DSPSE Operations Staffing Plan

- Driven by Lunar Operations
  - 70 Days, 24 hrs/day, 7 Days Per Week
  - Four Flight Operations Teams
    -- 3 Shift Operations
    -- 9 hour Shifts
  - One Support Team
    -- Single Shift
    -- May Coincide with Pomonkey C&C
- Staffing For All Other Phases Are A Subset Of Lunar Operations Staffing
DMOC Shift Operations Positions:

- Trajectory Analyst
- Mission Science Planner
- Scheduler
- Operations Controller
- Spacecraft Engineer
- Data Manager
- Mission Sensor Specialist
Trajectory Analyst

- Complete familiarity with use of all program software for trajectory identification, planning and design;

- Complete familiarity with use of all trajectory data from Goddard Space Flight Center (GSFC), Deep Space Network (DSN), Navy Space Surveillance Center (NAVSPASUR), and US Space Command

- Skilled in personal interaction on trajectories with GSFC representatives

- Modify tracking requirements for trajectory determination

- Communicate modified tracking requirements to scheduling and operations control personnel

- Prepare, analyze and present options for trajectory modification to react to a changing environment and control undesirable trends

- Prepare plans for trajectory modification; test trajectory modification plans on test bed

- Communicate trajectory modification plans to scheduling and operations control personnel.
Mission Science Planner

- Examine stored mission science data transmitted from the spacecraft in a timely manner to verify adequacy of plans and on-board algorithms for acquisition of next mission science data set and modify plans and algorithms
- If necessary; test modified mission science plans and on-board algorithms on test bed
- Communicate modified mission science plans and algorithms to scheduling and operations control personnel
- POC for SAC & LLNL representative. Skilled in personal interaction on mission science with NASA and LLNL representatives
- Suggest options for mission science modification to react to a changing environment.
DMOC Shift Operations Staffing (3 Of 7)

Scheduler

- Maintain and modify an integrated spacecraft schedule including inputs for mission science, engineering, and trajectory control
- Maintain and modify support schedules and activities for primary and secondary ground stations and DSN sites
- Modify and test event plans as required for every involved DSPSE ground station.
- The scheduler may also be the shift's test bed expert.
Operations Controller

- Interact with all ground stations supporting DSPSE
- Maintain and control data base for event plans, commands, data and supporting software for ground stations
- Ensure that event plans, commands, data, and supporting software are transmitted to the ground stations
- Control flow of data and information between BATCAVE and ground stations
- Review each event plan with supporting ground stations immediately prior to each event
- Communicate with and direct ground stations during events
- Review execution of each event with involved ground stations immediately after the event and define required modifications to subsequent event plans.
- Operations controller may also be the shift's expert in external communications.
Spacecraft Engineer

- Examine real time data while it is being received from the spacecraft to verify proper operation of critical on-board subsystems, such as electrical power, attitude control, thermal control
- Complete familiarity with all on-board systems and subsystems
- Examine stored engineering data transmitted from the spacecraft in a timely manner to verify proper operation of non-critical subsystems and to monitor long term trends
- Modify plans and commands for control of spacecraft subsystems to respond to changes from mission science and trajectory control,
- React to a changing environment, and control undesirable trends
- Test modified engineering plans and new commands on test bed
- Communicate modified engineering plans to scheduling and operations control personnel.
- The spacecraft engineer might also share the skills of the test bed expert.
Data Manager

- Manage on-line storage of data in shared, multiple-access memory areas
- Route incoming data to the proper computers, storage devices and storage locations and store in the proper format
- Route outgoing data from its storage location to the appropriate transmission device in the proper format
- Maintain logs on all incoming and outgoing data
- Maintain off-line data library and logs
- Transfer data from off-line to on-line storage in the proper location and format
- Transfer data from on-line to off-line storage.

- The Data Manager could also serve as the shift's computer software expert and would have some computer hardware skills.
Mission Sensor Specialist

- Complete familiarity with all of the mission science sensors, associated software and their operation in the spacecraft: UV/visible camera, high resolution camera, NIR camera, LWIR camera, and startracker

- Examine real time data while it is being received from the spacecraft to verify proper operation of mission sensors

- Examine mission sensor data transmitted from the spacecraft in a timely manner to verify proper operation of mission sensors and to monitor long term trends.

- Review all mission science data with the mission science planner as soon as it arrives in the BATCAVE.

- Work with the mission science planner to define required modifications to existing mission science plans and on-board algorithms.
Support Staff

- The Support Staff cannot hinder or depend on the DMOC Shift Operations Staff
- Require all of the skill categories described in paragraph 2 but with more emphasis on the trajectory analysis, mission science planning, mission sensors, engineering, and scheduling skill categories.
- Prepare schedules for later lunar orbits
- Prepare and test event plans, and plans for trajectory adjustment, mission science and engineering for later lunar orbits
- Prepare and test on-board algorithms
- Prepare and test specific plans for intermittent tests and experiments, such as autonomous navigation and rehearsals for later events
- Generate (build) and test on the test bed all spacecraft commands; transmit commands and supporting data and software to ground stations
- Define tracking requirements for trajectory determination
- Prepare daily tapes showing mission progress and recent data for sponsor and program review
- Make overall modifications as required to make life easier for Flight Operations
DSPSE Mission Operations 12/16/92

Lead Console Positions

Functions:

• Help Specify Console Requirements
• POC With HW & SW Developers
• Help Development By Providing Operations Perspective
• Develop Standard Operating Procedures & Training Plans

Trajectory Analyst            - D. Bakeris
Mission Science Planner       - R. Prescott
Scheduler                     - T. Alexander
Operations Controller         - G. Tegano
Spacecraft Engineer           - J. Devine
Data Manager                  - K. Fields
Mission Sensor Specialist     - R. Reisse