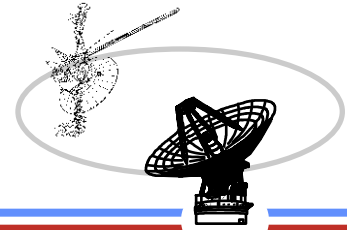




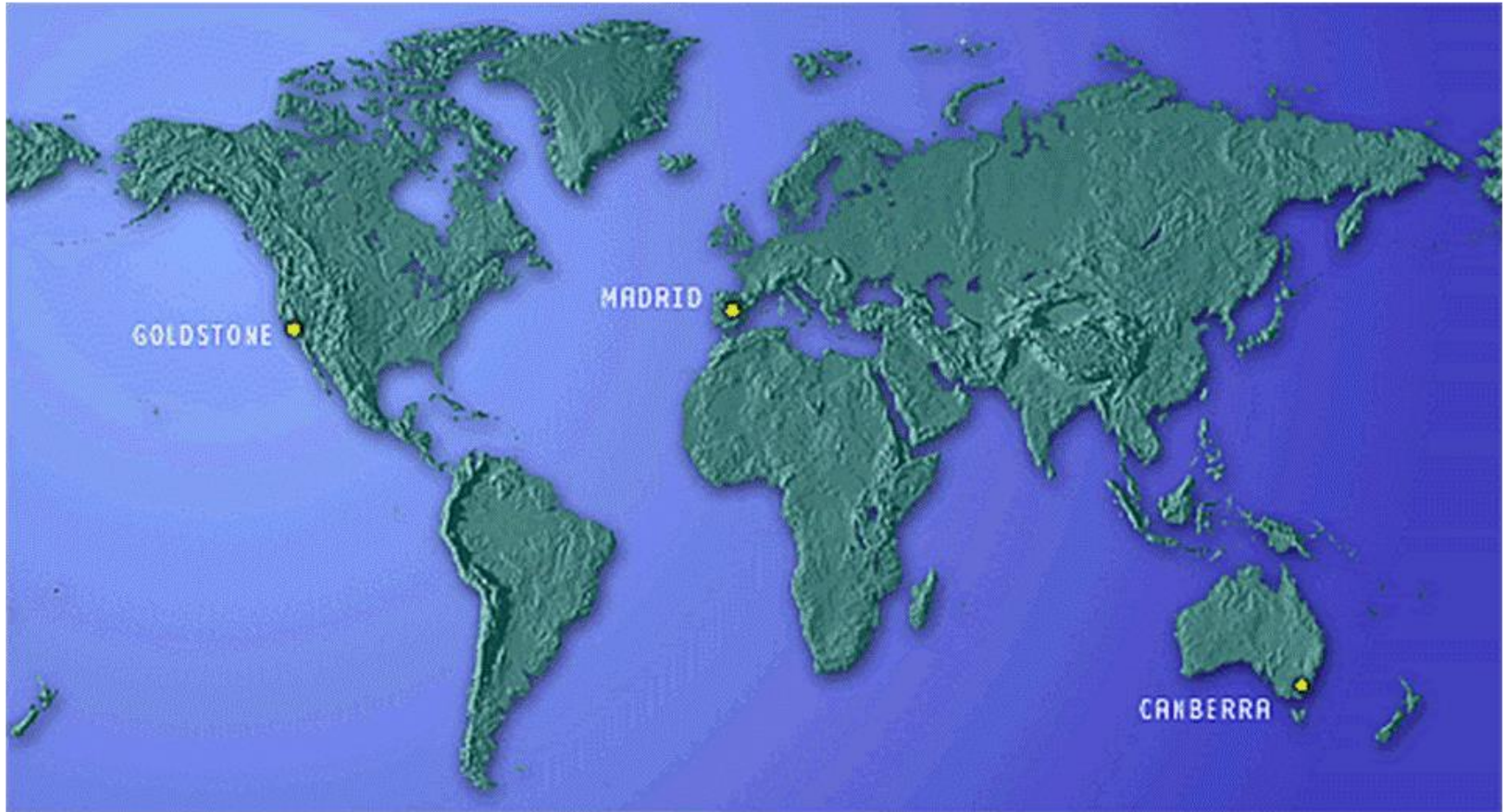
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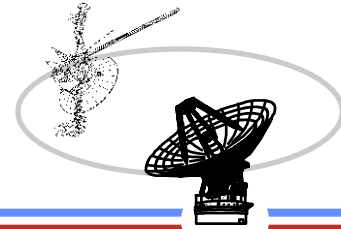
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DSN Antenna Downtime Status and Forecast





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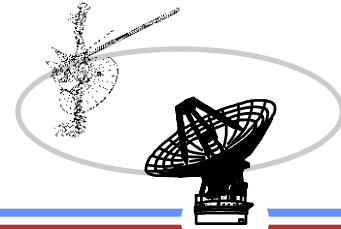


Antenna Downtime Status and Forecast

Downtime	Antenna	Start Date	End Date	Weeks	POC	Notes
NMC D3.2 SPS 1.4 I&T, AT Install/SOAK And D3.3 Install/SOAK	GDSCC	April 2015	Dec 2015	16, 19, 30, 40	Jim Buckley Shirley Cizmar, Dave Taylor	Week 16 changed from ALB-SPS Software install to I&T
	CDSCC	Feb 2015	Dec 2015	09, 20, 24, 31, 45		Week 09 AT was added to CDSCC. Weeks 17 & 18 SPS Install were cancelled
	MDSCC	May 2015	Dec 2015	21, 32, 50		Weeks 20 & 21 changed from NMC D3.3 I&T to NMC D3.2/SPS 1.4 install. Week 45 and 50 changed from SOAK to D3.3 install. These tasks may require night hours.
Power Transfer	DSS-24, 25, 26 (Apollo)	Feb 2015	Feb 2015	09	Richard Fleig	This 16-hour Power Transfer downtime was requested by OE. It is scheduled at Apollo Valley during off-shift hours.
		Oct 2015	Oct 2015	42		Additional 16-hour Phase 3 downtime requested for late 2015
G86 Power Work	GDSCC	Nov 2015	Dec 2015	51	David Lloyd	Requesting annual 16 hour downtime for G86 Power Work



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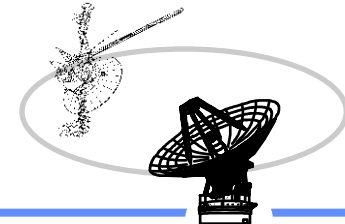


Antenna Downtime Status and Forecast

Downtime	Antenna	Start Date	End Date	Weeks	POC	Notes
Grouting	DSS-63	May 2015	May 2015	20 & 21	Dave Taylor, David Munoz Mochon, Bernardo Lopez, Asim Sehic	<p>May 2015 grouting will be NIB to 70m Tune-up and Calibration</p> <p>May and Aug 2015 groutings are only 2 weeks to allow support of NHPC</p> <p>May need to delay Grouting task in Feb by approximately 26 hours. Could extend Feb. activity 1 more weeks overlapping APCA at DSS-14 and July's Grouting by approximately 50 hours due to Cas. Activities. Five weeks is scheduled but may need additional time.</p> <p>Per mission requirements in 2017 have reduced time to 10 weeks and will place APCA downtime as stand alone in 2018. The SHMT will be worked on 11/3, Engineer will be there in early November. More information will be available after the Oct/Nov grouting to determine the Feb & Jul 2016 grouting's status in relation to actual time needed. Grouting needs to increase by one week to accommodate all NIB tasks.</p>
		Aug 2015	Aug 2015	32 & 33		
		Feb 2016	Mar 2016	05 – 09		
		Jul 2016	Aug 2016	30 – 34		
		Feb 2017	Apr 2017	08 – 17		



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Antenna Downtime Status and Forecast

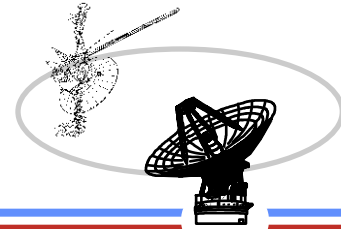
Downtime	Antenna	Start Date	End Date	Weeks	POC	Notes
80kW Installation	DSS-26	Oct 2014	June 2015	44 – 24	Erik Holmgren Pam Rothman, Daniel Olson	Downtime will start in week 44 of 2014 and end week 24 of 2015. Downtime will end in preparation for NHPC Pluto encounter in mid July. AZ Track will be NIB to the 80kW facility prep. Unknown if 80kW is ready. Could be a personnel availability problem. Mechanical task is going well.
70M Tune-up and calibration	DSS-43	Mar 18, 2015	April 3, 2015	12 – 14	Jose Perez Dave Taylor	The Tune-up Calibrations are In preparation for NHPC Pluto Encounter.
DLM	DSS-43	Aug 18, 2015	Aug 28, 2015	34 – 36	David Allen John Phillips	Requested an additional week (34-36) to replace time lost in 2014 during HBA John and Dave will compare tasks for DSS-14 & DSS-43.
70M Tune-up and calibration	DSS-63	May 11, 2015	May 23, 2015	20 & 21		DSS-43 Tune-up was changed to DLM. moved to weeks 34 – 36. May grouting scheduled NIB.
Metrology	DSS-63	Feb 2015	Aug 2015	7 & 34		Tasks for these downtimes should be similar for each complex. Having Radio Science issues Back-to-back nights requested to measure pedestal concrete cracking over the past two years. This will be an ongoing yearly task 1 in winter & 1 in summer
Ka U/L Engineering Test	DSS-25	Jan 2015	Jan 2015	4	Andre Jongeling	The Engineers are requesting 4 daylight days T-F 8 hours each to complete this task. Monday is a holiday. Times slightly reduced at request due to missions requirements. The requested time for DOY 20 was released for NHPC DDA PIT requirement. Ready to go. Will align aberration tables. This does not include demos for JUNO. Completed.



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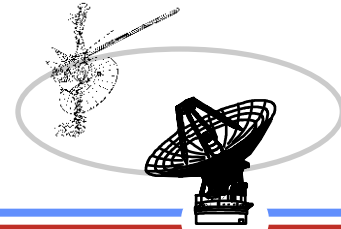


Antenna Downtime Status and Forecast

Downtime	Antenna	Start Date	End Date	Weeks	POC	Notes
Complex downtime for Power House Commission	CDSCC	Apr 2015	Apr 2015	15 (2)	John Phillips, Cameron Lyon Dave Taylor	Moved from Mar to April 2015 (Apr 9 & 10). Begins after Cassini pass. Added weeks 19, 35, 41, and 50 of 2015 and week 14 of 2016 The complex submitted a list of six new downtimes they would like in 2015/2016. There is a possible issue with DSCO & MMS launches in early 2015. The complex is requesting at least 1 6hour downtime per month possibly during night hours
		May 2015	May 2015	19		
		Aug 2015	Aug 2015	35		
		Oct 2015	Oct 2015	41		
		Dec 2015	Dec 2015	50		
		April 2016	April 2016	14		
		Antenna Inspections/ TXR RF Characterization	GDSCC	Apr 2015		
Apr 2018	Apr 2018			15 & 16		
CDSCC	Jan 2016		Jan 2016	03 & 04		
	MDSCC	Apr 2017	Apr 2017	17 & 18		
Encoder Cover	DSS-35	May 2015	May 2015	20	Pete Hames	One week of downtime M-F requested by Office 925 to replace Encoder Cover. Changed from week 18 to week 20 Per request from SPO Admin. due to high contention

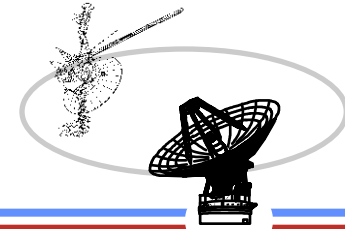


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Antenna Downtime Status and Forecast

Downtime	Antenna	Start Date	End Date	Weeks	POC	Notes
DCD v.5.1 software installation	GDSCC/DSOC	Aug, 2015	Aug 2015	32	Anna Fan, Sheila Garrett	All complexes require installation of DCD 5.1. with a minimum of 6 hours. Beginning with Goldstone, with 30 day separation from the MDSCC install, lastly the CDSCC install. Requires a 2 week separation from the 2 nd and 3 rd install. Removed back-up task in week 41
	MDSCC	Sep 2015	Sep 2015	37		
	CDSCC	Sep 2015	Sep 2015	39		
AZ Track Replacement	DSS-55	Aug 2015	Oct 2015	34 – 46	Pam Rothman Daniel Olson	Downtime will begin one day late on DOY 230 vice 229 due to Cassini activities. Requesting an additional 2 weeks on back end of downtime for demolition of epoxy grout. This is NIB to XX/Ka Installation. When is track being purchased.
	DSS-25	Feb 2018	Apr 2018	05 - 14		
Depot Level Maintenance	DSS-34	Nov 2015	Dec 2015	49 & 50	John Phillips	DSS-34 moved to December time frame with CDSCC concurrence
APCA	DSS-14	Mar 7, 2016	Jun 10, 2016	10 – 23	Anna Fan, Barzia Tehrani	DSS-14 extended an additional 2 weeks Doing everything possible to fill all task in time available. Need to complete prior to JNO JOI. Suggest doing a demo with JNO prior to RTS. (Last 2 weeks of downtime). DSS-43 extended an additional 3 weeks on the back end
	DSS-43	Oct 30, 2017	Jan 19, 2018	44 – 06		
	DSS-63	Apr 30, 2018	Jul 20, 2018	15 – 29		

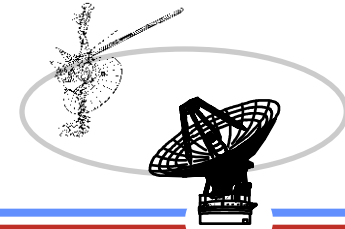


Antenna Downtime Status and Forecast

Downtime	Antenna	Start Date	End Date	Weeks	POC	Notes
SWUPS Installation	CDSCC	May 19 2016	May 19 2016	20	Dave Taylor Hal Ahlstrom	<p>Must be done in daylight, Downtimes moved from 1 12-hour block in weeks 14, 16, and 18 to 12-hour block in week 20 and 2 blocks in week 21 There is a connection to the power house.</p> <p>Two blocks in a 3 week period. Need to avoid InSight activities. There may be a Fire Detection issues.</p> <p>This might be combined with Powerhouse Commission into 1 task. A vendor has to be selected and has agreed to the dates.</p>
		May 24 2016	May 24 2016	21		
		May 26 2016	May 26 2016	21		
Ka2 Tune-up	DSS-54	Jan 23, 2017	Feb 3, 2017	04 & 05	Wendy Hodgkin	<p>These downtimes are being moved to 2017 with DSS-54 being the first Tune-up. All Tune-ups will be standalone. These need to be completed prior to the end of June 2017. This is budget/resource driven</p> <p>There is a task to build 4th Ka2/S-Band capabilities.</p>
	DSS-24	Mar 13, 2017	Mar 24, 2017	11 & 12		
	DSS-34	May 14, 2017	May 26, 2017	20 & 21		
XX/Ka Installation	DSS-25	Jan 2018	April 2018	01 – 14	Wendy Hodgkin	<p>XX/Ka requires 14 weeks - AZ Track will be NIB in weeks 05-14</p> <p>Needs to happen as soon after JNO end of mission as possible. DSS-24 is not funded at this time, but still in the plan to proceed with downtime.</p>
	DSS-24	Apr 30, 2018	Jul 9, 2018	18 – 27		



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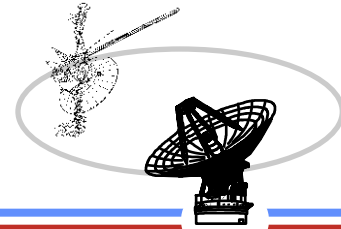
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Antenna Downtime Status and Forecast

Downtime	Antenna	Start Date	End Date	Weeks	POC	Notes
Pedestal Rehab	DSS-54	Nov 4, 2019	Apr 30, 2021	45 – 17	Bernardo Lopez	This Rehab could take 15 – 18 months to complete. Servo Replacement and Transmitter Replacement will be NIB. DSS-56 will become operational October 1, 2019 with Ka2/S-Band feed. If DSS-54 is not available for JWST, the Ka2 will be installed at DSS-55. If we wait for DSS-56 to become operational and DSS-54 can operate until then, DSS-54 will start Pedestal Rehab the first weeks of Nov 2019 and end the last week of April 2021. Servo and Transmitter Replacements will be NIB
EI Bearing Replacement	DSS-63	April 20, 2020	July 10, 2020	17 - 28	Asim Sehic	This downtime was request on 11/14/2014. There are about 5-6 years of bearing life left based on last inspection.



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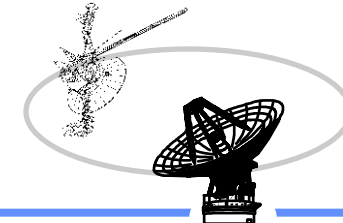


70m Major Downtimes 2015 - 2018

Downtime	Ant	Start Date	End Date	Weeks	Status	# of Days	Notes and next downtime date
70m Tune-up Calibration	DSS-43	Mar 16, 2015	Apr 3, 2015	12 – 14	Approved	18	Next downtime is August of 2017
70m Tune-up Calibration	DSS-43	Aug 18, 2015	Aug 28, 2015	34 – 36	Approved	10	Moved from week 8&9 due to Dawn safing event Next downtime is October of 2017
Grouting 70m Tune-up Calibration	DSS-63	May 11, 2015	May 24, 2015	20 – 21	Approved NIB to grouting	13	Next down time is August of 2015
Grouting	DSS-63	Aug 3, 2015	Aug 16, 2015	32 – 33	Approved	14	Next downtime is February of 2016
Grouting	DSS-63	Feb 1, 2016	Mar 3, 2016	05 – 09	Proposed	32	Next downtime is July of 2016. May shift due to CAS activities
Grouting	DSS-63	Feb 1, 2016	Mar 3, 2016	05 – 09	Proposed	32	Next downtime is July of 2016. May shift due to CAS activities
APCA	DSS-14	Mar 7, 2016	Jun 10, 2016	10 – 23	Proposed	95	
Grouting	DSS-63	Feb 20, 2017	Apr 28, 2017	08 – 17	Proposed	67	Next downtime is April of 2018
APCA	DSS-43	Oct 30, 2017	Jan 19, 2018	44 – 03	Proposed	80	
APCA	DSS-63	Apr 30, 2018	Jul 20, 2018	18 – 29	Proposed	80	Next downtime is April of 2020
El Bearing Replacement	DSS-63	Apr 20, 2020	Jul 10, 2020	17 – 27	Proposed	446	



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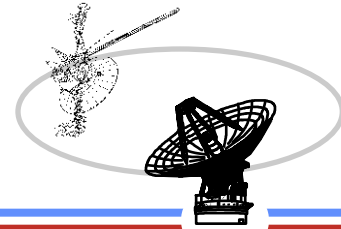
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2015 Key Project Events	DSCO Launch					MMS Launch & Commissioning											NET						NHPC Pluto Encounter Science P/B																														
	DSCO MCC #1						DSCO L1-LOI				NHPC Status, First Look D/L						PLC VOI																																				
	DSCO MCC #2						NHPC Prime Knowledge U/L - Phone Home						NHPC N/O Op Nav, Failsafe D/L - Bistatic U/L						HEY2 Earth Swing-by																																		
	MSGR OCM-12/OCM-12c						NHPC REX ORT						NHPC TCM-17/17 B/U 1/ B/U 2						GSSR Ast 2003 SD220																																		
	MVN Deep Dip 2						MVN Deep Dip 3						Rosetta Perihelion Passage						GSSR Ast 1998 WT24																																		
	DAWN Arrival at Ceres						NHPC TCM-16 (P-40)						NHPC TCM-16 (P-30)						GSSR Ast 2003 RB																																		
	HBV2 Ka-Band Mono/HGA Boresight Cals and Test						NHPC P-39 Hazard D/L						NHPC P-29/P-28/P-27 Hazard D/L						GSSR Ast 1994 AW1																																		
	GSSR Ast 2004 BL86						GSSR Ast ICARUS						GSSR Ast 1999 JD6						GSSR Ast 2003 RB																																		
	VGR1 DTR P/B						VGR1 DTR P/B						MVN Deep Dip 4						MVN Deep Dip 5																																		
	CAS TITAN Flyby						CAS TITAN LGA Gravity Observation						CAS ENCELADUS Flyby						CAS ENCELADUS Flyby																																		
	CAS TITAN Flyby						CAS TITAN LGA Gravity Obs						CAS ENCELADUS Flyby						CAS ENCELADUS Flyby																																		
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Key Project Events Legend:													■ Level 1 ■ Level 2 ■ Level 3 ■ All Others ■ TBD □ Station downtimes less than 24 hours in duration																																								
GDSCC	D26 AZ Track Replacement - NIB											G86 Power Work																																									
	D26 80kW Facility Install - Start 10/27/14																																																				
CDSCC	D25 Ka U/L					D14, 15, 24, 25, 26 Ant Insp/TRX RF Characterization											D24, 25, 26 Power Transfer																																				
	D24, 25, 26 Power Transfer					NMC D3.3 I&T											D34 Depot Level Maint																																				
MDSCC	NMC D3.2 AT					NMC D3.3 AT											NMC D3.3 AT																																				
	D35 Encoder Cover Install					NMC D3.3 I&T											DCD 5.1																																				
	D43 70m Tune-up/Calibration					NMC D3.2/SPS 1.4 Install											DCD 5.1																																				
	Powerhouse Upgrades (2)					Powerhouse Upgrade											Powerhouse Upgrade																																				
MDSCC	Powerhouse Upgrade					Powerhouse Upgrade											Powerhouse Upgrade																																				
	D63 Pedestal Metrology					NMC D3.2/SPS 1.4 Install											NMC D3.3 Install																																				
MDSCC	D63 Grouting - NIB					D55 AZ Track Replacement											NMC D3.3 Install																																				
	D63 70m Tune-up/Calibration					D63 Grouting											D63 Pedestal Metrology																																				

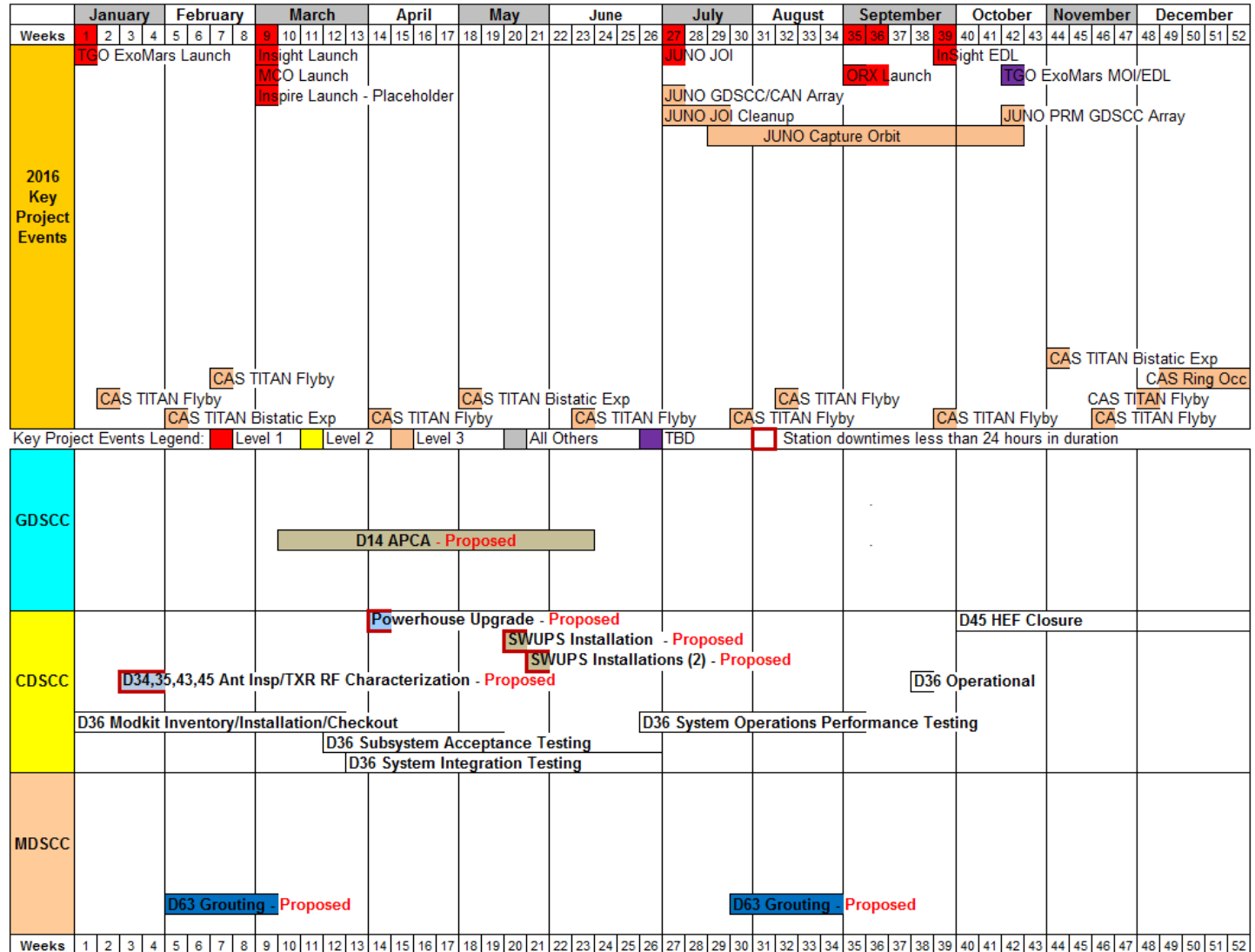
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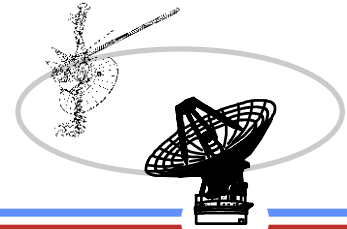


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- 2017 -

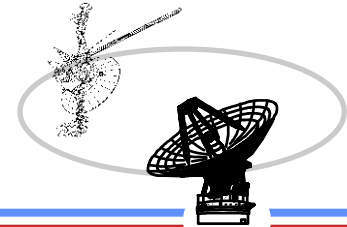
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2017 Key Project Events																																TESS Launch																																			JUNO EOM																																			
	CAS Ring Occ																																			CAS Ring Occ																																																																		
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GDSCC																																D24 Ka2 Tune-up - Proposed																																			D15 HEF Closure																																			
CDSCC																																																D34 Ka2 Tune-up - Proposed																				D43 APCA																																		
MDSCC	D54 Ka2 Tune-up - Proposed																																			D63 Grouting - Proposed																				D54,55,63, 65 Ant Insp/TXR RF Characterization - Proposed																																														
Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52																																																		

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Downtime February 3, 2015 12



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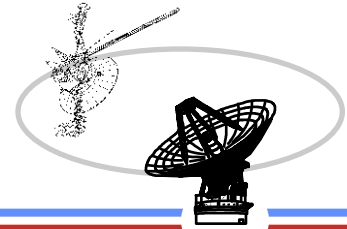
- 2018 -

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2018 Key Project Events																																SP Launch and LEOP				HSF EM1 Launch				JWST Launch and Commissioning																																															
Key Project Events Legend: Level 1 Level 2 Level 3 All Others TBD Station downtimes less than 24 hours in duration																																																																																							
GDSCC					D25 XX/Ka Installation - Proposed				D25 AZ Track Replacement - NIB								D24 XX/Ka Installation																																																																						
D14, 15, 25, 26, 24, 15 Ant Insp/TXR RF Characterization - Proposed																																																																																							
CDSCC	D43 APCA - Proposed																																																																																						
MDSCC																	D63 APCA - Proposed																																																																						
D56 Modkit Installation, System Integration and System Level Testing																																																																																							
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Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52																																			

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- 2019 -

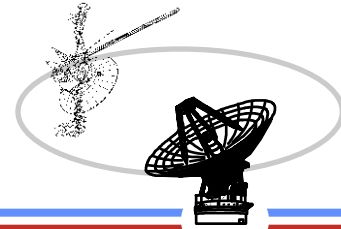
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2019 Key Project Events						SPP Beacon					SPP Solar Enc										ORX Tag 1 Reh					Tag 1					SPP Solar Enc										SPP Venus Flyby																			
																															HYB2 Target Asteroid 1999 Ju3 Departure																													
Key Project Events Legend: ■ Level 1 ■ Level 2 ■ Level 3 ■ All Others ■ TBD Station downtimes less than 24 hours in duration																																																												
GDSCC																																																												
CDSCC																																																												
MDSCC	D56 Modkit Installation, System Integration and System Level Testing																																			D56 Operational																								
																																				D54 Pedestal Rehab end April 2021 - Proposed																								
																																				D54 Servo/MTR Replacement - N/A																								
																																				D53 Modkit Installation, System Integration and System Level Testing																								
Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52								

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Downtime February 3, 2015 14



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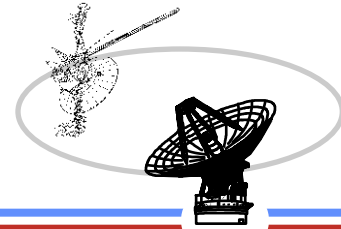
- 2020 -

	January					February				March				April				May				June				July				August				September				October				November				December						
Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
2020 Key Project Events	<div style="display: flex; justify-content: space-between; width: 100%;"> Mars 2020 Launch HYB2 Earth Re-Entry </div>																																																			
Key Project Events Legend: ■ Level 1 ■ Level 2 ■ Level 3 ■ All Others ■ TBD Station downtimes less than 24 hours in duration																																																				
GDSCC																																																				
CDSCC																																																				
MDSCC	D54 Pedestal Rehab end April 2021 - Proposed																																																			
	D54 Servo/XMTR Replacement - NIB																																																			
	D53 Modkit Installation, System Integration and System Level Testing																										D53 Operational																									
Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52

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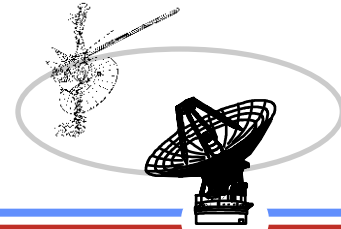
- 2021 -

	January					February				March				April				May				June				July				August				September				October				November				December									
Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52			
2021 Key Project Events																																HSF EM2 Launch																							
	Key Project Events Legend: Level 1 Level 2 Level 3 All Others TBD Station downtimes less than 24 hours in duration																																																						
GDSCC																																																							
CDSCC																																																							
MDSCC	D54 Pedestal Rehab Begin November 2019 - Proposed										D54 Servo/XMTR Replacement - NIB																																												
	D53 Modkit Installation, System Integration and System Level Testing																																				D53 Operational																		
Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52			

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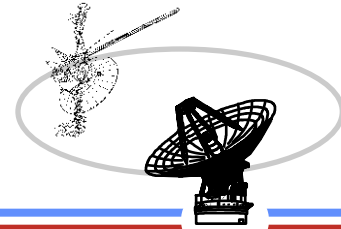
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DSN Downtime 2014

2014/2015							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 26	80kW Install	10/27/2014 15:00	06/13/2015 00:00	228	44 - 24	300	164
DSS 26	AZ Track Replacement - NIB	10/27/2014 15:00	06/13/2015 00:00	228	44 - 24	300	164



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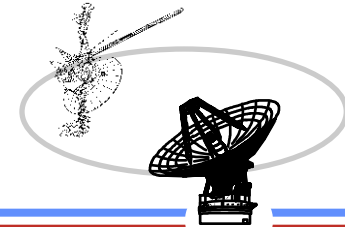


DSN Downtime 2015

2015							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 63	Pedestal Metrology	02/09/2015 20:00	02/10/2015 05:20	0	07 - 07	40	41
DSS 63	Pedestal Metrology	02/10/2015 20:10	02/11/2015 03:30	0	07 - 07	41	42
SPC 40	NMC D3.2 AT	02/24/2015 09:55	02/24/2015 12:55	0	09 - 09	55	55
DSS 24	Power Transfer	02/25/2015 23:15	02/26/2015 15:00	1	09 - 09	56	57
DSS 25	Power Transfer	02/25/2015 23:15	02/26/2015 15:00	1	09 - 09	56	57
DSS 26	Power Transfer	02/25/2015 23:15	02/26/2015 15:00	1	09 - 09	56	57
DSS 43	70m Tune-up/Callibration	03/18/2015 01:00	04/03/2015 06:00	16	12 - 14	77	93
SPC 40	Complex Powerhouse Upgrade	04/09/2015 22:00	04/10/2015 04:00	0	15 - 15	99	100
SPC 40	Complex Powerhouse Upgrade	04/11/2015 07:45	04/11/2015 13:45	0	15 - 15	100	101
SPC 10	NMC D3.2/SPS 1.4 Install/SOAK	04/15/2015 06:00	04/15/2015 12:00	0	16 - 16	105	105
DSS 14	Antenna Inspection/TXR RF Characterization	04/20/2015 15:00	04/21/2015 03:00	0	17 - 17	110	111
DSS 26	Antenna Inspection/TXR RF Characterization	04/21/2015 15:00	04/22/2015 03:00	0	17 - 17	111	112
DSS 24	Antenna Inspection/TXR RF Characterization	04/22/2015 15:00	04/23/2015 03:00	0	17 - 17	112	113
DSS 25	Antenna Inspection/TXR RF Characterization	04/22/2015 15:00	04/23/2015 03:00	0	17 - 17	112	113
DSS 15	Antenna Inspection/TXR RF Characterization	04/23/2015 15:00	04/24/2015 03:00	0	17 - 17	113	114
DSS 14	Antenna Inspection/TXR RF Characterization	04/27/2015 15:00	04/28/2015 03:00	0	18 - 18	117	118
DSS 26	Antenna Inspection/TXR RF Characterization	04/28/2015 15:00	04/29/2015 03:00	0	18 - 18	118	119
DSS 25	Antenna Inspection/TXR RF Characterization	04/29/2015 15:00	04/30/2015 03:00	0	18 - 18	119	120
DSS 24	Antenna Inspection/TXR RF Characterization	04/29/2015 15:00	04/30/2015 03:00	0	18 - 18	119	120
DSS 15	Antenna Inspection/TXR RF Characterization	04/30/2015 15:00	05/01/2015 03:00	0	18 - 18	120	121
SPC 40	Complex Powerhouse Upgrade	05/05/2015 21:00	05/06/2015 03:00	0	19 - 19	125	126
SPC 10	NMC D3.3 I & T	05/10/2015 00:00	05/10/2015 06:00	0	19 - 19	130	130
DSS 35	Encoder Cover	05/10/2015 22:00	05/15/2015 06:00	4	19 - 20	130	135



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DSN Downtime 2015

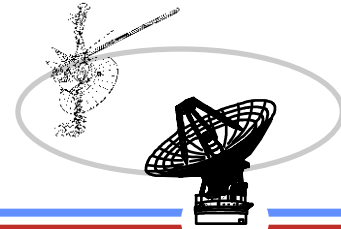
2015							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 63	70m Tune-up/Calibration	05/11/2015 06:00	05/22/2015 17:00	11	20 - 21	131	142
DSS 63	Grouting - NIB	05/11/2015 06:00	05/22/2015 17:00	11	20 - 21	131	142
SPC 40	NMC D3.2/SPS 1.4 Install	05/17/2015 00:00	05/17/2015 06:00	0	20 - 20	137	137
SPC 60	NMC D3.2/SPS 1.4 Install	05/24/2015 00:00	05/24/2015 06:00	0	21 - 21	144	144
SPC 40	NMC D3.3 I & T	06/13/2015 00:00	06/13/2015 06:00	0	24 - 24	164	164
SPC 10	NMC D3.3 AT	07/26/2015 00:00	07/26/2015 06:00	0	30 - 30	207	207
SPC 40	NMC D3.3 AT	08/02/2015 00:00	08/02/2015 06:00	0	31 - 31	214	214
DSS 63	Grouting	08/03/2015 05:00	08/14/2015 17:00	12	32 - 33	215	226
SPC 10	DCD V5.1	08/05/2015 17:00	08/05/2015 23:00	0	32 - 32	217	217
GCF 20	DSOC DCD V5.1	08/05/2015 17:00	08/05/2015 23:00	0	32 - 32	217	217
SPC 60	NMC D3.3 AT	08/09/2015 00:00	08/09/2015 06:00	0	32 - 32	221	221
DSS 43	Depot Level Maintenance	08/17/2015 21:00	09/04/2015 06:00	10	34 - 36	229	247
DSS 55	AZ Track Replacement	08/18/2015 06:00	11/13/2015 17:00	87	34 - 46	230	317
DSS 63	Pedestal Metrology	08/19/2015 22:00	08/20/2015 05:00	0	34 - 34	231	232
DSS 63	Pedestal Metrology	08/20/2015 22:00	08/21/2015 05:00	0	34 - 34	232	233
SPC 40	Complex Powerhouse Upgrade	08/26/2015 21:00	08/27/2015 03:00	0	35 - 35	238	239
SPC 60	DCD V5.1	09/09/2015 07:00	09/09/2015 13:00	0	37 - 37	252	252
SPC 40	DCD V5.1	09/24/2015 22:00	09/25/2015 04:00	0	39 - 39	267	268
SPC 10	NMC D3.3 Install/SOAK	10/03/2015 00:00	10/03/2015 06:00	0	40 - 40	276	276
SPC 40	Complex Powerhouse Upgrade	10/07/2015 21:00	10/08/2015 03:00	0	41 - 41	280	281
DSS 24	Power Transfer	10/15/2015 16:00	10/16/2015 08:00	1	42 - 42	288	289
DSS 25	Power Transfer	10/15/2015 16:00	10/16/2015 08:00	1	42 - 42	288	289
DSS 26	Power Transfer	10/15/2015 16:00	10/16/2015 08:00	1	42 - 42	288	289



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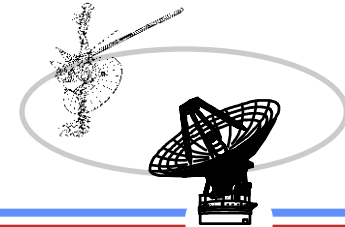


DSN Downtime 2015

2015							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
SPC 40	NMC D3.3 Install	11/07/2015 00:00	11/07/2015 06:00	0	45 - 45	311	311
DSS 34	Depot Level Maintenance	11/30/2015 21:00	12/11/2015 05:00	10	49 - 50	334	345
SPC 40	Complex Powerhouse Upgrade	12/11/2015 21:00	12/12/2015 03:00	0	50 - 50	345	346
SPC 60	NMC D3.3 Install	12/12/2015 00:00	12/12/2015 06:00	0	50 - 50	346	346
SPC 10	G86 Power Work	12/17/2015 14:00	12/18/2015 06:00	1	51 - 51	351	352



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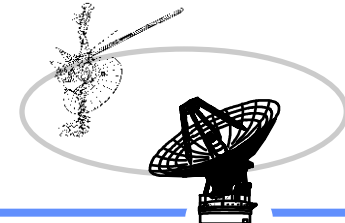
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DSN Downtime 2016

2016							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 43	Ant Insp/TXR RF Characterization - Proposed	01/19/2016 22:00	01/20/2016 14:00	1	03 - 03	19	20
DSS 34	Ant Insp/TXR RF Characterization - Proposed	01/20/2016 22:00	01/21/2016 14:00	1	03 - 03	20	21
DSS 45	Ant Insp/TXR RF Characterization - Proposed	01/21/2016 22:00	01/22/2016 14:00	1	03 - 03	21	22
DSS 35	Ant Insp/TXR RF Characterization - Proposed	01/21/2016 22:00	01/22/2016 14:00	1	03 - 03	21	22
DSS 43	Ant Insp/TXR RF Characterization - Proposed	01/26/2016 22:00	01/27/2016 06:00	0	04 - 04	26	27
DSS 34	Ant Insp/TXR RF Characterization - Proposed	01/27/2016 22:00	01/28/2016 06:00	0	04 - 04	27	28
DSS 45	Ant Insp/TXR RF Characterization - Proposed	01/28/2016 22:00	01/29/2016 06:00	0	04 - 04	28	29
DSS 63	Grouting - Proposed	02/01/2016 06:00	03/04/2016 17:00	32	05 - 09	32	64
DSS 14	Antenna Painting 4wks NIB	03/07/2016 15:00	06/11/2016 00:00	95	10 - 23	67	163
DSS 14	APCA - Proposed	03/07/2016 15:00	06/11/2016 00:00	95	10 - 23	67	163
SPC 40	Complex Powerhouse Upgrade	04/06/2016 21:00	04/07/2016 03:00	0	14 - 14	97	98
SPC 40	SWUPS Installation - Proposed	05/19/2016 21:00	05/20/2016 09:00	0	20 - 20	140	141
SPC 40	SWUPS Installation - Proposed	05/24/2016 21:00	05/25/2016 09:00	0	21 - 21	145	146
SPC 40	SWUPS Installation - Proposed	05/26/2016 21:00	05/27/2016 09:00	0	21 - 21	147	148
DSS 63	Grouting - Proposed	07/25/2016 06:00	08/26/2016 17:00	32	30 - 34	207	239



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 Deep Space Network (DSN)
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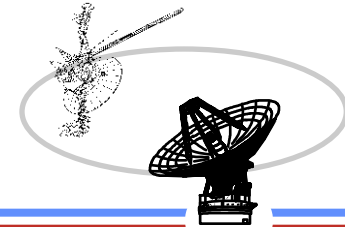
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DSN Downtime 2017

2017							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 54	Ka2 Tune-up - Proposed	01/23/2017 07:00	02/03/2017 17:00	11	04 - 05	23	34
DSS 63	Grouting	02/20/2017 06:00	04/28/2017 17:00	67	08 - 17	51	118
DSS 24	Ka2 Tune-up - Proposed	03/13/2017 15:00	03/25/2017 00:00	11	11 - 12	72	84
DSS 55	Ant Insp/TXR RF Characterization - Proposed	04/24/2017 07:00	04/24/2017 23:00	1	17 - 17	114	114
DSS 65	Ant Insp/TXR RF Characterization - Proposed	04/25/2017 07:00	04/25/2017 23:00	1	17 - 17	115	115
DSS 63	Ant Insp/TXR RF Characterization - Proposed	04/26/2017 07:00	04/26/2017 23:00	1	17 - 17	116	116
DSS 54	Ant Insp/TXR RF Characterization - Proposed	04/27/2017 07:00	04/27/2017 23:00	1	17 - 17	117	117
DSS 55	Ant Insp/TXR RF Characterization - Proposed	05/01/2017 07:00	05/01/2017 15:00	0	18 - 18	121	121
DSS 65	Ant Insp/TXR RF Characterization - Proposed	05/02/2017 07:00	05/02/2017 15:00	0	18 - 18	122	122
DSS 54	Ant Insp/TXR RF Characterization - Proposed	05/05/2017 07:00	05/05/2017 15:00	0	18 - 18	125	125
DSS 34	Ka2 Tune-up - Proposed	05/15/2017 21:00	05/26/2017 06:00	10	20 - 21	135	146
DSS 43	APCA - Proposed	10/30/2017 21:00	02/09/2018 06:00	101	44 - 06	303	40



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DSN Downtime 2018

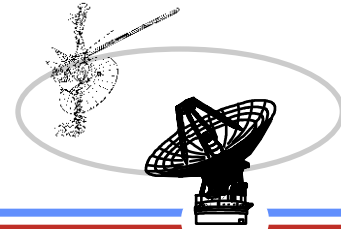
2018							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 25	XX/Ka Installation	01/04/2018 15:00	04/07/2018 00:00	92	01 - 14	4	97
DSS 25	AZ Track Replacement - NIB	01/29/2018 15:00	04/07/2018 00:00	67	05 - 14	29	97
DSS 14	Ant Insp/TXR RF Characterization - Proposed	04/09/2018 15:00	04/10/2018 06:00	1	15 - 15	99	100
DSS 63	APCA	04/09/2018 21:00	07/20/2018 06:00	101	15 - 29	99	201
DSS 26	Ant Insp/TXR RF Characterization - Proposed	04/10/2018 15:00	04/11/2018 06:00	1	15 - 15	100	101
DSS 25	Ant Insp/TXR RF Characterization - Proposed	04/11/2018 15:00	04/12/2018 06:00	1	15 - 15	101	102
DSS 15	Ant Insp/TXR RF Characterization - Proposed	04/12/2018 15:00	04/13/2018 06:00	1	15 - 15	102	103
DSS 14	Ant Insp/TXR RF Characterization - Proposed	04/16/2018 15:00	04/17/2018 00:00	0	16 - 16	106	107
DSS 26	Ant Insp/TXR RF Characterization - Proposed	04/17/2018 15:00	04/18/2018 00:00	0	16 - 16	107	108
DSS 24	Ant Insp/TXR RF Characterization - Proposed	04/18/2018 15:00	04/19/2018 06:00	1	16 - 16	108	109
DSS 24	XX/Ka Installation	04/30/2018 15:00	07/07/2018 00:00	67	18 - 27	120	188



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DSN Downtime 2019

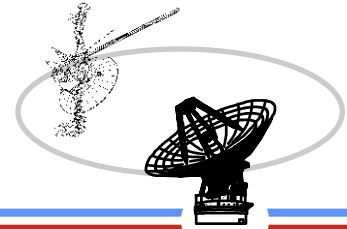
2019							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 54	Pedestal Rehab	11/04/2019 06:00	04/30/2021 17:00	543	45 - 17	308	120
DSS 54	Servo Replacement - NIB	11/04/2019 06:00	04/30/2021 17:00	543	45 - 17	308	120
DSS 54	Transmitter Replacement - NIB	11/04/2019 06:00	04/30/2021 17:00	543	45 - 17	308	120



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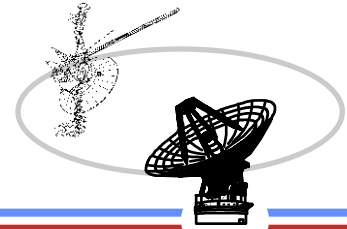


DSN Downtime 2020

2020							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 63	El Bearing Replacement	04/20/2020 07:00	07/10/2021 17:00	446	17 - 28	111	191



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Deep Space Network (DSN)
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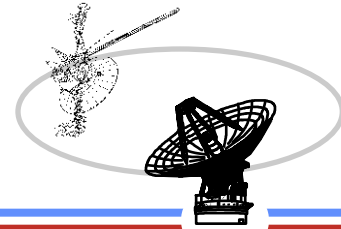
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Future assets new/upgrades

- ❑ DSS-26 80kW Installation 2014 – 2015
 - ❑ 80kW arrive at DLF January 26, 2015. week 05 @ CDSCC
 - ❑ DSRR June 9, 2015, week 24

- ❑ DSS-36 Installation and Operational 2016
 - ❑ Modkit inventory/install/checkout November 23, 2015 – March 21, 2016 Weeks 48 – 12
 - ❑ Acceptance testing March 22, 2016 – May 13, 2016 weeks 12 – 19
 - ❑ System Integration Testing March 29, 2014 June 30, 2016 Weeks 13 – 26
 - ❑ Operations System Performance Testing June 30, 2016 – August 29, 2016 weeks 26 – 35
 - ❑ Operational date October 1. 2016



Antenna Downtime Status and Forecast

DSN Resource Implementation Planning Matrix by Complex

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-23*	34B2	N/A	N/A	10/01/24	10/01/24	10/01/24	10/01/24	N/A	N/A	N/A
10	DSS-24	34B1	✓	✓	✓	✓	N/A	N/A	✓	✓	N/A
10	DSS-25	34B2	N/A	N/A	✓	✓	✓	✓	N/A	N/A	N/A
10	DSS-26	34B2	N/A	N/A	✓	✓	✓	N/A	N/A	N/A	10/01/15
10	DSS-15	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-33*	34B2	N/A	N/A	10/01/22	10/01/22	10/01/22	N/A	N/A	N/A	N/A
40	DSS-34	34B1	✓	✓	✓	✓	✓	N/A	✓	✓	N/A
40	DSS-35*	34B2	N/A	N/A	✓	✓	✓	N/A	N/A	N/A	N/A
40	DSS-36*	34B2	N/A	N/A	10/01/16	10/01/16	10/01/16	N/A	N/A	N/A	N/A
40	DSS-45	34HEF	✓	✓	✓	✓	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-53*	34B2	N/A	N/A	10/01/20	10/01/20	10/01/20	N/A	N/A	N/A	N/A
60	DSS-54	34B1	✓	✓	✓	✓	✓	N/A	✓	✓	N/A
60	DSS-55	34B2	N/A	N/A	✓	✓	✓	N/A	N/A	N/A	N/A
60	DSS-56*	34B2	N/A	N/A	10/01/19	10/01/19	10/01/19	N/A	N/A	N/A	N/A
60	DSS-65	34HEF	✓	✓	✓	✓	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 = Not Applicable or Capability Not Planned

xx/xx/xx = Capability Date Recently Changed

As of: 10/1/2014

✓ ✓ ✓ = Capability Recently Exists

✓ = Capability Exists

* = To Be Commissioned