

S77 Rev 180 Saturn rings (Ingress)  
& atm (egress) Occ

(1)  
Rev 180  
1/31

2013-031  
Jan 31, 2013  
~~~~~

Ops: Gregory then  
Aseel & Danny then  
Elias

ACE: Bill Steve Hillau then  
morning

NOPE: Lu, Jack → Mitch → Anthony  
David Rochblatt from home

Stations: 14, 25, 34, 45

Elias scripted all RSRs

Timeline shows 65 pass @ start, but it's 55

0800 DSS-14 Briefing (notes from Gregory)

Station Xmttr on 0915, but ACE said to follow <sup>RSS</sup> timeline  
<sub>said</sub> & have Xmttr on @ 0918

Equipment: Green

X DCC 03

Weather: Clear skies, light winds

S DCC 01

0830 Start rec 14 RSRs subch 1 & 2

0850 34 14 X-band signal  
32.88 dB-Hz

0918 55 Xmttr off (confirmed @ 0921)

0929 14 Drive on, 17.5 kW, Ramp, Sweep

→ 1030 Start rec 25 RSR subchannel 1 & 2  
 0959 DSS-25 Briefing X DCC 08  
 Equipment screen Ka DCC 07  
 Weather: Clear, winds calm  
 1027 25 X & Ka signals in RSR  
 10?? Lu asking 25 about step in BM (I see delay directive)  
 104522 8-band on  
 Lu told station  
 1046 14 1/L

1053 Lu told 25 to check SNT on DG-08.  
 Shows invalid value  
 1055 25 → 25 SNT should look good now  
 Lu → much better

1057 25 1/L X & Ka  
 1005 Lu called. Had to remind 25 during pre-call to  
 enter 1sec delay directive. Wonder if did it during DCCs.  
 David said one CRT data weren't good. Maybe that's why.  
 100810 25 Mono enable ⇒ .6 dB Jump

~ 46.8 → 47.4  
 Elevation ~ 29.9, Accum Az ~ -2.7, EL -3

1117 Told 14 saw a drop of 2dB @ X-band  
 Don't see it @ 25 Told them later it's  
 happened @ 1115 closer to 1dB not 2

1118 ~~They~~ said they checked log & don't see anything

1119 Talked to Lu & Mitch  
 They see it in open-loop but not closed-loop  
 Mitch says ~ .5. I said closer to 1  
 me → So what should we do. Should we conscan?  
 Lu → Yes. We can verify pointing. We still have 40 min

me → but does it have to be that long?  
Lu → No. 3 cycles → 6 mins. But will ask  
for 10 mins  
me → ok

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Danny & Gregorio  
Checked DKF  
for bit rate  
changes.  
None.

112220 Lu asking ~~14~~ to Conscom

1124 14 reporting Conscom on @ 112328.  
will stop @ 1134

1131 Lu says Conscom doesn't seem to be working.  
high affects. ~~and~~ Don't usually Conscom  
during science supports. New s/w maybe  
have to do something different. Disable

11330 Lu asking 14 to disable Conscom &  
clear affects

113140 14 X-band signal back to nominal level!  
Whatever they did fixed problem

1140-41 Att auto on

|        |          |                                   |
|--------|----------|-----------------------------------|
| Fgains | 14 X 60  | ← Change 1144. Had turn on values |
|        | 14 S 49  | ← " "                             |
|        | 25 X 55  | ← changed 1144. "                 |
|        | 25 Ka 55 |                                   |

114645 Told 14 & 25 to enable SNT

1148 SNT measurement

|       |        |
|-------|--------|
| 14 X  | 22.906 |
| 14 S  | 28.061 |
| 25 X  | 26.992 |
| 25 Ka | 63.659 |

115130 told 14 & 25 to disable SNT @ all  
except X @ 25

1152 Checking. 14 didn't disable X

1153 Asked 14 to disable X also. Only keeping  
X @ 25 on  
14 → disabled

1158 In telling stations will be switching to  
1-way in

120010 Switch 1-way  
RSR 1K sfo 515 ←

TLM off

1201 14 1/L 1-way

1202 25 ~~asking~~ if they should lockup  
rcvr lock & go out  
(they have X 1/L)

1207 Jack suggesting station halt & <sup>re-set &</sup> try to  
re-lock. Cause according to RS they  
should have signaled

EDMD showing 25 ka gains in & out of  
lock

120930 ~~25~~ 25 asking if they should halt rcvr

Jack → we are seeing signal.

Jack mentioned something about a command  
showing up .. TDN

121030 25 → 1/L now

Jack → what did u do?

25 → Paused TDN

↑ 1207 P<sub>c</sub>/N<sub>0</sub> 1-way Rev 180 (3)  
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|      |       | WUSR |      |
|------|-------|------|------|
| 14X  | 55.09 | 14X  | 53.1 |
| 14S  | 42.94 | 14S  | 44.2 |
| 25X  | 48.43 | 25X  | 48.0 |
| 25Ka | 47.60 | 25K  | 47.0 |

1211 Jack to 25. That was unusual problem. It's (operator) was doing everything correctly & TDN was kicking in & issuing halt. Open DR.

121120 2-way/3-way

1214 14 1/L  
25 1/L

1214 Mono enabled (offsets that were in system  
Elevation 37.6 -1.79, -4.76)  
Accum A3 Corr 0.7, EL -3

1218 Lu asking 14 for DR on Censcan not working. lost 10 dB on power

1225 P<sub>c</sub>/N<sub>0</sub> 2-way/3-way

|      |       | WUSR (1-way w/ offset) |      |
|------|-------|------------------------|------|
| 14X  | 54.70 | 14X                    | 55.0 |
| 14S  | 43.10 | 14S                    | 42.8 |
| 25X  | 48.48 | 25X                    | 48.3 |
| 25Ka | 47.79 | 25K                    | 47.7 |

Blank

WVSR 1-way to 2-way affects

S 745195

X 2732385

Ka 10383000

1223 Saw 1dB drop @ 14 again!

1230 34 Briefing Weather fine, equipment green  
Nope verified they have V3 of timeline

X  
DCC06  
Ka  
DCC05  
Nope told them to enter  
manual offset in EL +2.5 mdeg  
(recommended by David & Canberra engineers)

1235 Told NOPE about 1dB drop in 14 X-band  
@ 1223. Told Jack don't know if Lu briefed  
you, but saw this @ 1115 & now again

14 DR G113659 for Conscom

1239 14 x-band power recovered by itself!!  
Talking to David (on phone)

David: Investigate antenna controller.  
How long to reset AMC controller?

124? Talk w/ NOPE (Jack)  
X-band @ 14 recovered. Seems to be similar  
to what happened before. Talking to David  
Reichblatt & thinks maybe problem w/  
antenna controller. How long to  
re-set AMC? Do you know?  
Jack have to ask station

Jack can't opened DR for Censcom

me → so will include this in same DR

Jack → yes, will put note about periodic drop in signal power

124? Jack to RS:

Doesn't recommend to reset AMC controller. Should be done during pre-cel. If do now, may not recover in time & may impact on exp. ~~With~~ ask for separate DR instead

me → let open a separate DR

124a? Jack to 14

Asking for DR

Periodic drop in  $\lambda$  signal power. recovers & go back to normal. Happened twice first @ 1115. 5-.6 dB drop in signal level in open-loop only. Not seen in closed-loop. 1223 dB drop observed in open-loop closed-loop doesn't have sensitivity that they do

Seems somewhat periodic. Maybe issue w/ antenna controller

David to me on phone: May also be encoder issue

1300

Talking to David over phone about problem. Check NMC logfile. Could be glitch in encoder system or master equatorial. 14 tracking in precision mode now. when signal drop & come back indicates could be glitch in encoder. Could be one situation. Also, slw issues @ 14



1305 45 Briefing XCO4 SDCOS

Equipment green, weather fine

1315 P/No 2-way/3-way baseline (official)

|      |       |                      |      |
|------|-------|----------------------|------|
| 14X  | 55.19 | <sup>DOUSR</sup> 14X | 55.0 |
| 14S  | 43.12 | 14S                  | 42.9 |
| 25X  | 48.52 | 25X                  | 48.3 |
| 25Ka | 47.81 | 25Ka                 | 47.7 |

1323 Told 2S about monopulse

Ring F strong signal throughout. keep enabled

Ring A.. strong signal during most.. if disabled, re-enable but let us know when that happens

Ring B.. Once we get to ring B @ 134827, if you go out of lock, then don't need to re-acquire, so if monopulse gets disabled, leave it

4 Rings!

1334 2S Ka out of lock, mono disabled

1335 Start rec 45 034

1335 2S Ka I/L, but no mono then out of lock

1340 ~~Told~~ 2S that see mono updating now. Is this first re-enable?

2S → Didn't disable it. kept it running. Bot rcvr went in & out of lock between 1335 039

1341 David says v. high mono offsets (in 20s).  
Doesn't trust mono now. Ask station  
to disable

134110 Asked 25 to disable mono.

13411a Asked 25 to clear offsets

11 dB jump in Ka-band !!

24 → 35

3 dB jump in X-band

33.8 → 36.9

1342 25 asking if should re-enable mono  
me → we'll wait for stronger signal. We'll  
let them know

1344 25 saying strong signal. Enable mono?  
me → no. Talking to antenna calibration  
expert. Won't enable mono until we  
go behind planet & then enter manual  
offset. (said it wrong!)

25 → enable mono behind planet?

me → keep it disabled, & when we go  
behind planet enter manual offset  
in preparation for egress

1354 1-way spike

1357-1400 1-way in WVS2

1400 ~~Stronger~~ signals again!

David says mono  
was steering  
signal in  
wrong  
direction

w 1403 weak signals @ Combarra

140510 45 1/L X

140614 34 1/L X

1414 coherent S & ~~14~~ signals back!

X drifted @ -3000.

Mixed w/ atmosphere & did not compensate ingress part

No Ka visible. Would've drifted -12K. Can't see it in 50kHz BW

1417 Intermittent

1419 Still 2-way S-band  
14X would be outside Ka

1427 Still 2-way S-band  
-2000 Hz offset

1432 S-band gone!

1435 14 G113660 for unexplained drop

25 G113661 for TDN

1443 Lu asking 25 to put DCC in open-loop mode

1450 Rec. a disable

|                  |                |              |
|------------------|----------------|--------------|
| Ingress playback | 1k all file 14 | 0830-1450    |
|                  |                | 25 1030-1450 |
| Data files       | 14 & 25        | 1145-1450    |
|                  | 45 & 34        | 1340-1450    |

1554 Asked 25 to enter manual offset  
-2.0 mdeg in EL

First called them 1505, but as I was asking them, I wasn't sure if it's EL or XEL, so bid them to standby. Tried to get a hold of David, but couldn't for a while.

~~1557~~ Lu told 25 that to use manual offset, they had to enter two directives

AP .....

AP track

1559 14 xmtr off

Canberra figures

45 X 55

45S 42

34X 55

34Ka 55

Egress  
~~~~~

1600 Start rec all

1640 S-band 1-way in WUSR  $\begin{matrix} 14 \\ \swarrow \\ 10-12 \text{ dB-Hz} \\ \nwarrow \\ 45 \sim 4-8 \text{ dB-Hz} \end{matrix}$

Shoot! Forgot to do SNT measurement during occ!

164940 X-band 1-way  $\sim 28 \text{ dB}$

1655 Ka 1-way signal

1655 Asked 14 & 45 to acquire X & S

165640 Asked 34 & 25 to acquire X & Ka

1 34 1/L X-band

165730 25 1/L on X - 159 & still try

165741 Switched to coherent  
Asked stations to switch



165830 14 1/L X 2-way

165850 25 1/L Ka 3-way

Goldstone reporting very high residuals  
25 wondering if still 1-way

→ no coherent, but going through atmosphere

Our predicts look v. good! Signals centered

1704 Only 14 is 1/L on both bands

1711 Told 34 that their We noticed that their X-band rcvr has widened Ca loop BW & if they need to reduce it to acquire <sup>than other</sup> antennas (per David's comments)

1712 34 change Ca loop BW from 10 to 7

1713 Jack told 34 to open up initial Ca loop BW to 10 😊 (opposite of what we said)

Back to 10!

171830 45 1/L S-band

1720 3A 1/L Ka-band  
(But not X-band yet!)

1720 Signals back to full strength  
171944 (Timeline has 171736)

1721 25 1/L Ka-band  
enable mono?  
→ negative

1721 David saying painting @ 3A looks good

1727 Called NOPEs on phone. Anthony answered  
Do we know why 3A is having difficulty  
locking up on X-band  
Anthony → DCC having problem

1728 3A 1/L X... ~~switched to another DCC~~  
~~through~~ Added DCC02 edmd still shows  
Had to go to ACE  
edmd page to see DCC  
NOPE (Jack) asked for DR for D/L channel  
that failed to acquire  
Used display  
we use show only  
first 2 channels

174350 3A giving NOPE DR# C109723  
for problem locking up

1816 45 EOT ... I wanted to thank you for your excellent  
support. Everything very well so thank  
you for...everything! DUT!

1817 Asked 25 to enable mono  
... humm... not getting enabled

1819 Asked 3A to enable mono  
⇒ 1.6 dB Jump!

182045 Asked 25 if having difficulty enabling mono  
→ tried but v. large offsets so system asked him to

ComScan First

1823 Lu & Jack called  
8° El. signal v. noisy  
system won't apply corrections.

182455 Asked 25 to enable SNT on Ka

1825 25 SNT  
X 43.21 Elevation 7.45  
Ka 127.7

1827 Told 25 that we asked for mono to check pointing but understand that we're at low el angles & signal is noisy, so if having problems w/ it, pls disregard.

25 → regen. Will disable mono

182850 Asked 14 to enable SNT on both D/L channels

182910 → enabled

1829 14 SNT  
X 44.228  
S 119.124

1830 Goldstone EOT

1841 34 reports LOS X & Ka

1854 Asked 34 to enable SNT on Ka  
34 → enabled

1856 SNT @ 34

X 23.557

Ka 39.168

1858 Told 34 we completed our data acquisition,  
so thank u v. much for your support. Pls stand by  
for ACE to release u

185815 ACE released 34

Egress playback

45 1625 - 1835

Goldstone 1625 - 1843

34 1625 - 1900