

# DSN Antennas Supporting T27

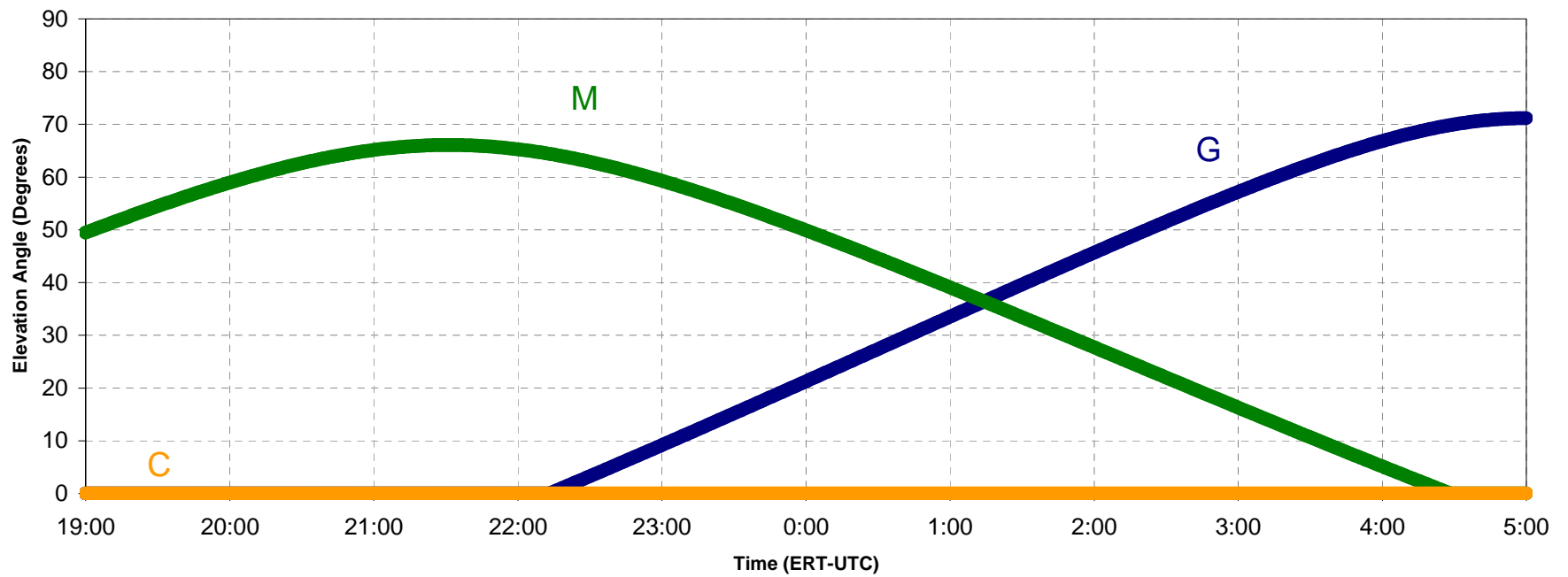
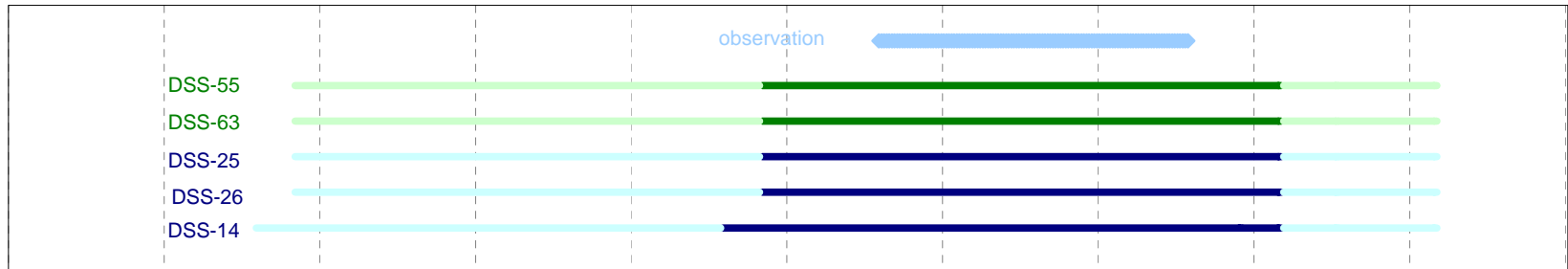
Station	Pre-cal	BOT	EOT	Post-Cal
DSS-14	084/2035	084/2335	085/0310	085/0410
DSS-55	084/2045	084/2350	085/0310	085/0410
DSS-25	084/2050	084/2350	085/0310	085/0410
DSS-26	084/2050	084/2350	085/0310	085/0410
DSS-63	084/2050	084/2350	085/0310	085/0410

## **Equipment scheduled:**

- 2 closed-loop receivers per antenna
- All RSRs and VSRs and WVSRs at Goldstone and Madrid
  - Total: 18 open-loop receivers

OWLT ~01:10  
RTLT ~02:20

### S28 T27 Rev 41 Titan Bistatic & Occultation 2007-084 / March 25, 2007



# Antennas Capabilities

## Simultaneous Band and Polarization

DSS-14

X-RCP  
X-LCP

S-RCP  
S-LCP

DSS-25

X-RCP  
X-LCP

K-RCP

DSS-26

X-RCP  
X-LCP

K-RCP  
K-LCP

Either KLCP or monopulse

DSS-63

X-RCP  
X-LCP

S-RCP  
S-LCP

DSS-55

X-RCP  
X-LCP

K-RCP  
K-LCP

Either KLCP or monopulse

All-Band Dependent Polarizations

Ambient Load or Cold Sky changes will impact both polarizations/both bands

Same-Band Dependent Polarizations

Ambient Load or Cold Sky changes will impact both polarizations/same band

Independent Polarizations

Ambient Load or Cold Sky changes will only impact polarization being changed

# RSR/VSR/WVSR Assignment

DSS	Operator	Station	Open-Loop Receiver	RSR Assignment
14	Gene	rsops1	RSR1 and RSR3	RSR1A -> XRCP RSR1B -> XLCP RSR3A -> SRCP RSR3B -> SLCP
25	Kamal	PC via rsops1	WVSR1	WVSR1A -> XRCP WVSR1B -> KRCP
26	Danny	PC via rsops2/rsops3	RSR2 and VSR1	VSR1A -> XRCP VSR1B -> XLCP RSR2A -> KRCP RSR2B -> KLCP
63	Don	rsops3	VSR1 and WVSR1	VSR1A -> XRCP VSR1B -> XLCP WVSR1A -> SRCP WVSR1A -> SLCP
55	Elias	rsops2	RSR1 and RSR2	RSR1A -> XRCP RSR1B -> XLCP RSR2A -> KRCP RSR2B -> KLCP

# Bistatic Calibrations

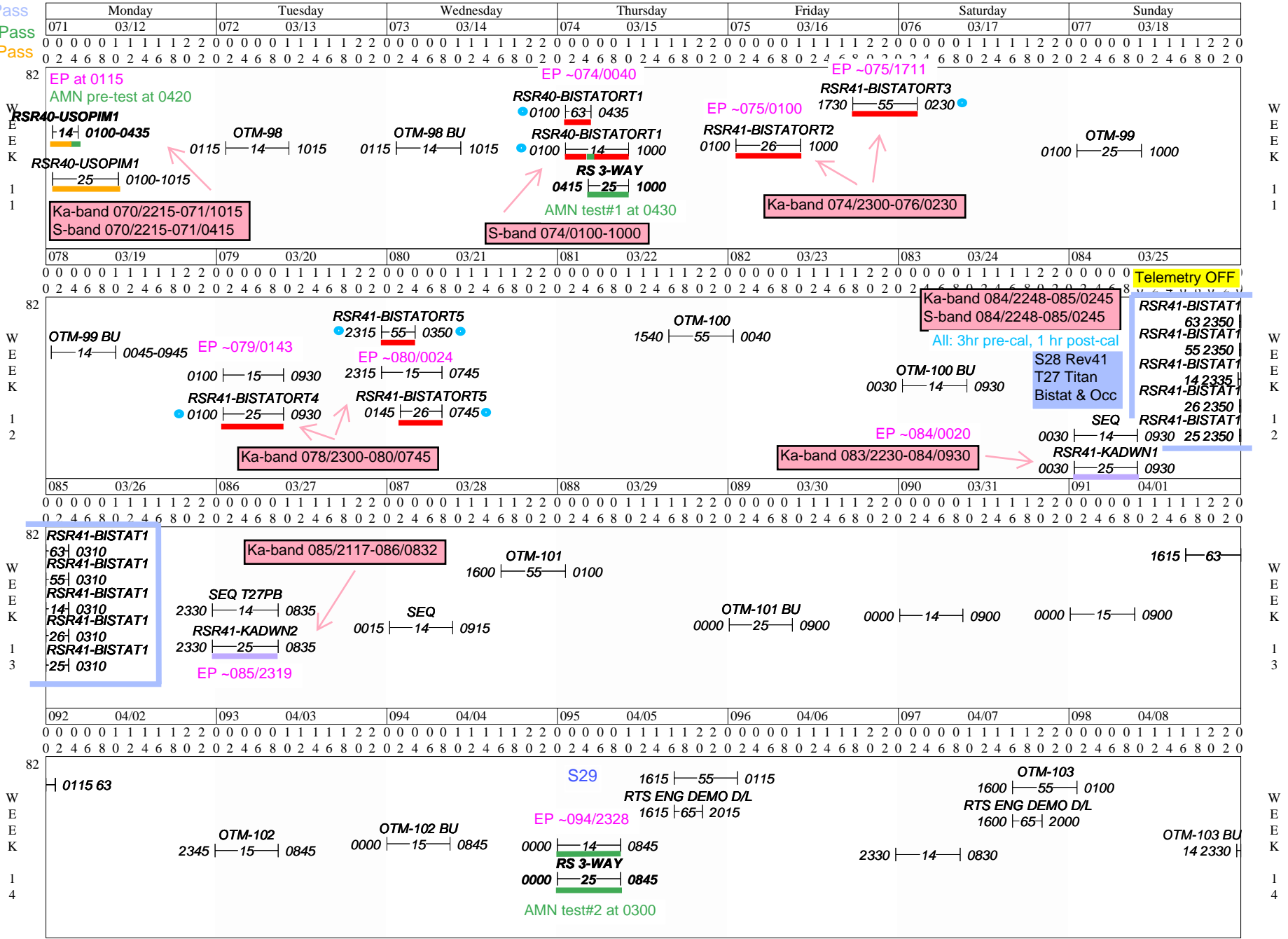
- Calibrations will be performed during
  - Pre-cal (antennas at stow)
    - 3-hr pre-cal periods were scheduled
  - Observation (mini-cals)
    - Pre-determined and carefully selected times (during turns or while in occultation)
      - More from Essam
  - Post-Cal (antennas at stow)
    - 1-hr post-cal periods were scheduled
- Pre-cal Calibrations are the longest of the three

EP = Earth Point (begin)  
 ● = Longer ORT pre- or post-cal to practice bistatic cals

**Cassini S28 RSS Activities**  
 T27/Rev41 Titan Bistatic and Occultation

**CAS / DEEP SPACE NETWORK WORKING SCHEDULE**  
 2007 March / April 2007

- ORT Pass
- GSE Pass
- Occ Pass
- AMN Pass
- USO Pass



# ORTs Completed To-Date

ORT #1, DOY 073-074 (3/14-15) over DSS-14 and DSS-63 (X- and S-band)

07 073 2200 0100 1000 1015 DSS-14 CAS RSR40-BISTATORT1 3447 1639 1A1 \*

07 073 2200 0100 0435 0450 DSS-63 CAS RSR40-BISTATORT1 3447 1639 1A1

- Practiced bistatic calibrations at DSS-14 and DSS-63 during the first two hours of pre-cal
- Verified RCP and LCP signals
- Practiced mini-cals during DSS-63 track
- Comments/Issues:
  - Took a few runs for DSS-63 to perfect mini-cal
  - XM Radio Interference at DSS-14
  - WVSR operations

ORT#2, DOY 074-075 (3/15-16) over DSS-26 (X- and Ka-band)

07 074 2315 0100 1000 1015 DSS-26 CAS RSR41-BISTATORT2 3448 N750 1A1 \*

- Collected pointing data (monopulse) to update the 4th-order blind pointing model
- Verified KLCP, and test switching between monopulse and KLCP Monopulse
- Comments/Issues:
  - Problem with RSR2B

ORT#3, DOY 075 (3/16) over DSS-55 (X- and Ka-band)

07 075 1545 1730 0230 0330 DSS-55 CAS RSR41-BISTATORT3 3449 N750 1A1 \*

- Station completed monopulse on-point phase cal during last 20 minutes of pre-cal
- Collected pointing data (monopulse) to update the 4th-order blind pointing model
- Verified KLCP, and tested switching between monopulse and KLCP Monopulse
- Practiced bistatic calibrations during post-cal

# To Discuss ...

- SNT
- RSR2B
- Goldstone XM Radio Interference
- Naming of 4<sup>th</sup>-order pointing models