

## S90 Rev 220 Timeline for RSS Dione D5 Gravity Observation and Gravity Science Enhancements

2015/228-231, Sun-Wed August 16-19  
Dione Closest Approach: 2015/229-19:55 ERT

OWLT = ~01:22, RTLT = ~02:44

	Goldstone DSS-25 related activities
	Goldstone DSS-14 related activities
	Canberra DSS-35 related activities
	Madrid DSS-55 related activities

RSR = Radio Science Receiver (open-loop receiver)    RSSG = Radio Science Systems Group    GSE = Gravity Science Enhancement  
RSSG: Note telemetry bit rate changes and playback periods. Set RSR fgain accordingly and do not change during observation

Time ERT	Time PDT	Event	Comments
		X-TWTA ON	On since DOY 160
<b>DOY 228, Sunday August 16 PDT</b>			
20:00:00	1:00 PM	DSS-25 Pre-Cal	Pass# 0228. Cassini specific 4th-order pointing model
20:30:00	1:30 PM	DSS-14 Pre-Cal	Pass# 0228
21:15:00	2:15 PM	RSSG: Begin DSS-25 RSR recordings (X & Ka)	
21:15:00	2:15 PM	RSSG: Begin DSS-14 RSR recordings (X)	
21:30:00	2:30 PM	DSS-25 BOT	
21:30:00	2:30 PM	DSS-14 BOT	
21:30:00	2:30 PM	Ka-band ON (KEX & Ka-TWTA)	ON until end of gravity third segment
21:30:00	2:30 PM	<b>Begin Inbound GSE</b>	
21:30:00	2:30 PM	DSS-25 Acquire 1-way X- and Ka-band signals	
		DSS-25 Enable Monopulse	At Ka-band 1-way acquisition
21:30:00	2:30 PM	DSS-14 Acquire 1-way X-band signal	
21:30:00	2:30 PM	RSSG: Note telemetry B/R 66360	
21:45:00	2:45 PM	DSS-14 Transmitter ON	18 kW, Ramped uplink predicts
22:15:00	3:15 PM	RSSG: Note telemetry B/R change to 99541	
23:44:59	4:44 PM	RSSG: Note telemetry B/R change 124426	
<b>DOY 229</b>			
00:26:00	5:26 PM	DSS-25 Disable Monopulse without clearing offsets	Before mode switch to 3-way
00:28:56	5:28 PM	DSS-25 Acquire 3-way X- and Ka-band signals w/ DSS-14	
		DSS-25 Enable Monopulse	At Ka-band 3-way acquisition
00:28:56	5:28 PM	DSS-14 Acquire 2-way X-band signal	
03:31:00	8:31 PM	DSS-14 Transmitter OFF	
04:00:01	9:00 PM	RSSG: Note telemetry B/R change 99541	
05:30:01	10:30 PM	RSSG: Note telemetry B/R change 66360	
05:45:00	10:45 PM	DSS-35 Pre-Cal	Pass# 0229. Cassini specific 4th-order pointing model
05:45:00	10:45 PM	RSSG: Note telemetry B/R 1896	
06:15:00	11:15 PM	<b>End Inbound GSE</b>	

Time ERT	Time PDT	Event	Comments
06:15:00	11:15 PM	DSS-25 EOT	
		DSS-25 Disable Monopulse	At loss of Ka-band signal
06:15:00	11:15 PM	DSS-14 EOT	
06:25:00	11:25 PM	<i>RSSG: End DSS-25 &amp; DSS-14 RSR recordings</i>	
06:30:00	11:30 PM	DSS-25 End of Post-Cal	
06:30:00	11:30 PM	DSS-14 End of Post-Cal	
<b>DOY 229, Monday August 17 PDT</b>			
07:15:00	12:15 AM	DSS-35 BOT	Spacecraft off Earth point. No signal until 10:15:02 ERT
07:31:00	12:31 AM	DSS-35 Transmitter ON	18 kW, Ramped uplink predicts
09:55:00	2:55 AM	RSSG: Begin DSS-35 RSR recordings (X & Ka)	
10:15:02	3:15 AM	Begin 1st Segment - Begin Coherent Downlink	
10:15:02	3:15 AM	DSS-35 Acquire 2-way X- & Ka-band signals	
		DSS-35 Enable Monopulse	When requested by RSSG
10:15:03	3:15 AM	<i>RSSG: Note telemetry B/R change to 27650</i>	Expect decrease in signal power of about 6.45 dB
10:31:59	3:31 AM	DSS-35 Transmitter OFF	
12:30:04	5:30 AM	<i>RSSG: Note telemetry B/R change to 22120</i>	
12:45:00	5:45 AM	DSS-55 Pre-Cal	Pass# 0229. Cassini specific 4th-order pointing model
13:16:03	6:16 AM	End 1st Segment - End Coherent Downlink	
		Begin s/c turn from Earth point	
		DSS-35 Disable Monopulse	At loss of Ka-band signal
13:16:04	6:16 AM	<i>RSSG: Note telemetry B/R change to 1896</i>	
13:30:00	6:30 AM	<i>RSSG: End DSS-35 RSR recordings</i>	
13:45:00	6:45 AM	DSS-35 EOT	
14:00:00	7:00 AM	DSS-35 End of Post-Cal	
14:15:00	7:15 AM	DSS-55 BOT	Spacecraft off Earth point. No signal until 17:15:04 ERTz
14:30:56	7:30 AM	DSS-55 Transmitter ON	18 kW, Ramped uplink predicts
17:00:00	10:00 AM	<i>RSSG: Begin DSS-55 RSR recordings (X &amp; Ka)</i>	
17:15:04	10:15 AM	Begin 2nd Segment - Begin Coherent Downlink	
17:15:04	10:15 AM	Spacecraft Earth pointed	
17:15:04	10:15 AM	DSS-55 Acquire 2-way X- & Ka-band signals	
		DSS-55 Enable Monopulse	When requested by RSSG
17:25:05	10:25 AM	<i>RSSG: Note telemetry B/R change to 22120</i>	Expect decrease in signal power of about 6.45 dB
19:31:55	12:31 PM	DSS-55 Transmitter OFF	
19:50:00	12:50 PM	DSS-25 Pre-Cal	Pass# 0229. Cassini specific 4th-order pointing model
19:50:05	12:50 PM	<i>RSSG: Note telemetry B/R change to 1896</i>	Expect increase in signal power of about 6.45 dB
19:55:00	12:55 PM	<b>Dione D5 Closest Approach</b>	Altitude 475 km
20:00:07	1:00 PM	<i>RSSG: Note telemetry B/R change to 22120</i>	Expect decrease in signal power of about 6.45 dB
21:15:00	2:15 PM	<i>RSSG: Begin DSS-25 RSR recordings (X &amp; Ka)</i>	
21:15:08	2:15 PM	<i>RSSG: Note telemetry B/R change to 14220</i>	
21:20:00	2:20 PM	DSS-25 BOT	
21:20:00	2:20 PM	DSS-25 Acquire 3-way X- and Ka-band signals (w/ DSS-55)	
		DSS-25 Enable Monopulse	When requested by RSSG. EL 6.73 degrees. 10 degrees at 21:38
22:10:53	3:10 PM	DSS-25 Transmitter ON	18 kW, Ramped uplink predicts

Time ERT	Time PDT	Event	Comments
22:16:07	3:16 PM	End 2nd Segment - End Coherent Downlink	
22:16:07	3:16 PM	Begin s/c turn from Earth point	
		DSS-55 Disable Monopulse	At loss of Ka-band signal
		DSS-25 Disable Monopulse	At loss of Ka-band signal
22:16:08	3:16 PM	RSSG: Note telemetry B/R change to 1896	
22:25:00	3:25 PM	RSSG: End DSS-55 RSR recordings (X & Ka)	
22:25:00	3:25 PM	RSSG: End DSS-25 RSR recordings (X & Ka)	
22:30:00	3:30 PM	DSS-55 EOT	
		DSS-55 Disable Monopulse	At loss of Ka-band signal
22:45:00	3:45 PM	DSS-55 End of Post-Cal	
DOY 230			
00:40:00	5:40 PM	RSSG: Begin DSS-25 RSR recordings (X & Ka)	
00:55:08	5:55 PM	Begin 3rd Segment - Begin Coherent Downlink	
00:55:08	5:55 PM	Spacecraft Earth pointed	
00:55:08	5:55 PM	DSS-25 Acquire 2-way X- & Ka-band signals	
		DSS-25 Enable Monopulse	When requested by RSSG
00:55:09	5:55 PM	RSSG: Note telemetry B/R change to 27650	Expect decrease in signal power of about 6.45 dB
01:11:52	6:11 PM	DSS-25 Transmitter OFF	
03:00:11	8:00 PM	RSSG: Note telemetry B/R change to 22120	
03:56:09	8:56 PM	End 3rd Segment - End Coherent Downlink	
03:56:09	8:56 PM	Begin s/c turn from Earth point	
		DSS-25 Disable Monopulse	At loss of Ka-band signal
03:56:10	8:56 PM	RSSG: Note telemetry B/R change to 1896	
03:56:11	8:56 PM	Ka-band OFF	
04:15:00	9:15 PM	RSSG: End DSS-25 RSR recordings (X & Ka)	
04:30:00	9:30 PM	DSS-25 EOT	
04:45:00	9:45 PM	DSS-25 End of Post-Cal	
DOY 230, Tuesday August 18 PDT			
19:50:00	12:50 PM	DSS-25 Pre-Cal	Pass# 0230. Cassini specific 4th-order pointing model
20:35:00	1:35 PM	DSS-14 Pre-Cal	Pass# 0230
21:05:00	2:05 PM	RSSG: Begin DSS-25 RSR recordings (X & Ka)	
21:15:00	2:15 PM	Ka-band ON (KEX & Ka-TWTA)	On until end of GSE
21:20:00	2:20 PM	RSSG: Begin DSS-14 RSR recordings (X)	
21:20:00	2:20 PM	DSS-25 BOT	
21:20:00	2:20 PM	<b>Begin Outbound GSE</b>	
21:20:00	2:20 PM	DSS-25 Acquire 1-way X- and Ka-band signals	
		DSS-25 Enable Monopulse	At Ka-band 1-way acquisition
21:35:00	2:35 PM	DSS-14 BOT	
21:35:00	2:35 PM	DSS-14 Acquire 1-way X-band signal	
21:35:18	2:35 PM	RSSG: Note telemetry B/R 66360	Expect decrease in signal power of about 6.45 dB
21:40:00	2:40 PM	DSS-25 Transmitter ON	18 kW, Ramped uplink predicts
21:50:19	2:50 PM	RSSG: Note telemetry B/R change to 82951	
22:15:18	3:15 PM	RSSG: Note telemetry B/R change 99541	
23:00:19	4:00 PM	RSSG: Note telemetry B/R change 110601	

Time ERT	Time PDT	Event	Comments
<b>DOY 231</b>			
00:00:19	5:00 PM	<i>RSSG: Note telemetry B/R change 124426</i>	
00:22:00	5:22 PM	DSS-25 Disable Monopulse without clearing offsets	Before mode switch to 2-way
00:24:35	5:24 PM	DSS-25 Acquire 2-way X- and Ka-band signals	
		DSS-25 Enable Monopulse	At Ka-band 2-way acquisition
00:24:35	5:24 PM	DSS-14 Acquire 3-way X-band signal	
02:45:00	7:45 PM	DSS-14 EOT	
02:45:19	7:45 PM	<i>RSSG: Note telemetry B/R change to 1896</i>	Expect increase in signal power of about 6.45 dB
02:50:55	7:50 PM	DSS-25 Transmitter OFF	
02:55:00	7:55 PM	<i>RSSG: End DSS-14 recordings</i>	
03:00:00	8:00 PM	DSS-14 End of Post-Cal	
05:35:35	10:35 PM	<b>End Outbound GSE</b>	
05:35:35	10:35 PM	Begin s/c turn from Earth point - Begin RWA Bias	
05:35:35	10:35 PM	DSS-25 Disable Monopulse	At loss of Ka-band signal
05:50:00	10:50 PM	<i>RSSG: End DSS-25 RSR recordings</i>	
06:13:23	11:13 PM	Ka-band OFF	
06:15:00	11:15 PM	DSS-25 EOT	
06:30:00	11:30 PM	DSS-25 End of Post-Cal	