

CRITICAL ITEMS LIST

ASSY NOMENCLATURE OXYGEN CYLINDER
ASSY P/N: C4285

SYSTEM CREW ESCAPE SYSTEM
SUBSYSTEM EMERGENCY OXYGEN SYSTEM

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FMEA		NAME, QTY & DRAWING REF DESIGNATION	QTY	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	RATIONALE FOR ACCEPTANCE
REF	REV					
511		OXYGEN CYLINDER, (3) C4285	1/1	S.S.1 Mode: Rupture Cause: Material failure	Loss of half or all available oxygen	<p>1. Design Features.</p> <ul style="list-style-type: none"> a. The cylinders are designed and fabricated to MIL-STD-1522A (3/8 inch 18 and 1) internal thread, class 2 - 3000 psi, construction and nonshatterable, leak before burst. b. The material is CRES cryoformed 301, yield strength 285,000 psi, and ultimate strength 290,000 psi. c. The cylinders were designed to a safety factor of 2 plus. d. The cylinder wall thickness is .012 inches minimum. e. Burst pressure is not less than 6,000 psi. f. Cylinders will be certified in accordance with MIL-STD-1522A pressure vessels. <p>2. Test or Analysis to Detect Failure Mode.</p> <ul style="list-style-type: none"> a. <u>Acceptance Tests</u> <ul style="list-style-type: none"> (1) The material is certified by the supplier by physical/chemical tests run on CRES cryoformed 301. (2) The cryoformed cylinders are verified to be in conformance to MIL-STD-1522A. (3) The cylinders are subjected to permanent volumetric expansion hydrostatic test. The permanent volumetric expansion must not exceed .6 percent of the total volumetric expansion. (4) The cylinders are leak tested at 3000 psi for at least 1 minute with helium. Leakage shall not exceed 1 x 10⁻⁶ cc/sec. (5) Functional test at 38 slpm for 10 minutes minimum at 70 ± 10 psig. After 10 minutes flow is reduced to 90 slpm until gauge reads empty.

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REF	REV				END ITEM	
511		OXYGEN CYLINDER, (2) C4285	1/1	S-1.1 Mode: Rupture Cause: Material failure	Loss of half or all available oxygen	<p>(6) All cylinders are proof tested hydrostatically at 4500 psi</p> <p>(7) All cylinders are subjected to a 3000 psi high pressure system leak test for 24 hours and 750 psi low pressure system leak test for 24 hours</p> <p>(8) All cylinders receive penetrant and x-ray inspection to detect surface cracks and voids in the welds</p> <p>(9) Oxygen purity test on all cylinders using 99.95 percent oxygen. The oxygen in the cylinders is not less than 95 percent</p> <p>b. Certification</p> <p>(1) The cylinders are qualified in accordance with MIL-STD-1522A</p> <p>(2) Burst pressure tested, hydrostatically for 1 minute at 6000 psi, then tested to destruction</p> <p>(3) Cycle tested, hydrostatically charged to 3000 psi and pressure released to obtain an internal pressure equal to ambient atmospheric pressure for 1800 cycles. This procedure repeated at 4500 psi for 4 cycles</p> <p>(4) The cylinder is leak tested at 3000 psi for 1 minute with helium. Leakage shall not exceed 1×10^{-6} cc/sec</p> <p>(5) A similar system was live jumped at the Naval Weapons Center 12 jumps from 25,000 feet, 4 jumps for 12,000 feet, 12 jumps from 10,000 feet, and 8 water drop jumps</p> <p>Turnaround Testing (In accordance with PIA 23029)</p> <p>a. System test, 3000 psi high-pressure system leak/decay test for 24 hours</p> <p>b. Proof tested to 4500 psi every 4 years</p>

PREPARED BY
 PROCESSING

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511		OXYGEN CYLINDER, (2) C4285	1/1	5.1.1 Mode: Rupture Cause: Material failure	Loss of half or all available oxygen	3. Inspection. <ul style="list-style-type: none"> a. 100 percent OCAS inspection. b. Dimensional inspection after permanent volumetric expansion after hydrostatic testing c. Cylinders are examined for cleanliness, level 100A, in accordance with ISCM 5322, Contamination Control Plan. d. Cylinders are visually inspected for conformance to the configuration of type specified, internal cleanliness, finish, color, and markings e. Verification of test report <u>Turnaround Inspection</u> (In accordance with PIA 23029) <ul style="list-style-type: none"> a. Cylinders are examined for cleanliness, level 100A b. Cylinders are visually inspected c. Packing inspection after installed in parachute harness 4. Failure History. None. The oxygen cylinder is a new configuration 5. Operational Use. <ul style="list-style-type: none"> a. Operational effect of failure. Possible loss of crewmember b. Crew action. None c. Crew training. The crew is trained in the proper use of the emergency O₂ system d. Mission constraints. None. Mission is terminated prior to use of this equipment e. In-flight checkout. The crew could inspect the O₂ bottles during flight, but cannot repair or replace defective O₂ bottles