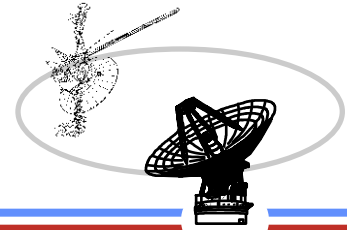




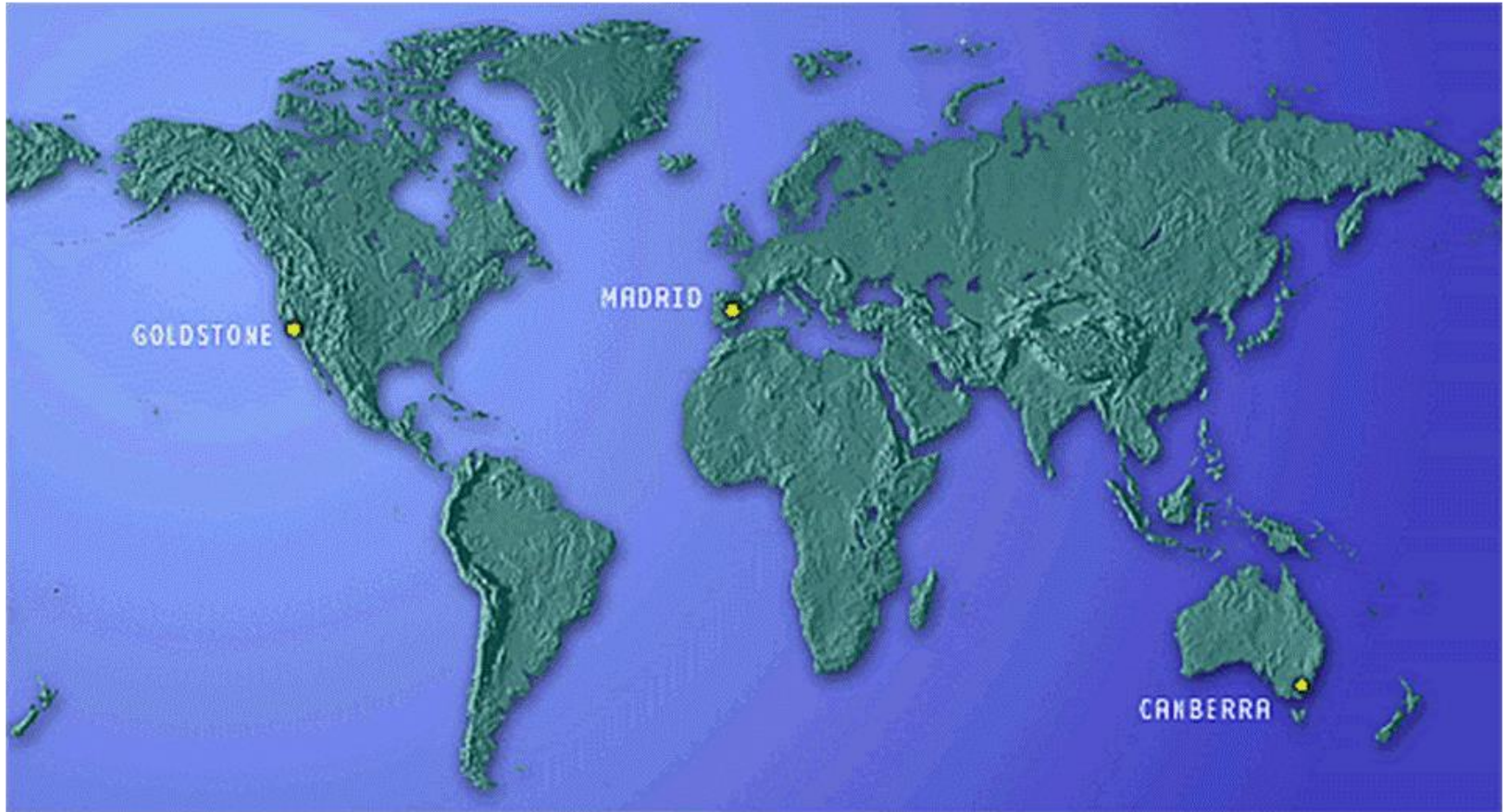
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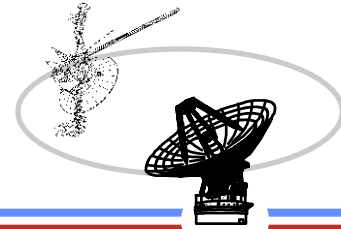
## DSN Antenna Downtime Status and Forecast





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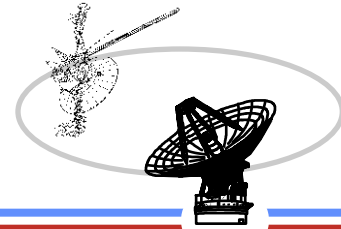


## Antenna Downtime Status and Forecast

Downtime`	Antenna	Start Date	End Date	Weeks	POC	Notes
80kW Installation	DSS-26	Oct 2014	Jun 2015	44 – 24	Erik Holmgrin 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. <b>Task completed. Scheduling 80kW test periods during unused time so that we exercise the system</b>
Pedestal Metrology	DSS-63	Feb 2015	Aug 2015	34	David Munoz Muchon Bernardo Lopez	Back-to-back nights needed to measure pedestal stability twice a year in Summer and Winter, through Summer 2017. The 2016 downtimes could not co-exist with grouting consequently they are proposed for weeks 4 and 29. <b>Moved week 29 to week 32.</b>
		Feb 2016	July 2016	4 & 32		
		Feb 2017	Aug 2017	7 & 34		
	DSS-55	Jun 2015	Jul 2015	24, 30	David Munoz Muchon Bernardo Lopez	Requesting 2 nights each week. Proposal for an additional block at DSS-55 was not needed. Weeks 30 & 31 requesting M-Th 2 night each for both antenna. <b>Week 24 completed.</b>
	DSS-54	Jun 2015	Jul 2015	26, 30, 36		Removed week 31 Metrology for DSS-55, moved DSS-54 Metrology from week 31 to week 36. Will measure pedestal stability twice a year in Summer and Winter, through Summer 2019. <b>Week 26 completed.</b>



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



## Antenna Downtime Status and Forecast

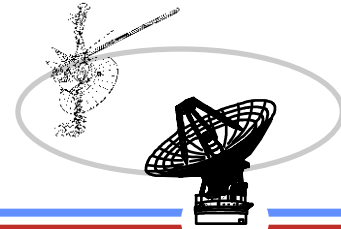
Downtime	Antenna	Start Date	End Date	Weeks	POC	Notes
Track Survey	DSS-15	May 20 2015	May 2015	21	Mark Alvarez, Tim Sink	Requested time for track survey to verify the track is still in alignment. Added additional block of time in week 21. Pam will coordinate with Mark after week 21 to see if they need additional 3 week blocks and how many - Completed. <b>No need for an additional 3 weeks</b>
NMC D3.2 SPS 1.4 I&T, AT Install/SOAK And D3.3 Install/SOAK	CDSCC	Feb 2015	Dec 2015	23, 24, 31, <b>46</b>	Jim Buckley	<b>Weeks 16, 19, 22, 23 and 24 were completed.</b> Week 46 and 50 changed from SOAK to D3.3 install. These tasks may require night hours.
	GDSCC	April 2015	Dec 2015	16, 19, 30, 41	Shirley Cizmar,	
	MDSCC	May 2015	Dec 2015	22, 32, 50	Dave Taylor	
NMC 4-MSPA I&T, AT SOAK Install, Ops Install	GDSCC	Feb 2016	Aug 2016	6, 15, 30		Requesting <b>10 – 12</b> hour downtimes in 2016 for NMC 4-MSPA tasks. <b>Week 13 task at CDSCC moved to week 11.</b>
	CDSCC	May 2016	Aug 2016	<b>11</b> & 31		
	MDSCC	May 2016	June 2016	19 & 23		



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## Antenna Downtime Status and Forecast

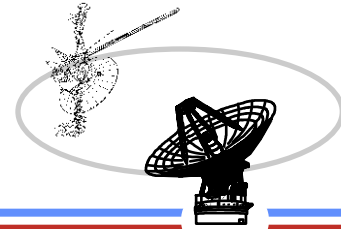
Downtime	Antenna	Start Date	End Date	Weeks	POC	Notes
Complex downtime for Power House Commission	CDSCC	Aug 2015	Aug 2015	33	John Phillips, Cameron Lyon Dave Taylor	Requires at least 1 6 hour downtime per month possibly during night hours.
		Oct 2015	Oct 2015	41		
		Dec 2015	Dec 2015	50		
		April 2016	April 2016	14		
Antenna Inspections/ TXR RF Characterization	CDSCC	Jan 2016	Jan 2016	03 & 04	Dave Taylor	Inspections require 12 hours, 8 hours NIB to maintenance with 4 hours following for TXR RF Characterization during inspections. Per discussion with engineers the Inspection will use the first 6 hours of downtime and release to TXR for the last 6 hours.at each complex. Note: cannot do Inspection/TXR RF Characterization on 2 antenna on a given day.
	MDSCC	Apr 2017	Apr 2017	17 & 18	Andrew Brooks	
	GDSCC	Mar 2018	Mar 2018	09 & 10	Harout Matossian	



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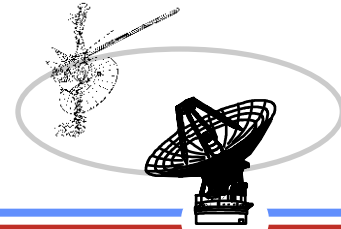


## Antenna Downtime Status and Forecast

Downtime	Antenna	Start Date	End Date	Weeks	POC	Notes
Grouting	DSS-63	Jul 2016	Aug 2016	30 – 31	Dave Taylor, David Munoz Mochon, Bernardo Lopez, Asim Sehic	Bad weather could cause a slip of the task and could require an additional week for demos during DSS-14 APCA downtime. July is shortened due to Cas. Activities Grouting changed to Shimming and moved from weeks 30-34 to 30&31 <b>2017 grouting, has moved to 2018 and extended to 35 weeks in conjunction with the APCA.</b> This will be the first attempt for the 120 degree regrout. There will be discussions about using weekends however, it is not currently in the budget..
		Mar 2018	Nov 2018	11 - 45		
Depot Level Maintenance	DSS-63	Aug 3, 2015	Aug 14, 2015	32 & 33	Paul Richter	DSS-63 DLM changed from grouting activity.
	DSS-43	Aug 18, 2015	Sep 9, 2015	34 – 36	Bernardo Lopez,	DSS-43 Tune-up/Calibration changed to DLM and extended 1 extra week to 36.
	DSS-34	Nov 2015	Dec 2015	49 & 50	John Phillips	DSS-34 moved to December time frame with CDSCC concurrence. <b>Exciter Obsolescence will be NIB to DLM.</b>
Retrofit Plan	DSS-35	Nov 2015	Nov 2015	45– 46	Chris Link	<b>Install retrofit components from DSS-13 at DSS-35 and test.</b>



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



## Antenna Downtime Status and Forecast

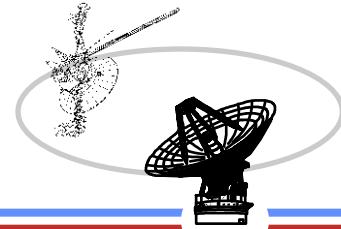
Downtime	Antenna	Start Date	End Date	Weeks	POC	Notes
DCD v.5.1 software installation	GDSCC/DSOC	Aug, 2015	Aug 2015	32	Anna Fan, Sheila Garrett	All complexes require installation of DCD 5.1. with a minimum of 6 hours. Beginning with Goldstone, with 30 day separation from the MDSCC install, lastly the CDSCC install. Requires a 2 week separation from the 2 <sup>nd</sup> and 3 <sup>rd</sup> install.
	MDSCC	Sep 2015	Sep 2015	37		
	CDSCC	Sep 2015	Sep 2015	40		
Network DCD Switchover	DSOC	Oct 2015	Oct 2015	44		Network wide DCD equipment switchover to operations from the Data Center
AZ Track Replacement	DSS-55	Aug 2015	Nov 2015	34 – 47	Pam Rothman	Begin DOY 230 vice 229 due to CAS activities. Requested to extend to week 47. This is NIB to XX/Ka Installation.
	DSS-25	Apr 2018	Jun 2018	14 - 23	Daniel Olson	
XKR Feed Cone Ladder	DSS-14	Sept 2015	Sept 2015	39	David Allen	Requesting 3 days to install the XKR Feed Cone Ladder. This will include the hoist mount install.
Power Transfer	DSS-26	Oct 2015	Oct 2015	42	Richard Fleig	This 16-hour Power Transfer downtime was requested by OE.. <b>Each antenna will be scheduled in separate weeks.</b> Prefer dayshift but can work night, no weekends.
	DSS-25			43		
	DSS-24			44		
G86 Power Work	GDSCC	Nov 2015	Dec 2015	51	David Lloyd	Requesting annual 16 hour downtime for G86 Power Work. This task has been built into the schedule.



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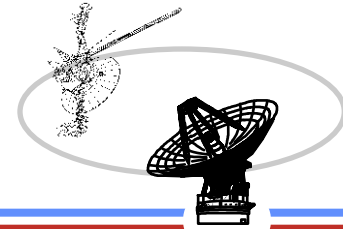
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# Interplanetary Network Directorate (IND) Deep Space Network (DSN) Resource Allocation Planning Service



## Antenna Downtime Status and Forecast

Downtime	Antenna	Start Date	End Date	Weeks	POC	Notes
Comm & PPC Integration	DSS-26	Oct 2015	Oct 2015	44	Tom Grey	Requested 8 hours
Kirk Key Removal	DSS-28	Dec 2015	Dec 2015	49	Tom Grey	Requested 4 hours
APCA	DSS-14	Feb, 2016	May 2016	04 – 19	Anna Fan, Barzia Tehrani	Moved to weeks 04-19 to finish early in preparation for JNO JOI. Suggest doing a demo with JNO prior to RTS. DSS-43 extended an additional 3 weeks on the back end. DSS-63 will be in conjunction to the HBA Grouting and is extended to 35 weeks.
	DSS-43	Oct 30, 2017	Feb 9, 2018	44 – 06		
	DSS-63	Mar 2018	Nov 2018	11 - 45		
SWUPS Installation	CDSCC	May 19 2016	May 19 2016	20	Dave Taylor Hal Ahlstrom	Must be done in daylight, There is a connection to the power house. Need to avoid InSight/Inspire/MCO activities. There may be a Fire Detection issues.
		May 24 2016	May 24 2016	21		
		May 26 2016	May 26 2016	21		
Follow the Sun	SPC-10	Jan 2017	Jan 2017	03	Shirley Cizmar	Require 12 hour complex downtime for testing the Follow the sun (FtS) remote Ops. At least 2 complexes concurrent
	SPC-40	Jan 2017	Jan 2017	03		
	SPC-60	Apr 2017	Apr 2017	13		



## Antenna Downtime Status and Forecast

Downtime	Antenna	Start Date	End Date	Weeks	POC	Notes
Ka2 Tune-up	DSS-54	Jan 23, 2017	Feb 3, 2017	04 & 05	Wendy Hodgins	<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 4<sup>th</sup> Ka2/S-Band capabilities. This needs to be done 6 months prior to TESS Launch.</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	Mar 2018	Jun 2018	10 – 23	Wendy Hodgins	<p>XX/Ka requires 14 weeks - AZ Track will be NIB in weeks 14 – 23. Needs to happen as soon after JNO end of mission as possible.</p> <p>DSS-24 is not funded at this time, but still in the plan to proceed with downtime. <b>Moving to early 2019 for 12 weeks.</b></p>
	DSS-24	Feb 2019	Apr 2019	06 – 17		
Pedestal Rehab	DSS-54	Nov 4, 2019	Apr 30, 2021	45 – 17	Bernardo Lopez	<p>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.</p> <p>Servo and Transmitter Replacements will be NIB</p>

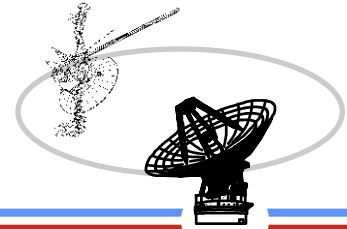




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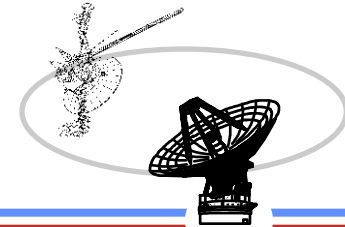


## Antenna Downtime Status and Forecast

Downtime	Antenna	Start Date	End Date	Weeks	POC	Notes
El Bearing Replacement	DSS-63	Apr 20, 2020	Jul 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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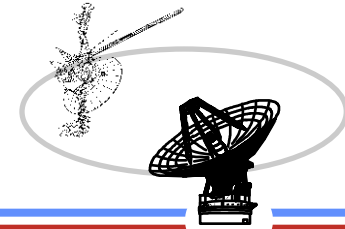
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## 70m Major Downtimes 2015 - 2020

Downtime	Ant	Start Date	End Date	Weeks	Status	# of Days	Notes and next downtime date
APCA	DSS-14	Jan 25, 2016	May 13, 2016	04 - 19	Approved	109	
Depot Level Maintenance	DSS-43	Aug 17, 2015	Sep 4, 2015	34 – 36	Approved	17	Renamed to Depot Level Maintenance Next downtime is October of 2017
APCA	DSS-43	Oct 30, 2017	Feb 9, 2018	44 – 03	Proposed	101	
Depot Level Maintenance	DSS-63	Aug 3, 2015	Aug 14, 2015	32 – 33	Approved	12	Next downtime is <b>July</b> of 2016
Shimming	DSS-63	Jul 25, 2016	Aug 5, 2016	30 – 31	Proposed	11	<b>Next downtime is March of 2018.</b>
<b>Grouting/APCA</b>	<b>DSS-63</b>	<b>Mar 12, 2018</b>	<b>Nov 9, 2018</b>	<b>11- 45</b>	<b>Proposed</b>	<b>243</b>	<b>Next downtime is April of 2020</b>
El Bearing Replacement	DSS-63	Apr 20, 2020	Jul 10, 2020	17 – 27	Proposed	446	



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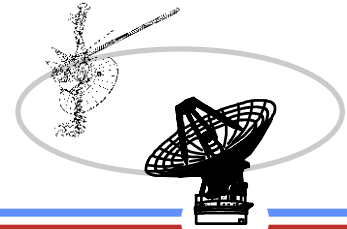
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## Proposed LNA Maintenance Schedule for 2016

Antenna	Start Date	End Date	Week	STATUS	Number of Days	Notes/Planned 2015 dates	Number of months since last LNA
DSS-43	Jan	Jan	01	Proposed	5	Mar, Jun, Oct, Nov, Dec of 2015	10 months
DSS-63	Jan	Jan	03	Proposed	5	Jan, Nov of 2015 During grouting	13 months
DSS-14	Jan	Jan	04	Proposed	5	Dec of 2014 During APCA	13 months
DSS-25	Apr	Apr	14	Proposed	3	Feb, Jul, Oct of 2015	14 months
DSS-45	Apr	Apr	17	Proposed	4	Feb, Apr, Jul of 2015	14 months
DSS-24	May	May	19	Proposed	3	Apr, Aug of 2015 After DSS-14 APCA	13 months
DSS-54	Jul	Jul	29	Proposed	3	Jun 2015	13 months
DSS-15	Aug	Aug	32	Proposed	3	Mar of 2015	17 months
DSS-34	Nov	Nov	44	Proposed	3	Sep, Nov 2015	14 months
DSS-65	Nov	Nov	45	Proposed	4	Jul, Dec 2015	16 months
DSS-35	Dec	Dec	49	Proposed	50 hours	Oct 2015	14 months
DSS-55	Dec	Dec	50	Proposed	3	Aug 2015	16 months
DSS-26	Feb 2017	Feb 2017	TBD	Proposed	50 hours	Dec 2015	14 months



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## Exciter Obsolescence Install 2016

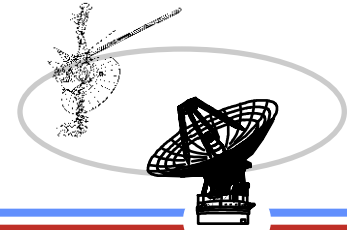
Antenna	Start Date	End Date	Week	Status	# of Days	Notes
DSS-15	Aug 8, 2016	Aug 11, 2016	32	Proposed	5	DSS-15 LNA NIB
DSS-24	May 9, 2016	May 13,, 2016	19	Proposed	5	DSS-24 LNA NIB
DSS-34	Nov 30, 2015	Dec 11, 2015	49	Proposed	5	NIB to DLM
DSS-54	Jul 18, 2016	Jul 22, 2016	29	Proposed	5	DSS-54 LNA NIB
DSS-55	Dec 12, 2016	Dec 16, 2016	50	Proposed	5	DSS-55 LNA NIB
DSS-63	Jul 25, 2016	Jul 30, 2016	30	Proposed	5	NIB to Shimming
DSS-65	Nov 7, 2016	Nov 11, 2016	45	Proposed	5	DSS-65 LNA NIB



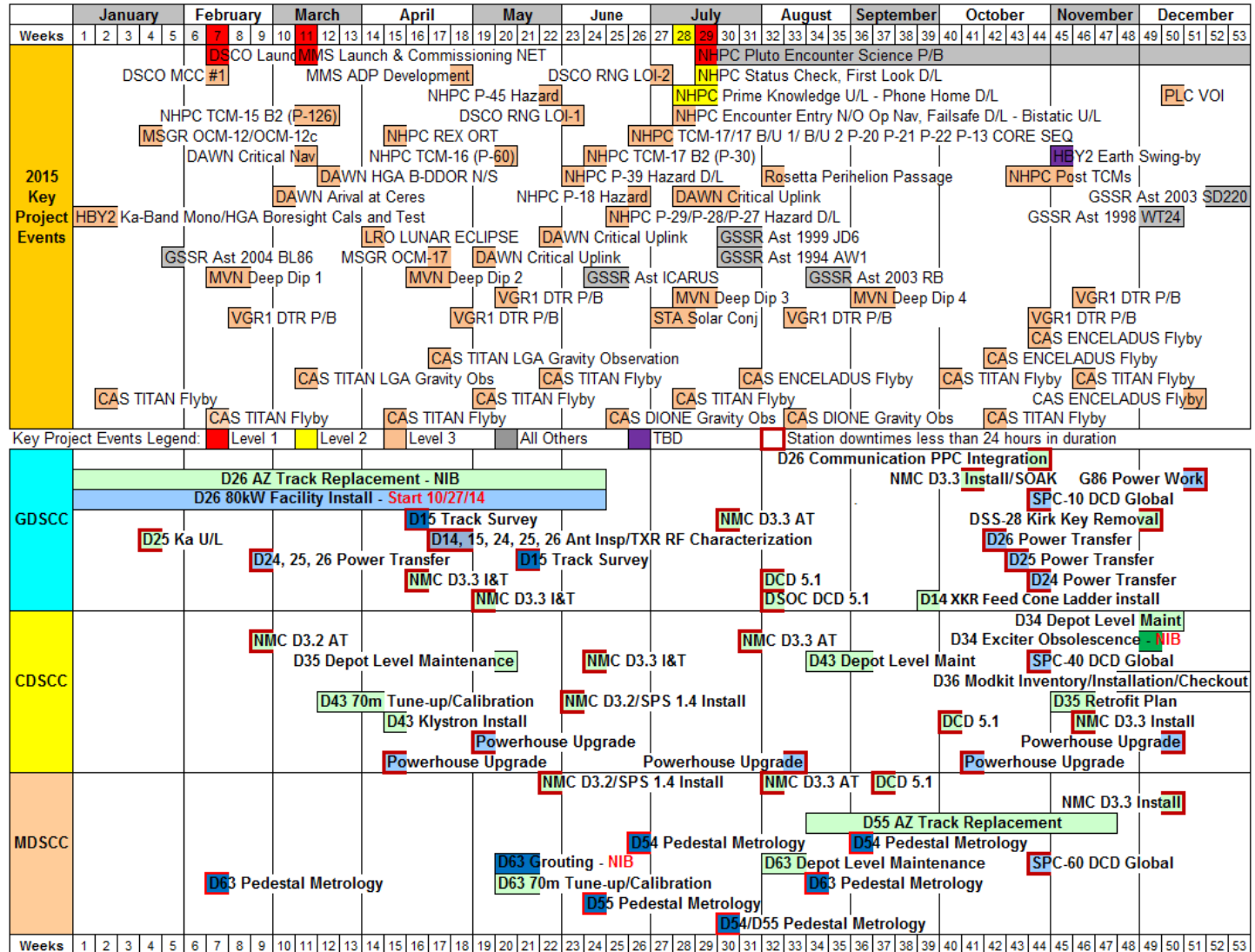
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- 2015 -

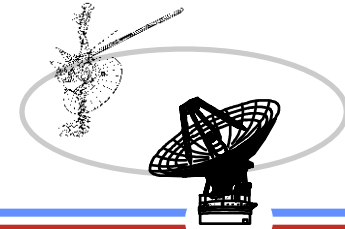


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**- 2017 -**

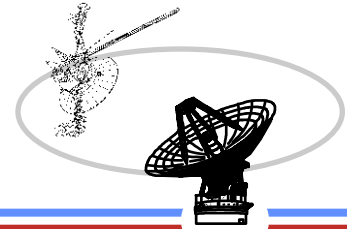
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Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52																			
2017 Key Project Events																																TESS Launch/LEOP																								CAS EOM															
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	Key Project Events Legend: <span style="background-color: red; border: 1px solid black; padding: 0 2px;"> </span> Level 1 <span style="background-color: yellow; border: 1px solid black; padding: 0 2px;"> </span> Level 2 <span style="background-color: orange; border: 1px solid black; padding: 0 2px;"> </span> Level 3 <span style="background-color: grey; border: 1px solid black; padding: 0 2px;"> </span> All Others <span style="background-color: purple; border: 1px solid black; padding: 0 2px;"> </span> TBD <span style="border: 1px solid red; padding: 0 2px;"> </span> Station downtimes less than 24 hours in duration																																																																						
GDSCC												D24 Ka2 Tune-up - Proposed																												D15 HEF Closure																															
CDSCC	SF C10 Follow The Sun Ops Testing 12 hours														SF C40 Follow The Sun Ops Testing 12 hours																				D34 Ka2 Tune-up - Proposed								D43 APCA																												
MDSCC					D54 Ka2 Tune-up - Proposed															SF C60 Follow The Sun Ops Testing 12 hours																																D63 Pedestal Metrology																			
							D63 Pedestal Metrology															D54,55,63, 65 Ant Insp/TXR RF Characterization - Proposed																																																	

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Downtime July 7, 2015 15



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- 2018 -

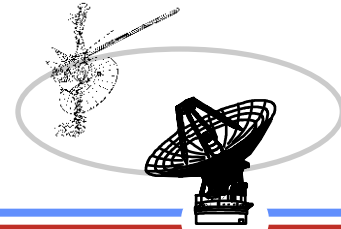
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Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52					
2018 Key Project Events									JUNO EOM												HYB2 Target Asteroid 1999 Ju3 Arrival				SP Launch and LEOP				JWST Launch and Commissioning				HSF EM1 Launch				NEA Scout Launch and LEOP				Lunar Flashlight Launch and LEOP				BioSentinel Launch and LEOP												
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GDSCC									D25 XX/Ka Installation - Proposed				D25 AZ Track Replacement - NIB												D14, 24, 25, 26 Ant Insp/TXR RF Characterization - Proposed																																
CDSCC	D43 APCA - Proposed																																																								
MDSCC																													D56 Modkit Installation, System Integration and System Level Testing																												
	D63 Grouting - Proposed											D63 APCA - Proposed																																													
																																									D65 HEF Closure																
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 -**

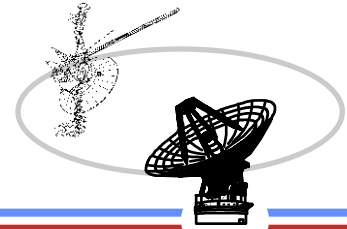
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Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52																				
2019 Key Project Events						SPP Beacon				SPP Solar Enc								ORX Tag 1 Reh				Tag 1				SPP Solar Enc								SPP Venus Flyby																																						
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	Key Project Events Legend: <span style="color: red;">■</span> Level 1 <span style="color: yellow;">■</span> Level 2 <span style="color: orange;">■</span> Level 3 <span style="color: grey;">■</span> All Others <span style="color: purple;">■</span> TBD <span style="border: 1px solid red; display: inline-block; width: 10px; height: 10px;"></span> Station downtimes less than 24 hours in duration																																																																							
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		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																			

Revised: July 2, 2015

Downtime July 7, 2015 17



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



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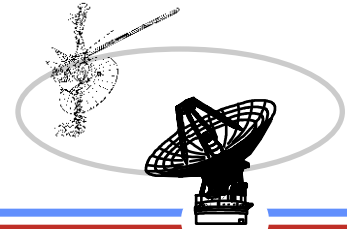
- 2020 -

	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																											Mars 2020 Launch																														HYB2 Earth Re-Entry							
Key Project Events Legend:																																																																
<span style="display: inline-block; width: 10px; height: 10px; background-color: #ff0000; border: 1px solid black;"></span> Level 1 <span style="display: inline-block; width: 10px; height: 10px; background-color: #ffff00; border: 1px solid black;"></span> Level 2 <span style="display: inline-block; width: 10px; height: 10px; background-color: #ffcc99; border: 1px solid black;"></span> Level 3 <span style="display: inline-block; width: 10px; height: 10px; background-color: #cccccc; border: 1px solid black;"></span> All Others <span style="display: inline-block; width: 10px; height: 10px; background-color: #660099; border: 1px solid black;"></span> TBD <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black;"></span> Station downtimes less than 24 hours in duration																																																																
GDSCC																																																																
CDSCC																																																																
MDSCC																		D63 EI Bearing Replacement - Proposed																																														
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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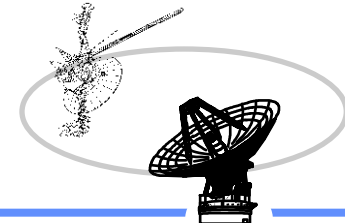
- 2021 -

	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																																																				
Key Project Events Legend: <span style="color: red;">■</span> Level 1 <span style="color: yellow;">■</span> Level 2 <span style="color: orange;">■</span> Level 3 <span style="color: gray;">■</span> All Others <span style="color: purple;">■</span> TBD <span style="border: 1px solid red; display: inline-block; width: 10px; height: 10px; vertical-align: middle;"></span> Station downtimes less than 24 hours in duration																																																				
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										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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## DSN Downtime 2015

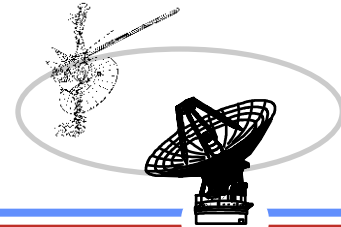
2015							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 54	Pedestal Metrology	07/20/2015 21:00	07/21/2015 07:00	0	30 - 30	201	202
SPC 10	NMC D3.3 AT	07/21/2015 07:50	07/26/2015 11:50	5	30 - 30	202	207
DSS 55	Pedestal Metrology	07/21/2015 21:00	07/22/2015 07:00	0	30 - 30	202	203
DSS 55	Pedestal Metrology	07/22/2015 21:00	07/23/2015 07:00	0	30 - 30	203	204
DSS 54	Pedestal Metrology	07/23/2015 23:45	07/24/2015 07:00	0	30 - 30	204	205
SPC 40	NMC D3.3 AT	08/01/2015 19:55	08/02/2015 01:55	0	31 - 31	213	214
DSS 63	Depot Level Maintenance	08/03/2015 05:00	08/14/2015 17:00	12	32 - 33	215	226
SPC 10	DCD V5.1	08/07/2015 08:35	08/07/2015 14:35	0	32 - 32	219	219
GCF 20	DSOC DCD V5.1	08/07/2015 08:35	08/07/2015 14:35	0	32 - 32	219	219
SPC 60	NMC D3.3 AT	08/09/2015 00:00	08/09/2015 05:25	0	32 - 32	221	221
SPC 40	Complex Powerhouse Upgrade	08/14/2015 20:00	08/15/2015 02:00	0	33 - 33	226	227
DSS 43	Depot Level Maintenance	08/17/2015 21:00	09/04/2015 06:00	17	34 - 36	229	247
DSS 55	AZ Track Replacement	08/18/2015 06:00	11/20/2015 17:00	94	34 - 47	230	324
DSS 63	Pedestal Metrology	08/19/2015 23:00	08/20/2015 05:00	0	34 - 34	231	232
DSS 63	Pedestal Metrology	08/20/2015 23:00	08/21/2015 05:00	0	34 - 34	232	233
DSS 54	Pedestal Metrology	09/02/2015 21:00	09/03/2015 03:25	0	36 - 36	245	246
DSS 54	Pedestal Metrology	09/03/2015 21:00	09/04/2015 05:30	0	36 - 36	246	247
SPC 60	DCD V5.1	09/11/2015 21:55	09/12/2015 03:55	0	37 - 37	254	255
DSS 14	XKR Feed Cone Ladder Installation	09/21/2015 15:00	09/24/2015 02:00	2	39 - 39	264	267
SPC 40	DCD V5.1	10/03/2015 14:25	10/03/2015 20:15	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
SPC 10	NMC D3.3 Install/SOAK	10/11/2015 00:00	10/11/2015 08:00	0	41 - 41	284	284
DSS 26	Power Transfer	10/15/2015 19:05	10/16/2015 11:05	1	42 - 42	288	289



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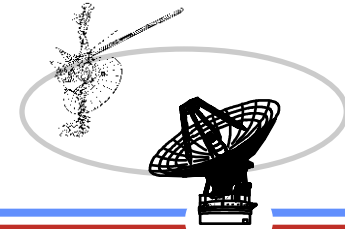


## DSN Downtime 2015

2015 cont.							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 25	Power Transfer	10/20/2015 15:00	10/21/2015 07:00	1	43 - 43	293	294
SPC 10	DCD Equipment Switchover	10/26/2015 14:00	10/26/2015 18:00	0	44 - 44	299	299
SPC 40	DCD Equipment Switchover	10/26/2015 14:00	10/26/2015 18:00	0	44 - 44	299	299
GCF 20	DCD Equipment Switchover	10/26/2015 14:00	10/26/2015 18:00	0	44 - 44	299	299
SPC 60	DCD Equipment Switchover	10/26/2015 14:00	10/26/2015 18:00	0	44 - 44	299	299
DSS 26	Communication PPC Integration	10/26/2015 18:00	10/27/2015 02:00	0	44 - 44	299	300
DSS 24	Power Transfer	10/28/2015 15:00	10/29/2015 07:00	1	44 - 44	301	302
DSS 35	Retrofit Plan	11/02/2015 00:00	11/13/2015 05:00	11	45 - 46	306	317
SPC 40	NMC D3.3 Install	11/12/2015 00:00	11/12/2015 08:00	0	46 - 46	316	316
DSS 34	Exciter Obsolescence Install-NIB	11/30/2015 21:00	12/06/2015 00:00	5	49 - 49	334	340
DSS 34	Depot Level Maintenance	11/30/2015 21:00	12/11/2015 05:00	10	49 - 50	334	345
DSS 28	Kirk Key Removal	12/01/2015 15:00	12/01/2015 19:00	0	49 - 49	335	335
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 03:00	12/12/2015 09:00	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



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



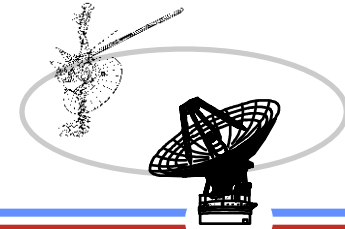
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## DSN Downtime 2016

2016							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 43	LNA Maintenance	01/04/2016 00:00	01/08/2016 16:30	5	01 - 01	4	8
DSS 63	LNA Maintenance	01/18/2016 00:00	01/22/2016 17:00	5	03 - 03	18	22
DSS 43	Ant Insp/TXR RF Characterization	01/18/2016 22:00	01/19/2016 14:00	1	03 - 03	18	19
DSS 34	Ant Insp/TXR RF Characterization	01/19/2016 22:00	01/20/2016 14:00	1	03 - 03	19	20
DSS 45	Ant Insp/TXR RF Characterization	01/20/2016 22:00	01/21/2016 14:00	1	03 - 03	20	21
DSS 35	Ant Insp/TXR RF Characterization	01/21/2016 22:00	01/22/2016 14:00	1	03 - 03	21	22
DSS 14	LNA Maintenance - NIB	01/25/2016 00:00	01/29/2016 23:00	5	04 - 04	25	29
DSS 14	APCA	01/25/2016 15:00	05/13/2016 23:00	109	04 - 19	25	134
DSS 63	Pedestal Metrology	01/25/2016 19:00	01/26/2016 05:00	0	04 - 04	25	26
DSS 63	Pedestal Metrology	01/26/2016 19:00	01/27/2016 05:00	0	04 - 04	26	27
DSS 43	Ant Insp/TXR RF Characterization	01/26/2016 22:00	01/27/2016 06:00	0	04 - 04	26	27
DSS 34	Ant Insp/TXR RF Characterization	01/27/2016 22:00	01/28/2016 06:00	0	04 - 04	27	28
DSS 45	Ant Insp/TXR RF Characterization	01/28/2016 22:00	01/29/2016 06:00	0	04 - 04	28	29
SPC 10	NMC 4 - MSPA I&T	02/13/2016 00:00	02/13/2016 08:00	0	06 - 06	44	44
SPC 40	NMC 4 - MSPA I&T	03/18/2016 00:00	03/18/2016 08:00	0	11 - 11	78	78
DSS 25	LNA Maintenance	04/04/2016 00:00	04/07/2016 23:00	4	14 - 14	95	98
SPC 40	Complex Powerhouse Upgrade	04/06/2016 21:00	04/07/2016 03:00	0	14 - 14	97	98
SPC 10	NMC 4 - MSPA AT	04/15/2016 00:00	04/15/2016 08:00	0	15 - 15	106	106
DSS 45	LNA Maintenance	04/25/2016 00:00	04/29/2016 00:00	4	17 - 17	116	120
DSS 24	LNA Maintenance - NIB	05/09/2016 00:00	05/12/2016 00:00	3	19 - 19	130	133
DSS 24	Exciter Obsolescence Install	05/09/2016 00:00	05/14/2016 00:00	5	19 - 19	130	135
SPC 60	NMC 4 - MSPA AT	05/14/2016 00:00	05/14/2016 08:00	0	19 - 19	135	135
SPC 40	SWUPS Installation	05/19/2016 21:00	05/20/2016 09:00	0	20 - 20	140	141



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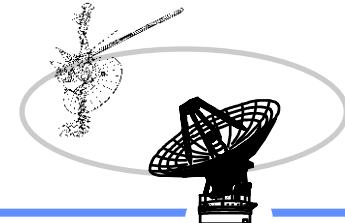
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## DSN Downtime 2016

2016 cont.							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
SPC 40	SWUPS Installation	05/24/2016 21:00	05/25/2016 09:00	0	21 - 21	145	146
SPC 40	SWUPS Installation	05/26/2016 21:00	05/27/2016 09:00	0	21 - 21	147	148
SPC 60	NMC 4 - MSPA SOAK/Install	06/10/2016 00:00	06/10/2016 08:00	0	23 - 23	162	162
DSS 54	Exciter Obsolescence Install	07/18/2016 00:00	07/23/2016 00:00	5	29 - 29	200	205
DSS 54	LNA Maintenance/HVAC Plumbing - NIB	07/18/2016 00:00	07/23/2016 00:00	5	29 - 29	200	205
DSS 63	Exciter Obsolescence Install-NIB	07/25/2016 00:00	07/30/2016 00:00	5	30 - 30	207	212
DSS 63	Shimming	07/25/2016 06:00	08/05/2016 17:00	11	30 - 31	207	218
SPC 10	NM -MSPA Ops Install	07/30/2016 00:00	07/30/2016 08:00	0	30 - 30	212	212
SPC 40	NMC 4 - MSPA OPs Install	08/06/2016 00:00	08/06/2016 08:00	0	31 - 31	219	219
DSS 15	LNA Maintenance - NIB	08/08/2016 00:00	08/11/2016 00:00	3	32 - 32	221	224
DSS 15	Exciter Obsolescence Install-Proposed	08/08/2016 00:00	08/13/2016 00:00	5	32 - 32	221	226
DSS 63	Pedestal Metrology	08/08/2016 22:00	08/09/2016 05:00	0	32 - 32	221	222
DSS 63	Pedestal Metrology	08/09/2016 20:00	08/10/2016 05:00	0	32 - 32	222	223
DSS 45	Decommissioned	10/01/2016 00:00	01/01/2050 00:00	12145	39 - 52	275	1
DSS 34	LNA Maintenance	10/31/2016 00:00	11/03/2016 00:00	3	44 - 44	305	308
DSS 65	LNA Maintenance - NIB	11/07/2016 00:00	11/11/2016 00:00	4	45 - 45	312	316
DSS 65	Exciter Obsolescence Install	11/07/2016 00:00	11/12/2016 00:00	5	45 - 45	312	317
DSS 35	LNA Maintenance	12/05/2016 00:00	12/08/2016 02:00	3	49 - 49	340	343
DSS 55	LNA Maintenance - NIB	12/12/2016 00:00	12/15/2016 00:00	3	50 - 50	347	350
DSS 55	Exciter Obsolescence Install	12/12/2016 00:00	12/17/2016 00:00	5	50 - 50	347	352



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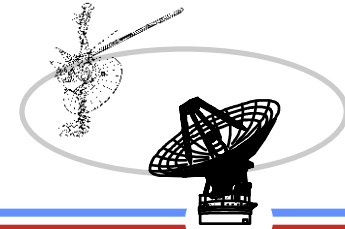
## DSN Downtime 2017

2017							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
SPC 10	Follow the Sun Ops Testing	01/21/2017 00:00	01/21/2017 12:00	0	03 - 03	21	21
SPC 40	Follow the Sun Ops Testing	01/21/2017 00:00	01/21/2017 12:00	0	03 - 03	21	21
DSS 54	Ka2 Tune-up - Proposed	01/23/2017 07:00	02/03/2017 17:00	11	04 - 05	23	34
DSS 63	Pedestal Metrology	02/13/2017 20:00	02/14/2017 07:00	0	07 - 07	44	45
DSS 63	Pedestal Metrology	02/14/2017 20:00	02/15/2017 07:00	0	07 - 07	45	46
DSS 63	Grouting	02/20/2017 06:00	07/07/2017 17:00	137	08 - 27	51	188
DSS 24	Ka2 Tune-up - Proposed	03/13/2017 15:00	03/25/2017 00:00	11	11 - 12	72	84
SPC 60	Follow the Sun Ops Testing	04/01/2017 00:00	04/01/2017 12:00	0	13 - 13	91	91
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 63	Pedestal Metrology	08/21/2017 22:00	08/22/2017 05:00	0	34 - 34	233	234
DSS 63	Pedestal Metrology	08/22/2017 22:00	08/23/2017 05:00	0	34 - 34	234	235
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

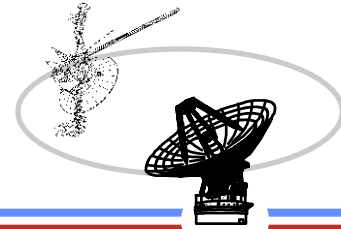
2018							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 25	XX/Ka Installation	03/06/2018 15:00	06/08/2018 00:00	93	10 - 23	65	159
DSS 63	Grouting/APCA	03/12/2018 18:00	11/09/2018 17:00	242	11 - 45	71	313
DSS 25	AZ Track Replacement - NIB	04/02/2018 15:00	06/08/2018 00:00	66	14 - 23	92	159
DSS 14	Ant Insp/TXR RF Characterization - Proposed	04/09/2018 15:00	04/10/2018 06:00	1	15 - 15	99	100
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



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## DSN Downtime 2019

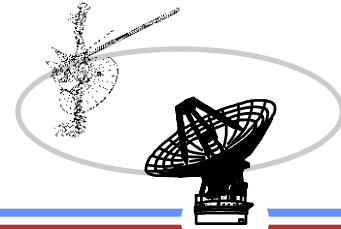
2019							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 24	XX/Ka Installation - Proposed	02/04/2019 15:00	04/26/2019 00:00	80	17-Jun	35	116
DSS 54	Pedestal Rehab	11/04/2019 06:00	04/30/2021 17:00	543	45 - 17	308	120
DSS 54	Servo Replacement - NIB	11/04/2019 06:00	04/30/2021 17:00	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

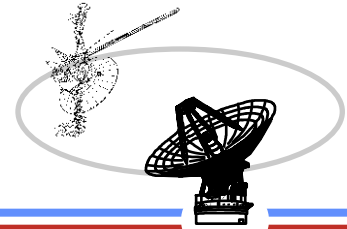
2020							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 63	El Bearing Replacement	4/20/2020 7:00	7/10/2021 17:00	446	17 - 27	111	191



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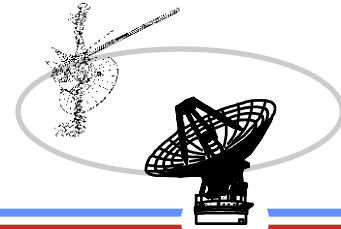


## Future assets new/upgrades

- ❑ 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



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## 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	10/01/16	10/01/16	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*	34B1	10/01/19	10/01/19	10/01/19	10/01/19	10/01/19	N/A	10/01/19	10/01/19	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: 5/1/2015

✓ ✓ ✓ = Capability Recently Exists

✓ = Capability Exists

\* = To Be Commissioned