

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
-----				
		115FM08		
SHEAR PLATE ASSEMBLY, ITEM 115 (PIVOTED, PLANAR) ----- SV778540-56 (1)  OR (ORU) ----- SV824133-8 (1)	2/2	Fails to close PLSS O2 shutoff valve.  Linkage malfunction.	END ITEM: Failure to close primary oxygen regulator shutoff valve when O2 actuator is in off position.  GFE INTERFACE: Primary oxygen supply continues to flow to primary suit regulator when O2 actuator is off. PLSS oxygen is vented into airlock.  MISSION: Loss of use of one EMU. Loss of PLSS bottle pressure during EMU doffing and PLSS recharging.  CREW/VEHICLE: None.  TIME TO EFFECT /ACTIONS: None.  TIME AVAILABLE: N/A  TIME REQUIRED: N/A  REDUNDANCY SCREENS: A-N/A B-N/A	A. Design - The shutoff valve linkage consists of a spring loaded translating push rod assembly which is pinned to a lever. Output motion of the lever moves the spring loaded shutoff valve. The linkage springs provide a force of 17.6 lbs to move the linkage towards the shutoff position. In addition, the shutoff valve itself is forced closed by a 5 lb spring force for a total available force of 22.6 lbs to move the linkage toward the shutoff position.  Linkage system friction is kept low by using a ball bearing guide at the cam end of the push rod and clevis pin joints with good wheelbase on the lever.  Thus a net force moving over 20 lbs exists to prevent linkage hangup in the shutoff valve open position.  B. Test - Component Acceptance Test - Shear plate level testing per AT-E-115 verifies the shutoff valve closed by para. 9.0 leakage test in which 1.67 x 10 <sup>-5</sup> scc/sec He maximum. It is allowed at 900 psi; and verifies proper actuator operation by para. 10 in which the force required to slide the actuator to any off positions is 15 lbs max.  PDA Test - Proper actuator mechanism operation is verified during SEMU-60-010 at the PLSS level identical to the above component level test.  Certification Test - Certified for a useful life of 20 years from the date of manufacture. Successful refurbishment will extend useful life to 30 years max. (ref EMUM1-0491, EMUM1-0027).  After which proper PLSS shutoff valve actuation was verified.  C. Inspection - Details are 100% inspected per drawing dimensions and surface finish characteristics. Details are manufactured from material with certified physical and chemical properties.  D. Failure History - None.  E. Ground Turnaround - Tested for non-EET processing per FEMU-R-001, High Pressure O2 Leakage. FEMU-R-001 Para 8.2 EMU Preflight KSC Checkout for EET processing.  F. Operational Use - Crew Response - POST EVA: Respress A/L. With SOP deactivated, disable airlock O2 supply to SCU. Doff EMU normally allowing primary O2 tanks to vent into cabin. For subsequent EVA's activate airlock O2 supply to SCU prior to fan activation during EMU donning. EMU go for SCU standby or EVA depending on feedwater remaining.  Training -

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
		115FM08	C-N/A	No training specifically covers this failure mode. Operational Considerations - Flight rules define loss of EMU for loss of pressure regulation. EVA checklist procedures verify hardware integrity and systems operational status prior to EVA.

EXTRAVEHICULAR MOBILITY UNIT  
SYSTEMS SAFETY REVIEW PANEL REVIEW  
FOR THE  
I-115 SHEAR PLATE ASSEMBLY  
CRITICAL ITEM LIST (CIL)

EMU CONTRACT NO. NAS 9-97150

Prepared by: *J. Roman* 3/27/02  
HS - Project Engineering

Approved by: *RMB*  
LSS

*M. Smyth*  
HS - Reliability

*V. Barnes*  
HS - Reliability

*Alan Plough for RMB*  
HS - Engineering Manager

*[Signature]*  
HS - Reliability

*James J. Som* - ul/mods  
HS - Reliability

*John Olin*  
HS - Reliability

*[Signature]*  
HS - Reliability