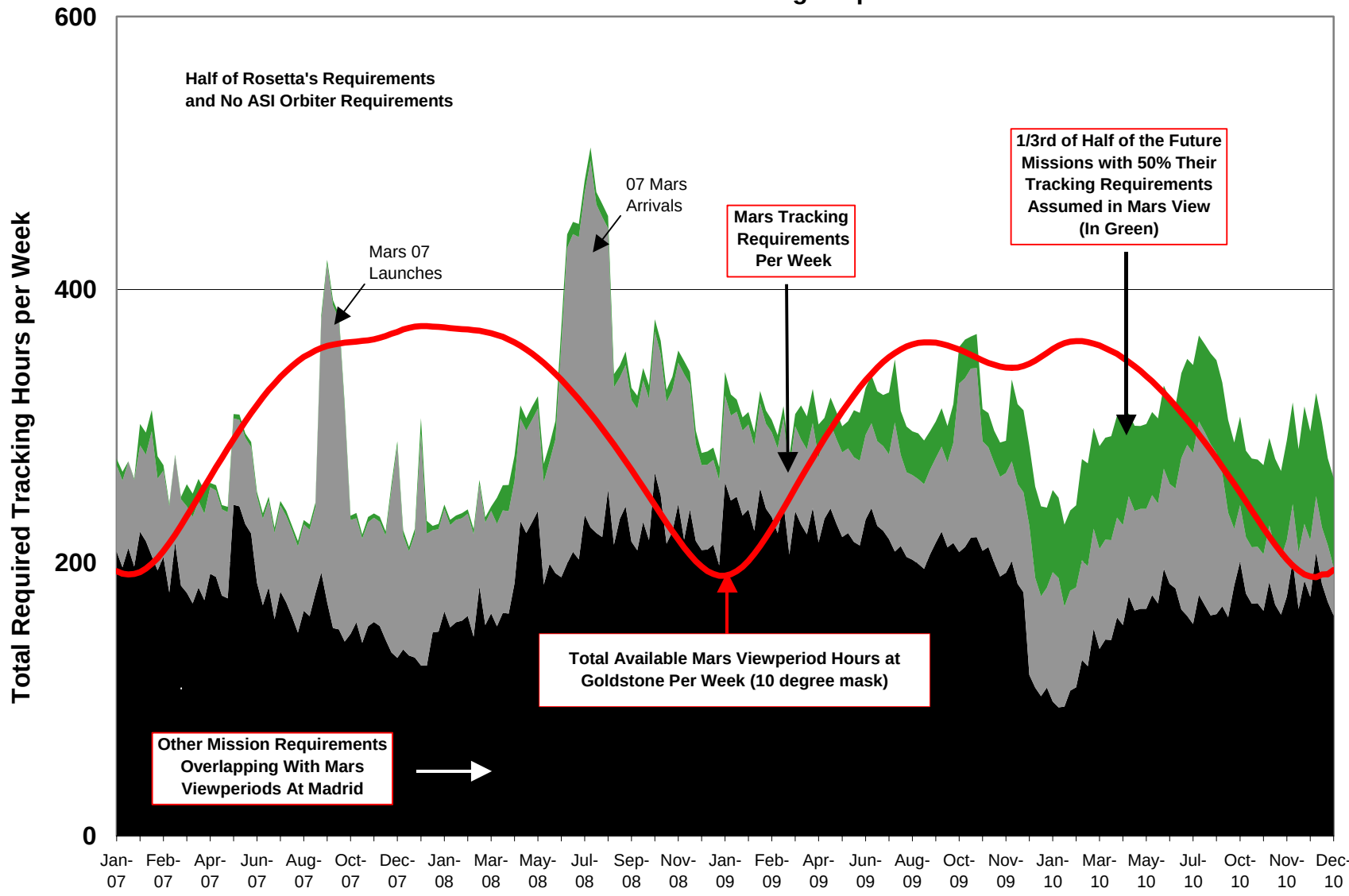
Goldstone Estimated MARS 34M & 70M Antenna Loading Requirements For 2007 Thru 2010



July 20, 2001 Version 2.0

RESOURCE ALLOCATION REVIEW

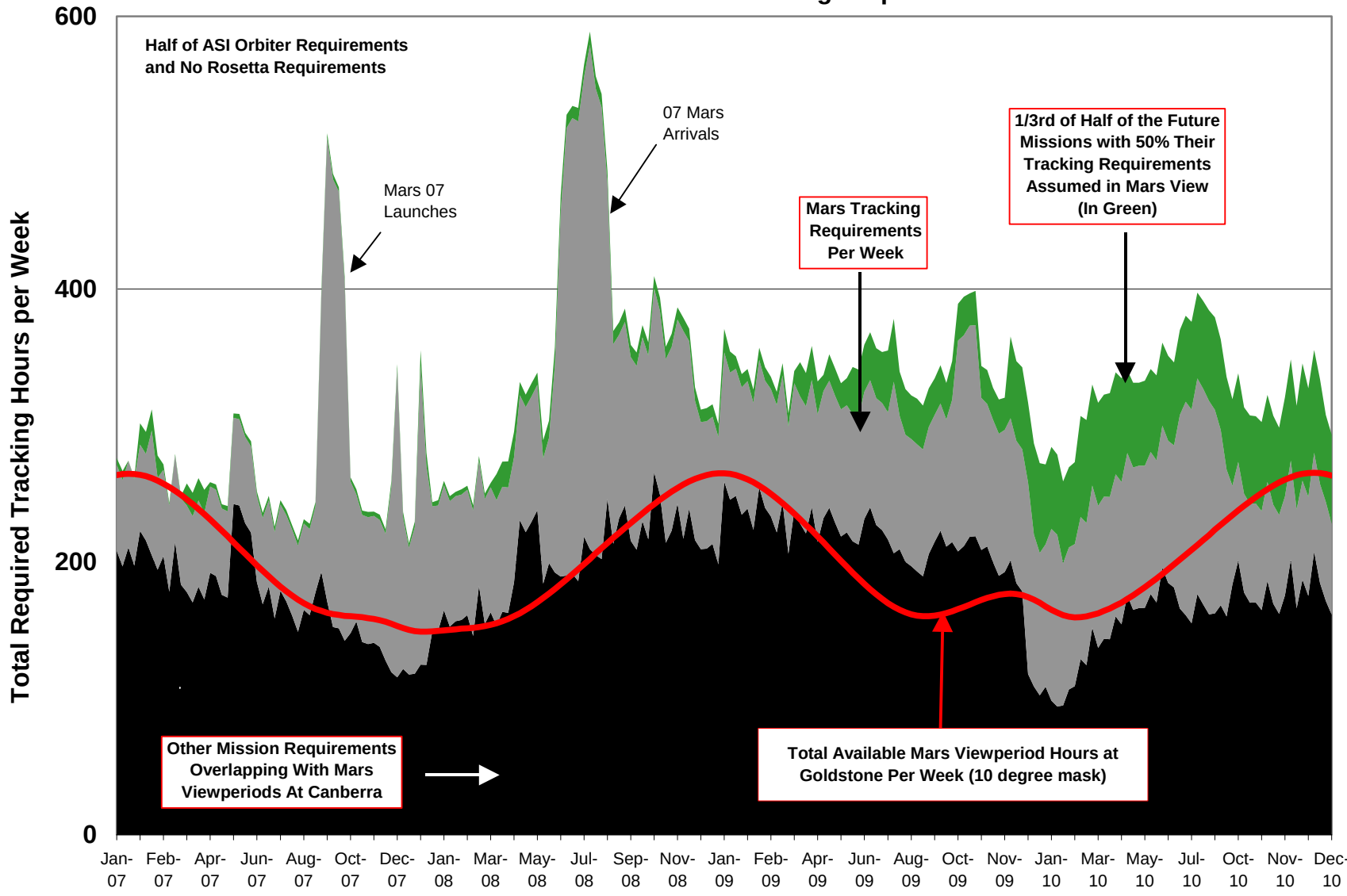
Madrid Estimated MARS 34M & 70M Antenna Loading Requirements For 2007 Thru 2010



July 20, 2001 Version 2.0

RESOURCE ALLOCATION REVIEW

Canberra Estimated MARS 34M & 70M Antenna Loading Requirements For 2007 Thru 2010



July 20, 2001 Version 2.0

DSN LOADING STUDY
January 2007 Through December 2010

Roger Bartoo

August 14, 2001

DSN Loading Study, January 2007 Thru December 2010

Why Do The Study?

- In September 2007, Four Missions Are Planned For Launch To MARS –

  Mars Lander – NASA
  Mars Scout - NASA
  Mars Telesat Orbiter – ASI
  Mars Orbiter – CNES

- There Are 30+ Missions That Have Overlapping Viewperiods With The Mars View At This Time (This Is In Addition To the Existing Mars Missions MEX & MRO)

- To Answer The Question: Is There Sufficient Antenna Resources To Meet Anticipated Tracking Requirements?

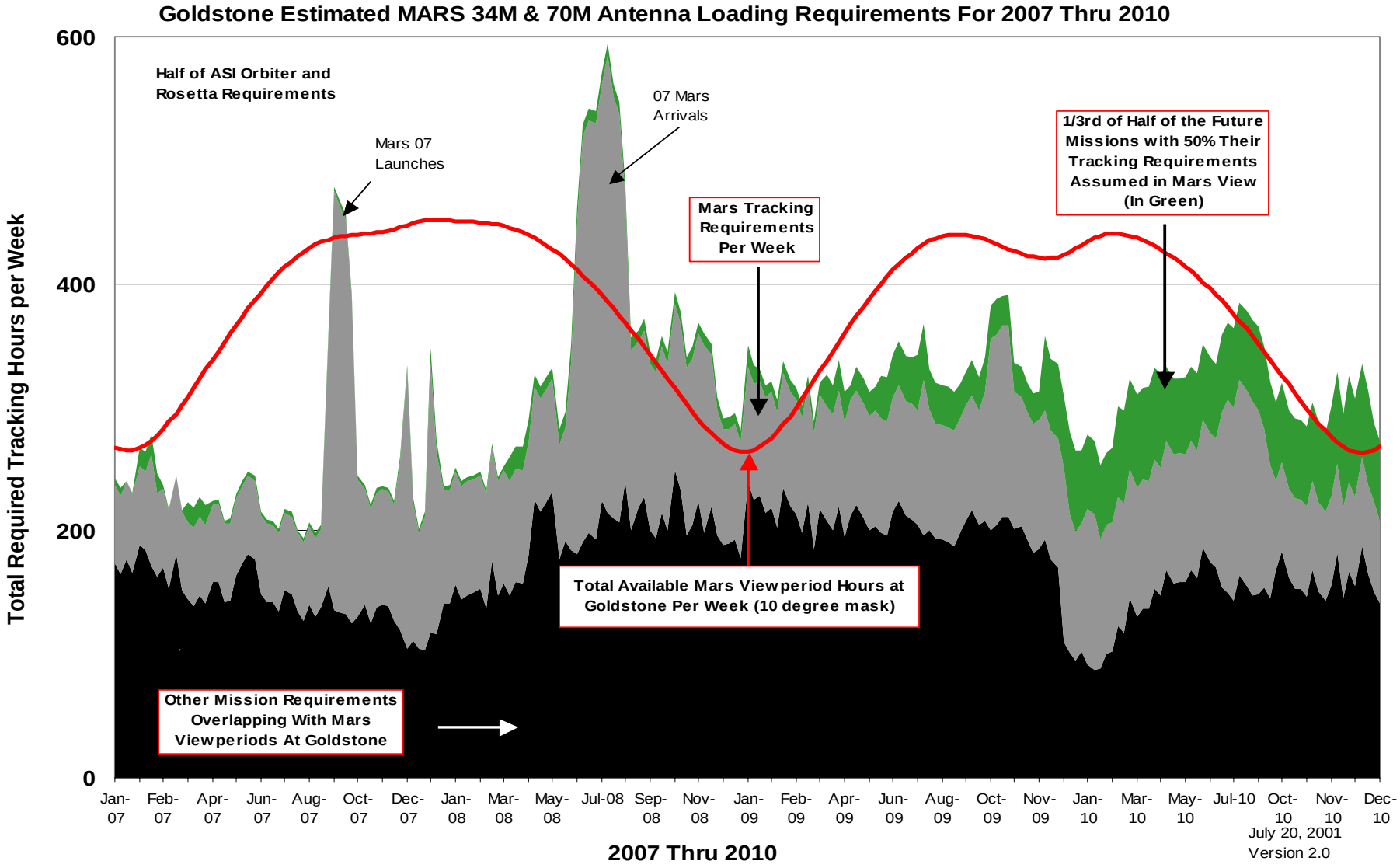
Study Assumptions/Structure

- A Mars 10 Degree Horizon Mask Is Assumed For Each Of the Three Longitudes Studied – Goldstone, Madrid, & Canberra
- Other Mission Tracking Requirements Used In The Study Were Only That Fraction Of Their Requirements Which Overlapped With The Mars Viewperiod At Each Complex
- Tracking Requirements For All Missions (Including Mars Missions, Other Missions, & Future Missions) Were Assumed Equally Divided Between The Three Complexes (1/3rd each) With the Following Exceptions:
  - Voyager 1 & 2 DSN Requirements Were Scaled Back to One 8-hour Pass per Day for Each Spacecraft
  - Voyager 2 DSN Tracking Requirements Are Met By Canberra Only
  - Rosetta DSN Tracking Requirements Apply Only to Goldstone and Madrid (1/2 of the Anticipated Requirements Go To Each Complex)
  - The ASI Mars Orbiter DSN Tracking Requirements Apply Only To Canberra And Goldstone (1/2 of the Anticipated Requirements Go To Each Complex)
- Only Half of the Future Missions Were Assumed To Be Approved In This Time Frame, And Only Half of Their Viewperiods Were Assumed To Overlap With the Mars Viewperiod At Each Complex
- The Study Has Resolution Only To The Week
- MSPA And Delta DOR Technologies Were Not Included

InterPlanetary Network and Information Systems Directorate

Resource Allocation Planning and Scheduling Office

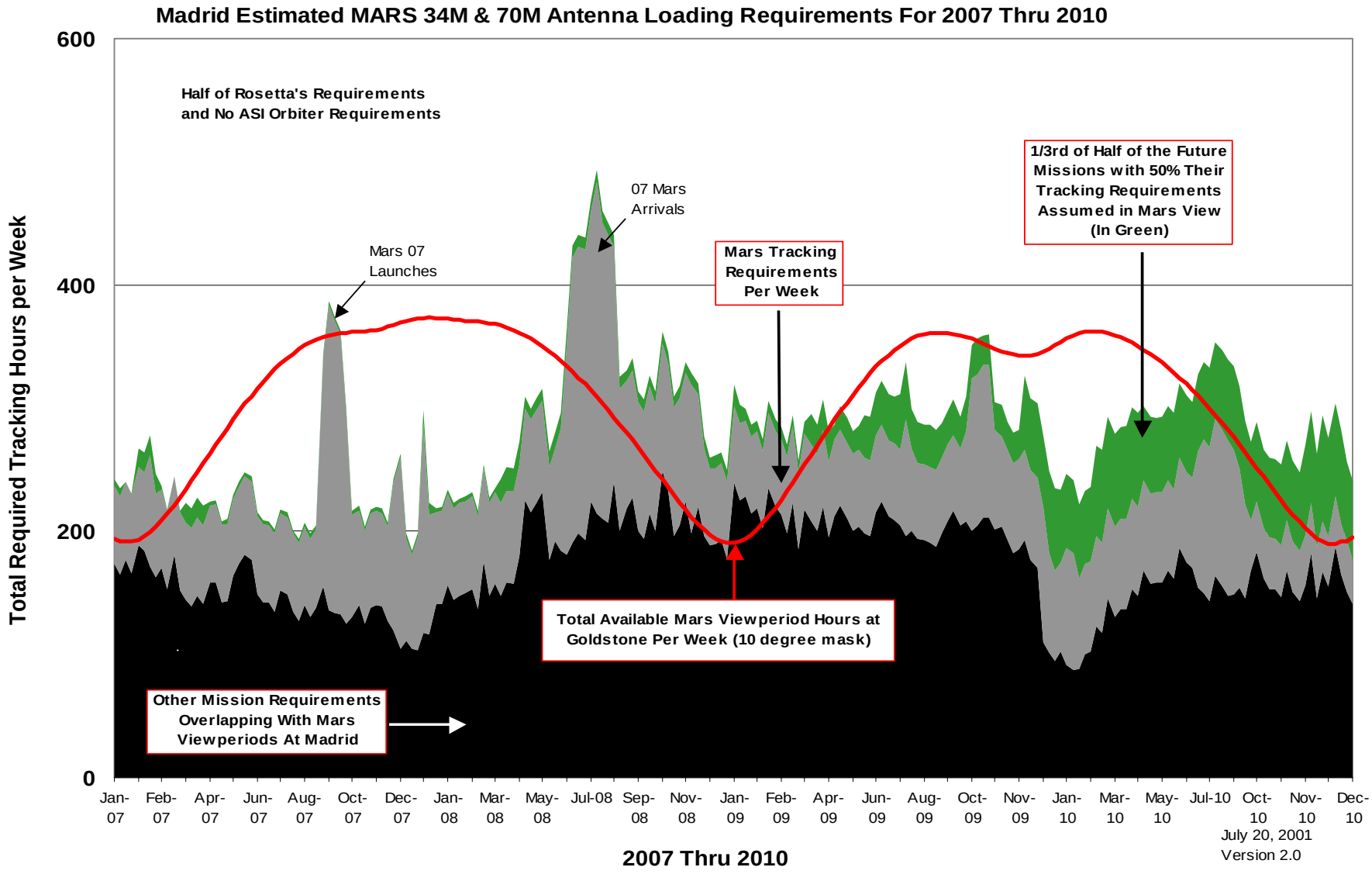
DSN Loading Study, January 2007 Thru December 2010



InterPlanetary Network and Information Systems Directorate

Resource Allocation Planning and Scheduling Office

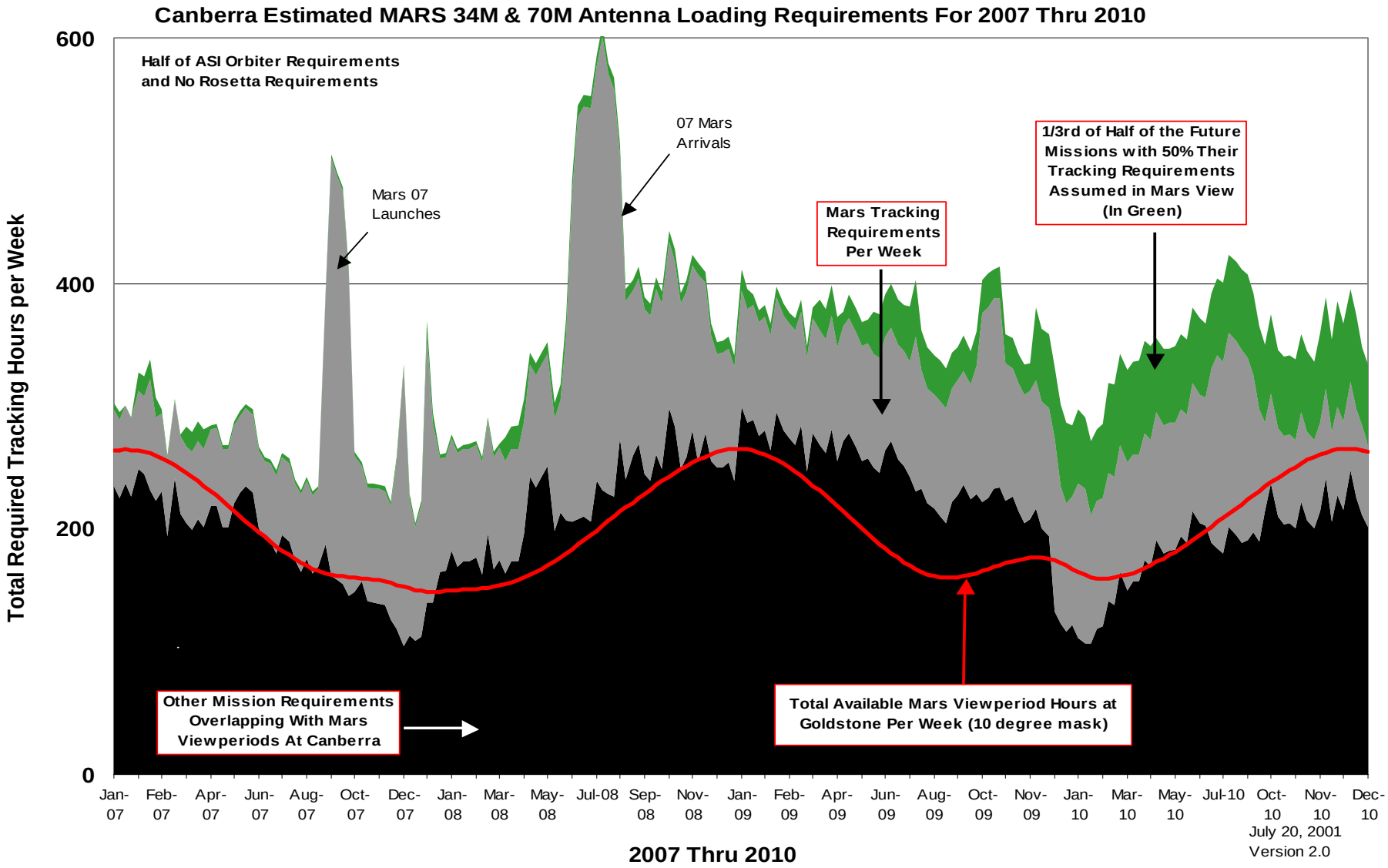
DSN Loading Study, January 2007 Thru December 2010



InterPlanetary Network and Information Systems Directorate

Resource Allocation Planning and Scheduling Office

DSN Loading Study, January 2007 Thru December 2010



July 20, 2001
Version 2.0

STUDY ASSESSMENT/CONCLUSIONS

- Canberra Appears To Be Continuous Steady State Overload Through The Entire Period of 2007 Thru 2010
- Except For Cases Of Antenna Failure And Extended Outage, The Momentary Peak Loads After The Mars Arrivals in August 2008 At Goldstone Are Expected To Be Met
- With The Addition of the 34 BWG in 2004, The Tracking Situation At Madrid Is Similar To Goldstone. Except For Momentary Peak Loads And The Nine Month Period After August 2008, Tracking Requirements Can be Met.

JPL DSMS

Engineering program office

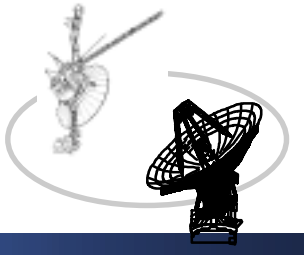
Joe Statman

940 – DSMS Engineering Program Office

What's New?

presented by:
J. Statman

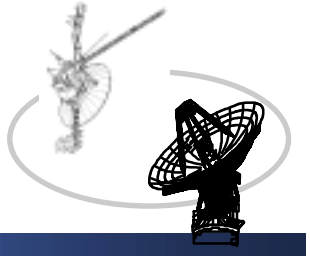
August 14, 2001



Scope

- **This meeting focuses on:**
  - **Tasks that will be delivered by 11/1/03**
    - **Before the 03-04 overload crunch**
  - **Tasks that are mostly in the DSN**

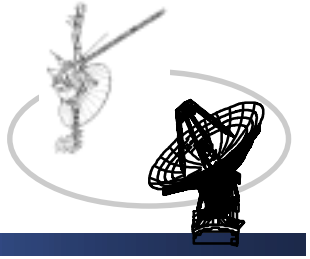
Sustaining & Upgrades



- Our engineering work is divided into “sustaining” and “upgrades”
  - The definitions vary slightly depending on the environment
    - But the work is conducted by the same teams
  - “Sustaining” is engineering work that is driven by the need to keep a cost-effective capability
    - E.g. Replace an obsolete resistor, fix a software bug, replace an antenna controller
    - Could be very small or very big!
  - “Upgrade” is engineering work that is driven by the need to change (add or remove) capability or capacity
  - Over time, more of our work is becoming “Sustaining”

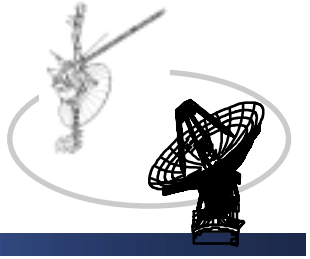
  - Sustaining = Something goes in, something goes out (usually)
    - Missions (and controllers) lose some well-understood (though obsolete / expensive to maintain / unreliable) equipment, get new (newer, more reliable, but with a learning curve) equipment

Key Upcoming Implementations



• Cassini Radio Science	Osman	U
• NMC 1.3 (Network Monitor & Control)	Law	S
• 26m Automation	Kurtik	S
• CS 1.0 (Complex Supervisor)	Law	S
• SPS D1 (Service Preparation Subsystem)	Law	S
• UPL D2 (Uplink Subsystem)	Kurtik	S
• 70m X-band Uplink	Osman	U
• Ka-band on BWG	Osman	U
• NSP (Network Simplification Project)	Kurtik	S
• ACR (Antenna Controller Replacement)	Osman	S
• FTS M&C Replacement	Cangahuala	S

Key Upcoming Implementations



• Delta-DOR	Cangahuala	U
• DSS-55	Osman	U
• 20kW Tx on BWG	Osman	U
• 2-MSPA Automation	Law	?
• Arraying	Osman	U
• 11m antennas	Osman	S
• Turbo code	Kurtik	U

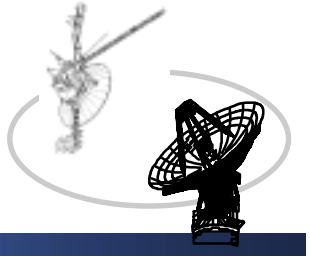
Format

- The following pages will use the same format:
  - What is it?
  - Equipment added?
  - When?
  - Where?
  - Equipment removed?
  - Delta Effects on missions?
- There is an obvious general effect on the missions – any new equipment will require understanding of the changes in displays, monitor data, and controls. We'll identify only unique delta impacts, where applicable

Cassini Radio-Science

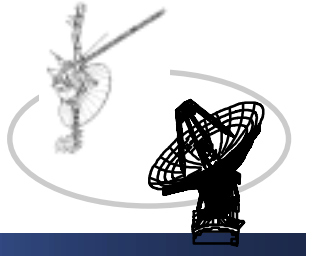
- What is it?
  - Add a Ka-band uplink and downlink capability to DSS-25. Add ancillary measurement equipment for calibration. Add Radio Science Receivers (RSRs)
- Equipment added?
  - Note the RSR's - a derivative of the FSR's used for Galileo
- When?
  - All in place, minus a ETC that will be added in 10/01
- Where?
  - RSR – all DSCC's. All else – just in Goldstone
- Equipment removed?
  - RIV, DSP-R
- Delta Effects on missions
  - Nominal

Network Monitor and Control (NMC) 1.3



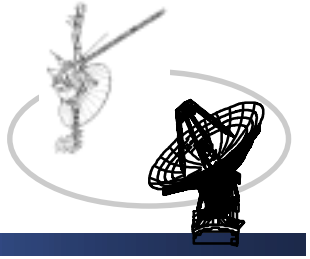
- What is it?
  - Link monitor and control at the DSCC's, software upgrade to version 1.3
- Equipment added?
  - Mostly software. Upgrades reliability, expands usage across DSCC, removes DCE/DFS
- When?
  - September 2001, starting at CDSCC
- Where?
  - All DSCC's
- Equipment removed?
  - NMC 1.2, LMC
- Delta Effects on missions?
  - 0158-MON Visibility, quality DKF

DSCC Visibility to the Missions



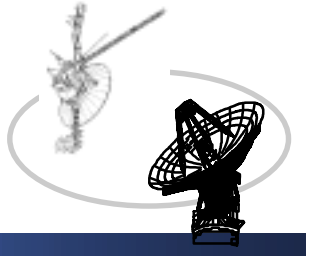
- The general philosophy is the same. The implementation approach is changing
  - Present: JPL and non-JPL missions get DSCC monitor data blocks
    - MON-5-15
    - MON-5-16
    - JPL Missions also get NOCC-RT units
  - Future – JPL and non-JPL missions get DSCC monitor data blocks
    - 0158-MON
      - Contents similar to MON-5-15, MON-5-16
    - Mission is responsible to format the data to mission requirements
      - For JPL missions, easiest approach is via DMD adaptation
        - DSMS will develop a set of multi-mission DMD displays
        - Looking for volunteers to steer these

26m Automation D2/D3



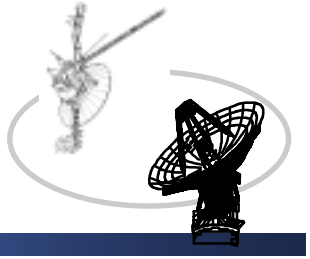
- What is it?
  - Add COTS-based telemetry and command processing. Add 2kW remotely-controlled transmitter. Add Automation capability. Add SLE capability
- Equipment added?
  - TCP, UIA, RUI, 2kW Tx, Automation controller
- When?
  - 8-9/2001, starting at GDSCC
- Where?
  - All DSCC's
- Equipment removed?
  - Bit synch's, TGC/TCA (eventually), One 20kW Tx
- Delta Effects on missions?
  - Quality of DKF, manual 20kW usage

Complex Supervisor (CS) 1.0



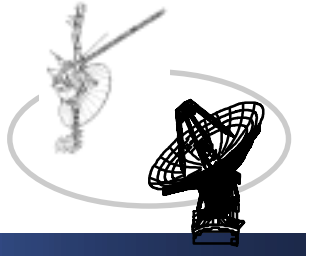
- What is it?
  - Replacement for Complex Monitor and Control (CMC)
- Equipment added?
  - SUN and software
- When?
  - February 2002
- Where?
  - All DSCC's
- Equipment removed?
  - CMC's
- Delta Effects on missions?
  - Nominal

Service Preparation Subsystem (SPS) 1.0



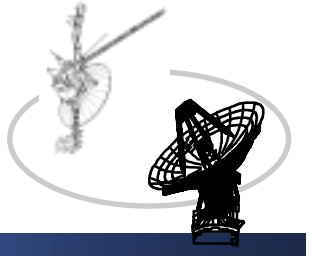
- **What is it?**
  - **First delivery in a major upgrade of the customer interface to DSN. This delivery is mostly internal to DSMS with no impact on the missions. It will lighten the load on the NSS machinery**
- **Equipment added?**
  - **SUN and software**
- **When**
  - **January 2003**
- **Where?**
  - **In Pasadena**
- **Equipment removed?**
  - **None**
- **Delta Effects on missions?**
  - **Nominal**

Uplink Subsystem (UPL) D2



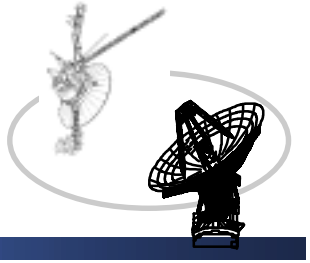
- What is it?
  - COTS-based replacement of the CPA/CMA for the 34/70m antennas (except DSS-27). D1 is in place, supporting one antenna per site with NMC 1.2
- Equipment added?
  - New HW and SW
- When?
  - Shortly (as soon as one week) after NMC 1.3 delivery
- Where?
  - All DSCC's
- Equipment removed?
  - CMA, CPA for 34/70m antennas (Except DSS-27)
- Delta Effects on missions?
  - Nominal

70m X-Band Uplink



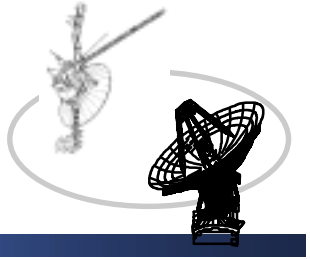
- What is it?
  - Adds a cooled-feed 20kW X-band uplink capability to the 70m antennas
- Equipment added
  - New feed system, MG's, etc
- When
  - Last antenna upgrade, at MDSCC, is underway. Upgrades at GDSCC and CDSCC are complete
- Where?
  - All DSCC's
- Equipment removed
  - None
- Delta Effects on missions
  - Nominal

Ka-Band on BWG



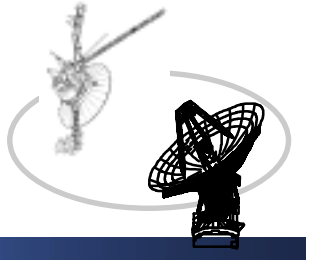
- What is it?
  - Upgrades all the existing BWG antennas to have a Ka-band capability. Uses a X/X/Ka feed system that also improves the SNT to make the BWG SNT comparable to the HEF SNT
  - Adds a mono-pulse pointing capability (applies to DSS-25 as well)
- Equipment added?
  - New feed system, some blind pointing improvements
- When?
  - First deployment at DSS-26, by 4/03. Other antennas - TBD
- Where?
  - At all DSCC's
- Equipment removed?
  - Old feed system
- Delta Effects on missions?
  - Nominal

Network Simplification Project (NSP)



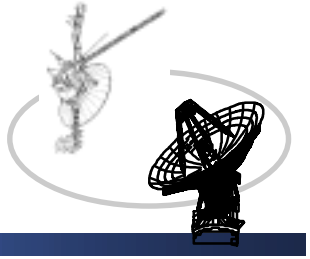
- What is it?
  - Replace the telemetry, command, and ranging equipment for the 34/70m antennas (except DSS-27) with COTS-based equipment. Streamline the architecture. Adds SLE. Adds tracking data processing.
- Equipment added?
  - DTT HW and SW, UPL D3 hardware and software
- When?
  - 8/02 – mid-03
- Where?
  - At all 34/70m sites, except DSS-27
- Equipment removed?
  - TCA's, SRA's, MDA's, etc, except those needed to support DSS-27
- Delta Effects on missions?
  - Multiple interface changes, faster pre-post-cal, significant down-time

Antenna Controller Replacement (ACR)

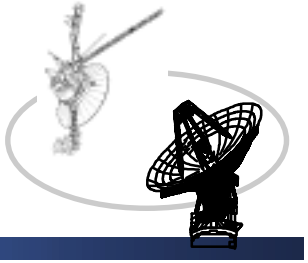


- What is it?
  - Replaces the old antenna controllers in the 70m and 34m HEF antennas
- Equipment added?
  - Modern antenna controllers
- When?
  - TBD
- Where?
  - At all DSCC's
- Equipment removed?
  - Old antenna controllers
- Delta Effects on missions?
  - Significant down time required

FTS M&C Replacement



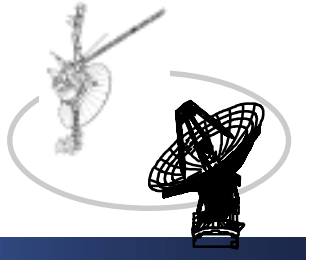
- What is it?
  - Replaces the old (real old!) FTS M&C subsystem
- Equipment added?
  - New controller
- When?
  - TBS
- Where?
  - All DSCC's
- Equipment removed?
  - Old FTS M&C
- Delta Effects on missions?
  - Nominal



Delta-Differenced-One-way-Ranging (DDOR)

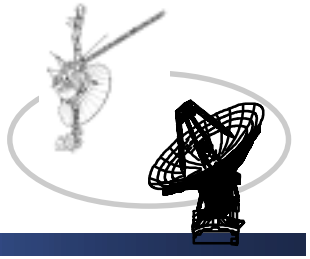
- **What is it?**
  - **A new method to get radiometric measurements in the plane-of-sky to add resiliency to the navigation process**
- **Equipment added?**
  - **VSR's and software**
- **When?**
  - **VSR's in 8/01. Remainder by 4/03**
- **Where?**
  - **At all DSCC's**
- **Equipment removed?**
  - **None**
- **Delta Effects on missions?**
  - **Must evaluate navigation needs**

DSS-55



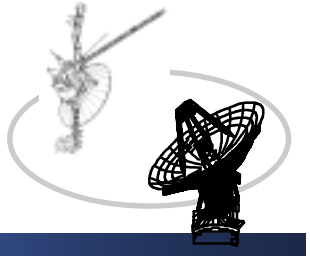
- What is it?
  - A new antenna in MDSCC. A BWG identical to an existing BWG except with the Ka-band capability and the 20kW X-band uplink
- Equipment added?
  - New antenna, including pedestal, structure, controls, electronics, etc
- When?
  - Construction underway. Operational 11/1/03
- Where?
  - MDSCC
- Equipment removed?
  - None
- Delta Effects on missions?
  - Nominal

20kW X-Band Tx on BWG



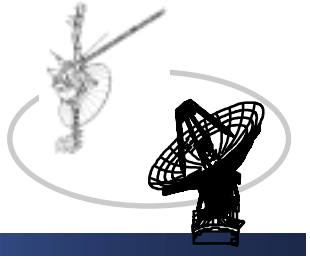
- What is it?
  - Replaces the existing 4kW X-band Tx's with similar 20kW X-band Tx's
- Equipment added?
  - New Tx and auxiliary equipment
- When?
  - 11/02-7/03
- Where?
  - All BWG's
- Equipment removed?
  - Old 4kW Tx's and auxiliary equipment
- Delta Effects on missions?
  - Nominal

2-MSPA Automation



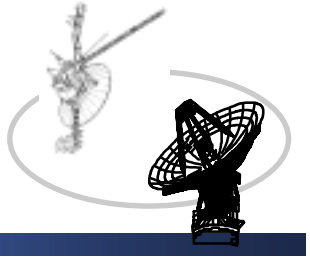
- What is it?
  - Processes and software to ease the MSPA process (Note: the DSMS does not have 4-MSPA capability in the funded budget)
- Equipment added?
  - Software and procedures
- When?
  - 5/03
- Where?
  - All DSCC's
- Equipment removed?
  - None
- Delta Effects on missions?
  - Nominal

Arraying



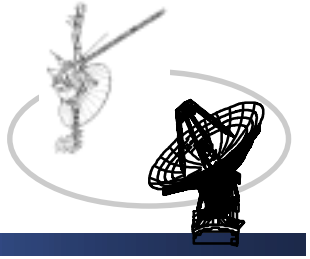
- What is it?
  - Allows arraying of multiple antenna to create an effective larger downlink antenna
- Equipment added?
  - RSR's and combiner
- When?
  - Jan 02 – April 03
- Where?
  - All DSCC's (GDSCC equipment is in place)
- Equipment removed?
  - None
- Delta Effects on missions?
  - Nominal

11m SVLBI Support

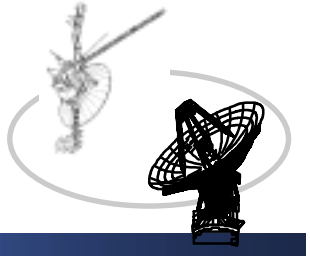


- What is it?
  - Capability to support SVLBI with 11m antennas will be phased out
- Equipment added?
  - No plans
- When?
  - February 2002
- Where?
  - All DSCC's (GDSCC already phased out)
- Equipment removed?
  - No plans
- Delta Effects on missions?
  - Nominal

Turbo Code



- What is it?
  - A new error-correcting code, functionally replaces the MCD3, but 0.8 dB better
- Equipment added?
  - 1-2 DSP boards, inside the NSP/DTT chassis
- When?
  - Shortly after NSP, to be completed by 9/03
- Where?
  - At all 34/70m antenna (except DSS-27)
- Equipment removed?
  - None. MCD3 support will continue for existing committed missions but no new customers will be signed up.
- Delta Effects on missions?
  - Nominal



Summary

The next two years

will be busy!

JPL DSMS
Operations Program Office

A. J. Salazar

(for Joe Wackley)

JPL

RESOURCE ALLOCATION REVIEW

- **Network Performance**
  - Continue to deliver meet customer data requirements
- **Network Loading Observations**
  - Significant resource loading is required when support conflicts arise
    - Required Network infrastructure maintenance with minimum staffing "takes the back seat" increasing risk of Network failures
    - Support of Network upgrades become lower priority
  - Overtime cost has increased and operations staff is stressed to the limits even under "normal" operations
  - Demands for Operations support for the Network Upgrades to meet the 03/04 overload has begun
  - Single Points of Failure in Operations staffing exist due to the long training period and on-the-job experience

RESOURCE ALLOCATION REVIEW

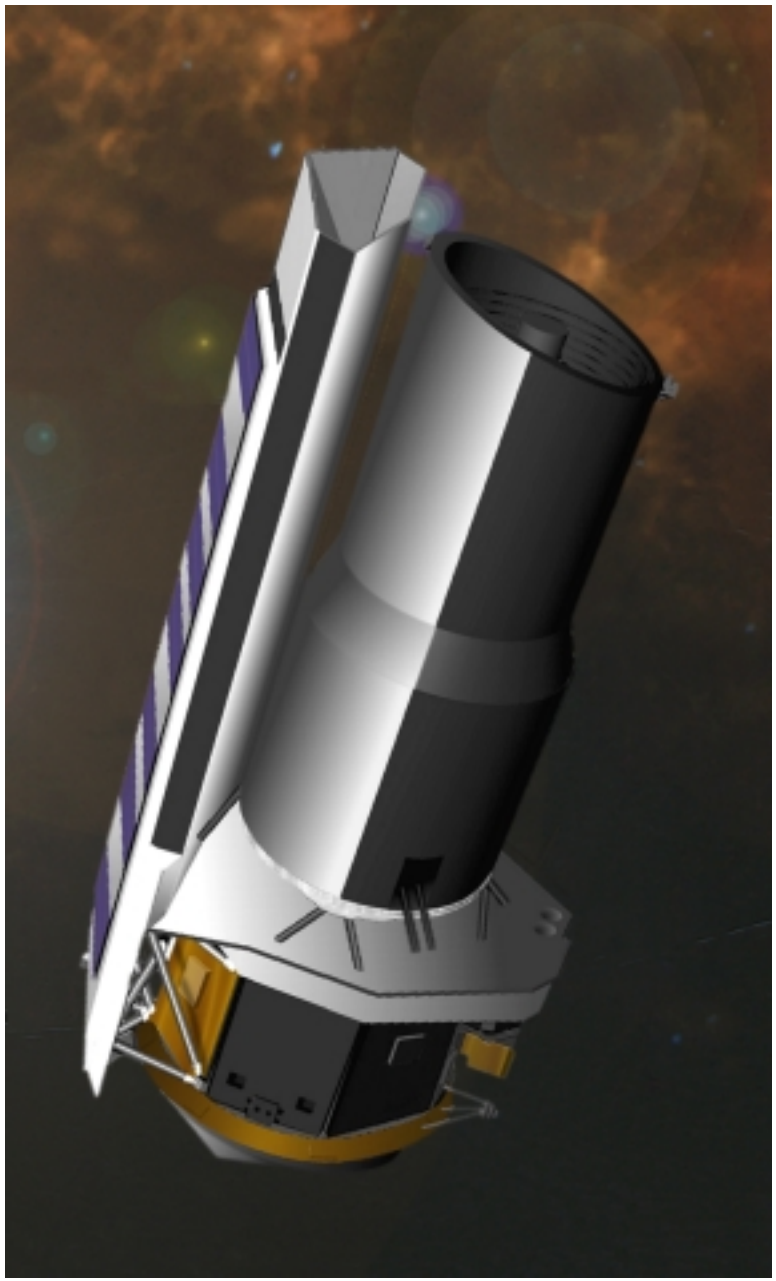
- **Risk Mitigation Plan**
  - Have submitted concerns to JPL and NASA management
  - Working on deriving a mitigation plan. Some examples are:
    - Determination of Infrastructure Single Points of Failure
    - Re-evaluation of Operations processes
    - Re-evaluation of current Network procedures and improvement
    - Determination of staff constraints including Single Points of Failure
    - Support of Network Upgrades while continuing to provide committed data
    - Formal training for operators, maintainers, operations planning, and operations engineering staff
    - Cross-utilization of DSCC staff
    - Determination of Operations scenarios during the 03/04 overload
    - Reduction of Infrastructure Single Points of Failure
    - Augmentation of maintenance staff to cope of aging infrastructure

NEW OR MODIFIED

PROJECT requirements

- SIRTF -

Robert Wilson



JPL

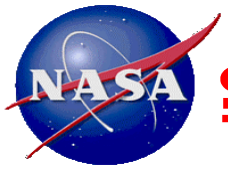
SIRTF
Space Infrared Telescope Facility

"The Last of the Great Observatories"

Resource Allocation Briefing

Robert K. Wilson

August 14, 2001



SIRTF

SIRTF's Role In NASA Program

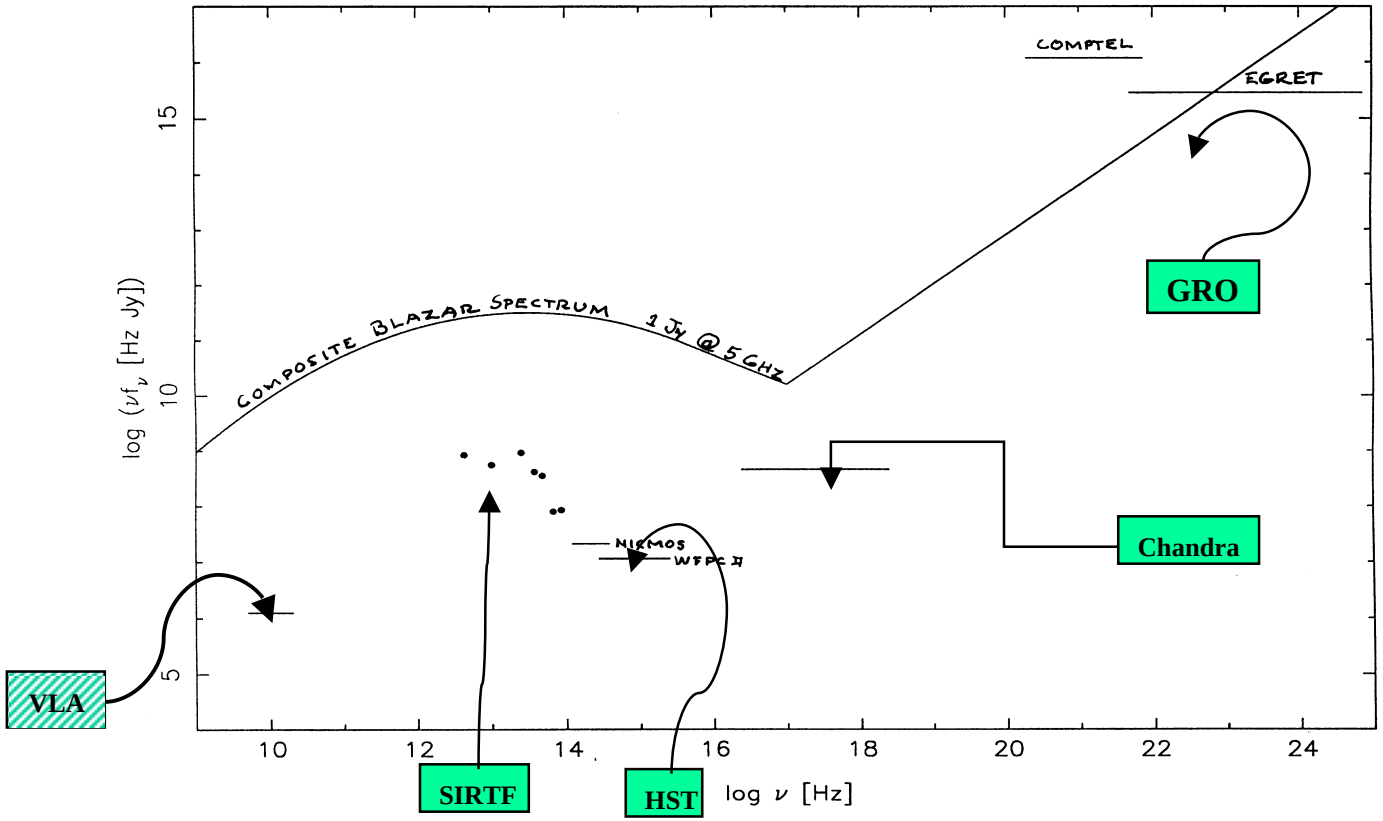
JPL

- **Completes NASA's Great Observatories**
  - ***Hubble Space Telescope***
  - ***Compton Gamma Ray***
  - ***Chandra***
  - ***SIRTF***

- **Cornerstone of the Origins Program**
  - ***SIRTF***
  - ***SIM***
  - ***Planet Finder***
  - ***…***

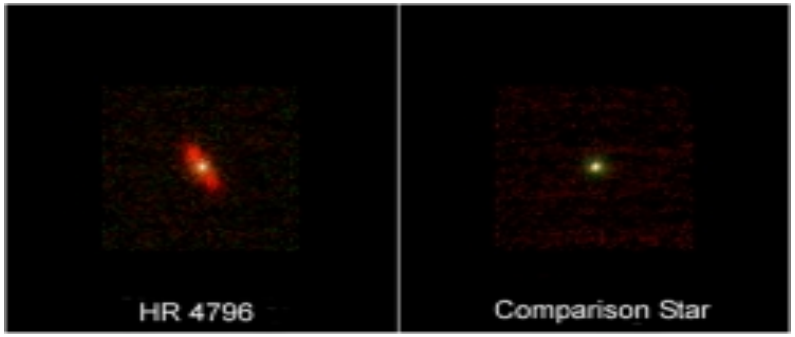
THE GREAT OBSERVATORIES

Great Observatories Imaging Sensitivity - (5 sigma in One Hour)

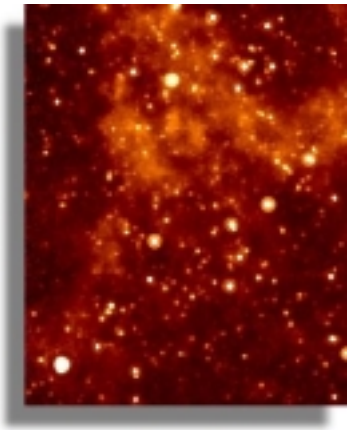


Themes of Infrared Astronomy

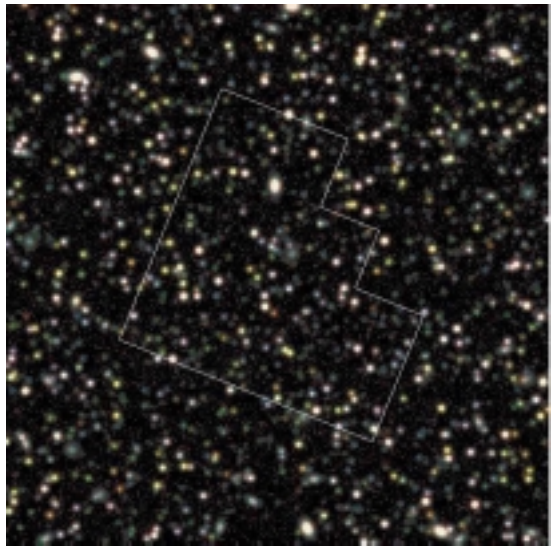
Infrared Observations Probe:



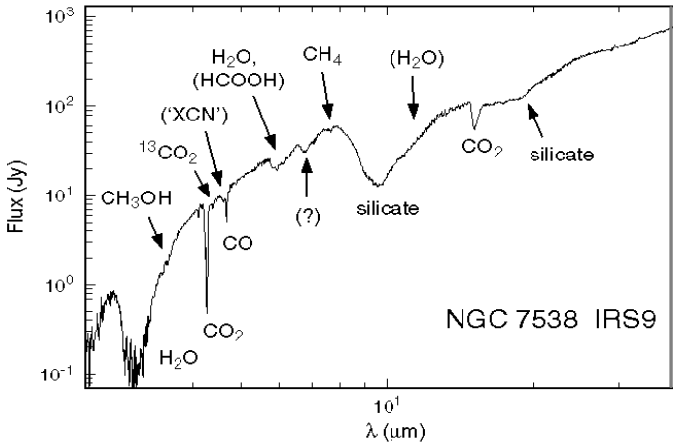
- **The Cold Universe**



- **The Dusty Universe**



- **The Distant Universe**



- **The Chemical Universe**

SIRTF's Scientific Program

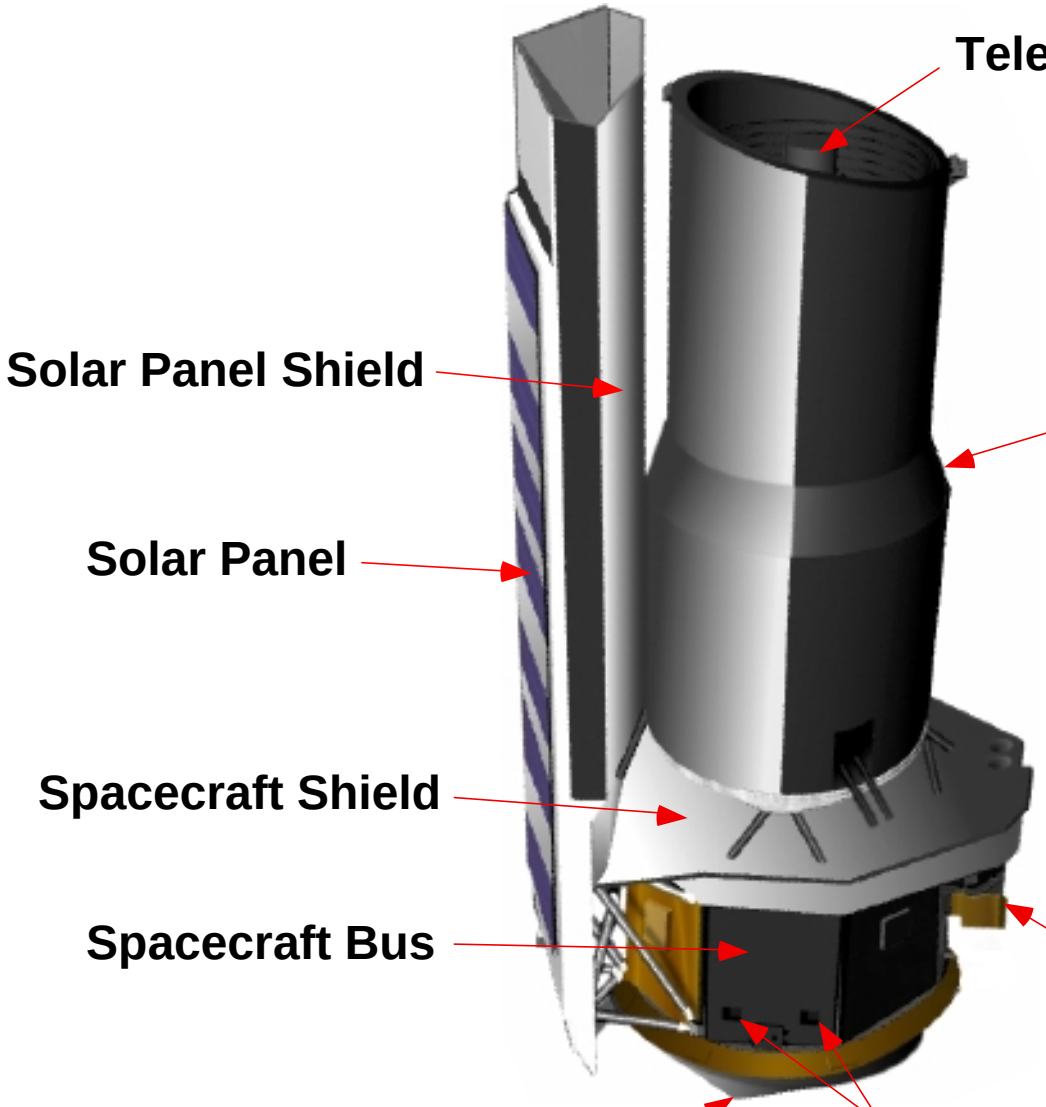
- **Protoplanetary and Planetary Debris Disks**
  - ***Have Planetary systems formed around nearby stars?***
- **Search for Brown Dwarfs and Super Planets**
  - ***Is the mass of the Milky Way Galaxy hidden in sub-stellar objects and giant planets?***
- **Ultraluminous Galaxies and Active Galactic Nuclei**
  - ***What engines drive the most luminous objects of the Universe?***
- **The Early Universe**
  - ***How do galaxies form and evolve?***

The SIRTF mission is driven only by the requirements of these programs, which are called out for SIRTF in the Bahcall Report

The resulting system will have very powerful capabilities in many other scientific areas, allowing SIRTF to be an observatory for the entire scientific community

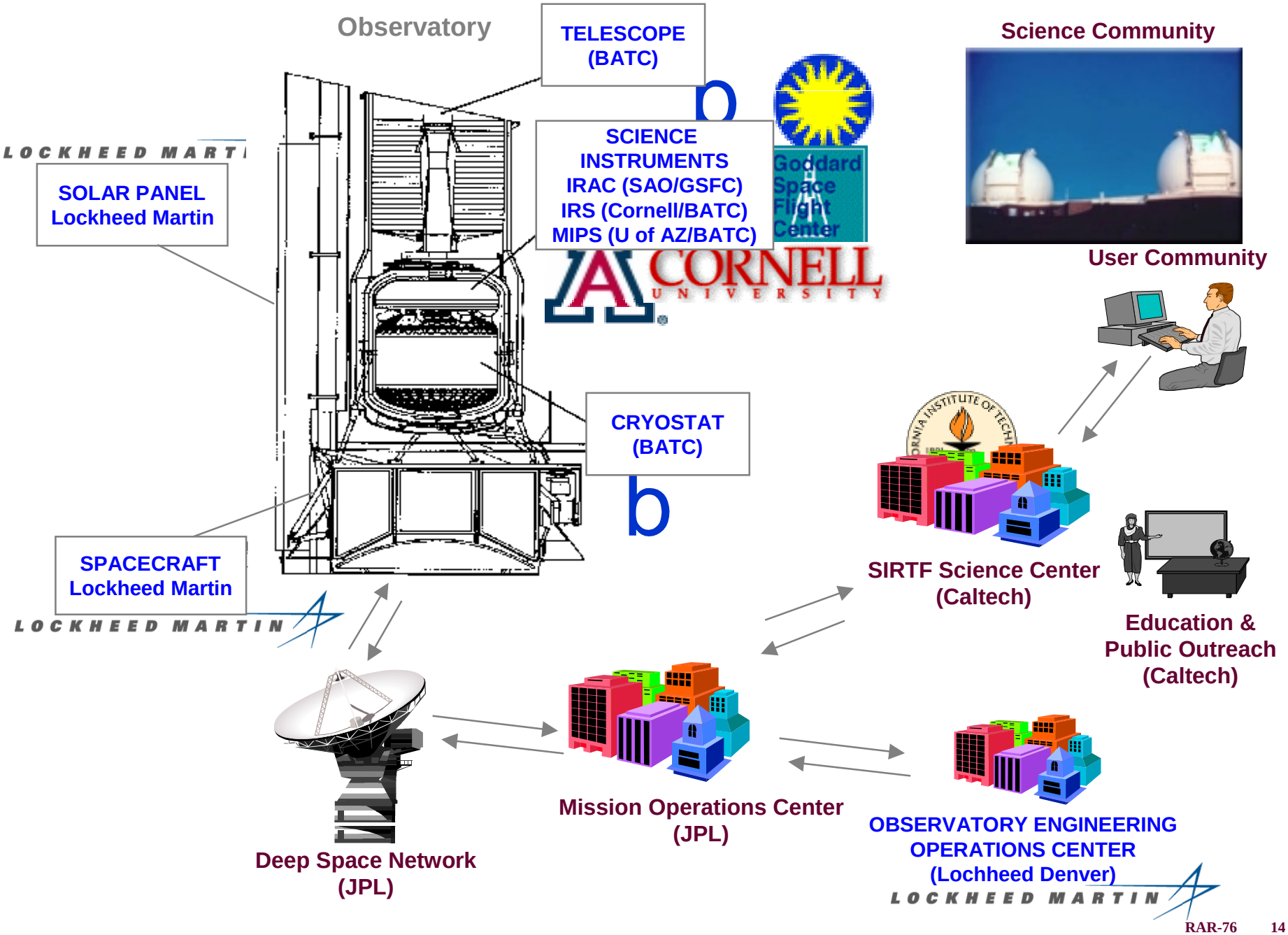
In addition, SIRTF will have great potential for the discovery of new phenomena in the Universe, and the mission must exploit this potential

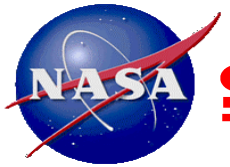
Observatory Configuration



The observatory is ~4m tall and has a mass of ~865kg

SIRTF System Architecture and Team Members





SIRTF

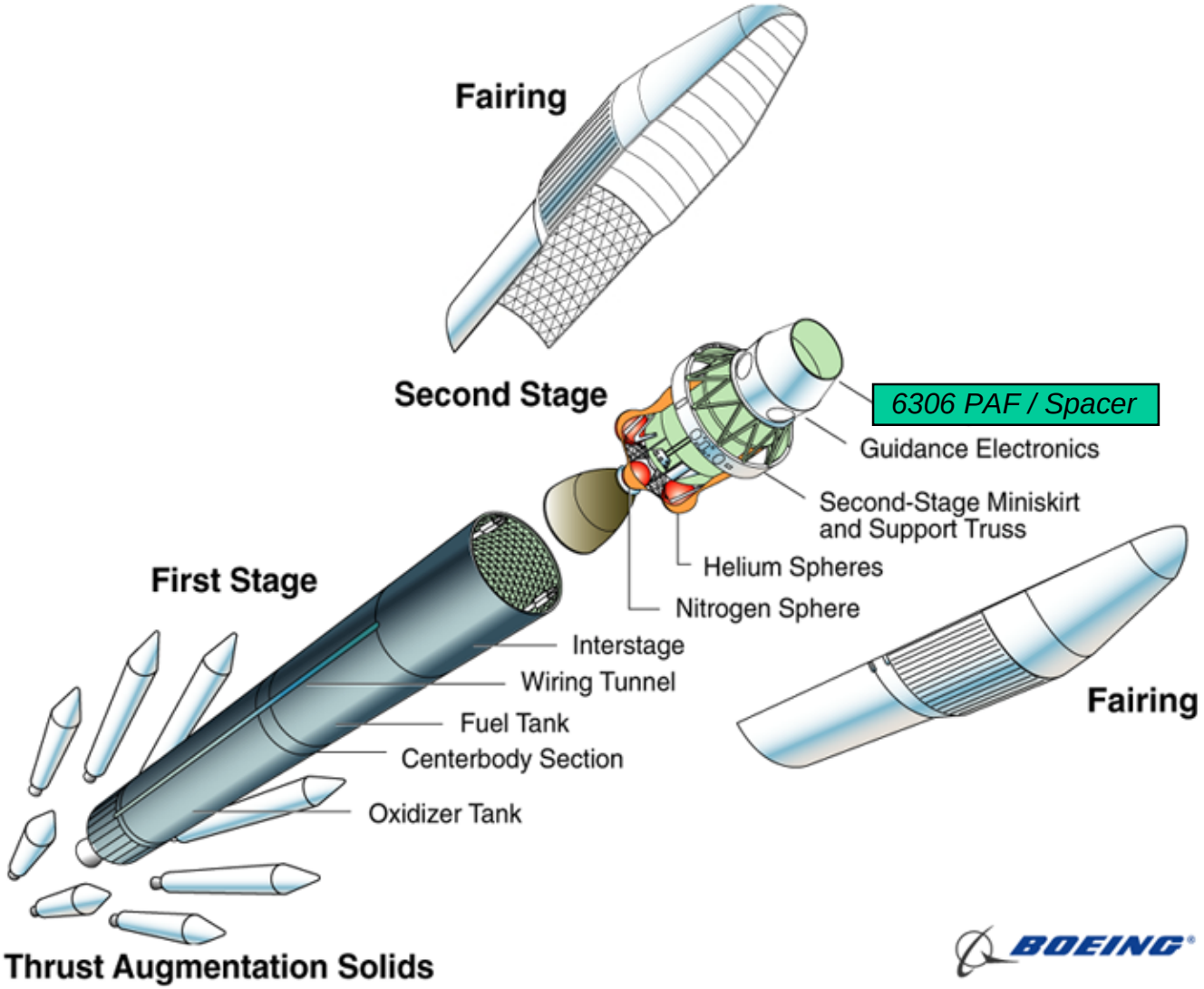
Mission Overview

JPL

- Solar orbit trailing Earth and receding at 0.12 AU per year
- Delta II - 7920H-9.5
- Launch date - July 15, 2002
- 60-Days In Orbit Checkout
- 30-Days Instrument Validation
- 2.5 years science lifetime, with a goal of 5 years
- DSN for Telemetry, Tracking, and Commanding
- Two 1-hour Downlink Passes Per Day
- Up to 4 Gbits per 12-hour
- 2.2 Mbps Downlink Rate
- 2 Kbps Uplink
- No Propulsion
- Doppler Tracking

Delta 7920H

Nine GEM LDXL SRMs replace standard GEMs



Launch Window Restrictions

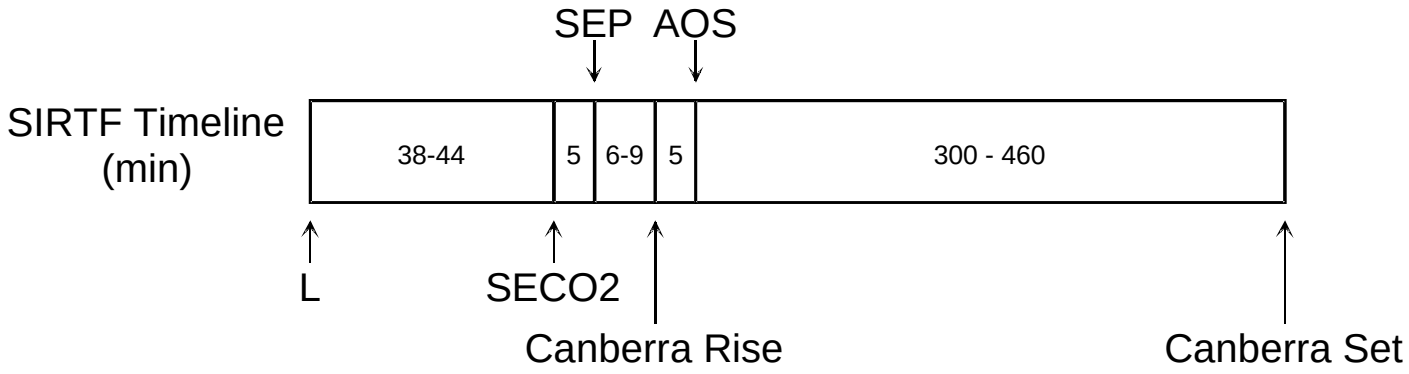
- Launch Vehicle Performance Impact when Launching near Equinoxes
  - *March and September, the sun is at the equator (equinoxes)*
- Insufficient orbit plane to sun angle with a due-east launch regardless of using direct ascent or parking orbit
  - *Angle Can be Increased by:*
    - Use non due-east launch azimuth
    - Add orbit plane rotation during ascent (dog-leg)

Launch Period	Launch Traj	Launch Azimuth	Mass Capability (kg)*
December Launch	Direct	95	929
7/15/02 – 7/28/02	Parking	95	897
7/29/02 – 8/20/02	Parking	105	889
8/21/02 – 9/12/02	Parking	105 + dog leg	831

*Pending additional penalty due to special instrumentation

History of DSN Acquisition Times

Mission	Planned Launch to DSN Rise (min)	Separation to DSN Rise (min)
Mars Observer	45 – 48	0
Mars Global Surveyor	50 – 60	1-5
Cassini	50	10
Mars Pathfinder	77 – 80	2-5
Mars Polar Lander	51	7-10
Mars 2001 Odyssey	58	25

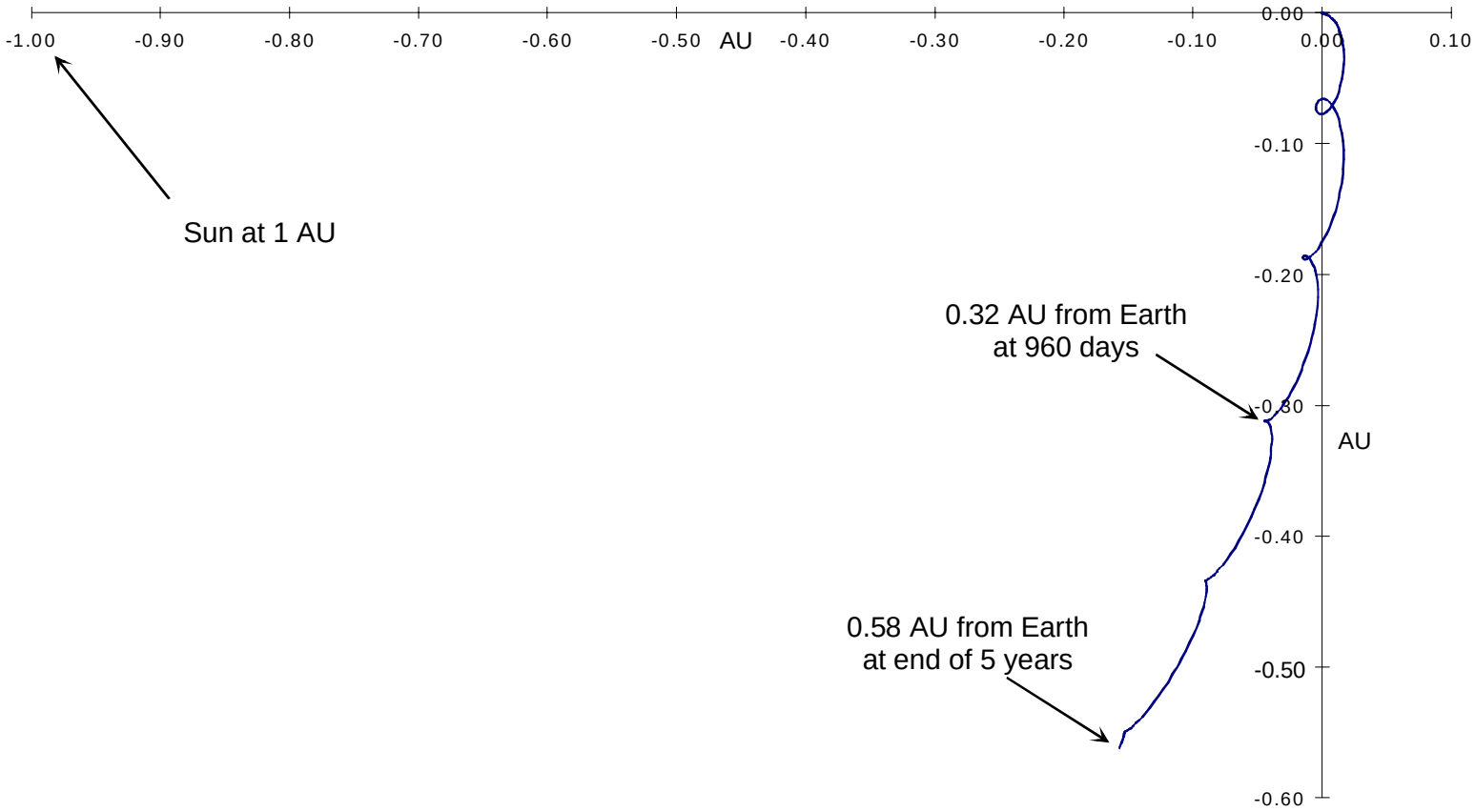


SIRTF - Operational Features and Characteristics

- **SIRTF Is Designed for Easy Operability**
  - **Heliocentric orbit**
    - No eclipses or occultations - continuous operations
    - Excellent sky access and visibility - sun angle 80-120 degrees
    - 35% of sky visible at one time for >40 days. Repeat on ~six month centers
    - Continuous viewing of ecliptic poles.
  - **No real time communication with spacecraft**
    - Autonomous operations from stored sequences
    - Data downlinked every 12 hours using body-fixed antenna and DSN
    - Respond to Target of Opportunity as quickly as 48 hours
  - **Three array-based instruments designed for simple operations**
    - Only two moving parts in payload
    - Just seven distinct observing modes
    - Limited number of array types, multiplexers, and [familiar] data formats
  - **Single instrument operation campaigns lasting 3-to-7 days**
    - Optimized cryogenic system minimizes benefit of parallel operations

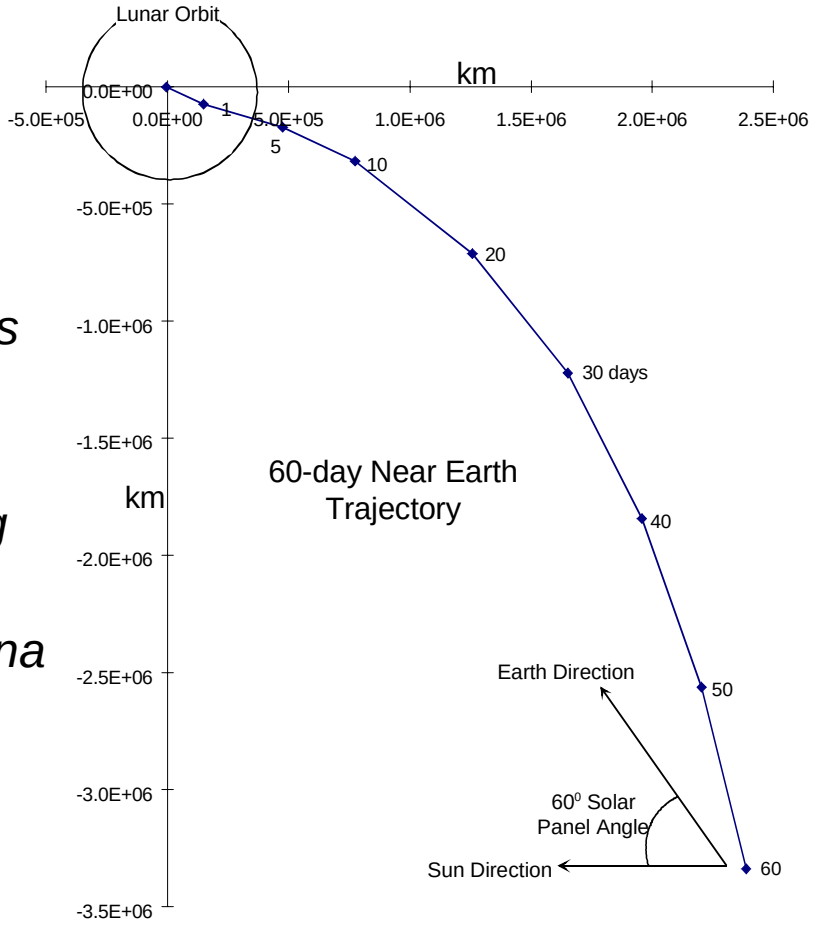
Solar Orbit

North Ecliptic Pole View in Rotating Frame



In Orbit Checkout Phase

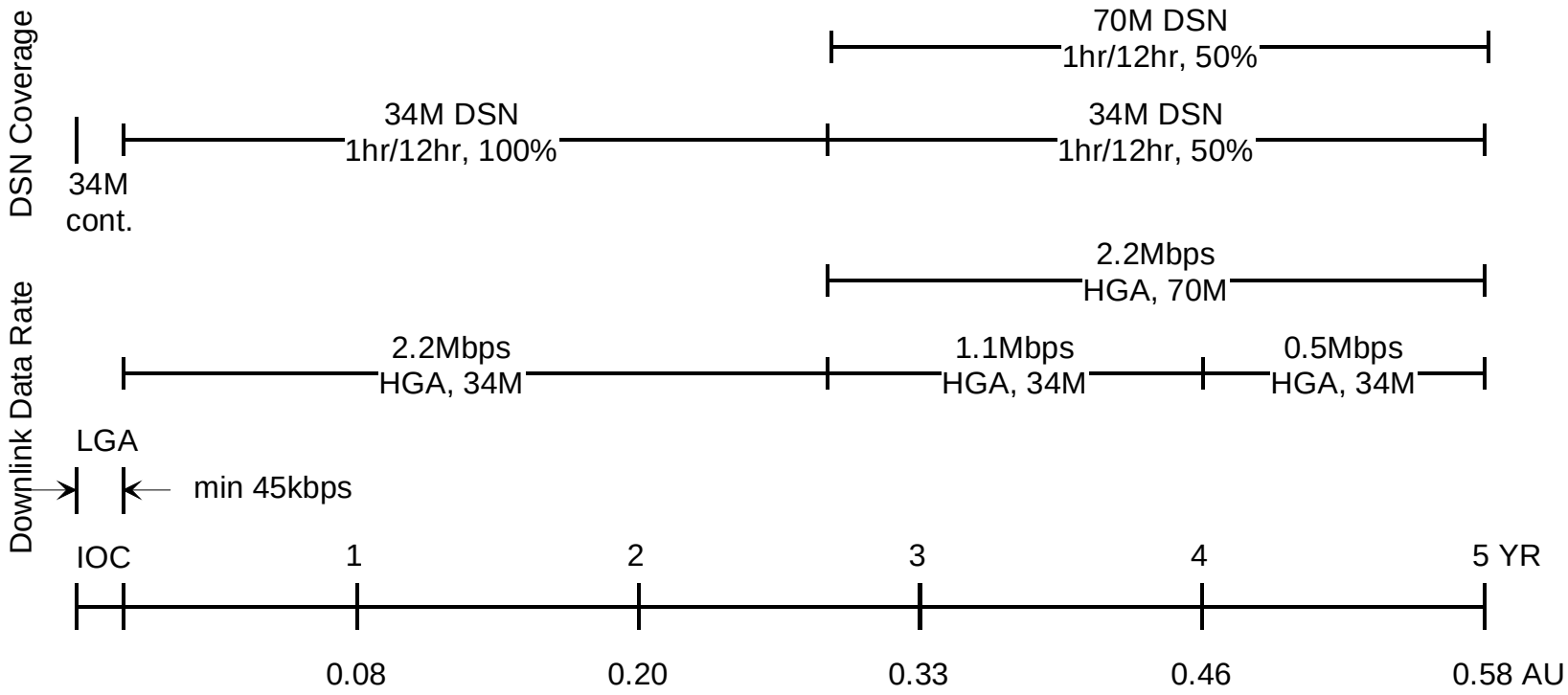
- *IOC from separation to L+ 60 days*
- *Dust Cover Ejection at ~L+ 7 days*
- *Achieve operating temp at ~L+ 45 days*
- *Verification and validation of Observatory performance*
- *Verification of science and engineering operating modes*
- *Communications thru Low Gain Antenna*
- *Continuous DSN coverage*
- *45 Kbps downlink*



Key Features of Nominal Operations

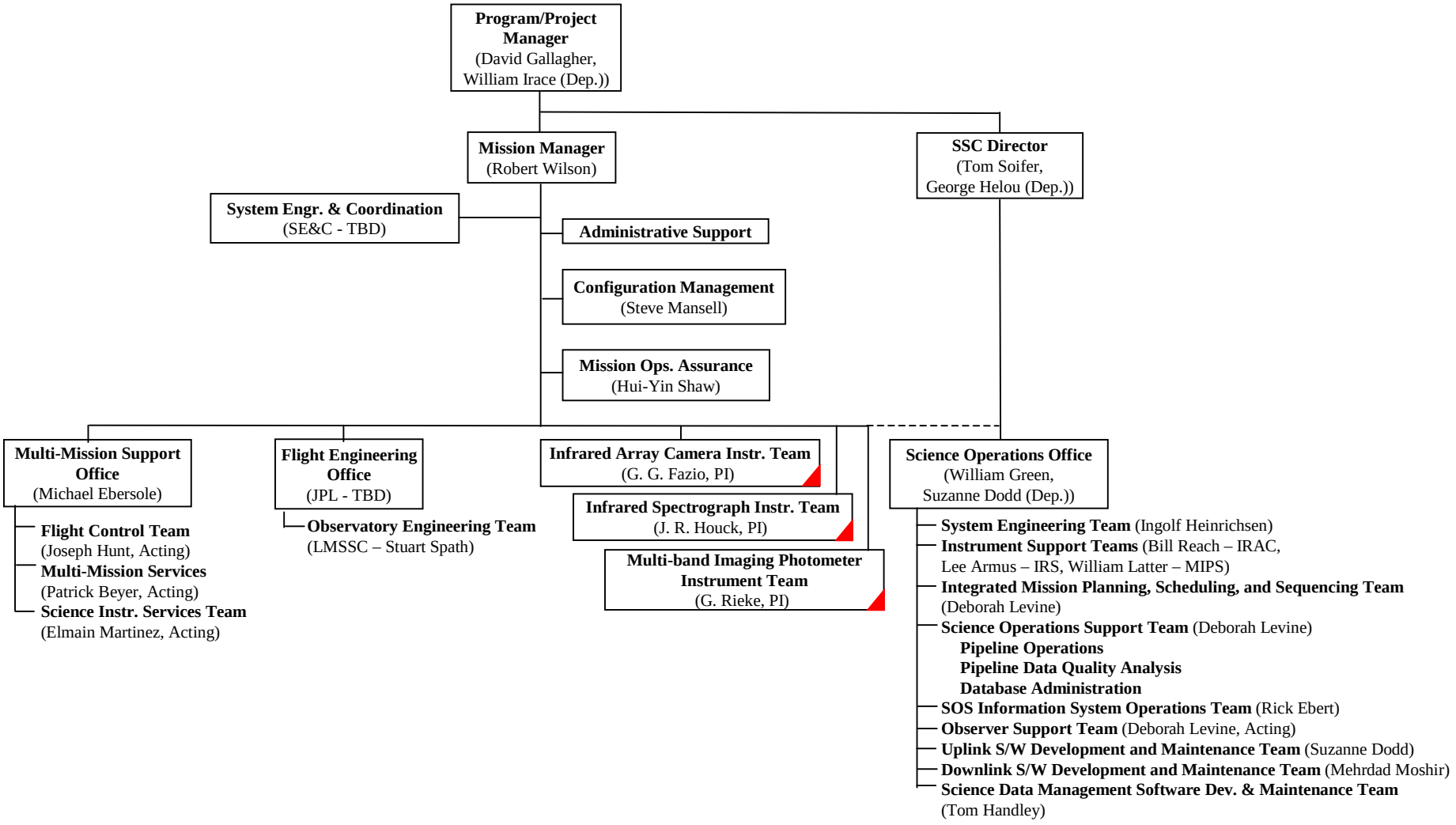
- After IOC, Instrument Validation and until depletion of Cryogen
- Downlink and uplink thru High Gain Antenna
- One instrument observing for several days
- Uplink once a week
- Lossless science data compression before storing
- Average stored data rate of 90 kbps
- Downlink every 12-hour of up to 4 Gbits
- No observation during downlink
- Event Driven Execution
  - *Continue observation if missing one DSN pass*
  - *Take data immediately after slew and settled*
  - *Return to observation immediately after downlinking data in memory*
  - *Skip to next IRS observation if fail to peakup on target*

Communication Strategy



Uplink @ 2kbps with Simultaneous downlink
Doppler data every pass

Mission Operations Organization

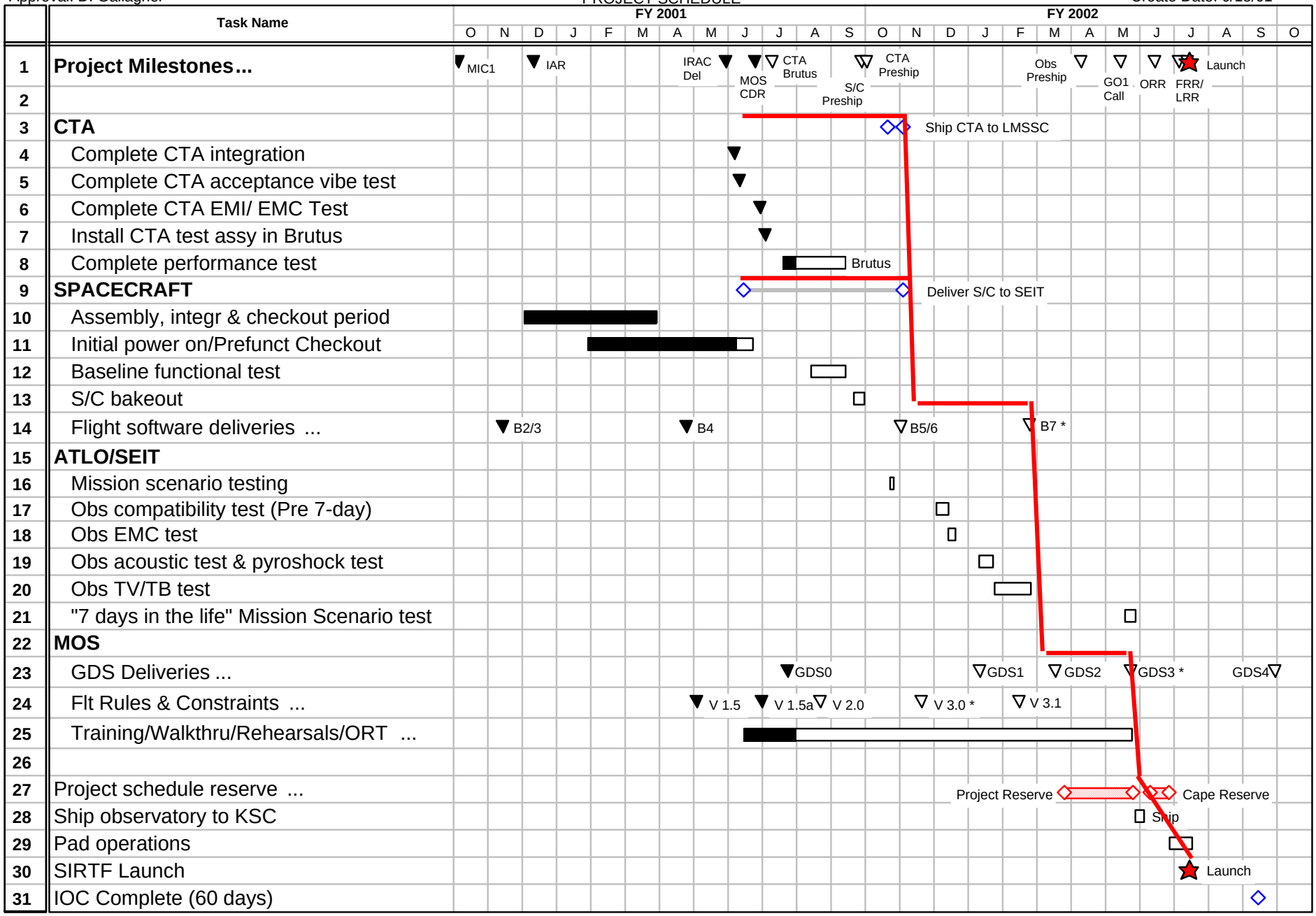


◢ = Proposed For IOC Phase Only
(In Work)

JET PROPULSION LABORATORY
Approval: D. Gallagher

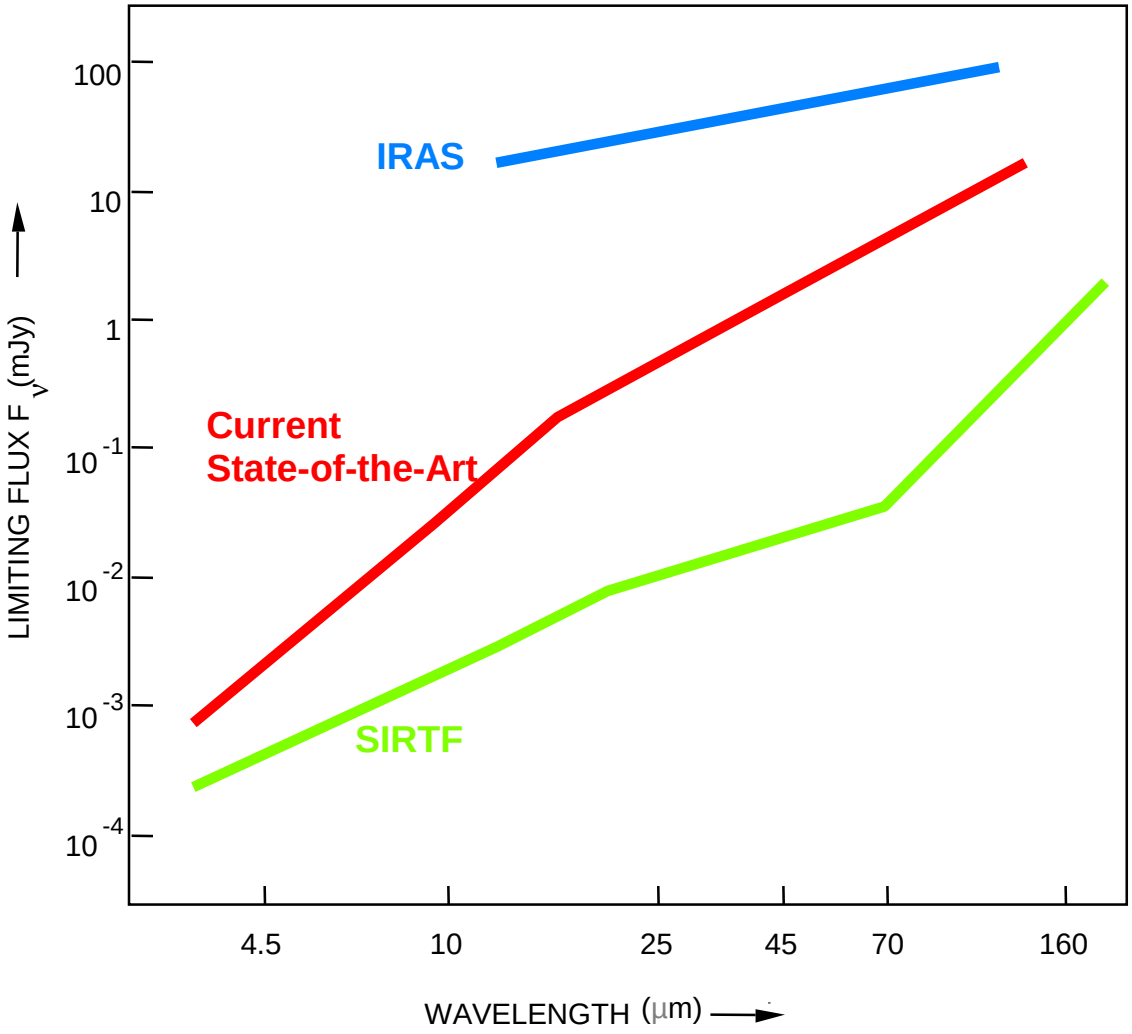
SPACE INFRARED TELESCOPE FACILITY
PROJECT SCHEDULE

Presentation Date: 08/08/01
Create Date: 6/18/01



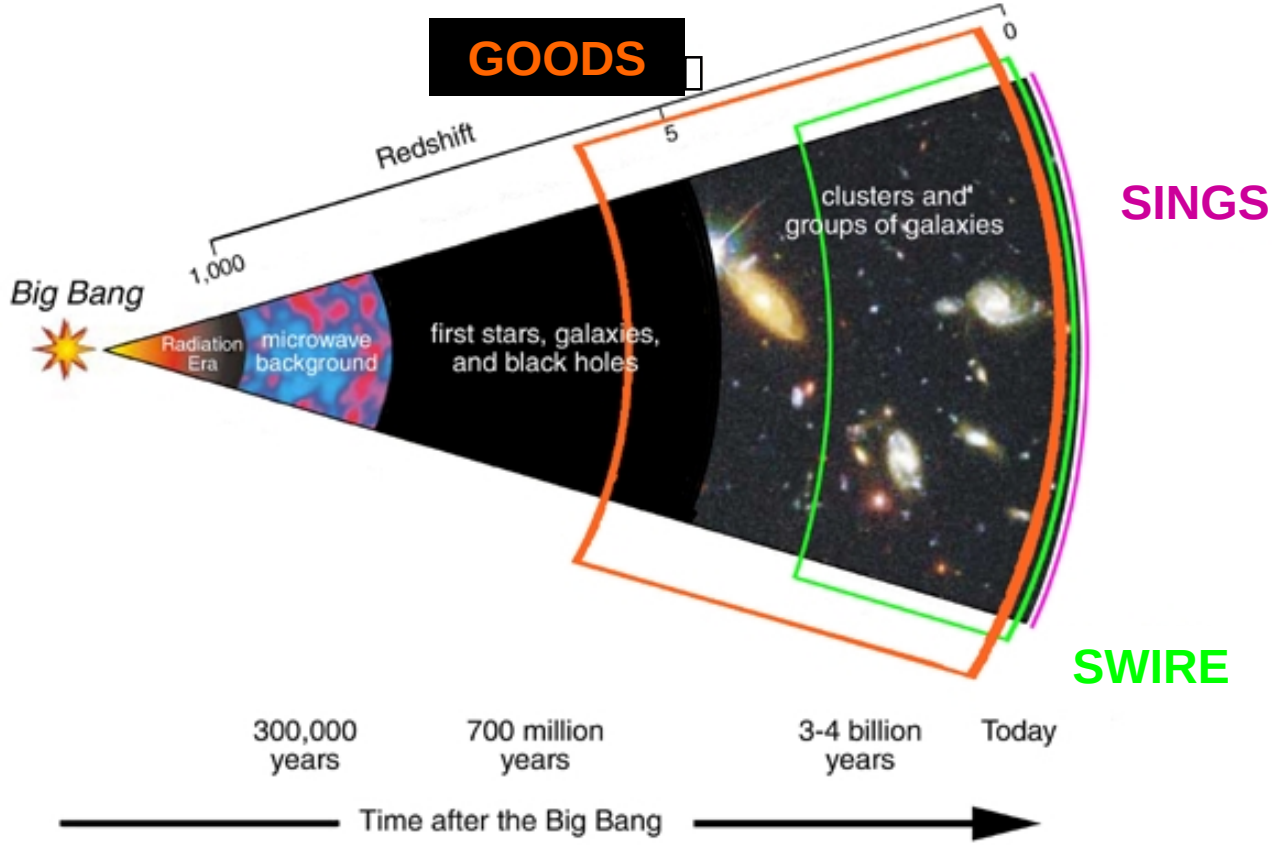
Project Critical Path

The Sensitivity of Infrared Telescopes



Extragalactic Science in the Legacy Program

The Journey Through Cosmic Time



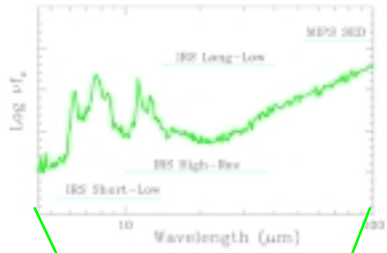
Sky Coverage Area

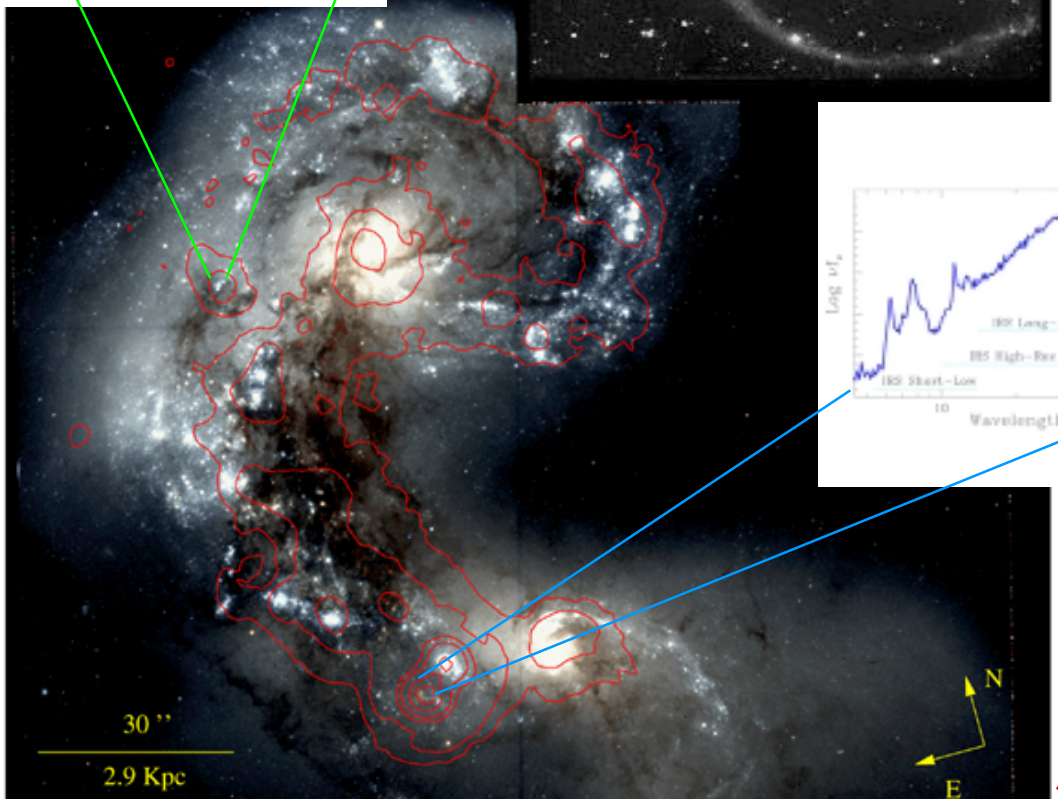
- **SINGS**
  - **75 galaxies**
- **SWIRE**
  - **~100 sq. deg.**
- **GOODS**
  - **~0.1 sq. deg.**

Anchor Points in the Local Universe (*SINGS Team*)

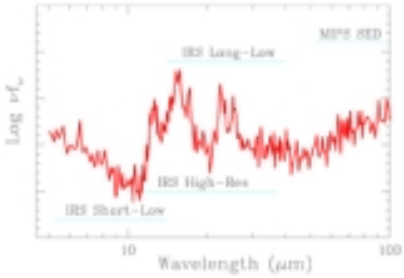
The Distant Universe

The Local Universe



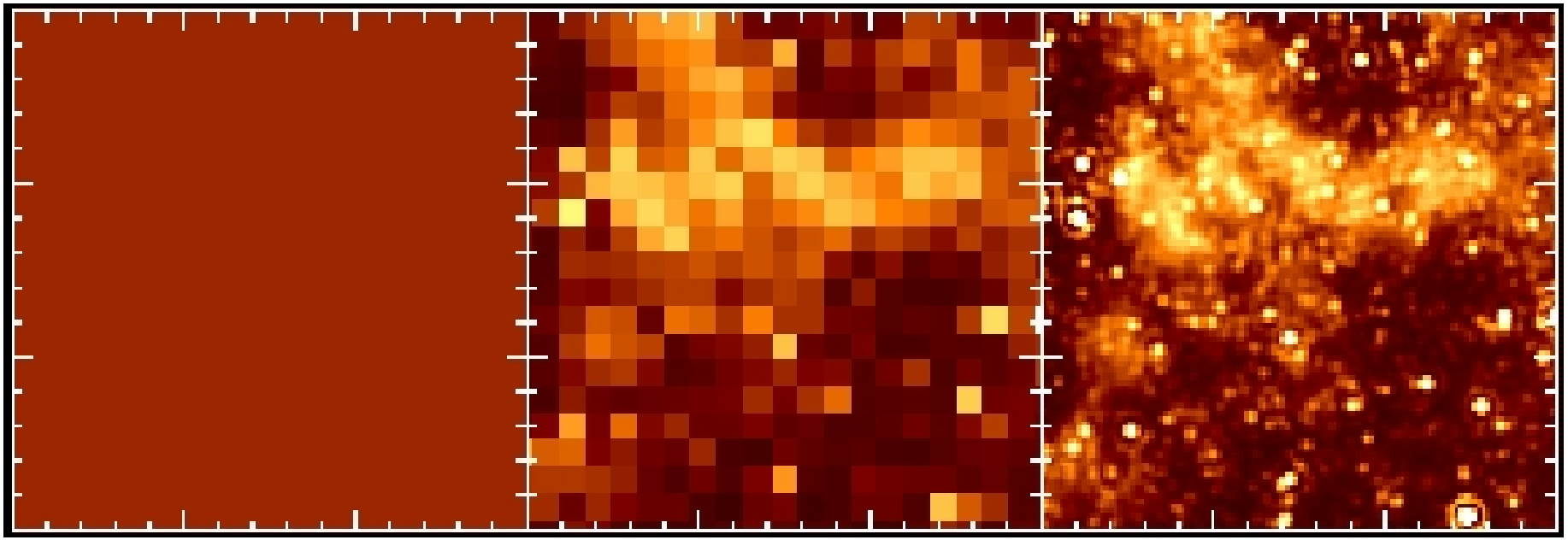


Simulated galaxy spectrum



SIRTF Observations may Resolve the Infrared Background at 160 μm

160 micron simulated sky, observed at different resolutions



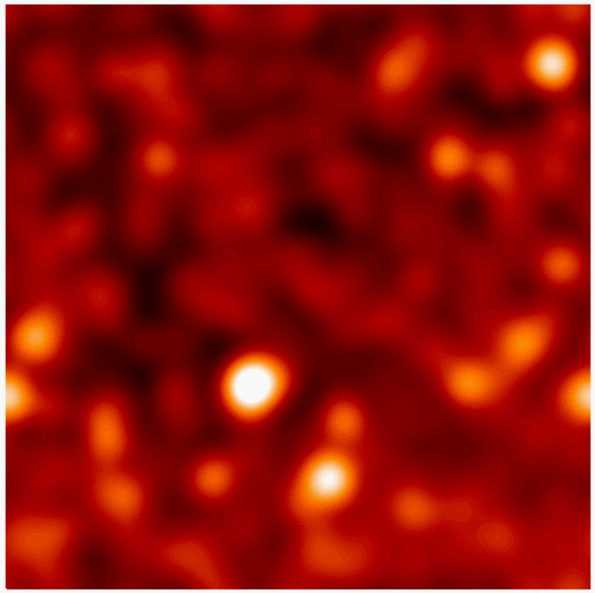
DIRBE 45’ ISO 90” MIPS 45”

Influence of Resolution on Deep Far Infrared Confusion-Limited Surveys

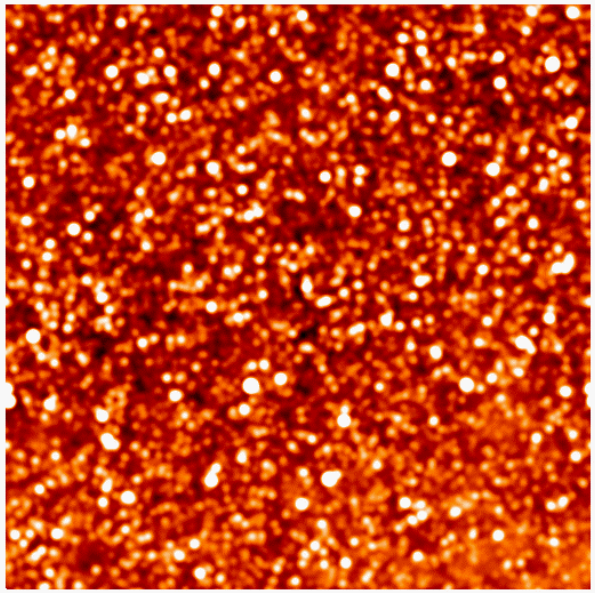
(H.Dole, MIPS)

Simulations of a 34' x 34' sky at **70 μm**

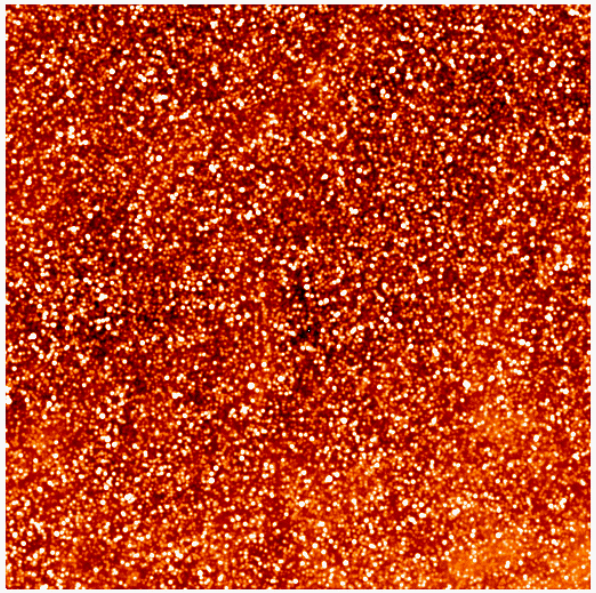
Extragalactic Sources: ~ 400.000 sources between 1 μJy and 2 Jy (Dole H. et al astro-ph/0002283)
Foreground: Galactic Cirrus N_H ~10^{20} cm^{-2}



IRAS resolution



ISOPHOT resolution



MIPS resolution

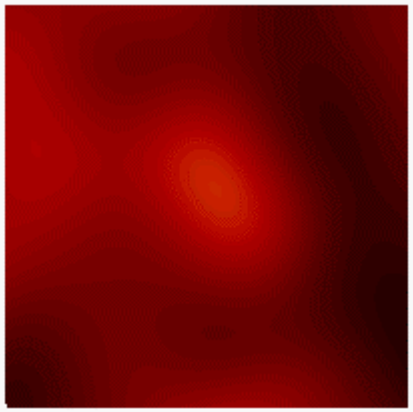
Influence of Resolution on Deep Far Infrared Confusion-Limited Surveys

(H. Dole, MIPS)

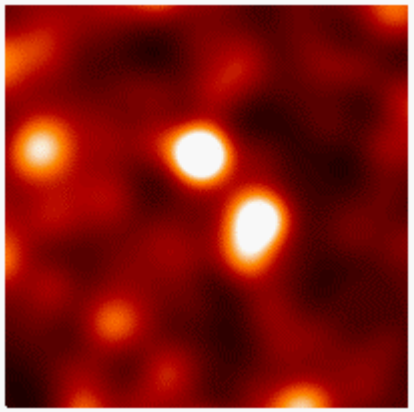
Simulations of a 34' x 34' sky at **160 μm**

ZOOM on a 6.7 ' x 6.7 ' square

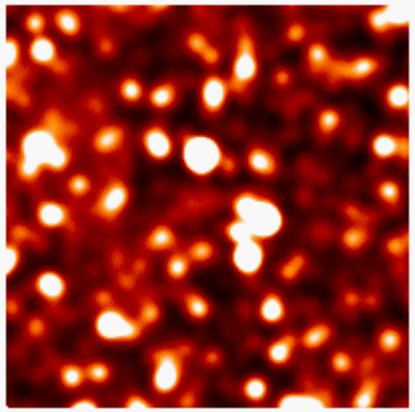
Extragalactic Sources: ~ 600.000 sources between 1 μJy and 2 Jy (Dole H. et al astro-ph/0002283)
Foreground: Galactic Cirrus N_H ~10^{20} cm^{-2}



IRAS resolution



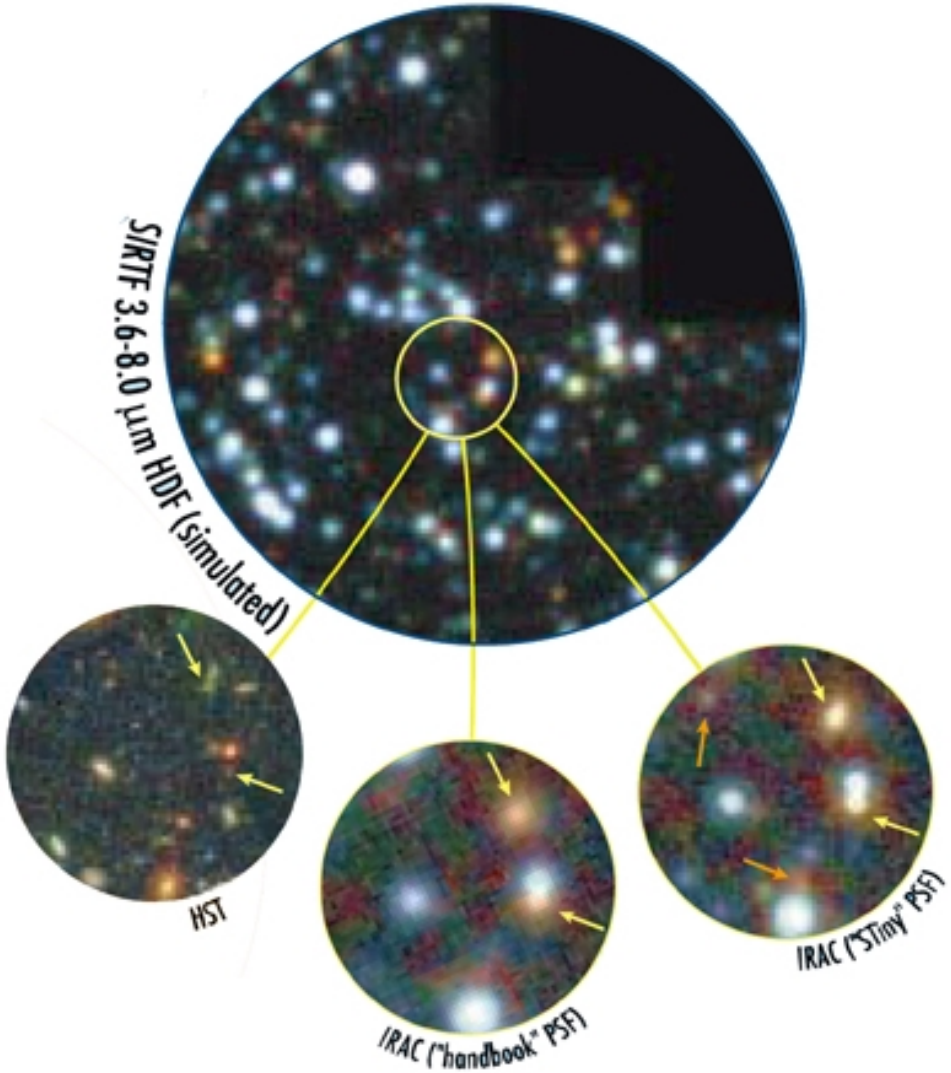
ISOPHOT resolution



MIPS resolution

Comparing HST and SIRTF (simulated) Images of the HDF

GOODS Team



NEW OR MODIFIED

PROJECT REQUIREMENTS

- DEEP IMPACT -

John McKinney

Resource Allocation Review Board (RARB)

August 14, 2001

Deep Impact Mission Overview

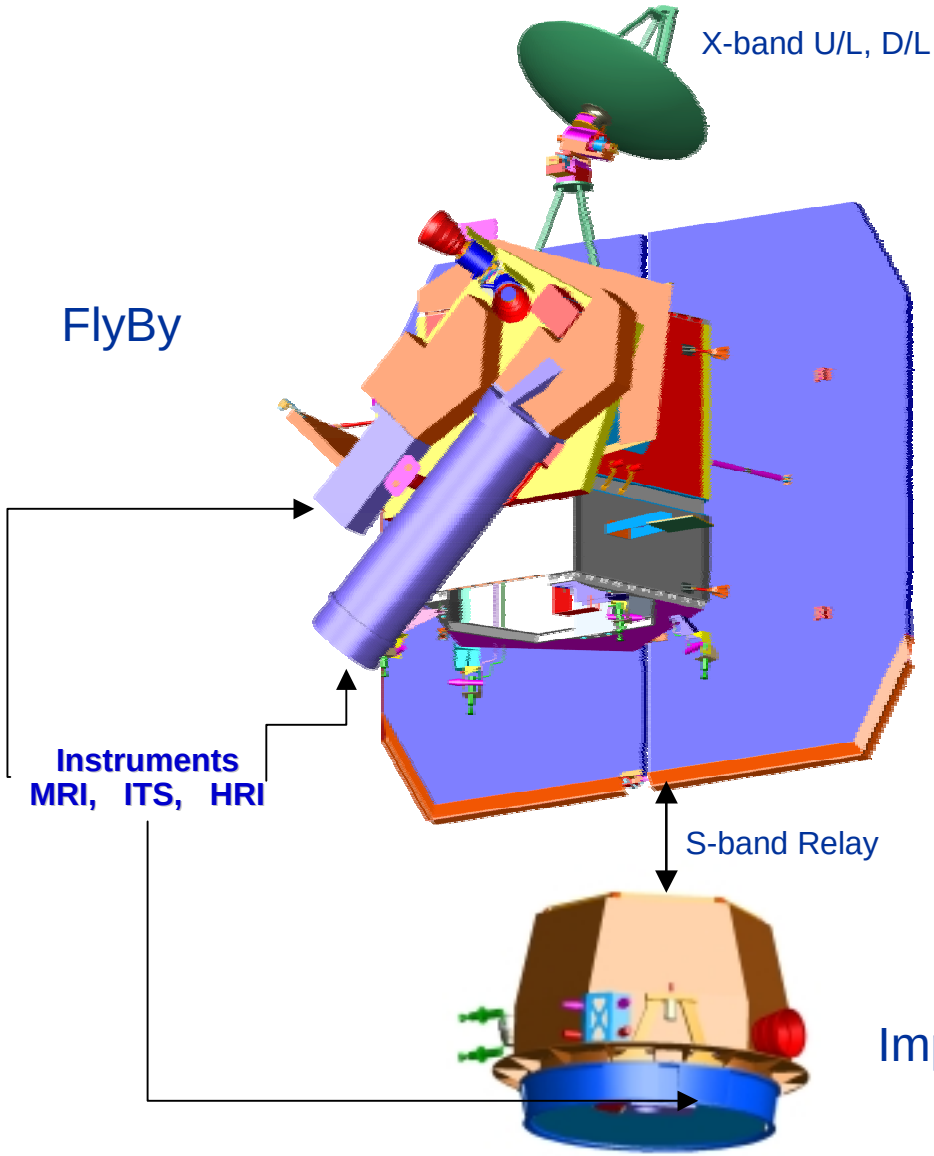
John McKinney

Deep Impact Mission Manager

Objectives

- **Dramatically improve the knowledge of key properties of a cometary nucleus and, for the first time, assess directly the interior of a cometary nucleus by means of a massive impactor hitting the surface of the nucleus at high velocity**
- **Determine properties of the surface layers such as density, porosity, strength, and composition from the resultant crater and its formation**
- **Study the relationship between the surface layers of a cometary nucleus and the possibly pristine materials of the interior by comparison of the interior of the crater with the pre-impact surface**
- **Improve our understanding of the evolution of cometary nuclei, particularly their approach to dormancy, from the comparison between interior and surface**

Spacecraft Overview



- High Resolution Imager (HRI)
  - CCD Imaging @ 2 microrad/pixel
  - IR Spectroscopy
- Medium Resolution Imager (MRI)
  - CCD Imaging @ 10 microrad/pixel
- Impactor Targeting Sensor (ITS)
  - Identical to MRI
  - Used for Science & “Autonav”

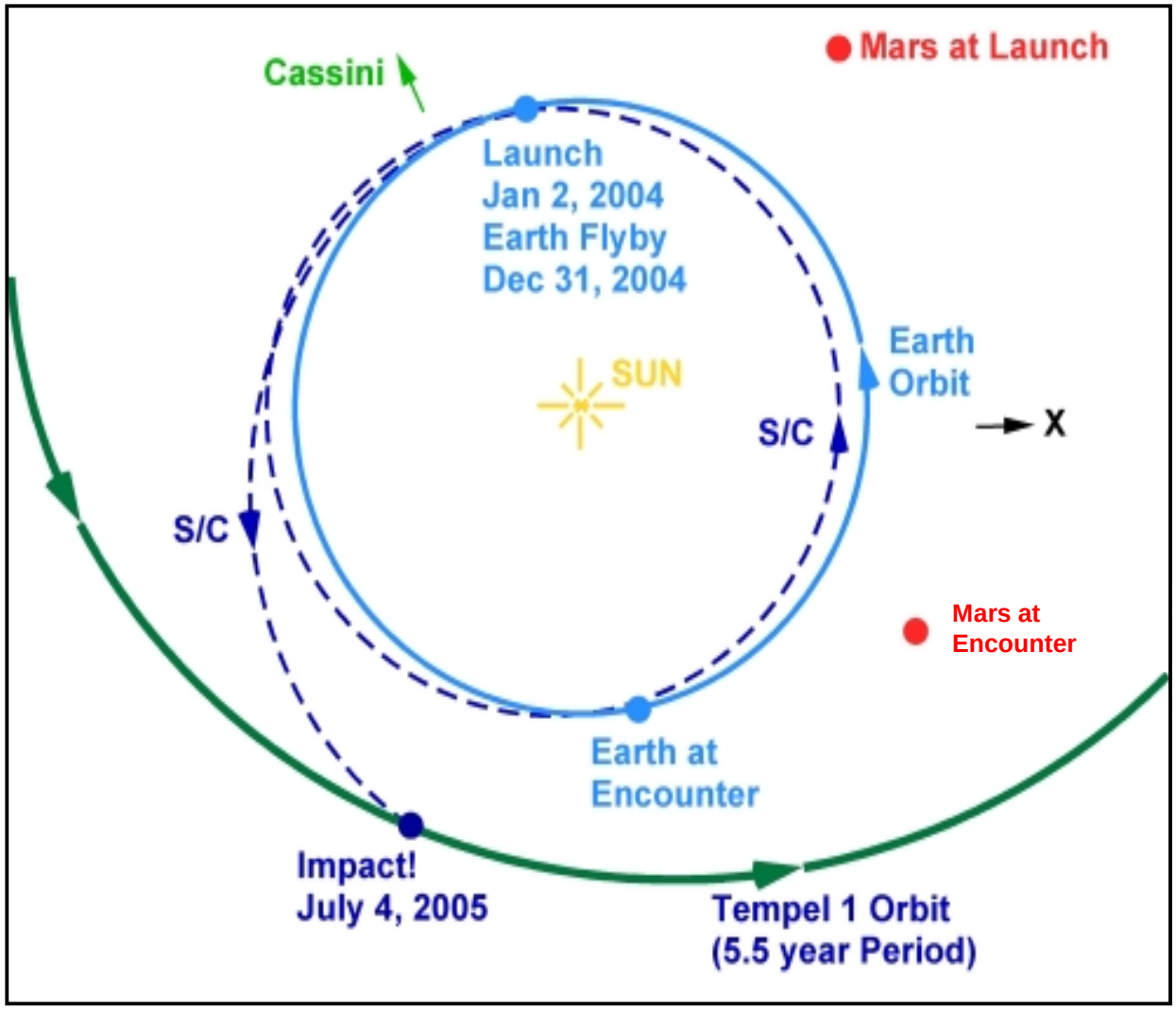
Mission Overview

- 2 spacecraft – 1 impactor + 1 flyby
- Fly together until 1 day before impact
  - 1-year heliocentric orbit with Earth return and lunar calibration of instruments
  - 6-month Earth-to-comet trajectory
- Smart impactor
  - Impactor Targeting Sensor (ITS)
    - CCD Imaging at 10 microrad/pixel
    - Used for active navigation to target site
    - Images relayed via flyby to Earth for analysis
  - Cratering mass (350 kg at 10.2 km/s)
    - Excavates 100-meter crater in few*100 seconds

Mission Overview (continued)

- Flyby Spacecraft
  - Diverts to miss by 500 km
  - Slows down to observe for 800 seconds
  - Instruments body-mounted – spacecraft rotates to follow comet during flyby
- Instruments on Flyby Spacecraft
  - High Resolution Imager (HRI)
    - CCD imaging at 2 microrad/pixel
    - IR spectroscopy
  - Medium Resolution Imager (MRI)
    - CCD imaging at 10 microrad/pixel
    - Identical to ITS
- Major Earth-based Observing Campaign
  - Prime Science at/near Impact
    - HST
    - Palomar & Mauna Kea or Chile (Paranal, CTIO)

Deep Impact
Inter-Planetary Trajectory



TCM-1 L+10d

TCM-2 L+158d

TCM-3 EFB-10d

TCM-4 EFB+10d

TCM-5 E-60d

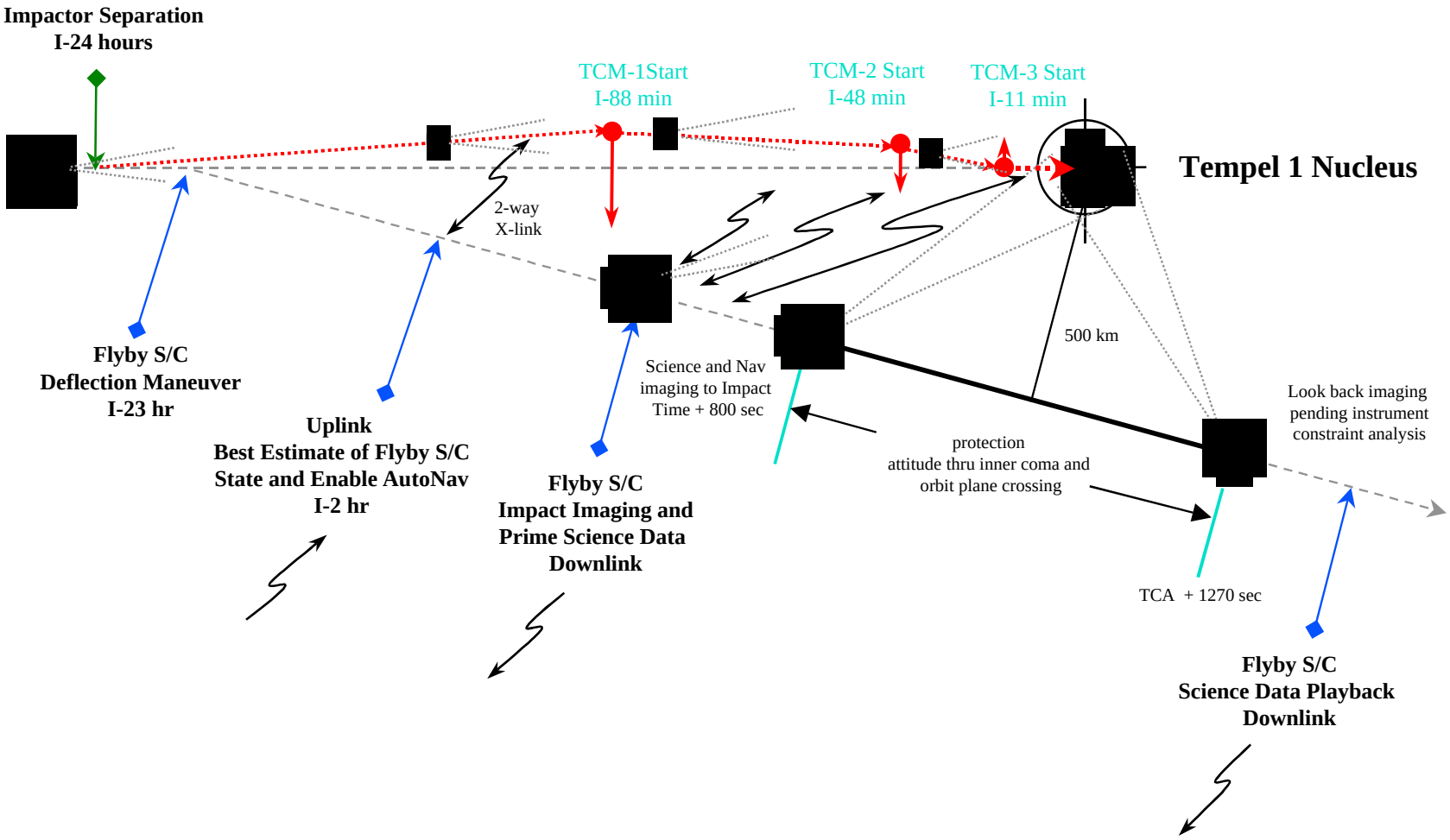
TCM-6 E-4d

TCM-7 E-32hrs

TCM-8 E-24 Hrs (Deflection)

TCM-9 E-12hrs (Trim)

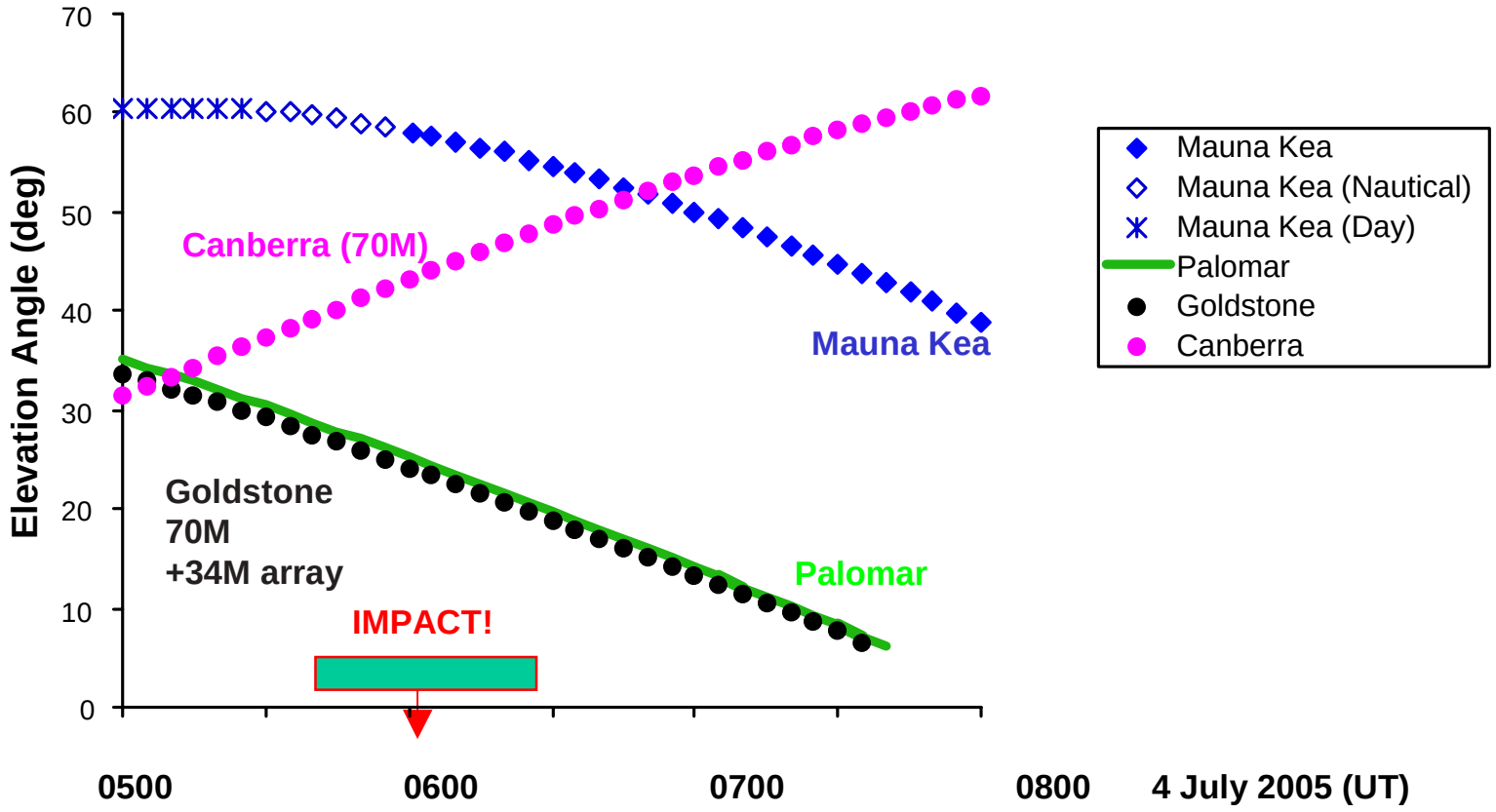
Encounter Overview



Deep Impact
Key Mission Ops Support Drivers

- Launch, Initial Acquisition, & Near Earth
  - Initial Acquisition
  - Post Launch S/C checkout & Calibration
  - TCM-1 @ L +10days
- Cruise - Low Activity, no significant ops planned
  - Periodic S/C Health checks
  - Nav Tracking
  - TCM @ L+158days
- Earth Flyby
  - TCMs @ ± 10 days
  - Instrument Calibration using Earth/Moon
  - AutoNav checkout/demo using Earth, Moon, and GPS Satellites
- Comet Approach
  - Arrival time adjustment by ± 45 min to accommodate HST viewing at impact
  - Approach Navigation – Radio & Optical Navigation
  - Approach Science
- Flyby/Impactor Separation & Deflection maneuver (E-24 hrs)
  - Impactor Checkout and Release (E-12hr late release contingency plan)
  - Flyby Deflection maneuver after separation (Contingency trim @ E-12 hrs)
- Encounter/Impact
  - Flyby & Impactor High Rate Science
  - “Live for the moment” ops strategy
    - Plan for highest possible telemetry rate that can be reliably supported (~300Kpbs, R=1/6 code)
    - Provide redundant 70m coverage for Impact event
      - Overlapping Coverage (63/14 or 14/43), and/or
      - 34m array (backup for 70m)
- Post Encounter
  - Science playback
  - “Look back” Imaging
  - End of mission @ E+30days

Impact Time*



*** 0600 option optimized for Mauna Kea viewing & DSS14/43 Overlap**