Bendix

Aerospace Systems Division

NO.	REV. NO.
ATM 886	

LRRR Astronaut Trainer
Acceptance Test Results

PAGE 1 OF 3

DATE May 8, 1970

This ATM reports the results of the Crew Systems and Operations Acceptance Test for the LRRR Astronaut Trainer. The Acceptance Plan used for this test is Internal Memorandum 70-260-144, dated May 4, 1970.

ATM-876 presents the CS&O evaluation of the LRRR Concept Model; this ATM will report on those items not covered in earlier tests.

Prepared by: _____

Approved by: _____

The Acceptance Test performed by CS&O provides a means of evaluating the astronaut interface in the areas of manipulative characteristics for the LRRR Astronaut Trainer prior to delivery. CS&O personnel insure that the LRRR model is an exact mechanical simulation of the Flight Model. Discrepancy Reports by the QA Dept. record any material defects, drawing errors and assembly errors in the model.

The deployment of the trainer was in the CS&O laboratory on a simulated lunar surface (dry sand) by a CS&O shirt sleeve subject wearing PGA gloves. A spotlight was used to evaluate the sundial at several sun angles. The (Grumman) Pallet for the LM interface was not evaluated with the LRRR. The LRRR Deployment Sequence presented in ATM-874 was used to deploy the Trainer.

Mr. W. Dunnaway RALPO representative and Mr. Gordon Fullerton NASA/MSC, Astronaut Office witnessed the acceptance test with BxA personnel.

A. Carry Handle

Acceptable per design and earlier tests.

B. Universal Handling Tool Sockets

Two socket locations were reviewed, the primary socket at the approximate CG on the structure under the carry handle and the second socket on the structure to the left of the handle for back-up. The angle of the socket presented an acceptable UHT height of 31 inches at the handle/shaft weldment measured from the surface. The socket bracket assembly is white with double striping for UHT alignment. Both sockets are acceptable for leveling and alignment.

C. Pull Pin for Extension Leg Release

Acceptable per design.

D. Extension Leg and Lock Mechanism

Spring forces on the locking device and the positive stop feature acceptable.

E. Emplacement

Lowering the unit to the deployment position using three techniques were evaluated. The most reliable method is by using the UHT, inserted in the (primary) socket prior to rotating the unit. The unit is immediately available for leveling and alignment using this method. Lowering the unit with the UHT handle in the carry handle and guiding it to the deployed position is acceptable but offers less stability to the crewman and unit. He then must insert the UHT to level and align. Lowering the unit by hand is not suggested due to stability problems which the unit and crew may encounter.

F. Array Dust Cover

The Dust Cover should be removed just prior to rotation of the unit to the deployed position. Acceptable per design.

G. Stability During Temporary Emplacement on Back Support Structure (BSS).

The BSS design provides 13^{o} stability on the array side and 27^{o} on the pallet side or carry position. Temporary emplacement is not an apparent problem at earth gravity with the light weight unit.

The only valid stability test would be with a fully ballasted unit at 46.5 pounds in a lunar gravity simulator (KC-135 aircraft).

H. Leveling and Alignment, Littrow Site

Acceptable per design. The unit was easily leveled and aligned in the simulated surface using the UHT.

Additional testing by NASA/MSC in the Lunar Gravity Aircraft (KC-135) will verify the design and crew deployment techniques.