April 12 - 18, 2002

The Terra spacecraft is in nominal mode. All instruments are functioning well in science mode.

A Single Event Upset occurred on the Terra Science Formatter (SFE-A) on April 14, 2002 at 1400z. An on-board Telemetry Monitor (TMON) responded to error indicators reported by the Terra Science Formatter built-in tests, and commanded the SFE-A to OFF. No science data collection or playback operations were possible with the SFE off.

The incident occurred while Terra was in the South Atlantic Anomaly. The Terra spacecraft and instruments were otherwise unaffected by this incident. After thorough analysis of the incident and consultation with the component design engineer to confirm that an SEU was indeed the root cause of the event, the Flight Operations Team (FOT) executed approved recovery procedures and SFE-A was restored to operation and science data collection resumed as normal. These procedures were also used during the initial spacecraft activation and during a similar SFE event in October 2000. Single Event Upset occurrences on this component are expected at a rate of approximately one per year. Science data collection resumed on the evening of April 15 at 2336z.

The Terra Flight Operations Team, spacecraft contractor subsystem engineers, and MODIS personnel continue to evaluate lessons learned from the March 19 safe hold event. Modified procedures were tested, verified, and executed during last week's Drag Make-up Maneuver. These changes minimize the likelihood of a similar post-maneuver safe hold event by modifying the sequence and timing for transitioning the spacecraft back to normal mode after a propulsive maneuver is completed and the transition from thrusters back to wheels occurs.

A re-evaluation of the commanding upon entering safe mode is being performed for MODIS. The specific commands to be issued to MODIS automatically via RTCS when going into safe hold are being re-evaluated to ensure that the instrument is being placed in the optimal mode for the most straightforward recovery sequence from the specific safe mode condition. The team is also working concepts for the loading of Formatter patches from the EEPROM on MODIS to minimize the likelihood of safe hold recovery problems in the future. Extensive analysis is being performed on components with the support of the MODIS instrument vendor, spacecraft contractor, and AETD radiation experts, along with the Terra FOT and MODIS Instrument Operations Team personnel.

The fourth Terra-based Aqua Ground Network Science Data Loading Test with the polar ground stations was conducted April 8-10.

The sixth planned Inclination Adjust Maneuver was postponed in order to allow adequate time to perform these evaluations and procedure modifications before performing another maneuver. Executing the sixth Inclination Adjust Maneuver at this time is not critical to the orbital relationship between Terra and the SAC-C satellite, which is the primary motivation for the maneuver sequence. No specific date has been set for re-scheduling the sixth maneuver. Preliminary Flight Dynamics planning is in progress.

There was no MODIS roll maneuver in April as a result of the fact that the lunar

geometry would have resulted in a roll angle greater than the maximum allowed by the mission rules.

The MODIS calibration roll maneuvers will resume in early May.