

S95 Rev 237 Saturn Rings &
atmospheric Occultations

①
Rev 237
DOY 181-182

DSS-63 (mostly ULL), DSS-14 (UL & DL)

DSS-25, DSS-43, DSS-35

2016 / 181-182, June 29-30, 2016

Aseel

Ops: Elias, Danny, Jay

NOA: Lu, Sandy

ACE: Bill

Targets	63 X 48	14 X 60	43 X 60
	S 50	14 S 50	43 S 50
		25 X 55	35 X 55
		25 Ka 55	35 Ka 55

Timeline: Script predicts only switch ~~from~~ due to
ULL transfer @ 042948

DSS-54 onjoins track (DSN monopulse cal)

2230 DSS-63 Pre-Cal
Weather clear, no wind
Equipment green
Change to ULL. No transfer w/ DSS-54
Crew C supporting

2330 DSS-63 BOT

234311 54 XMTB off
Station didn't announce so checked w/ ACE

2354 63 XMTB on
17.194 kW

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0017 25 Pre-Cel

BOT 0140
3-way w/ 54

TLM off 0214

Weather clear & calm
Equipment green

0032 14 Pre-Cel

Weather clear w/ winds 13 mph

Equipment green

0037 ACE to 14 wanted to make sure he gave XMTB time
0158 XMTB on transfer from 63

WVSR plan

To set fgain (slw issue)

Change DSS-35 from WVSR to VSR & record 1816

(this is 1-way w/ offset & 1-way recordings.)

3-way recordings due on RSR)

35 starts in atmosphere. 43 OK on WVSR since can
set fgain later

Goldstone: Set fgain @ 0145 after reach 10 deg.

Impact results out to subchannel + (1 kHz)

0126 14 X & S signals

0138 Pc/No

63 X 37.81

63 S 41.05

14 X 35.24

14 S 41.10

25 X 30.19

25 Ka 39.82

0136 Tell ACE to ask 25 to hold off on enabling Mono @ 0140 until better elevation angles passed on station. now $\approx 7.5^\circ$ ←

0138 ACE asked 25 for name of 4th order pointing model (per my request)
def25ka.sem

Coherent offsets in WUSR/VSR (1-way w/ offset)

S 744660

X 2730410

Ka 10375570

0143 14 telling 63 have Xfr
14 drive on 015800
63 drive off 015805

0148 Tell ACE we are ready for Mono @ 25.
Ask station to enable

0149 DSS-25 Mono enabled
 ≈ 2.5 dB jump

39.9 \rightarrow 42.3 dB-Hz
w/0 deg elev. Signal more stable

0158 Uplink transfer 63 to 14
14 U/L 17.755 KW

0200 63 EOT

0210 Told ACE to ask 25 to disable Mono w/o
cleaning offsets @ 021400.

0214 DSS-25 Mono disabled w/o cleaning offsets
A3 -3.63 EL -5.42

0215 Switch to 1-way

0215 DSS-54 EOT

S -500

X -1350

Ka -4400

0220 DSS-25 Mono enabled (in timeline but didn't
request it.)

0223 ACE told 25 to wait on enabling/disabling
Mono until get confirmation from RS
(per my request)

0224 Told ACE 25 still checking if Mono is enabled
but our displays show it it. Need it
disabled w/o cleaning offsets at 022500

022530 DSS-25 Mono disabled
Offsets A3 1.34 EL 8.74

0226 Mode switch. to 3/way w/ DSS-63

022812 Asked ACE to ask 25 to enable Mono

0229 DSS-25 Mono enabled
dump! 44.5 → 45.2
0.7 dB !

WVSR: Had to reset Rx gain on 1 kHz channels since they were set w/ TLM on on 1-way w/ offset channels w 0228 had to do that on 1-way subchannels @ 0218

0308 ACE asked 25 to disable Mono w/o cleaning offsets @ 032400

0309 25 Ka out of lock
Mono offsets Az 2.75, El 0.66

0315 25 Ka still out of lock.

0318 NOA (Sandy) asking 25 to try to re-acquire on Ka band

0319 25 Ka 1/L
Monopulse now updates

0324 DSS-25 disabled Mono w/o cleaning offset
Az 3.65 El 0.82

Ka-band in & out of lock

0356 Told ACE to let stations know that should not expect acquire signal until 0644

033653 } 1-way
0348/49 }

0336 Pre-Cod. Briefings

Weather forecast -
Equipment Area

Team D
@ 0900 Team C

0555 DSS-35 BOT

gress

0640 ACE telling 14/25/35 to try to acquire @ 06454

0649 Told ACE to let stations to wait on
acquiring signals until we see a strong
signal

0703 1-way s-band signal @ .185 Hz

07240 1-way X-band signal ~ 16 dB

071919 1-way Ka-band signal ~ 14 dB

0730 Told to ACE
shall 1-way signals ;

0731 2way / 3-way signal
station lock times
14S 073149
14X 073255
Ka in & out of lock

0748 ACE told stations 25 & 35 to enable
Mono @ 075400
(after discussion w/ me)

0754 DSS-25 & ~~DSS-35~~ Monopulse enabled
DSS-25 46.69 to 47.18 ~0.4 dB jump

075430 DSS-35 asked me if should enable Mono
→ go ahead

075430 DSS-35 Monopulse enabled
49.3 to 49.9 ~0.7 dB jump

0756 DSS-14 transmitter off

0756 P_c/N₀

14X	54.40
14S	42.94
25X	48.23
25Ka	46.91
35X	49.55
35Ka	49.99 dB-Hz

0800 DSS-43 Pre-Cal Briefing
3-way w/ 14
104455 LOS

Equipment green
Weather ~~rain in area~~
heavily overcast

0813 ACE told 25 & 35 to disable Mono @
0822 w/o clearing offsets
(per my request)

08130 DSS-43 X & S-band signals

0822 DSS-25 & DSS-35 Manopulse disabled
25 Az 2.18 EL -5.05 elevation 23.75
35 Az -1.24 EL -3.16 elevation 38.9

083409 1-way signal (going through B ring)

083635
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0848 1-way signal for w/10 secs
then soon after for another several secs

0859 ACE asked 25 & 35 to enable Manopulse
@ 091000, per my request

It seems that DSS-35 misunderstood &
enabled Manopulse right away

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Talked to ACE
 Seems DSS-35 enabled MWD @ A05

ACE checking w/ station
 they enabled MWD @
 D010053

(Shutdown DSS-30 also has MWD enabled)
 25 said don't have solid lock on ka-band.
 Wait on enabling MWD → yes
 25 said signal level is low. Expect higher?
 MWD said open through ring ft & signal will
 fluctuate

Q1501 DSS-25 MWD enabled
 No jump in power

Q122 25 said that ka-band dropped out of lock
 for few hrs. Disabled MWD?
 ACE (after discussing w/ me) We are coming
 out of RNF ft. Signal should be getting stronger.
 Keep MWD enabled

Q140	Pc/No	14X	53.31	43X	54.73
		145	41.75	435	42.98
		25X	47.18	35X	49.74
		25Ka	44.42	35Ka	49.58

Q158 Asked ACE for weather update from campuses
 → 43: Overcast & intermittent light showers.

Spurs DSS-43 X

+/- 56 60 -60

+/- 177 180 -180

+/- 296 300 -300

1004 Asked ACE to let 43 know about spurs

1012 43 asking about signal levels relative to carrier

I responded:

ca 55 dB-Hz

+/- 300 spurs are stronger. \approx 6-7 dB Hz

+/- 180 are \approx 3-4 dB-Hz

+/- 60 Hz are difficult to see. \approx 3 dB-Hz

Asked for DR. Will send screenshot to Graham

1015 14 & 25 60T

1021 43 said they have DR
DR C112170

1027 1-way
3 fros in 1 kHz:

S -500

X -1350

Ka -4700

} Signals placed @ \approx +200 from center

1029 DSS-35 Mono enabled
I forgot to ask them to disable @ 102700.
It just lost lock & they re-enabled it

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104420 LOS S & Ka-band

104430 3S asking me if disable monopulse
me → yes

1046 X LOS

Playback times:

DSS-63: Baseline: 22:45 - 0225

DSS-14 & DSS-25:

rings ingress: 0050 - 0450

atm egress: 0630 - 0830

rings egress: 0730 - 1045

DSS-35:

atm egress: 0630 - 0830

rings egress: 0730 - 1115

DSS-43:

rings egress: 0800 - 1115