SOLAR SYSTEM OBSERVING WITH THE SPACE INFRARED TELESCOPE FACILITY (SIRTF). J. Van Cleve1 V. S. Meadows2, and J. Stansberry3, 1Ball Aerospace and Technologies Corp. (1600 Commerce St., Boulder, CO 80301; jvanclev@ball.com), 2SIRTF Science Center (MS 220-6, California Institute of Technology, 1200 E. California Blvd, Pasadena CA 91125; vsm@feisty.jpl.nasa.gov), 3Steward Observatory, University of Arizona (933 N Cherry Ave Tucson AZ 85721; stansber@as.arizona.edu)

SIRTF: SIRTF is NASA’s Space Infrared Telescope Facility. Currently planned for launch on 15 Apr 2003, it is the final element in NASA’s Great Observatories Program. SIRTF has an 85 cm diameter f/12 lightweight beryllium telescope, cooled to < 5.5K. It is diffraction-limited at 6.5 µm, and has wavelength coverage from 3-180 µm. Its estimated lifetime (limited by cryogen) is 2.5 years at minimum, with a goal of 5+ years.

SIRTF has three instruments, IRAC, IRS, and MIPS. IRAC (InfraRed Array Camera) provides simultaneous images at wavelengths of 3.6, 4.5, 5.8, and 8.0 µm. IRS (InfraRed Spectrograph) has 4 modules providing low-resolution (R=60-120) spectra from 5.3 to 40 µm, high-resolution (R=600) spectra from 10 to 37 µm, and an autonomous target acquisition system (PeakUp) which includes small-field imaging at 15 µm. MIPS (Multiband Imaging Photometer for SIRTF) does imaging photometry at 24, 70, and 160 µm and low-resolution (R=15-25) spectroscopy (SED) between 55 and 96 µm.

SIRTF Solar System Observers: The SIRTF Guaranteed Time Observers (GTOs) are planning to observe Outer Solar System satellites and planets, extinct comets and low-albedo asteroids, Centaurs and Kuiper Belt Objects, cometary dust trails, and a few active short-period comets. The GTO programs are listed in detail in the SIRTF Reserved Observations Catalog (ROC). We would like to emphasize that there remain many interesting subjects for the General Observers (GO). Proposal success for the planetary observer community in the first SIRTF GO proposal cycle (GO-1) determines expectations for future GO calls and Solar System use of SIRTF, so we would like promote a strong set of planetary GO-1 proposals. Towards that end, we present this poster, and we will convene a Solar System GO workshop 3.5 months after launch.

SIRTF Planning and Observation Tool (SPOT): SPOT is a Java-based software tool for planning, creating, modifying and submitting SIRTF Astronomical Observing Requests (AORs). The SPOT software and User's Guide can be downloaded from the SIRTF Science Center Website: http://sirtf.caltech.edu/SSC/. Figure 1 shows an example planning image for observations of Neptune, showing an unrelated point source and the zodiacal emission at 25 µm, with overlays of the SIRTF focal plane and diffraction spikes.

Figure 1: SPOT-generated ISSA 2.5x2.5 degree 25 um image showing Neptune's path (yellow), an unrelated point source (white blob), the SIRTF focal plane (enclosed by white circle), and SIRTF's diffraction spikes (red). The green grid is ecliptic co-ordinates.

A SIRTF Observation uses any of the set of 7 Astronomical Observing Templates (AOTs). A filled-out AOT is an AOR. Four of the AOTs (IRAC Mapping, IRS Staring, MIPS photometry, and MIPS Scan Map) will be commissioned during the Science Verification period (days 60-90) following launch and In-Orbit Checkout (IOC). Two more AOTs, IRS Spectral Mapping and MIPS SED Mode, are expected to be commissioned in time for the first GO Call for Proposals. All observing modes are available for moving target observations. In addition SIRTF supports

1. Shadow Observations: SIRTF Solar System observers can specify background observations in which the track across the sky can be replayed or pre-played when the target is not there.

2. Observe Offsets Only: SIRTF allows moving target observers to track on a centrally specified object, but observe only the co-moving offset positions from that central object.

3. Flexible Bright Moving Object Avoidance: Although observing close to a known bright moving object is avoided by default in the SPOT software, this feature can be deselected.
to allow observations close to bright moving objects.

SIRTF uses ephemerides derived from the Horizons database maintained by the Solar System Dynamics Group at JPL. User-defined ephemerides can also be supported. A core set of ephemerides is provided with each SPOT release. Observers can also submit a SIRTF Helpdesk request to have new objects added at any time during the proposal planning period. For approved observations, ephemerides are updated 3 weeks prior to execution on the telescope. Ephemeris updates closer to the time of execution can be accommodated but incur an additional observing time overhead.

**Website:** All of these items can be found at the SSC website:

1. Proposal Kit Website: This site contains the SIRTF Solar System Observer's section with supporting information.
2. SPOT Software
3. SIRTF Observer's Manual
4. The SPOT User's Guide
5. The SIRTF Observer's Cookbook: This document takes the reader from science concept through AOR and currently includes an example chapter on how to plan and execute a MIPS imaging study of a Centaur.
6. Horizons Tips for SIRTF Solar System Observers