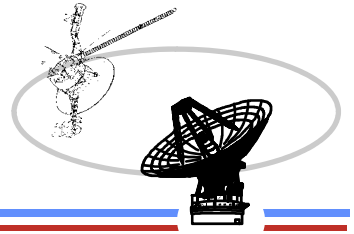
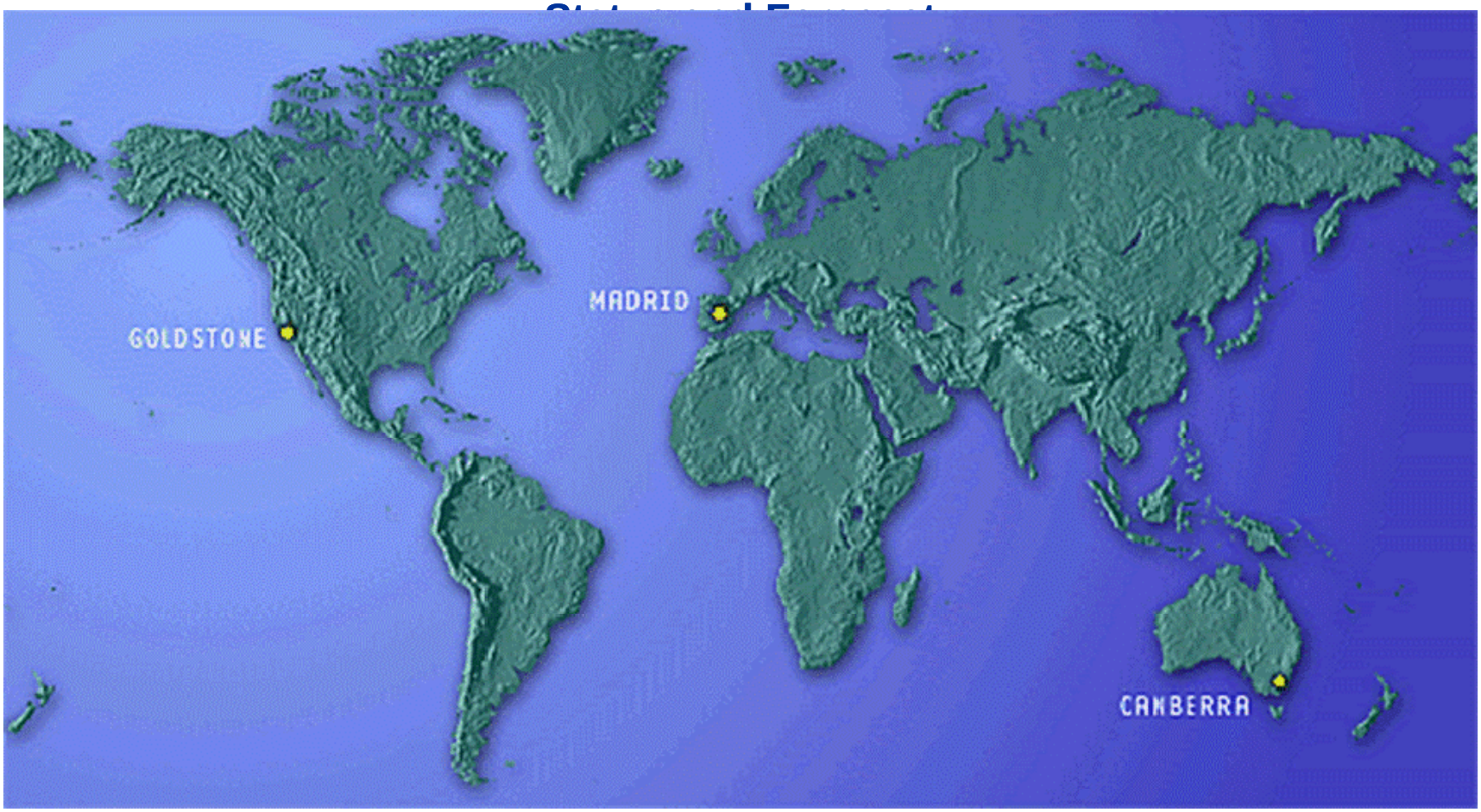


DSN Antenna Downtime



Resource Allocation Planning Service

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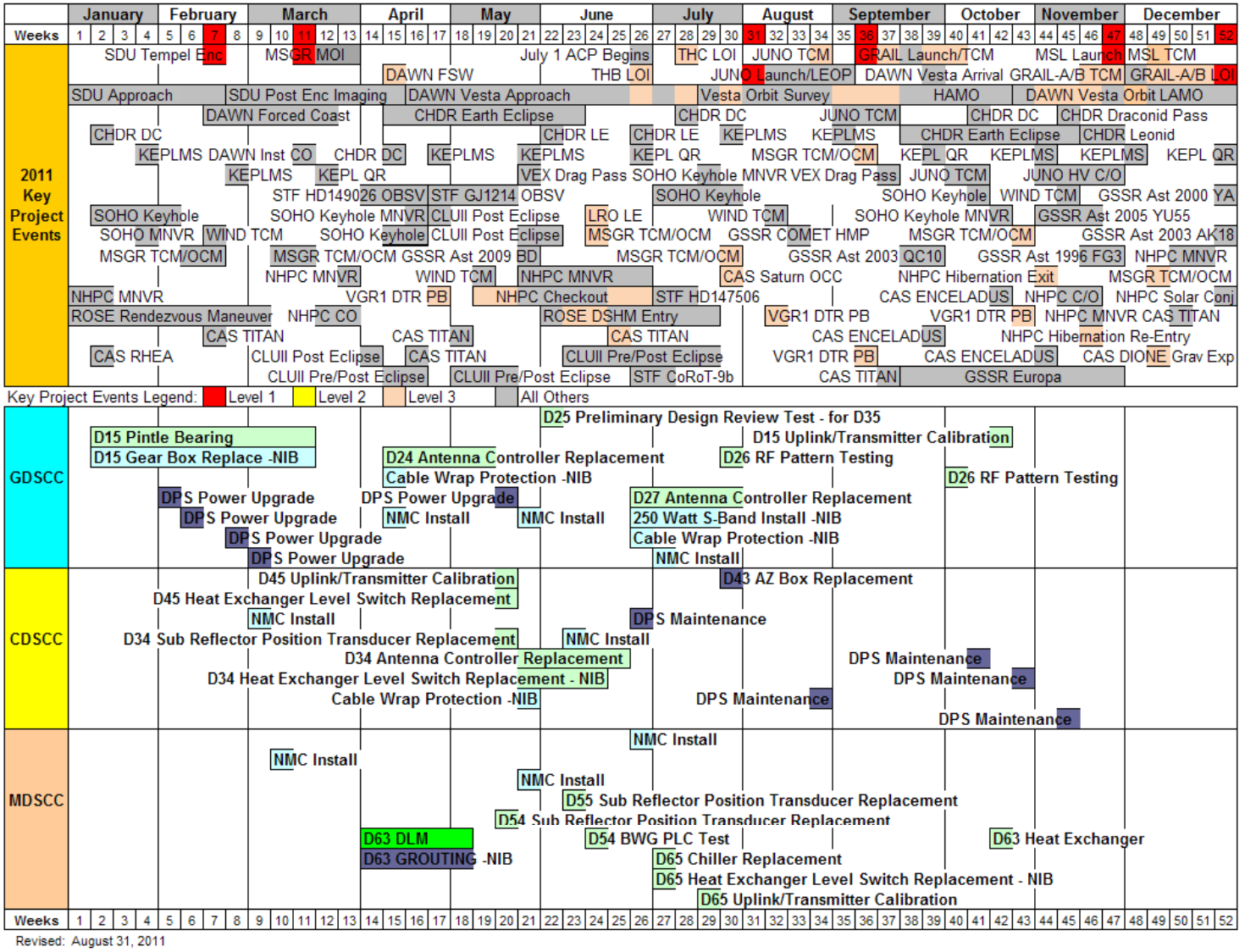
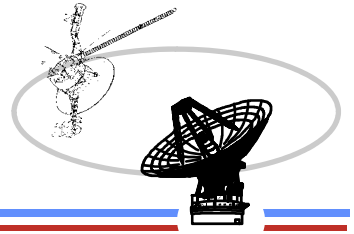
- 2011 -

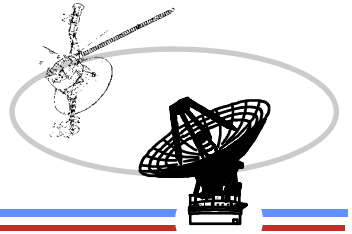


Revised: August 31, 2011



DSN Downtime 2011

2011							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 26	RF Pattern Testing	10/03/2011 00:00	10/06/2011 02:20	3	40 - 40	276	279
SPC 40	DPS Maintenance	10/13/2011 16:50	10/14/2011 06:05	1	41 - 41	286	287
DSS 63	Heat Exchanger	10/18/2011 16:30	10/23/2011 16:20	5	42 - 42	291	296
DSS 15	Uplink/Transmitter Cal	10/20/2011 10:00	10/21/2011 22:00	2	42 - 42	293	294
SPC 40	DPS Maintenance	10/24/2011 15:35	10/25/2011 03:30	0	43 - 43	297	298
SPC 40	DPS Maintenance	11/10/2011 17:45	11/11/2011 04:30	0	45 - 45	314	315



Antenna Downtime Status and Forecast

The following are downtimes for 2011

- 34HEF Uplink and Transmitter Calibration downtime is requested on DSS-65 (completed) and DSS-15 for 36 hours in 2011
  - DSS-15 is scheduled for week 42 October 20 – 21, DOY 293/1000 – 294/2200
- Canberra requested six 8 – 12 hour blocks of Complex Wide DSCC Power Substation (DPS) Maintenance Downtime for April – November
  - Scheduled/completed for weeks listed
    - August 25, week 34, DOY 237/0100 – 1300 completed
    - October 13, week 41, DOY 286/1650 – 287/0605
    - October 24, week 43, DOY 299/1535 – 0330/0330
    - November 10, week 45, DOY 314/1745 – 315/0430
  - There is a possibility that downtimes may be affected by GRAIL if the launch slips into week 40
- DSS-26 RF Pattern Testing is requested for July and September
  - One block is scheduled in October, week 40, DOY 276/0000 – 279/0220
- DSS-63 Heat Exchanger is scheduled for October, 2011
  - DSS-63 needs downtime due to a heat exchanger leak. This downtime is scheduled for October 18 – 23, DOY 291/1630 – 296/1620, week 42

Resource Allocation Planning Service

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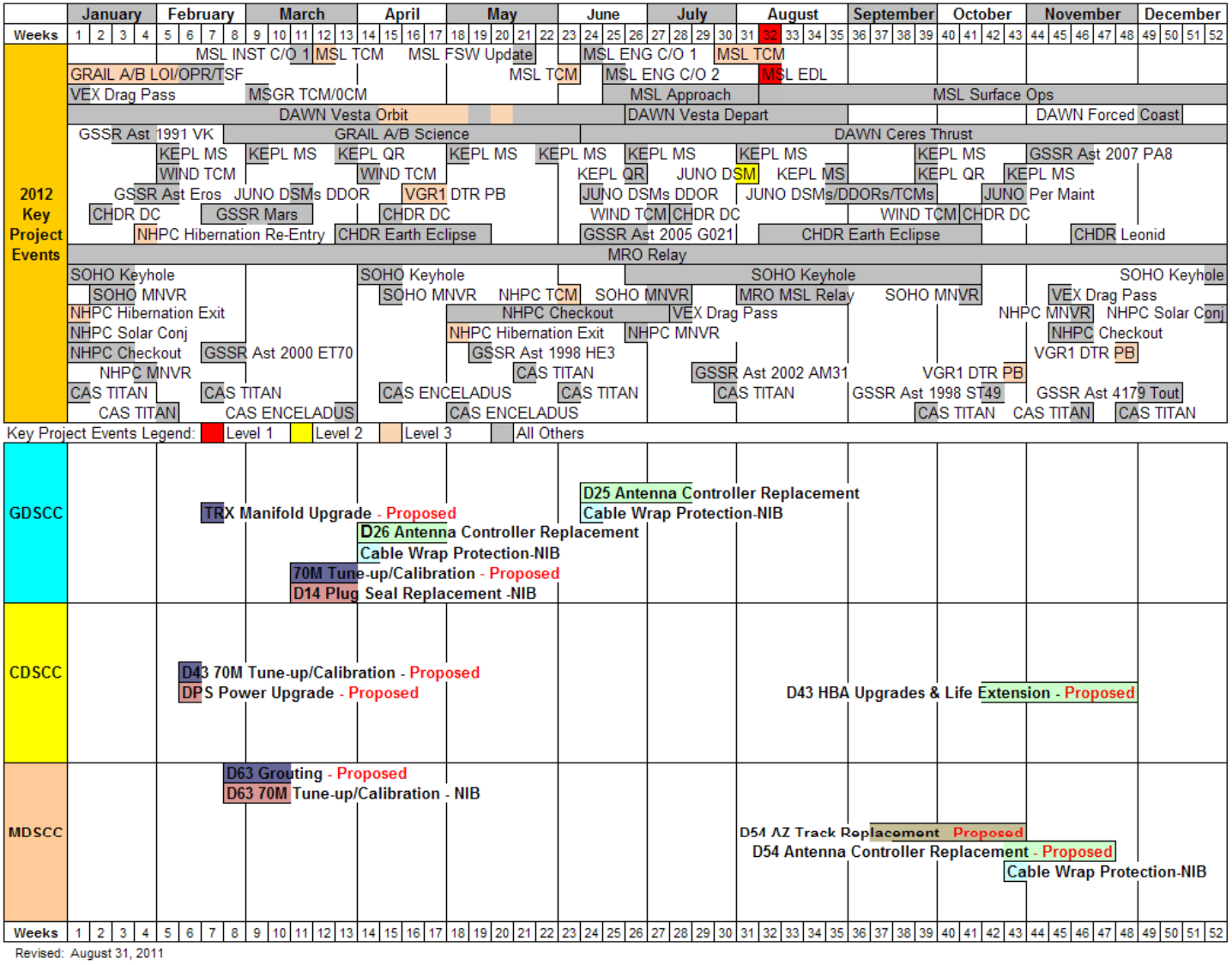
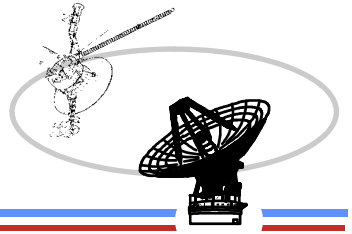
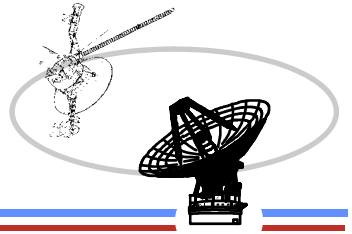
- 2012 -





DSN Downtime 2012

2012							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 43	70m Tune-up/Calibration - Proposed	02/06/2012 19:00	02/12/2012 07:00	6	06 - 06	37	43
SPC 40	DPS Maintenance - Proposed	02/08/2012 20:00	02/09/2012 10:00	1	06 - 06	39	40
DSS 63	70m Tune-up/Calibration - NIB	02/20/2012 06:00	03/11/2012 17:00	20	10 - 10	51	71
DSS 63	Grouting - Proposed	02/20/2012 06:00	03/11/2012 17:00	20	08 - 10	51	71
DSS 15	TXR Manifold Upgrade-Proposed	03/05/2012 14:00	03/10/2012 00:00	4	10 - 10	65	70
DSS 14	70m Tune-up/Calibration - Proposed	03/12/2012 14:00	04/01/2012 01:00	19	12 - 12	72	92
DSS 14	Plug Seal Replacement - NIB	03/12/2012 14:00	04/01/2012 01:00	19	12 - 12	72	92
DSS 26	Cable Wrap Protection - NIB	04/02/2012 13:00	04/05/2012 05:00	3	14 - 14	93	96
DSS 26	Antenna Controller Replacement	04/02/2012 13:00	04/29/2012 01:00	26	14 - 17	93	120
DSS 25	Cable Wrap Protection - NIB	06/11/2012 00:00	06/14/2012 00:00	3	24 - 24	163	166
DSS 25	Antenna Controller Replacement	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 43	HBA Upgrades and Life Extension Phase 1 - Proposed	10/15/2012 00:00	12/02/2012 00:00	48	42 - 48	289	337
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



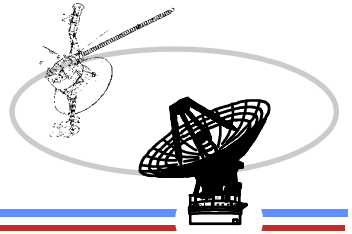
Antenna Downtime Status and Forecast

The following are downtimes for 2012 – 2014

- DSS-15 Downtime for TXR Manifold Upgrade requested
  - One week of downtime is requested for January – May time frame,
  - Proposed for March 5 – 9, week 10, 1400 – 0000, DOY 65 – 69
- BWG Antenna Controller Replacement for 2012 – 2013
  - DSS-26 is Scheduled for April 2 – 29, 2012, weeks 14 – 17, DOY 093/1300 – 120/0100
  - DSS-25 is Scheduled for June 11 – July 15, 2012, weeks 24 – 28, DOY 163/0000 – 197/0000
  - DSS-54 is proposed for October 22 – November 25, 2012, weeks 43 – 47, DOY 296/0000 – 330/0000
  - DSS-55 is proposed for January 14 – February 17, 2013, weeks 03 – 07, DOY 014/0000 – 048/0000

  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
  - Proposed for February 20 – March 11, 2012, weeks 08 – 10, DOY 051/0600 – 071/1700
    - Tune-up/Calibration is requested NIB to grouting
  - Proposed for September 2 – 17, 2013, weeks 36 – 38, DOY 245/0600 – 260/1700

  Note: Stand alone Grouting requires 15 days
- DSS-43 downtime for Tune-up/Calibration is requested for 2012
  - Tune-up/Calibration is proposed for February 6 – 12, week 06, DOY 037/1900 – 043/0700
  - An additional SPC-40 DPS 8-12 hour power task is proposed for week 06, DOY 039/2000 – 040/1000
    - Initially requested for December 2011, but due to contention/high level activities, it is proposed for February 2012



Antenna Downtime Status and Forecast

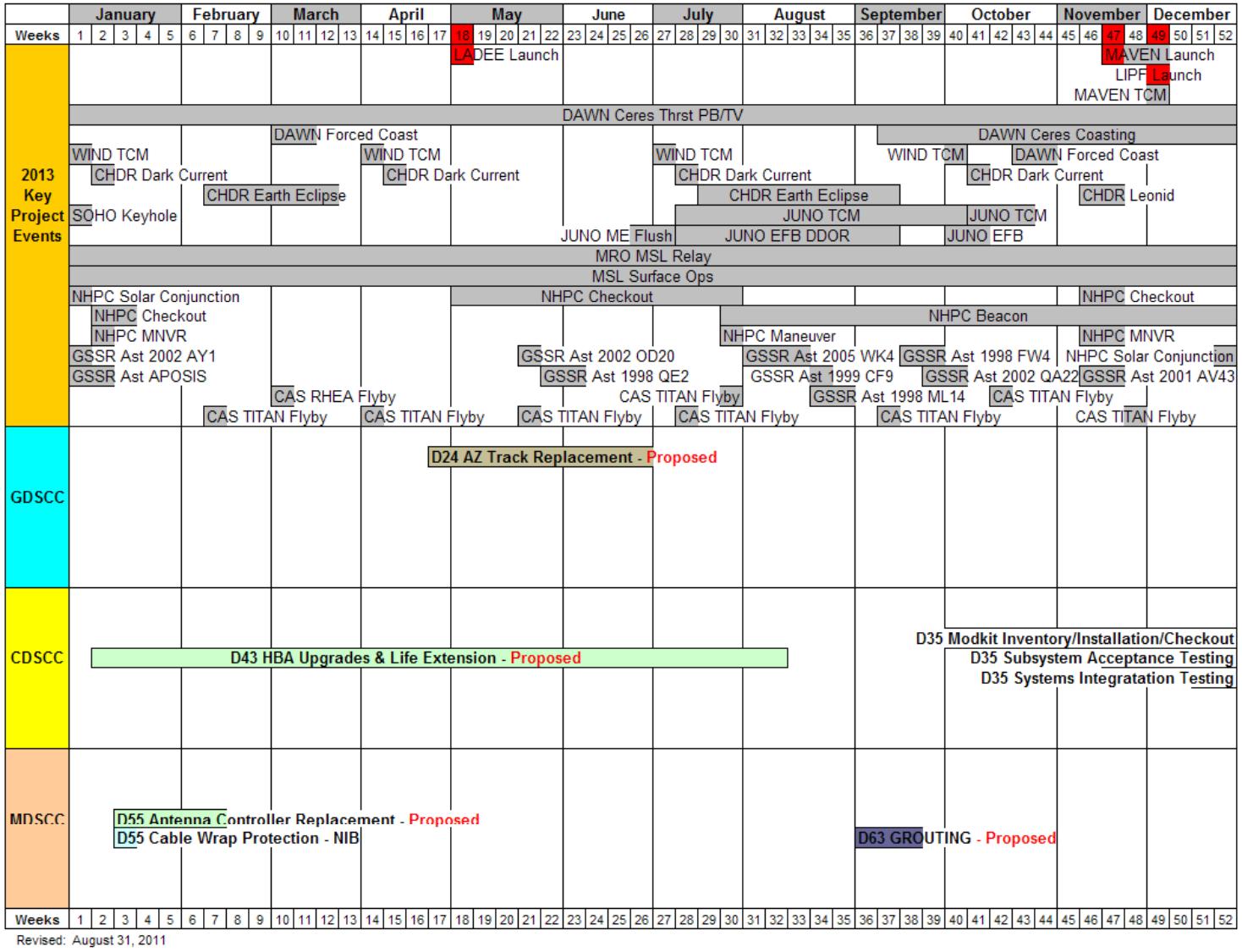
The following are downtimes for 2012 – 2014 (continued)

- DSS-14 downtime for Tune-up/Calibration and Plug Seal Replacement is requested for 2012
  - Tune-up/Calibration and Plug Seal Replacement is proposed for March 12 – April 1 weeks 11 – 13, DOY 072/1400 – 092/0000
    - 20 days of downtime is requested to complete the task
- 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
  - 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 2012 – 2013
  - Details being worked internally
  - Phase one for downtime phase one is proposed for late 2012, possibly week 42 – 48
  - Phase two for extended downtime is proposed for 27 weeks in 2013
  - ZDD will be scheduled prior to return to service

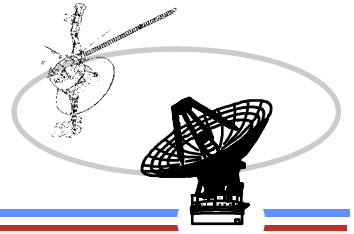
  NOTE: This downtime is currently under review
- DSS-63 HBA Upgrade downtime is proposed for 2014
  - Proposed for March 10 – October 5, weeks 11– 40
    - ZDD will be scheduled prior to return to service

Resource Allocation Planning Service

- 2013 -



Revised: August 31, 2011

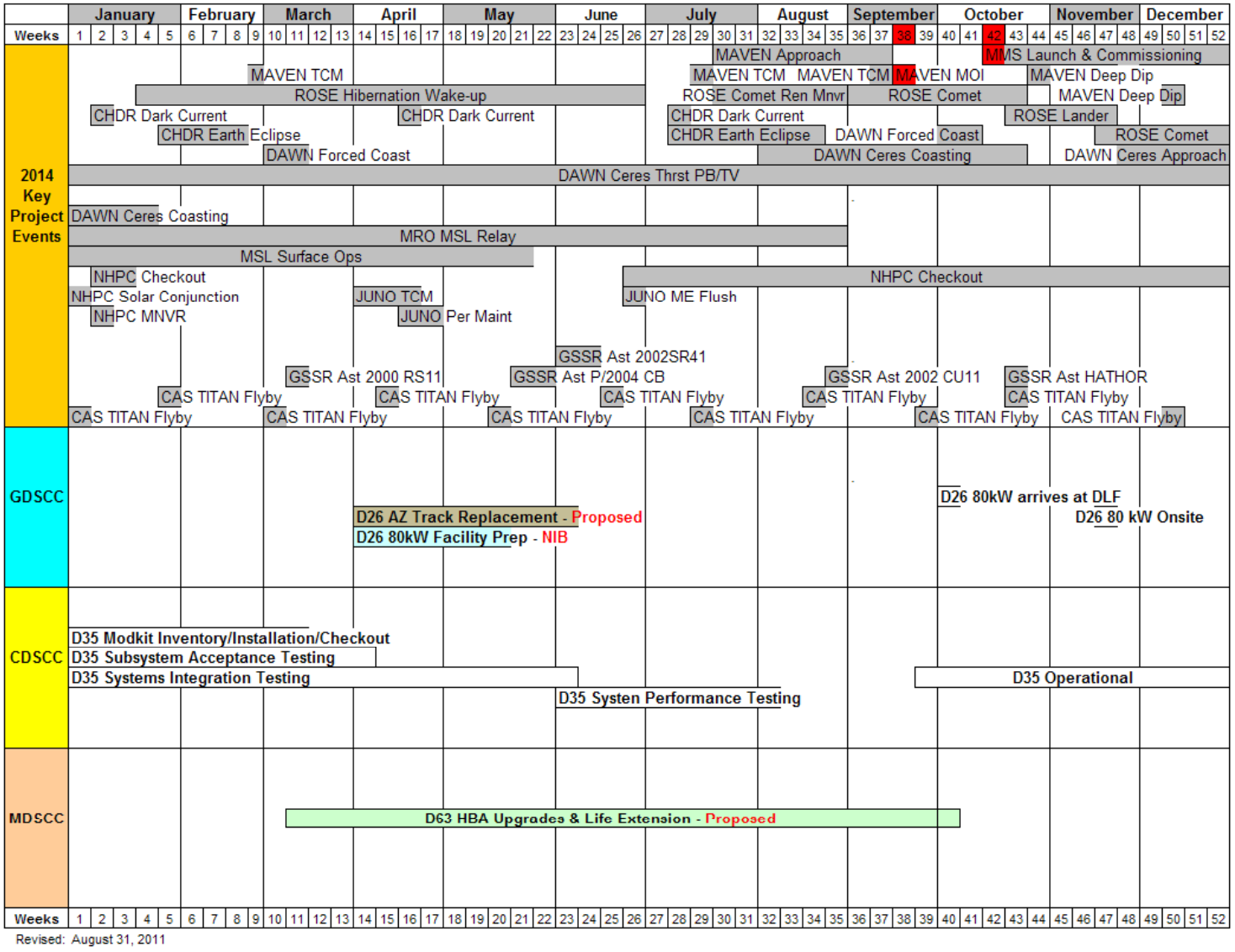


DSN Downtime 2013

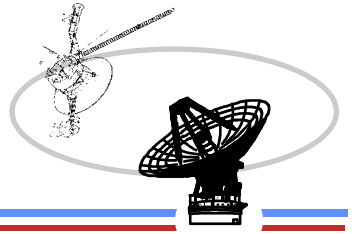
2013							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 43	HBA Upgrades and Life Extension Phase 2 - Proposed	01/07/2013 00:00	08/11/2013 00:00	216	02 - 32	7	223
DSS 55	Cable Wrap Protection - NIB	01/14/2013 00:00	01/17/2013 00:00	3	03 - 03	14	17
DSS 55	Antenna Controller Replacement - Proposed	01/14/2013 00:00	02/17/2013 00:00	34	06 - 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

Resource Allocation Planning Service

- 2014 -



Revised: August 31, 2011



DSN Downtime 2014

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

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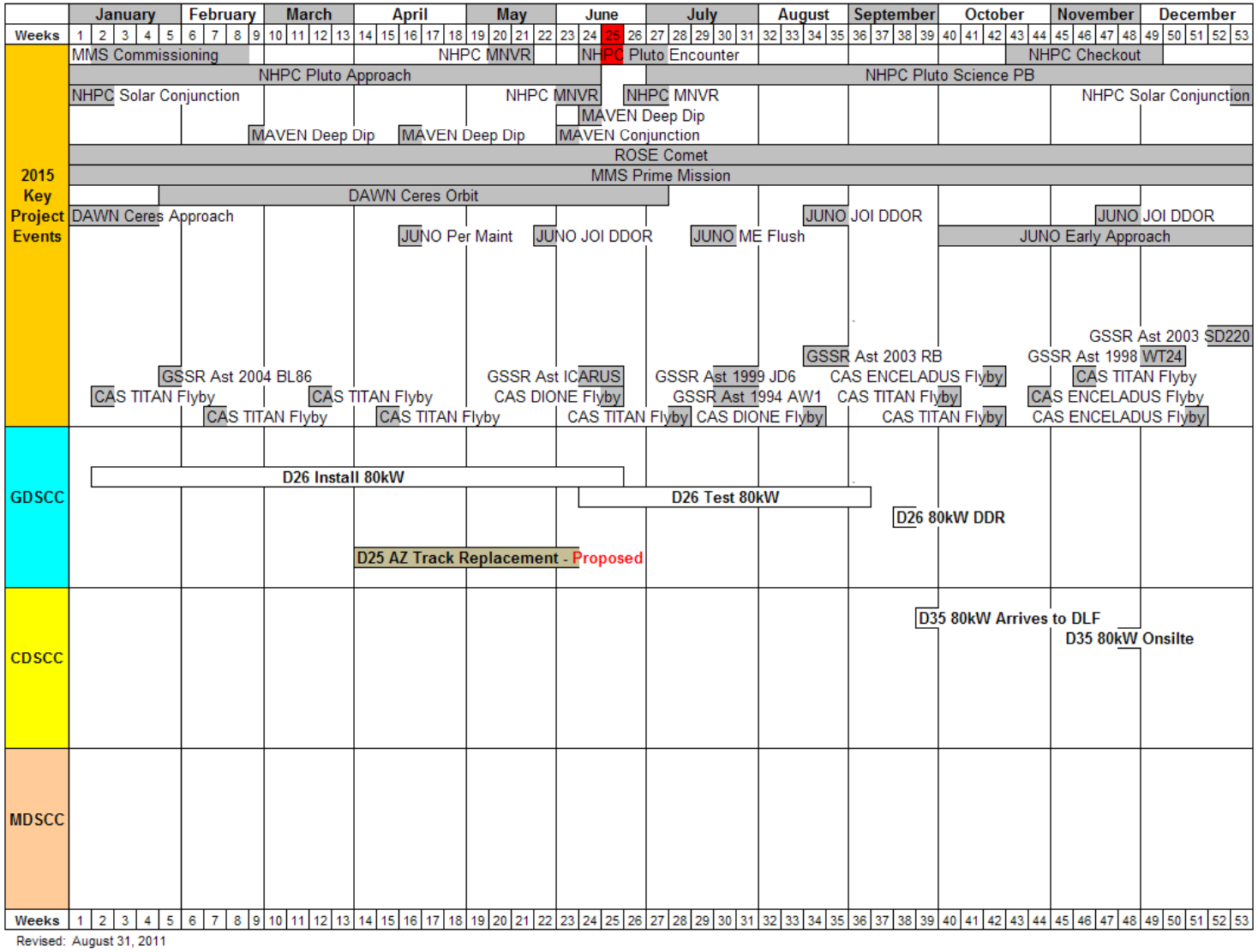
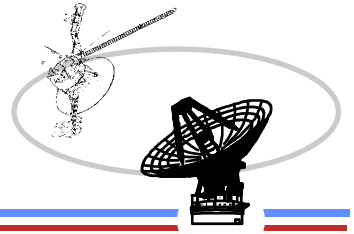
- 2015 -

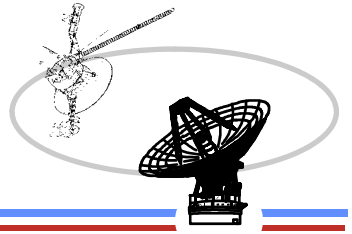


Revised: August 31, 2011



DSN Downtime 2015

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



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

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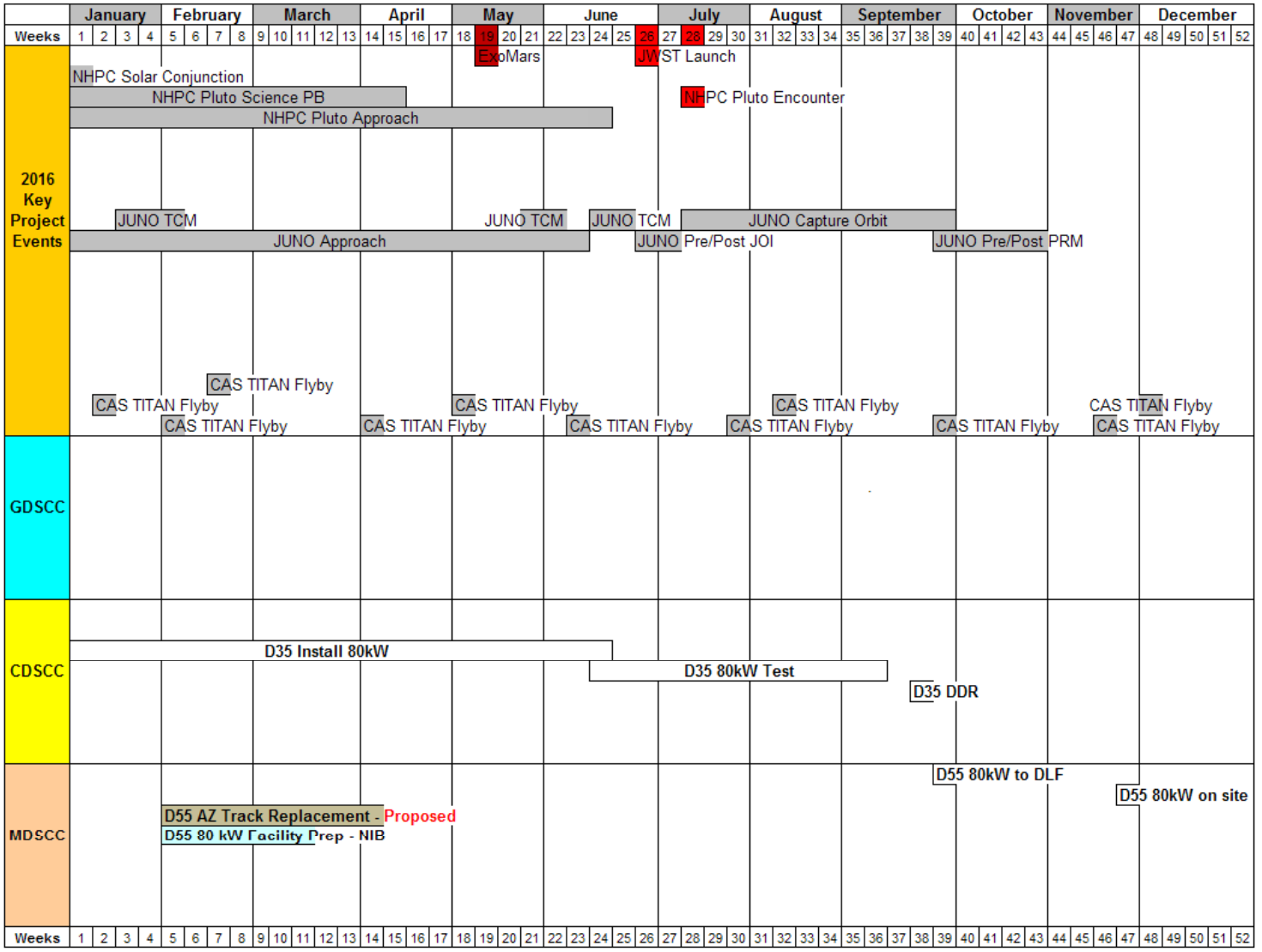
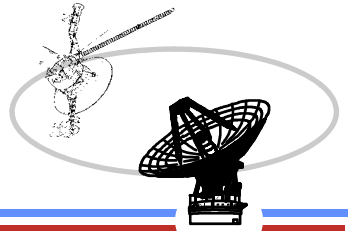
- 2016 -



Revised: August 31, 2011

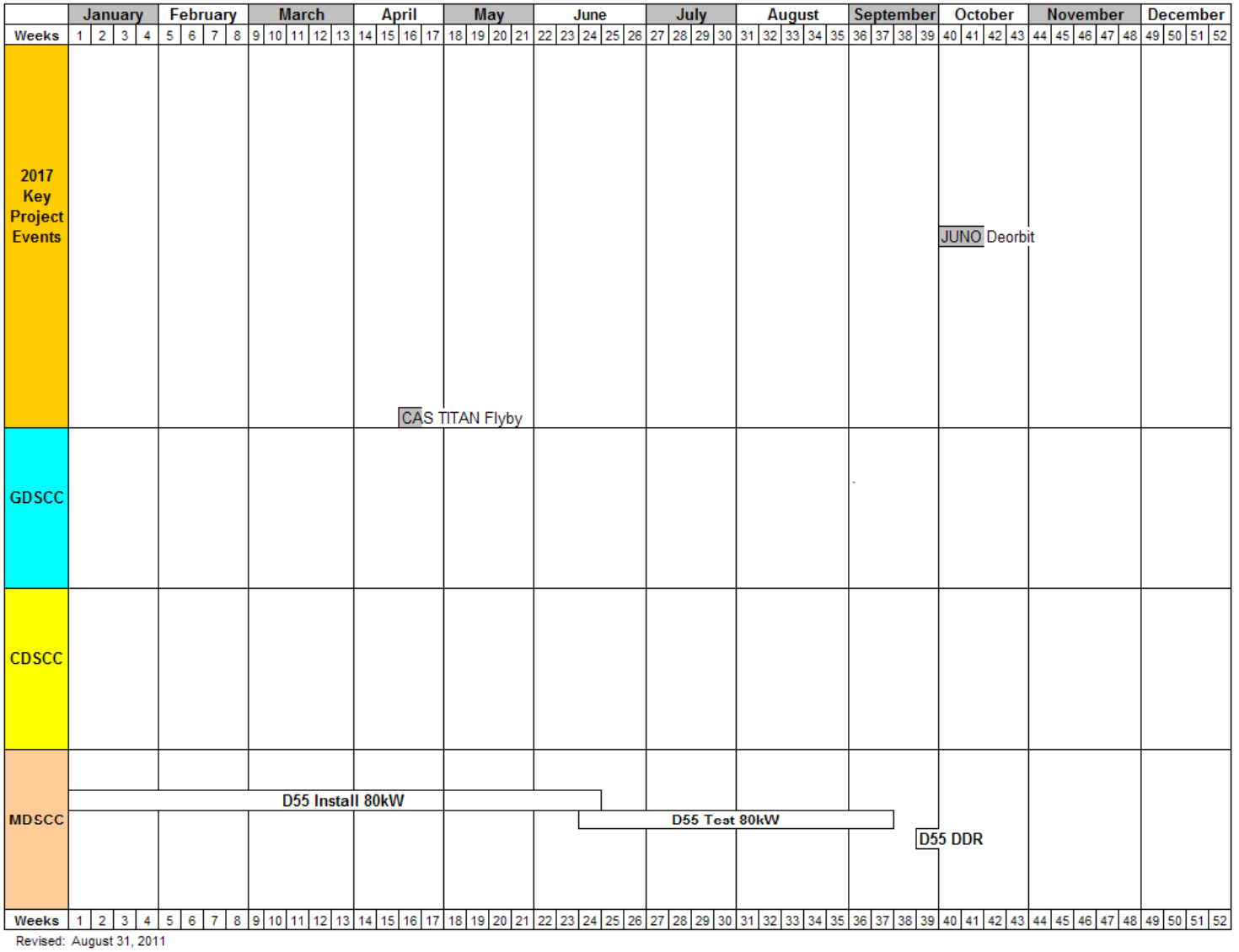


DSN Downtime 2016

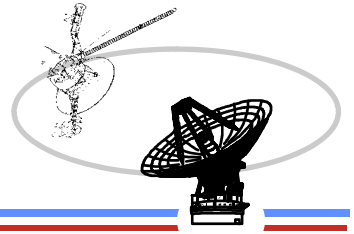
2016							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 55	80 kW Facility Prep - NIB	02/01/2016 00:00	03/20/2016 00:00	48	05 - 11	32	80
DSS 55	AZ Track Replacement - Proposed	02/01/2016 00:00	04/10/2016 00:00	69	05 - 14	32	101

Resource Allocation Planning Service

- 2017 -

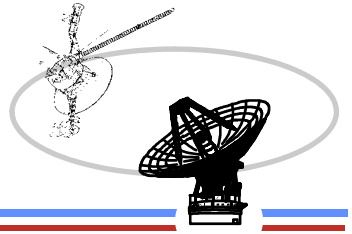


Revised: August 31, 2011



Future assets new/upgrades

- DSS-35 Installation and Operational 2013 – 2014
  - Modkit Installation October 1, 2013 – March 14, 2014 weeks 40 – 11
  - Acceptance Testing November 22, 2013 – April 4, 2014, weeks 47 – 14
  - System Integration Testing December 17, 2013 – June 2, 2014 weeks 51 – 23
  - Operations Systems Performance Testing June 2, 2014 – August 15, 2014, weeks 23 – 33
  - 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



Antenna Downtime Status and Forecast

Complex	Station	Subnet	S-Band		X-Band		Ka-Band		Ka Phase 2	X-Band ACQ AID	80KW
			Down	Up	Down	Up	Down	Up			
10	DSS-27	34HSB	✔	✔	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10	DSS-24	34B1	✔	✔	✔	✔	N/A	N/A	✔	✔	N/A
40	DSS-34	34B1	✔	✔	✔	✔	✔	N/A	✔	✔	N/A
60	DSS-54	34B1	✔	✔	✔	✔	✔	N/A	✔	✔	N/A
10	DSS-25	34B2	N/A	N/A	✔	✔	✔	05/17/11	N/A	N/A	10/01/15
10	DSS-26	34B2	N/A	N/A	✔	✔	✔	N/A	N/A	N/A	N/A
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	DSS-55	34B2	N/A	N/A	✔	✔	✔	N/A	N/A	N/A	10/01/17
10	DSS-15	34HEF	✔	N/A	✔	✔	N/A	N/A	N/A	N/A	N/A
40	DSS-45	34HEF	✔	✔	✔	✔	N/A	N/A	N/A	N/A	N/A
60	DSS-65	34HEF	✔	✔	✔	✔	N/A	N/A	N/A	N/A	N/A
10	DSS-14	70M	✔	✔	✔	✔	N/A	N/A	N/A	N/A	N/A
40	DSS-43	70M	✔	✔	✔	✔	N/A	N/A	N/A	N/A	N/A
60	DSS-63	70M	✔	✔	✔	✔	N/A	N/A	N/A	N/A	N/A

N/A = Capability Not Planned

xx/xx/xx = Capability Date Recently Changed

As of: 8/4/2011

✔ ✔ ✔ = Capability Recently Exists

✔ = Capability Exists

* = To Be Commissioned