

Methodology

Two analysis cases were performed using the FASTER (Forecasting And Scheduling Tool for Earth-based Resources) software tool. The first analysis case assumed an 8-hour maintenance support on the 26M; the second assumed a 12-hour maintenance support (including the additional 4-hour phasing requirement). Figure 1 is a graphical comparison of the projected SOHO supportability produced from these two analysis cases. The SOHO mission can expect a 1 – 3 percent supportability reduction in 2005 due to the additional phasing requirement.

The 26M requirements for SOHO in 2005 include a continuous HSO coverage period from week 26 to week 35. The expected supportability during the HSO period is between 87 and 90 percent. To achieve the desired continuous support SOHO may have to move supports from the 26M to DSS-27, 34BWG1 or 70M subnet. This may include negotiating support changes with other missions. During the HSO period, SOHO has greater than 60% view period overlap with Cassini, Deep Impact Flyby, IMAGE, Messenger, Ulysses and WIND (Figure 3). The scheduled downtimes at DSS-24, DSS-43, DSS-54 and DSS-55 will complicate the negotiation process.

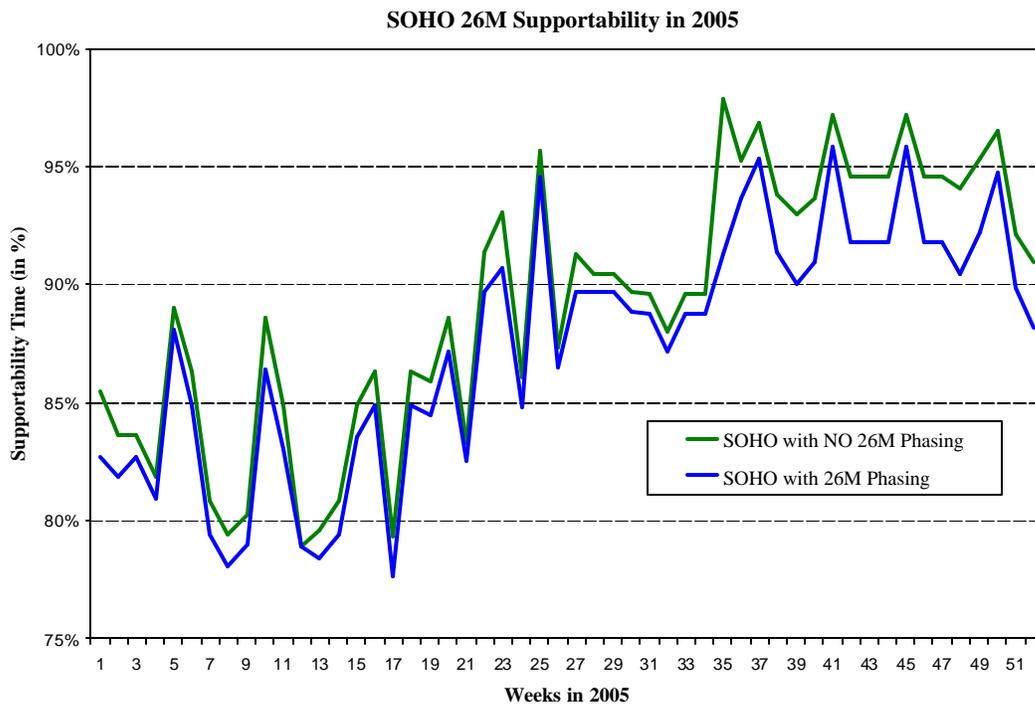


Figure 2 (SOHO 26M Supportability in 2005)

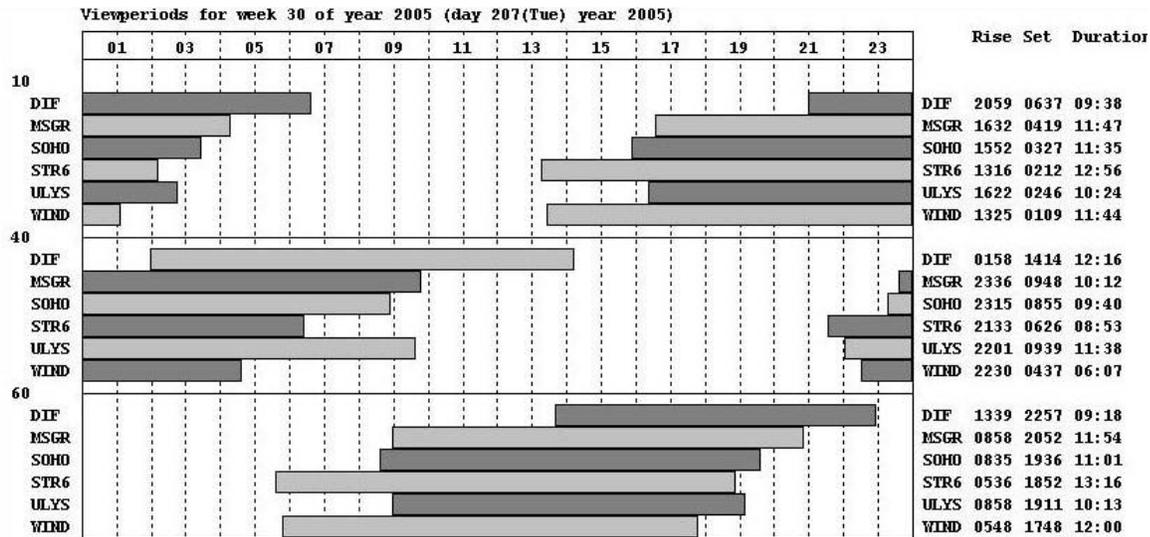


Figure 3 (View Period Overlap During HSO)

Although the forecast model predicts minimal effects due to antenna phasing, it does not predict 100% supportability. The RAPSO Mid-Range and SSMO scheduling offices will need to negotiate support changes to clear SOHO and DSS facility conflicts in 2005. The scheduling teams have already completed negotiations through week 14 in 2005. During this time SOHO has moved supports from the 26M to the 34BWG1 or DSS-27 on maintenance days. Two SOHO/Maintenance conflicts remain open at DSS-66 in weeks 02 and 03 (Table1). During these weeks SOHO is unable to move to the 34BWG1 because of increased activity at DSS-54. These types of situations are likely to persist through 2005. Other strategies for de-conflicting the schedule may include asking DSS to switch maintenance days or reduce maintenance duration to accommodate the SOHO requirements.

DOY	Project	Antenna	SOA	EOA	Activity
11	SOHO	DSS-66	1305	1655	VC4 SSR DUMP
11	DSS	DSS-66	0700	1500	MAINTENANCE
11	DSS	DSS-66	1500	1900	ANTENNA PHASING
18	SOHO	DSS-66	0905	1740	VC4 SSR DUMP
18	DSS	DSS-66	0700	1500	MAINTENANCE
18	DSS	DSS-66	1500	1900	ANTENNA PHASING

Table 1 (Mid-Range SOHO/Antenna Phasing Conflicts)

Conclusion

Based on current project requirements the 26M antenna phasing requirement is projected to cause a 1-3 percent reduction to SOHO's 26M supportability in 2005. The projected supportability during SOHO's HSO period is 87-90%. This is considered a workable percentage that should be handled during the mid-range scheduling process. RAPSO will continue to work with SOHO and other users of the DSN to maximize the time available for each individual user.