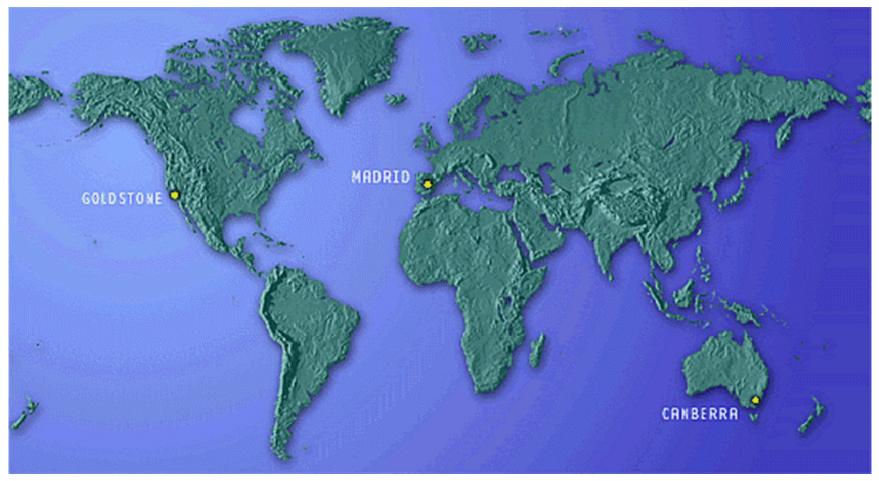




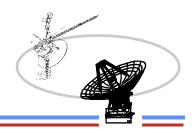
#### DSN Antenna Downtime Status and Forecast



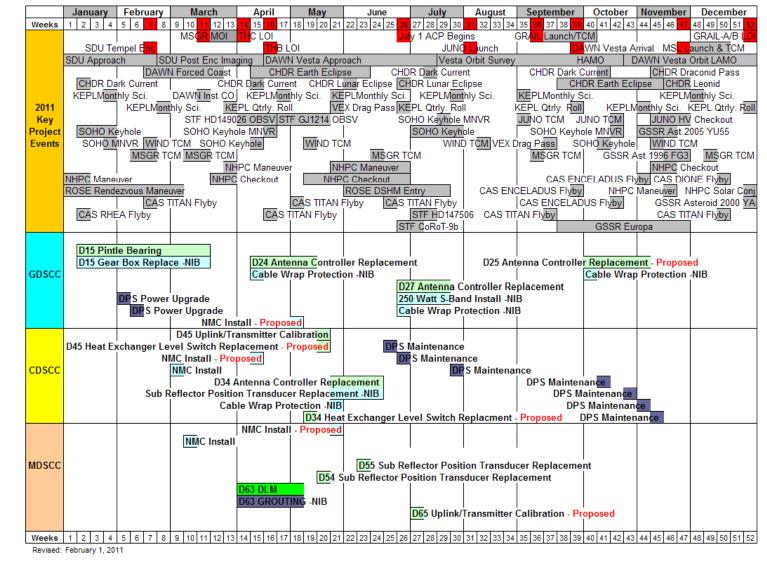


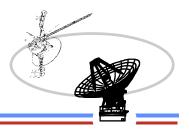
- 2011 -

#### Interplanetary Network Directorate (IND) Deep Space Network (DSN) Resource Allocation Planning Service



Jet Propulsion Laboratory California Institute of Technology

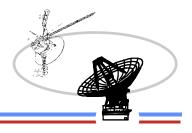




Jet Propulsion Laboratory California Institute of Technology

		2011					
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 15	Gear Box Replacement-NIB	01/10/2011 00:00	03/20/2011 00:00	69	02 - 11	10	79
DSS 15	Pintle Bearing	01/10/2011 00:00	03/20/2011 00:00	69	02 - 11	10	79
SPC 10	DPS Power Upgrade	02/01/2011 14:15	02/02/2011 10:15	1	05 - 05	32	33
SPC 10	DPS Power Upgrade	02/04/2011 14:15	02/05/2011 09:35	1	05 - 05	35	36
SPC 10	DPS Power Upgrade	02/07/2011 22:00	02/08/2011 08:30	0	06 - 06	38	39
SPC 10	DPS Power Upgrade	02/09/2011 00:30	02/09/2011 11:50	0	06 - 06	40	40
SPC 40	NMC Installation	03/03/2011 07:45	03/04/2011 13:45	1	09 - 09	62	63
SPC 60	NMC Installation	03/12/2011 21:15	03/13/2011 03:15	0	10 - 10	71	72
DSS 63	Depot Level Maintenance	04/04/2011 00:00	05/08/2011 00:00	34	14 - 18	94	128
DSS 63	Grouting - NIB	04/04/2011 00:00	05/08/2011 00:00	34	14 - 18	94	128
DSS 24	Cable Wrap Protection - NIB	04/11/2011 00:00	04/14/2011 00:00	3	15 - 15	101	104
DSS 24	Antenna Controller Replacement	04/11/2011 00:00	05/15/2011 00:00	34	15 - 19	101	135
SPC 40	NMC Installation - Proposed	04/11/2011 22:00	04/12/2011 02:00	0	15 - 15	101	102
SPC 10	NMC Installation - Proposed	05/03/2011 22:00	05/04/2011 02:00	0	18 - 18	123	124
DSS 34	Heat Exchange Level Switch Replacment - Proposed	05/09/2011 14:00	05/11/2011 02:00	2	19 - 19	129	131
DSS 54	Subreflector Position Transducer Replacement	05/17/2011 00:00	05/20/2011 00:00	3	20 - 20	137	140
DSS 45	Uplink/Transmitter Cal	05/17/2011 22:00	05/20/2011 10:00	2	20 - 20	137	140
DSS 45	Heat Exchange Level Switch Replacment - Proposed	05/18/2011 22:00	05/20/2011 10:00	2	20 - 20	138	140
DSS 34	Cable Wrap Protection - NIB	05/23/2011 00:00	05/26/2011 00:00	3	21 - 21	143	146
DSS 34	Antenna Controller Replacement	05/23/2011 00:00	06/19/2011 00:00	27	21 - 24	143	170
DSS 34	Subreflector Position Transducer Replacement - NIB	05/23/2011 00:00	06/19/2011 00:00	27	21 - 24	143	170



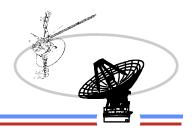


Jet Propulsion Laboratory California Institute of Technology

# **DSN Downtime 2011 (Continued)**

	2011										
SPC 60	NMC Installation - Proposed	05/24/2011 22:00	05/25/2011 02:00	0	21 - 21	144	145				
DSS 55	Subreflector Position Transducer Replacement	06/07/2011 00:00	06/10/2011 00:00	3	23 - 23	158	161				
SPC 40	DPS Maintenance	06/23/2011 20:00	06/24/2011 08:00	0	25 - 25	174	175				
DSS 27	Cable Wrap Protection - NIB	06/27/2011 00:00	06/30/2011 00:00	3	26 - 26	178	181				
DSS 27	250 Watt S-Band Install - NIB	06/27/2011 00:00	07/24/2011 00:00	27	26 - 29	178	205				
DSS 27	Antenna Controller Replacement	06/27/2011 00:00	07/24/2011 00:00	27	26 - 29	178	205				
SPC 40	DPS Maintenance	06/27/2011 20:00	06/28/2011 04:00	0	26 - 26	178	179				
DSS 65	Uplink/Transmitter Cal - Proposed	07/04/2011 05:00	07/05/2011 18:00	2	27 - 27	185	186				
SPC 40	DPS Maintenance	07/25/2011 20:00	07/26/2011 04:00	0	30 - 30	206	207				
DSS 25	Cable Wrap Protection - NIB	10/03/2011 00:00	10/06/2011 00:00	3	40 - 40	276	279				
DSS 25	Antenna Controller Replacement - Proposed	10/03/2011 00:00	11/06/2011 00:00	34	40 - 44	276	310				
SPC 40	DPS Maintenance	10/13/2011 20:00	10/14/2011 08:00	0	41 - 41	286	287				
SPC 40	DPS Maintenance	10/24/2011 20:00	10/25/2011 08:00	0	43 - 43	297	298				
SPC 40	DPS Maintenance	11/02/2011 20:00	11/03/2011 08:00	0	44 - 44	306	307				
SPC 40	DPS Maintenance	11/10/2011 20:00	11/11/2011 08:00	0	45 - 45	314	315				





Jet Propulsion Laboratory California Institute of Technology

### Antenna Downtime Status and Forecast

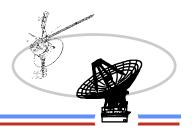
The following are downtimes for 2011

- □ DSS-15 downtime for Pintle Bearing is in progress, beginning January 10 March
  - 20, weeks 02 11
    - Elevation Gearbox Replacement is scheduled NIB
    - ZDD will be scheduled prior to return to service
- Goldstone 12-hour Complex Wide DPS Power Upgrade Downtime
  - Power Upgrade Task for January 31, DOY 31 week 05 was completed
  - Four additional days have been scheduled in weeks 05 and 06, February, 1, 4, 7 and 9, DOYs 32, 35, 38 and 40

□ NMC 6-hour Complex Wide Downtime is scheduled at all complexes

- Goldstone NMC Task in weeks 3 and 4 have been completed
  - □ 4 additional hours of downtime have been requested for May 3, week 18
- □ Canberra is scheduled for March 3 DOY 62, 0745 1345, week 09
  - □ 4 additional hours of downtime have been requested for April 11, week 15
- □ Madrid is scheduled for March 12 DOY 71, 2115 0315, week 10
- □ 4 additional hours of downtime have been requested for May 24, week 21 Note: Additional requested dates are place holders



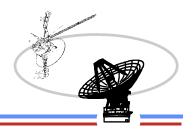


Jet Propulsion Laboratory California Institute of Technology

### Downtimes for 2011 (continued)

- □ HEF Uplink and Transmitter Calibration downtime is requested on each antenna for 36 hours in 2011
  - DSS-45 has been scheduled for May 17 and 18 DOYs 137 and 138, 2200 1000, week 20. Maintenance will be NIB for 8 hours of the downtime
    - Downtime is proposed for Heat Exchanger Level Switch Replacement in week 20, back-to-back with Uplink Transmitter Calibration
  - DSS-65 is proposed for week July 4 and 5, week 27
  - DSS-15 will be proposed for after September timeframe
- Canberra request seven 8 12 hour blocks of Complex Wide DSCC Power Substation (DPS) Maintenance Downtime for April – September
  - Proposed during day shift (2000 0800) but not required in weeks 25, 26, 30, 41, 43, 44 and 45
  - Weeks 26 and 30 are scheduled as 8 hour downtimes, the remainder of the downtimes are scheduled as 12 hours downtimes
  - □ There is a possibility that downtimes in weeks 41, 43, 44 and 45 may be affected by GRAIL if the launch slips into week 40.
- DSS-63 downtime for Depot Level Maintenance is scheduled
  - □ Downtime scheduled for April 4 May 8, weeks 14 18
    - Grouting will be scheduled NIB





Jet Propulsion Laboratory California Institute of Technology

## Antenna Downtime Status and Forecast

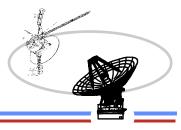
# Downtimes for 2011 (continued)

- D BWG Antenna Controller Replacement is requested starting in April
  - □ DSS-24 is scheduled for April 11 May 15, weeks 15 19
  - DSS-34 is scheduled for May 23 June 19, weeks 21 24
    - □ Sub Reflector Position Transducer Replacement will be scheduled NIB
    - Week19 is proposed for Heat Exchanger Level Switch Replacement downtime is requested during 2 day maintenance before ACPA in June
      Propose to use DSS-45 maintenance day for DSS-34 task
  - Goldstone BWG downtime requested for DSS-35 design review baseline testing no later than June 1
    - □ Request 2 days contiguous ,10 12 hours or 3 days contiguous 8 10 hours
  - □ DSS-27 is scheduled for June 27 July 24, weeks 26 29
    - 250 Watt S-Band Install will be scheduled NIB
  - □ DSS-25 is proposed for October 3 November 6, weeks 40 44
  - Note: Cable Wrap Protection for each BWG ACR requires 3 days and will be NIB
- Sub Reflector Position Transducer Replacement is scheduled for May and June
  - DSS 54 is Scheduled for May 17, 18 and 19, DOYs 137, 138 and 139, week 20
  - DSS 55 is Scheduled for June 7, 8 and 9, DOYs 158, 159 and 160, week 23

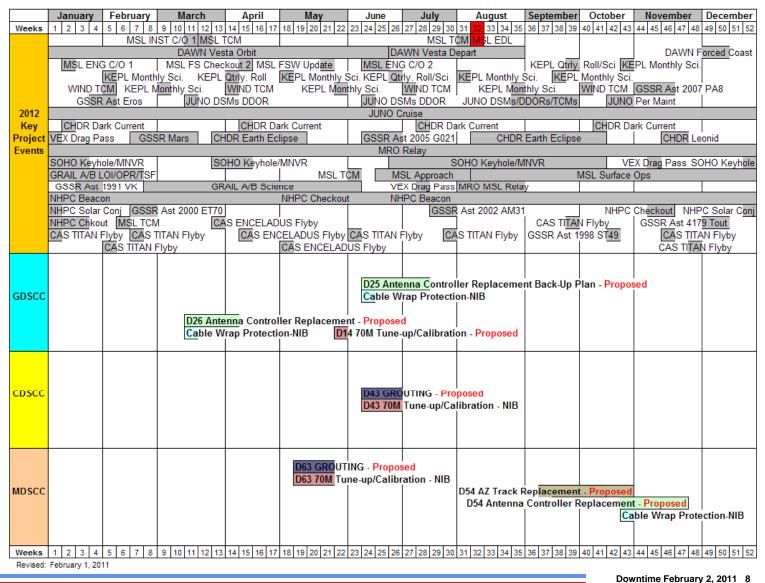


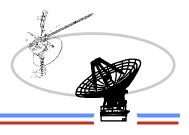
- 2012 -

#### Interplanetary Network Directorate (IND) Deep Space Network (DSN) Resource Allocation Planning Service



Jet Propulsion Laboratory California Institute of Technology

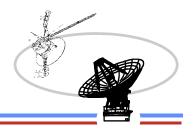




Jet Propulsion Laboratory California Institute of Technology

		2012					
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 26	Cable Wrap Protection - NIB	03/12/2012 00:00	03/15/2012 00:00	3	11 - 11	72	75
DSS 26	Antenna Controller Replacement - Proposed	03/12/2012 00:00	04/08/2012 00:00	27	11 - 14	72	99
DSS 63	70m Tune-up/Calibration - NIB	05/07/2012 00:00	05/27/2012 00:00	20	19 - 21	128	148
DSS 63	Grouting - Proposed	05/07/2012 00:00	05/27/2012 00:00	20	19 - 21	128	148
DSS 14	70m Tune-up/Calibration - Proposed	05/28/2012 00:00	05/31/2012 00:00	3	22 - 22	149	152
DSS 25	Cable Wrap Protection - NIB	06/11/2012 00:00	06/14/2012 00:00	3	24 - 24	163	166
DSS 43	70m Tune-up/Calibration - NIB	06/11/2012 00:00	06/26/2012 00:00	15	24 - 26	163	178
DSS 43	Grouting - Proposed	06/11/2012 00:00	06/26/2012 00:00	15	24 - 26	163	178
DSS 25	Antenna Controller Replacement - Back-up Plan Proposed	06/11/2012 00:00	07/15/2012 00:00	34	24 - 28	163	197
DSS 54	AZ Track Replacement - Proposed	09/10/2012 00:00	10/28/2012 00:00	48	37 - 43	254	302
DSS 54	Cable Wrap Protection - NIB	10/22/2012 00:00	10/25/2012 00:00	3	43 - 43	296	299
DSS 54	Antenna Controller Replacement - Proposed	10/22/2012 00:00	11/25/2012 00:00	34	43 - 47	296	330





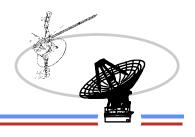
Jet Propulsion Laboratory California Institute of Technology

### Antenna Downtime Status and Forecast

## The following are downtimes for 2012 – 2014

- □ BWG Antenna Controller Replacement for 2012 2013
  - □ DSS-26 is proposed for March 12 April 8, weeks 11 14
  - $\square DSS-25 \text{ is proposed for June 11} July 15, weeks 24 28$ 
    - This is a backup for 2011 based on GRAIL launch schedule
  - $\hfill\square$  DSS-54 is proposed for October 22 November 25, weeks 43 47
  - □ DSS-55 is proposed for January 14 February 17, 2013, weeks 03 07
  - Note: Cable Wrap Protection for each BWG ACR requires 3 days and will be NIB
- DSS-63 downtime for Grouting is requested once per year
  - □ 2012 is proposed for May 7 27, weeks 19 21
    - □ Tune-up/Calibration is requested NIB to grouting
  - □ 2013 is proposed for September 2 17, weeks 36 38Note: Stand alone Grouting requires 15 days
- DSS-14 downtime for Tune-up/Calibration is requested for May 28 31, 2012, week 22
- DSS-43 downtime for Grouting is requested for 2012
  - Tune-up/Calibration is requested NIB to grouting
  - $\hfill\square$  This is proposed for June 11 June 25, weeks 24 26





Jet Propulsion Laboratory California Institute of Technology

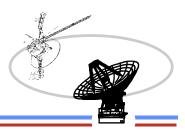
## Antenna Downtime Status and Forecast

The following are downtimes for 2012 – 2014 (continued)

- □ AZ Track Replacement is requested for DSS-54, 24 and 26 beginning in the fall of 2012. The following sequence is proposed
  - □ DSS-54 is proposed for September 10 October 28, 2012, weeks 37 43
  - $\hfill\square$  DSS-24 is proposed for April 22 June 30, 2013, weeks 17 26
  - □ DSS-26 is proposed for March 31 June 8, 2014 weeks 14 23
    - 80 kW Facility Preparation will be scheduled NIB March 31 May 18, weeks14 – 20

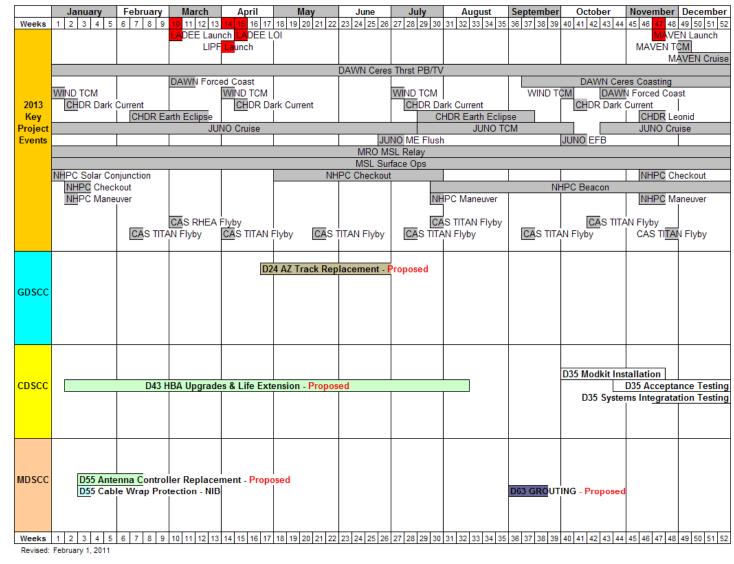
DSS-43 HBA Upgrade Downtime is proposed for 2013

- □ Proposed for January 7 August 11, weeks 02 32
  - □ ZDD will be scheduled prior to return to service
- DSS-63 HBA Upgrade Downtime is proposed for 2014
  - □ Proposed for March 10 October 5, weeks 11–40
    - □ ZDD will be scheduled prior to return to service

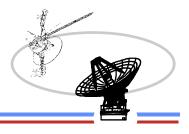


Jet Propulsion Laboratory California Institute of Technology

- 2013 -

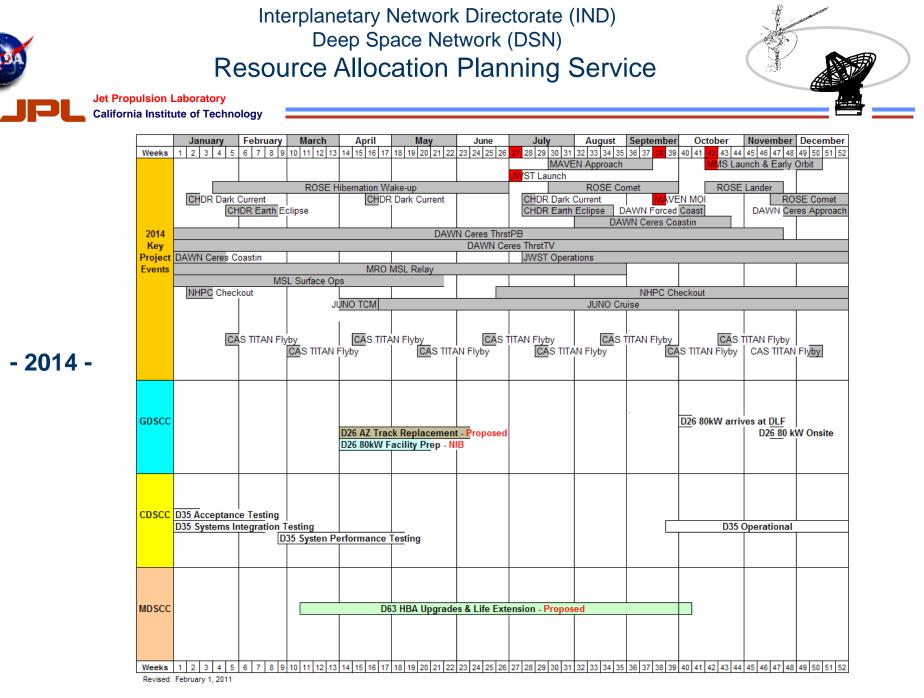


Downtime February 2, 2011 12

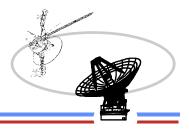


Jet Propulsion Laboratory California Institute of Technology

		2013					
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 43	HBA Upgrades and Life Extension - Proposed	01/07/2013 00:00	08/11/2013 00:00		02 - 32	7	223
DSS 55	Cable Wrap Protection - NIB	01/14/2013 00:00	01/17/2013 00:00	3	03 - 03	14	17
DSS 55	Antenna Controller Replacement - Proposed	01/14/2013 00:00	02/17/2013 00:00	34	03 - 07	14	48
DSS 24	AZ Track Replacement - Proposed	04/22/2013 00:00	06/30/2013 00:00	69	17 - 26	112	181
DSS 63	Grouting - Proposed	09/02/2013 00:00	09/17/2013 00:00	15	36 - 38	245	260

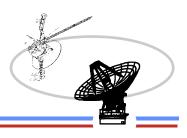


Downtime February 2, 2011 14



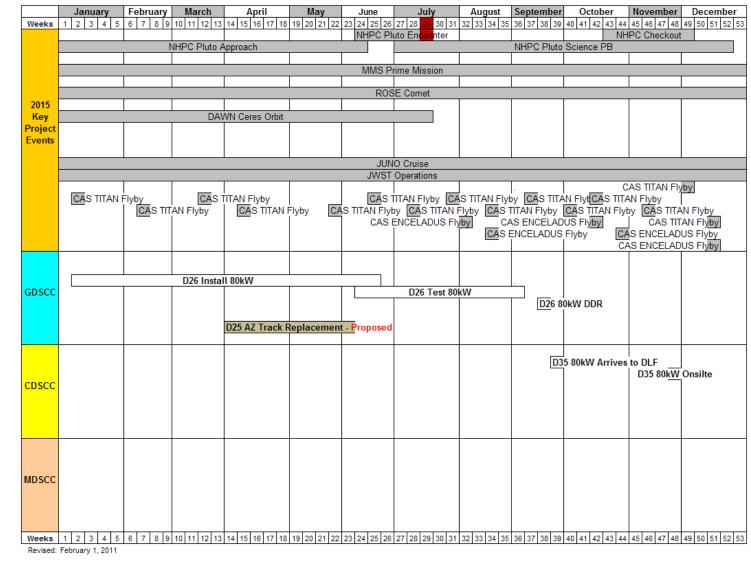
Jet Propulsion Laboratory California Institute of Technology

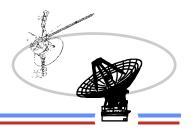
		2014					
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 63	HBA Upgrades and Life Extension - Proposed	03/10/2014 00:00	10/05/2014 00:00	209	11 - 40	69	278
DSS 26	80 kW Facility Prep - NIB	03/31/2014 00:00	05/18/2014 00:00	48	14 - 20	90	138
DSS 26	AZ Track Replacement - Proposed	03/31/2014 00:00	06/08/2014 00:00	69	14 - 23	90	159



Jet Propulsion Laboratory California Institute of Technology

- 2015 -

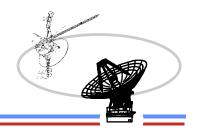




Jet Propulsion Laboratory California Institute of Technology

2015										
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY			
DSS 25	AZ Track Replacement - Proposed	03/31/2015 00:00	06/07/2015 00:00	68	14 - 23	90	158			



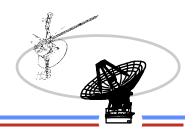


Jet Propulsion Laboratory California Institute of Technology

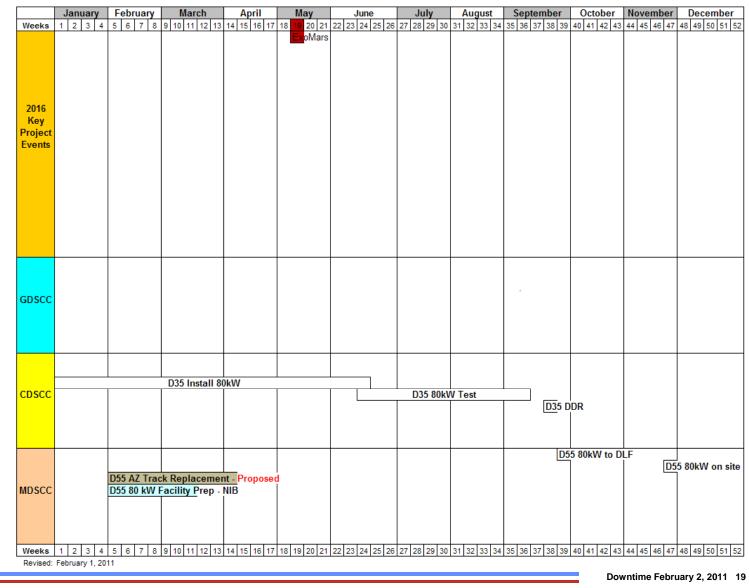
# Antenna Downtime Status and Forecast

# The following are downtimes for 2015 – 2016

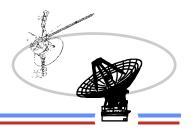
- □ AZ Track Replacement is requested for DSS-25 and 55
  - □ DSS-25 is proposed for March 31 June 7, 2015, weeks 14 23
  - □ DSS-55 is proposed for February 1 April 10, 2016, weeks 05 14
    - □ 80 kW Facility Preparation is scheduled NIB for February 1 March 20, weeks 05 11



Jet Propulsion Laboratory California Institute of Technology

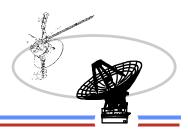


- 2016 -

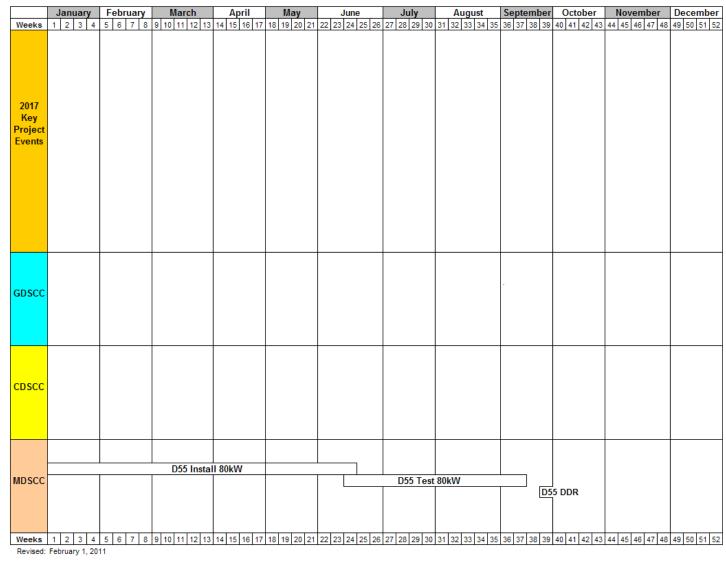


Jet Propulsion Laboratory California Institute of Technology

		2016					
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 55	80 kW Facility Prep - NIB	02/01/2016 00:00	03/20/2016 00:00	48	05 - 11	32	80
DSS 55	AZ Track Replacement - Proposed	02/01/2016 00:00	04/10/2016 00:00	69	05 - 14	32	101

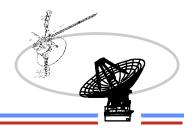


Jet Propulsion Laboratory California Institute of Technology



- 2017 -

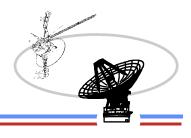




Jet Propulsion Laboratory California Institute of Technology

# Future assets new/upgrades

- DSS-35 Installation and Operational 2013 2014
  - □ Modkit Installation October 1 November 19, 2013, weeks 40 47
  - □ Acceptance Testing October 23, 2013 January 8, 2014, weeks 43 2
  - □ System Integration Testing November 20, 2013 February 13, 2014, weeks 47 07
  - Operations Systems Performance Testing February 27 May 1, 2014, weeks 09 18
  - Operational September 26, 2014
- □ DSS-26 80kW Installation 2014 2015
  - □ 80kW arrive at DLF October, 2014, week 40
  - □ 80kW arrive on-site November, 2014, week 47
  - □ 80kW install January June, 2015, weeks 02 25
  - □ 80 kW test June September, 2015, weeks 24 36
  - DDR September, 2015, week 38
- □ DSS-35 80kW Installation 2016 A placeholder has been set awaiting dates
- DSS-36 Installation and Operational 2016 A placeholder has been set awaiting dates
- DSS-55 80kW Installation 2016 2017
  - □ 80kW Facility Prep February 2016, weeks 05 10
  - □ 80kW at DLF September, 2016, week 39
  - □ 80kW on-site November, 2016, week 47
  - □ 80kW install January June, 2017, weeks 01 24
  - □ 80kW test June September, 2017, weeks 24 37
  - DDR September, 2017, week 39



Jet Propulsion Laboratory California Institute of Technology

## Antenna Downtime Status and Forecast

			S-B	and	Х-В	and	Ka-E	Band	Ka 2	X-Band	
Complex	Station	Subnet	Down	Up	Down	Up	Down	Up	ra z	ACQ AID	80kW
10	DSS-27	34HSB	✓	>	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10	DSS-24	34B1	•	<b>v</b>	~	~	N/A	N/A	<b>v</b>	✓	N/A
40	DSS-34	34B1	•	<b>v</b>	~	~	<b>v</b>	N/A	<b>v</b>	✓	N/A
60	DSS-54	34B1	•	<b>v</b>	~	~	<b>v</b>	N/A	<b>v</b>	<b>~</b>	N/A
10	DSS-25	34B2	N/A	N/A	~	~	<b>~</b>	12/12/10	N/A	N/A	N/A
10	DSS-26	34B2	N/A	N/A	~	~	<b>~</b>	N/A	N/A	N/A	10/01/15
40	DSS-35*	34B2	N/A	N/A	11/01/14	11/01/14	11/01/14	N/A	N/A	N/A	11/01/16
40	DSS-36*	34B2	N/A	N/A	11/01/16	11/01/16	11/01/16	N/A	N/A	N/A	N/A
60	<b>DSS-55</b>	34B2	N/A	N/A	~	~	<b>~</b>	N/A	N/A	N/A	10/01/17
10	<b>DSS-15</b>	34HEF	<b>~</b>	N/A	~	>	N/A	N/A	N/A	N/A	N/A
40	DSS-45	34HEF	٨	<b>&gt;</b>	>	>	N/A	N/A	N/A	N/A	N/A
60	DSS-65	34HEF	<b>~</b>	<b>v</b>	~	~	N/A	N/A	N/A	N/A	N/A
10	DSS-14	70M	<b>~</b>	<b>v</b>	<b>~</b>	<b>~</b>	N/A	N/A	N/A	N/A	N/A
40	DSS-43	70M	~	>	<b>~</b>	<b>~</b>	N/A	N/A	N/A	N/A	N/A
60	<b>DSS-63</b>	70M	<b>~</b>	<b>&gt;</b>	<b>~</b>	>	N/A	N/A	N/A	N/A	N/A
N/A = Capa	N/A = Capability Not Planned xx/xx/xx = Capa					Capability Date Recently Changed			As of: 6/28/2010		
✓ ✓ ✓ = Ca	pability Re	cently Exis	sts		✓ = Capab	oility Exists			* = To Be	Commissioned	