

EJA
EMU CRITICAL ITEMS LIST

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ANALYSIS:

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
RELIEF VALVE ITEM 693 34792696-3 (1)	1/1	4931M03: External gas leakage. CAUSE: Seal failure, seat contamination.	END ITEM: Sulf gas leakage to ambient (airlock). O/E INTERFACE: Reduced ability to pressurize suit. More frequent O2 refill cycles required to maintain 7.5-8.0 psig suit pressure. MISSION: Reduced bend treatment capability. CREW/VEHICLE: Possible loss of crewmn from decompression sickness if leak is severe enough to completely lose pressurization capability.	A. Design - Seal failure: There are two seals in the relief valve that separate vent loop gas from ambient. One is a conventional static silicone O-ring which creates a seal by maintaining a controlled gapmate on the elastomer. Precise dimensions and surface finish and lap control help maintain sealing performance. The second seal is formed by the valve lip seating on a silicone ring. Valve geometry and clearances are controlled to permit lip to elastomer alignment under all tolerance conditions. Also, the depth of indentation is controlled to form a seal, but prevent elastomer overstress. This self aligning, slight indentation and lip to elastomer relationship, creates a reliable valve seal. Contamination: An inlet filter protects the valve from particles greater than 0.004 inch. The valve seal, consisting of a sharp lip contacting an elastomeric seat, can accept tiny particles in this range and maintain a seal. B. Test - Component Acceptance Test - The item is external leakage tested per vendor test sheets to 7.9-8.04 psi where a maximum leakage of 25.0 sec/min O2 is allowed. PSA Test - An external leakage test is performed per SEMU-80-016, to 7.9-8.04 psi where a maximum leakage of 15.0 sec/min O2 is allowed. Certification Test - The RTA completed the following Certification Cycle in 9790s:

Test	Actual Cycle	Spec. Cycle
Proof Pres. (11.3 psi)	16	16
Crack/Max Flow	2100	2100
Hold/Overate	506 latch Seal	500 latch Seal
Poppet Keeper Retraction	312	312
Burst Pres. (32.2 psi)	1	1

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ANALYST:

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NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	REASONING FOR ACCEPTANCE
	1/1	493FH031		<p>The B1A Assembly completed the 15-year random vibration (45 minutes per axis), sinusoidal vibration, design and bench shock testing in 9/88.</p> <p>C. Inspection - All O-rings, sealing surfaces, valve seat, and poppet sealing surfaces are 100% inspected for dimensional and surface finish requirements. All parts are cleaned to level 4M1500 per 493F031 prior to assembly.</p> <p>D. Failure History - N-EMU-493-C001 (10/30/87) excessive external leakage due to contamination from the test facility. A 2 micron filter was added to the test facility.</p> <p>E. Ground Turnaround - Exempt for external leakage per FIMI-R-001.</p> <p>F. Operational Use - Crew Response - For minor leaks, cycle the O2 actuator more frequently to attain treatment conditions. For greater leaks, create a hot problem. Consider IFN to close relief valve and use highest purge valve to control suit pressure. Training - Standard EMU training covers this failure mode. Operational Consideration - Not applicable.</p>