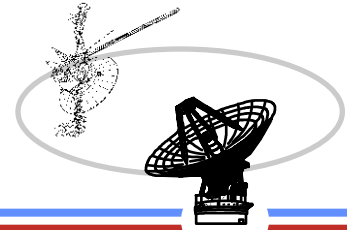




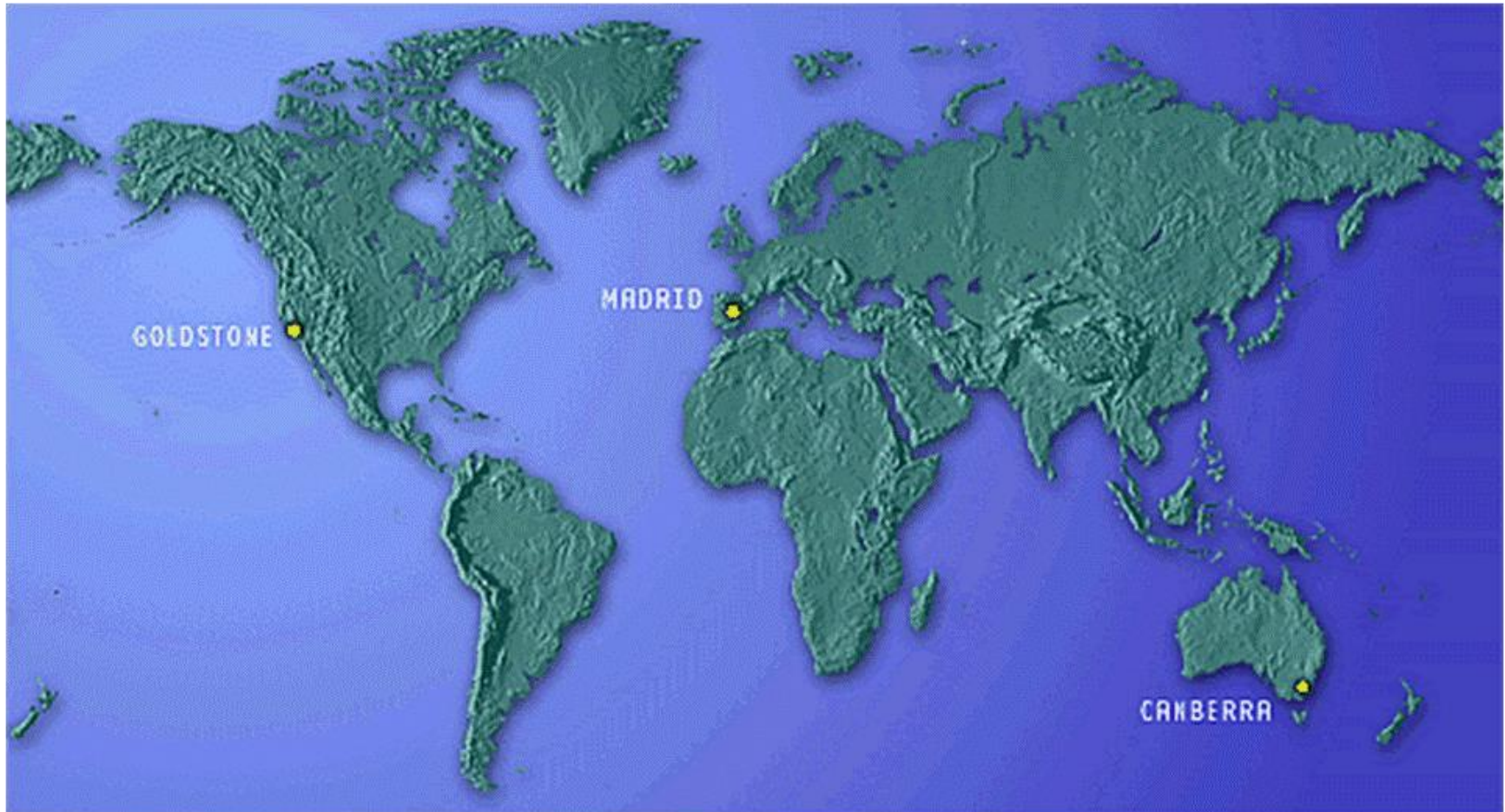
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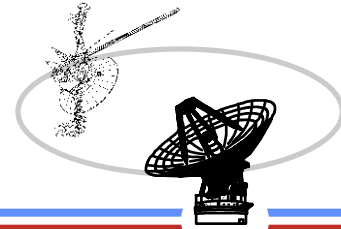
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DSN Antenna Downtime Status and Forecast





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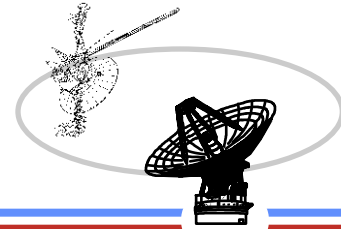


Antenna Downtime Status and Forecast

Downtime	Antenna	Start Date	End Date	Weeks	POC	Notes
S-Band TXR Install	DSS-43	Feb 2016	Mar 2016	7 – 10	Harout Matossian	Require 1 block per week, day shift, NIB to Maintenance
S-Band Filter	DSS-35	May 2016	May 2016	19		This downtime was requested in Feb, Require 3 days dayshift – no night time tracking with 4 hours at end for DEMO track.
S-Band Tuner Upgrade	DSS-34	Oct 2016	Oct 2016	44 & 45		Moved to weeks 44 & 45 NIB to Ka2 Tune-up and activity changed to Tuner Upgrade
Shimming	DSS-63	May 2016	May 2016	20 & 21	Dave Taylor Ryan Higuera David Munoz Mochon, Bernardo Lopez, Asim Sehic	Approved additional 2 weeks in May
Epoxy Grouting		Jul 2016	Aug 2016	29 - 33		July is shortened due to Cas. Have done 2 60 degree and 1 120 degree for a total of 240 degrees. This will in turn reduce the downtime requirement in 2018 for APCA and HBA grout effort.
		Sep 2016	Sep 2016	35 - 39		Additional downtime in Aug/Sept allows Engineering to replace more of the HBA grout. This will in turn reduce the downtime requirement in 2018 for APCA and HBA grout effort.
Grouting/APCA		Mar 2018	Nov 2018	11 – 45		Grouting extended to 35 weeks in conjunction with the APCA. With the extended time there will be a 60 degree in July and also a 180 degree regrout. Grout and APCA will be combined as 1 activity with the weeks divided between the 2 activities. Additional weeks in 2016 could possibly shorten the 2018 timeframe. Bernardo and Anna will talk about the shortening of the time in 2018



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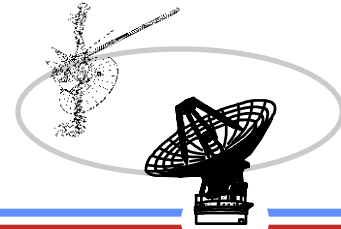
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Antenna Downtime Status and Forecast

Downtime`	Antenna	Start Date	End Date	Weeks	POC	Notes
APCA	DSS-14	Jan 2016	May 2016	04 – 19	Anna Fan, Barzia Tehrani Dave Taylor	In preparation for JNO JOI. Suggest doing a demo with JNO prior to RTS. DTRR scheduled for 1/6. Possible weather mitigation at DSS-14, need to stay within the scheduled time. Switchgear upgrade will be NIB in week 18 & 19.
	DSS-43	Oct 2017	Feb 2018	42 – 06		
	DSS-63	Mar 2018	Nov 2018	11 – 45		
NMC 4-MSPA I&T, AT SOAK Install, Ops Install	GDSCC	Feb 2016	Aug 2016	06, 16, 30	Jim Buckley Shirley Cizmar, Dave Taylor	Require 8 hour downtimes in 2016 for NMC 4-MSPA tasks. Downtime in week 15 moved to week 16 due to high contention in week 15.
	CDSCC	May 2016	Aug 2016	11 & 31		
	MDSCC	May 2016	June 2016	19 & 23		
NMC Operational Readiness Test	CDSCC	Nov 2016	Nov 2016	45		Task name is changed to B230 Operations Readiness for all 3 tests. Require additional 8 hour blocks in November for Operational Readiness testing. CDSCC was moved to week 45 prior to MDSCC due to a conflict with a mission event. Status will stay as is for now.
	MDSCC	Nov 2016	Nov 2016	45		
	DSOC/ GDSCC	Nov 2016	Nov 2016	46		



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Antenna Downtime Status and Forecast

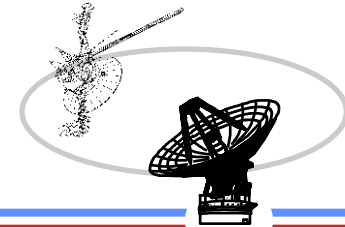
Downtime	Antenna	Start Date	End Date	Weeks	POC	Notes		
Pedestal Metrology	DSS-63	Feb 2016	Jul 2016	04 & 32	David Munoz Muchon Bernardo Lopez	Will measure pedestal stability twice a year in Summer and Winter, through Summer 2019. Require 2 consecutive nights.		
		Feb 2017	Aug 2017	07 & 34				
		Feb 2018	Aug 2018	08 & 32				
		Feb 2019	Aug 2019	06 & 31				
		DSS-54	Feb 2016	Jul 2016			06 & 28	Week 6 deleted due to budget cuts. Will be NIB to LNA and Exciter in week 28 Will be NIB to Ka2 Tune-up in week 5
			Feb 2017	Aug 2017			05 & 32	
	Feb 2018		Aug 2018	03 & 34				
	Jan 2019		Aug 2019	04 & 33				
	DSS-55		Feb 2016	Jul 2016	34	Week 9 deleted due to budget cuts. Start time reduced by 45 minutes for CAS support scheduled during first block in week 34.		
			Feb 2017	Aug 2017	06 & 35			
		Feb 2018	Aug 2018	05 & 29				
		Feb 2019	Aug 2019	08 & 35				
		Will be NIB to LNA in week 5						
		Bernardo will send a presentation of reason why the metrology is needed.						



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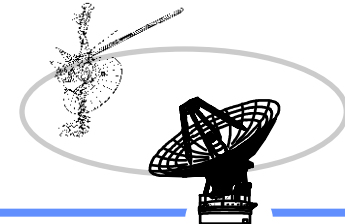


Antenna Downtime Status and Forecast

Downtime	Antenna	Start Date	End Date	Weeks	POC	Notes
Complex downtime for Power House Commission	CDSCC	Mar 2016	Apr 2016	12 & 15	Cameron Lyon, Dave Taylor	Additional downtime requested for Feb/March timeframe. Week 14 downtime moved to week 15 due to high contention in week 14.
LNA Replacement	DSS-35	Mar 2016	Mar 2016	12	Kevin Piechowski Chris Link	Replacing defective LNA, the first 6 hours combined with Power Upgrade. Upgrading LNA. There will be a S/W upgrade. Major concerns on time crunch. Pam will put together a timeline.
LNA Upgrade	DSS-35			13		
Power Plant Controller Replacement	MDSCC	Apr 2016	May 2016	14, 17 & 21	Javier Lopez-Perea	Require a minimum of 15 days separation between downtimes. Weeks 14 & 17 removed as H/W was not available. May look for additional time after level 1 activities.
Generator Switch Gear Update	DSS-14	May 2016	May 2016	18	Ethan Copitch	This task will be NIB to APCA and level 4 tracks. No back-up or recovery system will be available during a power interruption.
Apollo ARC Flash	DSS-24 DSS-25 DSS-26	May 2016	May 2016	20	Ethan Copitch	Completion of work started during an earlier downtime. Moved to week 20 NIB to LNA maintenance at DSS-24.
Mini DLM	CDSCC	May 2016	May 2016	20 & 21	Paul Richter Bernardo	Mini DLMs are scheduled for 12-hour blocks and will include S-Band TXR Upgrade during DSS-34 Mini DLM.
Depot Level Maintenance	DSS-43	Feb 2017	Mar 2017	07 – 09	Lopez, John Phillips	NIB to Exciter Obsolescence Installation and LNA Maintenance.



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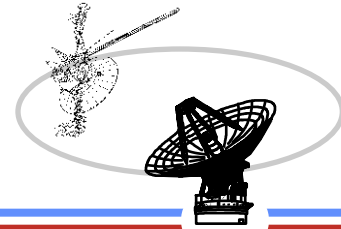
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Antenna Downtime Status and Forecast

Downtime	Antenna	Start Date	End Date	Weeks	POC	Notes
SWUPS Installation	CDSCC	May 2016	May 2016	20	Dave Taylor Hal Ahlstrom	Must be done in daylight, There is a connection to the power house. There may be Fire Detection issues. S-Band TXR Upgrade and Mini DLM will be scheduled NIB. Will be completed prior to JNO JOI. Will use diesel power instead for the JOI. Chiller Installation scheduled NIB in week 21.
		May 2016	May 2016	21		
		May 2016	May 2016	21		
Chiller Installation	DSS-43	May 2016	May 2016	21	John Phillips	Work will be done in parallel with the SWUPS powerhouse outages. Scheduled 2 12 hour blocks NIB..
		May 2016	May 2016	21		
Ka2 Tune-up	DSS-34	Oct 2016	Nov 2016	44 & 45	Wendy Hodgins	DSS-34 moved to 2016, weeks 44 & 45 with LNA NIB in week 44. Scheduled S-Band Tuner Upgrade NIB. This is budget/resource driven. There is a task to build 4 th Ka2/S-Band capabilities. This needs to be done 6 months prior to TESS Launch. MERR is scheduled 6 weeks prior to launch. LNA downtime will include Ka2 after the Tune-ups.
	DSS-54	Jan 2017	Feb 2017	04 & 05		
	DSS-24	Mar 2017	Mar 2017	11 & 12		
DSS-36 Operational	DSS-36	Oct 2016		40	Pam Rothman	DSS-36 may not be operational as planned due to budget cuts. It will be on a month to month slip. DSS-45 will remain operational until DSS-36 is online.
AZ Encoder Cover Installation	DSS-35	Nov 2016	Dec 2016	47 – 49		Added 2 additional weeks for AZ Encoder Cover Installation. LNA will be NIB



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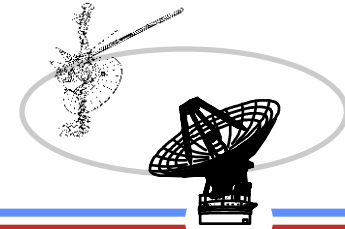


Antenna Downtime Status and Forecast

Downtime	Antenna	Start Date	End Date	Weeks	POC	Notes
Antenna Inspections/ TXR RF Characterization	CDSCC	Jan 2017	Jan 2017	02 & 03	Dave Taylor Daniel Olson Harout Matossian	All inspections slipped 1 year 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 the last 6 hours for TXR task at each complex. Note: Cannot do Inspection/TXR RF Characterization on 2 antenna on a given day.
	MDSCC	Jun 2018	Jun 2018	24 & 25		
	GDSCC	May 2019	May 2019	21 & 22		
	CDSCC	Jan 2020	Jan 2020	04 & 05		
Follow the Sun Ops Test	Network wide, SPC-10, 40, 60	Jan 2017	Jan 2017	03	Shirley Cizmar	Require 14 hour Network downtime for testing the Follow the sun (FtS) remote Ops. All 3 complexes concurrent. Require 14 hour Network downtime for testing the Follow the sun (FtS) remote Ops. All 3 complexes concurrent. Require 14 hour Network downtime for testing the Follow the sun (FtS) remote Ops. All 3 complexes concurrent. Require 14 hour Network downtime for testing the Follow the sun (FtS) remote Ops. All 3 complexes concurrent. Performing remote Ops during the last test. No additional task can co-exist during these downtimes. Shirley will have more information at the next meeting.
	Network wide, SPC-10, 40, 60	Mar 2017	March 2017	10		
	Network wide, SPC-10, 40, 60	May 2017	May 2017	19		
	Network wide, SPC-10, 40, 60	Jun 2017	Jun 2017	25		



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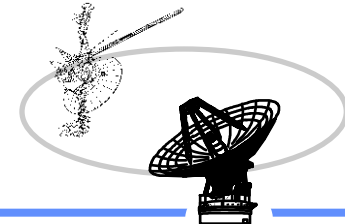
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Antenna Downtime Status and Forecast

Downtime	Antenna	Start Date	End Date	Weeks	POC	Notes
XMTR Controller Replacement Roof Repair	DSS-14	Jun 2017	Jun 2017	22 – 26	Ryan Higuera Michael Clements	Require 2 weeks for transmitter controller replacement in place of L-Band Install task. Extended to include roof repair NIB.
S-Band Install	DSS-26	Sept 2017 Mar 2018	Oct 2017 Apr 2018	36 – 42 10 – 16	Wendy Hodgins	GDSCC cannot support the downtime as planned in weeks 14-19, so the downtime has moved to weeks 36-42. DSS-26 Exciter install will be NIB. This may move to 2018, weeks 10 – 16. This will impact decommission of DSS-15. Will also be moved to start 1 month after S-Band installation.
Maser Replacement	DSS-25	Apr 2018	May 2018	17 – 20	Wendy Hodgins	Reduced to 4 weeks and changed to Maser Replacement instead of XX/Ka replacement – NIB to AZ Track.
AZ Track Replacement	DSS-25	Apr 2018	Jun 2018	17 – 27	Pam Rothman Daniel Olson	Prime activity with Maser Replacement, Exciter Obs Install and LNA NIB
Maser Replacement	DSS-24	Feb 2019	Apr 2019	11 – 14	Wendy Hodgins	Reduced to 4 weeks and changed to Maser Replacement instead of XX replacement.



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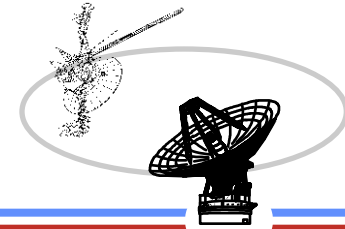
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Antenna Downtime Status and Forecast

Downtime	Antenna	Start Date	End Date	Weeks	POC	Notes
Pedestal Rehab	DSS-54	Nov 2019	Apr 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 Status of this task is still unknown at this time. Could move to start in 2020. DSS-56 has to be operational prior to taking this antenna down.
El Bearing Replacement	DSS-63	Apr 2020	May 2020	16 - 21	Asim Sehic	This downtime moved from weeks 12-24 to weeks 16-21. There are about 5-6 years of bearing life left based on last inspection. Requires only 6 weeks. If bearings continue to show healthy conditions and longevity, this work may be reduced to seals replacement. This downtime may be flexible.
20 KW XMTR Replacement	DSS-14	Jun 2020	Sep 2020	25 - 38	Pete Hames	This downtime is require in preparation for HYB2 Earth Re-Entry



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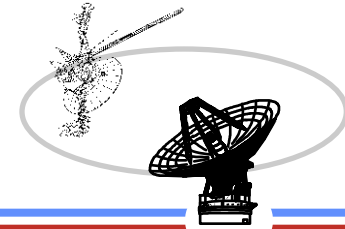
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70m Major Downtimes 2015 - 2020

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	LNA is scheduled NIB in week 04 Next downtime is June 2020
20 KW XMTR Replacement	DSS-14	Jun 15, 2020	Sep 19, 2020	25 – 38	Proposed	95	
Depot Level Maintenance	DSS-43	Feb 19, 2017	Mar 3, 2017	07 – 09	Approved	12	NIB to Exciter Obsolescence Installation Next downtime is October of 2017
APCA	DSS-43	Oct 30, 2017	Feb 9, 2018	44 – 06	Approved	101	LNA is scheduled NIB in week 02 of 2018
Shimming	DSS-63	Jan 18, 2016	Jan 23, 2016	03	Approved	5	NIB to LNA Next downtime May 2016
Shimming	DSS-63	May 16, 2016	May 27, 2016	20 – 31	Approved	11	Next downtime is Aug of 2016.
Epoxy Grout	DSS-63	Jul 18, 2016	Aug 19, 2016	29 – 33	Approved	11	Exciter Obsolescence Install is NIB Next downtime is March of 2018. Possible extension of 5 weeks
Grouting/APCA	DSS-63	Mar 12, 2018	Nov 9, 2018	11 – 45	Proposed	242	Next downtime is March of 2020
El Bearing Replacement	DSS-63	Mar 16, 2020	Jun 12, 2020	16 – 21	Proposed	88	



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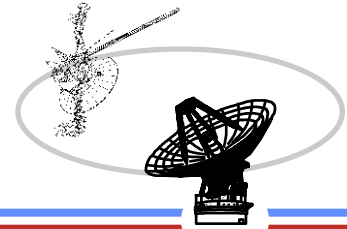
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Proposed LNA Maintenance Scheduled for 2016

Antenna	Start Date	End Date	Week	STATUS	Number of Days	2015 LNAs/ Notes	Number of months since last LNA
DSS-43	Jan	Jan	01	Approved	5	Mar, Jun, Oct, Nov, Dec of 2015	10 months
DSS-63	Jan	Jan	03	Approved	5	Jan, Nov of 2015 During grouting	13 months
DSS-14	Jan	Jan	04	Approved	5	Dec of 2014 During APCA	13 months
DSS-25	Apr	Apr	14	Approved	3	Feb, Jul, Oct of 2015	14 months
DSS-45	Apr	Apr	17	Approved	4	Feb, Apr, Jul of 2015	14 months
DSS-24	May	May	20	Approved	3	Apr, Aug of 2015 After DSS-14 APCA	13 months
DSS-26	Jun	Jun	21	Approved	3	May 2015	13 months
DSS-54	Jul	Jul	28	Approved	3	Jun 2015	13 months
DSS-15	Aug	Aug	32	Approved	3	Mar of 2015	17 months
DSS-34	Nov	Nov	44	Approved	3	Sep, Nov 2015	14 months
DSS-65	Nov	Nov	46	Approved	4	Jul, Dec 2015	16 months
DSS-35	Dec	Dec	49	Approved	50 hours	Oct 2015	14 months
DSS-55	Dec	Dec	50	Approved	3	Aug 2015	16 months



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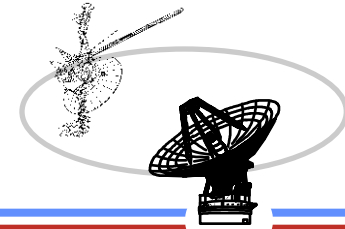
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Proposed LNA Maintenance Scheduled for 2017

Antenna	Start Date	End Date	Week	STATUS	Number of Days	Notes for 2017 LNAs	Number of months since last LNA
DSS-43	Mar	Mar	08 & 09	Proposed	5	NIB to Exciter Obsolescence	14 months
DSS-14	Mar	Mar	13	Proposed	5	Stand Alone	14 months
DSS-63	May	May	19	Proposed	5	Stand Alone	16 months
DSS-25	Jun	Jun	22	Proposed	3	Stand Alone	14 months
DSS-24	Jul	Jul	27	Proposed	3	Stand Alone	14 months
DSS-54	Oct	Oct	41	Proposed	3	Stand Alone	15 months



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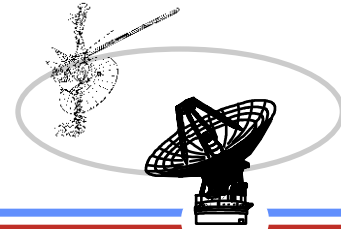
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Proposed LNA Maintenance Scheduled for 2018

Antenna	Start Date	End Date	Week	STATUS	Number of Days	Notes for 2018 LNAs	Number of months since last LNA
DSS-43	Jan	Jan	02	Proposed	5	NIB to APCA	10 months
DSS-55	Feb	Feb	05	Proposed	3	Stand Alone	13 months
DSS-14	Mar	Mar	09	Proposed	5	Stand Alone	11 months
DSS-34	Mar	Mar	09	Proposed	3	Ka2 will be added to process	15 months
DSS-25	Mar	Mar	17	Proposed	3	Stand Alone	9 months
DSS-35	Apr	Apr	16	Proposed	50 hours	Stand Alone	16 months
DSS-63	Jun	Jun	23	Proposed	5	NIB to APCA/Grouting	13 months
DSS-24	Sep	Sep	39	Proposed	3	Ka2 will be added to process	14 months
DSS-54	Nov	Nov	47	Proposed	3	Ka2 will be added to process	13 months



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Proposed LNA Maintenance Scheduled for 2019

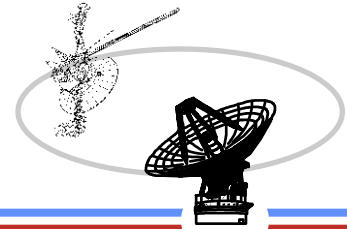
Antenna	Start Date	End Date	Week	STATUS	Number of Days	Notes for 2019 LNAs	Number of months since last LNA
DSS-43	Mar	Mar	10	Proposed	5	Stand Alone	14 months
DSS-34	May	May	18	Proposed	3	Stand Alone	14 months
DSS-14	May	May	19	Proposed	5	Stand Alone	14 months
DSS-55	May	May	21	Proposed	3	Stand Alone	15 months
DSS-35	Jun	Jun	23	Proposed	50 hours	Stand Alone	14 months
DSS-25	Jun	Jun	24	Proposed	3	Stand Alone	14 months
DSS-63	Aug	Aug	31	Proposed	5	Stand Alone	14 months
DSS-24	Dec	Dec	49	Proposed	3	Stand Alone	13 months



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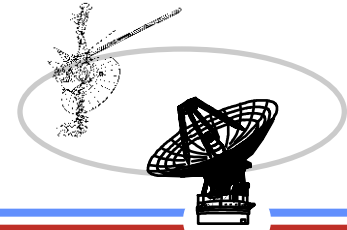
Exciter Obsolescence Install 2015 – 2018

Antenna	Start Date	End Date	Week	Status	Number of Days	Notes
DSS-34	Nov 30, 2015	Dec 15, 2015	49 – 51	Approved	12	Completed
DSS-24	May 9, 2016	May 13, 2016	19	Approved	5	DSS-24 LNA NIB
DSS-54	Jul 11, 2016	Jul 15, 2016	28	Approved	5	DSS-54 LNA/Single Axis LOTO NIB
DSS-15	Aug 8, 2016	Aug 11, 2016	32	Approved	5	DSS-15 LNA NIB
DSS-63	Jul 25, 2016	Jul 30, 2016	29	Approved	5	NIB to Shimming
DSS-65	Nov 14, 2016	Nov 19, 2016	46	Approved	5	DSS-65 LNA NIB
DSS-55	Dec 12, 2016	Dec 16, 2016	50	Approved	5	DSS-55 LNA NIB
DSS-43	Feb 19, 2017	Mar 3, 2017	07 – 09	Proposed	5	DLM & LNA NIB
DSS-14	Jun 19, 2017	Jun 24, 2017	25	Proposed	5	NIB to L-Band Install
DSS-26	Sep 4, 2017	Oct 20, 2017	36-42	Approved		NIB to DSS-26 S-Band Install
DSS-25	Apr 2, 2018	Apr 7, 2018	14	Proposed	5	NIB to AZ Track Replacement XX/Ka Install
DSS-26	May 6, 2018	Apr 21, 2018	10 – 16	Proposed	46	NIB to S-Band Install.



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- 2016 -

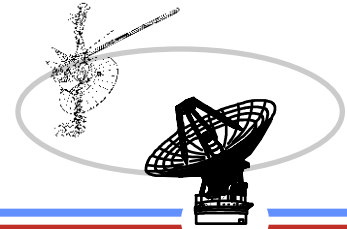
	January				February				March				April				May				June				July				August				September				October				November				December																																													
Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52																																						
2016 Key Project Events	PLC Umbra Support										TGO ExoMars Launch										TGO Contact										JUNO JOI										ORX Launch/LEOP										TGO ExoMars EDM/MOI										JUNO JOI PJ7/PJ8																													
	PLC Umbra Support										MRO Side Swap/Safe Mode/Reboot Entry/Exit to Nominal										Holy Week										JUNO JOI MERR										JUNO GDSCC/CAN Array										JUNO JOI PJ6+7.5H OTM/PJ7+7.5 OTM										JUNO JOI PJ7/PJ8																													
	GSSR AST TORO										GSSR AST 2014 EK24										GSSR AST 2003 KO2										GSSR AST 2008 HU4										GSSR AST 2005 GR33										GSSR AST 2004 FG11										GSSR AST 2010 NY65										GSSR AST 2011 DU										GSSR AST 1998 XB									
	GSSR AST 1999 JV6										COMET 252P/2000 G1										GSSR AST 1994 UG										GSSR AST 2009 DL46										GSSR AST 2002 KL6										GSSR AST 1999 YR14										GSSR AST 2003 YT1																													
	GSSR AST 2001 WL15										GSSR AST 2206 UK										GSSR AST 2008 TZ3										VGR1 DTR P/B										CAS OTM 438 LME MVR										VGR1 DTR P/B										VGR1 DTR P/B										CAS 237 Saturn ATM Rings OCC Exp.										GSSR AST HERACLES									
	CAS TITAN Flyby										CAS Enceladus Plume Occultation										CAS Saturn Rings OCC Exp.										CAS RSS Proximal Test 1/2										VGR1 DTR P/B										VGR1 DTR P/B										CAS TITAN Flyby																													
	CAS OTM 441 LME MVR										CAS OTM 447 LME MVR										CAS OTM 453 LME MVR										CAS TITAN Bistatic Exp										CAS TITAN Flyby										CAS TITAN Flyby										CAS TITAN Flyby																													
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	CAS TITAN T117 Bistatic Exp										CAS TITAN Flyby										CAS TITAN Flyby										CAS TITAN Flyby										CAS TITAN Flyby										CAS TITAN Flyby										CAS TITAN Flyby																													
Key Project Events Legend: ■ Level 1 ■ Level 2 ■ Level 3 ■ All Others ■ TBD Downtimes < 24 hours MERR																																																																																										
GDSCC	D14 Ant Gain Cal										Cmplx GNM										D24 Elec & Ground Inspections										D15 LNA 3days - NIB										D15 Exctr Obs Inst 5 days																																																	
	D14 Ant Gain Cal										D25 LNA 3days										D24 LNA 4days - NIB										D24,25,26 Apollo Arc Flash - D24 NIB										D26 LNA 4days - NIB										D26 Elec & Ground Inspections																																							
CDSCC	Cmplx GNM										Security Scan										D14 LNA 5days NIB										Network GNM										D14 Switch Gear Upgrd										DSOC B230 Ops Readiness										B230 Ops Readiness																													
	Cmplx GNM										Cmplx GNM										Security Scan										Cmplx GNM										NMC 4 - MSPA Ops/Install										D45 HEF Closure 10/31/2016										D36 Operational 10/1/2016																													
MDSCC	Security Scan										NMC 4-MSPA I&T										D45 LNA 4days										SWUPS Install (2)										NMC 4 - MSPA Ops/Install										D36 System Operations Performance Testing										D34 Ka2 Tune-up																													
	D43 LNA 5days										Cmplx Pwr Upgrade										Cmplx GNM										D43 Chiller Install (2) - NIB										D34,35,43,45 Mini DLM										D34 S-Band Tuner Upgrade - NIB										D34 LNA 3days - NIB																													
Cmplx GNM										Cmplx Pwr Upgrade										Cmplx GNM										D35 TXR Upgrade										D35 LNA Replacement										D35 LNA Upgrade										SWUPS Install										D36 System Integration Testing										D35 LNA/AZ Encoder Cover Replacement										
Cmplx GNM										Security Scan										Network GNM										Security Scan										D34,35,43,45 Mini DLM										D36 System Operations Performance Testing										D34 S-Band Tuner Upgrade - NIB										D35 LNA - NIB																				
D43 MTF Hoist/swap - NIB										D36 Subsystem Acceptance Testing										D36 Modkit Inventory-Install-C/O										D36 System Integration Testing										D36 System Operations Performance Testing										B230 Ops Readiness										D35 LNA - NIB																														
D36 Modkit Inventory-Install-C/O										D36 System Integration Testing										D36 System Operations Performance Testing										D36 System Operations Performance Testing										D36 System Operations Performance Testing										D36 System Operations Performance Testing										D36 System Operations Performance Testing																														
D65 XHMT LNA 32hrs										Cmplx GNM										NMC 4 - MSPA SOAK/Install										D54 Metrology (2) - NIB										D54 Exctr Obs Inst 5 days										D65 Exctr Obs Inst 5 days										D65 LNA 4days - NIB																														
Security Scan										Security Scan										NMC 4 - MSPA AT										D54 LNA/Single Axis LOTO - NIB										D63 Metrology (2)										D63 Metrology (2)										D65 LNA 4days - NIB																														
D63 Metrology (2)										Cmplx GNM										NMC 4 - MSPA AT										D54 LNA/Single Axis LOTO - NIB										D63 Metrology (2)										D63 Metrology (2)										D65 LNA 4days - NIB																														
Cmplx GNM										D63 LNA 5days										Cmplx GNM										D63 Shimming - NIB										D63 Epoxy Grout										D63 Epoxy Grout										D55 LNA 3days - NIB																														
D63 LNA 5days										Cmplx GNM										Cmplx GNM										D63 Shimming - NIB										D63 Epoxy Grout										D63 Epoxy Grout										D55 LNA 3days - NIB																														
D63 Shimming - NIB										Cmplx GNM										Cmplx GNM										D63 Shimming										D63 Exctr Obs Inst 5 days										D55 Exctr Obs Inst 5 days										D55 Exctr Obs Inst 5 days																														
D54 S-Band TXR Upgrade										Network GNM										Cmplx Pwr Cont Rplc										D63 Exctr Obs Inst 5 days										D55 Metrology (2)										B230 Ops Readiness										D55 Exctr Obs Inst 5 days																														
D55 Metrology (2)										Cmplx GNM										Cmplx Pwr Cont Rplc										D63 Exctr Obs Inst 5 days										D55 Metrology (2)										B230 Ops Readiness										D55 Exctr Obs Inst 5 days																														

Downtime March 1, 2016 16

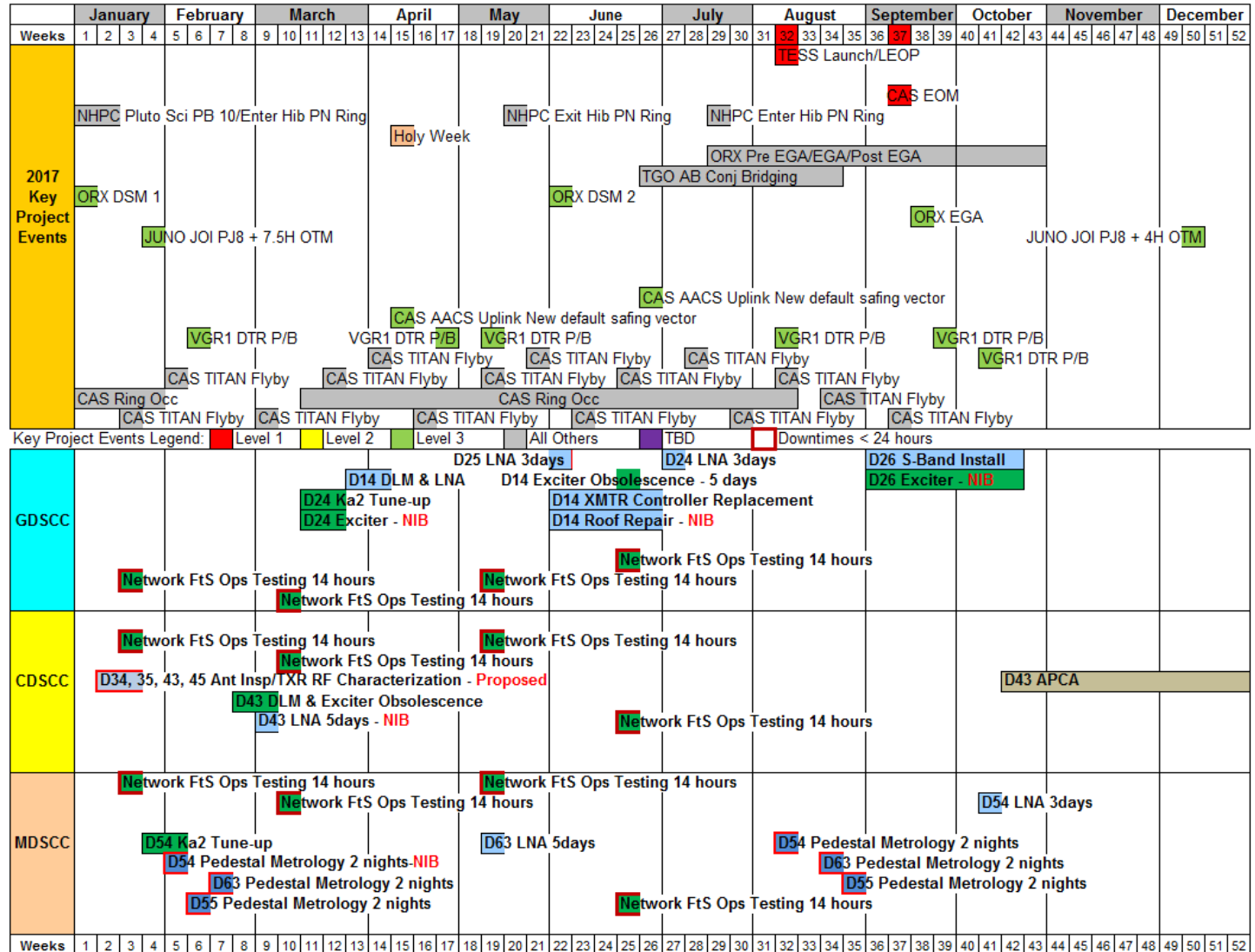


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- 2017 -

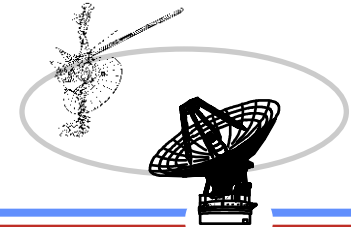


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Downtime March 1, 2016 17

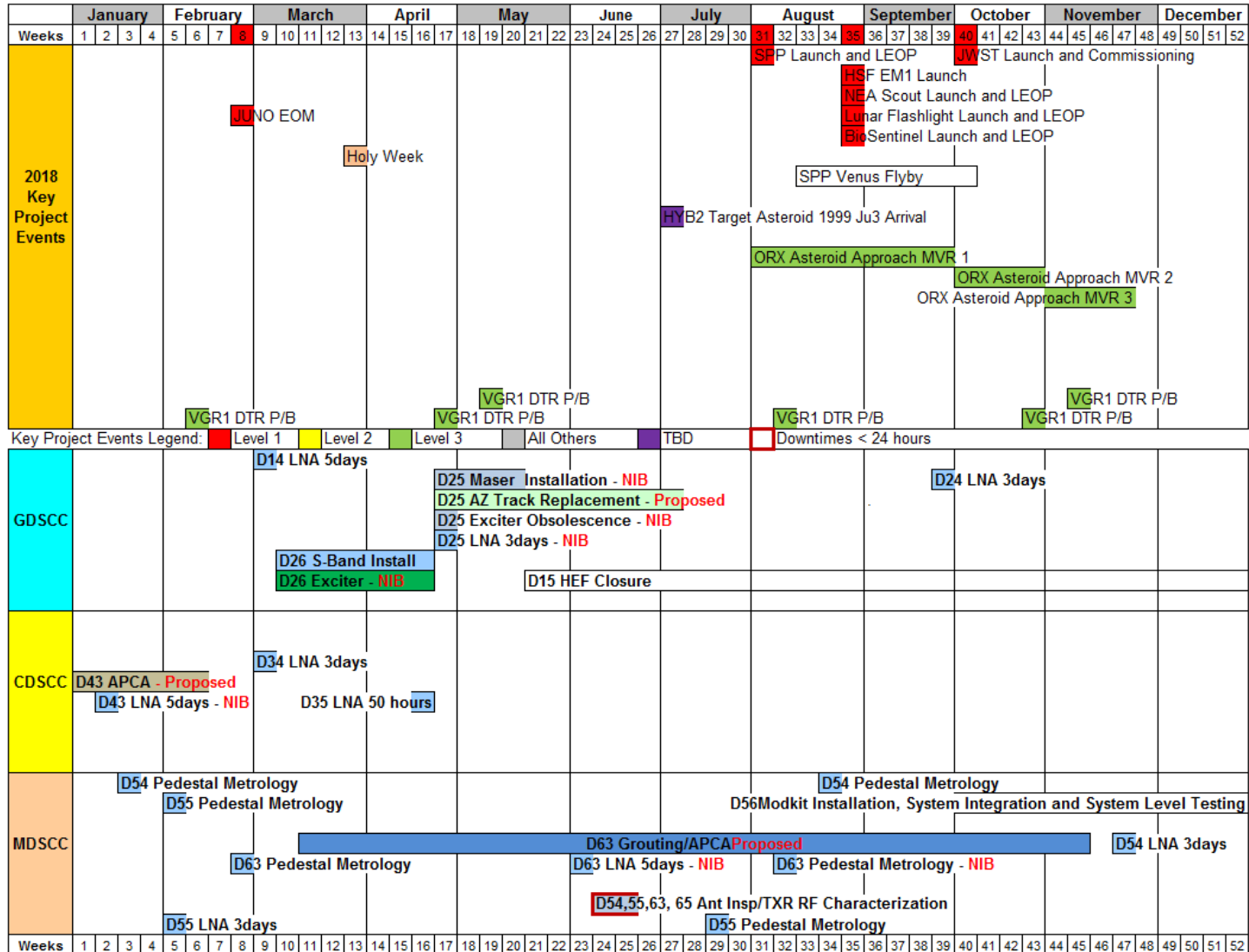


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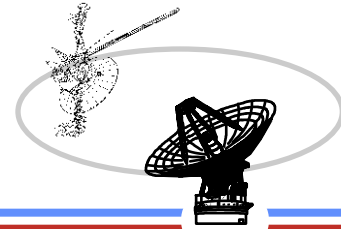
- 2018 -



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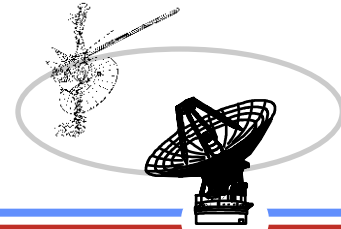
- 2019 -

	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								
2019 Key Project Events						SPP Beacon					SPP Solar Enc					ORX Touch & Go (TAG) 1 Reh										ORX TAG 1					SPP Solar Enc										SPP Venus Flyby																			
											Holy Week															HYB2 Target Asteroid 1999 Ju3 Departure																																		
						VGR1 DTR P/B										VGR1 DTR P/B					VGR1 DTR P/B										VGR1 DTR P/B										VGR1 DTR P/B					VGR1 DTR P/B														
Key Project Events Legend: ■ Level 1 ■ Level 2 ■ Level 3 ■ All Others ■ TBD Downtimes < 24 hours																																																												
GDSCC											D24 Maser Replacement - Proposed					D14 LNA 5days					D25 LNA 3days															D24 LNA 3days																								
																					D14, 24, 25, 26 Ant Insp/TXRF Characterization - Proposed																																							
CDSCC						D43 LNA 5days										D34 LNA 3days					D35 LNA 50 hours																																							
MDSCC						D63 Pedestal Metrology															D55 LNA 3days										D54 Pedestal Metrology					D56 Decommission					D56 Operational																			
						D54 Pedestal Metrology																									D54 Pedestal Rehab end April 2021 - Proposed																													
						D55 Pedestal Metrology																									D63 LNA 5days					D54 Servo/MTR Replacement - NIB																								
																															D63 Pedestal Metrology - NIB																													
																																				D53 Modkit Installation, System Integration and System Level Testing					D55 Pedestal Metrology																			

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- 2020 -

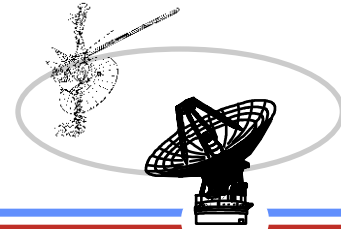
	January					February				March					April					May					June					July					August					September					October					November					December				
Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53						
2020 Key Project Events	Mars 2020 Launch																											HYB2 Earth Re-Entry																															
	Holy Week														SPP Venus Flyby										SPP Venus Flyby										MARS 2020 Approach																								
	VGR1 DTR P/B									VGR1 DTR P/B									VGR1 DTR P/B									VGR1 DTR P/B									VGR1 DTR P/B																						
Key Project Events Legend:																																																											
■ Level 1 ■ Level 2 ■ Level 3 ■ All Others ■ TBD Downtimes < 24 hours																																																											
GDSCC	D14 20 KW XMTR Replacement - Proposed																																																										
CDSCC	D34,35,36,43 Ant Insp/TXR RF Characterization																																																										
MDSCC	D63 EI Bearing Replacement - Proposed																																																										
	D54 Pedestal Rehab begin November 2019 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	53						

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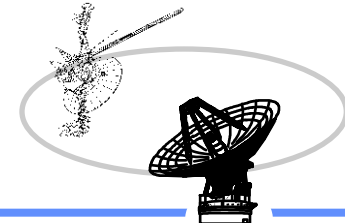
- 2021 -

	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	MARS 2020 Approach					Mars EDL				ORX Asteroid Departure MVR																HSF EM2 Launch				ORX Asteroid Sample Return Capsule Release																								
						SPP Venus Flyby				SPP Venus Flyby				Holy Week																SPP Venus Flyby																								
Key Project Events Legend: ■ Level 1 ■ Level 2 ■ Level 3 ■ All Others ■ TBD Downtimes < 24 hours																																																						
GDSCC																																																						
CDSCC																																																						
MDSCC																		D54,53,55,56,63, Ant Insp/TXR RF Characterization																																				
	<div style="display: flex; justify-content: space-between;"> D54 Pedestal Rehab Begin November 2019 - Proposed D54 Servo/XMTR Replacement - NIB </div>																																																					
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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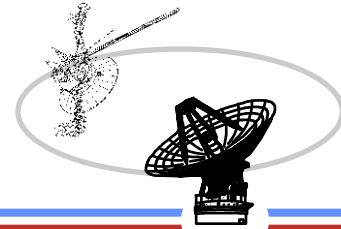
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DSN Downtime 2016

2016							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 14	APCA	01/25/2016 15:00	05/13/2016 23:00	109	04 - 19	25	134
DSS 43	MTF Test - NIB to Maint.	03/02/2016 21:00	03/03/2016 04:00	0	09 - 09	62	63
DSS 43	MTF Test - NIB to Maint.	03/07/2016 21:00	03/08/2016 04:00	0	10 - 10	67	68
SPC 40	ACT Laser Mapping - NIB	03/15/2016 22:00	03/16/2016 05:00	0	11 - 11	75	76
SPC 40	NMC 4 - MSPA I&T	03/15/2016 22:00	03/16/2016 05:00	0	11 - 11	75	76
SPC 40	Complex Powerhouse Upgrade	03/23/2016 00:00	03/23/2016 06:00	0	12 - 12	83	83
DSS 35	LNA Replacement	03/23/2016 00:00	03/25/2016 08:05	2	12 - 12	83	85
DSS 35	LNA Upgrade	03/28/2016 21:00	03/29/2016 21:00	1	13 - 13	88	89
DSS 25	LNA Maintenance	04/04/2016 00:00	04/07/2016 00:00	3	14 - 14	95	98
SPC 40	Complex Powerhouse Upgrade	04/13/2016 22:00	04/14/2016 06:00	0	15 - 15	104	105
SPC 10	NMC 4 - MSPA AT	04/22/2016 15:00	04/22/2016 23:00	0	16 - 16	113	113
DSS 45	LNA Maintenance	04/25/2016 00:00	04/29/2016 00:00	4	17 - 17	116	120
DSS 14	Generator Switch Gear Update	05/02/2016 00:00	05/09/2016 00:00	7	18 - 19	123	130
DSS 35	Transmitter Upgrade	05/09/2016 22:00	05/12/2016 10:00	2	19 - 19	130	133
SPC 60	NMC 4 - MSPA AT	05/12/2016 06:00	05/12/2016 14:00	0	19 - 19	133	133
DSS 63	Shimming	05/16/2016 06:00	05/27/2016 17:00	11	20 - 21	137	148
DSS 43	Mini DLM	05/16/2016 20:00	05/17/2016 08:00	0	20 - 20	137	138
DSS 24	Electrical and Ground Inspection	05/16/2016 00:00	05/20/2016 00:00	4	20 - 20	137	141
DSS 24	LNA Maintenance - NIB	05/16/2016 00:00	05/20/2016 00:00	4	20 - 20	137	141
DSS 34	Mini DLM	05/17/2016 20:00	05/18/2016 08:00	0	20 - 20	138	139
DSS 26	Apollo Arc Flash	05/18/2016 14:45	05/18/2016 22:45	0	20 - 20	139	139
DSS 24	Apollo Arc Flash	05/18/2016 14:45	05/18/2016 22:45	0	20 - 20	139	139
DSS 25	Apollo Arc Flash	05/18/2016 14:45	05/18/2016 22:45	0	20 - 20	139	139



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 Deep Space Network (DSN)
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DSN Downtime 2016

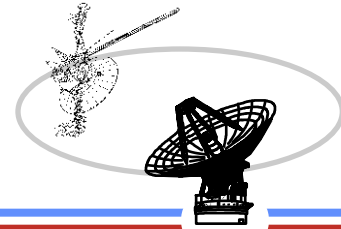
2016 cont.							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 45	Mini DLM	05/18/2016 20:00	05/19/2016 08:00	0	20 - 20	139	140
DSS 35	Mini DLM	05/19/2016 20:00	05/20/2016 08:00	0	20 - 20	140	141
SPC 40	SWUPS Installation	05/19/2016 20:00	05/20/2016 08:00	0	20 - 20	140	141
DSS 26	Electrical/Ground Inspection	05/23/2016 00:00	05/27/2016 00:00	4	21 - 21	144	148
DSS 26	LNA Maintenance - NIB	05/23/2016 00:00	05/27/2016 00:00	4	21 - 21	144	148
DSS 43	Mini DLM	05/23/2016 20:00	05/24/2016 08:00	0	21 - 21	144	145
DSS 43	Chiller Install - NIB	05/24/2016 20:00	05/25/2016 08:00	0	21 - 21	145	146
DSS 34	Mini DLM - NIB	05/24/2016 20:00	05/25/2016 08:00	0	21 - 21	145	146
SPC 40	SWUPS Installation	05/24/2016 20:00	05/25/2016 08:00	0	21 - 21	145	146
SPC 60	Power Plant Controller Replacement	05/25/2016 06:00	05/25/2016 14:00	0	21 - 21	146	146
DSS 45	Mini DLM	05/25/2016 20:00	05/26/2016 08:00	0	21 - 21	146	147
DSS 43	Chiller Install - NIB	05/26/2016 20:00	05/27/2016 08:00	0	21 - 21	147	148
DSS 35	Mini DLM	05/26/2016 20:00	05/27/2016 08:00	0	21 - 21	147	148
SPC 40	SWUPS Installation	05/26/2016 20:00	05/27/2016 08:00	0	21 - 21	147	148
DSS 35	Transmitter Upgrade	05/30/2016 20:00	06/02/2016 08:00	2	22 - 22	151	154
SPC 60	NMC 4 - MSPA SOAK/Install	06/10/2016 06:00	06/10/2016 14:00	0	23 - 23	162	162
DSS 54	Exciter Obsolescence Install	07/11/2016 06:00	07/15/2016 17:00	4	28 - 28	193	197
DSS 54	LNA/Single Axis LOTO - NIB	07/11/2016 06:00	07/15/2016 17:00	4	28 - 28	193	197
DSS 54	Pedestal Metrology - NIB	07/11/2016 22:00	07/12/2016 05:00	0	28 - 28	193	194
DSS 54	Pedestal Metrology - NIB	07/12/2016 22:00	07/13/2016 05:00	0	28 - 28	194	195
DSS 63	Exciter Obsolescence Install-NIB	07/18/2016 06:00	07/22/2016 17:00	4	29 - 29	200	204
DSS 63	Epoxy Grouting	07/18/2016 06:00	08/19/2016 17:00	32	29 - 33	200	232
SPC 10	NMC 4 -MSPA Ops Install	07/30/2016 15:00	07/30/2016 23:00	0	30 - 30	212	212



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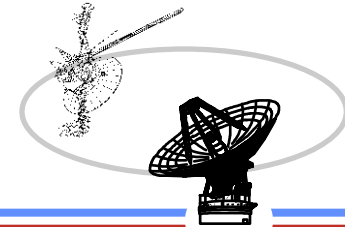


DSN Downtime 2016

2016 cont.							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
SPC 40	NMC 4 - MSPA OPs Install	08/02/2016 22:00	08/03/2016 06:00	0	31 - 31	215	216
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	08/08/2016 15:00	08/13/2016 00:00	4	32 - 32	221	226
DSS 63	Pedestal Metrology	08/09/2016 22:00	08/10/2016 05:00	0	32 - 32	222	223
DSS 63	Pedestal Metrology	08/10/2016 22:00	08/11/2016 05:00	0	32 - 32	223	224
DSS 55	Pedestal Metrology	08/22/2016 22:00	08/23/2016 05:00	0	34 - 34	235	236
DSS 55	Pedestal Metrology	08/23/2016 22:45	08/24/2016 05:00	0	34 - 34	236	237
DSS 63	Epoxy Grouting	08/29/2016 06:00	09/30/2016 17:00	32	35 - 39	242	274
DSS 45	Decommissioned	10/31/2016 00:00	01/01/2050 00:00	12115	44 - 52	305	1
DSS 34	LNA Maintenance - NIB	10/31/2016 00:00	11/03/2016 00:00	3	44 - 44	305	308
DSS 34	S-Band Transmitter Upgrade	10/31/2016 21:00	11/11/2016 06:00	10	44 - 45	305	316
SPC 40	NMC Ops Readiness	11/08/2016 21:00	11/09/2016 05:00	0	45 - 45	313	314
SPC 60	NMC Ops Readiness	11/10/2016 06:00	11/10/2016 14:00	0	45 - 45	315	315
DSS 65	LNA Maintenance - NIB	11/14/2016 00:00	11/18/2016 00:00	4	46 - 46	319	323
DSS 65	Exciter Obsolescence Install	11/14/2016 06:00	11/19/2016 17:00	5	46 - 46	319	324
SPC 10	NMC Ops Readiness	11/18/2016 16:00	11/19/2016 00:00	0	46 - 46	323	324
GCF 20	NMC Ops Readiness	11/18/2016 16:00	11/19/2016 00:00	0	46 - 46	323	324
DSS 35	Encoder Cover Replacement	11/21/2016 00:00	12/10/2016 00:00	19	47 - 49	326	345
DSS 35	LNA Maintenance - NIB	12/05/2016 00:00	12/08/2016 12:00	19	49 - 49	340	343
DSS 55	LNA Maintenance - NIB	12/12/2016 00:00	12/16/2016 00:00	4	50 - 50	347	351
DSS 55	Exciter Obsolescence Install	12/12/2016 06:00	12/17/2016 17:00	5	50 - 50	347	352



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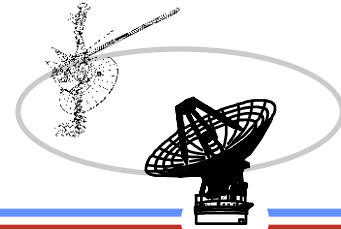
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DSN Downtime 2017

2017							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 43	Ant Insp/TXR RF Characterization - Proposed	01/09/2017 22:00	01/10/2017 10:00	0	02 - 02	9	10
DSS 34	Ant Insp/TXR RF Characterization - Proposed	01/10/2017 22:00	01/11/2017 10:00	0	02 - 02	10	11
DSS 45	Ant Insp/TXR RF Characterization - Proposed	01/11/2017 22:00	01/12/2017 10:00	0	02 - 02	11	12
DSS 35	Ant Insp/TXR RF Characterization - Proposed	01/12/2017 22:00	01/13/2017 10:00	0	02 - 02	12	13
DSS 43	Ant Insp/TXR RF Characterization - Proposed	01/16/2017 22:00	01/17/2017 10:00	0	03 - 03	16	17
DSS 34	Ant Insp/TXR RF Characterization - Proposed	01/17/2017 22:00	01/18/2017 10:00	0	03 - 03	17	18
DSS 45	Ant Insp/TXR RF Characterization - Proposed	01/18/2017 22:00	01/19/2017 10:00	0	03 - 03	18	19
DSS 35	Ant Insp/TXR RF Characterization - Proposed	01/19/2017 22:00	01/20/2017 10:00	0	03 - 03	19	20
SPC 60	Follow the Sun Ops Testing	01/21/2017 14:00	01/22/2017 02:00	0	03 - 03	21	22
SPC 40	Follow the Sun Ops Testing	01/21/2017 14:00	01/22/2017 02:00	0	03 - 03	21	22
SPC 10	Follow the Sun Ops Testing	01/21/2017 14:00	01/22/2017 02:00	0	03 - 03	21	22
DSS 54	Ka2 Tune-up	01/23/2017 07:00	02/03/2017 17:00	11	04 - 05	23	34
DSS 54	Pedestal Metrology	01/30/2017 20:00	01/31/2017 07:00	0	05 - 05	30	31
DSS 54	Pedestal Metrology	01/31/2017 20:00	02/01/2017 07:00	0	05 - 05	31	32
DSS 55	Pedestal Metrology	02/06/2017 20:00	02/07/2017 07:00	0	06 - 06	37	38
DSS 55	Pedestal Metrology	02/07/2017 20:00	02/08/2017 07:00	0	06 - 06	38	39
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 43	DLM & Exciter Obsolescence Install	02/19/2017 21:00	03/03/2017 21:00	12	07 - 09	50	62
DSS 43	LNA - NIB	02/26/2017 21:00	03/03/2017 21:00	5	08 - 09	57	62
DSS 26	Exciter - NIB	03/06/2017 15:00	04/21/2017 23:00	46	10 - 16	65	111
SPC 10	Follow the Sun Ops Testing	03/09/2017 12:00	03/10/2017 00:00	0	10 - 10	68	69
SPC 60	Follow the Sun Ops Testing	03/09/2017 12:00	03/10/2017 00:00	0	10 - 10	68	69



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DSN Downtime 2017

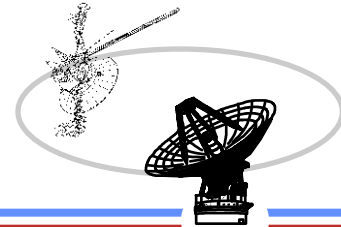
2017 cont.							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
SPC 40	Follow the Sun Ops Testing	03/09/2017 12:00	03/10/2017 00:00	0	10 - 10	68	69
DSS 24	Exciter - NIB	03/13/2017 15:00	03/25/2017 00:00	11	11 - 11	72	84
DSS 24	Ka2 Tune-up - Proposed	03/13/2017 15:00	03/25/2017 00:00	11	11 - 12	72	84
DSS 14	DLM & LNA Maintenance	03/27/2017 00:00	04/07/2017 23:00	12	13 - 14	86	97
DSS 63	LNA Maintenance	05/08/2017 00:00	05/13/2017 00:00	5	19 - 19	128	133
SPC 10	Follow the Sun Ops SOAK	05/13/2017 12:00	05/14/2017 02:00	1	19 - 19	133	134
SPC 40	Follow the Sun Ops SOAK	05/13/2017 12:00	05/14/2017 02:00	1	19 - 19	133	134
SPC 60	Follow the Sun Ops SOAK	05/13/2017 12:00	05/14/2017 02:00	1	19 - 19	133	134
DSS 14	Roof Repair	05/29/2017 15:00	06/30/2017 23:00	32	22 - 26	149	181
DSS 14	Transmitter Controller Replacement	05/29/2017 15:00	06/30/2017 23:00	32	22 - 26	149	181
DSS 25	LNA Maintenance	05/30/2017 00:00	06/02/2017 00:00	3	22 - 22	150	153
DSS 14	Exciter Obsolescence - NIB	06/19/2017 15:00	06/24/2017 23:00	5	25 - 25	170	175
SPC 10	Follow the Sun Ops Testing	06/22/2017 12:00	06/23/2017 02:00	1	25 - 25	173	174
SPC 60	Follow the Sun Ops Testing	06/22/2017 12:00	06/23/2017 02:00	1	25 - 25	173	174
SPC 40	Follow the Sun Ops Testing	06/22/2017 12:00	06/23/2017 02:00	1	25 - 25	173	174
DSS 24	LNA Maintenance	07/03/2017 00:00	07/06/2017 00:00	3	27 - 27	184	187
DSS 54	Pedestal Metrology	08/07/2017 22:00	08/08/2017 05:00	0	32 - 32	219	220
DSS 54	Pedestal Metrology	08/08/2017 22:00	08/09/2017 05:00	0	32 - 32	220	221
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 55	Pedestal Metrology	08/28/2017 22:00	08/29/2017 05:00	0	35 - 35	240	241
DSS 55	Pedestal Metrology	08/29/2017 22:00	08/30/2017 05:00	0	35 - 35	241	242
DSS 26	Exciter - NIB	09/04/2017 15:00	10/20/2017 02:00	45	36 - 42	247	293



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DSN Downtime 2017

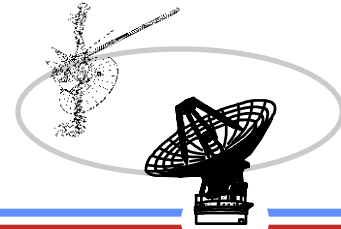
2017 cont.							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 26	S-Band Install	09/04/2017 15:00	10/20/2017 02:00	45	36 - 42	247	293
DSS 54	LNA Maintenance	10/09/2017 00:00	10/12/2017 00:00	3	41 - 41	282	285
DSS 43	APCA - Proposed	10/16/2017 21:00	02/09/2018 06:00	115	42 - 06	289	40



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DSN Downtime 2018

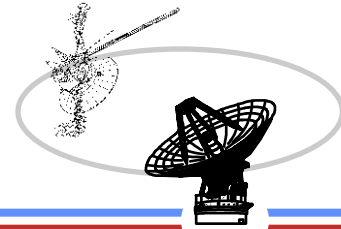
2018							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 43	LNA Maintenance	01/08/2018 21:00	01/13/2018 21:00	5	02 - 02	8	13
DSS 54	Pedestal Metrology	01/15/2018 20:00	01/16/2018 07:00	0	03 - 03	15	16
DSS 54	Pedestal Metrology	01/16/2018 20:00	01/17/2018 07:00	0	03 - 03	16	17
DSS 55	LNA Maintenance	01/29/2018 00:00	02/03/2018 00:00	5	05 - 05	29	34
DSS 55	Pedestal Metrology	01/29/2018 20:00	01/30/2018 07:00	0	05 - 05	29	30
DSS 55	Pedestal Metrology	01/30/2018 20:00	01/31/2018 07:00	0	05 - 05	30	31
DSS 63	Pedestal Metrology	02/19/2018 20:00	02/20/2018 07:00	0	08 - 08	50	51
DSS 63	Pedestal Metrology	02/20/2018 20:00	02/21/2018 07:00	0	08 - 08	51	52
DSS 14	LNA Maintenance	02/26/2018 00:00	02/26/2018 23:00	1	09 - 09	57	57
DSS 34	LNA Maintenance	02/26/2018 21:00	03/01/2018 21:00	3	09 - 09	57	60
DSS 26	S-Band Install/Exciter	03/06/2018 15:00	04/21/2018 23:00	46	10 - 16	65	111
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 06:00	11/09/2018 17:00	242	11 - 45	71	313
DSS 35	LNA Maintenance	04/16/2018 21:00	04/19/2018 21:00	3	16 - 16	106	109
DSS 25	LNA - NIB	04/23/2018 15:00	04/26/2018 00:00	2	17 - 17	113	116
DSS 25	Exciter Obsolescence Install-NIB	04/23/2018 15:00	04/27/2018 00:00	3	17 - 17	113	117
DSS 25	Maser Installation - NIB	04/23/2018 15:00	05/18/2018 17:00	25	17 - 20	113	138
DSS 25	AZ Track Replacement	04/23/2018 15:00	07/06/2018 00:00	73	17 - 27	113	187
DSS 15	Decommissioned	05/21/2018 00:00	01/01/2050 00:00	11548	21 - 52	141	1
DSS 63	LNA Maintenance	06/04/2018 00:00	06/09/2018 00:00	5	23 - 23	155	160
DSS 55	Ant Insp/TXR RF Characterization	06/11/2018 07:00	06/11/2018 19:00	0	24 - 24	162	162
DSS 65	Ant Insp/TXR RF Characterization	06/12/2018 07:00	06/12/2018 19:00	0	24 - 24	163	163
DSS 63	Ant Insp/TXR RF Characterization	06/13/2018 07:00	06/13/2018 19:00	0	24 - 24	164	164



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

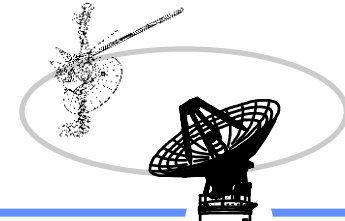


DSN Downtime 2018

2018 cont.							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 54	Ant Insp/TXR RF Characterization	06/14/2018 07:00	06/14/2018 19:00	0	24 - 24	165	165
DSS 55	Ant Insp/TXR RF Characterization	06/18/2018 07:00	06/18/2018 19:00	0	25 - 25	169	169
DSS 65	Ant Insp/TXR RF Characterization	06/19/2018 07:00	06/19/2018 19:00	0	25 - 25	170	170
DSS 63	Ant Insp/TXR RF Characterization	06/20/2018 07:00	06/20/2018 19:00	0	25 - 25	171	171
DSS 54	Ant Insp/TXR RF Characterization	06/21/2018 07:00	06/21/2018 19:00	0	25 - 25	172	172
DSS 55	Pedestal Metrology	07/16/2018 22:00	07/17/2018 05:00	0	29 - 29	197	198
DSS 55	Pedestal Metrology	07/17/2018 22:00	07/18/2018 05:00	0	29 - 29	198	199
DSS 63	Pedestal Metrology	08/06/2018 22:00	08/07/2018 05:00	0	32 - 32	218	219
DSS 63	Pedestal Metrology	08/07/2018 22:00	08/08/2018 05:00	0	32 - 32	219	220
DSS 54	Pedestal Metrology	08/20/2018 22:00	08/21/2018 05:00	0	34 - 34	232	233
DSS 54	Pedestal Metrology	08/21/2018 22:00	08/22/2018 05:00	0	34 - 34	233	234
DSS 24	LNA Maintenance	09/24/2018 00:00	09/27/2018 00:00	3	39 - 39	267	270
DSS 54	LNA Maintenance	11/19/2018 00:00	11/22/2018 00:00	3	47 - 47	323	326



Interplanetary Network Directorate (IND)
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DSN Downtime 2019

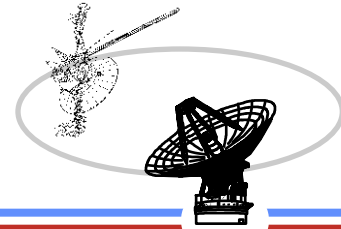
2019							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 54	Pedestal Metrology	01/22/2019 20:00	01/23/2019 07:00	0	04 - 04	22	23
DSS 54	Pedestal Metrology	01/23/2019 20:00	01/24/2019 07:00	0	04 - 04	23	24
DSS 24	XX/Ka Installation - Proposed	02/04/2019 15:00	04/26/2019 00:00	80	06 - 17	35	116
DSS 63	Pedestal Metrology	02/04/2019 20:00	02/05/2019 07:00	0	06 - 06	35	36
DSS 63	Pedestal Metrology	02/05/2019 20:00	02/06/2019 07:00	0	06 - 06	36	37
DSS 55	Pedestal Metrology	02/18/2019 20:00	02/19/2019 07:00	0	08 - 08	49	50
DSS 55	Pedestal Metrology	02/19/2019 20:00	02/20/2019 07:00	0	8-Aug	50	51
DSS 43	LNA Maintenance	03/04/2019 21:00	03/09/2019 21:00	5	10 - 10	63	68
DSS 24	Maser Replacement	03/11/2019 15:00	04/05/2019 23:00	25	11 - 14	70	95
DSS 34	LNA Maintenance	04/29/2019 21:00	05/02/2019 21:00	3	18 - 18	119	122
DSS 14	LNA Maintenance	05/06/2019 00:00	05/10/2019 23:00	5	19 - 19	126	130
DSS 55	LNA Maintenance	05/20/2019 00:00	05/23/2019 00:00	3	21 - 21	140	143
DSS 14	Ant Insp/TXR RF Characterization - Proposed	05/20/2019 15:00	05/21/2019 03:00	0	21 - 21	140	141
DSS 26	Ant Insp/TXR RF Characterization - Proposed	05/21/2019 15:00	05/22/2019 03:00	0	21 - 21	141	142
DSS 25	Ant Insp/TXR RF Characterization - Proposed	05/22/2019 15:00	05/23/2019 03:00	0	21 - 21	142	143
DSS 24	Ant Insp/TXR RF Characterization - Proposed	05/23/2019 15:00	05/24/2019 03:00	0	21 - 21	143	144
DSS 14	Ant Insp/TXR RF Characterization - Proposed	05/27/2019 15:00	05/28/2019 03:00	0	22 - 22	147	148
DSS 26	Ant Insp/TXR RF Characterization - Proposed	05/28/2019 15:00	05/29/2019 03:00	0	22 - 22	148	149
DSS 25	Ant Insp/TXR RF Characterization - Proposed	05/29/2019 15:00	05/30/2019 03:00	0	22 - 22	149	150
DSS 24	Ant Insp/TXR RF Characterization - Proposed	05/30/2019 15:00	05/31/2019 03:00	0	22 - 22	150	151
DSS 35	LNA Maintenance	06/03/2019 21:00	06/06/2019 21:00	3	23 - 23	154	157
DSS 25	LNA Maintenance	06/10/2019 00:00	06/13/2019 00:00	3	24 - 24	161	164
DSS 63	LNA Maintenance	07/29/2019 00:00	08/03/2019 00:00	5	31 - 31	210	215



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DSN Downtime 2019

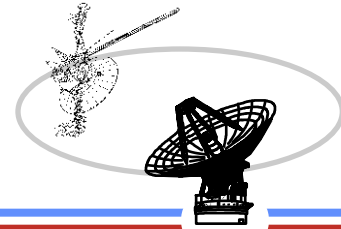
2019 cont.							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 63	Pedestal Metrology - NIB	07/29/2019 22:00	07/30/2019 05:00	0	31 - 31	210	211
DSS 63	Pedestal Metrology - NIB	07/30/2019 22:00	07/31/2019 05:00	0	31 - 31	211	212
DSS 54	Pedestal Metrology	08/13/2019 22:00	08/14/2019 05:00	0	33 - 33	225	226
DSS 54	Pedestal Metrology	08/14/2019 22:00	08/15/2019 05:00	0	33 - 33	226	227
DSS 55	Pedestal Metrology	08/26/2019 22:00	08/27/2019 05:00	0	35 - 35	238	239
DSS 55	Pedestal Metrology	08/27/2019 22:00	08/28/2019 05:00	0	35 - 35	239	240
DSS 65	Decommissioned	10/01/2019 00:00	01/01/2050 00:00	11050	40 - 52	274	1
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
DSS 24	LNA Maintenance	12/02/2019 00:00	12/05/2019 00:00	3	49 - 49	336	339



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DSN Downtime 2020

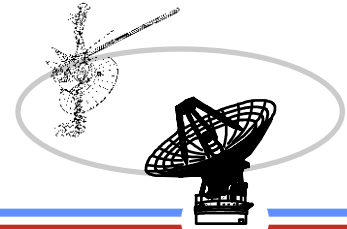
2020								
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY	
DSS 36	Ant Insp/TXR RF Characterization - Proposed	01/20/2020 22:00	01/21/2020 10:00	0	04 - 04	20	21	
DSS 43	Ant Insp/TXR RF Characterization - Proposed	01/21/2020 22:00	01/22/2020 10:00	0	04 - 04	21	22	
DSS 34	Ant Insp/TXR RF Characterization - Proposed	01/22/2020 22:00	01/23/2020 10:00	0	04 - 04	22	23	
DSS 35	Ant Insp/TXR RF Characterization - Proposed	01/23/2020 22:00	01/24/2020 10:00	0	04 - 04	23	24	
DSS 36	Ant Insp/TXR RF Characterization - Proposed	01/27/2020 22:00	01/28/2020 10:00	0	05 - 05	27	28	
DSS 43	Ant Insp/TXR RF Characterization - Proposed	01/28/2020 22:00	01/29/2020 10:00	0	05 - 05	28	29	
DSS 34	Ant Insp/TXR RF Characterization - Proposed	01/29/2020 22:00	01/30/2020 10:00	0	05 - 05	29	30	
DSS 35	Ant Insp/TXR RF Characterization - Proposed	01/30/2020 22:00	01/31/2020 10:00	0	05 - 05	30	31	
DSS 63	El Bearing Replacement	04/13/2020 06:00	05/22/2020 17:00	39	16 - 21	104	143	
DSS 14	20Kw XMTR Replacement	06/15/2020 16:00	09/19/2020 00:00	95	25 - 38	167	263	



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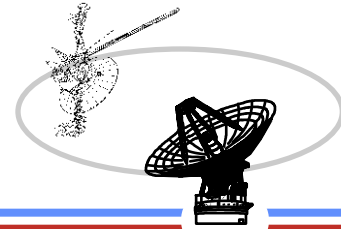


Future assets new/upgrades

- ❑ 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



Resource Allocation Planning Service



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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	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	10/01/24
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	09/01/17	09/01/17	✓	✓	✓	N/A	N/A	N/A	✓
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	10/01/22
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*	34B1	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	10/01/20
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: 10/5/2015

✓ ✓ ✓ = Capability Recently Exists

✓ = Capability Exists

* = To Be Commissioned