

CFA
CNU CRITICAL EVENT LIST

08/31/90 SUPERSEDED 01/02/90

ANALYST:

Page: 1
Date: 09/28/90

NAME P/N KIT	CRIT	FAILURE MODE & CAUSE	FAILURE EFFECT	REVISIONS FOR ACCEPTANCE						
PRIMARY OXYGEN BOTTLE, HENH Y11 SV784098-2, SV778095-1 (2)	2/16	ISSUE: External gas leakage. CAUSE: Failure due to fitting sealing surface damage, O-ring material defect.	ENE ITEM: Oxygen leakage to ambient. EFE INTERFACE: Excessive consumption of the primary oxygen supply. The SWP is automatically activated during EVA if the suit pressure drops to 3.33 psid. MISSION: Terminate EVA, Loss of use of one EVA, Unable to charge primary O2 tank. CREW/VEHICLE: None for single failure. Possible loss of crew with loss of SWP.	<p>A. Design - SV778095, SV784099-1: Bottle to manifold sealing is accomplished by a radial elastomeric O-ring. The vicor elastomeric seal design configuration, dimensions and rigidity of assembly provide square under all loading conditions.</p> <p>B. Test - SV778095, SV784099-1: Component Acceptance Test - The PLUS bottle acceptance test procedure is specified in SVHS 7421 Table 1. Tests are performed by vendor and are as follows:</p> <table border="1"> <thead> <tr> <th>Para. No.</th> <th>Test</th> </tr> </thead> <tbody> <tr> <td>4.2.3 C</td> <td>Front pressure and volumetric expansion</td> </tr> <tr> <td>4.2.3 D</td> <td>Helium leak test</td> </tr> </tbody> </table> <p>POA Test - (Both Types) The Primary Oxygen Bottles are tested per SEMU-60-018. The bottles are leak tested by pressurizing the bottles to 250-950 psia with a mixture of 98% N2 and 2% He. A helium mass spectrometer is then used to "sniff" for evidence of leakage from the bottles. At final inspection the item is visually inspected for evidence of damage.</p> <p>Certification Test - SV778095: Two units were subjected to operating pressure cycles of 36,000 (no failure) and 25,057 prior to failure. Two other units completed 100 proof pressure cycles without failure and then were burst tested to 3060 and 3100 psig. The burst pressure requirement is 2800 psig. IC 47896-742 (prevent unnecessary proof cycles on oxygen bottles) has been incorporated since that time.</p> <p>Certification Test - SV784099-1: The Primary Oxygen Bottles are certified by the POA test per SEMU-60-018. High pressure oxygen system leakage is checked by POA prior to shipment. Also, when raw "all metallic" tanks were cycled the leakage was tested and showed no discrepancies per VER 340 (SEMU-60-0018).</p>	Para. No.	Test	4.2.3 C	Front pressure and volumetric expansion	4.2.3 D	Helium leak test
Para. No.	Test									
4.2.3 C	Front pressure and volumetric expansion									
4.2.3 D	Helium leak test									

SEMU-60-0018
Page 534
Change 1

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
PRIMARY OXYGEN BOTTLE ITEM 111 5V778095 111	P/11	111F0281 EXTERNAL GAS LEAKAGE.		<p>C. INSPECTION - (CONTINUED)</p> <p>RADIOGRAPHIC INSPECTION IS PERFORMED TO DETECT CRACK, WELDS OR OTHER IRREGULARITIES IN THE WELDS AND PARENT METAL OF TANK AS SPECIFIED IN SVHS 9410 PARA. 3.3.7 FRACTURE CONTROL. IN ADDITION, FLUORESCENT PENETRANT INSPECTION TO DETECT SURFACE DEFECT IN THE WELDS AND PARENT METAL OF TANK AS SPECIFIED IN SVHS 9410, PARA. 3.3.7 FRACTURE CONTROL.</p> <p>INSPECTION OF PROOF, LEAKAGE, RADIOGRAPHIC INSPECTION AND EXAMINATION OF INTERNAL SURFACES ARE PERFORMED AT VENDOR AND MONITORED BY MAINTENANCE STANDARD SOURCE INSPECTION.</p> <p>D. FAILURE HISTORY - NONE.</p> <p>E. GROUND TROUBLESHOOTING - TESTED PER REMP-B-001. COLLIDER WAS CHECKOUT OF O2 BOTTLE CIRCUIT LEAKAGE.</p> <p>F. OPERATION USE -</p> <p>CRM RESPONSE - PRECVA: WHEN DETECTED PRIOR TO PRIMARY O2 TANK TOPOFF, TROUBLE SHOOT PADDED. IF NO SUCCESS, CONSIDER THE 3 IF AVAILABLE. EMU NO GO FOR EVA. EVA: WHEN CMS DATA CONTINUES AN ACCELERATED PRIMARY O2 USE RATE, TERMINATE EVA. TRAINING - STANDARD EVA TRAINING COVERS THIS FAILURE MODE.</p> <p>OPERATIONAL CONSIDERATIONS - FLIGHT RULES DEFINE REQUIRE EVA TERMINATION WHEN MINIMUM PRIMARY CONSUMABLES REMAIN. EVA CHECKLIST PROCEDURES VERIFY MODHARE INTEGRITY AND SYSTEMS OPERATIONAL STATUS PRIOR TO EVA. REAL TIME DATA SYSTEM ALLOWS GROUND MONITORING OF EMU SYSTEMS.</p>

FC6-2
04

YES 4074
JLC-11-1135

CIL
 CRITICAL ITEM LIST
 FILE: CIL-PL98/2

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
PRIMARY OXYGEN BOTTLE ITEM 311 SV704099-3 PC4A-2 02	Z/IR	ISIFH20; EXTERNAL GAS LEAKAGE.		<p>D. FAILURE HISTORY - NONE.</p> <p>E. GROUND TURNAROUND - TESTED PER FEMU-R-001, CHAMBER RUM CHECKOUT OF O2 BOTTLE CIRCUIT LEAKAGE.</p> <p>F. OPERATION EFFECTS - EVEN RESPONSE - PREEVA: WHEN DETECTED PRIOR TO PRIMARY O2 BANK POPOFF, TROUBLE SHOOT PROBLEM, IF NO SUCCESS, CONSIDER EHP 3 IF AVAILABLE, EHP NO GO FOR EVA. EVA: WHEN CMS DATA CONFIRMS AN ACCELERATED PRIMARY O2 USE RATE, TERMINATE EVA. TRAINING - STANDARD ENU TRAINING COVERS THIS FAILURE MODE. OPERATIONAL CONSIDERATIONS - FLIGHT RULES DEFINE REQUIRE EVA TERMINATION WHEN MINIMUM PRIMARY CONSUMIBLES REMAIN. EVA CHECKLIST PROCEDURES VERIFY AIRFRAME INTEGRITY AND SYSTEMS OPERATIONAL STATUS PRIOR TO EVA. REAL TIME DATA SYSTEM ALLOWS GROUND MONITORING OF ENU SYSTEMS.</p>