Jet Propulsion Laboratory
California Institute of Technology

4800 Oak Grove Drive
Pasadena, CA 91109-8099

(818) 354-4321

April 12, 2004

Refer to: 930–04-004/NL:ESB

TO: Distribution

FROM: Eugene S. Burke

SUBJECT: Minutes for the Joint Users Resource Allocation Planning Committee Meeting held March 18, 2004

NEXT JURAP MEETING:
Thursday, May 20, 2004
JPL Bldg. 303, Room 411 1:00 p.m.

Attendees:

Abramo, C.	Guduru, S.	Martinez, K.	Waldherr, S.
Alexander, H.	Hall, J.	Morris, D.	Ward, C
Andujo, A.	Hampton, E.	Ryan, R.	Yetter, B.
Baldwin, J	Lacey, N.	Scott, C	
Brymer, B.	Martinez, G.	Slade, M.	

The Joint Users Resource Allocation Planning Committee meets monthly to review the status of Flight Projects, the requirements of other resource users, and to identify future requirements and outstanding conflicts. The last regular meeting was held on March 18, 2004 at the Jet Propulsion Laboratory.

Introductory Remarks – D. Morris

Mr. Morris, the Acting JURAP Chairman, welcomed attendees to the meeting. He briefly discussed the problems associated with the Genesis Back-up Orbit and Disposal Orbit requirements (September, 2004). The April JURAP meeting will be cancelled.

Conflict Resolutions – D. Morris

The RARB Action Items #1, and 2a with a "due date" of 04/15/2004, and 2b with a "due date" of 03/24/2004, are the only open Action Items open at this time.

Action Item #1 requests DSMS Engineering to distribute a plan for the 26m subnet antenna hydraulic system refurbishment. This will then be worked by the Resource Analysis Team to coordinate DSS-16, 46, and 66 downtimes with Operations and Flight Projects.

Action Item #2a requests HQ to provide direction regarding DSN support for Genesis' post-Earth Flyby spacecraft disposal orbit. It is important that consultation with impacted users (e.g., Chandra and ISTP missions) is part of this action if DSN coverage is to be used. Per the request of NASA HQ, DSMS and the Project are working on a compromise. The goal of the compromise is to minimize the scheduling impact to other DSMS customers, yet still address risk mitigation for the Genesis mission (disposal orbit/first 60 days of backup orbit). Note: The disposal orbit and backup orbit are very similar for the first 60 days.

Action Item #2b requested Genesis to investigate alternate antenna support (non-DSN) for Genesis' post-Earth Flyby spacecraft disposal orbit.

Resource Analysis Team – N. Lacey

For a complete listing of Ongoing and Advanced Planning projects visit the following link for the RAPSO website: http://rapweb.jpl.nasa.gov/PlanningMissions.html

- Spirit EOEM was changed from 05/11/04 to 09/30/04
- Opportunity EOEM was changed from 06/15/04 to 09/30/04
- SELENE Launch was changed from 07/23/05 to 08/10/06
- SELENE EOPM was changed from 09/30/06 to 08/21/06
- Kepler Acronym changed from KPLR to KEPL

For a complete listing of the DSN Resource Implementation visit the following link for the RAPSO website: *http://rapweb.jpl.nasa.gov/Planning/TMODPlns.xls*

The Mid-Range scheduling RAP Team has completed schedule negotiation 28 weeks ahead of real-time with 10 weeks of conflict-free schedules. Conflict resolutions are required for: Weeks 21, 22, 23, 24, 25, 26, 27, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39.

E. Hampton, RAPSO Team Lead, spoke on the problem of having only 10 weeks of Conflict-Free Schedules. She also indicated that the Transfer Weeks (Weeks 21 – 24) as well as all weeks on the RAP side of the RAPSO remain in conflict, with the exception of Week 28.

DSN Downtime Forecast – A. Andujo

For a complete listing of Antenna Downtime Report visit the following link for the RAPSO website: *http://rapweb.jpl.nasa.gov/Downtime.html*

Changes to 2004 Downtime Schedule

- DSS-15 Antenna Controller Replacement Downtime has been cancelled. The new Date is TBD.

Changes to 2005 through 2007 Downtime Schedules

- There are no outstanding downtime requests for 2005 through 2007.

DSN Operations – J. Buckley

There was no presentation given at this month's JURAP.

Goldstone Solar System Radar – M. Slade

The Goldstone Orbital Debris Radar has been revived with new funding arriving in January 2004, for official restarting of these experiments. The letter from the Sponsor (Headquarters Code Q, Safety & Reliability) indicates these data are important for Space Shuttle return-to-flight and also astronaut "spacewalks" at the ISS. Another radar experiment to assess the current state of the GODR hardware and software is scheduled for March 24, 2004.

Mr. Slade also reported on the proposals for two new near-Earth asteroids that have been accepted. We are attempting to support these observations with gaps in the DSS-14 schedule, although a few requests have gone to some Flight Projects regarding their flexibility during the view periods for these objects.

NEA 2003 YT1 approaches within 0.073 AU on April 30, when it should be a strong radar target. 2003 YT1 was discovered by the Catalina Sky Survey (Steve Larson, PI). This object has an absolute magnitude of 16.2, suggesting that it is within a factor of two of 1.8 km in diameter.
Near-Earth asteroid 2001 US16 was rediscovered last week after not being seen for more than two years, an interval when it was effectively lost. We now know that this object will approach Earth within 0.029 AU (11 lunar distances) during the first half of May, and it will be a strong radar target at Goldstone.

Radio Astronomy / Special Activities – G. Martinez

No problems were reported on the following Clock Synchronizations:
DOY 007 with DSS-15 and DSS-65; DOY 016 with DSS-15 and DSS-65; DOY 023 with DSS-15 and DSS-65; DOY 038 with DSS-15 and DSS-65; and DOY 047 with DSS-15 and DSS-65.

For the European VLBI Network (EVN), the RASA supported E027B - A L-Band experiment that observed the nuclear region of ULIRG MKN 273, to obtain images that will allow mapping with unprecedented sensitivity, the compact regions and extended emission in its components. A tape problem was reported by DSS-63 resulting in a 2-minute data loss. 99.6% of data time was utilized.

For the Global Session, Mr. Martinez reported that RASA supported GM052A – This observation imaged both the jets and the counter jets of quasar B1524-136. The very sensitive, high-resolution observations that are required to image the source can only be achieved with global VLBI. No problems were reported by DSS-63. Data tapes were sent to the JIVE correlator for processing. 100% of data time utilized.

New Office: The Radio & Special Activities Group is now located at the 1400 S. Shamrock Facility. Mail Stop – B1400-300; New Phone Numbers are: Pam Wolken – 626-305-6275; George Martinez – 626-305-6278; Carleen Ward – 626-305-6279.

FLIGHT PROJECTS REPORTS

Cluster II, Geotail, Polar, SOHO, and Wind – A. Chang
There was no presentation given at this month's JURAP. C. Abramo remarked via the Meet-Me Line that the Custer II bi-yearly maneuver planned for June has been changed to May; the view-periods for Weeks 19 – 24 (3 May through 13 June 2004) are incorrect; and the supports must be renegotiated. She also indicated that the MSPA would not be used after the maneuver.

Hayabusa/MUSES-C – M. Ryne
There was no presentation given at this month's JURAP.

WMAP, ACE, IMAGE, and Genesis – S. Waldherr
WMAP is discussing losing the High Power S-Band and moving to the 34BWG1. WMAP is being re-programmed to become a non-MCD-3 type mission. ACE and IMAGE did not have a report.

Mars Global Surveyor – E. Brower / P. Poon
There was no presentation given at this month's JURAP, though presentation material is included with the Minutes.

Spitzer Space Telescope – C. Scott
The spacecraft continues to function normally. They successfully completed dust cover eject and aperture door open; transitioned to the High Gain Antenna and performed antenna boresight cal; focus adjustment was completed in only 2 moves; they cooled the telescope to the required 5.5 K degrees; and obtained 1st light for PCRS and all instruments; they completed the Mass Gauge Measurement (~5.6 year lifetime); and traversed a Solar Storm in nominal mode. All instruments checked out with only one minor issue with MIPS 70 micron array. Mr. Scott also discussed the newly discovered planet Sedna.

Mars Odyssey – B. Mase / P. Poon
There was no presentation given at this month's JURAP.

Mars Exploration Rover – B. Compton / B. Toyoshima
There was no presentation given at this month's JURAP, though presentation material is included with the Minutes.

INTEGRAL/Mars Express/Rosetta – D. Holmes
There was no presentation given at this month's JURAP.

Ulysses – B. Brymer
Nominal spacecraft operations continue. Jupiter Distant Encounter was completed successfully. On March 8th nominal spacecraft operations resumed, as Jupiter Distant Encounter activity was terminated with the EPAC/GAS and URAP Converter 2 instrument turn-off and data storage unit 2 turn-on. The support from both the Scheduling Group and DSN has been excellent throughout this period. Both NASA and ESA have approved the Ulysses extension for continuation until March 2008. DSN requirements were reduced by half, from September 2004 until November 2006, requesting a change in ULP to reflect seven (7) five-hour passes per week, versus present projection of four (4) ten-hour passes one week and three (3) ten-hour passes the next. Rationale is the flexibility of scheduling and greater balance of spacecraft operations.

Stardust - R. Ryan
The Stardust spacecraft is healthy; presently 2.2 AU from Earth with a 00:36:450 RTLT, 2.2 AU from the Sun, and it is back in cruise mode. The DSMS support has been good this past period and excellent support for the Deep Space Maneuver #4 completed on February 2, 2004.

Upcoming events include Aphelilon of 2.68 AU from the Sun, 7 weeks centered on October 2004, with limited communication because of power restrictions. TCM 16 moved to April 6, 2005 from October 1, 2004

Excellent shots, movies and information are available at the Stardust Website:
http://stardust.jpl.nasa.gov

Chandra - K. Gage
There was no presentation given at this month's JURAP.

Voyager – J. Hall
Mission Status for Voyager 1: Heliocentric Distance – 91.3 AU, RTLT – 25h15m58s; Spacecraft Remains Healthy; Major Activity: ASCAL and PMPCAL, and MAGROL.

Voyager 2: Heliocentric Distance – 72.8 AU, RTLT – 20h16m58s; Spacecraft Remains Healthy; Major Activity: ASCAL MAGROL, FULMRO, Playback and PMPCAL.

DSN overall support has been good. Numerous outages on Voyager 1 were due to weather at DSS-65; and Maser, Sub-reflector, and weather at DSS-25 and DSS-15. Outages on Voyager 2 were due to high winds at DSS-49, and rain at DSS-45.

The total Actual Support Time was 900.5 hours for Voyager 1, and 659.8 hours for Voyager 2. DSS-49 support accounted for 67.1 hours of the total. DSS-49 support ended February 22 (DOY 053).

Cassini – D. Doody

Approach Science Observations have begun. The Tour mission phase begins on May 15th with Sequence S01. TCM 20 – May 27; Phoebe Flyby – June 11; TCM 21 – June 16; Placeholder for

TCM 22 if needed – June 21; Saturn Orbit Insertion – July 1 (in sequence S03) Saturn Orbit Insertion (SOI) is planned for July 1st, 2004. Advanced science planning for Tour continues, as well as for Huygens Playback data delivery.

Daily Operations continue to go well. DSN and NOPE support has been excellent. They are exercising continuing FSPA Array supports as they can be scheduled. Cassini is working various minor S/C instrument anomalies and FSW installations. Mitigation of NOCC-RT display system demise is still to be determined.

Joint Users Resource Allocation Planning (JURAP)

Jet Propulsion Laboratory
California Institute of Technology

Action Item Status
From 10 February 2004 RARB
(Resource Allocation Review Board)

March 18, 2004

David G. Morris

Action Item Summary

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

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

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

Action Item Summary

AI#	*Year*	*Month(s)*	*System*	*Responsible*	*Due Date*	*Status*
02a	**2004-2005**	**September-February**	**Genesis**	**S. Waldherr E. Hirst**	**04/15/2004**	**Open**

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

RESPONSE:

Action Item Summary

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

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

RESPONSE:

Action Item Summary

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

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

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

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

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

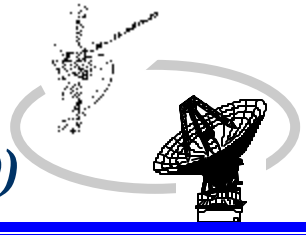
RESPONSE: (02/10/2004) Both the GBRA RA500 and the EVN need to occur before June 10, but not sooner than May 20. The RA500 activity will remain in Week 21 and agree to reduce support duration from 24 hours to 12 hours.

JOINT USERS RESOURCE ALLOCATION PLANNING COMMITTEE

Resource Analysis Team

March 18, 2004

Napoleon Lacey



– Ongoing / Approved Projects –

Project	Acronym	Launch or Start	EOPM	EOEM
DSN Antenna Calibration	DSN	--	--	--
DSS Maintenance	DSS	--	--	--
European VLBI Network	EVN	--	--	--
Ground Based Radio Astronomy	GBRA	--	--	--
Reference Frame Calibration	DSN	--	--	--
Space Geodesy	SGP	--	--	--
Voyager 2	VGR2	08/20/77	10/15/89	09/30/07
Voyager 1	VGR1	09/05/77	12/31/80	09/30/07
Goldstone Solar System Radar	GSSR	04/01/85	--	--
Ulysses	ULYS	10/06/90	09/11/95	03/31/08
Geotail	GTL	07/24/92	07/24/95	12/31/08
Wind	WIND	11/01/94	11/01/97	12/31/08
SOHO	SOHO	12/02/95	05/02/98	12/31/08
Polar	POLR	02/22/96	08/23/97	09/30/05
Gravity Probe B (non Spacecraft support)	GPB	06/01/96	05/30/05	TBD
Mars Global Surveyor	MGS	11/07/96	02/01/01	01/03/08
Advance Composition Explorer	ACE	08/25/97	02/01/01	09/30/07

– Ongoing / Approved Projects (continued) –

Project	Acronym	Launch or Start	EOPM	EOEM
Cassini	CAS	10/15/97	06/30/08	06/30/10
Nozomi (Planet-B)	NOZO	07/03/98	12/15/03	- - -
Stardust	SDU	02/07/99	01/14/06	- - -
Chandra X-ray Observatory	CHDR	07/23/99	07/24/09	07/24/14
Imager for Magnetopause-to-Aurora Global Exploration	IMAG	03/25/00	05/30/02	09/30/07
Cluster 2 - S/C #2 (Samba)	CLU2	07/16/00	02/15/03	02/28/06
Cluster 2 - S/C #3 (Rumba)	CLU3	07/16/00	02/15/03	02/28/06
Cluster 2 - S/C #1 (Salsa)	CLU1	08/09/00	02/15/03	02/28/06
Cluster 2 - S/C #4 (Tango)	CLU4	08/09/00	02/15/03	02/28/06
2001 Mars Odyssey	M01O	04/07/01	08/24/04	05/29/08
Wilkinson Microwave Anisotropy Probe	WMAP	06/30/01	10/01/03	10/01/07
Genesis	GNS	08/08/01	09/08/04	- - -
Advanced Tracking and Observational Techniques (ATOT)	MEGA	02/01/02	12/31/08	- - -
International Gamma Ray Astrophysics Lab	INTG	10/17/02	12/18/04	12/31/08
Hayabusa (MUSES - C)	MUSC	05/09/03	06/05/07	- - -
Mars Express Orbiter	MEX	06/02/03	02/11/06	08/03/08
Spirit (Mars Exploration Rover - A)	MER2	06/10/03	04/06/04	09/30/04

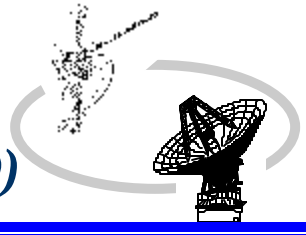
– Ongoing / Approved Projects (continued) –

Project	Acronym	Launch or Start	EOPM	EOEM
Opportunity (Mars Exploration Rover - B)	MER1	07/07/03	04/27/04	09/30/04
Spitzer Space Telescope (SIRTF)	STF	08/25/03	02/25/06	08/23/08
Rosetta	ROSE	02/26/04	12/31/15	- - -
Messenger	MSGR	05/11/04	04/06/10	- - -
Lunar - A	LUNA	08/27/04	04/11/05	- - -
Deep Impact	DIF	12/30/04	08/05/05	- - -
Space Technology 5	ST5	06/27/05	02/27/05	TBD
Mars Reconnaissance Orbiter	MRO	08/10/05	12/31/10	12/31/15
Stereo Ahead	STA	02/11/06	05/16/08	- - -
Stereo Behind	STB	02/11/06	05/16/08	- - -
New Horizons	NHPC	01/10/06	04/17/16	TBD
Dawn	DAWN	06/17/06	07/26/15	TBD

– Advanced / Planning Projects –

Project	Acronym	Launch or Start	EOPM	EOEM
Venus Express	VEX	10/26/05	08/19/07	TBD
SELENE	SELE	08/01/06	8/221/06	TBD
Phoenix Scout	PHX	08/09/07	11/04/08	TBD
Kepler	KEPL	10/01/07	09/26/11	TBD
Mars Telecommunications Orbiter 2009	M09T	09/07/09	09/07/16	09/07/20
Mars Science Laboratory 2009	M09L	10/25/09	03/04/12	TBD
Space Interferometry Mission	SIM	02/14/10	06/30/20	TBD
James Webb Space Telescope	JWST	08/01/11	07/31/16	TBD
Mars Placeholder 2011	M11S	10/30/11	09/10/14	TBD
Mars Placeholder 2013	M13O	11/28/13	08/21/16	TBD

Resource Allocation Planning & Scheduling Office (RAPSO)



Station	Subnet	Delivery Date	S-Band Down	S-Band Up	X-Band Down	X-Band Up	20 kW X-Band	Ka-Band Down	Ka-Band Up	NSP
DSS-14	70M	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	TBD	N/A	XXXX
DSS-15	34HEF	XXXX	XXXX	N/A	XXXX	XXXX	XXXX	TBD	N/A	XXXX
DSS-16	26M	XXXX	XXXX	XXXX	N/A	N/A	N/A	N/A	N/A	N/A
DSS-24	34BWG1	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	10/23/06	N/A	XXXX
DSS-25	34BWG2	XXXX	N/A	N/A	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
DSS-26	34BWG2	XXXX	N/A	N/A	XXXX	XXXX	XXXX	XXXX	N/A	XXXX
DSS-27	34HSB	XXXX	XXXX	XXXX	N/A	N/A	N/A	N/A	N/A	01/31/05
DSS-34	34BWG1	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	06/27/05	N/A	XXXX
DSS-43	70M	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	TBD	N/A	XXXX
DSS-45	34HEF	XXXX	XXXX	N/A	XXXX	XXXX	XXXX	TBD	N/A	XXXX
DSS-46	26M	XXXX	XXXX	XXXX	N/A	N/A	N/A	N/A	N/A	N/A
DSS-54	34BWG1	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	08/01/07	N/A	XXXX
DSS-55	34BWG2	11/01/03	N/A	N/A	11/01/03	11/01/03	11/01/03	11/01/03	N/A	11/01/03
DSS-63	70M	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	TBD	N/A	XXXX
DSS-65	34HEF	XXXX	XXXX	N/A	XXXX	XXXX	XXXX	TBD	N/A	XXXX
DSS-66	26M	XXXX	XXXX	XXXX	N/A	N/A	N/A	N/A	N/A	N/A

XXXX = Capability Currently Exists
N/A = Capability Not Planned

01/07/04

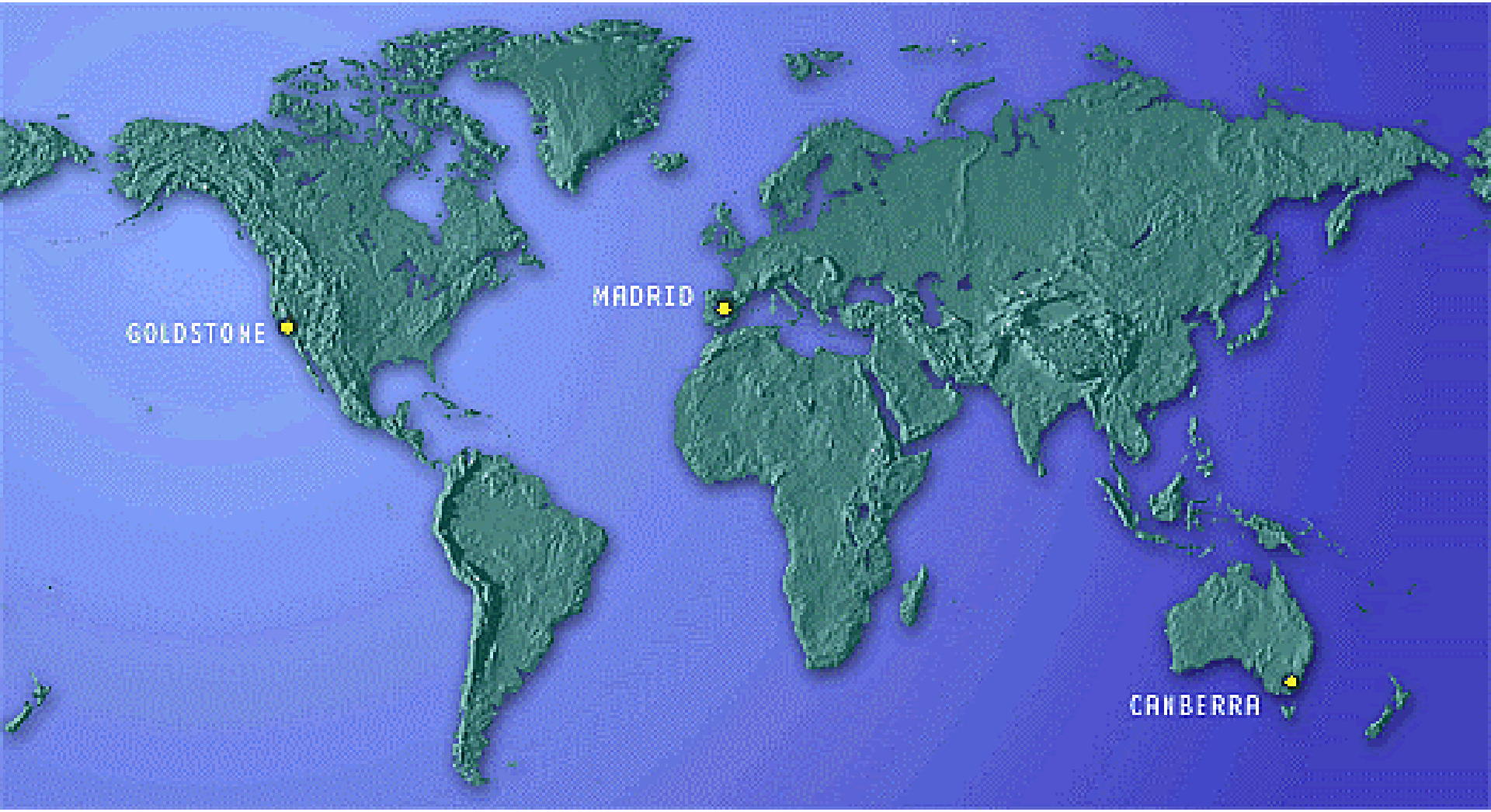
- **RESOURCE NEGOTIATION STATUS**
  - 2004 WEEKS 17 – 20 (THRU 05/16/2004) WERE RELEASED TO DSN SCHEDULING ON 02/27/2004.
  - 2004 WEEKS 21 - 24 (THRU 06/13/2004) ARE DUE TO BE RELEASED TO DSN SCHEDULING ON 03/26/2004.
  - 2004 WEEKS 25 - 39 (THRU 09/26/2004) ARE AWAITING CONFLICT RESOLUTION
  - 2004 WEEKS 40 - 41 (THRU 10/10/2004) WILL BE NEGOTIATED ON FRIDAY 03/26/2004.
- The Mid-range Scheduling process has negotiated schedules 28 weeks ahead of real-time. Currently, there are 10 weeks of conflict-free schedules. Conflict Resolutions are required for Eighteen (18) weeks

  Weeks 21, 22, 23, 24, 25, 26, 27, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39.

◆ ON-GOING ACTIVITIES

-- MADB/TIGRAS TESTING AND TRAINING
– DOWNTIME PLANNING
– GENESIS RECOVERY ORBIT
– LUNAR-A LOAD STUDY – MISSION REPLAN
– MESSENGER SPECIAL STUDY – POST 2004 REQUIREMENTS
– NEW HORIZONS – BEACON VS ONE 8-HOUR PASS/WEEK
– ROSETTA LOAD STUDY – POST 2004 REQUIREMENTS
– ST-5 SPECIAL STUDY – LAUNCH CHANGE (06/27/05)
– STEREO – NEW LAUNCH DATE (02/11/2006
– VENUS EXPRESS – RADIO SCIENCE SUPPORT

DSN Antenna Downtime Status and Forecast



http://rapweb.jpl.nasa.gov/planning

Antenna Downtime Status and Forecast

Changes to 2004 Downtime Schedule

- The DSS 15 Antenna Controller Replacement activity has bee cancelled. No new date has been identified. The cancellation was due to an extension of software testing. All project support previously moved from DSS-15 will be restored as necessary.

- There are no outstanding downtime requests for 2004. All previous requests have been negotiated and approved through the RARB, JURAP or Mid-Range Scheduling processes.

Antenna Downtime Status and Forecast

Changes to 2005 Downtime Schedule

- There are no outstanding downtime requests for 2005. All previous requests have been negotiated and approved through the RARB, JURAP or Mid-Range Scheduling processes.

Antenna Downtime Status and Forecast

Changes to 2006 Downtime Schedule

- There are no outstanding downtime requests for 2006. All previous requests have been negotiated and approved through the RARB, JURAP or Mid-Range Scheduling processes.

Antenna Downtime Status and Forecast

Changes to 2007 Downtime Schedule

- There are no outstanding downtime requests for 2007. All previous requests have been negotiated and approved through the RARB, JURAP or Mid-Range Scheduling processes.

Antenna Downtime Status And Forecast Schedule

DSN Antenna Downtime Report

Revised: March 17, 2004

2004							
Site	Description	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 43	Antenna Rebalance	05/29/2004 00:00	06/06/2004 23:59	9	22 - 23	150	158
DSS 14	Antenna Controller Replacement	07/07/2004 00:00	12/07/2004 23:59	154	28 - 50	189	342
DSS 14	Hydrostatic Bearing	07/07/2004 00:00	12/07/2004 23:59	154	28 - 50	189	342
DSS 45	Life Extension	08/09/2004 00:00	12/05/2004 23:59	119	33 - 49	222	340
DSS 14	NIB - USC Installation	09/20/2004 00:00	10/03/2004 23:59	14	39 - 40	264	277
DSS 45	NIB - USC Installation	11/22/2004 00:00	12/05/2004 23:59	14	48 - 49	327	340

2005							
Site	Description	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 27	NSP Implementation	01/03/2005 00:00	01/30/2005 23:59	28	01 - 04	003	030
DSS 27	NIB - USC Installation	01/10/2005 00:00	01/23/2005 23:59	14	02 - 03	010	023
DSS 63	USC Installation	01/17/2005 00:00	01/30/2005 23:59	14	03 - 04	017	030
DSS 26	USC Installation	01/24/2005 00:00	02/06/2005 23:59	14	04 - 05	024	037
DSS 65	Antenna Controller Replacement	01/31/2005 00:00	07/03/2005 23:59	154	05 - 26	031	184
DSS 65	NIB - USC Installation	01/31/2005 00:00	02/06/2005 23:59	7	05 - 05	031	037
DSS 65	Relocation	01/31/2005 00:00	07/03/2005 23:59	154	05 - 26	031	184
DSS 65	Life Extension	01/31/2005 00:00	07/03/2005 23:59	154	05 - 26	031	184
DSS 34	X/X-Ka Band	02/15/2005 00:00	04/10/2005 23:59	55	07 - 14	046	100
DSS 34	NIB - USC Installation	02/15/2005 00:00	03/06/2005 23:59	20	07 - 09	046	065
DSS 15	USC Installation	04/25/2005 00:00	05/08/2005 23:59	14	17 - 18	115	128
DSS 25	USC Installation	05/30/2005 00:00	06/12/2005 23:59	14	22 - 23	150	163
DSS 24	USC Installation	06/27/2005 00:00	07/03/2005 23:59	7	26 - 26	178	184
DSS 55	USC Installation	07/04/2005 00:00	07/10/2005 23:59	7	27 - 27	185	191
DSS 54	USC Installation	07/11/2005 00:00	07/16/2005 23:59	6	28 - 28	192	197
DSS 43	Antenna Controller Replacement	07/18/2005 00:00	01/01/2006 23:59	168	29 - 52	199	001
DSS 43	NIB - USC Installation	07/18/2005 00:00	07/31/2005 23:59	14	29 - 30	199	212
DSS 43	Hydrostatic Bearing	07/18/2005 00:00	01/01/2006 23:59	168	29 - 52	199	001

2006							
Site	Description	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 63	Antenna Controller Replacement	05/22/2006 00:00	09/03/2006 23:59	105	21 - 35	142	246
DSS 24	X/X-Ka Band	09/04/2006 00:00	10/22/2006 23:59	49	36 - 42	247	295
DSS 45	Antenna Controller Replacement	10/16/2006 00:00	12/17/2006 23:59	63	42 - 50	289	351

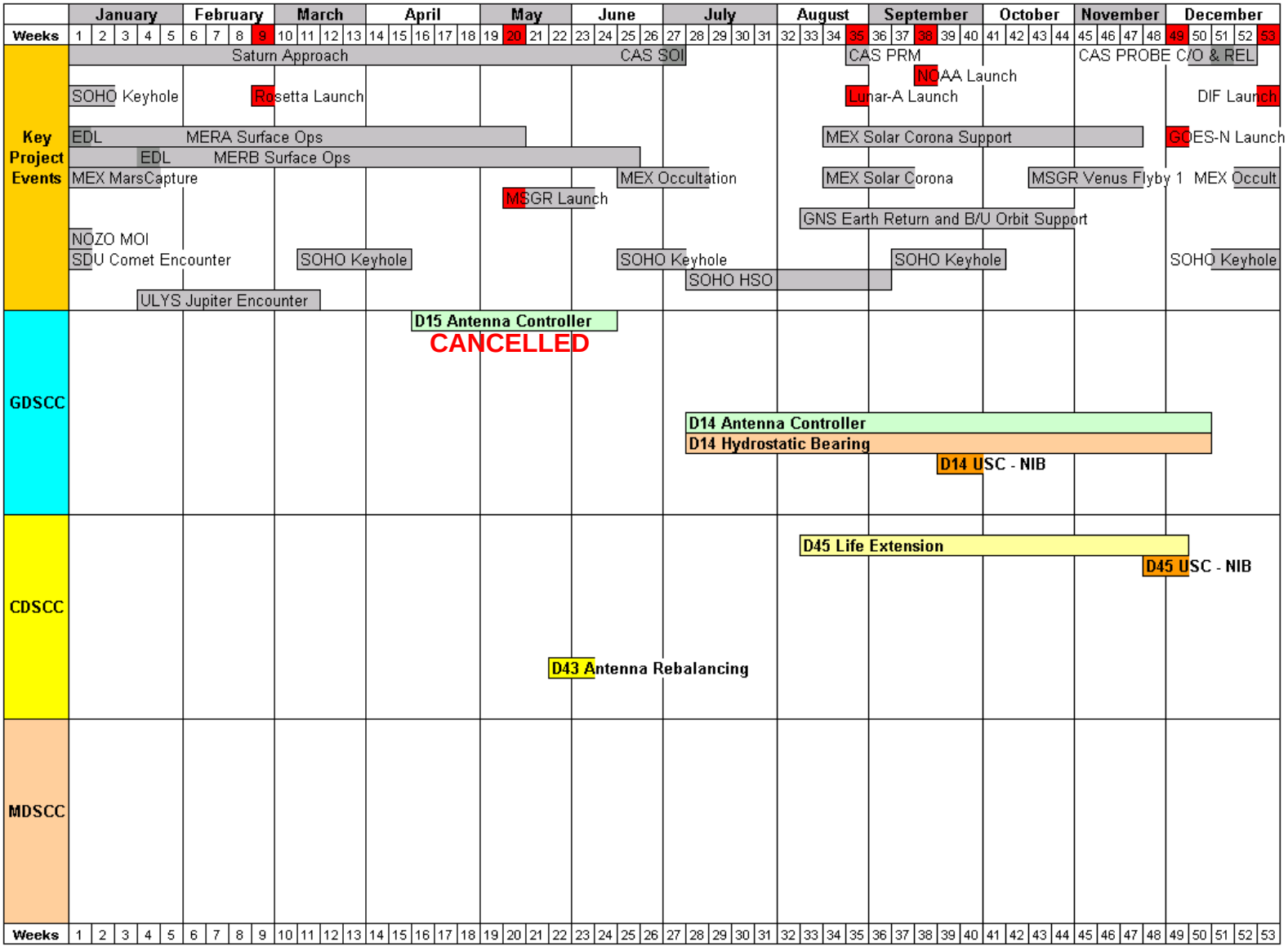
2007							
Site	Description	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 54	X/X-Ka Band	06/04/2007 00:00	07/29/2007 23:59	56	23 - 30	155	210

http://rapweb.jpl.nasa.gov

Although every efort is made to ensure the accuracy of this Downtime Planning report, changes can and do occur.

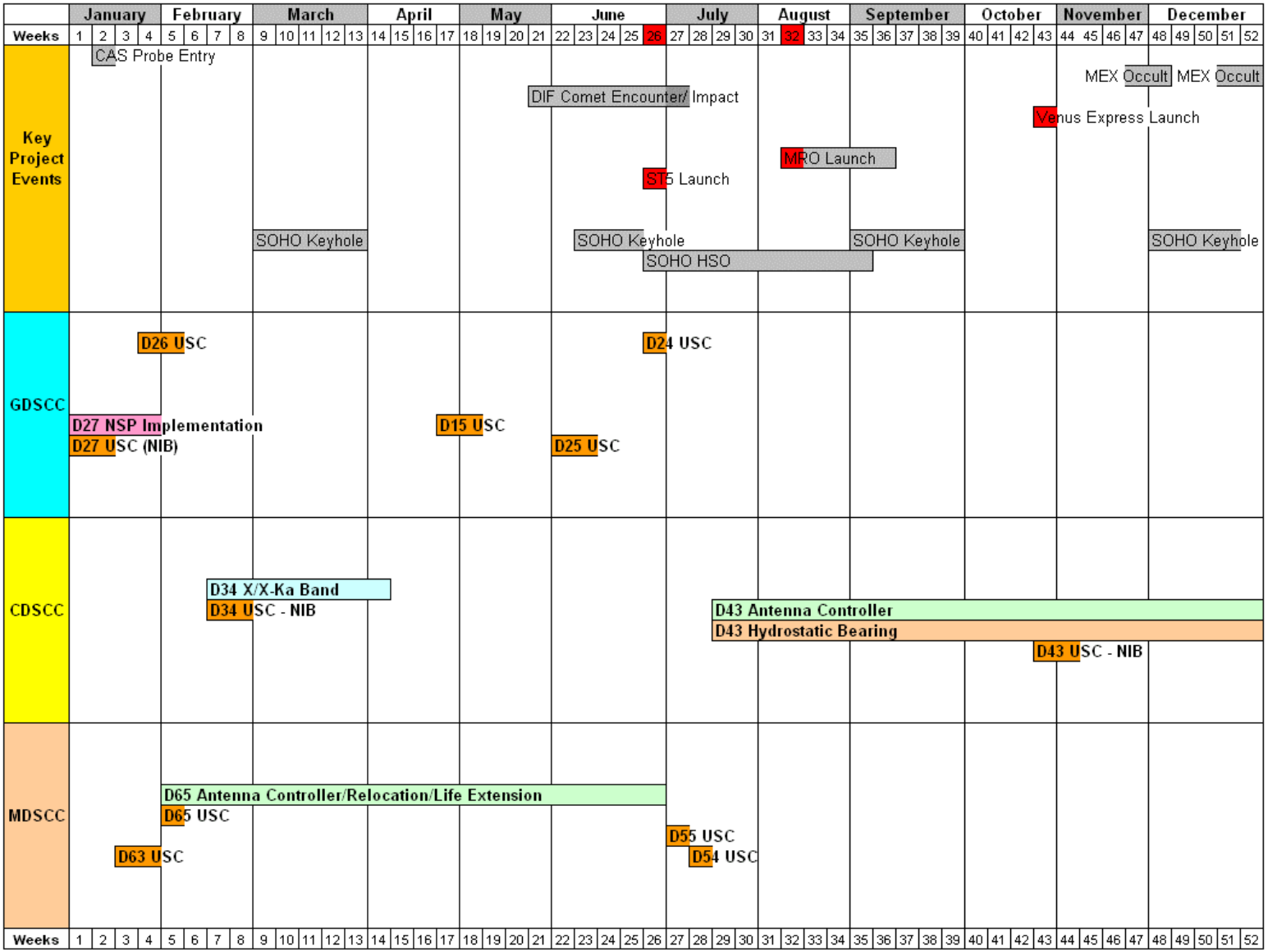
The DSN 7-Day Schedule takes precedence over this document.

Antenna Downtime Status And Forecast 2004



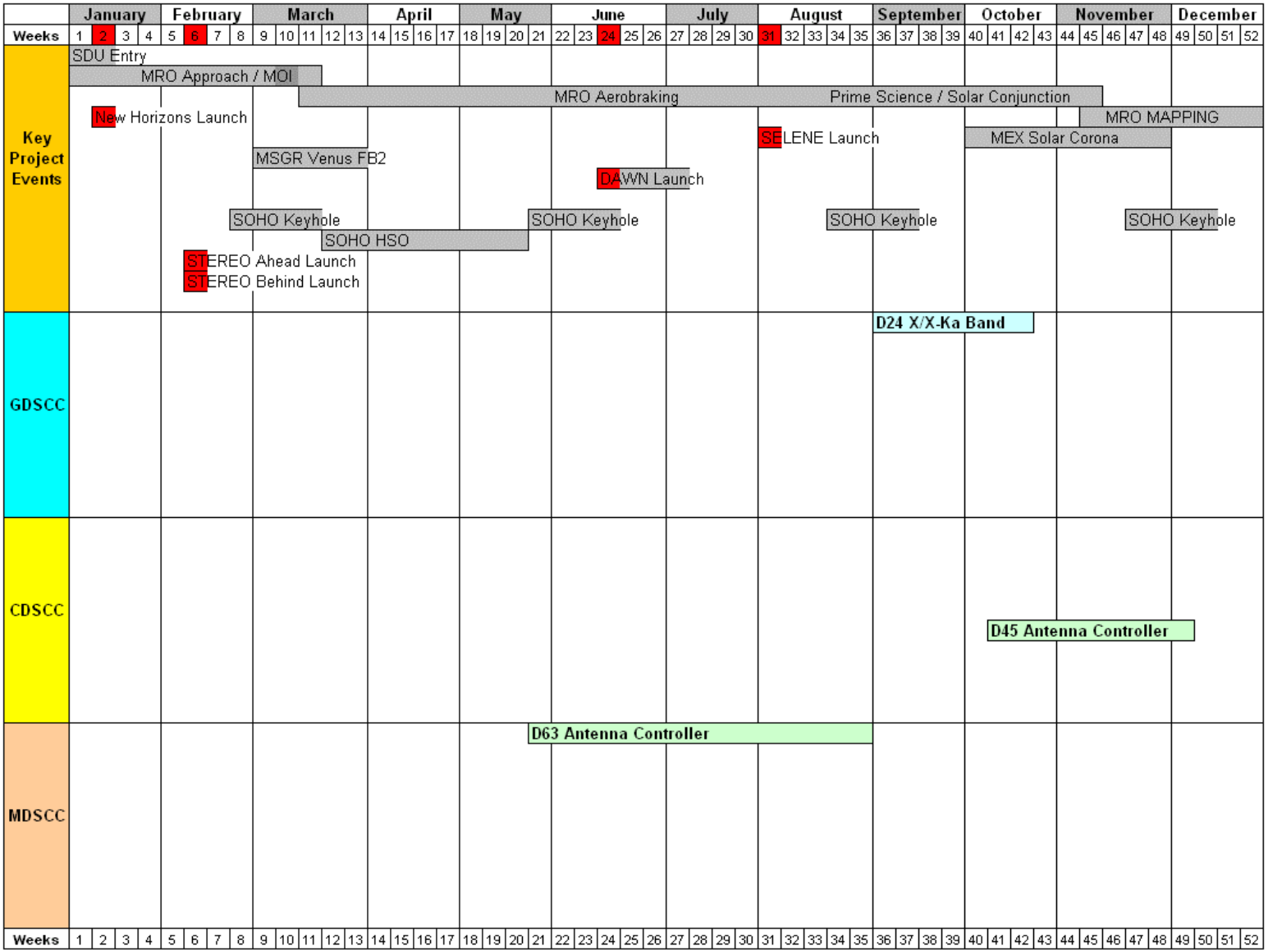
Revised: March 1, 2004

Antenna Downtime Status And Forecast 2005



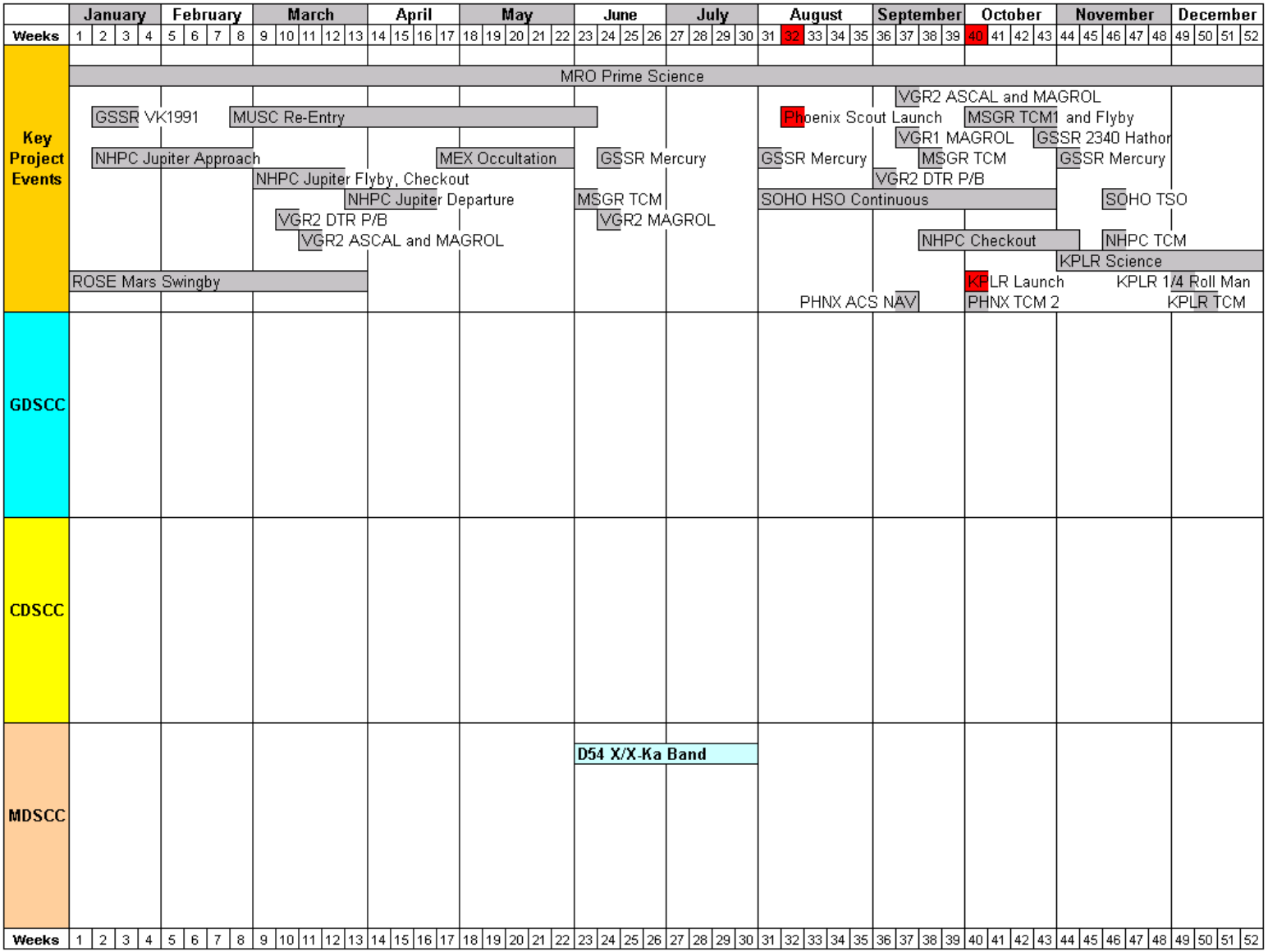
Revised: March 18, 2004

Antenna Downtime Status And Forecast 2006



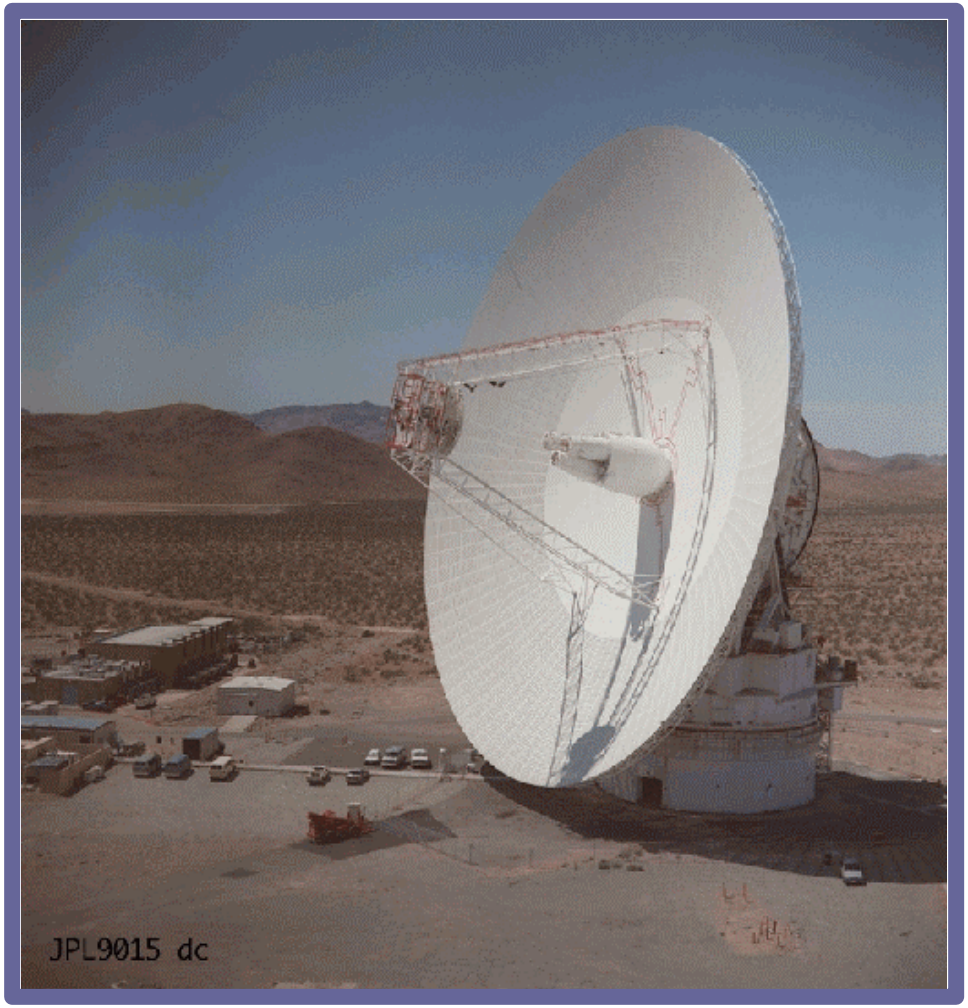
Revised: March 18, 2004

Antenna Downtime Status And Forecast 2007



Revised: February 18, 2004

Goldstone Solar System Radar



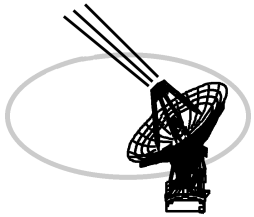
Martin A. Slade

March 18, 2004

NASA Jet Propulsion Laboratory

Joint Users Resource Allocation Planning Committee Meeting

Goldstone Solar System Radar (GSSR)



- **Observing proposals for two new near-Earth asteroids have been accepted. Details follow on next page. We are attempting to support these observations with gaps in the DSS-14 schedule, although a few requests have gone to some Flight Projects regarding their flexibility during the view periods for these objects.**
- **The Goldstone Orbital Debris Radar has been revived with new funding arriving in January 2004, for official restarting of these experiments. The letter from the Sponsor (Headquarters Code Q, Safety & Reliability.)indicates these data are important for Space Shuttle return to flight and also astronaut "spacewalks" at the ISS. Another radar experiment to assess the current state of the GODR hardware and software is scheduled for March 24, 2004.**

NEW NEAR-EARTH ASTEROID PROPOSED SUPPORT

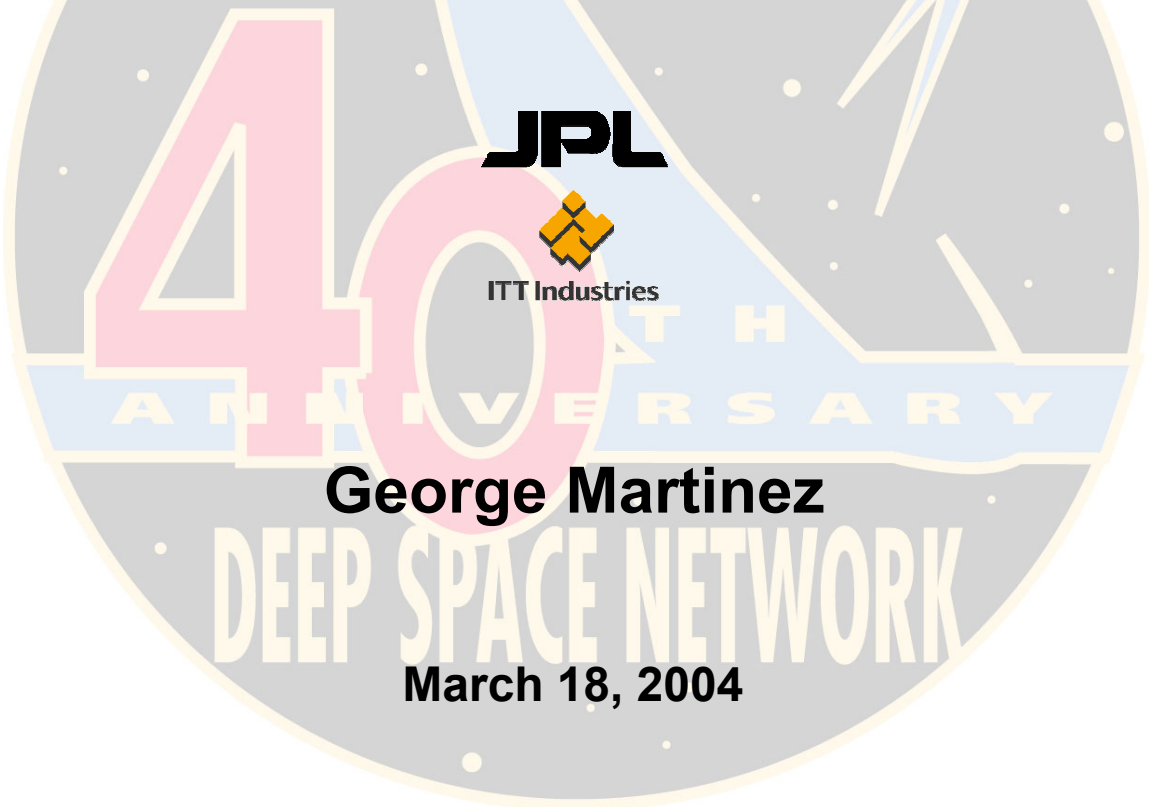
- **NEA 2003 YT1 approaches within 0.073 AU on April 30 when it should be a strong radar target. 2003 YT1 was discovered by the Catalina Sky Survey (Steve Larson, PI). This object has an absolute magnitude of 16.2, suggesting that it is within a factor of two of 1.8 km in diameter. As such, it is probably larger than most other near-Earth asteroids that we have observed recently at Goldstone. Otherwise we know nothing else about this object, although recent experience has shown that about 1/6 of objects this large are binary systems. Due to its size and and the proximity of its orbit to that of Earth, the Minor Planet Center has designated 2003 YT1 as a "Potentially Hazardous Asteroid (PHA)".**

- **Near-Earth asteroid 2001 US16 was rediscovered last week after not being seen for more than two years, an interval when it was effectively lost. We now know that this object will approach Earth within 0.029 AU (11 lunar distances) during the first half of May when it will be a strong radar target at Goldstone. From May 3-18, which spans the closest approach, we would like to request time at Goldstone on several days. We know very little about the physical properties of 2001 US16, but its absolute magnitude of 20.6 suggests that it is 200-300 meters in diameter. Previous observations have shown that about 1/6 of all near-Earth asteroids in this size range are binary systems, so one of our fundamental goals will be to determine if this object is a binary, and if so, to track the motion of both components long enough to determine the orbital parameters, mass, and density of the system. After 2004, the next opportunity for radar observations of this object occurs in 2034. Combined 2004 and 2034 radar ranging should be sufficient to detect the Yarkovsky acceleration for this object and thus constrain its mass and thermal conductivity. Due to its size and the proximity of its orbit to Earth's, 2001 US16 has also been designated as a "Potentially Hazardous Asteroid" by the IAU's Minor Planet Center.**

Interplanetary Network Directorate

Joint Users Resource Allocation and Planning Committee

Radio Astronomy & Special Activities



JPL

ITT Industries

George Martinez

March 18, 2004

Time and Earth Motion Precision Observations (TEMPO)

- Clock Sync
  - DOY 007
    - No problems were reported by either DSS-15 or DSS-65.
    - The data tapes were shipped to the JPL correlator for processing.
  - DOY 016
    - No problems were reported by either DSS-15 or DSS-65.
    - The data tapes were shipped to the JPL correlator for processing.
  - DOY 023
    - No problems were reported by either DSS-15 or DSS-65.
    - The data tapes were shipped to the JPL correlator for processing.

Time and Earth Motion Precision Observations (TEMPO) - Continued

- DOY 038
  - No problems were reported by either DSS-15 or DSS-65.
  - The data tapes were shipped to the JPL correlator for processing.
- DOY 047
  - No problems were reported by either DSS-15 or DSS-65.
  - The data tapes were shipped to the JPL correlator for processing.

- **Metrics**
  - 100% of data time utilized.

European VLBI Network (EVN)

- **E027B**
  - This was an L-band experiment that observed the nuclear region of ULIRG MKN 273 to obtain images that will allow to map, with unprecedented sensitivity, the compact regions and extended emission in its components.
  - A tape problem was reported by DSS-63 resulting in a 2 minute data loss.
- **Metrics**
  - 99.6% of data time utilized.

Global Session

- **GM052A**
  - This observation imaged both the jets and the counter jets of quasar B1524-136.
  - The very sensitive, high resolution observations that are required to image the source can only be achieved with global VLBI.
  - No problems were reported by DSS-63.
  - Data tapes sent to the JIVE correlator for processing.

- **Metrics**
  - 100% of data time utilized.

New Office

- The Radio Astronomy & Special Activities Group is now located at the 1400 S. Shamrock Facility.
- Mail stop is B1400-300
- New phone numbers are:
  - Pam Wolken 626-305-6275
  - George Martinez 626-305-6278
  - Carleen Ward 626-305-6279

Mars Global Surveyor
Flight Operations Status

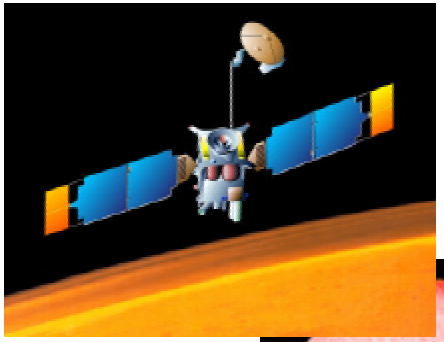
E.E. Brower

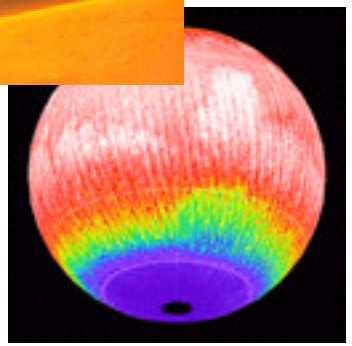
March 18, 2004

AGENDA

- Project Snapshot
- Recent Events/Accomplishments
- Mission Assessment
- Comments

Mars Global Surveyor





Salient Features

- ***Global mapping of Martian atmosphere, surface, magnetic field***
- ***Nadir pointed spacecraft***
- ***5 instruments (MOC imager, MOLA laser altimeter, TES - IR spectrometer, MAG magnetometer, RS radio science)***
- ***Launch date: November 1996***
- ***Mapping lifetime: One Mars year (687 days)***
- ***Provides relay capability for surface assets (Relay lifetime: 5 years)***

Science

- ***To characterize surface morphology at high spatial resolution to quantify surface characteristics and geological processes***
- ***To determine the composition and map the distribution of surface minerals, rocks, and ices; measure the surface thermophysical properties;***
- ***To determine globally the topography, geodetic figure, and gravitational field;***
- ***To establish the nature of the magnetic field and map the crustal remnant field;***
- ***To monitor global weather and thermal structure of the atmosphere;***
- ***To study surface-atmosphere interaction by monitoring surface features, polar caps, atmospheric dust, and condensate clouds over a seasonal cycle.***

Recent Accomplishments

P	Conducted UHF relay for both MER Spirit and Opportunity spacecraft EDLs. Performed Orbit Synchronization maneuver for overflights to within 2 second timing accuracy using single maneuvers, saving 75% of hydrazine allocation.
P	Secured CPROTOs of MER-A and B landing sites and environs
P	Performed UHF relays of MER A and B surface science and engineering data. Approximately 1 Gb of Rover data relayed through MGS to date at up to 75 Mb per pass using 128 kbs rate.
P	Performed MEX accommodations: cycled MR beacon off numerous times, eliminated ranging and conducted command uplinks from DSN at half power over week duration tests to reduce interference.
P	Investigated two incidents of reduced MR beacon power output following power cycling. Power reset restored full signal strength after most recent event (January 26). Beacon left on since then.
P	Managed spacecraft momentum buildup with active HGA non-com placement.

Codes:

P Per Plan
F Per Plan, but not previously forecasted
N Not previously planned
L1,2,3 Late -- 1st, 2nd, 3rd time slipped
C Canceled -- not needed

Recent Events

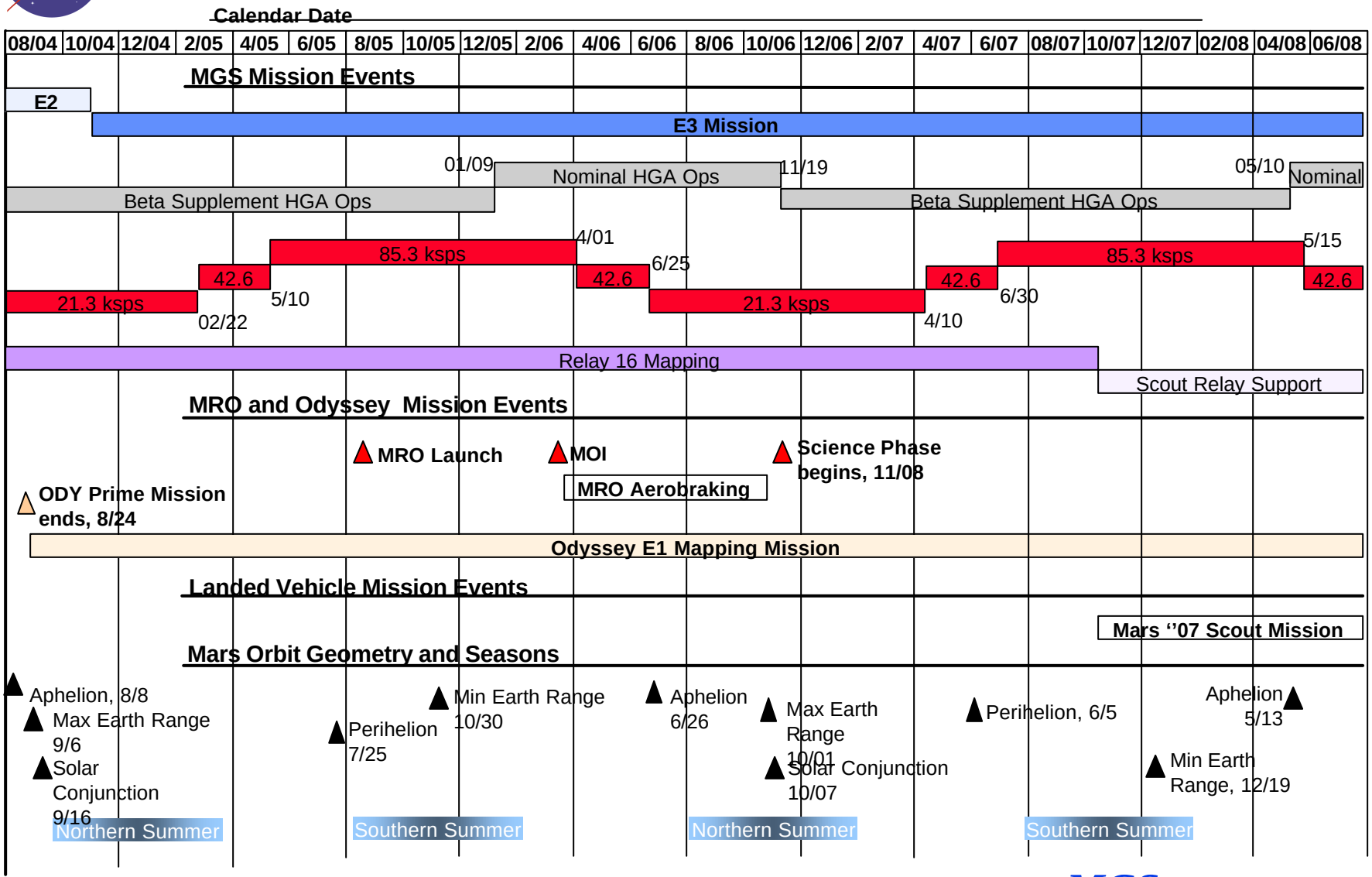
- Last 3 Months:

– **SA to 25 degrees**	**DEC 10**
– **CPROTO Demos**	**DEC. 13-14**
– **MR Turn On**	**DEC 30**
– **MGS MER-A EDL relay**	**JAN 4, 2004**
– **MGS OSM#4**	**JAN 4**
– **CPROTO MER-A**	**JAN 10**
– **MGS MER-B EDL relay**	**JAN 25**
– **Medium data rate**	**FEB 4**
– **CPROTO MER-B**	**FEB 6**

- Next 12 Months:

– **OSM 7?**	**tbd**
– **MGS MER ROVER relay**	**JAN-MAY**
– **E3 extension process**	**tbd**

Mars Global Surveyor
Proposed E3 Mission Timeline



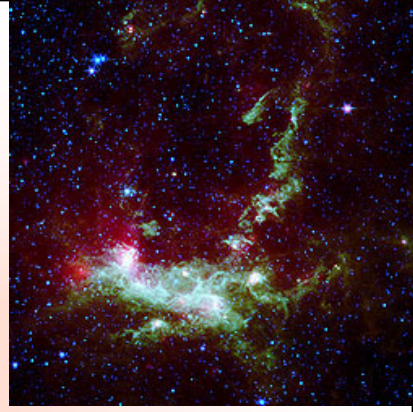
MGS

- **Spacecraft is in good health.**
- **Expect to fulfill most extended mission objectives (complete MER site coverage may become E2 mission objective).**
- **Expect to satisfy MER EDL Requirements.**
- **Chances of operation through 2008 are good.**

Comments

- **None**

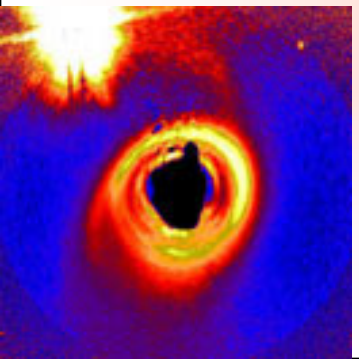
http://www.spitzer.caltech.edu/features/spotlightsindex.shtml



SPITZER STATUS

Joint Users Resource Allocation Planning Committee

March 18, 2004
Pasadena, CA



Charles Scott

Mission Operations Summary

– *SIRTF Observatory Continues to function normally*

- **Performed Dust Cover Eject and Aperture Door Open**
- **Successfully Transitioned to the High Gain Antenna & Performed Antenna Boresight Cal**
- **Focus adjustment completed successfully in 2 moves**
- **Successfully Cooled the Telescope to the required 5.5 K Degrees**
- **Successfully Obtained 1st Light for PCRS and all Instruments**
- **Successfully Completed the Mass Gauge Measurement (~5.6 Year lifetime)**
- **All Instruments checked out with only minor issue with MIPS 70 micron array**
- **Successfully Traversed Solar Storm in Nominal Mode**

Mission Operations Summary

- *Observatory has recovered from five Safe mode and four Standby mode since launch. Nominal recovery by MOS teams occurred. Causes are understood and proper corrective actions have been exercised (Recovery in as short as 24 hours)*
- *Successful Completion IOC @ L+63 days*
- *Successfully Completed SV @ L+92 days*
- Press Conference – 12/18/03 Renamed to Spitzer
- *Presently in Nominal Operations*
- *S/C and Instruments are performing above specification*

DSN METRICS

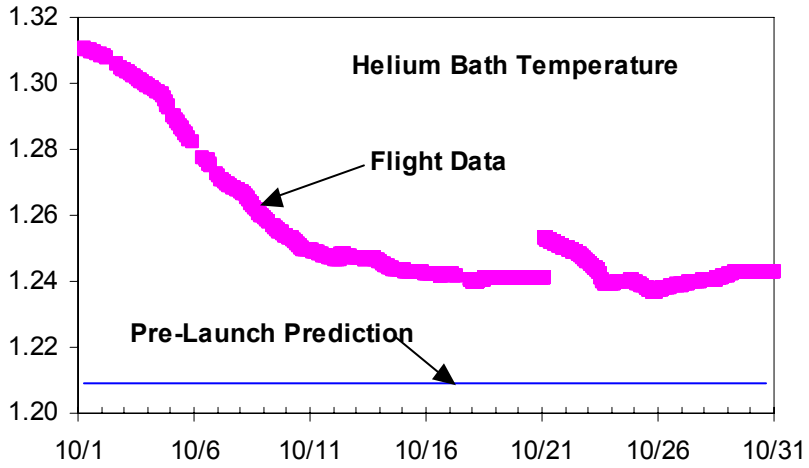
DEEP SPACE NETWORK TIME USED (HOURS):

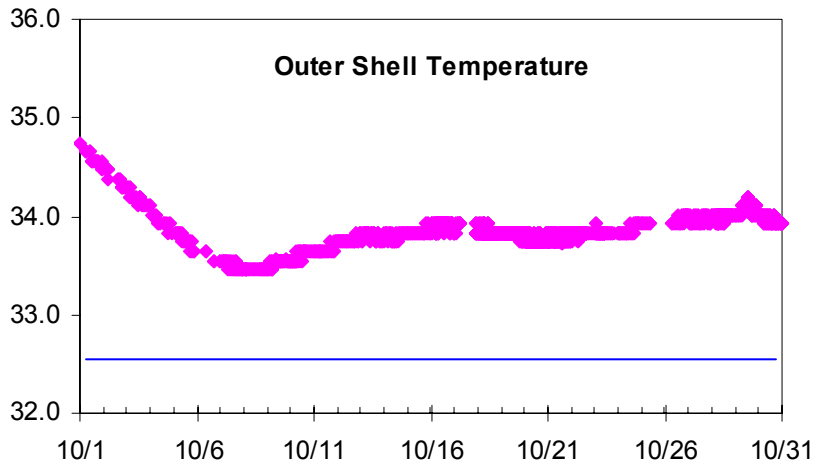
	34m			34m Total	70M			70M Total	Grand Total	Total hrs
WEEK	CDSCC	GDSCC	MDSCC		CDSCC	GDSCC	MDSCC		3 complexes	No overlap
5	1:00:00		1:15:00	2:15:00				0:00:00	2:15:00	2:15:00
6	8:31:00	14:55:00	2:15:00	25:41:00				0:00:00	25:41:00	25:41:00
7	7:00:00	3:00:00	4:00:00	14:00:00				0:00:00	14:00:00	14:00:00
8	7:00:00	5:00:00	2:00:00	14:00:00				0:00:00	14:00:00	14:00:00
9	7:00:00	4:00:00	2:00:00	13:00:00			1:00:00	1:00:00	14:00:00	14:00:00
Grand Total	30:31:00	26:55:00	11:30:00	68:56:00	0:00:00	0:00:00	1:00:00	1:00:00	69:56:00	69:56:00

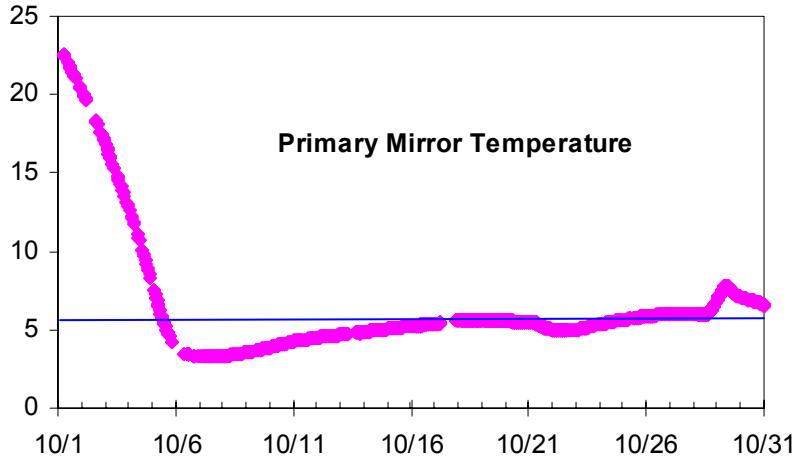
- **Total DSN Outages: 41 Minutes => 0.68 Hours = > 99.02% Data Captured by the DSN***

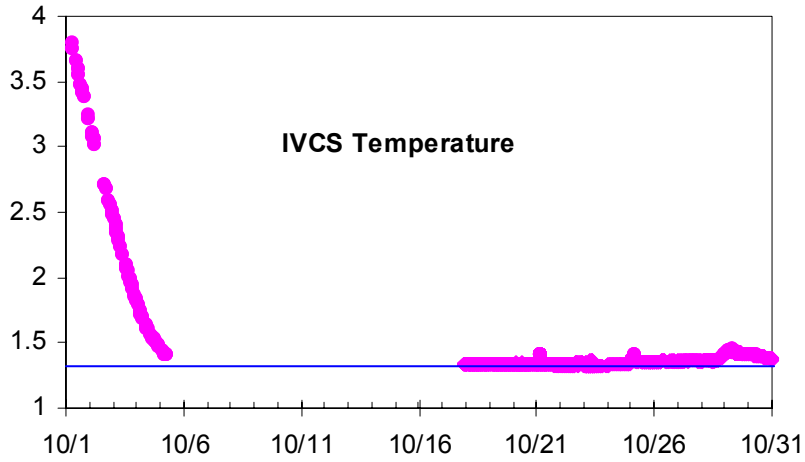
*This excludes outages due to weather, bad frequency predicts, and S/C not Earth pointed.

Observatory Temperature Performance

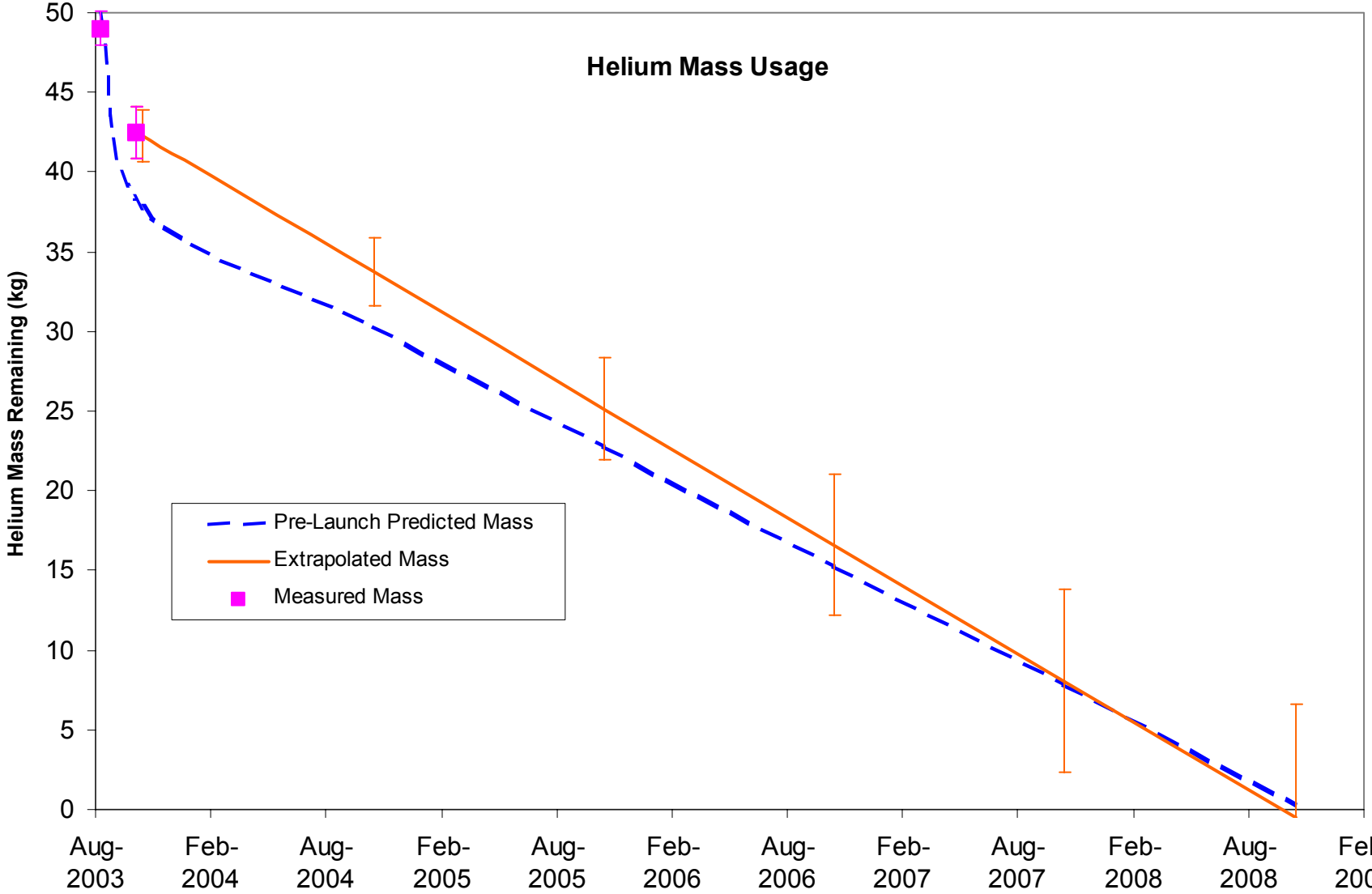








Helium Usage

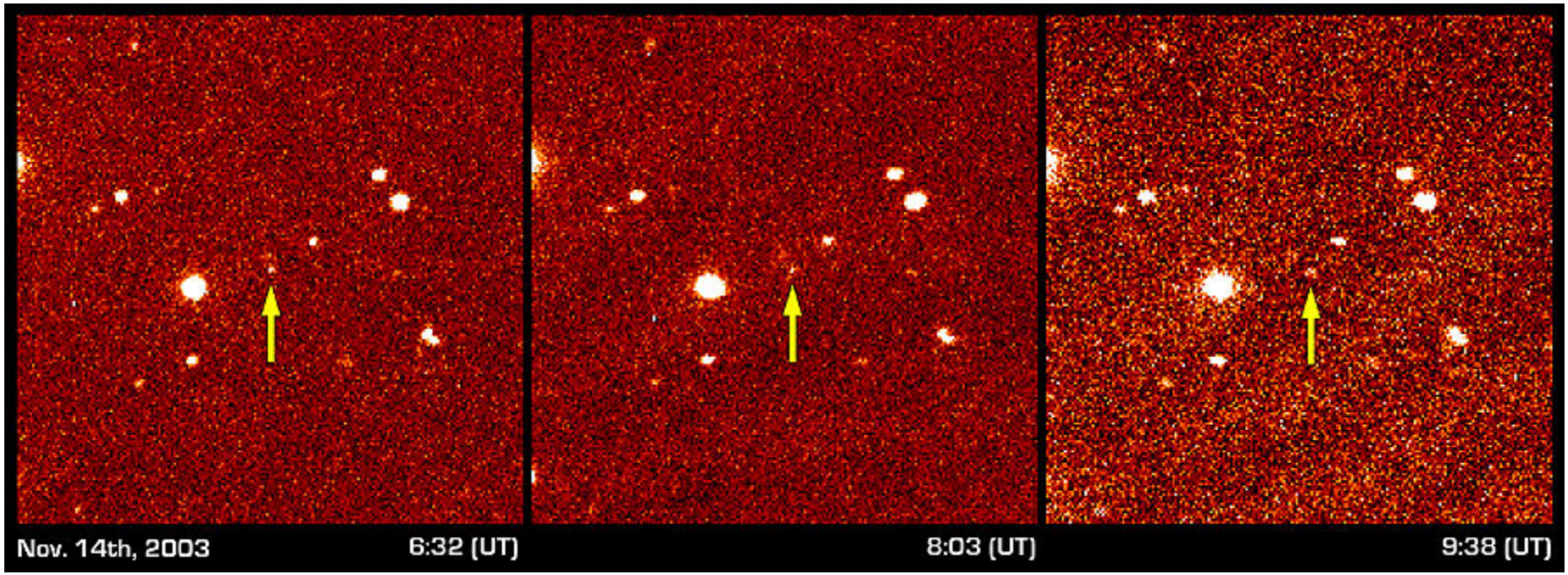


SEDNA OVERVIEW

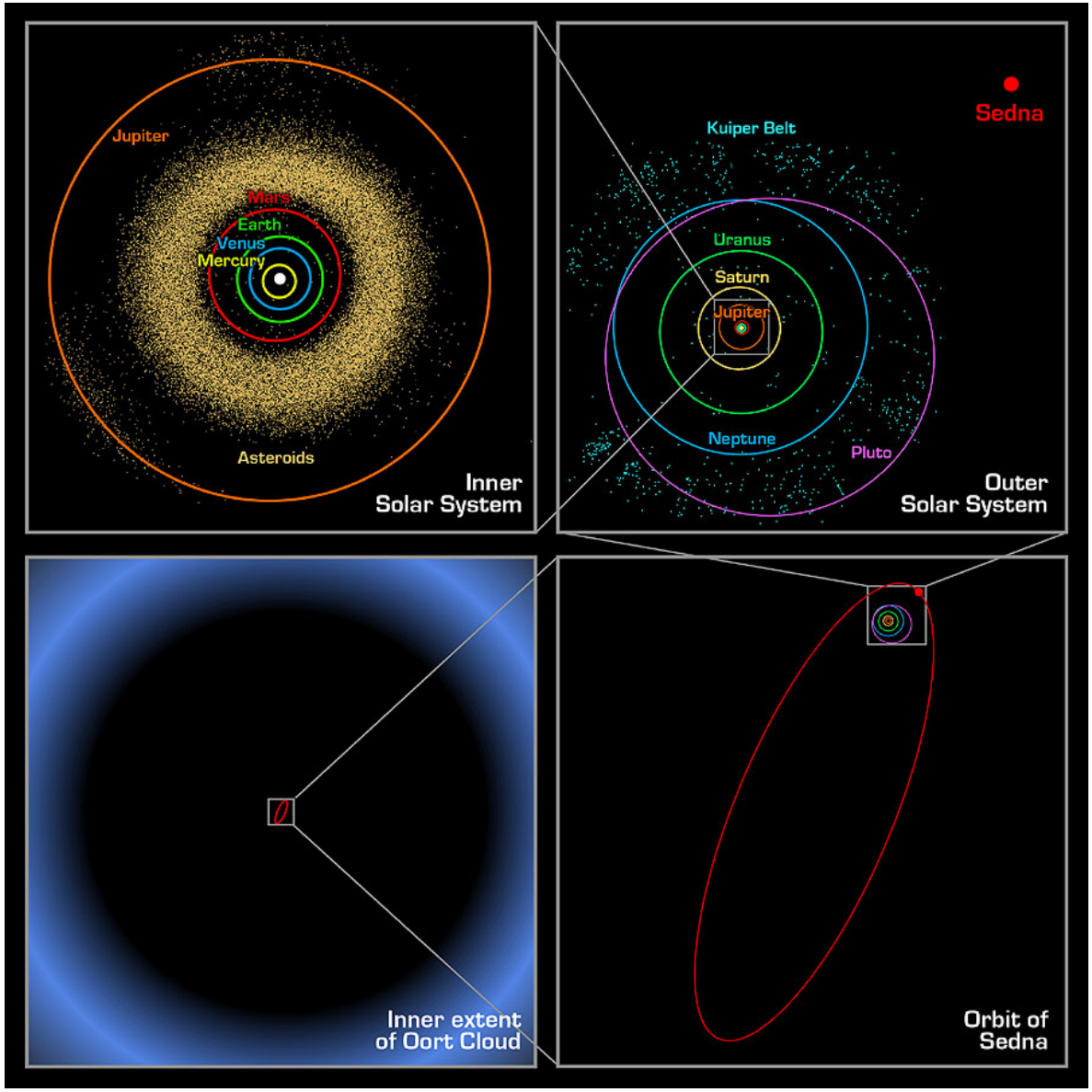
Michael Werner
Project Scientist

Spitzer Space Telescope
Pasadena, CA

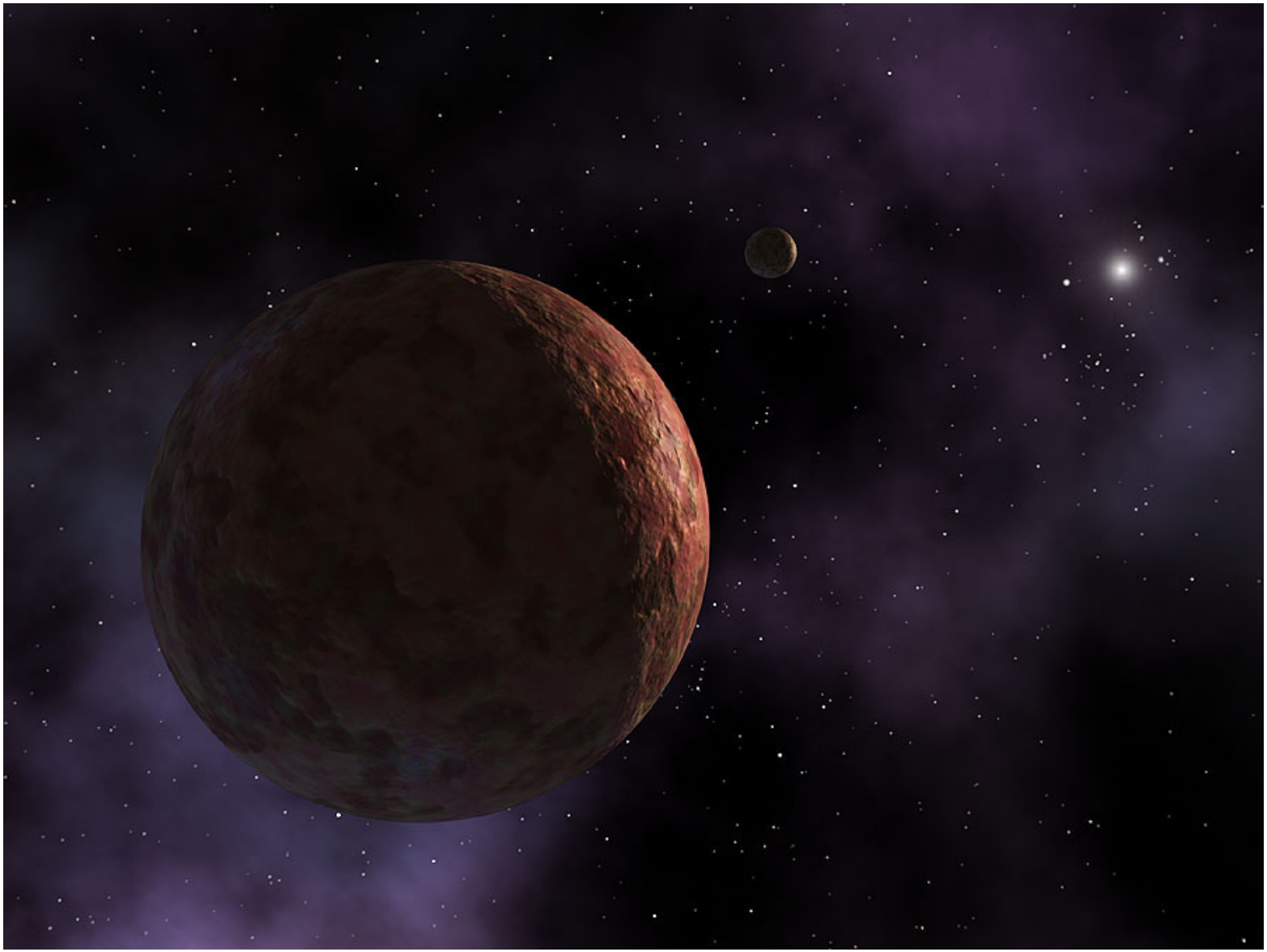
SEDNA Discovery



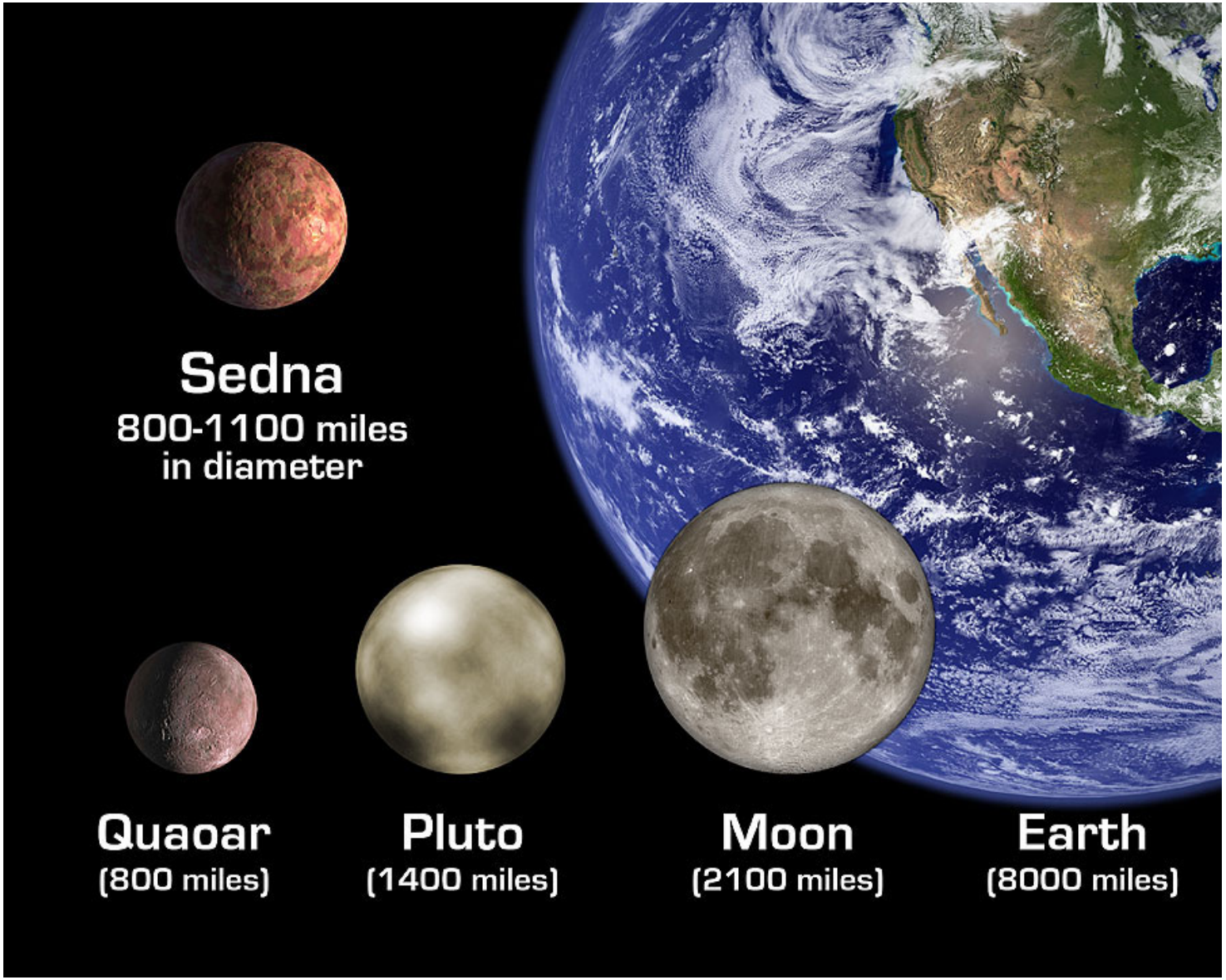
SEDNA Orbit


Jupiter
Mars
Earth
Venus
Mercury
Asteroids
Inner
Solar System
Sedna
Kuiper Belt
Uranus
Saturn
Jupiter
Neptune
Pluto
Outer
Solar System
Inner extent
of Oort Cloud
Orbit of
Sedna

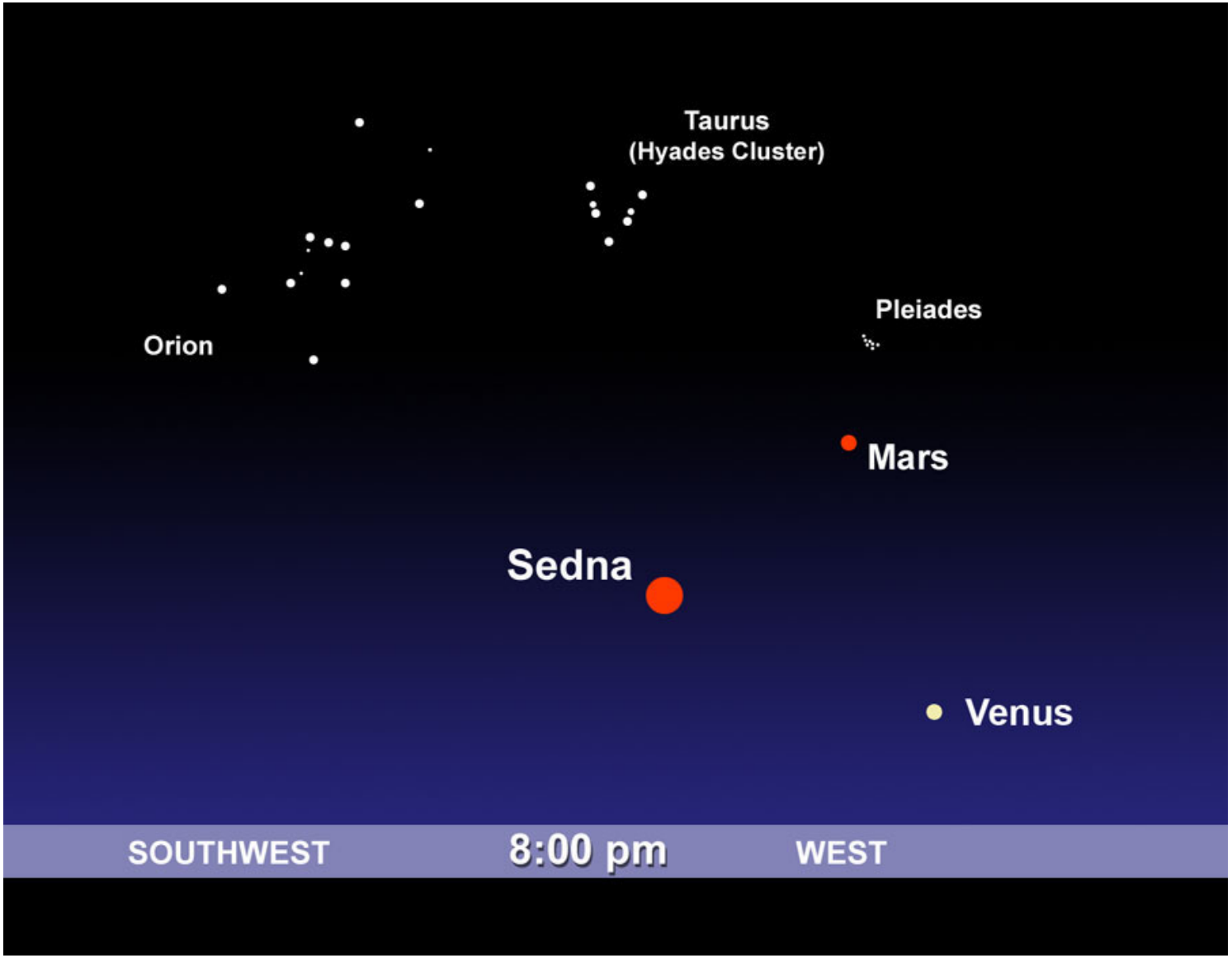
SEDNA and the Sun



SEDNA and Friends



Where's SEDNA Now?



Mars Exploration Program (MER)
Report to the JURAP

March 18, 2004

Brad Compton &
Ben Toyoshima

Spirit

- Climbing up to the rim of the Bonneville crater.
- Looked inside crater 3/15/04. No compelling reasons for entering crater were seen
- Not going into crater, will take some samples around the crater rim and move on to the Eastern Hills within a few SOLs
- Spirit is healthy and almost certainly will be far beyond 90 SOLs (3/31/04)
- OWLT: ~15min

Opportunity

Mars Exploration Rover

- Press Conference at HQ 3/2/04 to report there was a lot of water at Meridiani
- Will be driving out of crater we landed in within a week (~SOL60)
- Opportunity will also outlive its 90 SOL prime mission (4/25/04)

Mission Operations

- Extended Mission Operations Design Team
  - Planning Extended Mission until September ‘04
    - Cut staffing in half
    - Everyone but Flight & ACE going back to Earth time
    - 2-SOL sequences
- Flight Software Upload
  - Spirit: starts March 26, 2004
  - Opportunity: starts March 28, 2004
- Both Rovers to “Head for the Hills”
- DSN Operations
  - Network has been very supportive in light of our highly interactive operational practices.

ulysses

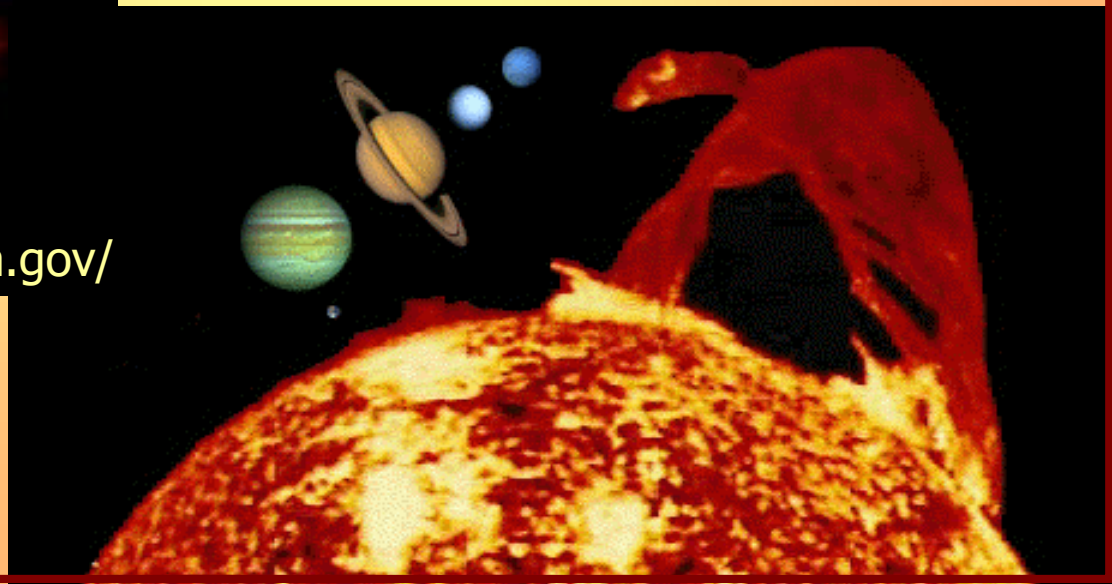
JOINT USERS RESOURCE ALLOCATION PLANNING COMMITTEE

http://ulysses.jpl.nasa.gov/

B. Brymer

March 18, 2004

NASA Jet Propulsion Laboratory



ULYSSES

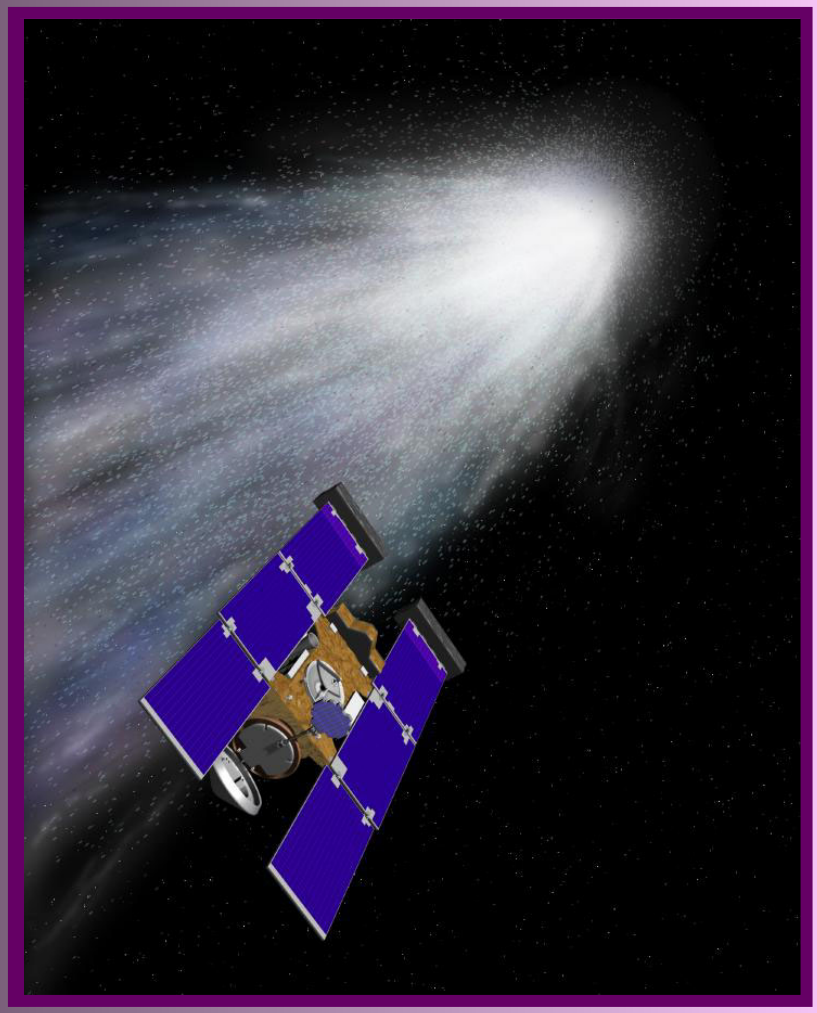
JOINT USERS RESOURCE ALLOCATION PLANNING COMMITTEE

- JUPITER DISTANT ENCOUNTER COMPLETED SUCCESSFULLY
- THE SPACECRAFT SUPPORTED ALL INSTRUMENTS WHILE NAVIGATING THE PLANET'S WAKE
- THE GAMA RAY BURST EXPERIMENT (HUS) HAD ANAMALOUS RESULTS WHILE OPERATING WITHOUT ACCOMPANYING HEATER AND THE INSTRUMENT ANOMALY IS PRESENTLY UNDER INVESTIGATION (PROCEED TO INSTRUMENT TURN-OFF)
- ON MARCH 8TH NOMINAL SPACECRAFT OPERATIONS RESUMED AS JUPITER DISTANT ENCOUNTER ACTIVITY WAS TERMINATED WITH THE EPAC/GAS AND URAP CONVERTER 2 INSTRUMENT TURN-OFF AND DATA STORAGE UNIT 2 TURN-ON
- THE SUPPORT FROM BOTH THE SCHEDULING GROUP AND THE DSN HAS BEEN EXCELLENT THROUGHOUT THIS PERIOD

ULYSSES

JOINT USERS RESOURCE ALLOCATION PLANNING COMMITTEE

- SPACECRAFT EARTH-POINTING MANEUVERS ARE BEING PERFORMED WEEKLY.
- ULYSSES EXTENSION HAS BEEN APPROVED BY BOTH NASA AND ESA FOR CONTINUATION UNTIL MARCH 2008
- DSN REQUIREMENTS REDUCED BY HALF, SEPTEMBER 2004 UNTIL NOVEMBER 2006
- REQUEST CHANGE IN ULP FROM SEPTEMBER 2004 UNTIL NOVEMBER 2006 TO REFLECT SEVEN (7) FIVE-HOUR PASSES PER WEEK, VERSUS PRESENT PROJECTION OF FOUR (4) TEN-HOUR PASSES ONE WEEK AND THREE (3) TEN-HOUR PASSES THE NEXT.
  - RATIONALE IS FLEXIBILITY OF SCHEDULING AND GREATER BALANCE OF SPACECRAFT OPERATIONS



STARDUST

JOINT USERS
RESOURCE ALLOCATION
PLANNING COMMITTEE

R. E. Ryan
March 18, 2004

NASA Jet Propulsion Laboratory

http://stardust.jpl.nasa.gov

STATUS

SPACECRAFT IS HEALTHY (3/18/04)

PRESENTLY 2.2 AU from EARTH

00:36:40 RTLT

2.2 AU from SUN

BACK IN CRUISE MODE

TELEMETRY BIT RATE IS 504 bps (on HGA/34 METER)

DSMS SUPPORT HAS BEEN GOOD THIS PAST PERIOD

EXCELLENT SUPPORT FOR THE DSM

DSM-4

DEEP SPACE MANEUVER 4

TRAJECTORY CORRECTION MANEUVER 15

SUCCESSFULLY COMPELTED ON FEBUARY 3 AT 19:21:32 UT

ACTUAL MAGNITUDE WAS 5.09 m/sec (1.5mm/sec over)

DEMONSTRATION OF USING THE SMALL THRUSTERS TO MOVE TO THE MANEUVER ATTITUDE, AS FURTHER ACCURACY TESTING OF THE EARTH RETURN MANEUVER STRATEGY.

ALSO ABLE TO VERIFY THAT NO DAMAGE WAS SUSTAINED BY THE SOLAR ARRAY DURING THE COMET CLOSE APPROACH.

EXCELLENT SUPPORT BY DSMS and DSS 14

STARDUST

Report to JURAP

http://stardust.jpl.nasa.gov

(there are some good shots, movies and information)

UPCOMING EVENTS

APHELION OF 2.68 AU FROM THE SUN

7 WEEKS CENTERED ON OCTOBER 2004

LIMITED COMMUNICATION BECAUSE OF POWER RESTRICTIONS

(long period of 3 hour duration tracks)

CHANGE REQUEST

TCM 16 MOVED TO April 6, 2005, FROM October 1, 2004

(CRUISE COVERAGE FOR THE REMAINDER OF 2004)

AND

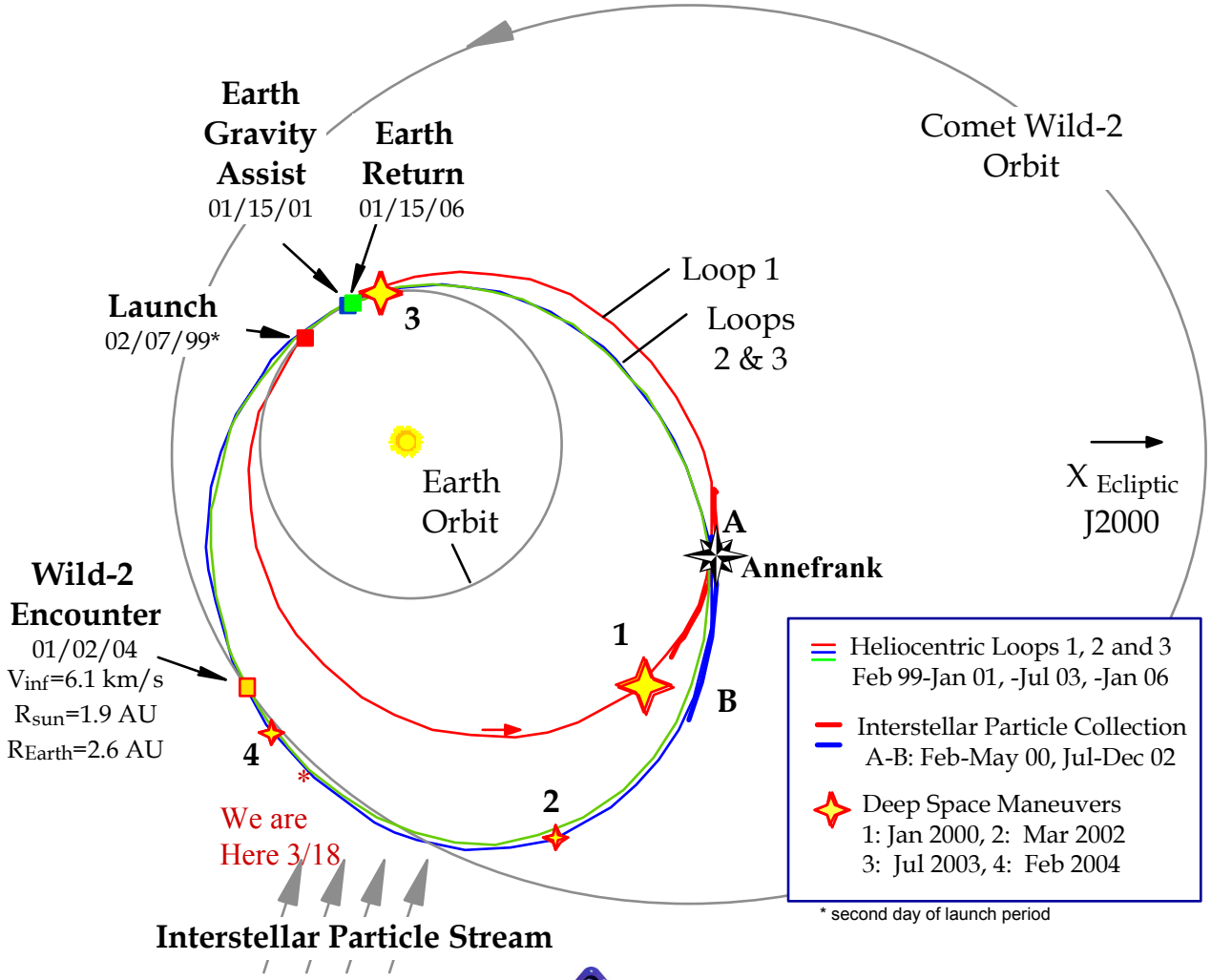
ONCE PER MONTH 70 METER TRACK

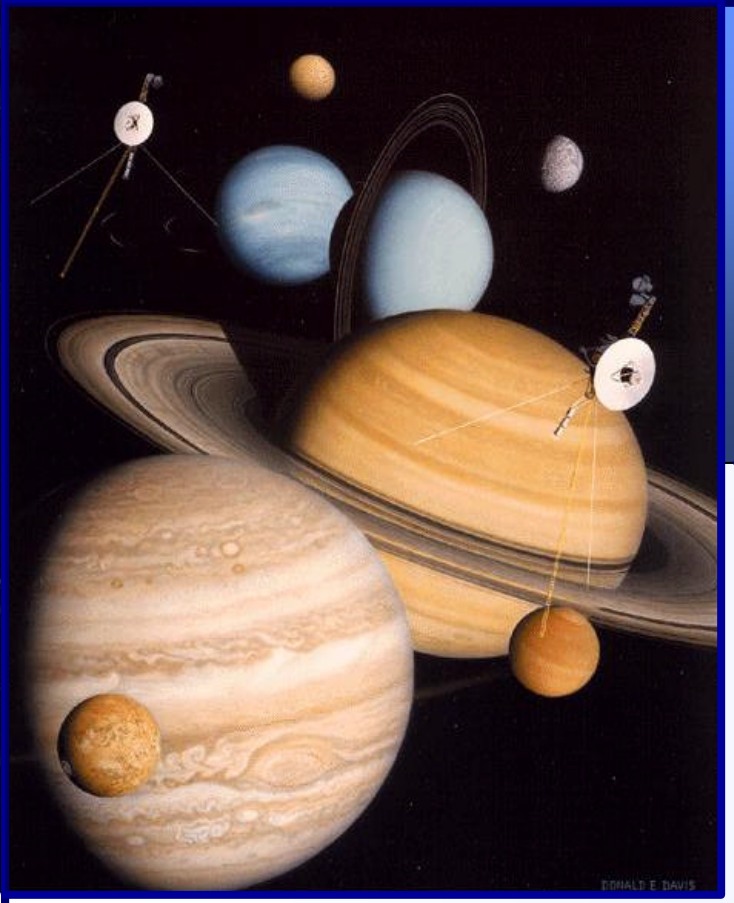
April "04 THROUGH May '05

4 to 5 HOUR TRACK FOR DATA REPLAY, THROUGH APHELION

STARDUST

Report to JURAP

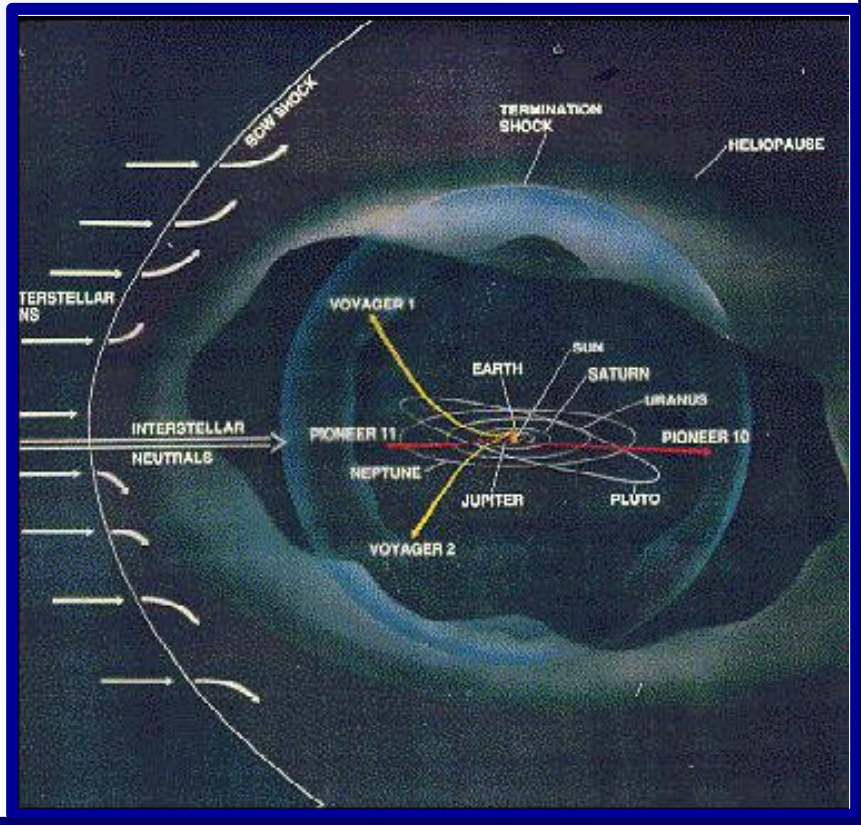




VOYAGER

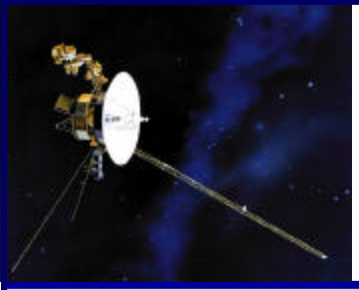
FLIGHT OPERATIONS

JOINT USERS RESOURCE ALLOCATION PLANNING COMMITTEE



Jefferson Hall
March 18, 2004
NASA Jet Propulsion Laboratory

http://voyager.jpl.nasa.gov



VOYAGER

FLIGHT OPERATIONS

JPL

JPL NASA Jupiter Saturn Uranus Neptune and Beyond... VOYAGER I & II

FLIGHT SYSTEM STATUS

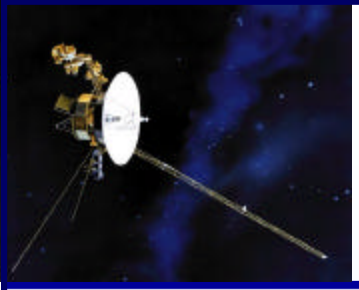
MISSION STATUS

VOYAGER 1

* HELIOCENTRIC DISTANCE – 91.3 AU, RTLT – 25h15m58s
* SPACECRAFT REMAINS HEALTHY
* MAJOR ACTIVITY: ASCAL AND PMPCAL, MAGROL

VOYAGER 2

* HELIOCENTRIC DISTANCE – 72.8 AU, RTLT – 20h16m58s
* SPACECRAFT REMAINS HEALTHY
* MAJOR ACTIVITY: ASCAL, MAGROL, FULMRO, PLAYBACK, & PMPCAL



VOYAGER

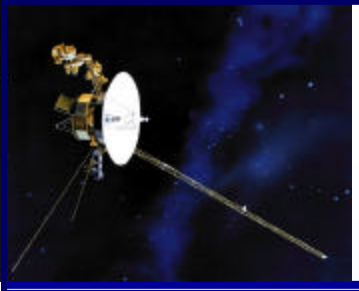
FLIGHT OPERATIONS

GROUND SYSTEM STATUS

(January 10,2004 - March 12, 2004)

• DSN - OVERALL SUPPORT – GOOD

• NUMEROUS OUTAGES ON VOYAGER 1 DUE TO WEATHER AT DSS-65; MASER, SUB-REFLECTOR, AND WEATHER PROBLEMS AT DSS-25 AND DSS-15 [all documented on DRs]. OUTAGES ON VOYAGER 2 WERE DUE TO HIGH WINDS AT DSS-49 AND RAIN AT DSS-45 [all documented on DRs].



VOYAGER

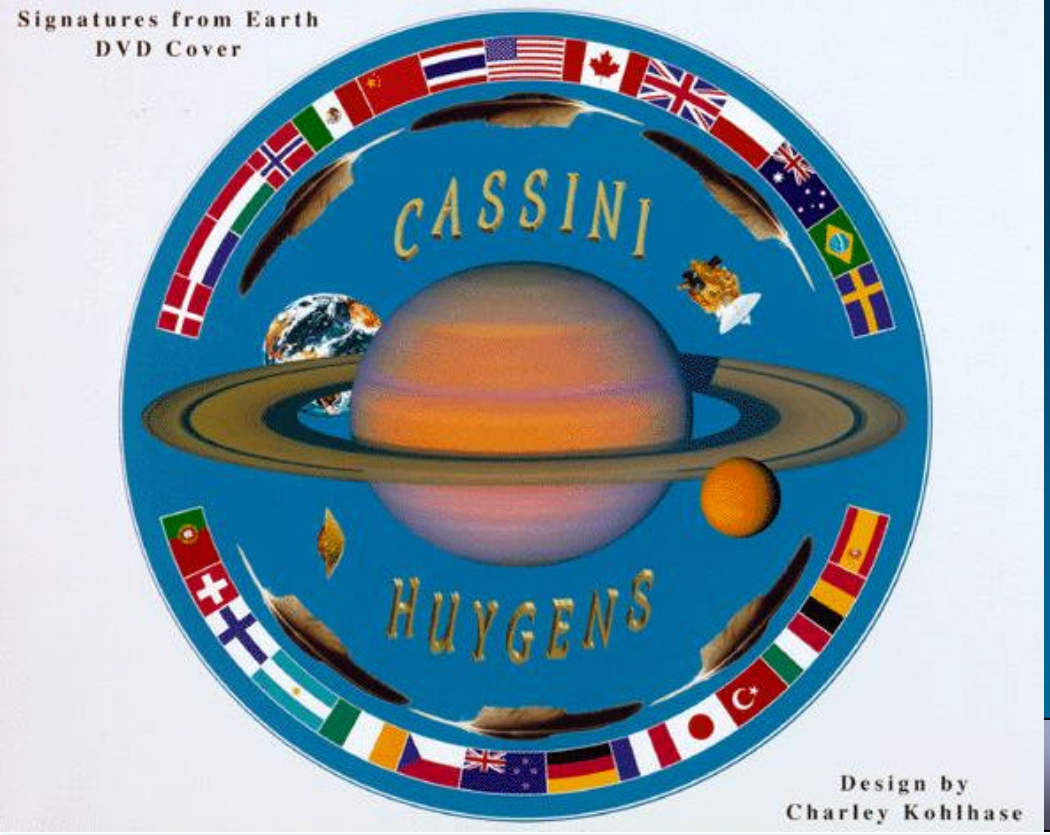
FLIGHT OPERATIONS

TOTAL SUPPORT TIME, OUTAGE TIME, % OF OUTAGE TIME

S/C	SCHED. SUPPORT	ACTUAL SUPPORT	70M TIME	SIGNIFICANT OUTAGE TIME	% OF OUTAGE TIME
31	900.7	900.5	187.2	19.9(2.0)	2.4
32	657.2	659.8	356.9*	6.8(3.8)	1.6

VOYAGER HOMEPAGE - http://voyager,jpl.nasa.gov

* DSS-49 support accounted for 67.1 hours of this total [ended 2/22(DOY 053)]



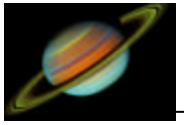
CASSINI

http://saturn.jpl.nasa.gov/cassini/index.shtml

Joint Users Resource Allocation Planning (JURAP) Committee Meeting

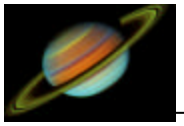
Dave Doody

March 18, 2004



Cassini / Huygens

- **Operating in Approach Science Phase**
  - Approach Science observations continue
    - Between DSN supports, Spacecraft is off earthpoint, observing Saturnian system
    - Optical Navigation images are included, to refine ephemeredes of the known satellites
    - During DSN supports spacecraft is usually rolling to collect Fields & Particles data
  - International astronomical community and Cassini cooperating in ground and HST Saturn observations in 2004
    - HST Observations by Boston University investigators
    - One goal is to characterize UV emissions remotely for correlation with *in situ* measurements of solar wind & magnetosphere interaction
  - PSG #33 was held at Caltech the last week of January
    - Milestone: Science integration for the 4-year tour completed
- **Tour mission phase begins May 15 with Sequence S01**
  - "S" for Saturn Tour, and the number zero-one, not to be confused with SOI, Saturn Orbit Insertion
  - TCM20 May 27
  - Phoebe flyby June 11
  - TCM21 June 16
  - Placeholder for TCM22 if needed June 21
  - Saturn Orbit Insertion July 1 (in sequence S03)
  - Advanced science planning for Tour continues, as well as for Huygens Playback data delivery



Cassini / Huygens

- **Daily ops continue to go well**
  - Huygens Probe Relay Critical Sequence was demonstrated on spacecraft March 1 through 4 UTC
    - Exercised ground system data delivery to HPOC
    - Exercised data completeness evaluations at JPL
      - As soon as data completeness can be confirmed on the ground at JPL during the actual Huygens Mission playback, nominal plan is to release storage space on Solid State Recorder on the spacecraft to support ensuing satellite observations
  - DSN and NOPE support has been excellent
    - High-rate TLM Lockup problem (on carrier-subcarrier change)
      - Workaround OPDs are clearly successful, fix expected in November 2004 DSN S/W
    - We are seeing fewer DRs, and these are mostly for very minor problems.
  - Exercising continuing FSPA Array supports as they can be scheduled
  - Working various minor S/C instrument anomalies, FSW installations
    - Ka-Translator recovery effort began in Monday 15 March.
  - Mitigation of NOCC-R/T display system demise still TBD this late in the game
    - Project's visibility into DSN is problematic
    - Deputy Director for IND William Rafferty observed Cassini Ace at work Monday 15 March. We are hoping the issue can be resolved soon.