

**Jet Propulsion Laboratory**  
California Institute of Technology

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November 29, 2000

Refer to: 930-00-16-ESB:ms

TO: Distribution

FROM: Eugene S. Burke

SUBJECT: Minutes for the Joint Users Resource Allocation Planning Committee Meeting held November 16, 2000.

**NEXT JURAP MEETING:**  
**Thursday, January 18, 2000**  
**JPL Bldg. 303, Room 209 – 1:00 p.m.**

We have instituted a simple Teleconference capability for non-JPL numbers.  
Please contact D. Morris if you wish to participate.

Attendees:

C. Abramo	J. Hall	K. Marsh	R. Ryan
H. Alexander	W. Hincy	K. Martinez	R. Sodano
P. Beyer	I. J. Webb	G. Martinez	K. T. Chen
S. Bucher	K. Kim	M. Medina-Gussie	P. Tay
G. Burke	N. Lacey	D. Morris	J. Valencia
B. Compton	S. Lineaweaver	K. Moyd	K. Yetter
D. Doody			

The Joint Users Resource Allocation Planning Committee meets monthly to review the status of Flight Projects and other resource users and to identify future requirements and outstanding conflicts. The last regular meeting was held on November 16, 2000, at the Jet Propulsion Laboratory.

***Introductory Remarks – G. Burke***

In 2001, the RARB meetings will be held on the 2nd Tuesday of February and August. The 2003 Mars missions' support requirements and DSN antenna loading concerns need to be worked.

***Network Simplification Project (NSP) report – N. Lacey for M. Marina***

The NSP plan calls for an accelerated implementation approach, with the transition to be completed by March 15, 2003 to minimize the impact on MARS Exploration Rover Project. The plan will shorten the original transition schedule (6/02- 09/03) by 6 months. Please see the DSS Downtime Forecast discussion for further information on this plan.

***Resource Analysis Team – N. Lacey for F. Leppla***

Preparation for the February 2001 RARB is being worked. The 70-METER long-term equivalent capability study is in progress. The CASSINI array support study for 2004 - 2008 is ongoing. The Galileo extended mission study and Solar Stereo study are being worked.

***DSS Downtime Forecast – N. Lacey***

The Resource Allocation Team (RAT) is conducting a loading study for the Network Simplification Project (NSP) project. The study will look at antenna loading during the planned implementation downtime period between 2002 and 2003. Significant changes have been noted that may impact the NSP implementation downtimes. The RAT has identified contentions, made recommendations, and received numerous agreements regarding support in 2002 and 2003. The contentions have been minimized to the point where the mid-range scheduling process can proceed successfully. A report on the study will be sent to affected projects as soon as possible so that they may comment and raise any concerns with the full plan. Because of the addition of the NSP downtime requests, the RAT will need to re-evaluate the estimates for 2002 and early 2003.

***DSN Operations – J. Hodder***

DSN Operations is operating well. Please see statistics on page 26.

***Goldstone Solar System Radar – M. Slade***

2000 UG11 was resolved as a true binary asteroid, and as a result of this latest discovery, an IAU circular No. 7518 was issued. In addition, observations of Near- Earth Asteroids 2000 UK11 and 2000 UG11 were successful.

***Radio Astronomy / Special Activities – G. Martinez***

Two Time and Earth Motion Precision Observations (TEMPO) were successfully supported, with 99% of data time utilized. Three Cat M & E observations were successfully supported, with 97% of data time utilized. Three radio star observations (X-band astrometry) were successfully conducted, with 98% of data time utilized. DSS65 supported Space Geodesy Program observation of COREB-702, with 98% of data time utilized.

***Flight Project Reports:******Chandra – K. Marsh***

The spacecraft continues nominal operations and is now on its second year of observations. The High Energy Transmission Grating (HETG) anomaly is being managed. The micro-switches that feed the position telemetry for HETG in the retracted position failed on June 11, 2000. Software changes are being worked. In the interim, any use of the Low Energy Transmission Grating (LETG) is constrained to real-time activity. To maximize data capture in the event of a DSN or CHANDRA ground equipment failure, the project is considering changes to the present Solid State Recorder (SSR) dump management operations.

***Stardust – R. Ryan***

Spacecraft health is nominal and the DSN support has been very good. The project support activities for the upcoming Earth Gravity Assist (EGA) remain nominal. Presently, the spacecraft is 0.28 AU from Earth (5minutes RTLT), and 1.25 AU from the Sun. Trajectory Correction Maneuver 4 (TCM4), which marks the start of EGA, has been rescheduled from 11/14/2000 to 11/28/2000. TCM4 Delta V is approximately 0.4 meters/sec; burn duration is approximately 83 seconds

***Voyager – J. Hall***

Voyager 1 and Voyager 2 status is nominal and overall DSN support is good. Voyager 1 heliocentric distance is 79.3 AU with an RTLT of 22h11min. Major activity: DTR playback of PWS data, ASCAL, and MAGROL. Voyager 2 heliocentric distance is 62.4 Au. The RTLT is 17h26m26s.

***Cassini – D. Doody***

All Operations are nominal. Jupiter Closest Approach is planned for DOY 365/1005. Minor instrument anomalies being worked and recovered near real time. Science Instrument ISS entered safe and was recovered on DOY 310. Science Instrument MIMI DPU Reset on DOY 313 with recovery in progress. Huygens Data Link options are being evaluated. DSN Coverage for the Gravitational Wave Experiment (GWE) is planned for the first week of May and the first week of August 2001.

***Mission Management Office (MMO) – E. Brower***

The first year of MGS mapping archive is complete with 60,000 images. The Four position/orbit solar array stepping strategy for aphelion power has been implemented and the Safe Mode Power Concern was addressed. Upcoming MGS events are: the PSG Meeting is scheduled for November 29th 2000; the extended Mission ORT is planned for December 4th and 5th, 2000; the first DDOR observation is scheduled for January 9th, 2001; and the end of primary mission is planned for February 1, 2001.

***Ulysses – I. J. Webb***

Spacecraft operations are nominal. Earth pointing maneuvers are being conducted every three days and instrument calibrations and reconfigurations are performed as required. DSS 34 successfully demonstrated the capability to radiate below the antenna's 10-degree elevation radiation restriction.

***International Solar Terrestrial Program (ISTP) – A. Chang***

The weekly ACE attitude maneuvers were successfully executed and all Space Science Mission Operations (SSMO) spacecraft and Instruments are performing nominally. As a result of the November 8th solar storm, the WIND s/c incurred a single event upset on November 9th which left several subsystems disabled, but all affected subsystems later recovered. The SOHO CDS and SUMER instrument detectors were temporarily saturated and the s/c autonomously changed guide twice. The instrument science team is investigating why the ACE SEPICA is not generating any science data.

***Galileo – M. Medina-Gussie***

Completed the playback of Ganymede-28 encounter. Began real-time science buffer dump to tape strategy and submitted DSN Loading Profile Study Request for the Galileo Millennium Mission. Ganymede-29 encounter is planned for 28 December 2000.

***Deep Space 1 – K. Moyd***

DS1 is at Solar Conjunction Between October 22nd through December 5th, with a Sun Earth Probe (SEP) angle of less than 5 degrees.

The DS1 track on October 30th track was successful in spite of one hour of sporadic telemetry lock; possibly correlated with solar mass ejection.

On November 14, the SEP was approximately 0.5 degrees. DSS14 provided X-band downlink and tone detection support. The detected tone was nominal, with both one-way and two-way data. (Refer to the power spectrum chart in the attachment.)

The uplink problems experienced were attributed to an outdated exciter table parameter. The tune rate parameter was corrected to clear problem.

***Near Earth Asteroid Rendezvous (NEAR) – J. Miller***

NEAR has now been in orbit around the asteroid Eros over 276 days, and the spacecraft remains healthy. All science instruments are energized with the exception of the Near Infrared Spectrometer (NIS), which was disabled due to excessive current draw. The closest approach event on DOY 299 was a complete success. The altitude at closest approach was estimated at 5.4km relative to the surface of EROS. The two subsequent orbital correction maneuvers executed successfully and transferred the s/c to its current circular 196X198 km orbit.

***Advanced Composition Explorer (ACE) – R. Sodano***

A total of 30 DSN/JPL ground system anomaly reports (ARs) were generated over the last six months. The DSN 26-Meter Automation implementation is on hold due to problems with Earth receipt time tagging and a Reed-Solomon decoding anomaly.

***U. S. Space VLBI – V. Altunin (No report)******IMAGE – A. Berman (No report)***

**ACE**

Afkhami, F. . . . . GSFC 428.2\*  
 Machado, M. J. . . . . GSFC Code 428.2\*  
 Myers, D. A. . . . . GSFC Code 428.2\*  
 Sodano, R. J. . . . . GSFC Code 581.1\*

**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. . . . . 230-301  
 Frautnick, J. C. . . . . 230-301  
 Gustavson, R. P. . . . . 230-301  
 Maize, E. H. . . . . 230-104  
 Mitchell, R. T. (PM) . . . . . 230-205  
 Webster, J. L. . . . . 230-104

**Chandra**

Gage, K. R. . . . . SAO\*  
 Lavoie, A. R. (PM) . . . . . MSFC Org. FD03\*  
 Marsh, K. . . . . TRW\*  
 Weisskopf, M. C. (PS) . . . . . MSFC Org. SD50\*  
 Wicker, D. . . . . TRW\*  
 Wright, G. M. . . . . MSFC Org. FD03\*

**Crustal Dynamics**

Clark, T. A. (PM) . . . . . GSFC Code 920.3 \*  
 Thomas, C. C. . . . . GSFC Code 920.1\*  
 Vandenberg, N. R. . . . . GSFC Code 920.1\*  
 Wolken, P. R. . . . . 507-105

**Deep Space 1**

Hunt, J. C. . . . . 230-207  
 Moyd, K. I. . . . . 230-207  
 Rayman, M. D. (PM) . . . . . 230-207  
 Tay, P. . . . . 264-235  
 Yetter, K. E. . . . . 264-235

**Galileo**

Compton, B. . . . . 230-102  
 Erickson, J. K. (PM) . . . . . 264-419  
 Huynh, J. C. . . . . 230-102  
 McClure, Jr., J. R. . . . . 230-102  
 Medina-Gussie, M. . . . . 301-371  
 Paczkowski, B. G. . . . . 230-260  
 Pojman, J. L. . . . . 301-276

**Goldstone Deep Space Communications Complex**

Holmgren, E. . . . . DSCC-25  
 Massey, K. . . . . DSCC-61  
 McConahy, R. . . . . DSCC-33  
 McCoy, J. . . . . DSCC-57  
 Mischel, D. . . . . DSCC-37  
 Recce, D. J. . . . . DSCC-37  
 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\*

**ICE Radio Science**

Woo, R. . . . . 238-725

**IMAGE**

Abramo, C. A. . . . . 507-120  
 Burley, R. J. . . . . GSFC Code 632.0\*  
 Green, J. L. . . . . GSFC Code 630\*

**ISTP (Cluster II)**

Abramo, C. A. . . . . 507-120  
 Chang, A. F. . . . . 264-844  
 Christensen, J. L. . . . . GSFC Code 404.0\*  
 Dutilly, R. N. . . . . GSFC Code 581.1\*  
 Mahmot, R. E. . . . . GSFC Code 444.0\*  
 Pickett, J. . . . . U. of Iowa\*  
 Williams, H. A. . . . . GSFC Code 444.0\*  
 Worrall, W. D. (PM) . . . . . GSFC Code 444.0\*

**ISTP (GEOTAIL/POLAR/SOHO/WIND)**

Abramo, C. A. . . . . 507-120  
 Alexander, H. . . . . 507-120  
 Bush, R. I. . . . . Stanford Univ.\*  
 Chang, A. F. . . . . 264-844  
 Dutilly, R. N. . . . . GSFC Code 581.1\*  
 Hearn, S. P. . . . . GSFC Code 450.C\*  
 Mahmot, R. E. . . . . GSFC Code 444.0\*  
 Milasuk-Ross, J. . . . . GSFC Code 428.5\*  
 Miller, K. A. . . . . GSFC Code 450.C\*  
 Mish, W. H. . . . . GSFC Code 690\*  
 Nace, E. M. . . . . GSFC Code 450.8  
 Pukansky, S. M. . . . . GSFC Code 450.C\*  
 Worrall, W. D. (PM) . . . . . GSFC Code 444.0\*

**JPL/General**

Burgess, L. N. ....	230-107
Burton, M. E. ....	169-506
Chadbourne, P. ....	230-207
Finley, S. G. ....	11-116
Gershman, R. ....	264-440
Hirst, E. A. ....	301-180
Holladay, J. A. ....	303-404
Jurgens, R. F. ....	238-420
Kahn, P. B. ....	301-486
Kliore, A. J. ....	161-260
Kobrick, M. ....	300-233
Moore, W. V. ....	161-260
Morabito, D. D. ....	161-260
Naudet, C. J. ....	238-600
Resch, G. M. ....	238-600
Robbins, P. E. ....	161-260
Silva, A. ....	149-200
Smith, J. L. ....	301-180
Taylor, A. H. ....	301-350
Toyoshima, B. ....	301-385
Winterhalter, D. ....	169-506
Woo, H. W. ....	126-221
Yung, C. S. ....	238-808

**Madrid Deep Space Communications Complex**

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

**MAP**

Abramo, C. A. ....	507-120
Citrin, E. A. (PM) ....	GSFC Code 730*
Coyle, S. E. ....	GSFC Code 581.0*
Dew, H. C. ....	GSFC Code 423.0*

**Mars Exploration Rover (MER A & B)**

Adler, M. ....	264-440
Arroyo, B. ....	264-235
Roncoli, R. B. ....	301-140L
Theisinger, P. C. (PM) ....	264-440

**Mars Express Orbiter**

Horttor, R. L. (PM) ....	238-540
McKay, M. ....	ESA/ESOC *
Thompson, T. W. ....	300-227

**Mars Global Surveyor**

Arroyo, B. ....	264-235
Brower, E. E. ....	264-235
Thorpe, T. E. (PM) ....	264-214
Yetter, K. E. ....	264-235

**Mars Program Office**

Cutts, J. A. ....	264-426
Jordan, Jr., J. F. ....	264-426
McCleese, D. J. ....	264-426
Naderi, F. M. ....	180-703

**Mars Surveyor 2001 Orbiter**

Arroyo, B. ....	264-235
Harris, J. A. ....	264-214
Mase, R. A. ....	264-380
Pace, Jr., G. D. (PM) ....	264-255
Spencer, D. A. ....	264-255

**NASA Headquarters**

Costrell, J. A. ....	Code MT*
Hertz, P. ....	Code SR*
Holmes, C. P. ....	Code SR*
Spearing, R. E. ....	Code M-3*

**NASA/ARC/General**

Campo, R. A. ....	ARC 244-14*
-------------------	-------------

**NASA/GSFC/General**

Barbehenn, G. M. ....	GSFC Code 440.8*
Levine, A. J. ....	GSFC Code 451*
Martin, J. B. ....	GSFC Code 453.0*

**NASA/SOMO**

Dalton, J. T. ....	GSFC Code 720.0*
Downen, A. Z. ....	303-400
Hall, V. F. ....	JSC Code TG*
Morse, G. A. ....	JSC Code TA*
Thompson, E. W. ....	JSC Code GA*

**NEAR**

Antreasian, P. G. ....	301-276
Farquhar, R. ....	APL 2-155*
Holdridge, M. ....	APL 13N-319*
Miller, J. K. ....	301-125J
Moore, G. A. ....	APL 13N-319*
Santo, A. G. ....	APL M1-126*
Williams, B. G. ....	301-125J

**NOZOMI (Planet B)**

Chang, A. F. ....	264-844
Tay, P. ....	264-235
Yetter, K. E. ....	264-235

**Outer Planets/Solar Probe**

Carraway, J. B. ....	301-335
Ludwinski, J. M. ....	301-335

**Radio Astronomy**

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

**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

**Space Technology 3**

Guske, P. J. ....	301-486
Linfield, R. P. (PS) .....	301-486
Livesay, L. L. (PM) .....	301-486
Patel, K. C. ....	198-219
Spradlin, G. L. ....	303-402

**Stardust**

Duxbury, T. C. (PM) .....	301-429
Ryan, R. E. ....	301-341
Tay, P. ....	264-235
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**TMOD / General**

Coffin, R. C. ....	303-400
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**TMOD / Mission Management Office**

Rosell, S. N. ....	303-407
Varghese, P. ....	230-207

**TMOD DSMS Engineering**

Freiley, A. J. ....	303-404
Kimball, K. R. ....	303-404
Klose, J. C. ....	303-403
Osman, J. W. ....	303-404
Sible, Jr., R. W. ....	303-404
Statman, J. I. ....	303-404

**TMOD DSMS Operations**

Almassy, W. T. ....	502-420
Covate, J. T. ....	507-105
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Frazier, R. ....	507-105
Gillam, I. T. ....	502-400
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Landon, A. J. ....	507-105
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Salazar, A. J. ....	303-403
Schroeder, H. B. ....	507-120
Short, A. B. ....	507-120
Wackley, J. A. ....	303-403
Waldherr, S. ....	507-120
Watzig, G. A. ....	502-420
Wert, M. ....	502-420

**TMOD DSMS Plans & Commitments**

Abraham, D. S. ....	301-472
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Bathker, D. A. ....	303-402
Benson, R. D. ....	264-844
Berman, A. L. ....	264-844
Beyer, P. E. ....	264-844
Black, C. A. ....	303-402
Cesarone, R. J. ....	303-402
Chang, A. F. ....	264-844
Gillette, R. L. ....	264-844
Griffith, D. G. ....	303-402
Holmes, D. P. ....	264-844
Kazz, G. J. ....	303-402
Luers, E. B. ....	303-402
Miller, R. B. ....	303-402
Peng, T. K. ....	303-402
Poon, P. T. ....	264-844
Slusser, R. A. ....	T-1720D
Wessen, R. R. ....	264-844
Yetter, B. G. ....	264-855

**TMOD DSMS RAPSO**

Borden, C. S. ....	301-165
Burke, E. S. ....	303-403
Caputo, R. ....	303-403
Hampton, E. ....	600-174
Hincy, W. ....	600-174
Kehrbaum, J. M. ....	301-180
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Lacey, N. ....	600-174
Leppla, F. B. ....	600-174
Lineaweaver, S. ....	600-174
Martinez, K. A. ....	600-174
Morris, D. G. ....	303-403
Tan, K. ....	TBD
Wang, Y-F. ....	301-165
Zendejas, S. C. ....	301-165

**Ulysses / Voyager**

Bray, T. L. ....	264-114
Brymer, B. F. ....	264-114
Cummings, A. C. ....	CIT*
Hall, Jr., J. C. ....	264-801
Massey, E. B. (PM) .....	264-801
Nash, J. C. ....	264-114
Smith, E. J. (PS - ULS) .....	169-506
Webb, I. J. ....	264-114

**U.S. Space VLBI**

Altunin, V. I. ....	303-402
Miller, K. J. ....	264-828
Smith, J. G. (PM) .....	264-828

**YOHKOH**

Chang, A. F. . . . . 264-844

**Other Organizations**

Crimi, G. F. . . . . SAIC\*

Laemmel, G. . . . . DLR-GSOC\*

Wanke, H. . . . . DLR-GSOC\*

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\* off-site label

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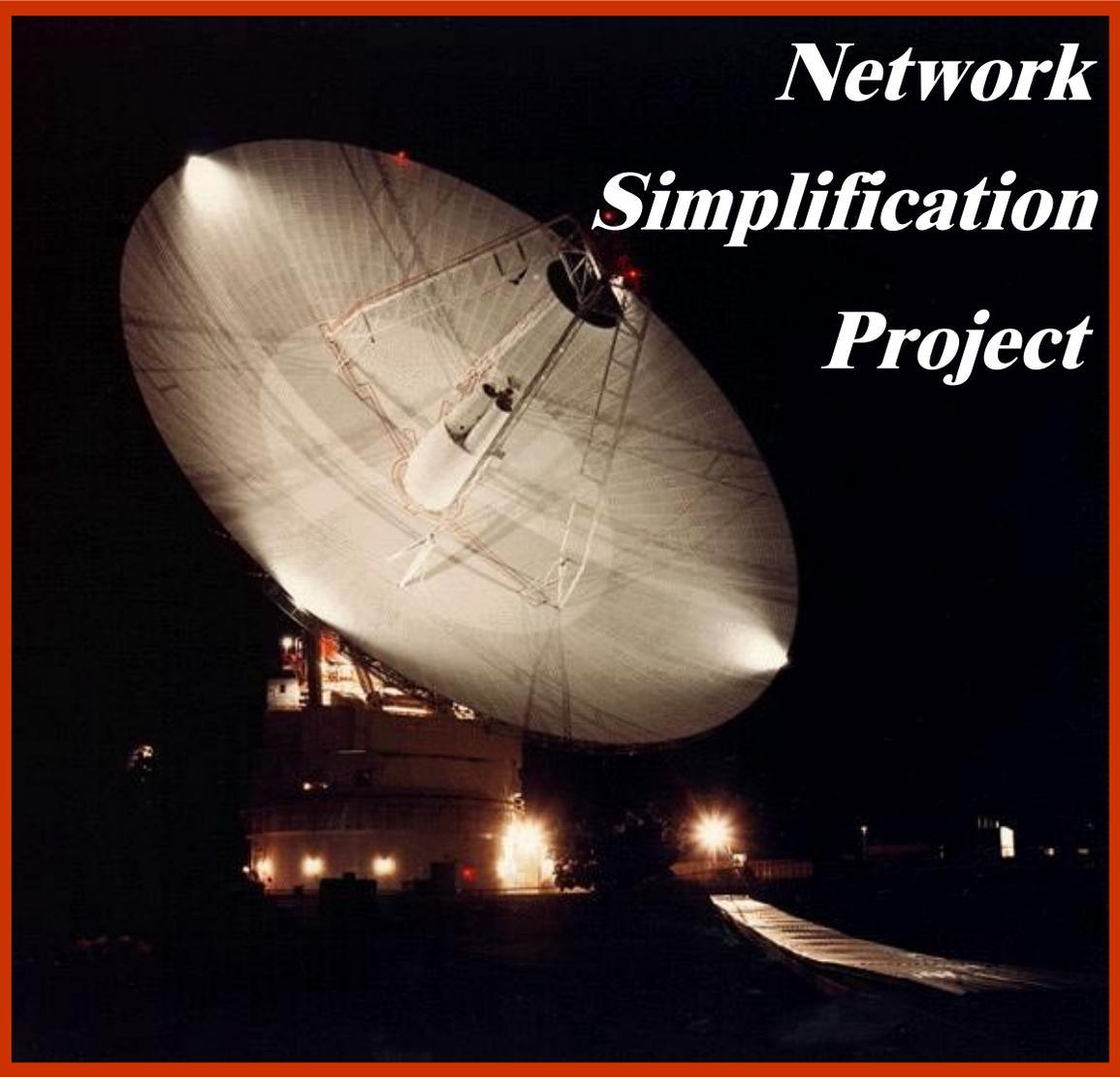
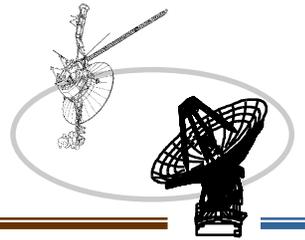
JOINT USERS RESOURCE ALLOCATION PLANNING COMMITTEE

Thursday, 16 November 2000, 1:00 p.m.

JPL - Building 303, Room 209

AGENDA

1. Introductory Remarks . . . . . E. Burke
2. Special Report:  
Network Simplification Project Downtime  
Implications . . . . . N. Lacey for M. Marina
3. Conflict Resolutions . . . . . E. Burke
4. Resource Analysis Team . . . . . E. Hampton
5. DSS Downtime Forecast . . . . . N. Lacey
6. DSN Operations . . . . . J. Hodder
7. Goldstone Solar System Radar . . . . . M. Slade
8. Radio Astronomy / Special Activities . . . . . G. Martinez
9. JURAP Science Advisor . . . . . E. Smith
10. Flight Projects Reports
  - a. Chandra . . . . . K. Marsh
  - b. Stardust . . . . . R. Ryan
  - c. Voyager . . . . . J. Hall
  - d. Cassini . . . . . D. Doody
  - e. U.S. Space VLBI . . . . . No Report
  - f. Mission Management Office (MMO) . . . . . E. Brower
  - g. Ulysses . . . . . I. J. Webb
  - h. International Solar Terrestrial Program (ISTP) . . . . . A. Chang  
(WIND, POLAR, SOHO, GEOTAIL, Cluster II)
  - i. Galileo . . . . . M. Medina-Gussie
  - j. Deep Space 1 . . . . . K. Moyd
  - k. Near Earth Asteroid Rendezvous (NEAR) . . . . . J. Miller
  - l. Advanced Cometary Explorer (ACE) . . . . . B. Sodano
  - m. IMAGE . . . . . No Report



***Network  
Simplification  
Project***

***Transition Plan***

**A Special Report to the  
Joint Users Resource Allocation  
Planning Committee**

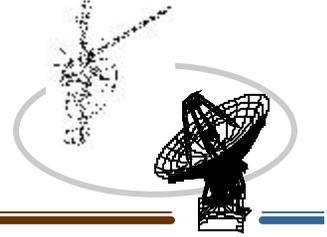
***Napoleon Lacey for Miguel Marina***

***November 16, 2000***

***NASA Jet Propulsion Laboratory***



*Telecommunications Science and Engineering Division*



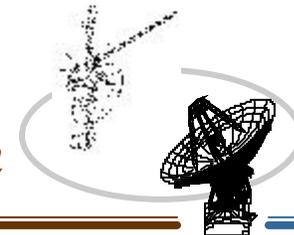
# **NSP Transition Plan**

*Miguel Marina*

*November 16, 2000*

# NSP Transition Plan

## *Telecommunications Science and Engineering Division*

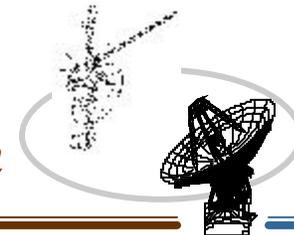


### ACCELERATED IMPLEMENTATION APPROACH

- COMPLETE NSP TRANSITION BY MARCH 15, 2003 TO MINIMIZE THE IMPACT ON MARS-03 MISSIONS SCHEDULED FOR JUNE 2003.
- PROVIDE DSN OPERATIONS WITH ADEQUATE TRAINING ON NEW NSP EQUIPMENT PRIOR TO MARS-03 MISSIONS SUPPORT
- SHORTEN ORIGINAL TRANSITION SCHEDULE (6/02- 09/03) BY SIX MONTHS
- DEVELOPMENT SCHEDULE EXAMINED FOR POSSIBLE ACCELERATION
  - CURRENT SCHEDULE IS AGGRESSIVE - NO SHORTENING POSSIBLE
- INSTALLATION SCHEDULE EXAMINED FOR POSSIBLE ACCELERATION
  - SIX MONTHS ACCELERATION POSSIBLE THROUGH THE USE OF ANTENNA DOWNTIME
  - WITH DOWNTIME - INSTALLATION, PRE-AT AND AT REDUCED FROM 8 WEEKS TO 4 WEEKS
  - DOWNTIME ALLOWS TWO FULL SHIFTS OF EFFORT
  - NO RECONFIGURATION OF SYSTEM AT START OR END OF SHIFT(S)
- PARALLEL IMPLEMENTATION (BY SUBNET)
- FIRST IMPLEMENTATION FOR EACH SUBNET IS AT GDSCC

# NSP Transition Plan

## *Telecommunications Science and Engineering Division*

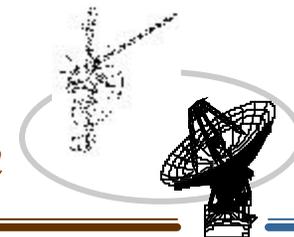


- **ACCELERATED IMPLEMENTATION APPROACH ASSUMPTIONS:**

- **SIMULTANEOUS UPLINK (UPL), DOWNLINK (DTT) and TDDS IMPLEMENTATIONS.**
- **DSS-26 ENGINEERING TESTS SUCCESSFULLY COMPLETED (06/01 THRU 06/02).**
- **SPACECRAFT ACCESS AVAILABLE FOR TRACKING VALIDATION.**
- **SIX DIFFERENT FRONT-END TYPES (24, 25, 26, 34 & 54, HEF, 70m) FOR THE UPLINK TASK (UPL).**
- **ENGINEERING TEST TIME (NIB) FOR UPL REQUIRED AT ALL FRONT END TYPES PRIOR TO INSTALLATION.**
- **TWO SHIFTS PER DAY WILL BE REQUIRED.**
- **STATION MAINTENANCE PERSONNEL REQUIRED TO SUPPORT BOTH SHIFTS.**
- **SCHEDULE IS HIGH RISK DUE TO REDUCTION IN TIME AVAILABLE FOR EQUIPMENT FAILURE RECOVERY.**
- **ENGINEERING AND OPS COSTS UNCHANGED BUT TIME SHIFTED.**
- **IN CASE OF EMERGENCY - ANY NSP INSTALLATION CAN BE REVERSED WITH ~1 DAY NOTICE DURING INSTALLATION. IF NECESSARY, ANTENNA DOWNTIME MAY BE INTERRUPTED.**

# NSP Transition Plan

## *Telecommunications Science and Engineering Division*



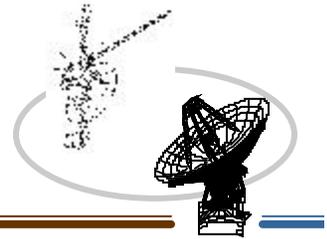
### ACCELERATED PARALLEL IMPLEMENTATION SEQUENCE:

- DSS-24, DSS-15 7/15/02 - 9/27/02
- DSS-14, DSS-34, DSS-65 10/01/02 - 11/22/02
- DSS-43, DSS-54 12/02/02 - 1/24/03
- DSS-25, DSS-45, DSS-63 1/27/03 - 3/14/03
  
- TOTAL ESTIMATED TIME 7/15/02 - 3/14/03



# NSP Transition Plan

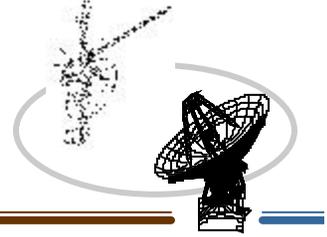
## Telecommunications Science and Engineering Division



ID	Task Name	Start	Finish	2003					
				Q2	Q3	Q4	Q1	Q2	Q3
1	<b>NSP IMPLEMENTATION</b>	<b>Mon 2/4/02</b>	<b>Fri 10/15/04</b>						
2	<b>DSS-24, DSS-15</b>	Mon 7/15/02	Fri 9/27/02						
3	<b>DSS-14, DSS-34, DSS-65</b>	Tue 10/1/02	Fri 11/22/02						
4	Cassini (G.W. Experiment) DSS-25, DSS-45, DSS-65	Wed 12/25/02	Fri 1/24/03						
5	<b>DSS-43, DSS-54</b>	Mon 12/2/02	Fri 1/17/03						
6	<b>DSS-25, DSS-45, DSS-63</b>	Mon 1/27/03	Fri 3/14/03						
7	Rosetta (DSS-24, DSS-34, DSS-54)	Wed 1/15/03	Thu 3/27/03						
8	Cassini (Solar Conjunction Experiment) DSS-25, DSS-45, DSS-65	Mon 5/26/03	Fri 6/27/03						
9	MARS-03 Rover A (70M's, HEF's)	Thu 5/1/03	Fri 6/27/03						
10	MARS-03 Rover B (70M's, HEF's)	Mon 6/2/03	Fri 7/25/03						
11	MARS-03 Express Orbiter (BWG1's)	Thu 5/1/03	Fri 6/27/03						
12									

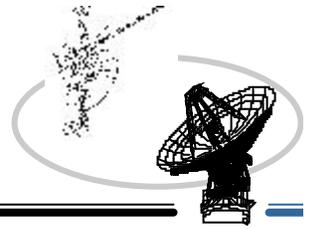
# NSP Transition Plan

## *Telecommunications Science and Engineering Division*



### PROPOSED DOWNTIMES FOR NSP AND 70M SERVO DRIVE UPGRADE - 7/15/02 - 4/27/03

<b>DSS</b>	<b>DOWNTIME</b>	<b>ACTIVITY</b>	<b>WEEKS</b>
DSS-15 & 24	7/15/02 - 9/27/02	NSP Implementation	<b>29 - 39</b>
DSS-14	9/30/02 - 12/8/02	70M Servo Drive Upgrade	<b>40 - 49</b>
DSS-14, 34, 65	10/1/02 - 11/22/02	NSP Implementation - DSS-14 NIB	<b>40 - 47</b>
DSS-43	12/9/02 - 2/16/03	70M Servo Drive Upgrade NIB - Ball-Joint Pad Refurbishment	<b>50 - 07</b>
DSS-43 & 54	12/9/02 - 2/16/03	NSP Implementation - DSS-43 NIB	<b>50 - 07</b>
DSS-63	2/17/03 - 4/27/03	70M Servo Drive Upgrade	<b>08 - 17</b>
DSS-25, 45, 63	2/17/03 - 4/13/03	NSP Implementation - DSS-63 NIB	<b>08 - 15</b>



# *Resource Analysis Team*



*Napoleon Lacey for  
Frank Leppla*

*November 16, 2000*

*NASA Jet Propulsion Laboratory*

*JOINT USERS RESOURCE ALLOCATION PLANNING COMMITTEE*

# **RESOURCE ALLOCATION AND PLANNING**

**JURAP-NOVEMBER 16, 2000**

## **RESOURCE NEGOTIATION STATUS**

WEEK 01 (01/01/01 THRU 01/07/00) WAS RELEASED TO DSN ON 11/07/00

WEEKS 02 - 03 (01/08/01 THRU 01/21/01) WAS RELEASED TO DSN ON 11/10/00

WEEKS 04 - 08 (01/22/01 - 02/25/01) ARE SCHEDULED TO BE RELEASED ON 11/27/00

WEEKS 09 - 12 (02/26/01 THRU 03/25/01) ARE BEING NEGOTIATED

## **SPECIAL STUDIES/ACTIVITIES**

LUNA-A

NOZOMI

MUSES-C

11/16/00

## **ON-GOING ACTIVITIES**

MADB/TIGRAS TESTING & TRAINING

70-METER LONG-TERM EQUIVALENT CAPABILITY STUDY

FEBRUARY 2001 RARB PREPARATION

CASSINI ARRAY SUPPORT STUDY 2004 - 2008

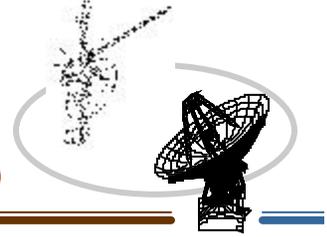
GALILEO EXTENDED MISSION STUDY

SOLAR STEREO STUDY

**RAPSO HOME PAGE:**    <http://rapweb.jpl.nasa.gov/>

11/16/00

TELECOMMUNICATIONS AND MISSION OPERATIONS DIRECTORATE



*Resource Allocation Planning & Scheduling Office (RAPSO)*

# *DSS DOWNTIME FORECAST*



*Napoleon Lacey*

*November 16, 2000*

*NASA Jet Propulsion Laboratory*

*JOINT USERS RESOURCE ALLOCATION PLANNING COMMITTEE*

# **JOINT USERS RESOURCE ALLOCATION PLANNING**

## **DOWNTIME PLANNING**

**November 16, 2000**

DSN Downtime & Test Schedule is located on the RAP WWW Homepage at:

**<http://rapweb.jpl.nasa.gov>**

**Although every effort 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.**

## RESOURCE ALLOCATION PLANNING

The Network Simplification Project (NSP) has requested a loading study for the NSP implementation downtimes for the DSN during 2002 and 2003.

The NSP Transition Schedule Plan was accelerated due to the planned launches of Mars Exploration Rover - A and Mars Exploration Rover - B. The original NSP plan required no station downtime.

**The following antenna downtime periods are requested from 7/15/02 through 03/14/03:**

<u>DSS</u>	<u>Downtime Period</u>	<u>Weeks</u>	<u>Start DOY</u>	<u>End DOY</u>
15, 24	7/15/02 - 9/27/02	29 - 39	196	270
14, 34, 65	10/1/02 - 11/22/02	40 - 47	274	326
43, 54	12/2/02 - 1/17/03	49 - 03	336	017
25, 45, 63	1/27/03 - 3/14/03	05 - 11	027	073

The Resource Analysis Team (RAT) has analyzed the above requests to estimates of projected supportable time and to identify other users in contention for resources during the NSP implementation downtime phases.

It is important to note that we are currently receiving updates to user loading profiles in preparation for the upcoming RARB meeting in February, 2001. These inputs have not been updated in our requirements databases but we have noted significant changes that may impact the NSP implementation downtimes.

During the last two RARB meetings, the RAT has identified contentions, made recommendations, and received numerous agreements regarding support in 2002 and 2003. The contentions have been minimized to the point where we feel that the mid-range scheduling process can proceed successfully. This new NSP downtime requests will cause us to re-evaluate the estimates for 2002 and early 2003.

Constraints observed for the NSP downtimes: (1) Only one antenna downtime per complex - Goldstone is an exception with DSS-15 and 24. (2) Only one antenna downtime with duplicate capabilities, i.e. Two 70M, BWG, or HEF.

The RAT propose that the new requests for NSP implementation be combined with the 70M Servo Drive Upgrade previously scheduled to minimize overall downtime on the 70M subnet.

DSS-14	02/04/02 - 04/14/02	70M Servo Drive Upgrade
Changed to		
DSS-14	9/30/03 - 12/8/02	70M Servo Drive Upgrade
DSS-63	05/20/02 - 07/28/02	70M Servo Drive Upgrade
Changed to		
DSS-63	2/17/03 - 4/27/03	70M Servo Drive Upgrade
DSS-43	09/16/02 - 12/08/02	70M Servo Drive Upgrade
*		NIB - Ball Joint Pad Refurbishment
Changed to		
DSS-43	12/9/02 - 2/16/03	70M Servo Drive Upgrade
		NIB - Ball Joint Pad Refurbishment

**PROPOSED DOWNTIMES FOR NSP AND 70M SERVO DRIVE UPGRADE - 7/15/02 - 4/27/03**

<b>DSS</b>	<b>DOWNTIME</b>	<b>ACTIVITY</b>	<b>WEEKS</b>
DSS-15 & 24	7/15/02 - 9/27/02	NSP Implementation	<b>29 - 39</b>
DSS-14	9/30/02 - 12/8/02	70M Servo Drive Upgrade	<b>40 - 49</b>
DSS-14, 34, 65	10/1/02 - 11/22/02	NSP Implementation - DSS-14 NIB	<b>40 - 47</b>
DSS-43	12/9/02 - 2/16/03	70M Servo Drive Upgrade NIB - Ball-Joint Pad Refurbishment	<b>50 - 07</b>
DSS-43 & 54	12/9/02 - 2/16/03	NSP Implementation - DSS-43 NIB	<b>50 - 07</b>
DSS-63	2/17/03 - 4/27/03	70M Servo Drive Upgrade	<b>08 - 17</b>
DSS-25, 45, 63	2/17/03 - 4/13/03	NSP Implementation - DSS-63 NIB	<b>08 - 15</b>

## RESOURCE ALLOCATION PLANNING

### REQUEST FOR DSN DOWNTIME

<u>FACILITY</u>	<u>TASK</u>	<u>[REQUEST]</u>	<u>Duration</u>
<b><u>GOLDSTONE</u></b>			
DSS-14	Antenna Controller Replacement <b>(No Proposal)</b>	[12/01/03 - 09/01/04] - 13 Weeks	
<b><u>CANBERRA</u></b>			
DSS-43	Antenna Controller Replacement <b>(No Proposal)</b>	[12/01/03 - 09/01/04] - 10 Weeks	
DSS-46	Antenna Repainting <b>(In the works by K. Martinez)</b>	[12/01/00 - 03/15/01] - NIB Continuous Days - when possible	
<b><u>MADRID</u></b>			
DSS-63	Antenna Controller Replacement <b>(No Proposal)</b>	[12/01/03 - 09/01/04] - 10 Weeks	
DSS-65	Antenna Controller Replacement * <b>(No Proposal)</b>	[07/15/03 - 11/30/03] - 7 Weeks	

\* Request Window DSS-65 Antenna Controller Replacement [07/15/03 - 11/30/03] must extend into 2004.  
DSS-45 Antenna Controller Replacement is schedule for 09/08/03 - 10/26/03

**NOTE: Antenna Controller Replacements - Completion Ranking**  
**1. Goldstone 2. Canberra 3. Madrid - 1 Month interval between each complex**

NOTE      Request Window = [Earliest Start - Latest Finish]



# *DSN Operations*



*Jim Hodder*

*November 16, 2000*

*NASA Jet Propulsion Laboratory*

*JOINT USERS RESOURCE ALLOCATION PLANNING COMMITTEE*



## DSN System Availability

<u>Data Type</u>	<u>September 2000</u>	<u>October 2000</u>
Telemetry	99.0%	98.2%
Tracking	98.7%	97.9%
Command	99.4%	98.7%
Monitor	99.6%	99.5%
Radio Science	99.4%	99.9%
VLBI	95.1%	97.1%



# *Goldstone Solar System Radar*



*Martin A. Slade*

*November 16, 2000*

*NASA Jet Propulsion Laboratory*

*Joint Users Resource Allocation Planning Committee*

# **Joint Users Resource Allocation Planning Committee**

*16 November 2000*

## *Goldstone Solar System Radar*

- **Observations of Near-Earth Asteroids 2000 UK11 and 2000 UG11 were successful on Nov. 4, 6 and Nov. 6, 9, and 11 respectively**
- **2000 UG11 was resolved as another true binary asteroid, and as a result of this latest discovery, an IAU circular (No. 7518 ) was issued**
- **Preliminary estimates of the average diameters, based on range extents at 15-m resolution, are 230-m and 100-m. The orbital period is ~ 19 hr**
- **Thanks to Galileo, Voyager 1, OSSA Microwave Spectroscopy, and DSN Maintenance for giving up time for these critical observations**

***Radio Astronomy & Special Activities***



***George Martinez***  
***November 16, 2000***

***Joint Users Resource Allocation Planning Committee***

**Radio Astronomy**

**&**

**Special Activities**

**November 16, 2000**  
**George Martinez**

**TEMPO**  
(Time and Earth Motion Precision Observations)

- **Clock Sync**
  - **DOY 277**
    - **No problems were reported by either DSS-15 or DSS-65.**
    - **Tapes sent to JPL Correlator for processing.**
  - **DOY 292**
    - **No problems were reported by DSS-65.**
    - **DSS-15 reported that the tape ran off the reel.**
    - **Tapes set to JPL Correlator for processing.**
- **Metrics**
  - **2 observations – 99% of data time utilized.**

## **Cat M & E**

- **DOY 281**
  - No problems were reported by either DSS-15 or DSS-65.
  - Tapes sent to JPL Correlator for processing.
- **DOY 289**
  - DSS-65 reported that the antenna hit azimuth prelimits.
  - DSS-15 reported that communications with the equipment was lost due to UPS failure.
  - Tapes sent to JPL Correlator for processing.
- **DOY 296**
  - No problems were reported by either DSS-15 or DSS-45.
  - Tapes sent to JPL Correlator for processing.
- **Metrics**
  - 3 observations – 97% of data time utilized.

## Radio Stars

- **DOY 288**
  - X-band astrometry experiment to look for candidate stars that may contain extrasolar planets.
  - DSS-14 reported a problem with the PCG.
  - DSS-63 reported problems with the EAC.
  - Data tapes sent to the Bonn Correlator for processing.
- **DOY 296**
  - X-band, dual polarization, astrometry experiment to look for candidate stars that may contain extrasolar planets.
  - No problems reported by either DSS-14 or DSS-63.
  - Data tapes sent to the Bonn Correlator for processing.
- **DOY 303**
  - X-band astrometry experiment to look for candidate stars that may contain extrasolar planets.
  - No problems were reported by DSS-63.
  - DSS-14 reported that 2 minutes lost due to problems with zenith calibrations.
  - Data tapes sent to the Bonn Correlator for processing.
- **Metrics**
  - 3 Observations – 98% of data time utilized.

## Space Geodesy Program

- **COREB-702**
  - **DSS-65 reported that the antenna went into Azimuth prelimits.**
  - **Data tapes sent to the Haystack Correlator for processing.**
  - **98% of data time utilized.**



# ***CHANDRA***

*JOINT USERS RESOURCE ALLOCATION PLANNING COMMITTEE*

**Kevin Marsh**

**November 16, 2000**

**<http://chandra.harvard.edu/index.html>**

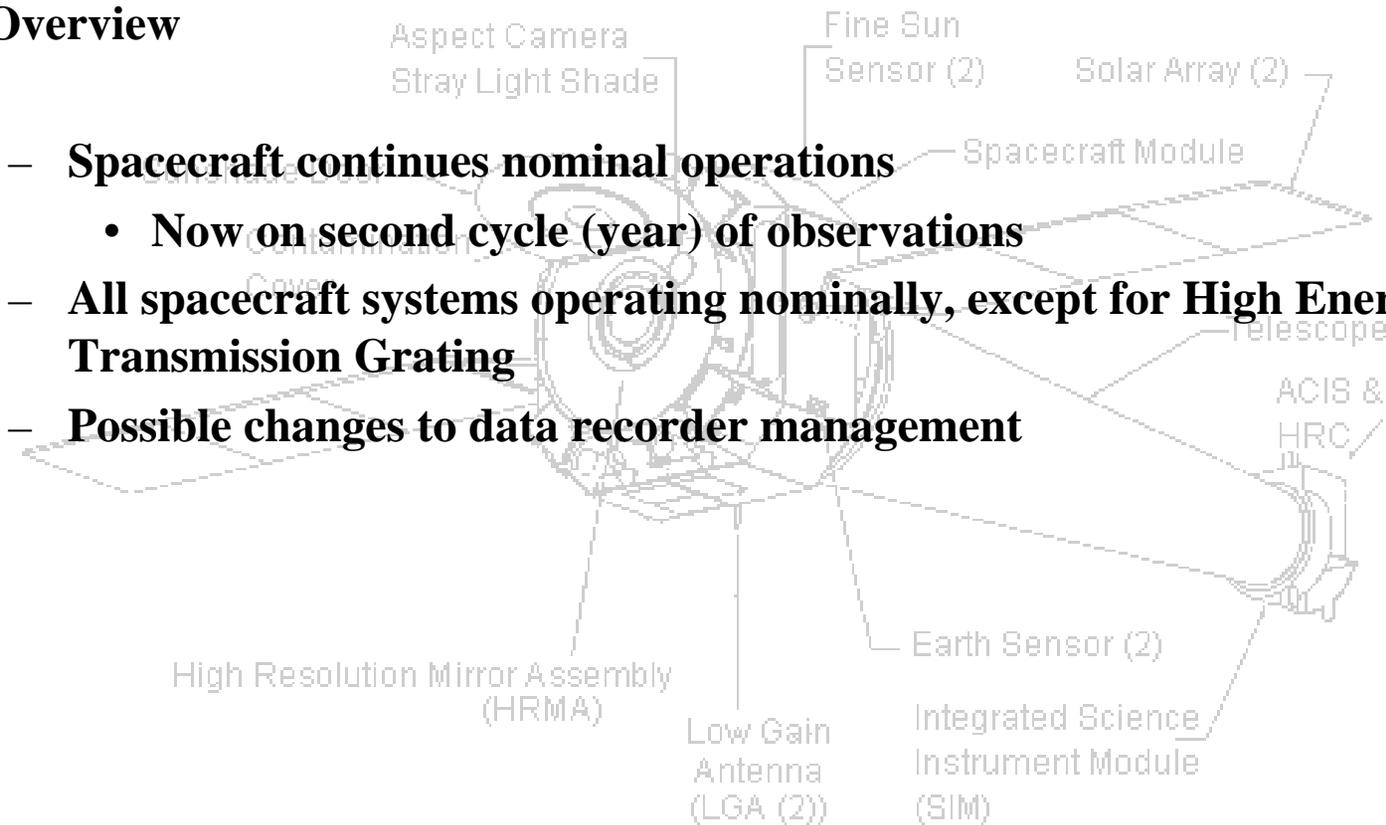




# *Chandra Status*

- **Overview**

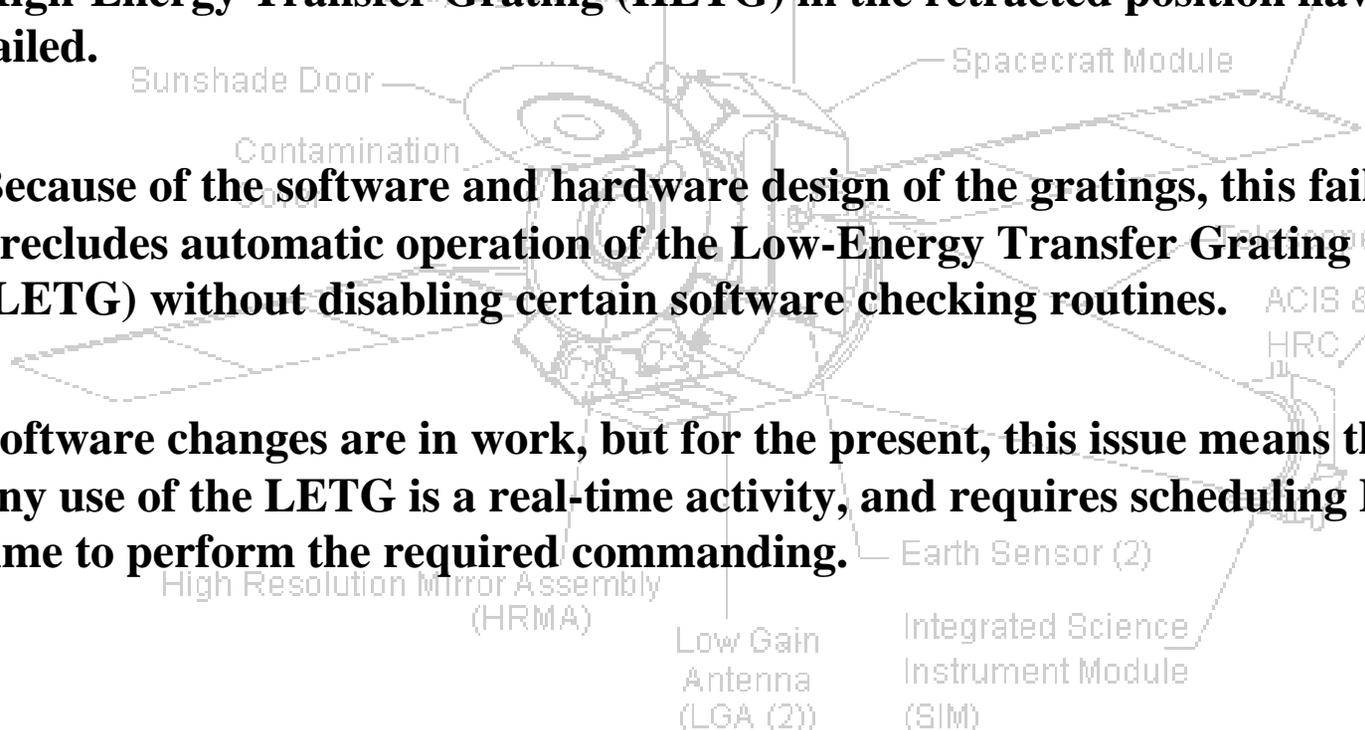
- **Spacecraft continues nominal operations**
  - **Now on second cycle (year) of observations**
- **All spacecraft systems operating nominally, except for High Energy Transmission Grating**
- **Possible changes to data recorder management**





# *Grating Anomaly*

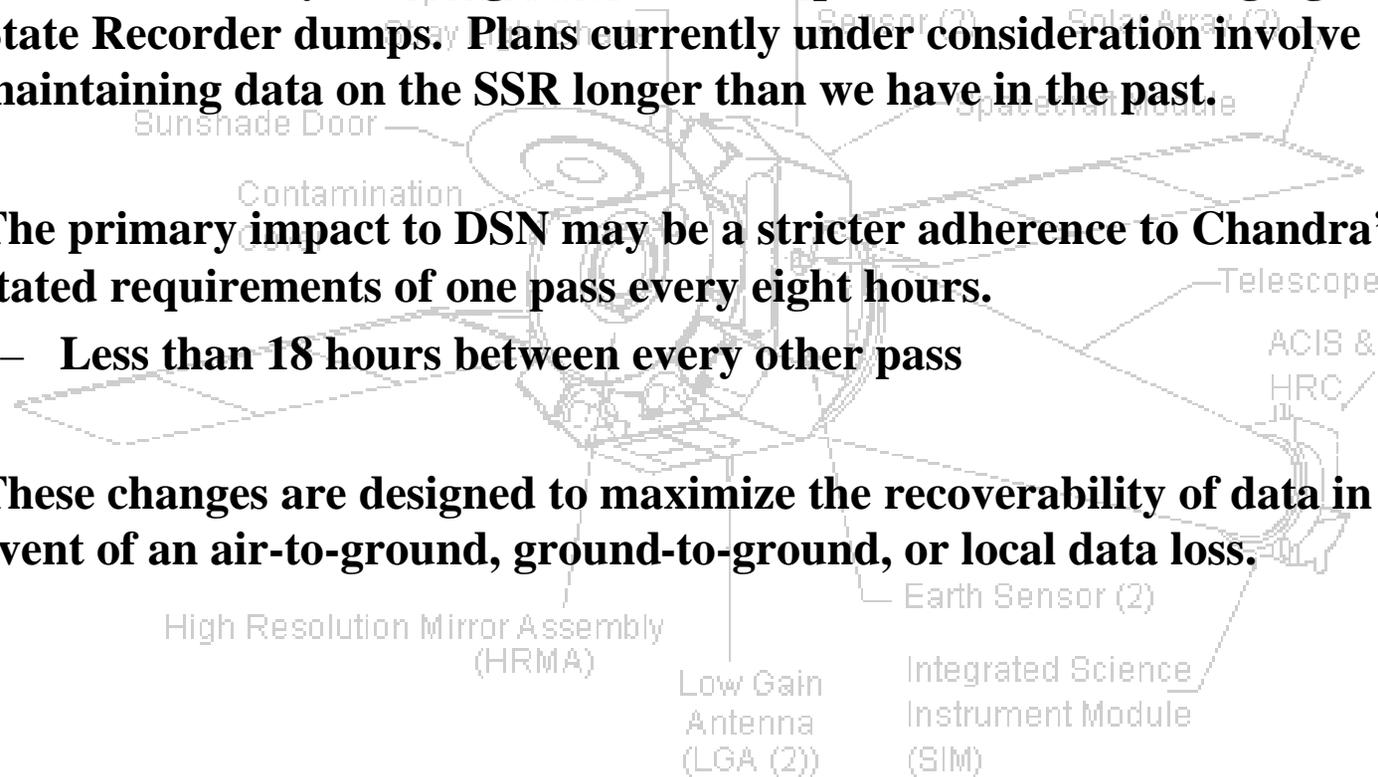
- As of 06/16/00, the micro-switches that feed the position telemetry for the High-Energy Transfer Grating (HETG) in the retracted position have failed.
- Because of the software and hardware design of the gratings, this failure precludes automatic operation of the Low-Energy Transfer Grating (LETG) without disabling certain software checking routines.
- Software changes are in work, but for the present, this issue means that any use of the LETG is a real-time activity, and requires scheduling DSN time to perform the required commanding.





# *Data Management*

- We are currently working on alternative procedures for managing Solid State Recorder dumps. Plans currently under consideration involve maintaining data on the SSR longer than we have in the past.
- The primary impact to DSN may be a stricter adherence to Chandra's stated requirements of one pass every eight hours.
  - Less than 18 hours between every other pass
- These changes are designed to maximize the recoverability of data in the event of an air-to-ground, ground-to-ground, or local data loss.

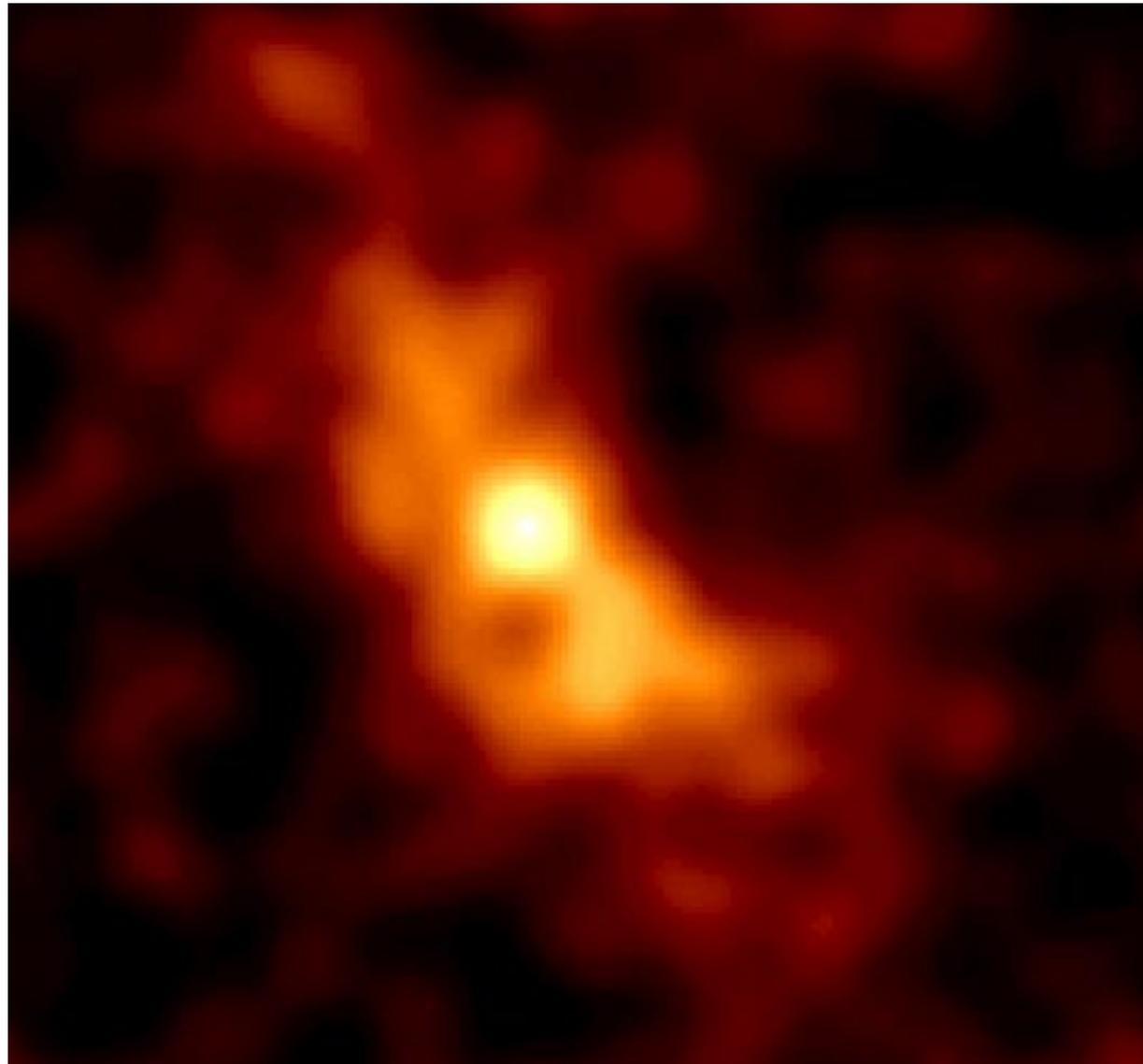




# Chandra X-ray Observatory

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## Comet C/1999 S4 (LINEAR)

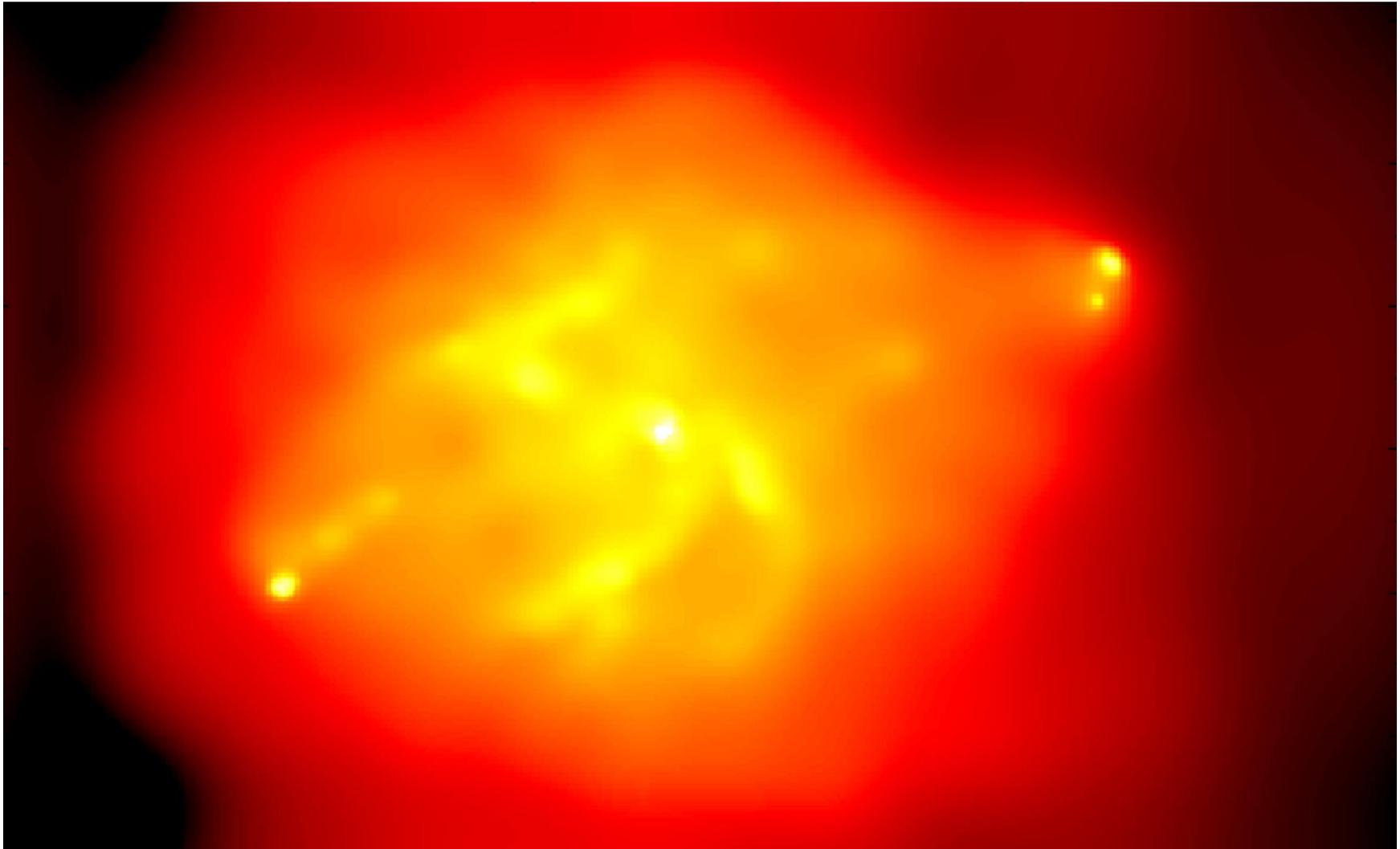




# Chandra X-ray Observatory

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## Cygnus A

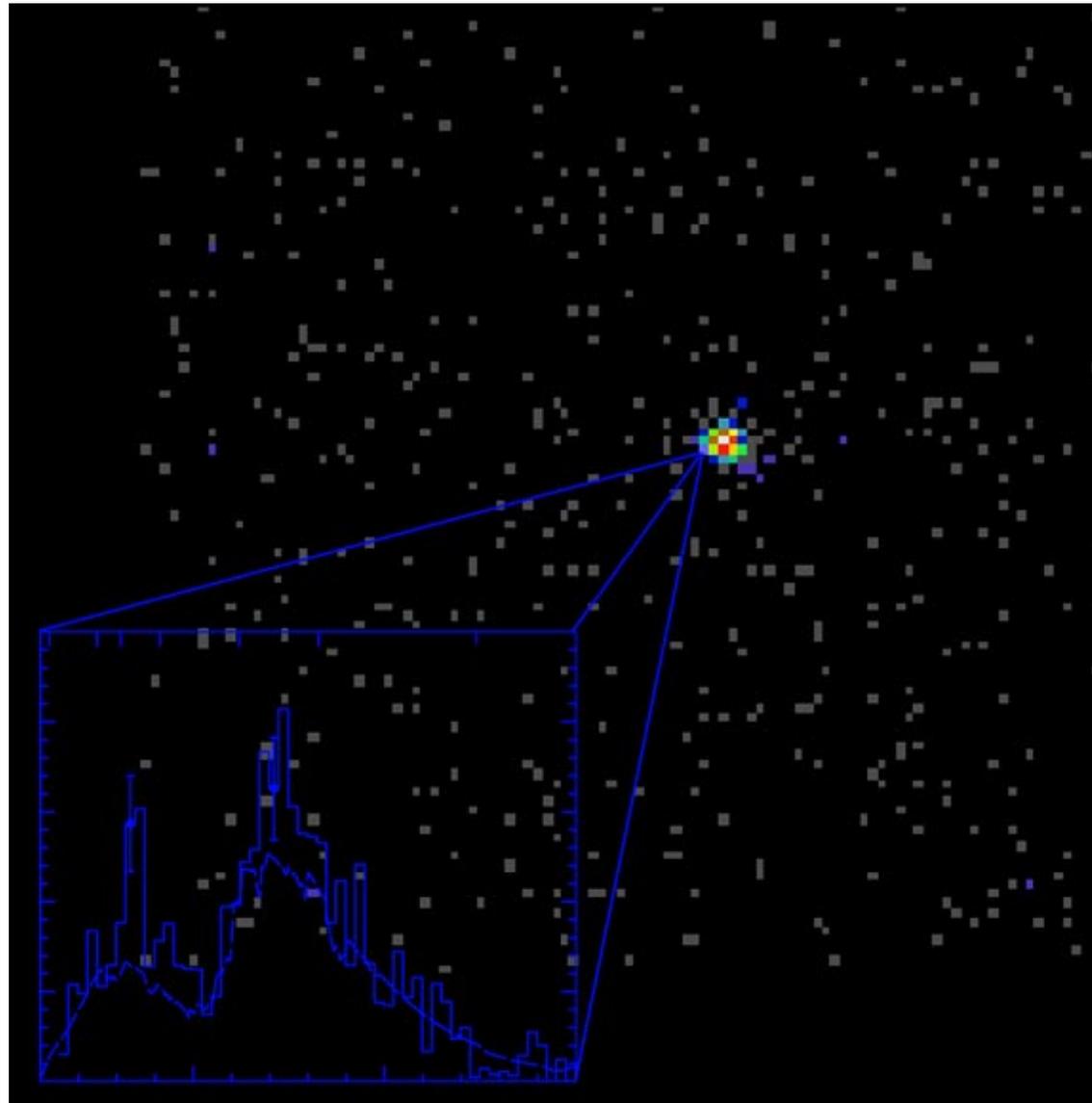




# Chandra X-ray Observatory

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GRB991216





**WELCOME**

# ***STARDUST Project***



***JOINT USERS***

***RESOURCE ALLOCATION  
PLANNING COMMITTEE***

***R. E. Ryan***

***November 16, 2000***

***NASA Jet Propulsion Laboratory***

***<http://stardust.jpl.nasa.gov>***



# STARDUST



- **ON MISSION PLAN FOR EARTH GRAVITY ASSIST**
- **SPACECRAFT IS HEALTHY**
- **PRESENTLY 0.28 AU from EARTH**
  - **5 MIN RTLT**
  - **1.25 AU from SUN**
- **TMOD SUPPORT HAS BEEN VERY GOOD**
- **TCM-4 (start of EGA) MOVED FROM 11/14 to 11/28**
  - **additional 0.4 meters/sec**
  - **burn duration about 83 seconds (about 9 more secs)**



11/16/00

R. Ryan

1 of 3





# STARDUST



## PROBABLE SOLAR FLARE INCIDENT ON NOVEMBER 8

- **NO CONTACT EARLY ON NOV 9**  
**DSS 15 AND THEN 45 TRIED**  
**ADDED DSS 63 TRACK FOUND THE SIGNAL**  
**SWITCHED TO HGA DOWNLINK**  
**SPACECRAFT WAS SUN CONING AT 1 REV PER HOUR**  
**SHORT DSS 43 TRACK ON FRIDAY STARTED RECOVERY**  
**LARGEST SOLAR FLARE SINCE 1976 CONFIRMED BY NOAA**  
**RECOVERY AND RECONFIGURATION CONTINUED ON SATURDAY**
- **ON MONDAY NOV 13, SPACECRAFT PUT INTO SAFE MODE, THEN EXITED**  
**TRACKS ON TUES, WED AND THUR USED TO RELOAD AND RECONFIGURE**  
**RE-PLANNING FOR TCM-4**
- **TRACK TOMORROW WILL BE USED TO SWITCH BACK TO ALL-STELLAR MODE**  
**AND COMPLETE RETURN TO NORMAL OPERATIONS**



11/16/00

R. Ryan

2 of 3





# STARDUST



- **DECEMBER 5**  
**SOLAR OPPOSITION AND SPACECRAFT FLIP MANEUVER**
- **JANUARY 5**  
**TCM-5 FINAL EGA ADJUSTMENT**
- **JANUARY 15      1122 UTC**  
**EARTH GRAVITY ASSIST**  
**NAV CAMERA LUNAR IMAGES PLANNED at EGA plus 17 hrs**
- **FEBRUARY 14**  
**TCM-6 EGA CLEANUP**

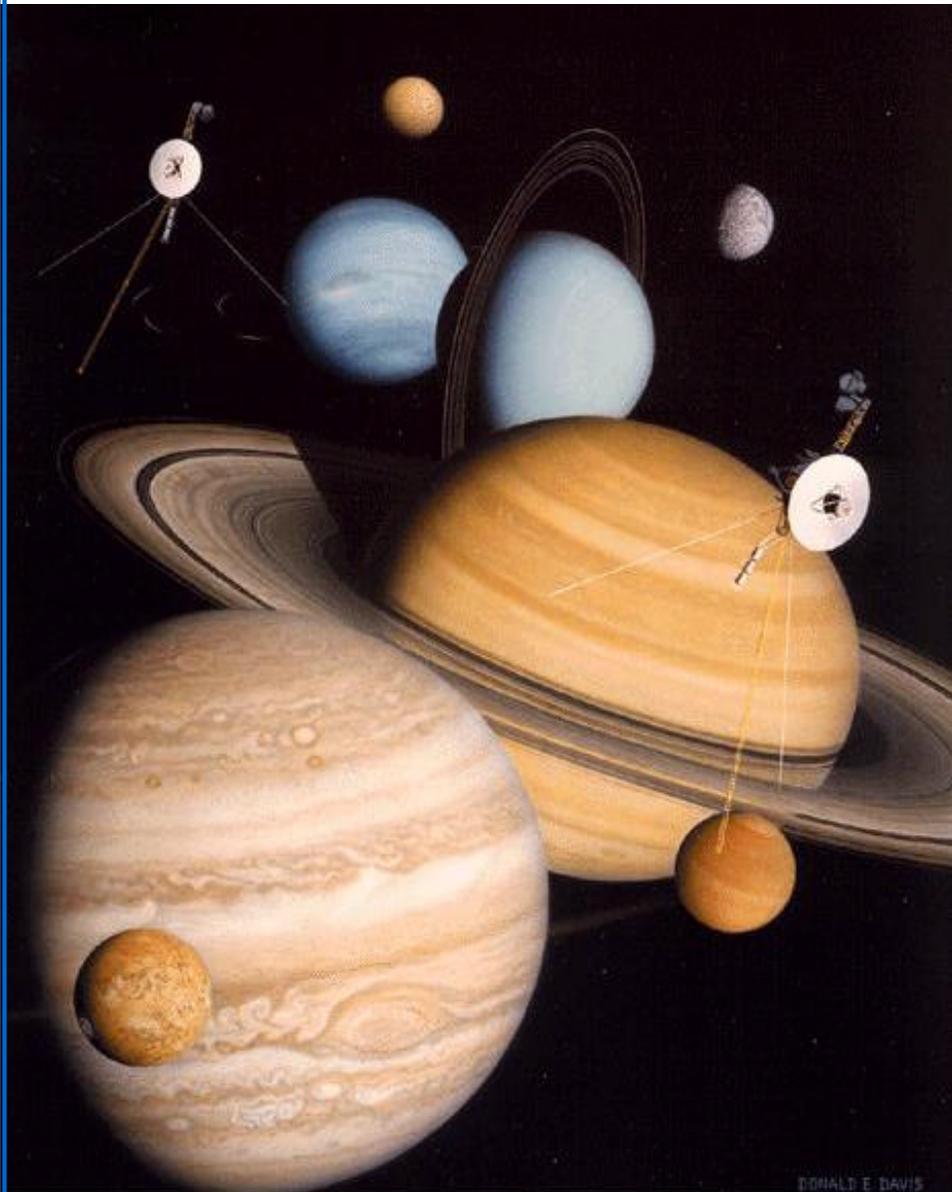


11/16/00

R. Ryan

3 of 3





*JOINT USERS  
RESOURCE ALLOCATION  
PLANNING COMMITTEE*

# ***VOYAGER***

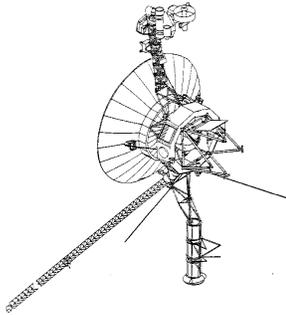
**FLIGHT OPERATIONS**



**J. C. Hall, Jr.**  
**November 16, 2000**

*NASA Jet Propulsion Laboratory*

*<http://vraptor.jpl.nasa.gov>*



# Voyager

## FLIGHT OPERATIONS

### JOINT USER'S RESOURCE ALLOCATION PLANNING COMMITTEE

#### FLIGHT SYSTEM STATUS

#### MISSION STATUS

##### VOYAGER 1

- \* HELIOCENTRIC DISTANCE – 79.3 AU, RTLT – 22h11m02s
- SPACECRAFT REMAINS HEALTHY
- MAJOR ACTIVITY - DTR PLAYBACK OF PWS DATA, ASCAL, & MAGROL
- RTLT = 24h00m00s in 2002-280/06:57:54 (10/7/02)

##### VOYAGER 2

- \* HELIOCENTRIC DISTANCE – 62.4 AU, RTLT – 17h26m26s
- SPACECRAFT REMAINS HEALTHY

#### GROUND SYSTEM STATUS

(October 14, 2000 - November 10, 2000)

**DSN - OVERALL SUPPORT – GOOD**

#### TOTAL SUPPORT TIME, OUTAGE TIME, % of OUTAGE TIME

S/C	SCHED SUPPORT	ACTUAL SUPPORT	70M TIME	SIGNIFICANT OUTAGE TIME	% of OUTAGE TIME
31	353.1	348.4*	162.5	2.5 (0.9)	0.98
32	243.1	243.1	4.2	12.7 (0.4)	5.39

**\*2.2 hours of DSS-14 support released to GSSR. 2.5 hours of DSS-15 support released to Gravity Probe B.**

**VOYAGER HOMEPAGE - <http://vraptor.jpl.nasa.gov>**



Joint Users Resource Allocation Planning (**JURAP**)  
Committee Meeting

Dave Doody  
November 16, 2000  
*NASA Jet Propulsion Laboratory*

<http://www.jpl.nasa.gov/cassini/>

# CASSINI

- Operations Basically Nominal
  - Jupiter Science Data Firehose includes thousands of images  
See <http://www.jpl.nasa.gov/jupiterflyby> for complete details from all experiments
  - Jupiter Closest Approach 2000 DOY 365 1005 TT
  - Attached charts show Repeating Template details (precursor to Saturn ops)
  - Minor instrument anomalies being worked and recovered near real time
- Collaborative Jupiter Observations with Galileo
  - Cassini RPWS observing Jovian emissions in frequency range overlapping GLL's
  - "Stereoscopic" observations to differentiate temporal vs. geometric variations
- Cassini MAPS Instruments monitoring Solar Wind
  - Deduce Solar Wind's influence on magnetosphere as GLL observes from within it.
  - Fundamental missing piece to Galileo's observations during its tour.

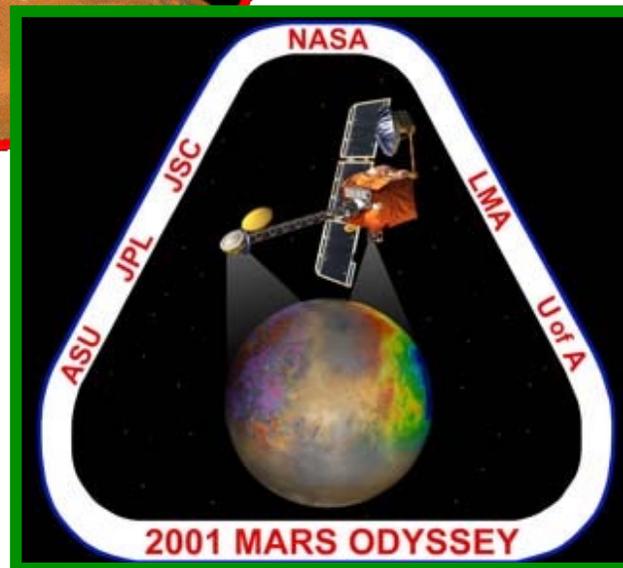
# CASSINI

- Huygens Data Link options being evaluated
- DSMS Data Repository (castds1) Anomaly Resolved
- Excellent DSN support
  - ECC test scheduled for DOY 334-335
- Science Instruments
  - ISS safed and was recovered DOY 310.
  - MIMI DPU Reset DOY 313, again this morning. Recovery in work.
- Gravitational Wave Experiment DSN Coverage Split:
  - Was 2 consecutive weeks early 2001. Now 1 week May, 1 week August 2001.
  - User Loading Profile changed
  - Initial GWE characterization can be followed by possible adjustments to experiment
  - Adds robustness to use of DSS-25 upgrade delivery overall



## ***Mission Management Office (MMO)***

# **Flight Operations Status**



E. E. Brower

November 16, 2000

*NASA Jet Propulsion Laboratory*

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*MMO*

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# AGENDA

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- **MGS**
  - **Color Status**
  - **Recent Events**
  - **Accomplishments**
  - **Upcoming Events**
  
- **Mars '01 (No Changes From October)**
  - **Mission Objectives**
  - **Mission Trajectory**
  - **Mission Timeline**
  - **Cruise Navigation Enhancements**



# MGS Status

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*MGS*

# COLOR STATUS

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	JUL	AUG	SEPT	OCT
•FLIGHT OPERATIONS				
–SPACECRAFT	G	G	G	G
–NAVIGATION	G	G	G	G
–MISSION PLAN/SEQUENCE	G	G	G	G
•SCIENCE	G	G	G	G
•FLIGHT SUPPORT				
–GROUND DATA SYSTEM	G	G	G	Y

# RECENT EVENTS

---

- **Began Beta-supplement operations** FEB 7
- **Completed 1 year of mapping** MAR 9
- **2nd mapping archive delivery (25,000 images)** MAY 22
- **Bistatic radar Radio Science measurement** MAY 14
- **MOLA polar scans** MAY17 - 18
- **Science Campaign D** MAY 29 - JUNE 5
- **Solar conjunction** JUNE 25 - JULY 9
  
- **Planetary Review extended mission Report** SEP 1
- **Science Campaign E** SEP 11-18
- **MOC focus calibrations** SEP 18 - OCT 3
- **MOLA polar scans** AUG 31, OCT 7
- **MOLA laser output drop to 18 mj** OCT 5
- **Southern hemisphere occultation observations** SEP 8, OCT 13
- **3rd mapping archive delivery (34,000 images)** OCT 2 - 31
- **Extended Mission full funding authorization** OCT 16

# FLIGHT OPERATIONS ACCOMPLISHMENTS

---

**First year mapping archive completed (60,000 images)**

**Four position/orbit solar array stepping strategy for aphelion power implemented**

**Partition 7 SSR playback/rewind strategy to mitigate Beta Sup. Losses implemented**

**GDS upgrade E1.0/2.0 installed: STL 10/16, MSA 10/23-24, SOPC 10/23**

**General Observation Program NRA written for Extended Mission**

**Safe Mode Power Concern addressed**

**Extended Mission targeting**

**workshop held October 25**

**example tests: MSSS evaluation of targeting**

**decisions: DSN coverage, overlapping sequences**

**ORTs scheduled: December 3-4, January 23**

**Extended Extended Mission analysis**

**spacecraft minimum drag configuration satisfies PQ in present orbit**

**permits continued mapping 1 yr beyond extended mission (4/03) or possible '03 relay**

---

*MGS*

# UPCOMING EVENTS

---

- **PSG Meeting** **NOV 29**
- **Extended Mission Target ORT** **DEC 4-5**
- **Campaign F (TES/RS coincident atm. obs.)** **DEC 9-DEC 21**
- **First DDOR observation** **JAN 9, 2001**
- **Extended Mission Target ORT2** **JAN 26, 2001**
- **End of primary mission** **FEB 1, 2001**
- **18 month archive complete** **APR 1, 2001**
- **Second year mapping archive complete** **OCT 1, 2001**
- **End of primary project** **OCT 1, 2001**
- **Beta supplement ends** **JUN 22, 2001**
- **End of nominal extended mission** **APR 22, 2002**
- **End of resource mission (no PQ orbit raise)** **APR 2003+**
- **End of extended project** **OCT 2003+**



# Mars'01 Status

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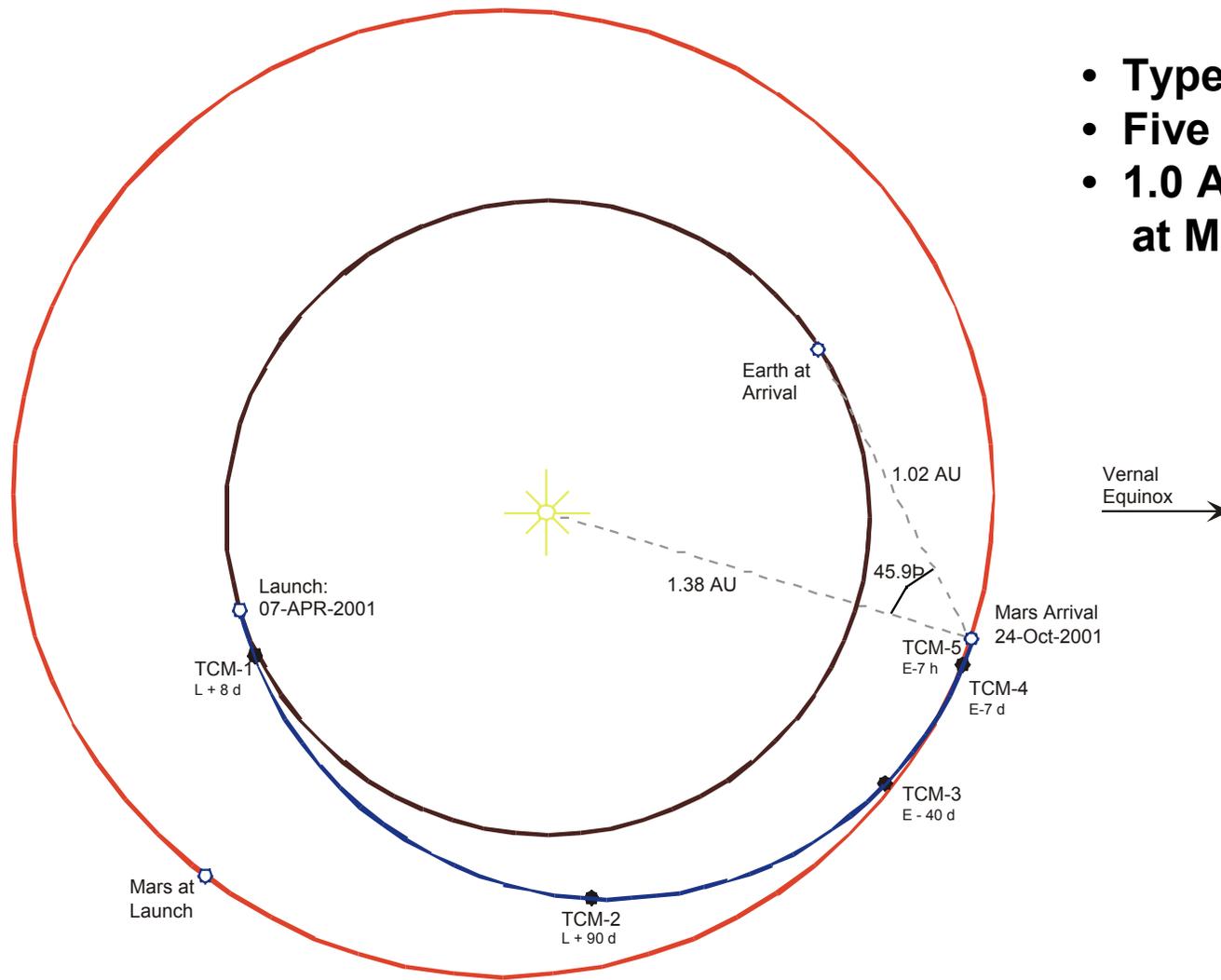
*Mars Surveyor Program 2001*

# MARS'01 MISSION OBJECTIVES

---

- **From Mars orbit, conduct a science mission for at least one Mars year (687 Earth days).**
  - **Globally map the elemental composition of the Mars surface.**
  - **Acquire high spatial and spectral resolution of the surface mineralogy.**
  - **Determine the abundance of hydrogen in the shallow subsurface.**
  - **Assess the Mars radiation environment.**
  - **Provide data for evaluation of future landing sites.**
- **Serve as a telecommunications relay for landed elements during the science mission, and for 1 Mars year following the end of the science phase, with a goal of an additional Mars year of relay activities (total mission lifetime goal of 3 Mars years).**

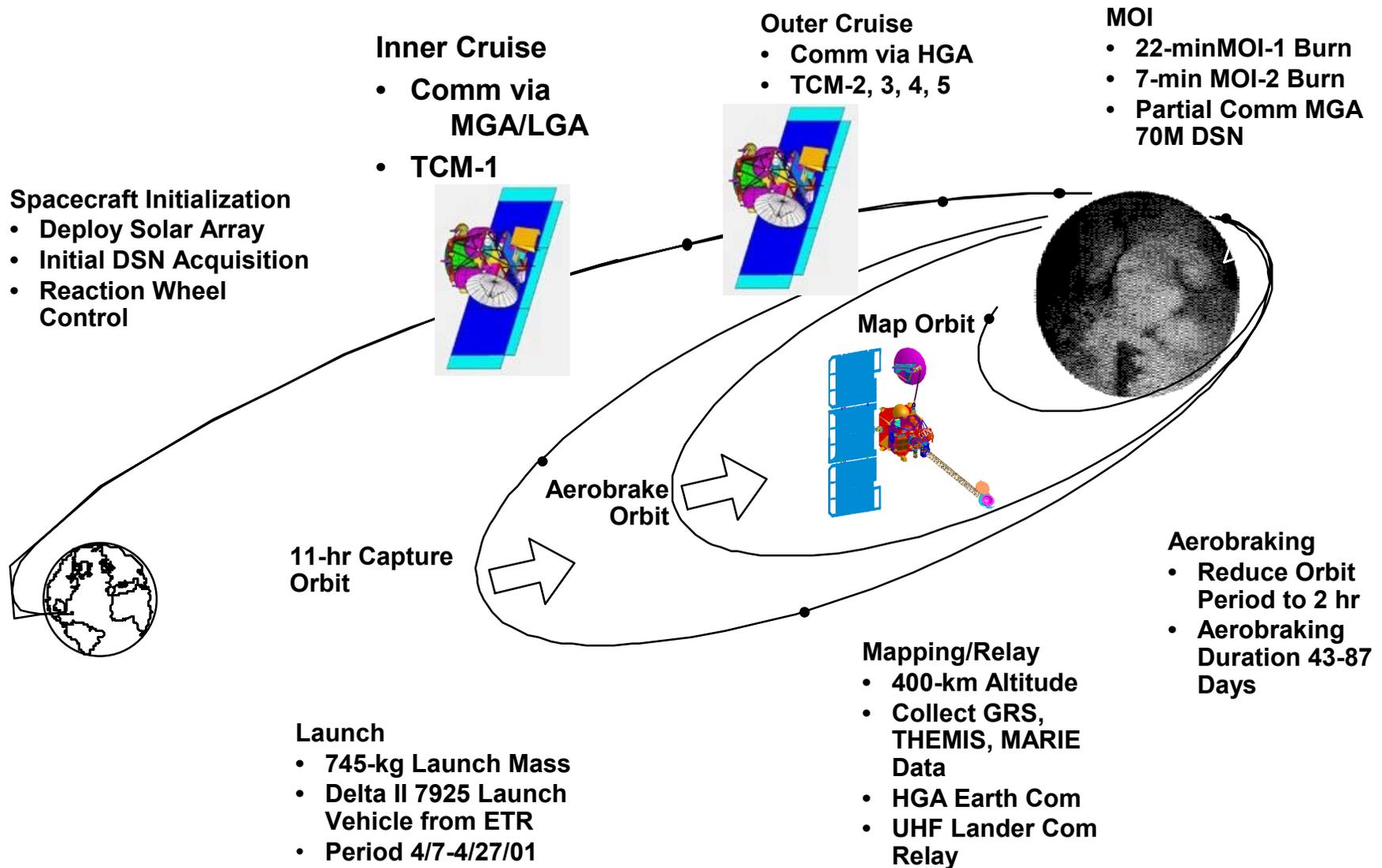
# MARS'01 TRAJECTORY



- Type I transfer
- Five TCMs planned
- 1.0 AU Earth range at Mars arrival

*Mars Surveyor Program 2001*

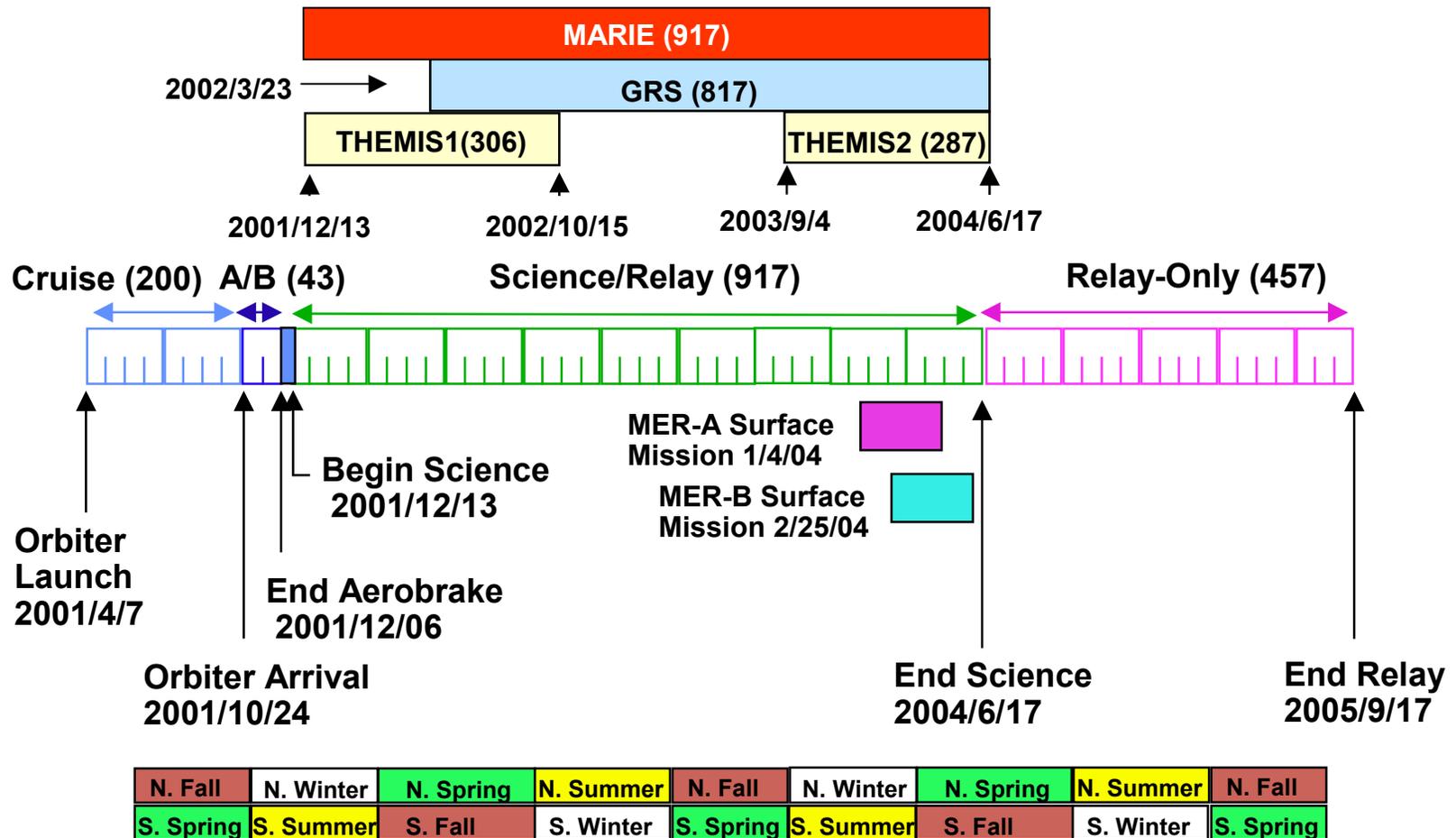
# MARS'01 MISSION TIMELINE



## Mars Surveyor Program 2001

# MARS'01 MISSION TIMELINE

Assumes launch at open of launch period



## Mars Surveyor Program 2001

# CRUISE NAVIGATION ENHANCEMENTS

---

<u>Risk Mitigation Approach</u>	<u>Status</u>	<u>Comments</u>
Active/passive thruster calibration during cruise	Baselined	Active thruster cal along Earth line shortly after launch. Passive cals around TCMs 2-4.
Delta Differential One-Way Range ( $\Delta$ DOR)	Baselined	To be tested during early cruise, utilized once per week during Mars approach phase. DOR tones on A-side SDST. MOU between Mars '01, '03 and MMO in works to fund TMOD $\Delta$ DOR support capability.

The Ulysses spacecraft is shown in a dynamic pose, appearing to fly through a fiery, orange and red plasma environment. The spacecraft's complex structure, including its solar panels and antennas, is clearly visible against the bright background.

# ulysses

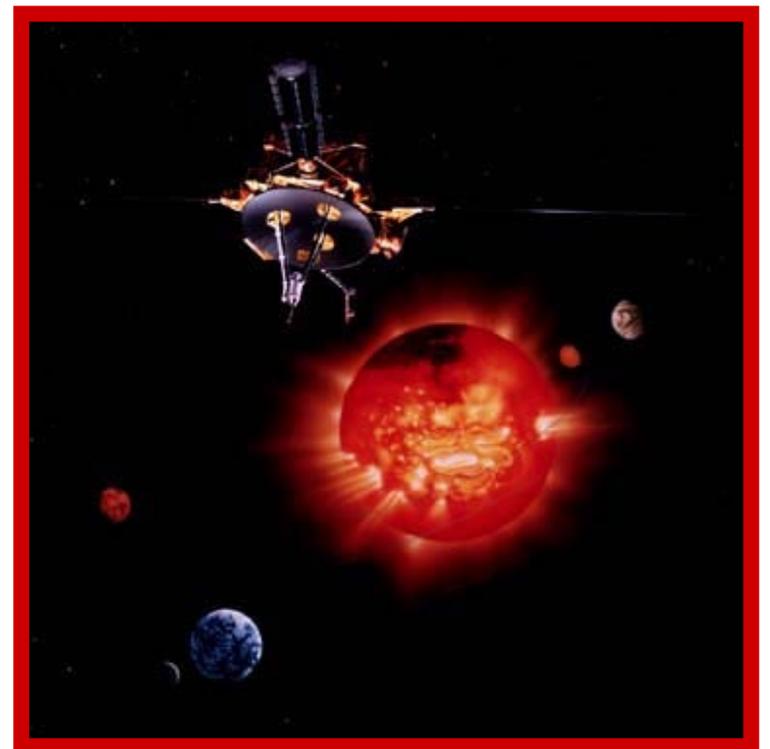
***JOINT USERS RESOURCE ALLOCATION  
PLANNING COMMITTEE***

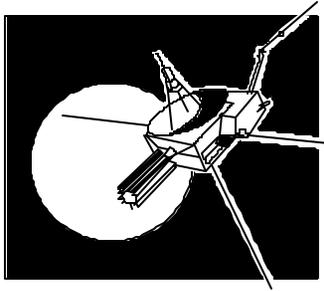
**I. J. Webb**

**November 16, 2000**

***NASA Jet Propulsion Laboratory***

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





## ULYSSES

### JOINT USERS RESOURCE

#### ALLOCATION PLANNING COMMITTEE

- 0 SPACECRAFT OPERATIONS ARE NORMAL. CURRENTLY EARTH POINTING MANEUVERS ARE BEING CONDUCTED EVERY THREE DAYS. INSTRUMENT CALIBRATIONS AND RECONFIGURATIONS ARE PERFORMED AS REQUIRED.
- 0 DOY 298 THROUGH 321 - DSS75 (KOUROU). PERFORMED 8 MISSION READINESS TESTS (MRTs). ALL TEST OBJECTIVES HAVE BEEN ACCOMPLISHED. TRAINING AND PROCEDURES DEVELOPMENT ARE STILL ONGOING.
- 0 DOY 305&307 - DSS 34. SUCCESSFULLY DEMONSTRATED CAPABILITY TO UPLINK AT ANTENNA ELEVATION LIMITS LOWER THAN 10 DEGREES OF ELEVATION.
- 0 DOY 314&315 - DSS 43. ANTENNA HALT DUE TO ERRONEOUS FILM HEIGHT ALARMS. FIRST OUTAGE = 4'27", AND SECOND OUTAGE = 2'15". PROBLEM APPEARS TO BE THE INTERFACE BETWEEN THE FHM AND THE DATA CONVERTER. SEVERAL BOARDS HAVE BEEN REPLACED AND MORE ARE ON ORDER. INVESTIGATION IS ONGOING.



# International Solar Terrestrial Physics

*exploring the Sun-Earth connection*

# ISTP

Joint Users Resource Allocation Planning  
Committee (JURAP)

Albert Chang for Ron Mahmot

November 16, 2000

*NASA Jet Propulsion Laboratory*

<http://www-istp.gsfc.nasa.gov/istp/>



# MONTHLY SPACECRAFT & PAYLOAD STATUS FOR IMAGE, ACE WIND, POLAR, AND SOHO



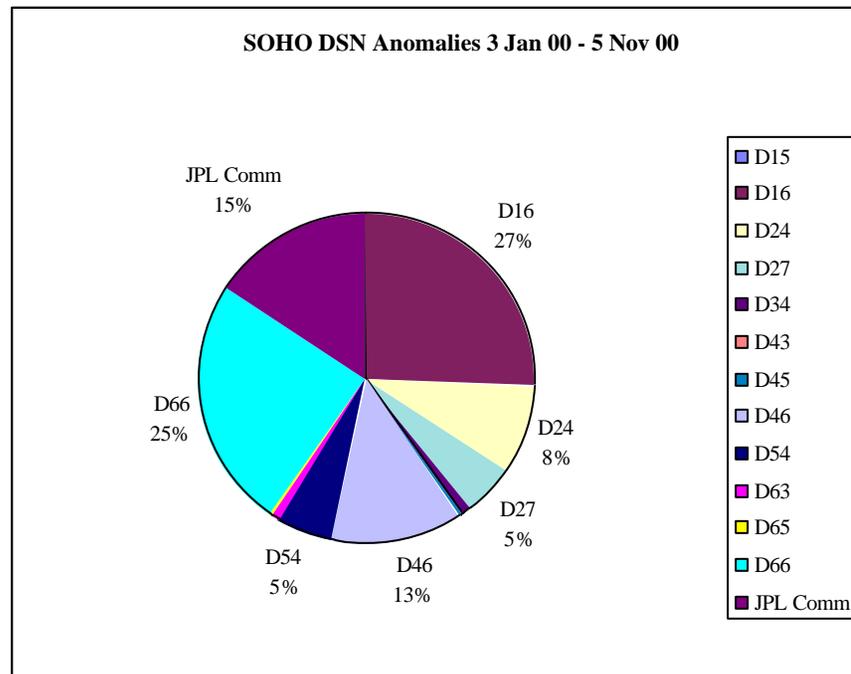
- THE WEEKLY ACE ATTITUDE MANEUVERS WERE SUCCESSFULLY PERFORMED.
- ALL Space Science Mission Operations (SSMO) SPACECRAFT & INSTRUMENTS SUPPORTED BY DSN PERFORMED NOMINAL THIS MONTH WITH THE FOLLOWING EXCEPTIONS:
  - As a result of the November 8<sup>th</sup> solar storm
    - The WIND s/c incurred a single event upset on November 9<sup>th</sup> which left several subsystems disabled (see 11/9/00 incident report from Bob Dutilly for more details). Recovery proceeded nominally.
    - The SOHO CDS and SUMER instrument detectors were temporarily saturated. In addition the s/c autonomously changed guide twice.
  - The ACE SEPICA instrument is not generating any science data. The instrument team is investigating the problem.
- **THE IMAX MOVIE SOLARMAX WAS PREVIEWED AT NATIONAL AIR & SPACE MUSEUM ON NOVEMBER 2**
  - General public will now have the opportunity to see fantastic images from SOHO, TRACE, POLAR, and Cluster II
- **HAPPY 6TH ANIVERSARY TO THE WIND TEAM**
  - WIND launched November 1 from KSC aboard Delta 227



# SUMMARY OF SOHO DSN ANOMALY COUNT THIS YEAR



D15	D16	D24	D27	D34	D43	D45	D46	D54	D63	D65	D66	JPL Comm	Total
0	92	29	19	3	0	1	45	19	3	1	88	55	355





# ISSUES



- CAST TOOL - FOR 19 MONTHS (AND COUNTING) GSFC HAS ATTEMPTED TO PUT THE JPL CAST TOOL IN THE HANDS OF OUR SCHEDULERS IN ORDER TO APPROVE CONFLICT RESOLUTION EFFICIENCY.
  - So far we have not been successful In getting JPL to allow this to happen.
  - There seems to be lingering licensing and security issues.

# **GALILEO EUROPA MISSION**

***JOINT USERS RESOURCE ALLOCATION PLANNING COMMITTEE***



***Michelle Medina-Gussie***

***November 16, 2000***

***NASA Jet Propulsion Laboratory***

***<http://galileo.jpl.nasa.gov/>***



# ***Galileo Europa Mission***

## **SIGNIFICANT EVENTS**

- **Completed the playback of Ganymede-28 encounter**
- **Began real time science buffer dump to tape strategy**
- **Submitted DSN Loading Profile Study Request For The Galileo Millennium Mission**



# ***GALILEO EUROPA MISSION***

## **PROJECT PLANS**

- **Begin real time science buffer dump to tape playback**
- **Next encounter Ganymede-29 (28 December)**

A detailed illustration of the Deep Space 1 spacecraft, showing its gold-colored body, solar panels, and various instruments, set against a black background with stars and a blue nebula.

# DEEP SPACE 1

Joint Users Resource Allocation Planning Committee (JURAP)

**K. Moyd**

*NASA Jet Propulsion Laboratory*

**November 16, 2000**

*<http://nmp.jpl.nasa.gov/ds1/>*

## Previous Month's Activities and Current Status

- Solar Conjunction: Within 5 degrees from October 22 – December 5, 2000.
  - No spacecraft attitude changes from October 30 through November 28.
  - Will decrease telemetry data rates between SEP 5 degrees and 2 degrees.
  - No required commanding below 3.8 degrees.
  - Because thrusting is effectively perpendicular to Earth, will not be able to detect thrusting with Doppler.
- Continued thrusting with turns to Earth for downlinking on October 23 and 30.
  - Mission Design has determined that we need to throttle down our engine for a while, so we will be thrusting at a low level at least through the end of December. (We need to keep the ion propulsion system going, since its gimbals provide fine attitude control, thus saving hydrazine.)
  - October 30: Successful track except telemetry lock sporadic for an hour. Possibly correlated with solar mass ejection.
  - November 7: Ka-band carrier-only (DSS-25, 13), X-band –tone detection (DSS 25)  
Successfully locked up on both Ka-band and X-band. Detected tone (Nominal). Sufficiently good 2-way data to provide to Navigation.  
Note: thanks to those who helped get the Ka-band capability restored at DSS-25 in time.
  - November 14: (SEP ~.5 degrees) X-band tone detection mode (DSS-14)  
Detected tone (Nominal) with both one-way and two-way data.  
Signal level about 12 db below non-solar predicts. Doppler broadening consistent with being in quiet region.

## Telecom-related problems from October 15 through November 15.

- Problems with incorrect uplink parameters due to wrong configuration table being used. New table created to be used for all passes and all other tables deleted. Will require override of one parameter for anchor tracks.

### Near Term Plans

- End of Conjunction
  - On November 20 we will attempt both X and Ka telemetry at DSS-25. The burn star selected for the conjunction period will allow the High Gain Antenna to be within 2 degrees of Earth point. (SEP 1.9 degrees)
  - Will stay on the Conjunction burn star until spacecraft status confirmed on November 28 (SEP 3.8 degrees), then command a turn to a better Earth star.
- Instrument activities
  - Turn on of PEPE instrument to its planned encounter operation level planned for December 5–12.
  - MICAS scattered light test, originally planned for October 18, moved to December 12
  - Data return from these activities will extend into January.
- Possibly turn on K-band for DSN testing at DSS-14.

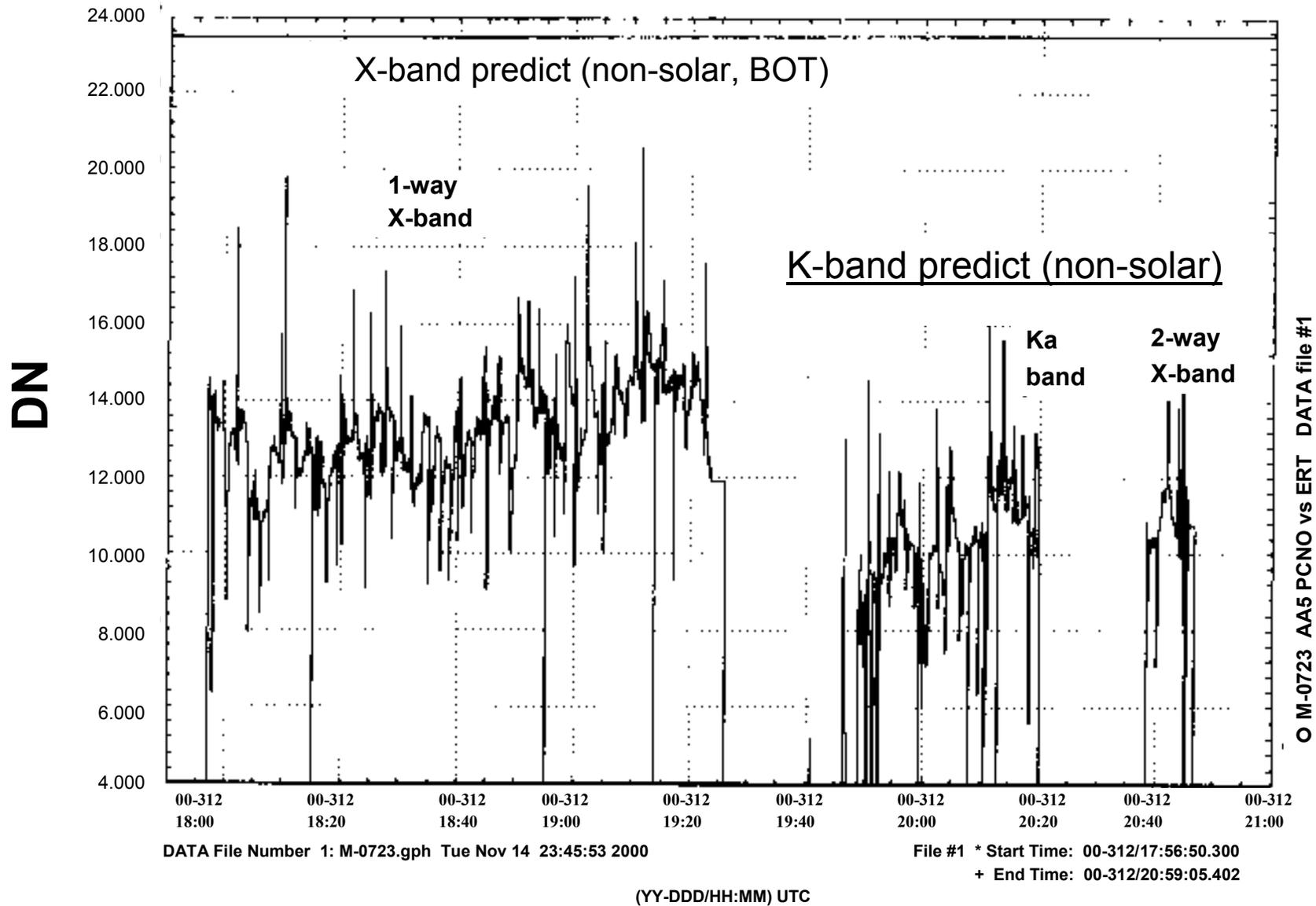
## Long Term Plans

- The M6F3 version of flight software will be uplinked starting March 5, 2001.
  - Encounter rehearsal will be done after the software load as part of validation.
- Thrusting needed to reach Comet Borrelly continues until April-May, 2001.
  - Because of the significant decrease in use of hydrazine while thrusting, we will be thrusting even during planned “coast” time. The strategy is still being developed.
- At least one encounter rehearsal will be conducted between June and September.
- Comet Borrelly encounter will occur September 22, 2001.
  - Time of the encounter will be controlled so as to work around the unavailability of DSS-63.

Zoom to  
125%

M-0723 (AA5 PCNO) vs ERT

SEP Angle ~ 61 degrees)

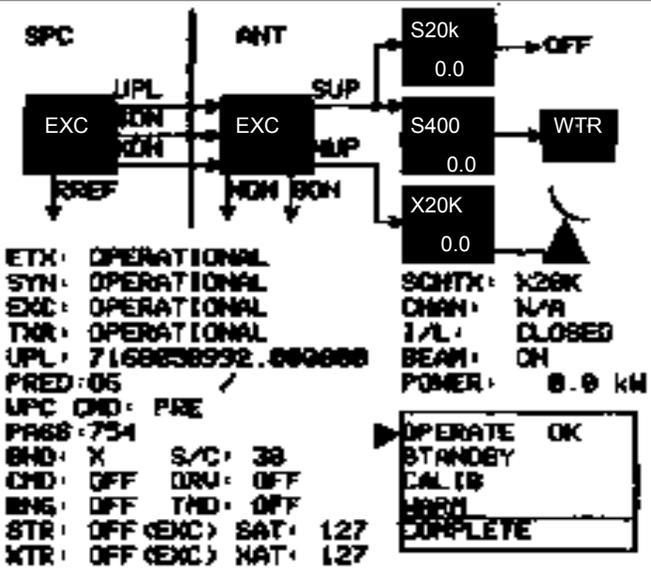
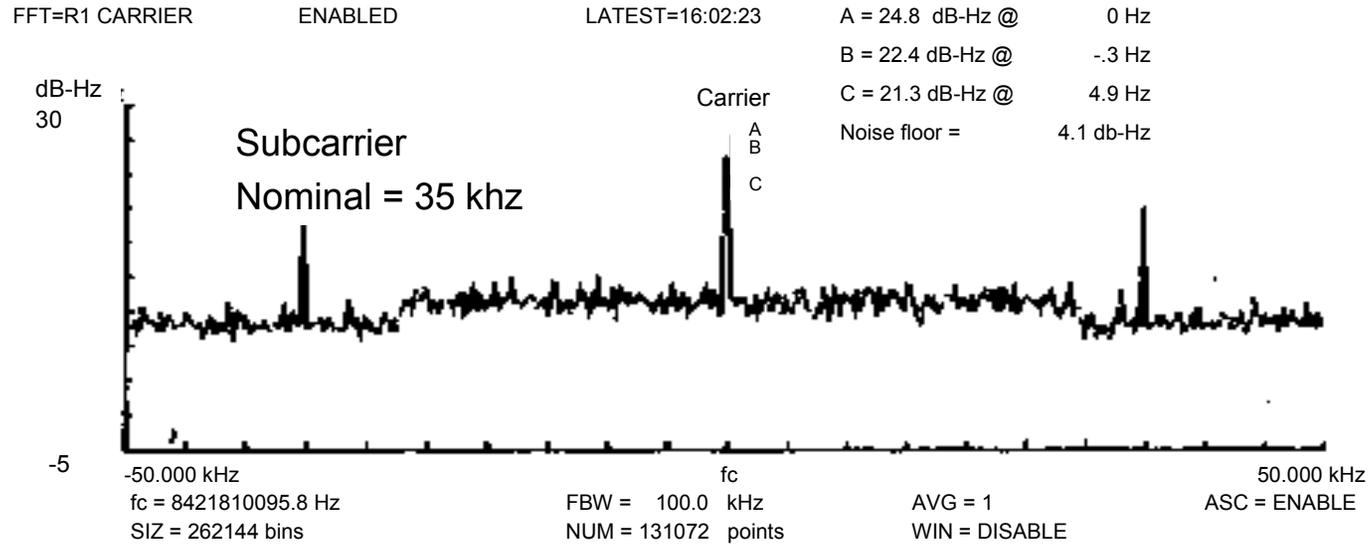


DS1

Date: Tue. Nov. 14, 2000 23:49:32

# DS1 Tone Detection – DOY 319

Zoom to  
125%



	CHI S OFF	CHI X
RCV	38	38
SCH	06/	06/
SETID		
PASS	754	754
WAY	1	1
SAM	0.1	0.1
NEAS	1000000.852	1000728.040 2
PRED	6127233533.723	1002979.320 Hz
RESID	-6126233532.634	-2249.115 6
NOISE	0.000	1.357 z
BLIP	137.000	2051.000 cy
+BLIP	11.000	-991.000 cy
DOP EXC	22000000.000	22000000.000 Hz
DOP REF	22000002.000	22031459.000 Hz
DOP RCVR	BLK4 R0	BLK5 R2 CP4
S - 3/11X		0.000 Hz
RT RNG	0.0	0.0 ms
RESID	0.0	0.0 nr
DRUID	0.0	0.0 nr
P-DRUID	0.0	94135.3 nr
MODE: RUN	RPT	REC

# NEAR



## *Mission Operations*

DSN Scheduling

November 16, 2000

*Joint Users Resource Allocation Planning Committee*

---

J. Miller for G. Moore  
gary.moore@jhuapl.edu  
(240)228-8352



Johns Hopkins University Applied Physics Laboratory

*<http://near.jhuapl.edu/>*



*Near Earth Asteroid Rendezvous*



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# **NEAR Mission Operations**

## **DSN Scheduling**

Gary Moore

[gary.moore@jhuapl.edu](mailto:gary.moore@jhuapl.edu)

(240)228-8352



# Spacecraft Status

---



- NEAR has been in orbit around the asteroid Eros for 276 days.
- ***Just 90 Days until End-of-Mission!***
  - *Think of all the DSN time that is going to be freed up!!!*
- Spacecraft is healthy. All instruments on except Near Infrared Spectrometer (NIS) which is disabled due to excessive current draw.
- Range from Sun is 1.68 AU
- Range from Earth is 1.68 AU
- The RTLTL is 27 min 58 sec (Nov 16th)
- In 195 x 197 km orbit around Eros.
- NEAR currently using 1/6 convolutional encoding for all tracks.
- Highest downlink data rate on 70-meter antennas is 26.5 kbps until End-of-Mission. Downlink on 34-m will be only 8.8 kbps until EOM.



# *Last Month's Events*

---



- **Last month's OCMs:**
  - **OCM-15 DOY 294 @ 2140 UTC (10/20/2000)**
    - **Circularize @ 50 km (51 X 49 km) orbit ~0.59 m/sec**
  - **OCM-16 DOY 299 @ 2220 UTC (10/25/2000)**
    - **Transfer to 50 X 21 km orbit - 5-6 km altitude at closest approach**
    - **Only fractional orbit.**
  - **Close Approach Flyover**
    - **Estimated 5.4 km minimum altitude above Eros surface.**
  - **OCM-17 DOY 300 @ 1740 UTC (10/26/2000)**
    - **Transfer to 200 km x 61 km orbit, inclination = 124 deg**
  - **OCM-18 DOY 308 @ 0700 UTC (11/03/2000)**
    - **Circularize to 196 X 198 km orbit**



# *Upcoming Activities*

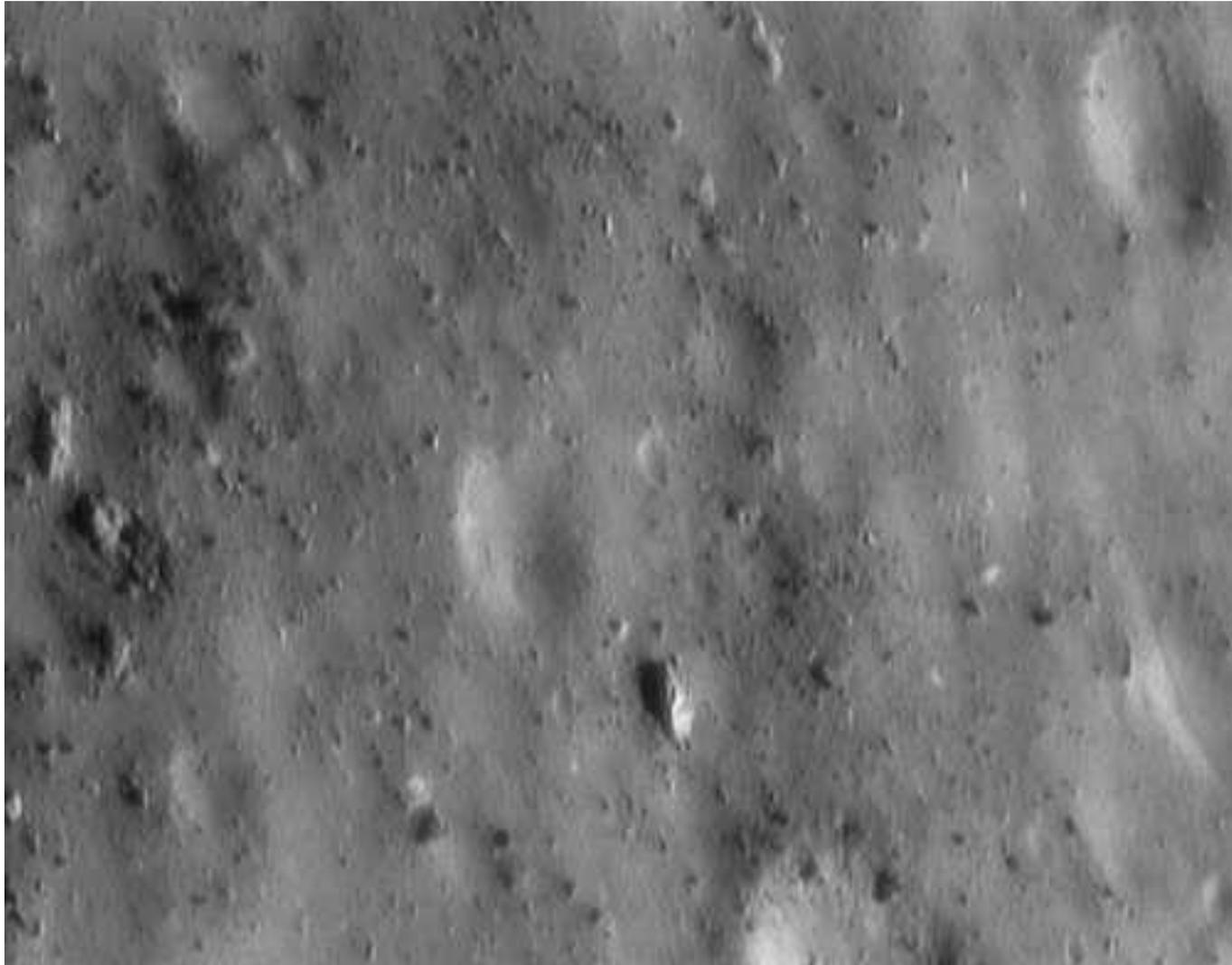
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- **Additional 35 km Orbit Phase starting Dec. 13th (DOY 348) - Jan. 24th, 2001 (DOY 024)**
  - **More time for gamma ray spectroscopy to make up for lost time back in July due to solar flare activity.**
- **Another close Approach Flyby in late January.**
- **Pending approval from Headquarters, powered descent and touchdown on Eros in final few days of mission.**



# *Eros Up Close*





## *Revised NEAR Maneuver Plans*

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- **OCM-19: DOY 342 @ 0112 UTC (12/07/2000)**
  - **Transfer to 196 X 35 km orbit**
- **OCM-20: DOY 348 @ 0917 UTC (12/12/2000)**
  - **Circularize @ 36 X 34 km orbit ~0.49 m/sec**
- **OCM-21: DOY 024, 2001 @ 2200 (01/24/2001)**
  - **Transfer to highly 35 x 21 km**
  - **6 - 8 close approaches**
- **OCM-22: DOY 028, 2001 @ 0030 (01/28/2001)**
  - **Lower to 35 x 19 km**
  - **1 or 2 close approaches**
- **OCM-23: DOY 028, 2001 @ 1250 (01/28/2001)**
  - **Recover to 35 km orbit.**



# *January Close Approach Flyover*

---



- **Similar to October Close Approach Flyby**
  - Minimum altitude 1 - 4 km.
  - First OCM to set up highly elliptical lower orbit on DOY 024
  - OCM early on DOY 028 (@0030) to set up closest approach
  - Closest approach on DOY 028.
  - Recover with OCM later that day (@1250)
  - Return to 35 km orbit until DOY 043 when Powered Descent is initiated.



## *End of Mission Scenarios*

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- **Currently Pending Approval**
  - **Powered descent on Feb. 12th, 2001**
    - **Collect images within 1 km range of spacecraft, best resolution on the order of 20 cm. Play back before touchdown.**
    - **Demonstrate techniques for approach, landing on small bodies (asteroids, comets, moons)**
      - **Benefits future missions (MUSES, Rosetta)**
    - **Initiate at @ 1700 on DOY 043 (“In high gate”).**
    - **Simultaneous coverage using DSS-63 and -14 from 1635 - 2000.**
    - **Touchdown at @ 1900 with surface contact velocity 1.8 m/sec.**
    - **Attempt to confirm spacecraft on surface.**
    - **Terminate DSN support and declare End-of-Mission Feb. 14th**



# Advanced Cometary Explorer (ACE)

Joint Users Resource Allocation Planning Committee

Bob Sodano  
NASA Goddard Space Flight Center  
November 16, 2000

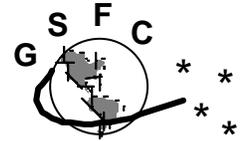
GSFC 581/444/Mission Director  
Robert.J.Sodano.1@gssc.nasa.gov  
(301) 286-66506 FAX: (301) 286-1624

<http://www.srl.caltech.edu/ACE/>

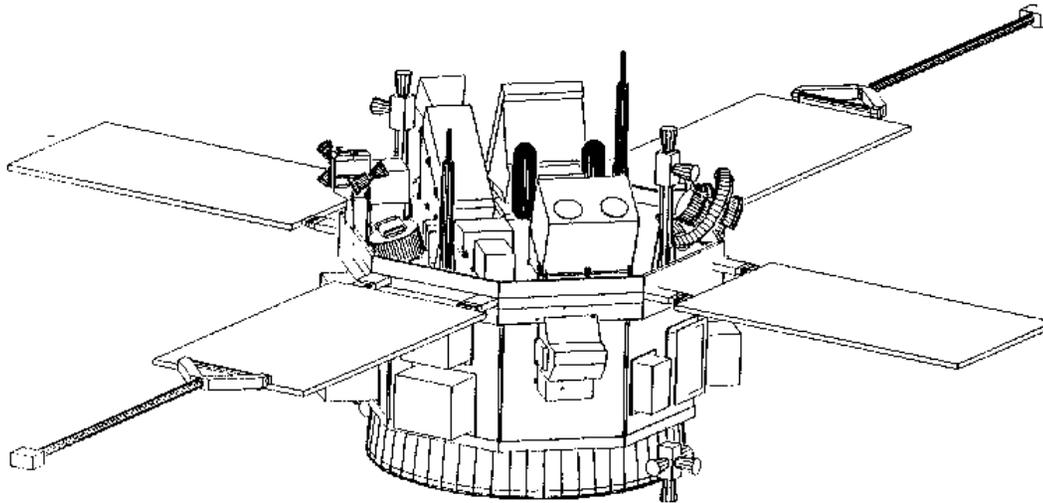




# Joint Users Resource Allocation Planning Committee Meeting



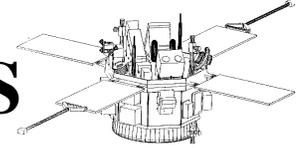
**JPL**  
**November 16, 2000**



Bob Sodano/GSFC 581/444/Mission Director  
Robert.J.Sodano.1@gssc.nasa.gov  
(301) 286-66506 FAX: (301) 286-1624



# SPACECRAFT/OPERATIONS STATUS



- **S/C Subsystem Status**

- » *Attitude Determination and Control (ADC)*

- System performance has been nominal with High Gain Antenna (HGA) constraint of  $4.5^\circ$

- » *Propulsion*

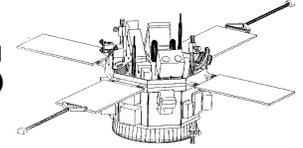
- Nominal system performance including Z-axis control maneuver in August
- **Next Z-axis control maneuver February**
- All propellant line and tank temperatures are within operational limits
- Fuel tank pressures: group A = 123.53 psi; group B = 125.49 psi

- » *RF*

- No reported problems of link margin impact to data from NOAA or Air Force ground networks at low data rate using  $4.5^\circ$  HGA constraint for the past ~14 months



# SPACECRAFT/OPERATIONS STATUS



- S/C Subsystem Status (cont'd)

- » *C&DH*

- **FOT cycled through all the SSR telemetry sections**

- 15 Single Bit Errors (SBEs) found and corrected on SSR A(12/99)
- 0 SBEs found and corrected on SSR B

- The FOT cycled through all the SSR telemetry sections again **following the July and November solar event and the SSR's suffered no additional SBEs**

- **Solar event in July had no effect on active C&DH autonomy and time tag bins (commands stored on C&DH - A)**

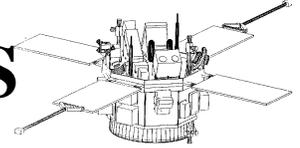
- » *Thermal*

- Hinge Blanket temperature range over last 6 months (51-68° C)

- Hinge Blanket temperature gives indication of how quickly the sun-facing blanket surfaces are degrading and is monitored and recorded daily by FOT.



# SPACECRAFT/OPERATIONS STATUS

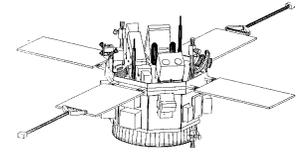


- **S/C Subsystem Status (cont'd)**

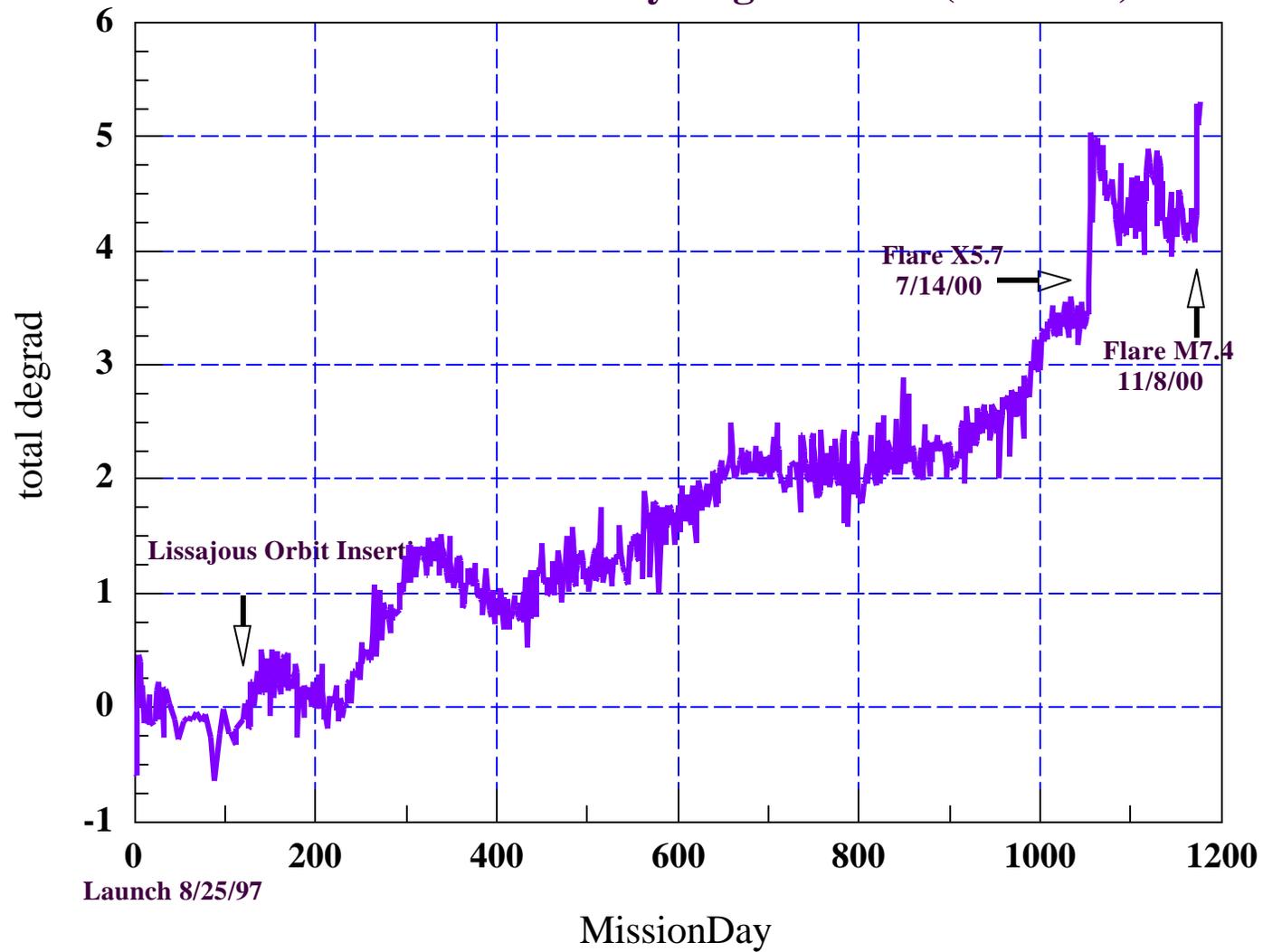
- » *Electrical Power Subsystem (EPS)*

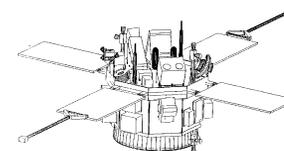
- Solar Array (SA) Degradation

- **Prior to X5.7 Solar Flare event on 7/14/2000, power generated by SA panels had degraded by ~1.15% a year**
- Power design specification: Supply > 443 W at 28V  $\pm$ 2% over 5 years
- Actual power currently ranges between ~546W and ~588W depending on S/C position and solar incidence angles
- **X5.7 Solar Flare event caused an equivalent of 1 year's worth of total solar array degradation**
- **SOHO and WIND trending also indicates approximately 1 year's worth of solar array degradation due to the July solar event**
- **M7.4 Solar Event (11/09/00) caused an ~0.5% solar array degradation**



## ACE Total Solar Array Degradation (11-13-00)

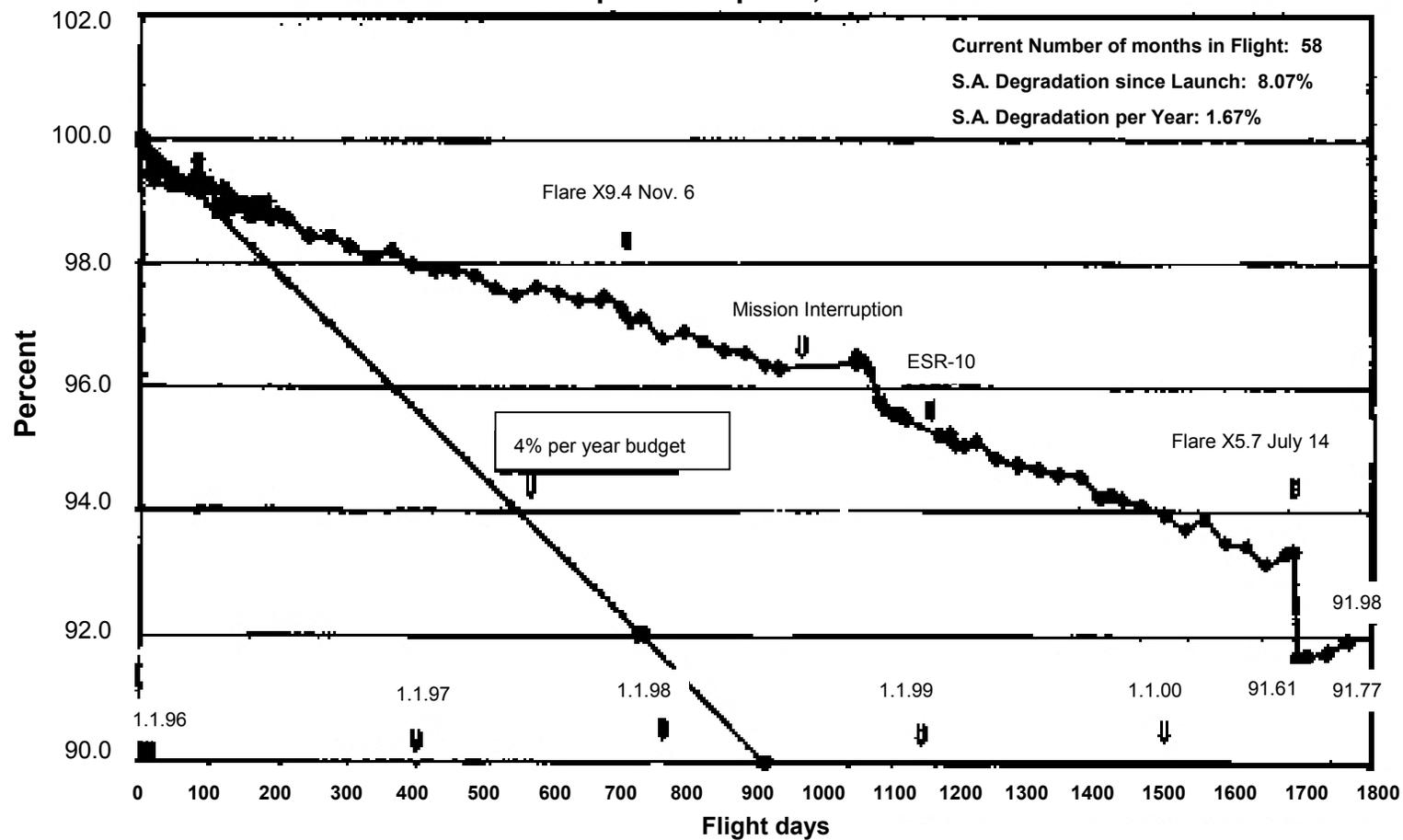




10/10/00 11:16 PM  
H. Schweitzer

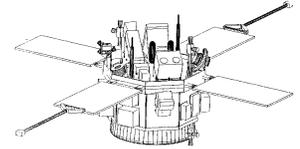
### Annex 5.1

## SOHO Solar Array Degradation Last Update: Sept. 30, 2000

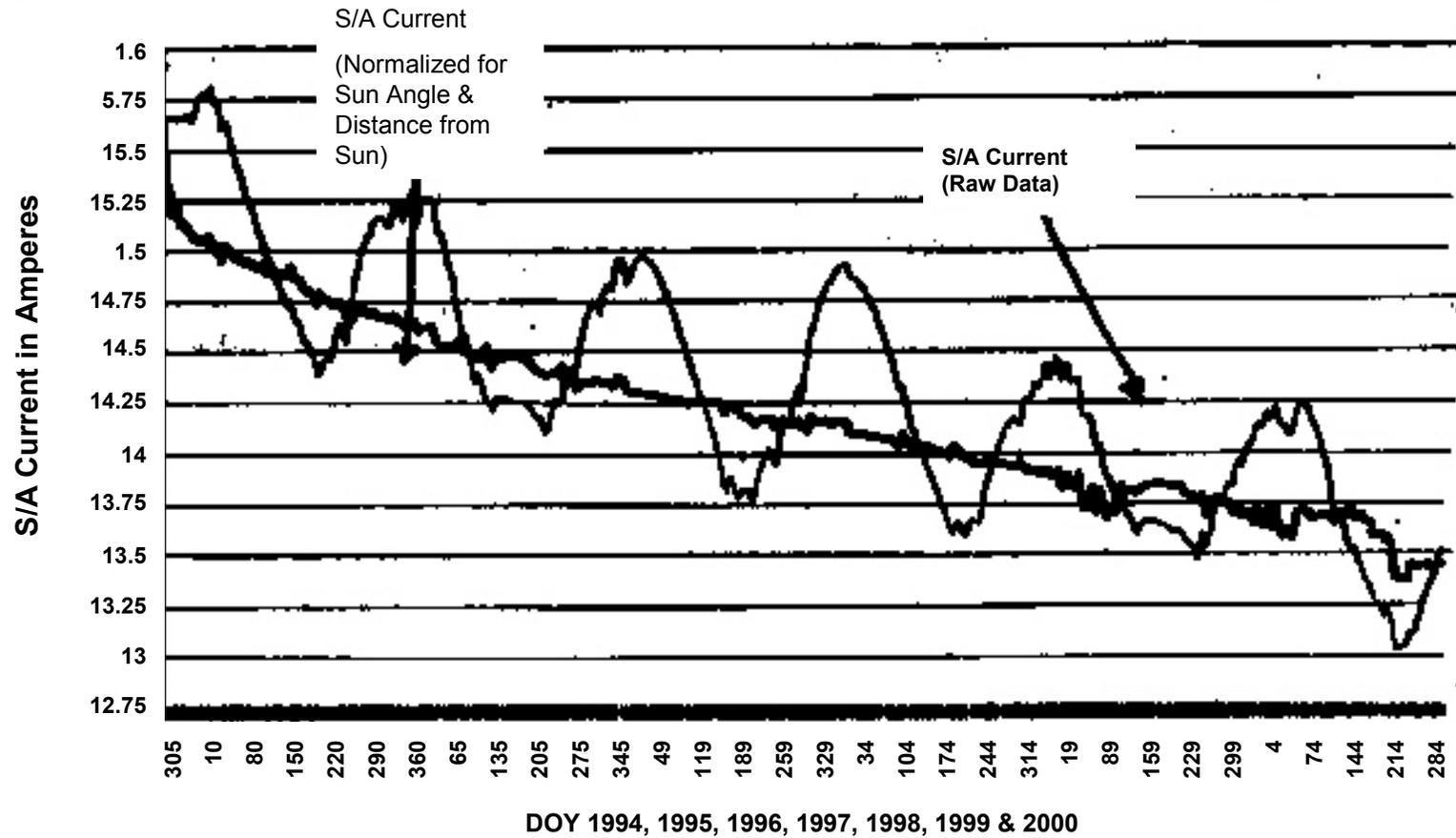




# WS/A-NORMI

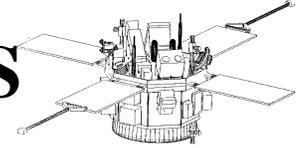


## WIND S/A Current Since Launch vs DOY





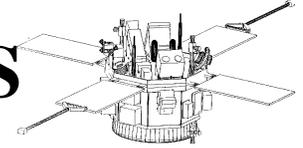
# INSTRUMENT OPERATIONS STATUS



- **Instrument commanding performed (3-00 to 10-00)**
  - » **SIS/CRIS**
    - 7/14 (SIS) Raised Detector Thresholds for solar flare activity after rate-saturation limit was reached
    - 7/17 (SIS) Detector thresholds returned to normal after flare activity
    - 7/27 (CRIS) Image Intensifier powered back ON after being automatically safeguarded to OFF during 7/14/00 solar event
    - 9/12-13 (SIS) Solar activity commanding
    - 9/22 (SIS) Z>10 hyperbola cut moved below carbon track
  - » **SWIMS/SWICS**
    - 4/27 (SWICS) Post-Acceleration power supply (PAPS) voltage increase
    - **8/16-19 (SWICS/SWIMS) High voltage ramp down and ramp up activity due to Z-Axis Control Burn #2**



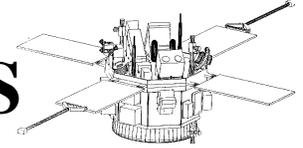
# INSTRUMENT OPERATIONS STATUS



- **Instrument commanding performed 3-00 to 10-00 (con't)**
  - » **SWEPAM**
    - **8/16-18 (Ion / Electron) High voltage ramp down and ramp up activity due to Z-Axis Control Burn #2**
  - » **SEPICA**
    - 6/27 dE/dX high gain and low gain amplifier reporting calibration
    - 7/14-15, 10/16 SEPICA 30kV High Voltage ramp up following automated ramp down by S3DPU
    - 7/5-11 Memory checks for investigation with deflection “Y” measurements
    - 8/2 DC offset data loaded into spare memory for deflection “Y” measurement problem - missing Y strip data returned but pattern of deflection (Y) measurements remained the same
    - **Database fix being investigated to resolve recent onset of false limit violations related to S3DPU instruments**



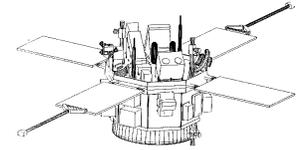
# INSTRUMENT OPERATIONS STATUS



- **Instrument commanding performed 3-00 to 10-00 (con't)**
  - » **ULEIS**
    - 4/17-5/4 Diagnostic commanding for anomaly of front Micro Channel Plate (MCP) system
    - 6/9 HVPS for front MCP set to nominal voltage after diagnostics
    - 6/19 Front HVPS for front MCP turned off due to anomaly
    - **9/11 Front MCP HVPS turned on to see if system would function**
    - **9/12 Front MCP HVPS turned off after system still not functioning**
  - » **MAG**
    - **Instrument team observed temporary jump in S/C magnetic field on various days (e.g. Day 078-2000)**
    - FOT reviewed configuration of S/C during periods in question and there was no apparent correlation to the magnetic field change; under investigation.



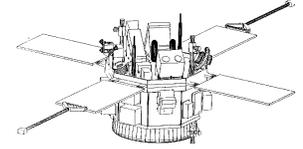
# OPERATIONS ANOMALY REPORTS



- **Total of 49 ground system anomaly reports (ARs) generated over the last six months**
  - » 30 AR related to DSN/JPL equipment problems
  - » 10 AR due to INIF problems
  - » 8 AR related to GSFC/MOC
  - » 1 AR during operational testing of 26m automation
- **Total of 5 spacecraft ARs generated this year**
  - » 5 SEPICA automated ramp down of 30kV Power Supply
  - » 1 SEPICA Fan 3 pressure drop—no valid science data
  - » 1 SEPICA Y strip data from cathode strips in the FAN 3 proportional counter were missing
  - » 1 ULEIS decreased rates on front Micro Channel Plate system



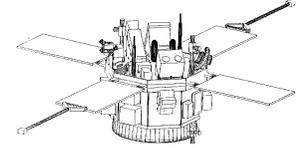
# GROUND SYSTEMS STATUS



- **Ground System – GSFC**
  - » **NASA Integrated Services Network (NISN)**
    - **Transitioning from ISIS to UDP/TCP**



# GROUND SYSTEMS STATUS



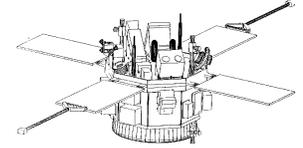
- **Ground System – DSN**

- » **26 Meter Automation**

- Implementation of 26m automated system on hold due to problems with:
  - Time correlation/Ground Receipt Time offset
  - Reed-Solomon non-correctable frame passing
  - Corrupted Standard Format Data Unit (SFDUs)
  - Negotiating DSN station monitor block information (SNRs)
- New release expected mid December 2000
- Planned to become operational mid January/early February 2001
- **Impacts to ACE:**
  - **Should reduce the amount of station configuration errors**
  - **Need to train FOT to handle Sequence of Events (SOE) changes**
  - **If station problems experienced < 20 minutes before a pass then potentially lose entire support**



# GROUND SYSTEMS STATUS



- **Ground System – DSN (cont'd)**

- » **New Command system Hardware and Software**

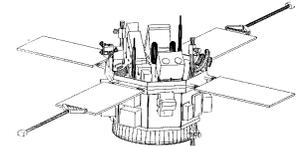
- Changes the station operations interfaces to the uplink through the Network Monitor and Control Subsystem (NMC)
- Allows automated configuration of station subsystem connections
- Impact to ACE:
  - Should reduce the amount of station configuration errors
  - Should reduce the amount of pre-calibration time = more time for ops

- » **Possible removal of DSS-27 (Goldstone) from the network**

- 34m hybrid antenna (uses 26m equipment) – no Sequential Ranging Assembly
- **Impact to ACE:**
  - **ACE currently uses DSS-27 frequently when other network conflicts cannot be resolved otherwise (unattended supports used to fulfill ranging requirement)**
  - **ACE operations may be forced off shift if resource contention remains high --increase operational costs**



# Automation



- **Automation**

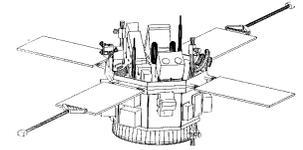
- » Automate FOT responsibilities in the areas of mission planning, real-time operations, and off-line processing
- » Designed to duplicate manually performed tasks into computer automated tasks

- **Automation Goals**

- » Provide for an 8 hr/day, 5 day/week – '2-day lights out operation' with alphanumeric paging of operations support personnel
- » Make routine operations more reliable by reducing FOT workload and the possibility of human error
- » Simplify ground system error recovery and minimize data losses
- » Increase satellite safety by making state-of-health monitoring more thorough
- » Allow all routine pass activities to be performed in an unattended environment



# Automation



- **Automated Planning and Scheduling**

- » Planning products will be automatically collected and checked on a regular basis
  - Download and check DSN schedules
  - Cross reference FDF maneuver planning schedule with DSN schedule
  - Automatically generate pass plans from DSN schedule
  - Submit Instrument Command Requests via web page

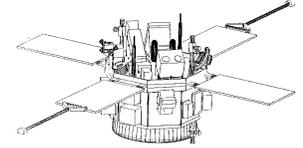
- **Automated Real-time Operations**

- » Real-time routine tasks and monitoring will be automatically performed
  - Automated expert system will continuously evaluate telemetry performance and inform FOT of subsystem problems
  - Automated command and control expert system will execute scripts and procedures to perform routine ground system and spacecraft activities

- **Maneuver/Orbit activities will not be automated**



# LEONID SHOWER OPERATIONS



- **Leonid S/C Configuration**

- » **Expected Leonid Meteor Shower Peak Activity**

- »

- » **According to the models, there are possible peaks in Leonid activity (at Earth) at the following times:**

- »

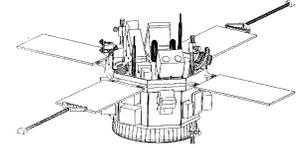
- ~ 08 hr UT on November 17 (material from 1932 stream)
- ~ 04 hr UT on November 18 (material from 1733 stream)
- ~ 08 hr UT on November 18 (material from 1866 stream)

- » **Perform no maneuvers**

- All spacecraft components would remain on and their nominal state during showe
- S/C would remain on HGA allowing for SSR playback of available science data



# LEONID SHOWER OPERATIONS

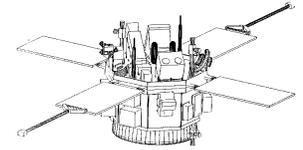


- **Flight Ops pre-storm operations**

- » Contingency procedures developed for Major S/C anomalies
  - LVS/BDI Recovery
  - C&DH Reset
  - C&DH Fail-over
  - RF System Failure
  
- » All contingency procedures being reviewed
  
- » Lessons learned from previous Leonid storms to be applied



# LEONID SHOWER OPERATIONS



- **Flight Ops real-time operations during shower**

- » Extended supports “if possible” for Storm peak monitoring and instrument reconfigurations if necessary
- » Detailed subsystem and instrument state of health checks will be executed daily during each DSN support
- » No critical commanding (I.E. no maneuvers or instrument commanding)