SECTION 4

AUXILIARY EQUIPMENT

4.0 INTRODUCTION

This section contains the LRV and 1G Trainer auxiliary equipment which includes provisions for transporting miscellaneous equipment for support of lunar activities including experiments, communications and photograph.

4.1 FORWARD CHASSIS PAYLOAD PROVISIONS

The forward chassis contains the equipment necessary to transport the LCRU, the high gain antenna, and the ground controlled television camera assembly (GCTA).

4.1.1 Lunar Communications Relay Unit (LCRU)

The LCRU is mounted in the two inboard receptacles on the forward chassis forward frame member as shown in figure 4-1. To conserve crew time on the lunar surface, the two LCRU support posts are installed in these receptacles at KSC before securing the LRV in the LM. In addition, the LRV/LCRU power cable is also connected to the LRV auxiliary connector before launch. The LCRU support posts and LRV/LCRU power cable are stowed on the LRV as shown in figure 4-2.

4.1.2 High Gain Antenna and GCTA

The high gain antenna is secured to the left outboard receptacle on the forward chassis forward frame member (figure 4-1). This receptacle is identical to the one on the right outboard side for the GCTA.

Provisions for securing the LCRU low gain antenna coax cable to the LRV are shown on figure 4-3.

4.2 CENTER CHASSIS PAYLOAD PROVISIONS

The center chassis has provisions to carry auxiliary equipment on the inboard handholds, under the crew seats and on the chassis floor.

4.2.1 Inboard Handhold Payload Receptacle

The inboard handholds are provided with receptacles for supporting the 16 mm Data Acquisition Camera and low gain antenna as shown in figure 4-4.

4.2.2 Under-Seat Stowage

One collapsible stowage bag is provided under each seat for transporting miscellaneous payload items. These bags are installed on the LRV before launch.

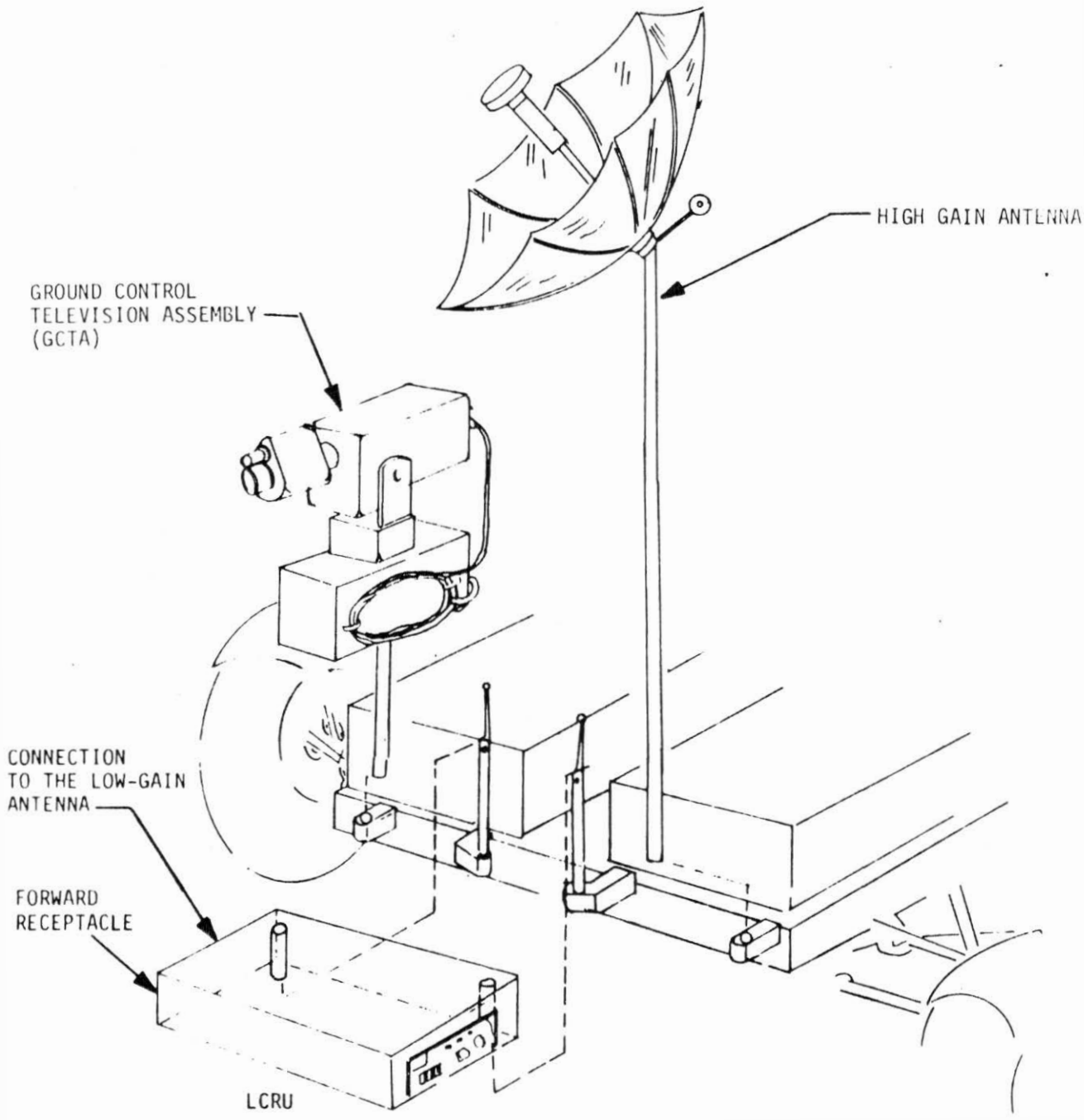


FIGURE 4-1. LCRU, HIGH GAIN ANTENNA, TV CAMERA INSTALLATION

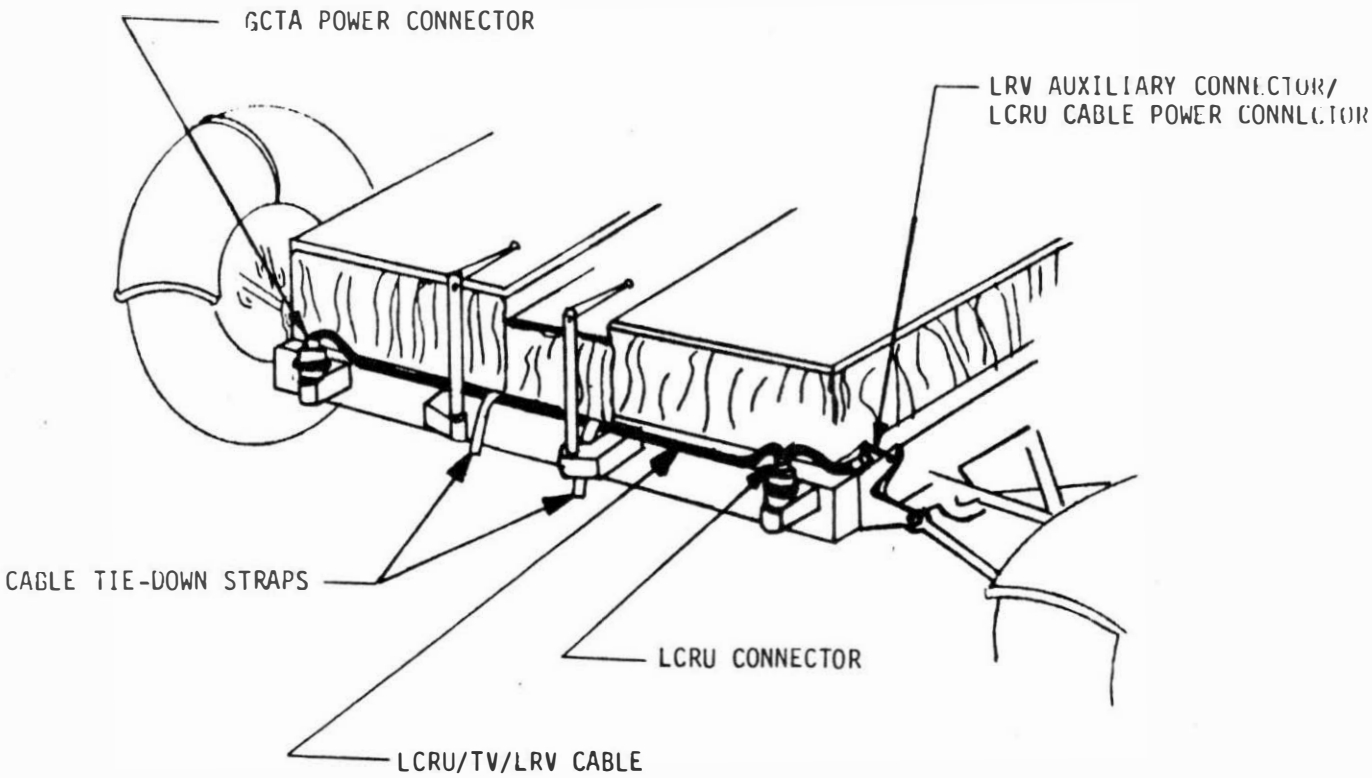


FIGURE 4-2. LCRU/TV/LRV CABLE STOWAGE

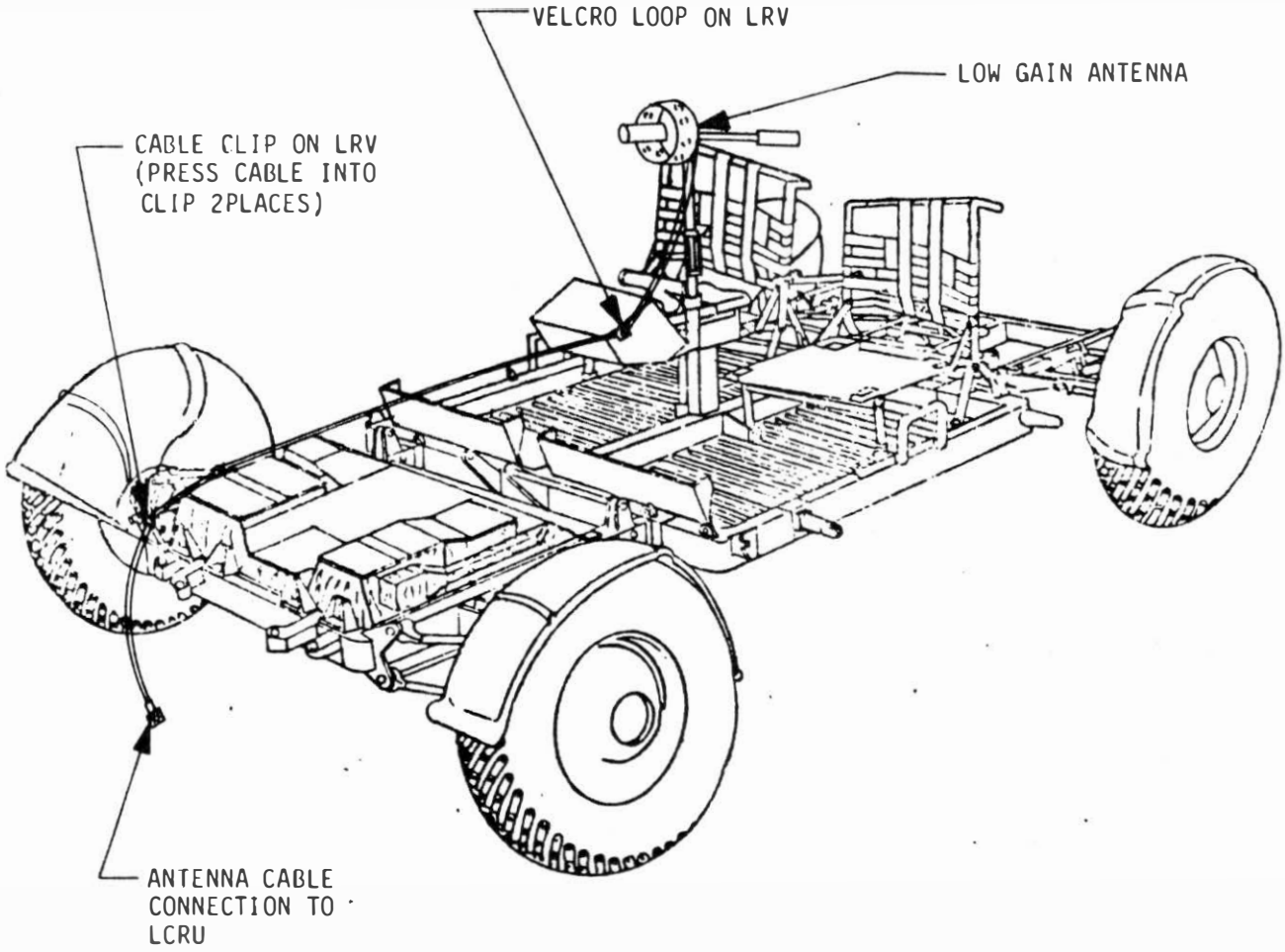


FIGURE 4-3 LCRU LOW GAIN ANTENNA CABLE
INSTALLATION ON LUNAR SURFACE

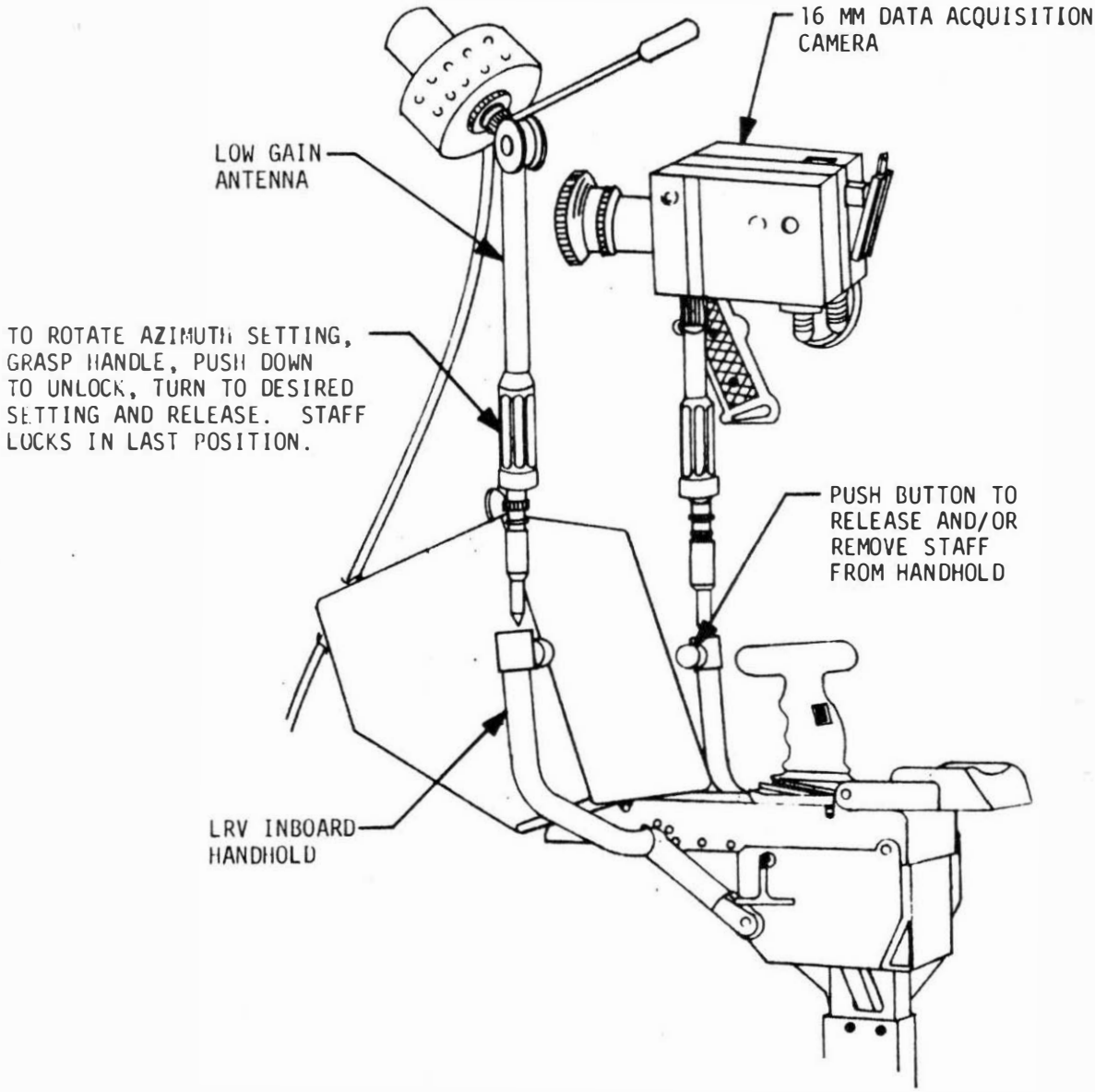


FIGURE 4-4 . 16 MM DAC AND LOW GAIN ANTENNA INSTALLATION

4.2.2 (Continued)

The two bags are identical and are of the configuration shown in figure 4-5. The forward end of each bag is secured to the seat support frame. The bags are automatically erected to the useable position when the seat support frames are raised during LRV activation. The aft ends of the bags are held in place by springs attached to the rear member of the center chassis and by attachment to cross member on the seat back.
During operations, access to the stowage bags is gained by raising the seat off the seat support which exposes the entire bag and contents.

4.2.3 Floor Payload Stowage

When only one astronaut is operating the LRV, the area normally used by the second crewman may be used for payload stowage. This is accomplished by placing the seat in the operational stowage position shown in figure 4-6. The seat is secured in the stowed position by velcro straps.

NOTE: The under seat stowage bag must be removed to use the floor area as a stowage area.

4.2.4 Back-of-Seat Payload Stowage

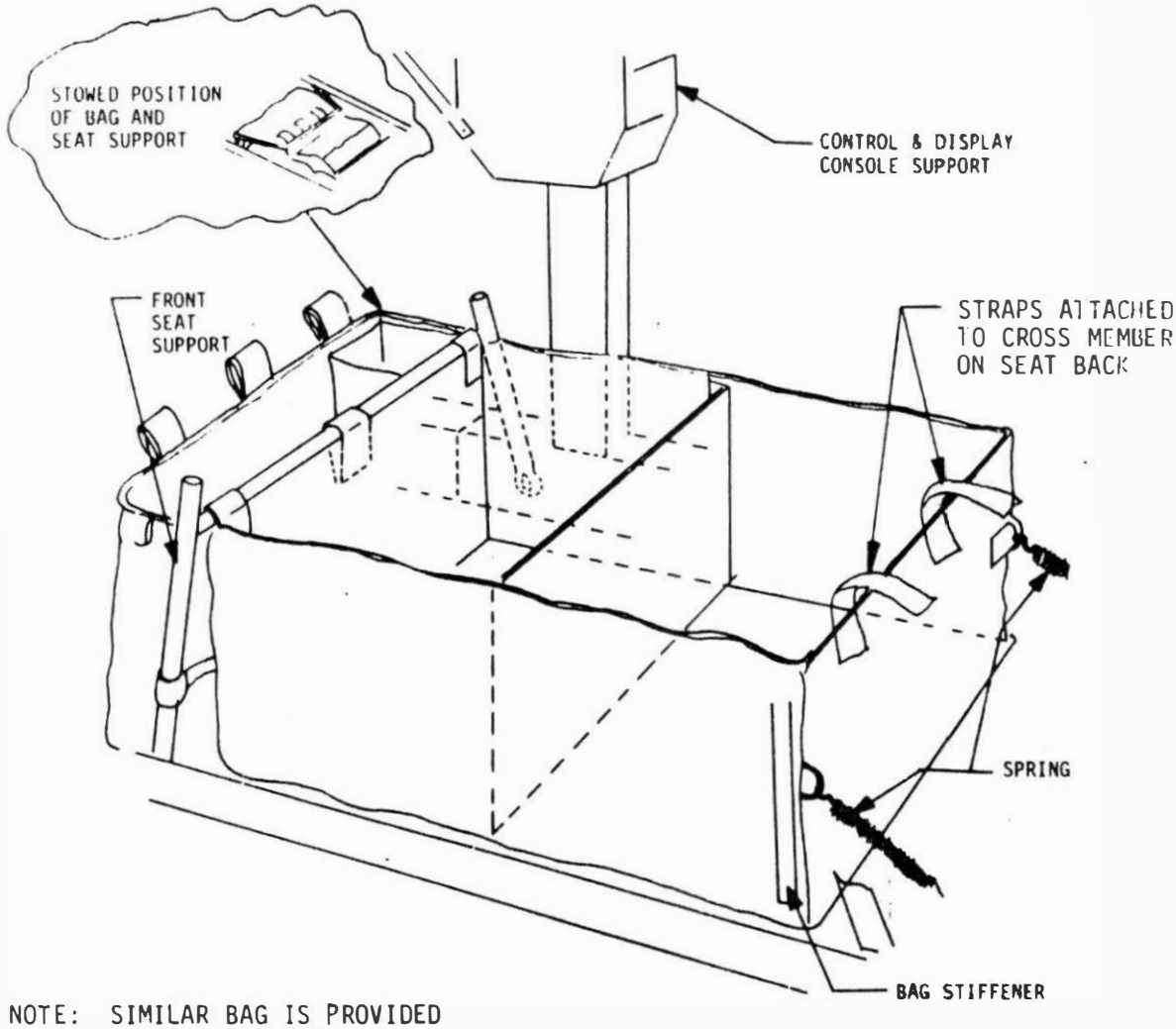
The Buddy SLSS umbilical is carried in a bag attached to the back of the LRV right seat. Specific interface is shown in figure 4-7.

4.3 REAR CHASSIS PAYLOAD PROVISIONS

Payload stowage provisions for the rear chassis are shown in figures 4-8 and 4-9. The LH and RH adapters and pallet support posts are installed on the LRV before launch, arriving on the lunar surface in the configuration shown in figure 4-8. The payload pallet which interfaces with the adapters and support posts is stowed in LM Quadrant III, and arrives on the lunar surface with payload items already installed on the pallet. The crew removes the pallet from Quadrant III and installs the pallet, with attached payload, onto the support post and adapters on the LRV.

*** 1G Trainer Note ***

The rear chassis payload adapters for the 1G Trainer will allow identical astronaut functions to be performed, but the configuration of the adapters is not exactly identical to the LRV adapters.



NOTE: SIMILAR BAG IS PROVIDED
UNDER RIGHT SEAT

FIGURE 4-5 UNDER-SEAT STOWAGE BAG (LEFT SEAT)

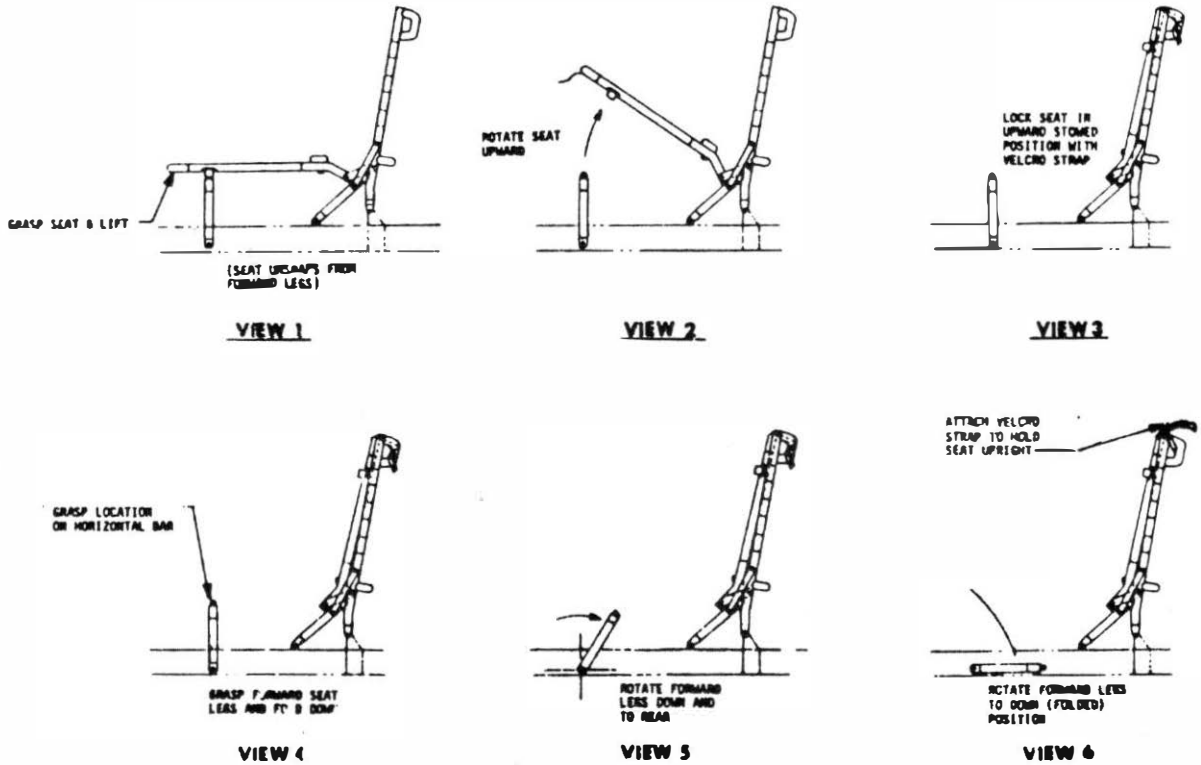


FIGURE 4-6 PASSENGER SEAT STOWAGE TO CREATE PAYLOAD AREA ON CENTER CHASSIS FLOOR

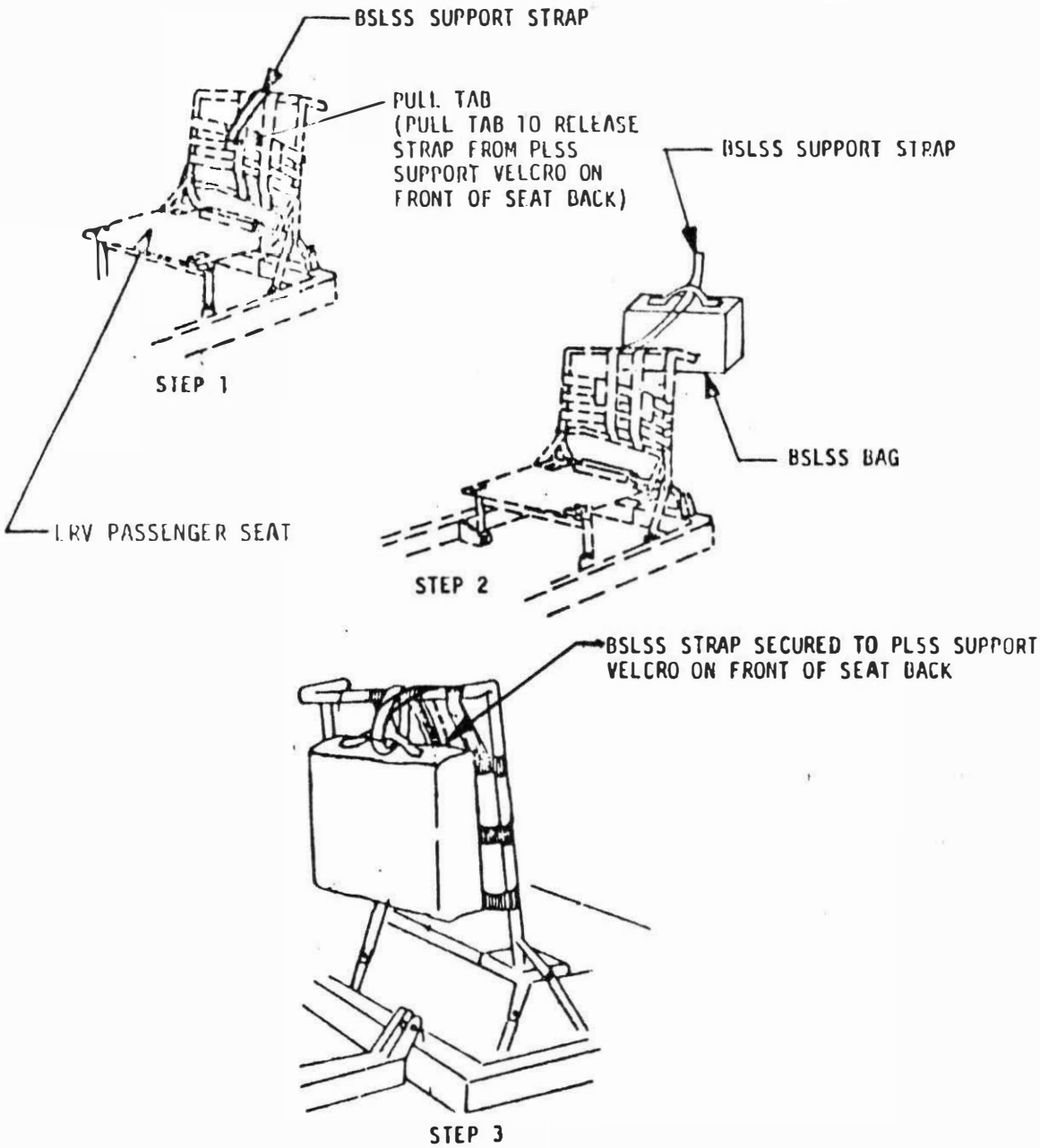


FIGURE 4-7. BUDDY SLSS INSTALLATION

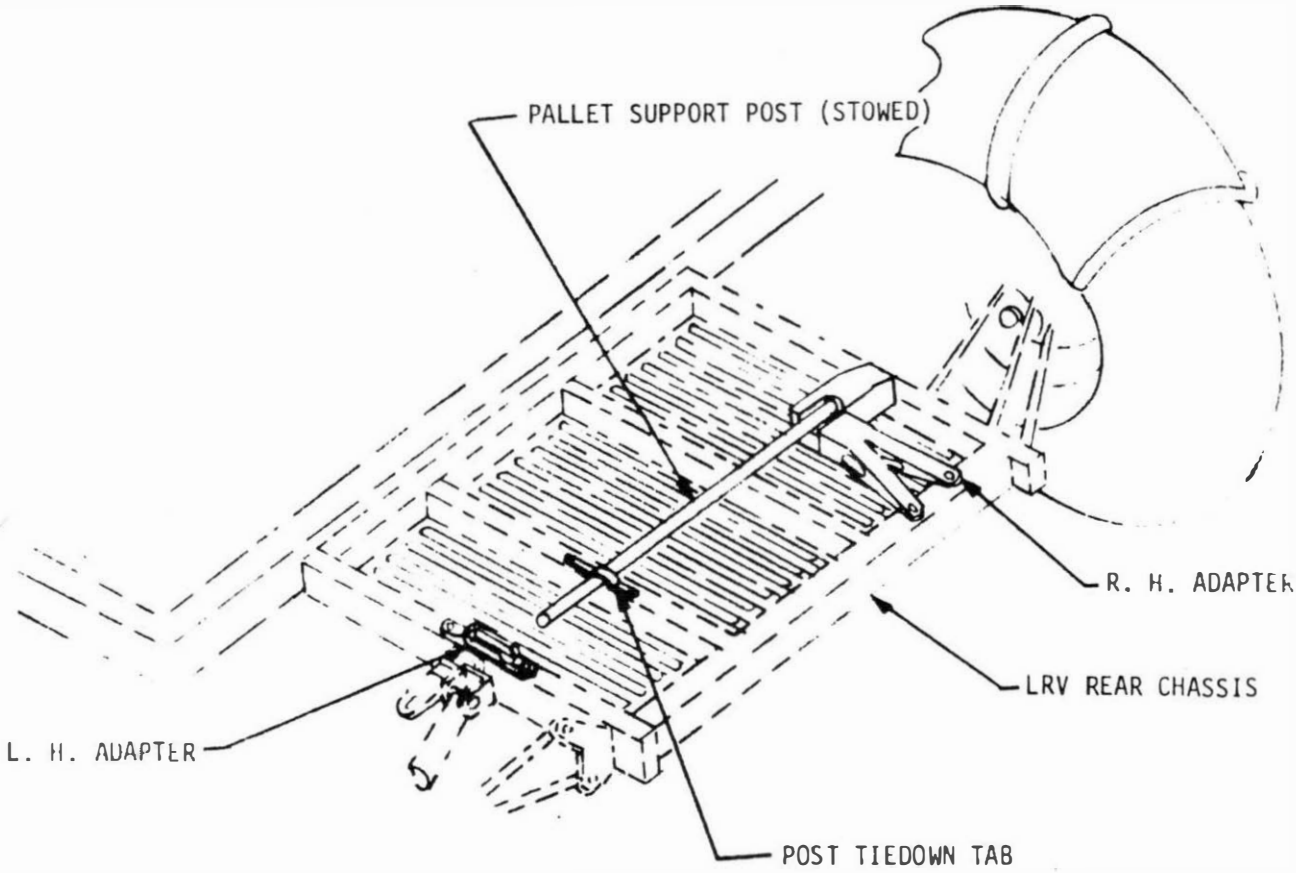


FIGURE 4-8 LRV REAR PAYLOAD PALLET ADAPTERS

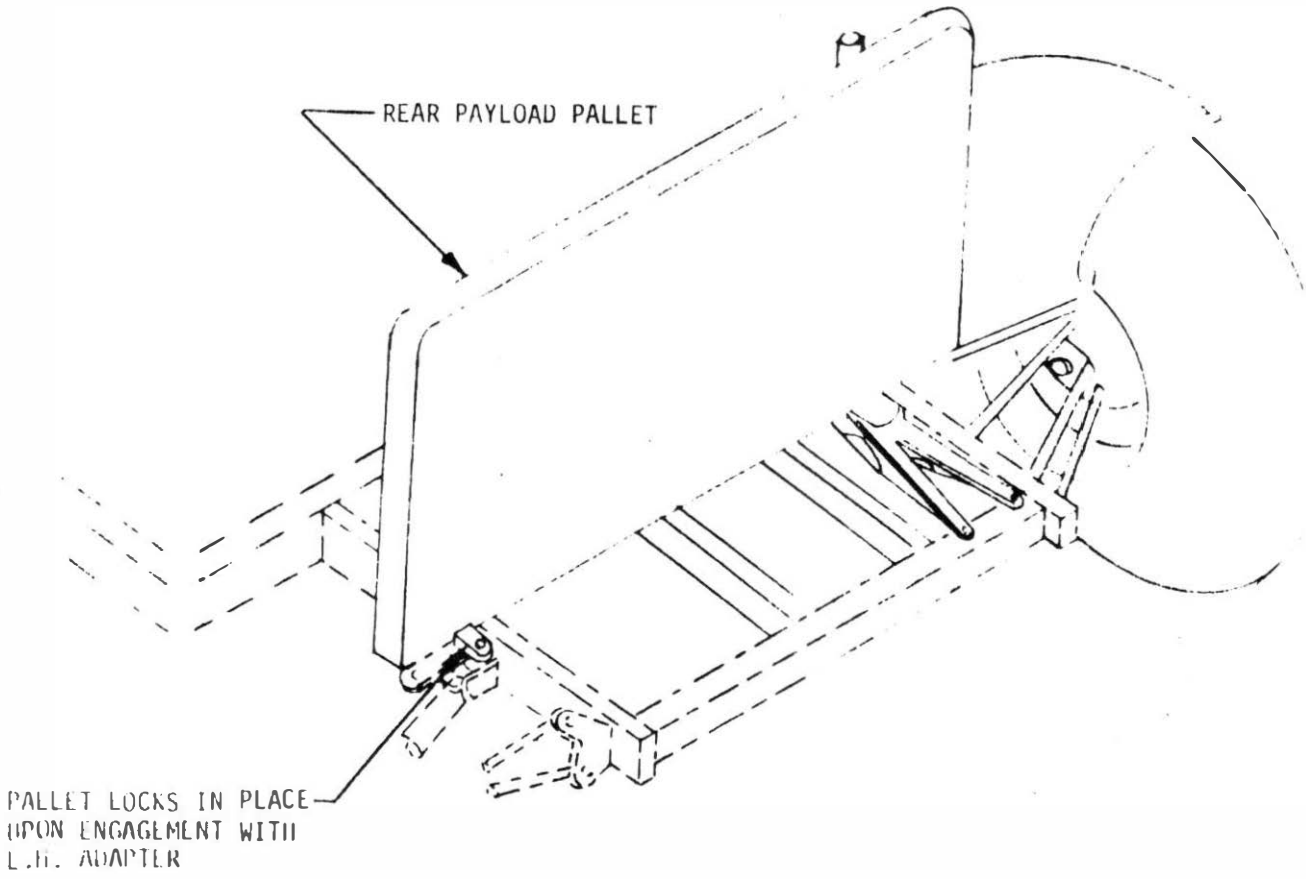


FIGURE 4-9 REAR PAYLOAD PALLET INSTALLED

SECTION 5

OPERATING LIMITATIONS

5.0 INTRODUCTION

This section contains the LRV operating limitations.

5.1 PAYLOAD LIMITATIONS

The LRV is designed for lunar operation a total payload of 970 pounds earth weight distributed as defined by the LRV to Stowed Payload Interface Control Document, 13M07391. Loading the LRV beyond the 970 pound limit will cause the structural factor of safety to be lessened below the 1.5 design case.

The allowable center of gravity location for the total LRV, including payload, is shown in Figure 5-1. Loading the LRV such that the center of gravity falls outside the defined envelope will cause degradation of performance, including:

a. Possible steering discontinuity
b. Possible traction drive discontinuity
c. Possible periods of instability

1G TRAINER NOTE

The 1G Trainer is designed for a gross payload of 800 pounds. Performance degradation will occur if overloaded.

5.2 PARKING LIMITATIONS

To achieve proper thermal control of the LRV and stowed payload during between-EVA parking periods, the LRV must be oriented per figure 5-2. Parking the LRV outside these limits will result in display and control component overheating or LCRU overheating. There are no orientation constraints imposed on short-term parking during EVA's.

1G TRAINER NOTE

There are no parking limitations for the 1G Trainer.

5.3 SORTIE LIMITATIONS

The LRV is designed for EVA's of 6 hours duration. The thermal design is based on 3 hours of mobility operation in the 6-hour EVA, with the navigation system and controls and displays remaining on during the entire 6-hour EVA. Operation of the vehicle beyond these time durations will cause thermal limits to be exceeded.

The LRV is designed for continuous operation in shadows for not more than 2 hours due to temperature limits on the Control and Display components. See Appendix A for temperature rise and cooldown times.

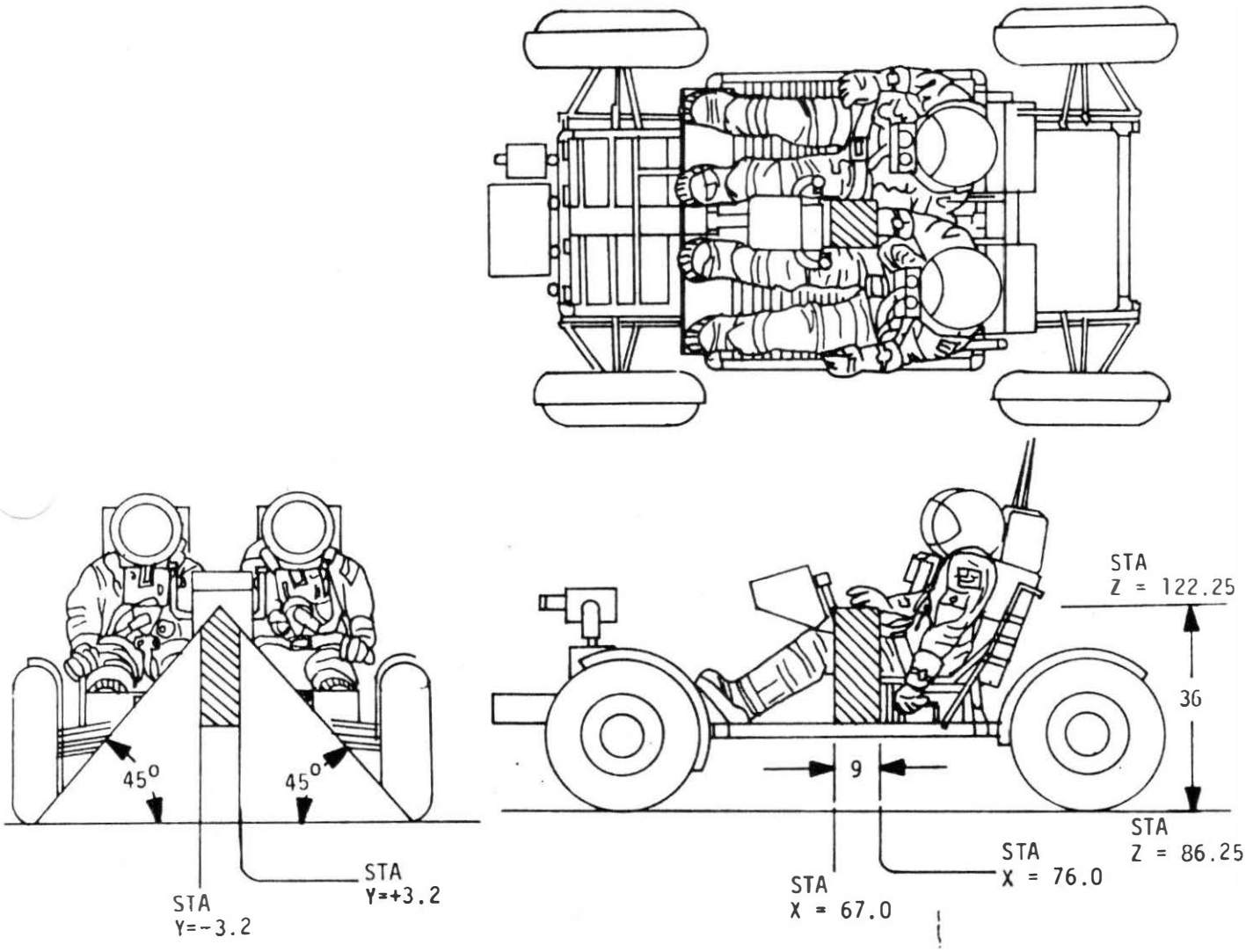


FIGURE 5-1. ALLOWABLE C.G. ENVELOPE FOR VEHICLE FULLY LOADED

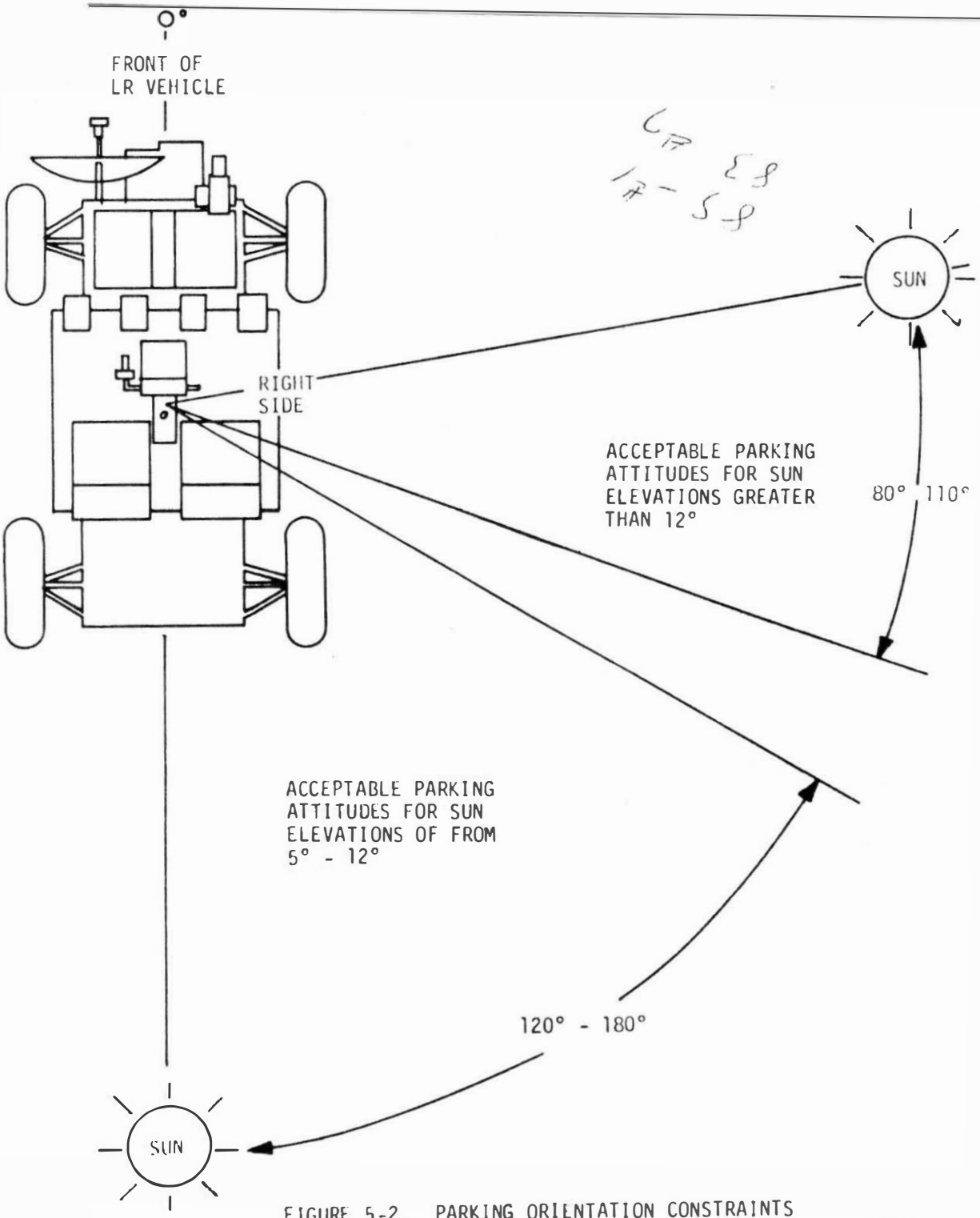


FIGURE 5-2. PARKING ORIENTATION CONSTRAINTS

5.4 NAVIGATION SYSTEM LIMITATIONS

The following limitations are placed on operating the LRV and 1G Trainer Navigation System.

a. The Navigation System is to be on for a minimum of three minutes before initialization to allow the gyro to reach operating speed.

b. The GYRO TORQUING Switch is not to be kept in the LEFT or RIGHT position for more than two minutes. After two minutes on, the switch must be kept OFF for a minimum of five minutes to prevent damage to the gyro torquing motor.

c. The navigation input voltage must not be allowed to be less than 30 VDC to prevent excessive computation and display errors and to prevent damage to navigation equipment if the under-voltage situation is prolonged. Therefore, it is imperative that the NAV POWER circuit breaker be open if the VOLTS indicator indicates less than 60. The VOLTS indicator should be checked periodically (at least each 15 minutes) to verify readings of not less than 60.

SECTION 6

OPERATING TIMELINES

6.0 INTRODUCTION

This section defines the approximate times for performing LRV functions on the lunar surface and 1G Trainer functions on earth.

1G TRAINER NOTE

Timelines for 1G Trainer operation are identical to those shown for LRV lunar surface operations except for traction drive decoupling and steering decoupling.

Included in this section are timelines for:

Figure 6-1 - LRV Deployment
6-2 - Post-Deployment Checkout
6-3 - Pre-Sortie Checkout and Preparation
6-4 - Post-Sortie Shutdown
6-5 - Navigation Update
6-6 - Traction Drive Decoupling
6-7 - Steering Decoupling
6-8 - Rear Steering Recoupling
6-9 - 1G Trainer Battery Changeout
6-10 - 1G Trainer Traction Drive Decoupling
6-11 - 1G Trainer Steering Decoupling

PULL VELCRO TAPE LOOSE FROM LEFT TRIPOD AND REMOVE INSULATION FROM AROUND LEFT LOWER SUPPORT ARM.	(.1 MIN)
RELEASE CENTER BRAKED REEL DEPLOYMENT TAPE FROM NYLON BAG ATTACHED TO LEFT LOWER SUPPORT ARM; DRAPE TAPE OVER LM LANDING STRUT.	(.2 MIN)
RELEASE DEPLOYMENT CABLE; DEPLOY FULL LENGTH OF CABLE AT 45° ANGLE FROM QUAD I TOWARD DESCENT LADDER.	(.2 MIN)
PULL VELCRO TAPE LOOSE FROM RIGHT TRIPOD AND REMOVE INSULATION FROM AROUND RIGHT LOWER SUPPORT ARM. PULL INSULATION BLANKET LOOSE FROM VELCRO ON LOWER END OF LRV CENTER CHASSIS.	(.2 MIN)
RELEASE DOUBLE BRAKED REEL DEPLOYMENT TAPE FROM NYLON BAG ATTACHED TO RIGHT LOWER SUPPORT ARM; DRAPE TAPE OVER CONVENIENT PROTRUSION.	(.2 MIN)
VISUALLY INSPECT BOTH LOWER SUPPORT ARMS.	(.1 MIN)
ASCEND TO LM PLATFORM TO DEPLOY LRV; OTHER CREWMAN GRASPS DEPLOYMENT CABLE AND MONITOR DEPLOYMENT.	(.2 MIN)
PULL D-HANDLE TO RELEASE LRV FROM LM AND VISUALLY VERIFY THAT LRV MOVED OUTWARD FROM LM ABOUT 4°.	(.2 MIN)
CREWMAN DESCENDS LM LADDER AND RETRIVES DOUBLE BRAKED REEL TAPE AT RIGHT SIDE OF VEHICLE.	(.2 MIN)
PULL TAPE FROM DOUBLE BRAKED REEL; VERIFY THAT LRV ROTATES OUTWARD FROM LM AND CAM FITTING ENGAGE LOWER SUPPORT ARMS. CONTINUE PULLING TAPE UNTIL AFT CHASSIS UNFOLDS ABOUT 45°; THEN VERIFY THAT AFT CHASSIS IS LOCKED INTO POSITION, THAT REAR WHEELS HAVE UNFOLDED AND THE TETHERED WHEEL STRUTS HAVE FALLEN FREE. ALSO VERIFY THAT THE FORWARD CHASSIS IS RELEASED FROM THE CONSOLE POST AND HAS RETURNED TO THE 35° POSITION.	(.5 MIN)

FIGURE 6-1 LRV DEPLOYMENT TIMELINE

CONTINUE PULLING TAPE FROM DOUBLE BRAKED REEL UNTIL AFT WHEELS CONTACT LUNAR SURFACE. VERIFY THAT THE AFT WHEELS SLIDE ALONG THE LUNAR SURFACE, AS THE CREWMAN PULLS THE TAPE, UNTIL THE CENTER CHASSIS LIFTS OFF THE LOWER STRUT ARMS AND THE FORWARD CHASSIS UNFOLDS AND LOCKS INTO POSITION. VERIFY THAT THE FORWARD WHEELS HAVE UNFOLDED AND THE TETHERED WHEEL STRUTS HAVE FALLEN FREE. CONTINUE TO PULL THE TAPE UNTIL THE DOUBLE BRAKED REEL CABLES ARE SLACK. (2.0 MIN)

STOW DOUBLE BRAKED REEL TAPE OUT OF WORK AREA; RELEASE OUTER BRAKED REEL CABLE AT RR OF CENTER CHASSIS AND STOW OUT OF WORK AREA. (.2 MIN)

RELEASE OUTER BRAKED REEL CABLE AT LR OF CENTER CHASSIS AND STOW OUT OF WORK AREA. (.1 MIN)

RETRIEVE AND PULL TAPE OF CENTER BRAKED REEL UNTIL THE FORWARD END OF THE LRV CONTACTS THE LUNAR SURFACE. STOW TAPE FROM CENTER BRAKED REEL OUT OF WORK AREA. (2.0 MIN)

OTHER CREWMAN TO RELEASE DEPLOYMENT CABLE AND STOW OUT OF WORK AREA. (.2 MIN)

RETURN TO RF HINGE LATCH OF LRV; VERIFY RIGHT FRONT HINGE LATCHED. (.2 MIN)

DEPLOY RF FENDER EXTENSION. (.1 MIN)

REMOVE PINS 9 AND 10 AND TOSS CLEAR OF WORK AREA. (.2 MIN)

GRASP APEX OF TRIPOD WITH RIGHT HAND AND PULL PIN 11. (.1 MIN)

DISCARD TRIPOD MAIN MEMBERS CLEAR OF DEPLOYMENT AREA. (.1 MIN)

GRASP RIGHT TRIPOD CENTER MEMBER IN RIGHT HAND PULL PIN 12 AND DISCARD. (.2 MIN)

INSERT RIGHT TRIPOD CENTER MEMBER IN FRAME FOR TOEHOLD. (.1 MIN)

FIGURE 6-1 LRV DEPLOYMENT TIMELINE (CONTINUED)

RELEASE RIGHT FOOTREST RESTRAINT AND ERECT RIGHT FOOTREST AND VERIFY LATCHED IN POSITION.	(.1 MIN)
PULL AND TURN C/D CONSOLE LATCH P13, 90° CW. WHEN CONSOLE DEPLOYS, RAISE INBOARD HANDHOLDS AND LOCK IN OPERATIONAL POSITION, ROTATE P13 90° CW AND VERIFY CONSOLE LOCKED IN POSITION	(.1 MIN)
RELEASE RIGHT SEAT BELT FROM STOWAGE POSITION AND STOW IN TEMPORARY LOCATION.	(.1 MIN)
GRASP FRONT OF RIGHT SEAT FRAME AND LIFT TO STABLE OVERCENTER POSITION AND ERECT RIGHT SEAT FRONT LEGS. VERIFY SEAT STOWAGE BAG ERECTS.	(.1 MIN)
PULL SEAT PAN FRAME UP AND POSITION ENDS OF FRAME UNDER BACK REST SUPPORT MEMBER LOWER SEAT FRAME TO ENGAGE FRONT LEGS AND VERIFY LATCHED.	(.1 MIN)
VERIFY RIGHT REAR HINGE LATCHED.	(.1 MIN)
VISUALLY VERIFY REAR STEERING DECOUPLING RING SEAL HAS NOT BEEN BROKEN.	(.1 MIN)
DEPLOY RIGHT REAR FENDER EXTENSION.	(.1 MIN)
VERIFY LEFT REAR HINGE LATCHED AND DEPLOY LEFT REAR FENDER EXTENSION.	(.2 MIN)
RELEASE INBOARD HANDHOLD VELCRO TIEDOWN STRAP.	(.1 MIN)
RELEASE LEFT SEAT BELT FROM STOWAGE POSITION AND STOW IN TEMPORARY LOCATION.	(.1 MIN)
GRASP FRONT OF LEFT SEAT FRAME AND LIFT TO STABLE OVERCENTER POSITION AND ERECT LEFT SEAT FRONT LEGS VERIFY SEAT STOWAGE BAG ERECTS.	(.1 MIN)

FIGURE 6-1 LRV DEPLOYMENT TIMELINE (CONTINUED)

PULL SEAT PAN FRAME UP AND POSITION ENDS OF FRAME UNDER BACK REST SUPPORT MEMBER. LOWER SEAT FRAME TO ENGAGE FRONT LEGS AND VERIFY LATCHED.	(.1 MIN)
FOLD INBOARD ARMREST DOWN.	(.1 MIN)
SUPPORT CONSOLE WITH LEFT HAND; GRASP C/D CONSOLE PANEL "T" HANDLE P7, TURN 90° CW TO LOCKED POSITION.	(.1 MIN)
ROTATE INBOARD HANDHOLD TO LOCKED POSITION WHILE ROTATING CONSOLE DOWNWARD WITH LEFT HAND.	(.1 MIN)
ROTATE T-HANDLE P7 90° CW AND FOLD FLUSH WITH CONSOLE BOX AND SECURE INTO POSITION WITH VELCRO STRAP.	(.1 MIN)
REMOVE ATTITUDE INDICATOR LOCK PIN AND DISCARD.	(.1 MIN)
REMOVE C&W FLAG LOCK PIN AND DISCARD.	(.1 MIN)
PULL PINS P3 AND 4 AND TOSS CLEAR OF WORK AREA.	(.1 MIN)
GRASP TRIPOD APEX WITH LEFT HAND AND PULL PIN P5; DISCARD PIN P5 AND TRIPOD MAIN MEMBERS.	(.1 MIN)
GRASP TRIPOD CENTER MEMBER IN LEFT HAND; PULL PIN P6 AND DISCARD.	(.2 MIN)
USE HOOKED END OF SHORT TRIPOD MEMBER TO PULL CABLE P2 AND VERIFY THAT TELESCOPING RODS SADDLE FALLS AWAY.	(.1 MIN)
INSERT TRIPOD CENTER MEMBER IN LRV FRAME FOR TOEHOLD.	(.1 MIN)
RELEASE LEFT FOOTREST RESTRAINT DEVICE AND ERECT LEFT FOOTREST AND VERIFY LATCHED POSITION.	(.1 MIN)

FIGURE 6-1 LRV DEPLOYMENT TIMELINE (CONTINUED)

MOVE TO LEFT FRONT HINGE AREA AND VERIFY LEFT FRONT HINGE LATCHED.	(.1 MIN)
DEPLOY LEFT FRONT FENDER EXTENSION.	(.1 MIN)
INSPECT AND VERIFY BATTERY NO. 1 AND SPU DUST COVERS ARE CLOSED AND SECURED.	(.1 MIN)
VERIFY THAT THE FORWARD STEERING DECOUPLING RING SEAL HAS NOT BEEN BROKEN.	(.1 MIN)
MOVE TO RIGHT SIDE OF VEHICLE AND VERIFY THAT BATTERY NO. 2 DUST COVER IS CLOSED AND SECURED.	(.2 MIN)
AT RIGHT SIDE OF VEHICLE ROTATE "T" HANDLE P13 90° CW AND FOLD "T" HANDLE FLUSH WITH CONSOLE BOX AND SECURE.	(.2 MIN)

LRV DEPLOYMENT COMPLETE.

TOTAL TIME 11.0 MINUTES

FIGURE 6-1. LRV DEPLOYMENT TIMELINE (CONTINUED)

- INGRESS LRV AND FASTEN SEAT BELT, AND VERIFY HAND CONTROLLER IN PARKING BRAKE POSITION. (.2 MIN)
  - VERIFY SWITCHES AND CIRCUIT BREAKERS IN PRE-LAUNCH POSITIONS. (.2 MIN)
    - CLOSE BUS A, BUS B, BUS C, BUS D CIRCUIT BREAKERS. (.1 MIN)
      - SET BATTERY SWITCH TO VOLTS X 1/2 AND REPORT VOLTS INDICATED. (.1 MIN)
        - SET BATTERY SWITCH TO AMPS, CLOSE THE + 15 DC PRIM CIRCUIT BREAKER, CLOSE STEERING FORWARD AND REAR CIRCUIT BREAKERS, CLOSE DRIVE POWER LF, RF, LR, RR CIRCUIT BREAKERS, SET FRONT DRIVE ENABLE SWITCHES TO PWM 2, SET REAR DRIVE ENABLE TO PWM 1, AND SET ± 15 DC SWITCHES TO SEC. (.3 MIN)
          - SET STEERING FORWARD SWITCH TO BUS C, SET STEERING REAR SWITCH TO BUS B, SET FRONT DRIVE POWER SWITCHES TO BUS C, SET REAR DRIVE POWER SWITCHES TO BUS B. (.1 MIN)
            - SET HAND CONTROLLER REVERSE INHIBIT SWITCH IN UP POSITION AND CALL OTHER CREWMAN TO DIRECT AND MONITOR BACKING OPERATIONS AND TO VERIFY THAT DRIVE MOTORS AND STEERING MOTORS ARE WORKING. (.1 MIN)
              - RECEIVE CLEAR SIGNAL FROM OTHER CREWMAN, RELEASE PARKING BRAKE AND BACK LRV CLEAR OF LM, STOP LRV AND SET PARKING BRAKE. RESET REVERSE INHIBIT SWITCH TO DOWN POSITION. (.4 MIN)
                - RELEASE PARKING BRAKE AND DRIVE FORWARD TO MESA PARKING AREA FOR EQUIPMENT LOADING. VERIFY THAT THE VEHICLE RESPONDS TO HAND CONTROLLER COMMANDS FOR LEFT AND RIGHT STEERING, SPEED CONTROL, BRAKING AND THAT ALL FOUR WHEELS ARE ROTATING (NOT SLIDING). (1.0 MIN)
                  - STOP LRV AND SET HAND CONTROLLER IN THE PARKING BRAKE POSITION; NEUTRAL THROTTLE. (.1 MIN)

FIGURE 6-2. LRV POST DEPLOYMENT CHECKOUT TIMELINE

SHUT DOWN LRV POWER AND VERIFY THAT THE HAND CONTROLLER IS IN THE PARKING BRAKE POSITION, THAT THE FRONT AND REAR DRIVE POWER SWITCHES ARE OFF, THAT THE FORWARD AND REAR STEERING SWITCHES ARE OFF, THAT THE ± 15 VDC SWITCH IS OFF AND THAT THE NAV POWER CIRCUIT BREAKER IS OPEN. (.2 MIN)

RELEASE AND STOW SEAT BELT; EGRESS VEHICLE. (.3 MIN)

(TOTAL TIME 3.1 MIN.)

FIGURE 6-2. LRV POST DEPLOYMENT CHECKOUT TIMELINE (CONTINUED)

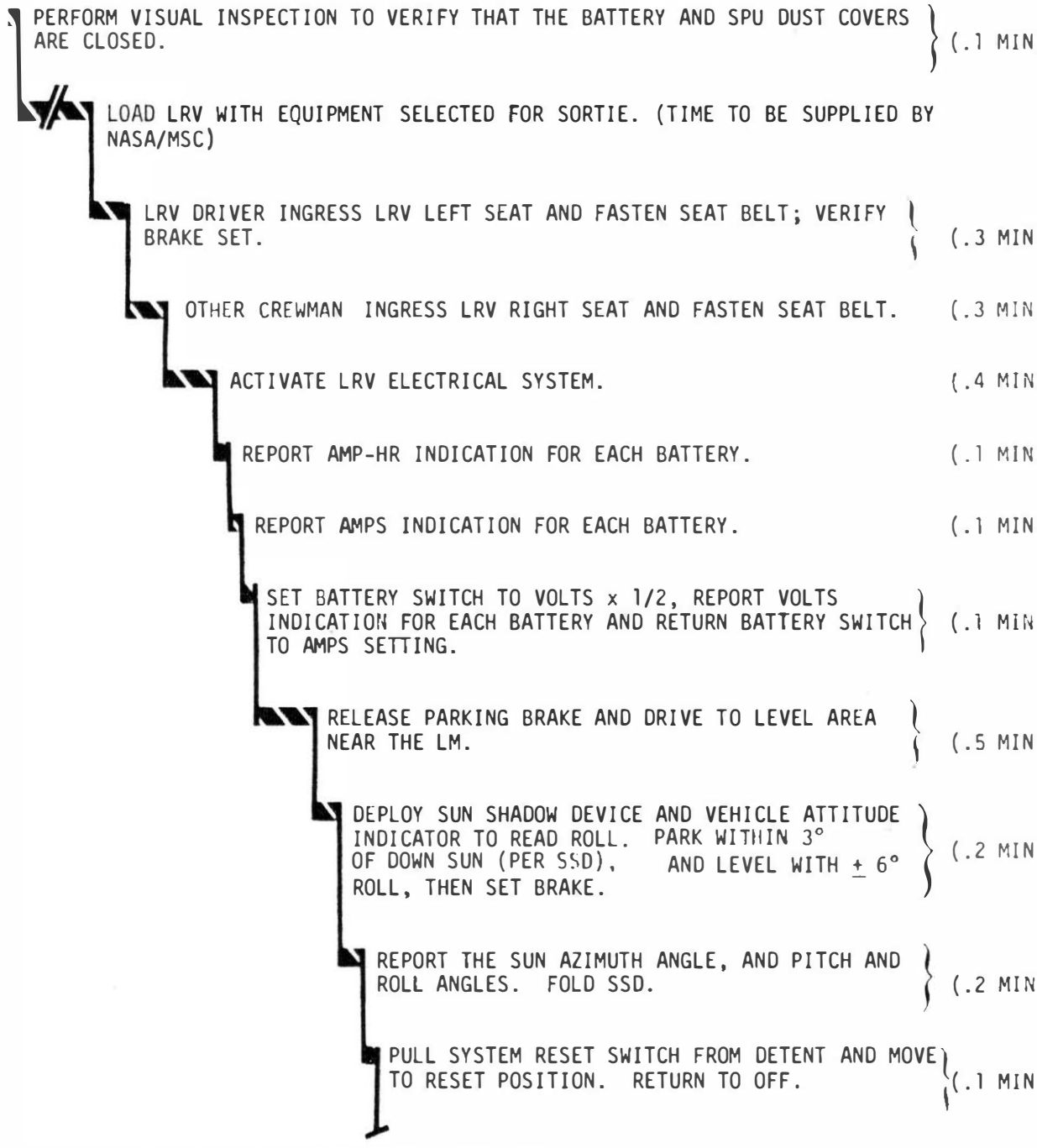
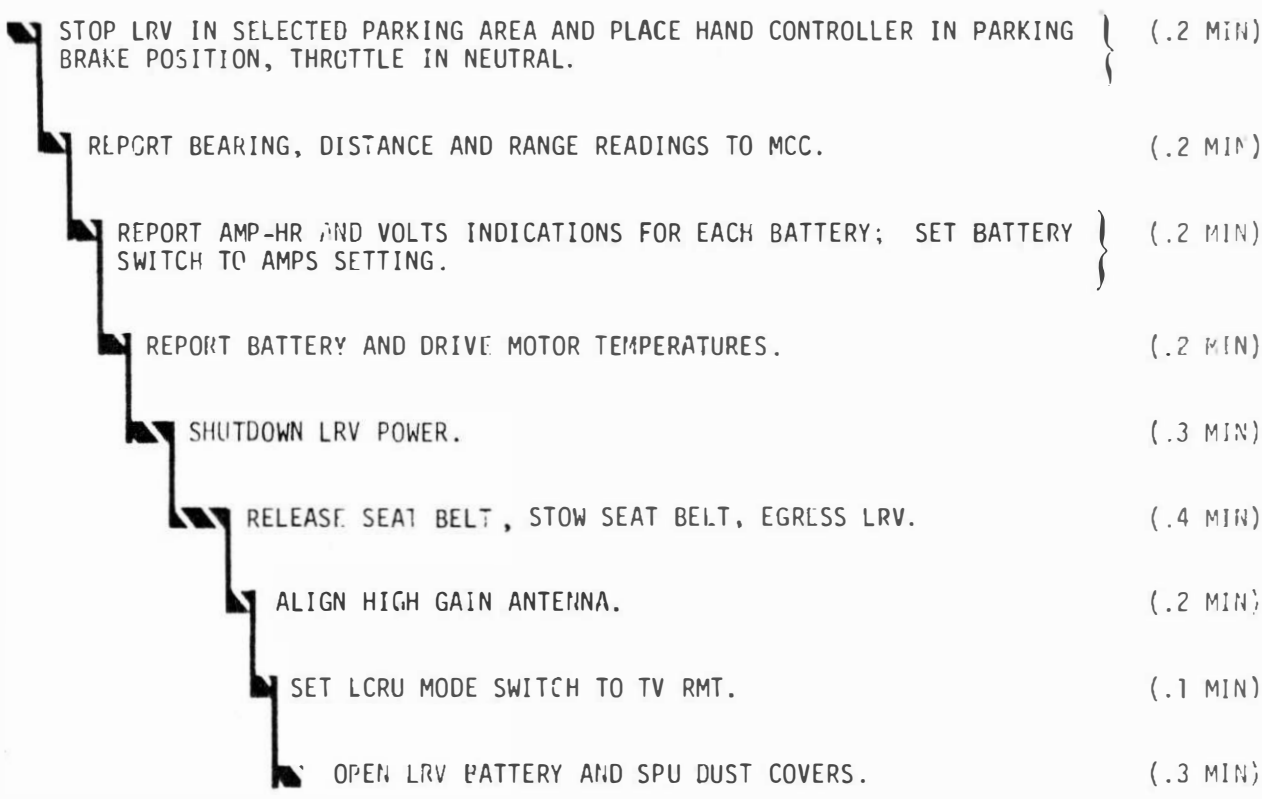


FIGURE 6-3. PRE-SORTIE CHECKOUT AND PREPARATION TIMELINE

FOLD VEHICLE ATTITUDE INDICATOR TO DRIVE POSITION.	(.1 MIN)
VERIFY THAT BEARING, DISTANCE, AND RANGE INDICATORS ARE ZERO; THEN RETURN SYSTEM RESET SWITCH TO OFF POSITION.	(.1 MIN)
RECEIVE CORRECTED HEADING FROM MCC, PULL GYRO TORQUING SWITCH FROM DETENT AND OPERATE TO CORRECT HEADING INDICATION; THEN TURN GYRO TORQUING SWITCH TO OFF.	(.8 MIN)
REPORT BATTERY AND DRIVE MOTOR TEMPERATURES.	(.1 MIN)
REPORT BATTERY CURRENT WITH VEHICLE IN MOTION.	(.1 MIN)
ADVISE MCC THAT PRE-SORTIE PREPARATION AND CHECKOUT IS COMPLETE; REQUEST CLEARANCE FOR SORTIE.	(.1 MIN)

(TOTAL TIME 3.7 MIN. PLUS
EQUIPMENT LOADING TIME)

FIGURE 6-3. PRE-SORTIE CHECKOUT AND PREPARATION TIMELINE
(CONTINUED)



TOTAL TIME 2.1 MIN

FIGURE 6-4. POST-SORTIE SHUTDOWN TIMELINE

SELECT A LEVEL AREA AND PARK THE LRV HEADING DOWN SUN, AND SET PARKING BRAKE (PITCH LESS THAN ± 6°, DOWN SUN WITHIN ± 3°).	(.2 MIN)
DEPLOY ROLL ANGLE DEVICE AND NOTE READING (ROLL LESS THAN 6°).	(.1 MIN)
RELAY LRV HEADING AND ROLL ANGLE TO MCC.	(.2 MIN)
RECEIVE CORRECTED HEADING FROM MCC.	(1 MIN)
IF INDICATED HEADING DIFFERS FROM CALCULATED BY GREATER THAN 2°, PULL GYRO TORQUING TOGGLE FROM DETENT AND SLEW HEADING AS REQUIRED. RETURN GYRO TOGGLE TO OFF POSITION.	(.2 MIN)
NOTIFY MSFN "LRV READY TO RESUME SORTIE".	(.1 MIN)

TOTAL TIME 1.8 MIN

FIGURE 6-5. NAVIGATION UPDATE TIMELINE

STOP LRV, SET BRAKE.	(.1 MIN)
RELEASE AND STOW SEAT BELT.	
EGRESS VEHICLE.	(.1 MIN)
REMOVE TOEHOLD.	(.1 MIN)
MOVE TO DEFECTIVE WHEEL DRIVE UNIT.	(.2 MIN)
ENGAGE CONTINGENCY TOOL THROUGH EITHER WHEEL DECOUPLING HOOK.	(.1 MIN)
PULL OUT TO LIMIT OF HOOK TRAVEL AND ROTATE 90° COUNTERCLOCKWISE.	(.1 MIN)
ENGAGE CONTINGENCY TOOL IN OTHER DECOUPLING HOOK, PULL OUT AND ROTATE.	(.1 MIN)
RE-INSTALL LEFT SIDE TOEHOLD.	(.2 MIN)

1G TRAINER NOTE

TIMES ARE IDENTICAL FOR 1G TRAINER SIMULATED DECOUPLING. (SEE FIGURE 6-9 FOR ACTUAL TIME REQUIRED FOR TECHNICIAN TO EFFECT DECOUPLING)

TOTAL TIME (1.0 MIN)

FIGURE 6-6. LRV TRACTION DRIVE DECOUPLING TIMELINE (CONTINGENCY OPERATION)

STOP LRV AND SET BRAKE. TURN DRIVE POWER AND STEERING OFF	(.2 MIN)
RELEASE AND STOW SEAT BELT.	(.1 MIN)
EGRESS VEHICLE.	(.2 MIN)
MOVE TO LEFT FRONT OR RIGHT REAR DECOUPLING RING LOCATION AS APPROPRIATE.	(.2 MIN)
PULL STEERING DECOUPLING RING AS APPROPRIATE.	(.1 MIN)
MANUALLY STRAIGHTEN WHEELS OF DEFECTIVE DRIVE SYSTEM. MOVEMENT OF WHEEL MAY BE NECESSARY FOR DECOUPLING	(.3 MIN)

1G TRAINER NOTE

TIMES ARE IDENTICAL FOR 1G TRAINER SIMULATED DECOUPLING. (SEE FIGURE 6-10 FOR ACTUAL TIME REQUIRED FOR TECHNICIAN TO EFFECT DECOUPLING)

TOTAL TIME 1.1 MIN

FIGURE 6-7. LRV STEERING DECOUPLING TIMELINE (CONTINGENCY OPERATION)

STOP LRV AND SET BRAKE. TURN DRIVE POWER AND STEERING OFF	(.2 MIN)
RELEASE AND STOW SEAT BELT	(.1 MIN)
EGRESS VEHICLE	(.2 MIN)
MOVE TO AREA FRONT OF RIGHT REAR FENDER	(.2 MIN)
RELEASE RECOUPLING TOOL TIEDOWN VELCRO STRAP AND REMOVE RECOUPLING TOOL FROM STOWAGE BLOCK	(.1 MIN)
PULL TAB TO OPEN REAR STEERING SECTOR DUST COVER AND PULL DUST COVER BACK	(.1 MIN)
PUSH BUTTON ON TOP OF SECTOR GEAR TO RE-ENGAGE GEAR	(.1 MIN)
INSERT RECOUPLING TOOL IN TOP OF RAISED AREA ON SECTOR GEAR, ROTATE TOOL TO ENGAGE LOCK PIN AND LIFT TOOL UNTIL PIN LOCKS IN RAISED POSITION. REMOVE TOOL.	(.2 MIN)
REPLACE STEERING SECTOR DUST COVER	(.1 MIN)
REPLACE RECOUPLING TOOL IN STOWAGE BLOCK AND SECURE WITH VELCRO STRAP.	(.1 MIN)

1G Trainer Note

RECOUPLING OF THE REAR STEERING FOR THE 1G TRAINER WILL BE PERFORMED BY A TECHNICIAN.

TOTAL TIME 1.4 MINUTES

FIGURE 6-8. LRV REAR STEERING RECOUPLING TIMELINE (CONTINGENCY OPERATION)