

SAS Rev 238 Saturn Rings &
atmospheric Occultations

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Rev 238
DOY 205-206

DSS-65 (U/L only), DSS-14 (UL & DL)

DSS-25, DSS-43, DSS-35

2016/205-206, July 23-24, 2016

Ops: Aseel, Elias, Danny, Jay

NOA: Lu, Sandin

ACE: Mike then Bill

Frames	14X	60	43X	60
	14S	50	43S	50
	25X	55	35X	55
	25Ka	55	35Ka	55

Timeline: V3 sent out yesterday. Remove U/L Xfr from 65 to 14. This is to keep DST freq at ingress close to BLF, so that quick acquisition @ egress can be achieved (change from Rev 237 timeline & late DST lock up problem)

Script only switch to coherent w/ DSS-14 while behind Saturn: 042200

Coherent offsets

S 744370

X 2729370

Ka 10371580

2100 DSS-65 Pre-Cool

← DSS-63 in maintenance & unavailable

Weather clear
wind 4.9 kph
Equip green

ACE was not aware of 1/3 of timeline &
NO OIL XFR. Elias

Team D

2200 DSS-65 BOT

2229 DSS-65 XMTR cm

2250 DSS-14 Pre-Cool X DCC04 S DCC02

Weather clear, no wind (though 25 said 13mph, & edmd way consistent)
Equipment green

2255 DSS-25 Pre-Cool X DCC08 Ka DCC07

Weather clear sky, wind 13 mph
Equipment green

4th order def 25 ka. sem model

2320 Change to DSS-25 open-loop assignment

On RSR2B had Ka-band 1-way & 1-way w/ offset, but can't do that with one ddc10 setting. Baseband freq 8 MHz & offset was 10 MHz, so has to be one or other.

Change: Put 1-way w/ offset 4 subchannels on RSR2B. Use VSR1A (backup revr) for Ka-band 1-way

2325 Asked ACE if should remind 65
of upcoming Xmtb off time.
It's critical


ACE to 65, Xmtb off 232742
65 → yes configured for drive off @ this time

2328 65 reporting carrier down
(but time was 232742)

0357 25 coming if 1-way @ 003501. SOE
shows 3-way w/ 65.
ACE checking w/ me
I doublechecked the times & confirmed
times in timeline

0010 Canberra open-loop assignment change
DSS-43 1-way & 1-way w/ offset on WUSK2
& problem w/ fgain settings is 1 kHz.
Change subchannel configuration from
1, 16, 50, 100 to 1, 4, 16, 50. The last
three should have good f-gains (fgain 0 is
problem on 1 & 2 kHz only).
Note this is an issue because there's
no signal to set f-gains on during ingress.

003132 X & S-band signals & Ka-band
0035 Told ACE that we are seeing strong signals
@ all bands. SIC ~~quite~~ on Earth-point earlier
than expected. Stations can try to acquire

- 0036 Told ACE to let stations to acquire
 0037 1-way freq offsets in 1kHz: Ka-1250, X-500, S-200
 0038 Asked 25 to enable Manopulse
 (there were issues w/ mono during Jono track a few days ago)
- 0039 NOT asking 25 to disable SNT on
 DCC07
- 0040 25 reporting Mono enabled
- 0040 Told 25 that our eDMD displays don't
 show Manopulse updates. Can you
 verify.
- 0042 Told 25 now see Manopulse values
 updating.
 Just curious what you did differently
 25 → Utilized different command before.
 Now used correct one.
- 25 signal levels more stable 
 44.51 → 46.47
 √ 2 dB improvement () more stable
- 0044 Lu asked 65 to lock DCC07
 65 → DCC07 I/L
- 0050 65 EOT
 ACE: Thank u for getting our carrier up.
 Any questions before we wrap this up. → no
- 0055 Asked 25 to look into VSR
 VSR1A can't see ~~stand~~ record
 VSR1B can't see stand

0055 Asked NOA if RS OE is available to look into VSR problem
Lu → Mitch is not in the ROC

010230 Told 25 @ 010300 to disable Mono w/o cleaning the offsets

010300 Mono disabled
Hz 4.93, EL 4.31, elevation 18.48

0103 25 said someone in process of rebooting VSR
→ thank you. I was going to ask if there's someone there who could reboot it

0105 25 said to go ahead & give VSR another try

0106 Told 25 that Kar-band is fluctuating a lot w/o monopulse. wondering if it's windy @ 25?
→ showing 12 mph winds

0106 Goldstone coming 3-way w/ 65

010825 Told 25 @ 010900 to enable Mono

010900 DSS-25 Mono enabled
Offsets Hz 2.50, EL 4.29, elevation 19.35
maybe 46.95 to 47.2, so 0.2-0.3 dB-Hz
But much more stable!

0146

Talked w/ Essam on phone. Told him about VSR problem & not

opening ka-band 1-way. Only option is

to use new recordings 25X 1-way & 1-way w/ offset to record ka-band, but prep. prefer backup to 14

Essam 1-way only use for scans when signals appear. Don't centrally process. Least critical.

0120


Told 25 VSR reboot did not fix the problem. We're recording, least important

data set so we'll just stop it. Open DR & have someone look @ it post-puro.

(double checked that VSR was officially requested)

0128

Asked if they did anything @ 0113. Saw X-band Eucaryotes & did

NOT see @ 25. Did you (consec) at all?  → NO

1031

Told it seems X-band signal level slight drop. ~~Am~~ see anything on their side that would explain?
 14 → everything appears normal on their side
 Could be
 F ring !!

1135 14 said went outside & fire nearby & sky unclear
→ said but we're not seeing @ 25 but thanks for checking

* Checking if we see something similar on WWSR. ← Data look clean & pretty stable!!!

0141 Asked ACE to remind 14 of XMTR on time @ 0146, ramp no sweep

0141 ACE told 14 critical time 014600 ramp no sweep.
14 → we are ready

0143 ACE reminding 25 of Mono disable time @ 0148 w/o clearing the offsets

014600 DSS 14 XMTR on

01460 Lu called on phone asking about temp when 25 Mono was enabled
me → 2dB. But signal much more stable w/ Mono.
Lu → wind just B - 19.6 mph so close to threshold
Saw drop in 14 power
me → F-rings may have had something to do w/ it

0148 DSS-2S Mono disabled w/o cleaning offsets
Az 3.19, EL -0.11, elevation 24.61

0152 2S said they did complete power down
on VSR & can see it so you might give
it another try
me → OK

0157 VSR is working!
Started recording on VSR1A @ 015537.
VSR1B not seeing input
VSR1A no longer reporting disk error

0201 Told 2S VSR A side is up & running &
recording. B side still can't see a signal.
But we only needed A side so thank u
v much!

2S what time did u start recording
me → 015537

2S → will get u DR from BOT till that time

w 020340 LOS. Going 1-way

Question about whether to change mode
in 2-way revs. Don't think so but
called Essam to verify.

Essam → keep it that way so that we don't
record artificial data in 2-way file

Data recorded is 1-way

Essam asking if cleared edge of ring B before
switching to 1-way? me → I think so. Will send plots

0245 DSS-35 Pre-Cel

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Weather overcast. Wind 11.1 kph

Equipment: S/R red.

~~ACE~~ can u expand?

35 → Y axis unable to control or tell where it is @ moment.

4th order model 35xker

Team D now & C later on

0246 ACE called me.

Had problem during last track
only seems a problem @ low elevations

0247 Lu called on phone

for 34-m, 0.2 dB down @ X-band.

Did Xs for Ka-band

0.5 - 5.5 dB @ 70 degrees!

If @ 45° best, but don't know where it is now

~0300 Last S-band ingress signal

0312 DSS-43 Briefing

Equipment green

Weather overcast, wind 17.9 kph

Ingress

Egress

045947 1st S-band signal @ 14
~8 dB-Hz

050730 S-band 2-way signal ~22.81 dB-Hz
then 1-way

050850 S-band 2-way again

051120 X-band 2-way signal ~11 dB-Hz

051716 25 I/L on X-band

051817 Ka-band signal!

14 lock: 051748 X-band
051804 S-band

43 lock: 051613 X-band
051935 S-band

0554 P_c/N₀ (after exit from Troposphere)

14X 54.18

43X 55.1

14S 42.93

43S 42.52

25X 48.36

35X 36.4

25Ka 47.31

35Ka 29.6

Elevation: ~29.14

Elevation: ~29.16

WVR values are consistent

0555 3S reporting finally in-lock

055027 X
055423 Ka

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⑥

0557 Told 2S & 3S @ 0601 Mono enable

0601 2S & 3S Mono enabled
2S 47.1 to 47.8: ~0.7 dB-Hz
3S signal dropping!

0602 Asked 3S to disable Mono & clear offsets

0602 Told 3S Monopulse seemed to drive antenna of para.
^{know why?}
3S Subreflector is currently red so that's probably affecting it.

0604 SLK stuck somewhere above 70 degrees?!

LU called.

This level tells them it's ~70

they didn't think it would be that

0607 2S X 48.33
Ka 47.60

0634 Told 2S @ 063800 disable Monopulse
w/o clearing the offsets

0638 2S Mono disabled
Az 1.76 El -5.64, elevation 24.56

Rings @gress

0706 1-way
070715 coherent signal

0727 Told 25 to enable Manopulse @ 073000

0730 25 Manopulse enabled
u35.5 → ~~36.5~~ ⇒ 1dB jump

0752 Pc/No

14x	52.55	43x	55.13
14S	41.83	43S	43.20
25x	47.50	35x	37.78
25Ka	46.02	35Ka	36.36

elevation 13.74 elevation 5279

Sudden drops in X-band signal level on DSS-14 RSR1A. Only in RSR1A, not in WWSR. May be related to ADC amplitude. Will follow up w/ RSR group.

081211 - 081800 DSS-14 X-band power drop
081357 another small drop on both RSR & WWSR! u2.5dB

Did not see @ DSS-43
0819 Told 14 see drop. Anything on their side that may have caused it

14 → only thing is antenna @ low elev.
me → Don't think it's that because it was intermittent & went back up

0827 Lu called. They see same
x-band DSS-14 drop in closed-loop
Open DR \xrightarrow{me} yes

0828 Lu asks 14 for DR for drops
in x-band

First time it happened 0827-0832
gradual drop ~4 dB

Second time 0812-0818

Drop ~3 dB

Only x-ray P/Ns

Problem maybe in LNA area?

0831 14 DR# G117338

Other DRs

DR# G 117317 for VSR

DR# C 112222 for real subreflector

0835 14 & 25 replying TOT to ACE & RS
 \xrightarrow{me} copy & thank you v. much for
your excellent supports

0915 LOS. Going 1-way

Offsets in 1 kHz

S -300

X -1100

Ku -4200

(-200 in wvsr)

0946 LOS

1016 DSS-43 & DSS-35 EOT

Playback times:

Ingress 00:20 - 03:20

Egress 04:30 - 06:40

Atm

Egress G 05:50 - 09:00

Rings C 05:50 - 10:15