

CBL  
CRITICAL ITEMS LIST  
FILE: CBLX/L

NAME P/N QTY	CRIT	FAILURE MODE & CAUSE	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
02 PRESSURE REGULATOR, 2ND STAGE ITEM 2130 5V778675- 13 111 FC177-1 "	2/3R	<p>1130FM02B REGULATION BAND DRIFTS ABOVE 3.90 BUT LESS THAN 4.2 PSID.</p> <p>CAUSE: BALL SEAT DETERIORATES, NEAR OR BALL ACTUATOR STEM OR BALANCE BAR, BALANCE STEM OR ACTUATOR STEM STICKS, CONTAMINATION.</p>	<p>END ITEM: NONE.</p> <p>OPE INTERFACE: NONE.</p> <p>MISSION: NONE.</p> <p>CREW/VEHICLE: NONE FOR SINGLE FAILURE. POSSIBLE LOSS OF CREWMAN WITH LOSS OF THE PLSS.</p>	<p>A. DESIGN - A CHANGE IN THE POSITION OF THE BALL IN THE SEAT DOES NOT SIGNIFICANTLY AFFECT REGULATION. A 0.005 INCH CHANGE IN BALL SEAT POSITION CHANGES THE REGULATED PRESSURE 0.1 PSK. VESPEA IS A CREEP RESISTANT MATERIAL. THE SYSTEM IS CLEANED TO MSSISO LEVEL EMSDA BEFORE OPERATION WHICH MINIMIZES THE AMOUNT OF CONTAMINATION INITIALLY IN THE SYSTEM. PARTICLE GENERATION DURING OPERATION IS MINIMIZED BY MATERIAL SELECTION AND SURFACE FINISHES. THE SECOND STAGE REGULATOR IS PROTECTED BY A 25 MICRON ABSOLUTE NICKEL FILTER TO MINIMIZE THE CHANCE OF JAMMING. NOMINAL RATING OF THE FILTER IS 16 MICRON WHICH IS EQUIVALENT TO A PARTICLE SIZE OF 0.0007 INCHES. DIAMETRIC CLEARANCE BETWEEN SLIDING PARTS IS SMALL TO MINIMIZE COCKING. IT IS 0.0010-0.0025 BETWEEN THE VALVE STEM AND HOUSING, 0.0005-0.0025 BETWEEN THE SPRING SEAT AND HOUSING, AND 0.0005-0.0025 BETWEEN THE STEM GUIDE AND PRESSURE BALANCE STEM. THE FILTER REDUCES THE PROBABILITY OF A PARTICLE JAMMING THESE CLOSE TOLERANCES. THE HOUSING AND STEM GUIDE ARE MADE OF STRESS RELIEVED MONEL 400, AND THE VALVE STEM, SPRING SEAT, AND PRESSURE BALANCE STEM ARE MADE OF AGE HARDENED MONEL K 500 TO MINIMIZE THE CHANCE OF GALLING. ALL SLIDING SURFACES HAVE EITHER A 16 OR 32 MICRONDINCH FINISH, ALL EDGES ARE EITHER RADIUSSED OR CHAMFERED. THE L/D RATIO FOR THE VALVE STEM - HOUSING COMBINATION IS 7; FOR THE SPRING SEAT - HOUSING COMBINATION IS 1.6; AND FOR THE PRESSURE BALANCE STEM - STEM GUIDE IS 7.</p>

C26  
 CRITICAL ITEMS LIST  
 FILE: CIL3/L

NAME P/N QTY	CRIT	FAILURE MODE & CAUSE	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
02 PRESSURE REGULATOR, 2ND STAGE ITEM 2110 SV770475- 11 (1)	2/3R	2110F0201 REGULATION BAND DRIFTS ABOVE 3.90 BUT LESS THAN 4.2 PSID.		<p>B. TEST -            COMPONENT ACCEPTANCE TEST -            CTE, PERFORMS THE FOLLOWING TESTS TO ASSURE THE SECOND            STAGE REGULATION DOES NOT DRIFT ABOVE 3.9 PSID.            CONTAMINATION IS REDUCED/MINIMIZED BY CLEANING ALL OF THE            REGULATOR INTERNAL DETAILS AND OXYGEN PASSAGEWAYS TO            MEET THIS REQUIREMENT. THE TEST FACILITY HARDWARE AND GASES ALSO            MEET THIS REQUIREMENT. THE REGULATION BAND IS VERIFIED            DURING ACCEPTANCE TEST BY PERFORMANCE TESTS AT SEA LEVEL            WITH AN INLET PRESSURE OF 7400 PSI AND VARYING FLOW RATE            FROM 0.06 TO 5.5 TO 0.04 PPH. THE PERFORMANCE TEST IS            ALSO PERFORMED AT VACUUM CONDITIONS WITH INLET PRESSURES            OF 7400, 5025, 2710 AND 360 PSI AND A VARYING FLOW RATE            FROM 0.06 TO 5.5 TO 0.04 PPH.</p> <p>POA TEST -            CONTAMINATION OR CLOGGING OF THE INLET FILTER IS            REDUCED/MINIMIZED BY CLEANING ALL INTERFACING INLET TEST            FIXTURES AND HOSES TO MEET THIS REQUIREMENT. TEST GASES MUST ALSO            MEET THIS REQUIREMENT. PROPER REGULATOR PERFORMANCE IS            VERIFIED IN A SERIES OF PERFORMANCE AND DURABILITY TESTS.            THE REGULATOR IS PERFORMANCE TESTED INITIALLY AT SEA            LEVEL AND THEN AT 7400 PSID AND 360 PSIG INLET PRESSURES.            AT EACH INLET PRESSURE, THE OUTLET PRESSURE IS MONITORED            OVER THE FLOW RANGES OF 0-0.2 LBS/HR OR 0.04 PPH AND 0.2            TO 5.5 LBS/HR OR 0.04 PPH.</p>
FC377-Z N				

CIL  
CRITICAL ITEMS LIST  
FILE: CIL1/1

NAME P/N QTY	CRIT	FAILURE MODE & CAUSE	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
OZ PRESSURE REGULATOR 2ND STAGE ITEM 2150 SV770475- 13 (1)	1/1R	2130FM02B: REGULATION AND DRAFTS ABOVE 5.90 BUT LESS THAN 4.2 PSIG.		<p>PDA TESTING (CONTINUED) - THE SOP IS ALLOWED TO BLOWDOWN FROM 7400 PSIG TO 350 PSIG, WHILE VERIFYING PROPER REGULATOR FUNCTION. WITH THE INLET AT 7400 PSIG, THE ITEM IS ENDURANCE FLOWED AT 4.5-5.25 LBS/HR O2 FOR 5 HOURS MINIMUM AND AT 0.5-2.0 LBS/HR O2 FOR 2.5 HOURS MINIMUM. AGAIN, THE SOP IS ALLOWED TO BLOWDOWN FROM 7400 TO 350 PSIG. WITH THE INLET PRESSURE AT 350 PSIG, THE ITEM IS ENDURANCE FLOWED AT 4.5-5.25 LBS/HR O2 FOR 5 HOURS MINIMUM, AND AT 0.5-2.0 LBS/HR O2 FOR 2.5 HOURS MINIMUM. AFTER THE BLOWDOWN AND ENDURANCE TESTING, THE ITEM IS PERFORMANCE TESTED AT SEA LEVEL AND VACUUM AMBIENT WITH INLET PRESSURES OF 7400 PSIG AND 350 PSIG. FOR EACH CONFIGURATION, THE OUTLET PRESSURE IS MONITORED OVER THE FLOW RANGES OF 0-0.2 LBS/HR O2 (MAX) AND 0.2 (MAX) - 0 LBS/HR O2. AN ADDITIONAL BLOWDOWN IS PERFORMED PRIOR TO VACUUM AMBIENT TESTING.</p> <p>CERTIFICATION TEST - THE ITEM COMPLETED THE FOLLOWING CYCLE TEST DURING 5/85: ON/OFF ACTUAL 1025, SPEC 1011; NO FLOW HOURS ACTUAL 904, SPEC 101; BLOWDOWN ACTUAL 812, SPEC 35. NO CLASS I ENGINEERING CHANGES HAVE BEEN INCORPORATED SINCE THE CONFIGURATION WAS CERTIFIED.</p> <p>C. INSPECTION - DETAILS ARE 100% INSPECTED PER DRAWING DIMENSIONS AND SURFACE FINISH CHARACTERISTICS. DETAILS ARE MANUFACTURED FROM MATERIAL WITH CERTIFIED PHYSICAL AND CHEMICAL PROPERTIES. ALL DETAILS, GAGES AND TEST FACILITIES ARE CLEANED AND INSPECTED TO HS1150 ENSURE TO PRECLUDE CONTAMINATION CLOGGING. THE BALL SEAT IS VISUALLY INSPECTED UNDER 30X MAGNIFICATION FOR SHARP EDGES AND SURFACE DEFECTS. THE TIGHTENING AND FINISH TORQUE OF ALL THREADED CONNECTIONS ARE VERIFIED BY VENDOR AND DEAS INSPECTORS. A TRIAL ASSEMBLY IS RUN ON ALL DETAILS AND THEN THEY ARE VISUALLY INSPECTED. THE BEHIND VALVE HANDLE AND BALANCE STEM ARE MANUALLY DEPRESSED DURING ASSEMBLY TO ASSURE FREE MOTION.</p> <p>D. FAILURE HISTORY - JEUJ-213-004 (8-24-82) REGULATOR SHOWN HIGH OUFLET PRESSURE WHEN TESTED ON NEH TEST FACILITY GSE. NO CORRECTIVE ACTION WAS PERFORMED. THE GSE HAS CONTINUED TO BE IN ERROR.</p> <p>E. CHECKED TURNAROUND - TESTED PER FEUJ-R-001, SOP SERVICE FOR FLIGHT, SHUTOFF VALVE INTERNAL LEAKAGE.</p>

CEL  
 CRITICAL ITEMS BEST  
 FILE: CELX/I

NAME P/N QTY	CRIT	FAILURE MODE & CAUSE	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
02 PRESSURE REGULATOR 2ND STAGE ITEM 2130 SV778475- 13 130  FC174-4 *	2/10	2130F020: REGULATION RANGE DRIFTS ABOVE 3.90 BUT LESS THAN 4.2 PSID.		F. OPERATIONAL USE - CREW RESPONSE - EVA: SINCE EVA TERMINATION IS REQUIRED AS SOON AS SOP IS FLOWING, CREW WOULD QUICKEN EVA TERMINATION WHEN IMPROPER REGULATION IS DETECTED. SPECIAL TRAINING - STANDARD EMI TRAINING COVERS THIS FAILURE MODE. OPERATIONAL CONSIDERATIONS - EVA CHECKLIST PROCEDURES VERIFY HARDWARE INTEGRITY AND SYSTEMS OPERATIONAL STATUS PRIOR TO EVA. FLIGHT RULES DEFINE GO/NO GO CRITERIA RELATED TO EMI PRESSURE INTEGRITY AND REGULATION. FLIGHT RULES DEFINE EMI AS LOST FOR LOSS OF OPERATIONAL SOP. REAL TIME DATA SYSTEM ALLOWS GROUND MONITORING OF EMI SYSTEMS.