

CIL  
EMU CRITICAL ITEMS LIST

Page: 1  
Date: 11/29/93

12/24/93 SUPERSEDES 12/24/91

ANALYST:

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
PACKAGING, DCM, ITEM 308 ----- SV792294-05 (1)	2/2	300FM07: Separation of DCM/HUT Retention System.  CAUSE: Overstress or fatigue.	END ITEM: Fracture of lower DCM attachment bracket. Failure of one of two screw brackets or screws attaching the DCM assembly to the HUT structure.  OFE INTERFACE: If the upper screw bracket also fails and three of the four screws at the O2/H2O interface pad fail, the water and oxygen will leak externally.  MISSION: Loss of use of one EMU.  CREW/VEHICLE: None.	A. Design - The DCM is secured to the HUT at two single screw brackets and an oxygen/water interface pad which has four screws. The safety factor at the worst case location (lower bracket) is 4.36 on fatigue for maximum combined launch acceleration and vibration loads and the minimum possible weld configuration. The weight and CG location are such that a failure of either or both the lower or upper bracket would not cause subsequent failure of the oxygen/ water interface pad. The DCM is attached to the HUT at the oxygen/water interface pad by four #6 bolts preloaded by torquing to 8-10 pounds over running torque at assembly. Should three of the four bolts fail or become loosened, leakage at this interface will result due to loss of seal squeeze at the face seals.  B. Test - Certification Test - This assembly completed the 15 year structural vibration and shock certification requirement during 10/83.  C. Inspection - The mounting bracket is inspected to meet dimensional requirements and is also inspected and tested in the materials laboratory to verify the material meets its specification requirement.  D. Failure History - B-EMU-102-A018 (6/18/90). The upper DCM threaded mounting boss pulled out of the fiberglass HUT due to excessive stress on the boss caused by improper shimming between DCM and HUT during DCM installation to the HUT. The DCM pad screws are installed first and provide the primary DCM to HUT alignment. The outer two DCM mounts must be shimmed within .002 before bolt installation/torquing. WETF procedure P. 528/C111-002 was revised and BAO procedure P 528/ESP-0-37 for flight HUTS always required inspection of DCM mounting bosses for damage prior to installation, and shimming to assure a maximum interface gap of .002 inch at the outer two DCM mounts.  E. Ground Turnaround - None.

C11  
EMU CRITICAL ITEMS LIST

12/24/93 SUPERSEDES 12/24/91

ANALYST:

Page: 2  
Date: 11/29/93

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
--------------------	------	-----------------------------	----------------	--------------------------

2/2 300FN07:

F. Operational Use -  
Crew Response - Launch and Entry: No response possible.  
Special Training - No training specifically covers this failure mode.  
Operational Considerations - For single failure, no constraints.