LUNAR EXCURSION ORDERS / SPACECRAFT COMMANDER

SECURITY GRADE: ONE

POST TOUCHDOWN PROCEDURE (LUNAR MODULE)

PHASE 1 3 minutes.

Advise Command & Service Module of touchdown.

State attitude of Lunar Module (upright, or degree of inclination to port/ starboard, fore/aft).

Activate exterior scan TV.

Establish direct communication contact with Control independent of Command & Service Module (conduct normal multi-channel checkout procedure).

YOU WILL LOSE RADIO CONTACT WITH COMMAND & SERVICE MODULE AS IT DISAPPEARS OVER MOON HORIZON 19 MINUTES AFTER TOUCHDOWN IF NORMAL DESCENT HAS BEEN ACHIEVED.

PHASE 2 13 minutes.

Lunar Module systems checkout.

Life support systems checkout.

Lunar Module ascent engine test.

DECLARE GO/NO GO STATUS OF MISSION.

NO GO PROCEDURE (EMERGENCY)

Advise Command & Service Module: NO GO.

Start EMERGENCY LIFTOFF PROCEDURE.

LIFTOFF. Advise.

MAINTAIN MAXIMUM VOICE COMMUNICATION WITH CONTROL THROUGHOUT.

On achieving Command & Service Module orbit, 80 miles high, await direction from Control concerning emergency rendezvous.

AT THIS POINT, CONTROL WILL ADVISE ESTIMATED TIME OF DOCKING.

Hold.

If Command & Service Module is behind Moon, you will be advised of instructions that will be given to Command & Service Module pilot for rendezvous.

Await contact with Command & Service Module.

IF IN CONTACT WITH COMMAND & SERVICE MODULE, FOLLOW NORMAL EMERGENCY RENDEZVOUS ROUTINE.

APOLLO LUNAR SURFACE EXPERIMENTS

(All units of the experiments have been stowed in hatches in the descent stage of the Lunar Module)

Contents and purpose of equipment

SOLAR WIND SPECTROMETER

Weight 1 lb.
Deployment time 4 minutes.
A device for measuring the intensity and variation of solar radiation on the Moon. A sheet of aluminium foil is placed facing the sun to entrap the gases in the solar wind. It is retrieved before the astronauts leave the Moon and returned to Earth for analysis.

LASER REFLECTOR

Weight 70 lbs.
An array of precision optical reflectors which serve as a target for Earth-based laser beams. Data obtained will improve the measurement of Earth-Moon distance and fluctuations of the Earth's rotation.

SEISMOMETER

Weight 100 lbs.
Deployment time 6 minutes.
Seismic devices will be placed on the Lunar surface, and will record and transmit Moon tremors to Earth. The transmitter will be powered by solar cells. Radio-isotope heaters are provided against the extremely cold lunar nights. The unit will be operative for one year.

PHASE 3 / Major Tasks follow

PHASE 3 180 minutes.

MAJOR TASKS DURING FIRST EXCURSION (Two astronauts on Lunar surface)

Task	Time in minutes	
Suit system & Back-pack checkout	10	
Decompress Lunar Module	6	
Exit from Lunar Module procedure	6	
Test your physical mobility and stability	4	
Collect 'grab sample'	6	(See below)
Lunar Module external checkout	10	
Pass up and receive equipment	7	
Erect S-band (Moon brolly) antenna	12	
Prepare Lunar Surface Experiments for carrying	13	
Walk to deployment site	5	
Rest time	6	
Deploy experiments (two men)	31	
Collect samples	30	
Load samples and close sample container	20	
Return to Lunar Module	4	
Prepare to enter Module with No. 1 Sample container	10	

FIRST EXCURSION MISSION COMPLETED. REPORT.

'GRAB SAMPLES' PROCEDURE

Grab samples are pieces of Lunar material immediately available in the vicinity of the Lunar Module. These are collected without regard to quality and retained in case emergency liftoff is necessitated in early stages of exploration.
THEY WILL BE REPLACED by 50 lbs. of superior selected samples if exploration mission proceeds according to plan.
A POSSIBLE SECOND EXCURSION MAY BE CARRIED OUT ENTIRELY AT THE DISCRETION OF THE COMMANDER, AFTER SUITABLE REST PERIOD AND AT A TIME DEEMED OPPORTUNE BY THE COMMANDER, AS FOLLOWS ...

PHASE 4 180 minutes.

MAJOR TASKS DURING SECOND EXCURSION (Two astronauts on Lunar surface)

Task	Time in minutes
Suit systems and Back-pack checkout	10
Decompress Lunar Module	6
Exit from Lunar Module procedures (one astronaut)	6
Pass up and receive equipment	5
Exit from Module procedures (second astronaut)	5
Walk out 300 feet	5
Walk out 1,700 feet	12
Rest time	6
Collect samples (noting location of each on map) and return to sample container	91
Park and close sample container	20
Return to Lunar Module	4
Prepare to enter Module with second sample container	10

SECOND EXCURSION MISSION COMPLETED. REPORT.

NOTE: DURING EXPLORATION, ALTHOUGH BIO-MEDICAL DATA IS AUTOMATICALLY TRANSMITTED TO CONTROL VIA 'BIOSENSORS', ASTRONAUTS ARE URGED TO REPORT UNUSUAL PHYSICAL SENSATIONS AS THEY OCCUR, REGARDLESS OF WHETHER THEY APPEAR TRIVIAL.

VISUAL AND PHOTOGRAPHIC COVERAGE OF LUNAR SURFACE

PHOTOGRAPHIC ACTIVITIES/LUNAR EXPLORATION

A comprehensive programme of photography will be carried out on the Lunar surface. Hasselblad cameras, with thermal protection to maintain equable temperature on camera and film are used. The astronauts will, generally, take stereo pairs of pictures. Because of weight considerations, cameras and equipment will be left on the Moon.

TV ACTIVITIES/LUNAR EXPLORATION

TV transmitter located on the Lunar Module will scan the landing area. It will be set to observe the astronauts while they are performing their various tasks. LIVE TRANSMISSION from the Lunar surface will be continuous.