MEMORANDUM

Attn: Robert Perram

From: Lou Wheatcraft

Subject: DSPSE Status Meeting - 21 March 94

cc: Don Horan

File

A DSPSE status meeting was held at 1000 (EST) at the BATCAVE on 21 March 94 and chaired by Don Horan. This meeting discussed spacecraft activities from 1000 on 3/19/94 to 1000 on 3/21/94. This memorandum briefly summarizes the results of the meeting.

Engineering

We are currently transmitting orbit 141. There were several communications problems (DMOC reconfiguration) which delayed the dumping, so segment 7 will have to be dumped along with orbit 142 SSDR data. A reduced data set script for orbit 142 has been uplinked to the spacecraft to make time for this.

All spacecraft systems are nominal at this time. Temperatures and pressures are nominal. However, we are in the part of the lunar month were the RCS tank temperatures are now increasing and will probably be approximately 280 psi at the time of the periselene rotation burns. The battery pressure is getting down to 320 psi, which is on the low side but still acceptable. Shadow times are 68 minutes and should not go above 70 minutes except for the one orbit between the rotation burns when the shadow time increases to 75 minutes. Reaction Wheel #1 is at 725 rpm and the ACS engineer is monitoring the speed to determine if a momentum dump will be required later in the day.

Engineering will decide if they are going to turn off IMU-B when not in use. Although there are reasons to do this, there are also valid reasons for leaving it on. (See March 16-17 status report for more details.) Also, an alarm has been set to notify the engineer on console if there are any IMU problems so the engineer can quickly assess the situation that caused the alarm.

The RF engineer outlined the status of the bistatic RF test and the open items. He will be getting with the proper personnel to resolve these items and firm up the schedule and procedures to accomplish this test. (See March 16-17 status report for more details.)

Flight Software

Flight software engineers looking into the DHU reset problem have provided the engineer and flight software console personnel the memory address to be dumped for further DHU resets. This data should help to better determine the cause of the resets and develop a fix for this condition.
To allow flight software engineers time to develop and test flight software required after lunar orbit departure, test bed time is being reserved for them. Starting on 22 March (tomorrow), they will have the test bed from 1300-1900 (local) every day. 0800-1200 will be used to verify the lunar mapping scripts that will be needed during the flight software test bed time. Because we are coming up on increased RF blockage times that affect SSDR dump times, and because the periselene rotation burns are coming up, it was recognized that some of the flight software test bed time may have to be given up to make sure any resulting scripts can be checked out before they are uploaded. SMOP will try to stay far enough ahead to minimize the times when the flight software engineers will be bumped from the DOTB.

**TAMP**

The spacecraft orbit is tracking well. The next RF blockages will start on 25 March on the dark side of the moon, which will affect the time for SSDR transmissions. The shadow traversals are now approximately 69 minutes and will increase to approximately 70 minutes by the end of the month, and will then decrease.

The periselene rotation burn is still scheduled for 26 March. The rotation will be accomplished in two burns: one occurring at approximately 0221 GMT on orbit 163 (106 m/s) and the other at approximately 1251 GMT (106 m/s) on orbit 165. Orbit 164 will be an 8 hour orbit (rather than the normal 5 hours) and will result in a 75 minute shadow period. A contingency trim burn is being scheduled for 25 hours after the second burn if needed.

**Sensors**

Sensor operation during lunar imaging continues to be nominal. There is an unexplained problem of repeating frames at the beginning of a segment. While we can explain this happening at the end of a segment, we don’t understand how the same condition could cause repeating frames at the beginning of a segment. This problem is being investigated further.

**SMOP - Mapping Results**

New sequence tables for the startrackers have been developed and we need to decide on which orbit after 22 March all sequence tables, scripts, etc. will be updated to start using startracker B. It was suggested that this be done sometime between orbits 151 and 155.

Completed orbits 132 through 141 and the SSDR image data from these orbits have been transmitted. There were several communications problems (DMOC reconfiguration) which delayed the transmission so segment 7 from orbit 141 will have to be transmitted along with orbit 142 SSDR data. A reduced data set script for orbit 142 has been uplinked to the spacecraft to make time for this.

We are now back on the near side of the moon and are imaging areas we flew over after lunar arrival but before beginning systematic mapping. No more special observations are being scheduled until after the shadow period decreases and after the RF blockage periods are over. However, prior to the RF blockage periods on March 25, the sequence tables will be modified to obtain some HiRes color images (multiple filters) at the higher latitudes.

SMOP has released a new schedule for lunar mapping. This schedule goes to lunar orbit departure and imaging requirements for post mapping are now being planned. The Science Team
met on March 19 and will again meet on April 1 to provide their recommendations for post mapping imaging. One item being considered is to lower the periselene to better image an Apollo landing site. The question is to what altitude: 50 km or 100 km? Dr. Shoemaker said that at 50 km there should be no problem with image clarity, using the clear filter on the HiRes, they can get good images without smearing. The main problem is being able to accurately point the cameras to where you want the images taken. If we were to go down to 50 km, there is another experiment that could be done concerning gravity and the depth of the lunar crust but more work needs to be done to better define this experiment and to analyze if it can really be done and meaningful data collected. Reasons for not going to 50 km are: the propellant usage would preclude a possible second asteroid flyby, camera pointing would be more accurate, and the 100 km altitude is the same distance as is being targeted for the asteroid flyby.

**Scheduling**

All required DSN support is on the schedule. Scheduling personnel are working with DSN to find out the cause of the communications problems that resulted in the loss of orbit 131 imaging. Lt. Col. Rustan asked Todd Alexander to write up what happened so a letter could be sent to NASCOM to try and prevent this problem from happening again.

Playbacks for orbits 35, 35, & 43 SSDR dumps are scheduled today with DSN, and data playbacks for orbit 46 & 54 are scheduled for tomorrow.