



**Aerospace
Systems Division**

Crew Engineering Design
Effort for LRRR(300)

NO.	REV. NO.
ATM-942	
PAGE <u>1</u> OF <u>3</u>	
DATE 1/19/71	

The following compilation constitutes the Crew Engineering LRRR(300) design inputs to the LRRR(300) Design Group.

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NO.	REV. NO.
ATM-942	
PAGE <u>2</u>	OF <u>3</u>
DATE 1/19/71	

The following Crew Engineering design inputs were provided to the LRRR(300) Design Group during the course of the LRRR(300) program.

1. Locate UHT socket on the side of the carry handle in line with the LRRR(300) deployed configuration center of gravity.
2. Place a light reflector behind the bubble level (with respect to the astronaut deployment station) to ensure adequate illumination of the bubble level at low sun angles.
3. Minimize size of leveling leg foot pad (consistent with requirement of supporting LRRR(300) lunar weight) to facilitate leveling operations.
4. UHT socket should be angled so that the UHT handle will be at a satisfactory work height for the standing astronaut. The angle of the socket should be adjustable to meet this requirement for the various possible elevation settings.
5. Based on a 20 pound force emission capability (multidirectional) for the spacesuited astronaut operating at 1/6G, recommended 20 pound force be used for possible astronaut input in stress analysis of LRRR(300) design. The point of application of the 20 pound force is at the midpoint of the UHT handle at any similar astronaut interface.
6. The UHT socket exterior surfaces should be painted white (improves visual contrast with the International Orange, UHT alignment stripes).
7. LRRR(300) carry handle should be similar in design to the ALSEP package carry handle.
8. LRRR(300) small array tie-down, leveling leg, alignment mechanism and dust cover pull rings should meet the specified 2 inch finger ingress requirement.
9. The bubble level should be located on the sun compass plate.
10. An array deployment handle should be provided to permit the astronaut to easily rotate the small array.



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Crew Engineering Design Effort for LRRR(300)		NO. ATM-942	REV. NO.
		PAGE <u>3</u> OF <u>3</u>	DATE 1/19/71

11. The array deployment handle and all pull rings should be painted International Orange for clear visibility.
12. The front of the dust cover should be colored orange to provide a cue to the astronaut that the dust cover is in place.
13. The alignment mechanism shall be spring-loaded to deploy automatically.
14. Pull rings stowed on the carry handle should not intrude on the space required for the astronaut to easily use the carry handle.
15. The gnomon should cast a single shadow on the compass rose.
16. The small array and the leveling leg should automatically lock in place following manual rotation.