

PREMISSION DOCUMENTATION CHANGE NO. 18
AS-506 MISSION SUPPLEMENTS
SECTION 36. PARKES, AUSTRALIA 210-FOOT
ANTENNA SUPPORT

June 1969

This PDC covers the issuance of Section
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is effective upon receipt.

Approved by:

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SUPPLEMENT TO SECTION 36. PARKES, AUSTRALIA
210-FOOT ANTENNA SUPPORT

36.1 GENERAL

The Parkes, Australia 210-foot antenna facility will support the lunar surface phase of the mission and will be the prime station for LM mode 10 data which includes TV, A/G voice, PLSS biomed and TLM data. The HSK STADIR will provide the operational interface between Parkes and GSFC/MCC.

36.2 EQUIPMENT INSTALLATION AND CHECKOUT

A simplified block diagram showing equipment at Parkes, Sydney, and HSK is shown in figure 36-1. All GSFC equipment at Parkes will be installed, tested, and operated by GSFC personnel. An implementation schedule is shown in figure 36-2.

36.3 COMMUNICATIONS

36.3.1 GENERAL

To ensure best video transmission from HSK or Parkes to MCC, a TV control center at Sydney will be established. This center will have full monitoring, signal, correcting, switching, and test signal generation capability. The AS-506 Australia TV TLM System is shown in figure 36-3.

36.3.2 MICROWAVE CIRCUITS

The temporary HSK-Canberra microwave was ordered for May 1 and RFI tests at HSK were made at that time so that there would be maximum time to solve problems. These will be followed by video transmission tests to Sydney to check out the Australian system and a test from HSK to Houston at an agreeable time. The Parkes-Coonambo temporary microwave is planned to be made available July 1 to be ready for tests when the Parkes station is turned over for NASA operation.

36.3.3 VOICE/TELETYPE CIRCUITS

36.3.3.1 4-Wire Voice Coordinating Circuit. So that Parkes can operate as a wing of HSK, a 4-wire voice coordinating circuit via the Canberra Switching Center from HSK to Parkes and Sydney will be provided. This circuit will be designated as Net 7. The addition of Sydney provides for real-time video coordination. By bridging these three points at Canberra, each branch can be used independently and conferenced only as required. During the Parkes installation, this circuit can provide the means for NASA personnel to reach GSFC or MCC. The termination at Parkes must be 4-wire to make this possible.

36.3.3.2 Canberra to Parkes Voice Circuit. A second voice circuit will be available from Canberra to Parkes. This circuit will be patched to Net 1 and will give Parkes a Net 1 monitor capability.

36.3.3.3 Telex Circuit. One Telex circuit will be used between HSK and Parkes.

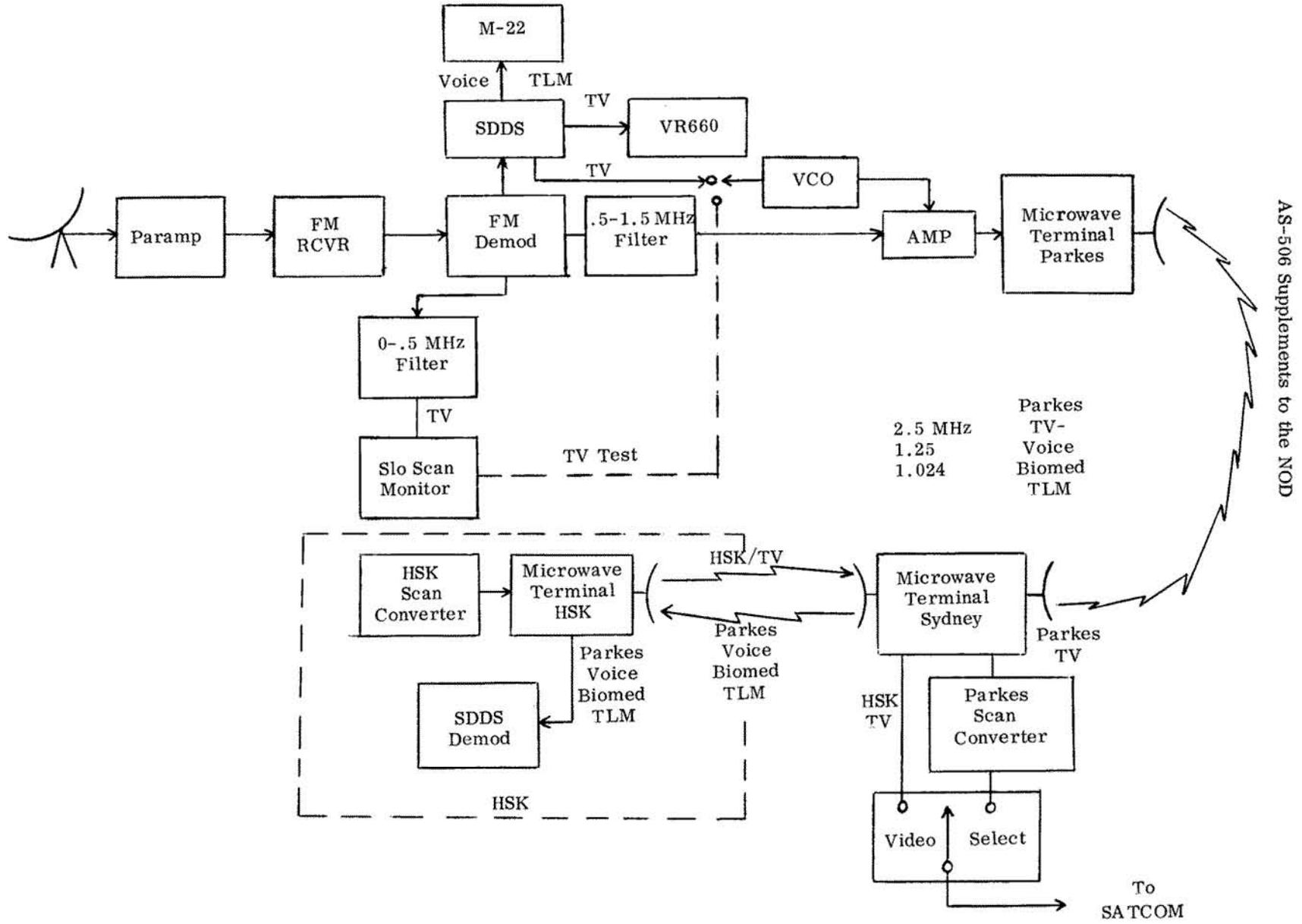


Figure 36-1. Equipment at Parkes, Sydney, and HSK

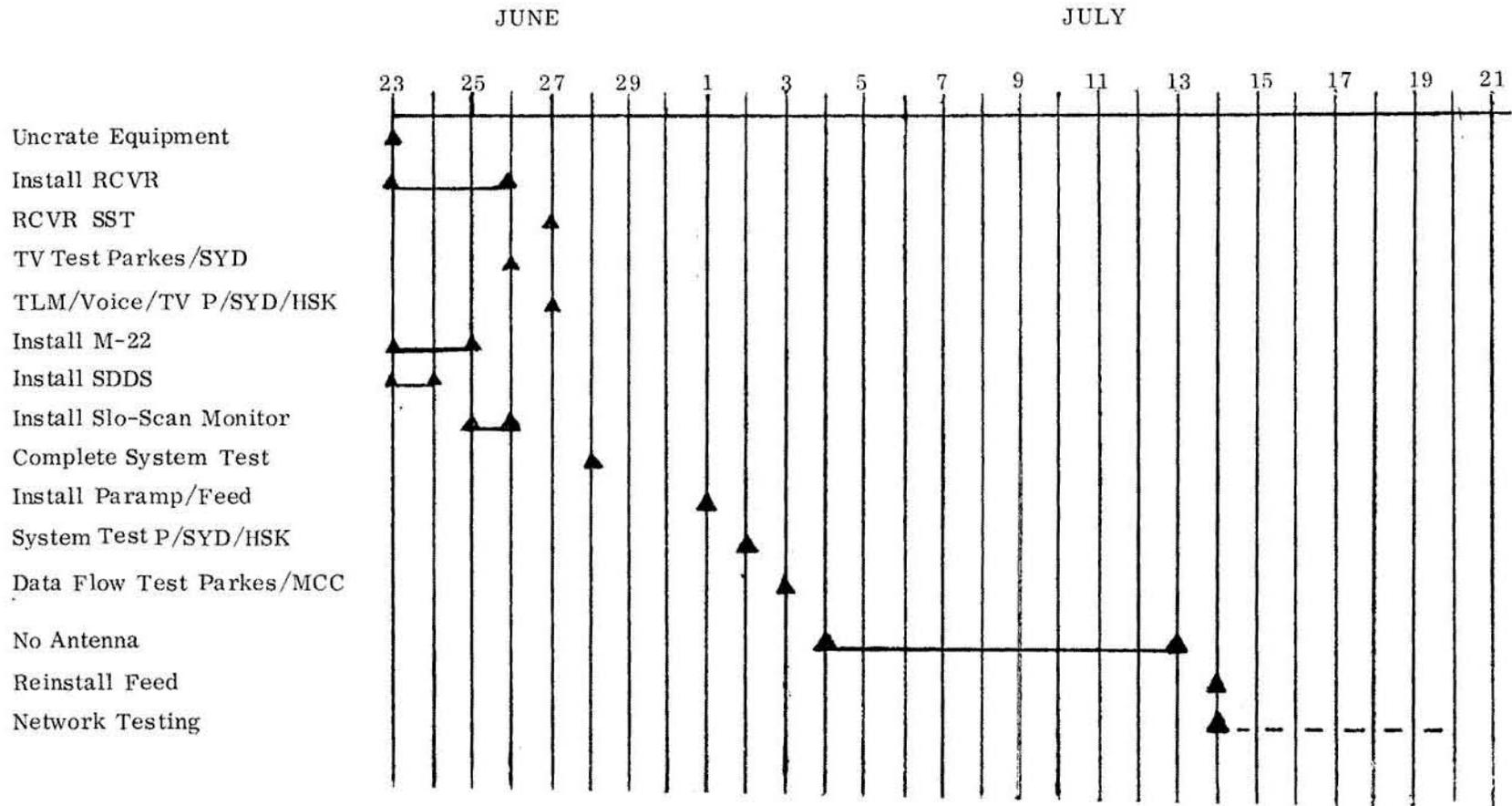
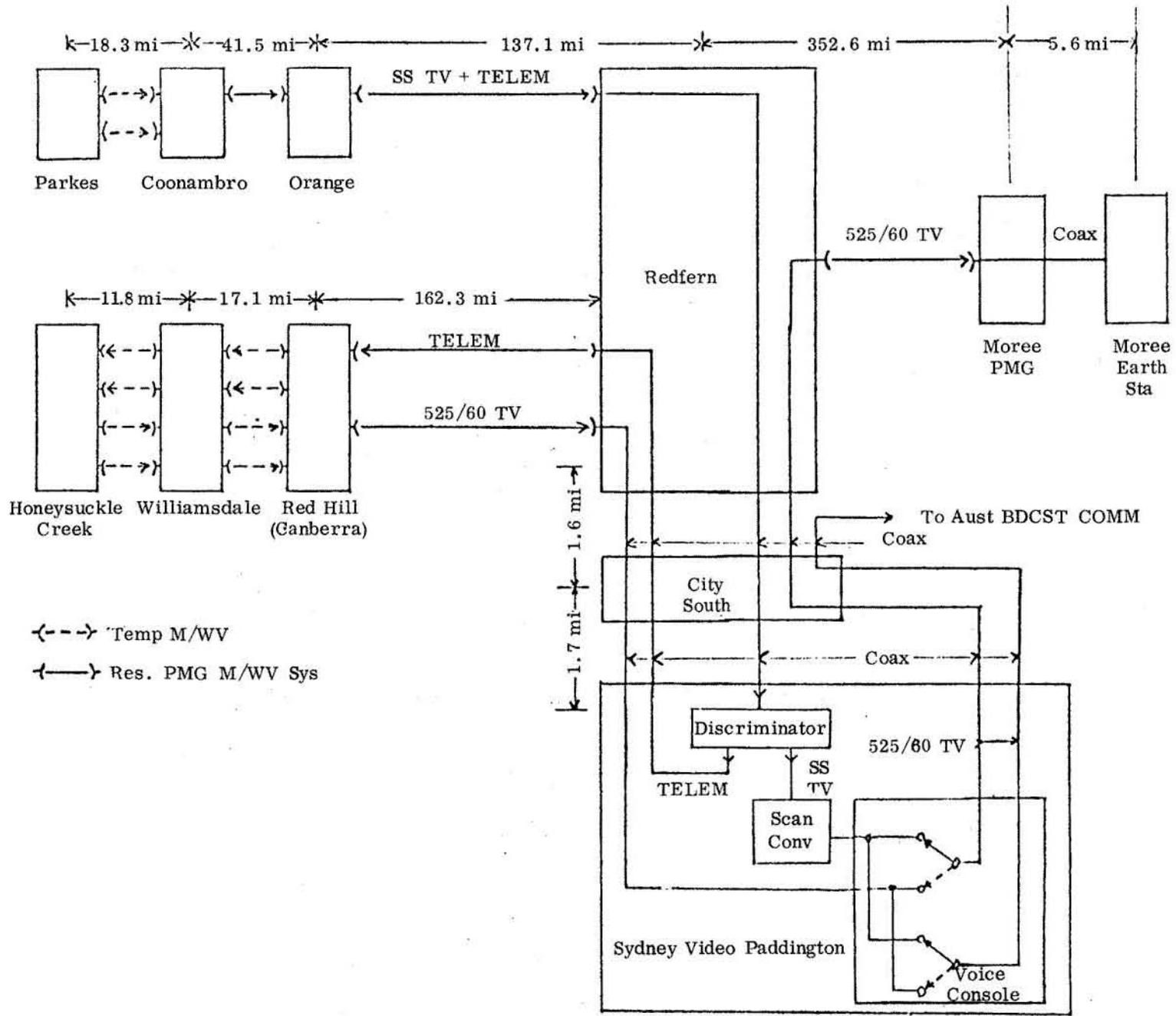


Figure 36-2. Parkes Implementation Schedule

PDC-18

36-4



AS-506 Supplements to the NOD

Figure 36-3. AS- Australia TV TLM System

36.4 MANNING

GSFC will provide the following personnel to Parkes and Sydney:

<u>Parkes</u>		
<u>Position</u>	<u>Name</u>	<u>Organization</u>
Operations Manager	Mr. R. C. Taylor	MFED
Receiver Engineer	Mr. W. R. Reytar	MFED
Recorder Technician	Mr. A. R. Stella	MILA
SDDS Technician	Mr. G. W. Krop	MILA
<u>Sydney</u>		
<u>Position</u>	<u>Name</u>	<u>Organization</u>
Communications Manager	Mr. Goodman	NASCOM
Communications Engineer	Mr. R. Holl	MFED
Scan Converter Engineer	-	RCA

Mr. Taylor will be responsible for the overall operation and will be the interface with the HSK STADIR. Mr. Goodman will be responsible for all communications and for the selection of HSK/Parkes video, at Sydney, for transmission to MSC.

36.5 PREMISSION TESTING

36.5.1 GENERAL

R. Taylor, GSFC OPS Manager, will ensure that adequate testing and test documentation will be available for system checkout prior to direct mission support. He will serve as GSFC point of contact and will coordinate all tests, test schedules, and test results with STADIR, HSK.

36.5.2 SUBSYSTEM TESTS

SSTs are available for the following equipment and will be utilized:

SST 411 H-01	----	Apollo slow scan TV monitor.
SST 411 H-04	----	Slow scan to commercial TV converter.
SST 417 G-00	----	USB single date demodulator.
SST 420 C-10	----	M-22 tape recorder.

Tests for paramp, RCVR, FM demod, VCO, and interface links will be prepared by MFED.

36.5.3 MFED TESTING

MFED will test components individually and as a system (less microwave) at GSFC. These results will be used as a basis for comparison after installation. Total system sensitivity will be measured on station and checked prior to CFFT, launch, and lunar support.

36.5.4 TEST EQUIPMENT

MFED will provide test equipment to check the system out and provide signal simulation. Signals to be simulated are:

<u>Type</u>	<u>Source</u>
PLSS	Tape recorder (Data recorded at MIL during FRT)
Voice	Tape recorder
TV	Bar generator (TV monitor)
PCM	AC tape for HSK/MCC test Fredric - 600 local treshold test

36.5.5 DATA FLOW INTERFACE TESTING

36.5.5.1 End-to-End Data Flow Tests. On July 3 and July 14, end-to-end data flow tests will be conducted between Parkes, Sydney switch, HSK, and MSC. The tests will consist of flowing PLSS biomed (tape data) and TLM data (AC confidence tape) from Parkes to MSC via Sydney, HSK, and GSFC. At the same time, a TV test pattern will be transmitted from Parkes to MSC via Sydney. The NOM will schedule these data flow test and generate a briefing message not later than 3 days prior to the tests.

36.5.5.2 Parkes and Sydney Data Flow Tests. Additional data flow tests will be conducted between Parkes and HSK via Sydney during the period from July 4 to July 13. These tests will be conducted to maintain confidence in the Parkes/Sydney, HSK communication during this period. However, since the S-band feed system will be removed from the antenna during this time, the test signals must be injected at the receiver instead of the paramp. These tests will be scheduled by the HSK STADIR and R. Taylor, GSFC OPS Manager.

36.5.5.3 F-2 Day SRT Interface. During the F -2 day SRT, the HSK STADIR will interface with Parkes. The timeline for the interface will be established by the HSK STADIR and R. Taylor, GSFC OPS Manager. This test will consist of a TV test pattern to Sydney and PLSS voice and PCM data to HSK. If CADFISS testing of Parkes data is required, the NOM will coordinate with the HSK STADIR. Otherwise, decom lock and 642B acceptance of data only will be validated by HSK.

36.5.5.4 H-70 Count Interface. A similar time line for interface testing will be required prior to the HSK H-70 count for the HSK/Parkes lunar support day.

36.6 MISSION SUPPORT

36.6.1 GENERAL

GSFC equipment will be operated by a group headed by R. Taylor. Prepass checklists will not be published. However, they will be prepared locally once installation is completed. This list will be checked during the H-70 count for HSK (Prime) on the day of the lunar landing.

36.6.2 PARKES STATUS

R. Taylor will send Parkes status daily through the HSK M&O. HSK will add this at the end of their STATUS MSG.

36.6.3 ACQUISITION DATA

Acquisition data has been furnished Parkes in moon/landing site tables. Offsets to these tables will be provided Parkes after MCC has determined landing site.

36.6.4 TV TRANSMISSION

HSK M&O will notify Parkes when TV transmissions are expected. Parkes will place a TV test pattern on-line one hour prior to expected TV downlink. The TV test pattern will be removed as soon as live TV is acquired.

36.6.5 TRACK ASSIGNMENTS

One M-22 tape recorder will be provided for this installation. Track assignments are as follows:

<u>Data</u>	<u>Track</u>	<u>Type</u>
Annotation	1	DIR
PLSS/voice	9	DIR
TV	8	FM
TLM PCM	7	FM
FM AGC	10	FM

Additional recordings or redundant recording of data may be made on spare channels with tape labels properly annotated.

36.6.6 RECORDER SPEEDS

Recorder TECH may vary recorder speed consistent with data, on the same reel.

1.6 kbps	15 ips
51.2 kbps	30 ips
TV	120 ips

Proper annotation should be made on tape label.

36.6.7 DATA SHIPMENT

All recorded data should be shipped air freight to:

Goddard Space Flight Center
Data Services Section
Code 824.3
Greenbelt, Maryland 20771

36.6.8 MISSION RELEASE

NOM will send mission release messages for Parkes through HSK M&O as soon as Parkes' total support is completed.