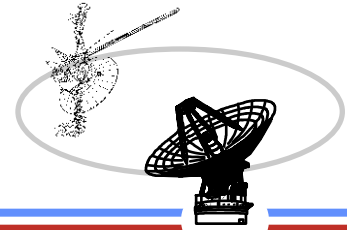




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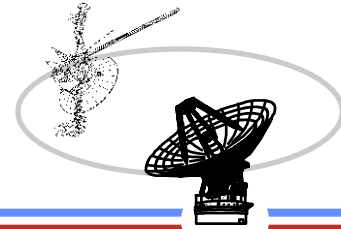
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DSN Antenna Downtime Status and Forecast





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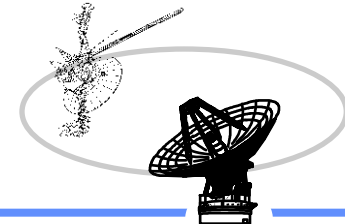


Antenna Downtime Status and Forecast

Downtime`	Antenna	Start Date	End Date	Weeks	POC	Notes
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.
Pedestal Metrology	DSS-63	Feb 2015 Feb 2016 Feb 2017	Aug 2015 July 2016 Aug 2017	34 4 & 29 7 & 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.
Track Survey	DSS-15	Apr 14 2015 May 20 2015	Apr 14 2015 May 20 2015	16 21	Mark Alvarez, Tim Sink	Requested time for track survey to verify the track is still in alignment – completed , Added additional block of time in week 21..
Pedestal Metrology	DSS-55	Jun 2015	Jul 2015	24, 30	David Munoz Muchon Bernardo	Requesting 2 nights each week, weeks 30 & 31 requesting M-Th 2 night each for both antenna. 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.
	DSS-54	Jun 2015	Jul 2015	26, 30, 36	Lopez	



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Antenna Downtime Status and Forecast

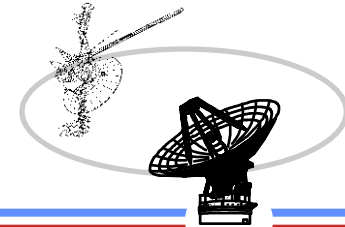
Downtime	Antenna	Start Date	End Date	Weeks	POC	Notes
NMC D3.2 SPS 1.4 I&T, AT Install/SOAK And D3.3 Install/SOAK	CDSCC	Feb 2015	Dec 2015	20, 24, 31, 45	Jim Buckley Shirley Cizmar, Dave Taylor	Week 16 changed from ALB-SPS Software install to I&T Weeks 20 & 21 changed from NMC D3.3 I&T to NMC D3.2/SPS 1.4 install. Week 45 and 50 changed from SOAK to D3.3 install. These tasks may require night hours. Week 16 NMC I&T has been completed
	GDSCC	April 2015	Dec 2015	16, 19, 30, 40		
	MDSCC	May 2015	Dec 2015	21, 32, 50		
NMC 4-MSPA I&T, AT SOAK Install, Ops Install	GDSCC	Feb 2016	Aug 2016	6, 15,		Requesting 8-hour downtimes in 2016 for NMC 4-MSPA tasks
	CDSCC	May 2016	Aug 2016	13 & 31		
	MDSCC	May 2016	June 2016	19 & 23		
XKR Feed Cone Ladder	DSS-14	Sept 2015	Sept 2015	39	David Allen	Requesting 3 days to install the XKR Feed Cone Ladder
Power Transfer	DSS-24, 25, 26 (Apollo)	Oct 2015	Oct 2015	42	Richard Fleig	This 16-hour Power Transfer downtime was requested by OE. It is scheduled at Apollo Valley during off-shift hours in late 2015
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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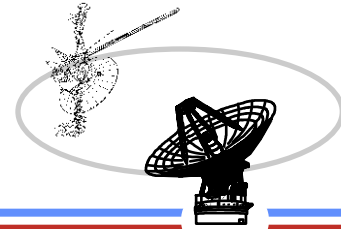
Antenna Downtime Status and Forecast

Downtime	Antenna	Start Date	End Date	Weeks	POC	Notes
70M Tune-up and calibration Klystron Install	DSS-43	Mar 18, 2015	Apr 3, 2015	12 – 14	John Phillips Dave Taylor	The Tune-up Calibrations are In preparation for NHPC Pluto Encounter. Two days requested for Klystron installation Completed,
		April 2015	April 2015	15		
70M Tune-up and calibration	DSS-63	May 11, 2015	May 23, 2015	20 & 21		May grouting/HBA refurbishment scheduled as NIB.
Complex downtime for Power House Commission	CDSCC	Apr 2015	Apr 2015	15 (1)	John Phillips, Cameron Lyon Dave Taylor	Downtime for week 15 Power House Commission was completed during the first block. Removed 2nd block.. Added weeks 19, 35, 41, and 50 of 2015 and week 14 of 2016 The complex submitted a list of six new downtimes they would like in 2015/2016. There is a possible issue with DSCO & MMS launches in early 2015. The complex is requesting at least 1 6hour downtime per month possibly during night hours
		May 2015	May 2015	19		
		Aug 2015	Aug 2015	35?		
		Oct 2015	Oct 2015	41		
		Dec 2015	Dec 2015	50		
Apr 2016	Apr 2016	14				
Antenna Inspections/ TXR RF Characterization	GDSCC	Apr 2015	Apr 2015	17,18&19	Dave Taylor Andrew Brooks Harout Matossian	Added DSS-13 & 28. 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.
		Apr 2018	Apr 2018	15 & 16		
	CDSCC	Jan 2016	Jan 2016	03 & 04		
	MDSCC	Apr 2017	Apr 2017	17 & 18		



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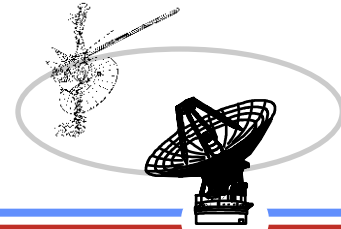


Antenna Downtime Status and Forecast

Downtime	Antenna	Start Date	End Date	Weeks	POC	Notes
Encoder Tape Clean	DSS-35	Mar 2015	Mar 2015	14	Pete Hames	Encoder cleaning will be NIB to Maintenance One week of downtime M-F requested by Office 925 to replace Encoder Cover.
Encoder Cover Replacement	DSS-35	May 2015	May 2015	20		Encoder cover not ready, moved downtime to Depot Level Maintenance and shortened length
Grouting	DSS-63	May 2015	May 2015	20 & 21	Dave Taylor, David Munoz Mochon, Bernardo Lopez, Asim Sehic	May 2015 grouting will be NIB to 70m Tune-up/Cal May and Aug 2015 are only 2 weeks in support of NHPC This was changed to DLM and moved to DLM downtime activity.
		Aug 2015	Aug 2015	32 & 33		
		Feb 2016	Mar 2016	05 – 09		
		Jul 2016	Aug 2016	30 – 34		
		Feb 2017	Apr 2017	08 – 17		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 by approximately 50 hours due to Cas. activities. Five weeks is scheduled but may need additional time. For the 2017 grouting, this is their first attempt on the 120 degree regrout. There will be discussions about using weekends however, it is not currently in the budget. Per mission requirements in 2017 time has been reduced to 10 weeks.. The SHMT will be worked on 11/3, Engineer will be there in early November. More information will be available after the Oct/Nov grouting to determine the Feb & Jul 2016 status in relation to actual time needed. Needs to increase by one week to accommodate all NIB tasks.



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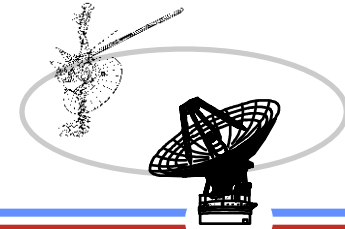


Antenna Downtime Status and Forecast

Downtime	Antenna	Start Date	End Date	Weeks	POC	Notes
DCD v.5.1 software installation	GDSCC/DSOC	Aug, 2015	Aug 2015	32	Anna Fan, Sheila Garrett	All complexes require installation of DCD 5.1. with a minimum of 6 hours. Beginning with Goldstone, with 30 day separation from the MDSCC install, lastly the CDSCC install. Requires a 2 week separation from the 2 nd and 3 rd install. Removed back-up task in week 41
	MDSCC	Sep 2015	Sep 2015	37		
	CDSCC	Sep 2015	Sep 2015	39		
Depot Level Maintenance	DSS-35	May 11, 2015	May 14, 2015	20	Paul Richter Bernardo Lopez,	Changed from Encoder Cover Installation
	DSS-63	Aug 3, 2015	Aug 14, 2015	32 & 33		DSS-63 DLM changed from grouting activity.
	DSS-43	Aug 18, 2015	Sep 9, 2015	34 – 36	John Phillips	DSS-43 Tune-up/Calibration changed to DLM and extended 1 extra week to 36.
	DSS-34	Nov 2015	Dec 2015	49 & 50		DSS-34 moved to December time frame with CDSCC concurrence
AZ Track Replacement	DSS-55	Aug 2015	Nov 2015	34 – 47	Pam Rothman Daniel Olson	Begin DOY 230 vice 229 due to CAS activities. Requested to extend to week 47. This is NIB to XX/Ka Installation.
	DSS-25	Feb 2018	Apr 2018	05 - 14		
APCA	DSS-14	Mar 7, 2016	Jun 10, 2016	10 – 23	Anna Fan, Barzia Tehrani	DSS-14 extended an additional 2 weeks Doing everything possible to fit all task in time available. Need to complete prior to JNO JOI. Suggest doing a demo with JNO prior to RTS. DSS-43 extended an additional 3 weeks on the back end DSS-63 extended an additional 3 weeks on the front end,
	DSS-43	Oct 30, 2017	Feb 9, 2018	44 – 06		
	DSS-63	Apr 9, 2018	Jul 20, 2018	15 – 29		



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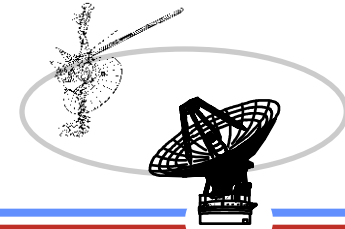
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Antenna Downtime Status and Forecast

Downtime	Antenna	Start Date	End Date	Weeks	POC	Notes
SWUPS Installation	CDSCC	May 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. This might be combined with Powerhouse Commission into 1 task. A vendor has to been selected and has agreed to the dates. Contract is being signed and holding contractor to delivery date.
		May 24 2016	May 24 2016	21		
		May 26 2016	May 26 2016	21		
Ka2 Tune-up	DSS-54	Jan 23, 2017	Feb 3, 2017	04 & 05	Wendy Hodgin	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 There is a task to build 4 th Ka2/S-Band capabilities.
	DSS-24	Mar 13, 2017	Mar 24, 2017	11 & 12		
	DSS-34	May 14, 2017	May 26, 2017	20 & 21		
XX/Ka Installation	DSS-25	Jan 2018	Apr 2018	01 – 14	Wendy Hodgin	XX/Ka requires 14 weeks - AZ Track will be NIB in weeks 05-14
	DSS-24	Apr 30, 2018	Jul 9, 2018	18 – 27		Needs to happen as soon after JNO end of mission as possible. DSS-24 is not funded at this time, but still in the plan to proceed with downtime.



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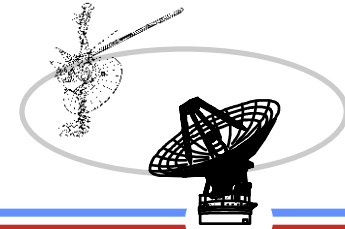
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Antenna Downtime Status and Forecast

Downtime	Antenna	Start Date	End Date	Weeks	POC	Notes
Pedestal Rehab	DSS-54	Nov 4, 2019	Apr 30, 2021	45 – 17	Bernardo Lopez	This Rehab could take 15 – 18 months to complete. Servo Replacement and Transmitter Replacement will be NIB. DSS-56 will become operational October 1, 2019 with Ka2/S-Band feed. If DSS-54 is not available for JWST, the Ka2 will be installed at DSS-55. If we wait for DSS-56 to become operational and DSS-54 can operate until then, DSS-54 will start Pedestal Rehab the first weeks of Nov 2019 and end the last week of April 2021. Servo and Transmitter Replacements will be NIB
EI Bearing Replacement	DSS-63	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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Proposed LNA Maintenance Schedule for 2016

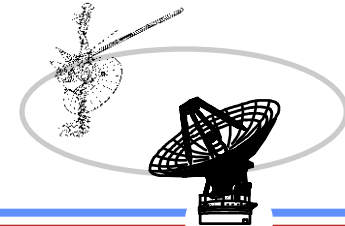
Antenna	Start Date	End Date	Week	STATUS	Number of Days	Notes/Planned 2015 dates	Number of months since last LNA
DSS-25	Jan	Jan	03	Proposed	3	Feb, Jul, Oct of 2015	11 months
DSS-43	Jan	Jan	04	Proposed	5	Mar, Jun, Oct, Nov, Dec of 2015	10 months
DSS-63	Feb	Feb	06	Proposed	5	Jan, Nov of 2015 During grouting	13 months
DSS-14	Mar	Mar	10	Proposed	5	Dec of 2014 During APCA	15 months
DSS-45	Apr	Apr	17	Proposed	4	Feb, Apr, Jul of 2015	14 months
DSS-24	Jun	Jun	24	Proposed	3	Apr, Aug of 2015 After DSS-14 APCA	14 months
DSS-54	Jul	Jul	25	Proposed	3	Jun 2015	12 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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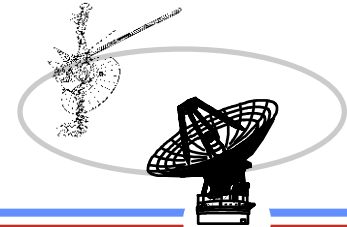


70m Major Downtimes 2015 - 2020

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



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	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	TGO ExoMars Launch								Insight Launch MarCo Launch Inspire Launch - Placeholder												JUNO JOI JUNO GDSCC/CAN Array JUNO JOI Cleanup				DRX Launch				Insight EDL				TGO ExoMars MOI/EDL				JUNO PRM GDSCC Array																
	CAS TITAN Flyby				CAS TITAN Bistatic Exp				CAS TITAN Flyby				CAS TITAN Flyby				CAS TITAN Bistatic Exp				CAS TITAN Flyby				CAS TITAN Flyby				CAS TITAN Flyby				CAS TITAN Flyby				CAS TITAN Flyby				CAS TITAN Bistatic Exp CAS Ring Occ												
Key Project Events Legend: ■ Level 1 ■ Level 2 ■ Level 3 ■ All Others ■ TBD Station downtimes less than 24 hours in duration																																																					
GDSCC	D25 LNA 3days								D14 LNA 5days NIB D14 APCA												D24 LNA 3days				D15 LNA 3days																												
CDSCC	D43 LNA 5days				D34,35,43,45 Ant Insp/TXR RF Characterization				D36 Modkit Inventory/Installation/Checkout				D45 LNA 4days				D36 System Operations Performance Testing				D36 System Integration Testing				D36 Operational				D36 HEF Closure				D34 LNA 3days				D35 LNA 50 hours																
MDSCC	D63 Pedestal Metrology - 2 nights D63 Grouting				D63 LNA 5days - NIB												D36 Subsystem Acceptance Testing				D36 System Integration Testing				D36 System Operations Performance Testing				D36 Operational				D36 HEF Closure				D34 LNA 3days				D35 LNA 50 hours												
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	

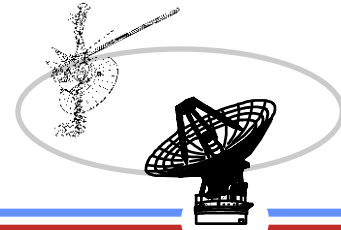
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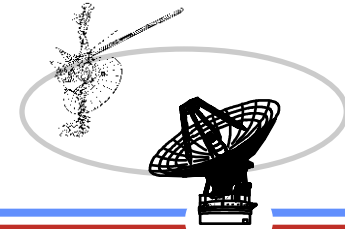
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MDSCC	D54 Ka2 Tune-up - Proposed																																			D63 Grouting - Proposed																																			D63 Pedestal Metrology																																			D63 Pedestal Metrology																																		
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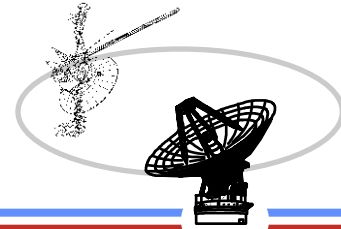
- 2018 -

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

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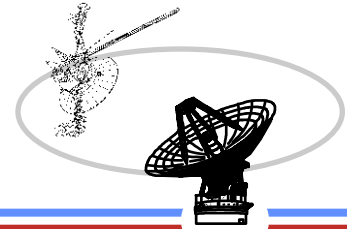
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2019 Key Project Events					SPP Beacon				SPP Solar Enc								ORX Tag 1 Reh				Tag 1				SPP Solar Enc								SPP Venus Flyby																				
																									HYB2 Target Asteroid 1999 Ju3 Departure																												
Key Project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

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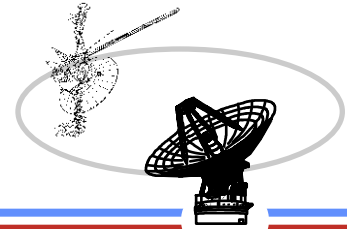
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Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	
2020 Key Project Events	Mars 2020 Launch																											HYB2 Earth Re-Entry																									
	Key Project Events Legend: Level 1 Level 2 Level 3 All Others TBD 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

Revised: May 4, 2015

Downtime May 5, 2015 16



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- 2021 -

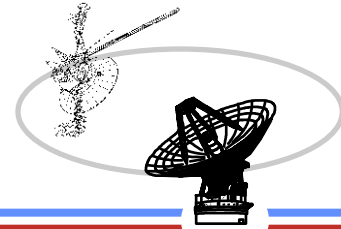
	January					February				March				April				May				June				July				August				September				October				November				December						
Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
2021 Key Project Events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

Revised: April 2, 2015

Downtime May 5, 2015 17



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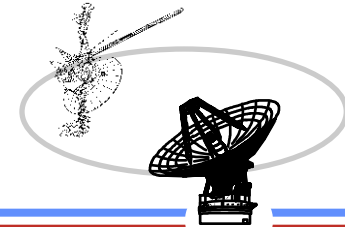
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DSN Downtime 2014/2015

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



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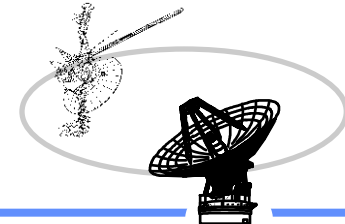
DSN Downtime 2015

2015							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 25	Antenna Inspection/TXR RF Characterization	04/30/2015 15:00	05/01/2015 10:00	1	18 - 18	120	121
DSS 15	Antenna Inspection/TXR RF Characterization	05/01/2015 15:00	05/02/2015 03:20	1	18 - 18	121	122
SPC 40	Complex Powerhouse Upgrade	05/06/2015 05:20	05/06/2015 11:20	0	19 - 19	126	126
SPC 10	NMC D3.3 I & T	05/09/2015 22:55	05/10/2015 04:55	0	19 - 19	129	130
DSS 63	70m Tune-up/Calibration	05/11/2015 06:00	05/22/2015 17:00	11	20 - 21	131	142
DSS 63	Grouting - NIB	05/11/2015 06:00	05/22/2015 17:00	11	20 - 21	131	142
DSS 35	Depot Level Maintenance	05/11/2015 22:00	05/14/2015 05:00	2	20 - 20	131	134
DSS 15	Track Survey	05/20/2015 04:25	05/20/2015 13:05	0	21 - 21	140	140
SPC 60	NMC D3.2 Install	05/26/2015 22:00	05/27/2015 05:00	0	22 - 22	146	147
SPC 40	NMC D3.2 Install	06/02/2015 05:35	06/02/2015 12:35	0	23 - 23	153	153
DSS 55	Pedestal Metrology	06/09/2015 21:00	06/10/2015 07:00	0	24 - 24	160	161
DSS 55	Pedestal Metrology	06/10/2015 21:00	06/11/2015 05:30	0	24 - 24	161	162
SPC 40	NMC D3.3 I & T	06/13/2015 01:00	06/13/2015 07:00	0	24 - 24	164	164
DSS 54	Pedestal Metrology	06/22/2015 23:15	06/23/2015 07:00	0	26 - 26	173	174
DSS 54	Pedestal Metrology	06/23/2015 21:30	06/24/2015 06:10	0	26 - 26	174	175
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 12:15	0	32 - 32	219	219



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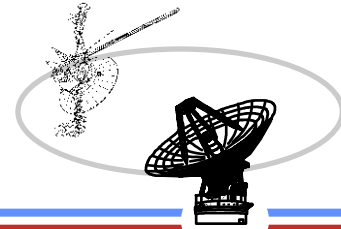


DSN Downtime 2015

2015							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
GCF 20	DSOC DCD V5.1	08/07/2015 08:35	08/07/2015 12:15	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
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
SPC 40	Complex Powerhouse Upgrade	08/26/2015 21:00	08/27/2015 03:00	0	35 - 35	238	239
DSS 54	Pedestal Metrology	09/02/2015 21:00	09/03/2015 05:00	0	36 - 36	245	246
DSS 54	Pedestal Metrology	09/03/2015 21:00	09/04/2015 05:00	0	36 - 36	246	247
SPC 60	DCD V5.1	09/09/2015 07:00	09/09/2015 13:00	0	37 - 37	252	252
DSS 14	XKR Feed Cone Ladder Installation	09/21/2015 15:00	09/24/2015 23:00	3	39 - 39	264	267
SPC 40	DCD V5.1	09/24/2015 22:00	09/25/2015 04:00	0	39 - 39	267	268
SPC 10	NMC D3.3 Install/SOAK	10/03/2015 00:00	10/03/2015 06:00	0	40 - 40	276	276
SPC 40	Complex Powerhouse Upgrade	10/07/2015 21:00	10/08/2015 03:00	0	41 - 41	280	281
DSS 24	Power Transfer	10/15/2015 16:00	10/16/2015 08:00	1	42 - 42	288	289
DSS 25	Power Transfer	10/15/2015 16:00	10/16/2015 08:00	1	42 - 42	288	289
DSS 26	Power Transfer	10/15/2015 16:00	10/16/2015 08:00	1	42 - 42	288	289
SPC 40	NMC D3.3 Install	11/07/2015 00:00	11/07/2015 06:00	0	45 - 45	311	311
DSS 34	Depot Level Maintenance	11/30/2015 21:00	12/11/2015 05:00	10	49 - 50	334	345
SPC 40	Complex Powerhouse Upgrade	12/11/2015 21:00	12/12/2015 03:00	0	50 - 50	345	346
SPC 60	NMC D3.3 Install	12/12/2015 00:00	12/12/2015 06:00	0	50 - 50	346	346
SPC 10	G86 Power Work	12/17/2015 14:00	12/18/2015 06:00	1	51 - 51	351	352



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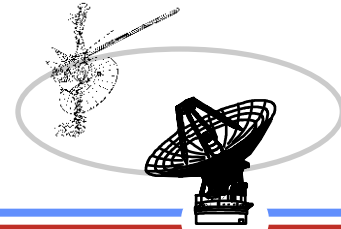
DSN Downtime 2016

2016							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 25	LNA Maintenance	01/18/2016 00:00	01/21/2016 00:00	3	03 - 03	18	21
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 43	LNA Maintenance	01/25/2016 00:00	01/30/2016 00:00	5	04 - 04	25	30
DSS 63	Pedestal Metrology	01/25/2016 19:00	01/26/2016 05:00	0	04 - 04	25	26
DSS 43	Ant Insp/TXR RF Characterization	01/26/2016 22:00	01/27/2016 06:00	0	04 - 04	26	27
DSS 63	Pedestal Metrology	01/26/2016 22:00	01/27/2016 07:00	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
DSS 63	Grouting	02/01/2016 06:00	03/04/2016 17:00	32	05 - 09	32	64
DSS 63	LNA Maintenance NIB	02/08/2016 00:00	02/13/2016 00:00	5	06 - 06	39	44
SPC 10	NMC 4 - MSPA I&T	02/13/2016 00:00	02/13/2016 08:00	0	06 - 06	44	44
DSS 14	LNA Maintenance - NIB	03/07/2016 00:00	03/12/2016 00:00	5	10 - 10	67	72
DSS 14	APCA	03/07/2016 15:00	06/11/2016 00:00	95	10 - 23	67	163
SPC 40	NMC 4 - MSPA I&T	04/01/2016 00:00	04/01/2016 08:00	0	13 - 13	92	92
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
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
SPC 40	SWUPS Installation	05/24/2016 21:00	05/25/2016 09:00	0	21 - 21	145	146



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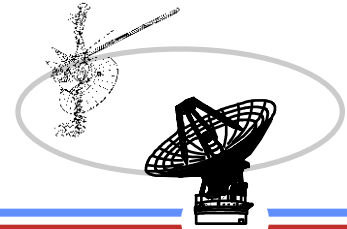


DSN Downtime 2016

2016							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
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 24	LNA Maintenance	06/13/2016 00:00	06/16/2016 00:00	3	24 - 24	165	168
DSS 54	LNA Maintenance	06/20/2016 00:00	06/23/2016 00:00	3	25 - 25	172	175
DSS 63	Pedestal Metrology	07/18/2016 22:00	07/19/2016 05:00	0	29 - 29	200	201
DSS 63	Pedestal Metrology	07/19/2016 20:00	07/20/2016 05:00	0	29 - 29	201	202
DSS 63	Grouting	07/25/2016 06:00	08/26/2016 17:00	32	30 - 34	207	239
SPC 10	NMC 4 - 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	08/08/2016 00:00	08/11/2016 00:00	3	32 - 32	221	224
DSS 34	LNA Maintenance	10/31/2016 00:00	11/03/2016 00:00	3	44 - 44	305	308
DSS 65	LNA Maintenance	11/07/2016 00:00	11/11/2016 00:00	4	45 - 45	312	316
DSS 35	LNA Maintenance	12/05/2016 00:00	12/08/2016 02:00	3	49 - 49	340	343
DSS 55	LNA Maintenance	12/12/2016 00:00	12/15/2016 00:00	3	50 - 50	347	350



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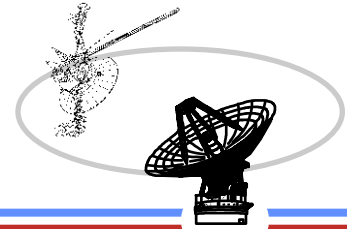
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DSN Downtime 2017

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

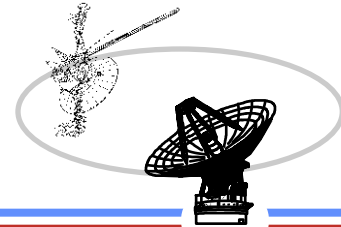
2018							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 25	XX/Ka Installation	01/04/2018 15:00	04/07/2018 00:00	92	01 - 14	4	97
DSS 25	AZ Track Replacement - NIB	01/29/2018 15:00	04/07/2018 00:00	67	05 - 14	29	97
DSS 14	Ant Insp/TXR RF Characterization - Proposed	04/09/2018 15:00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



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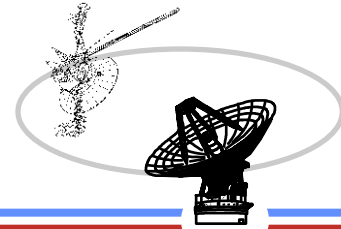


DSN Downtime 2019

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



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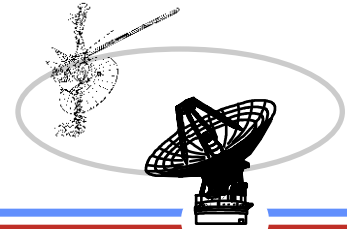
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DSN Downtime 2020

2020							
Site	Details	Start	End	Duration (Days)	Weeks	Start DOY	End DOY
DSS 63	El Bearing Replacement	04/20/2020 07:00	07/10/2021 17:00	446	17 - 27	111	191



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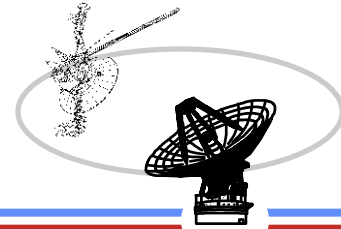
Future assets new/upgrades

- ❑ DSS-26 80kW Installation 2014 – 2015
 - ❑ 80kW arrived at Goldstone in week 04
 - ❑ DSRR June 9, 2015, week 24

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



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



Antenna Downtime Status and Forecast

DSN Resource Implementation Planning Matrix by Complex

Complex	Station	Subnet	S-Band		X-Band		Ka-Band		Ka Phase 2	X-Band ACQ AID	80KW
			Down	Up	Down	Up	Down	Up			
10	DSS-23*	34B2	N/A	N/A	10/01/24	10/01/24	10/01/24	10/01/24	N/A	N/A	N/A
10	DSS-24	34B1	✓	✓	✓	✓	N/A	N/A	✓	✓	N/A
10	DSS-25	34B2	N/A	N/A	✓	✓	✓	✓	N/A	N/A	N/A
10	DSS-26	34B2	N/A	N/A	✓	✓	✓	N/A	N/A	N/A	10/01/15
10	DSS-15	34HEF	✓	✓	✓	✓	N/A	N/A	N/A	N/A	N/A
10	DSS-14	70M	✓	✓	✓	✓	N/A	N/A	N/A	N/A	N/A
40	DSS-33*	34B2	N/A	N/A	10/01/22	10/01/22	10/01/22	N/A	N/A	N/A	N/A
40	DSS-34	34B1	✓	✓	✓	✓	✓	N/A	✓	✓	N/A
40	DSS-35*	34B2	N/A	N/A	✓	✓	✓	N/A	N/A	N/A	N/A
40	DSS-36*	34B2	N/A	N/A	10/01/16	10/01/16	10/01/16	N/A	N/A	N/A	N/A
40	DSS-45	34HEF	✓	✓	✓	✓	N/A	N/A	N/A	N/A	N/A
40	DSS-43	70M	✓	✓	✓	✓	N/A	N/A	N/A	N/A	N/A
60	DSS-53*	34B2	N/A	N/A	10/01/20	10/01/20	10/01/20	N/A	N/A	N/A	N/A
60	DSS-54	34B1	✓	✓	✓	✓	✓	N/A	✓	✓	N/A
60	DSS-55	34B2	N/A	N/A	✓	✓	✓	N/A	N/A	N/A	N/A
60	DSS-56*	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: 4/1/2015

✓ ✓ ✓ = Capability Recently Exists

✓ = Capability Exists

* = To Be Commissioned