

EMI CRITICAL ITEMS LIST

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ANALYST:

MHE P/N REV	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
PRESSURE GAGE ITEM 215G SV700042-3 (1)	3/100	<p>215GFM01: Erroneous output, drifts low (less than 600 psi)</p> <p>CAUSE: Leakage of the bourdon tube, binding of the display mechanism, pointer attachment to bourdon tube separates.</p>	<p>END ITEM: False indication of low SOP interstage pressure.</p> <p>GFE INTERFACE: False indication of low SOP first stage output pressure.</p> <p>MISSION: None for single or double failure (failed open first stage regulator).</p> <p>CREW/VEHICLE: None for single or second failure (failed open first stage regulator) possible loss of crewman due to suit rupture if third failure occurs (SOP second stage fails open).</p>	<p>A. Design - The maximum expected number of operating pressure cycles during the life of this item is 1000 and proof pressure cycles is 25. The bourdon tube is made of Inconel x-750 and is silver soldered into a 304 crev tube at one end. That tube is in turn copper brazed into a 305 crev socket. The other end of the tube is closed off and soldered to the pointer. The vendor, Kratos, performs five (5) stress proof pressure cycles to 15,000 psi and five (5) proof pressure cycles to 11,200 psi prior to gage calibration. If hysteresis remains, then five (5) more proof pressure cycles to 11,200 psi are performed prior to a re-calibration. The gage is scrapped if hysteresis still remains. This procedure ensures that the bourdon tube is properly strain hardened.</p> <p>B. Test - Component Acceptance Test - The vendor, Kratos, performs five (5) stress proof pressure cycles to 15,000 psi and five (5) proof pressure cycles to 11,200 psi prior to gage calibration. If hysteresis remains then five (5) more proof pressure cycles to 11,200 psi are performed prior to a re-calibration. The gage is scrapped if hysteresis still remains, this procedure ensures that the bourdon tube is properly strain hardened.</p> <p>CEL PPA Test - The item is externally leak tested with a 2X He and 98X N2 gas mixture at a pressure of 1800-2200 psig in a chamber vacuum. Leakage must not exceed 5.55×10^{-5} acc/sec He (5.55×10^{-3} acc/sec He $\times 10$ represents total end item (SOP) leakage. The accuracy of the item is checked by pressurizing it to 200 and 6000 psig with tolerances of $\pm 300/-200$ and ± 400 psig respectively.</p> <p>CERTIFICATION TESTS - During S/BP the SV700045 SOP completed 5000 on/off cycles and 100 proof cycles which is four times the 15 year expected use cycles. During the flow testing phase, the SOP completed 325 total hours of regulation at 5 pph or 0.16 pph. The SOP assembly also completed the 15 year random vibration, sinusoidal vibration, design shock and bench shock testing.</p> <p>During B/B2 the SV767710 SOP completed 112 blowdown cycles</p>

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	9/100	2)SG/MD?		<p>which is 3 times the cycle certification requirement of 35 to satisfy the 54799045 certification requirements.</p> <p>C. Inspection - There is 100% inspection, including proof pressure and leakage test of all the elements exposed to the high pressure medium during vendor acceptance testing. Particulates are minimized by cleaning these elements exposed to the oxygen to H3150 EN70A.</p> <p>D. Failure History - None.</p> <p>E. Ground Turnaround - Tested for purge calibration per FEMU-4-001, SOP servicing for flight.</p> <p>F. Operational Use - CREW RESPONSE - PRE-EVA: No response, this failure is not detectable. Training - standard (EM) training covers this failure mode. Operational Considerations - Flight rules define EMU as lost for loss of operational SOP.</p>