

CRITICAL ITEMS LIST

ASSY NOMENCLATURE: REDUCER ASSEMBLY

SYSTEM CREW ESCAPE SYSTEM

REVISION A

ASSY P/N: 8825071

SUBSYSTEM EMERGENCY OXYGEN SYSTEM

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FMEA		NAME, QTY & DRAWING REF DESIGNATION	QTY	FAILURE MODE AND CAUSE	FAILURE EFFECT OR IMPACT	RATIONALE FOR ACCEPTANCE
REF	REV					
542		REDUCER ASSEMBLY, (2) 8825071	1/1	Mode: Reducer fails closed Cause: • Piece part failure • Contamination	Loss of half or all available oxygen if second reducer fails	<ol style="list-style-type: none"> 1. Design Features <ol style="list-style-type: none"> a. The diaphragm spring is CRES 17-7PH, outer diameter: .545 inches, wire diameter: .100 inches, spring constant: 424 lb/in ± 38 lb/in b. Filter is "microweave" wire mesh (104 CRES), 20 micron c. Diaphragm is 1.1 inch diameter, macron 150B4/1 impregnated with Dow Corning silicone rubber #DC35u, thickness = .026 ± .002 d. Ball is made of 304 CRES e. Ball seat is batch controlled wessel SP-71 2. Test or Analysis to Detect Failure. <ol style="list-style-type: none"> a. <u>Acceptance Test</u> <ol style="list-style-type: none"> (1) Proof load between ball terminals: 120 lb for 5 seconds in accordance with MIL C-5688 (2) Functional test on cam actuation (3) Outlet flow and pressure test: 40-90 Lpm, 70 psi ± 5 psi (4) Functional test on seat prior to diaphragm assembly (5) Halogen purity test, flow oxygen to verify minimum purity of 95 percent (6) Functional test of reducer during oxygen charge/discharge cycle

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SUBSYSTEM: EMERGENCY OXYGEN SYSTEM

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FMEA		NAME, QTY & DRAWING REF DESIGNATION	CMT'Y	FAILURE MODE AND CAUSE	FAILURE EFFECT OR INDICIA	RATIONALE FOR ACCEPTANCE
REF	REV					
542		REDUCER ASSEMBLY, (2) 0025071	1/1	Mode: Reducer fails closed Cause: • Piece part failure • Contamination	Loss of half or all available oxygen if second reducer fails	<p>(7) Seat leakage, body leakage test and cam actuation test</p> <p>(8) Relief valve cracking pressure test between 140 ± 10 psig at 3000 psig + 100 0 psig</p> <p>(9) Functional test at 38 slpm for 10 minutes minimum at 70 ± 10 psig. After 10 minutes, flow is increased to 90 slpm until gauge reads empty</p> <p>(10) The material is certified by the supplier by physical/chemical tests</p> <p>b. <u>Certification:</u></p> <p>(1) A similar reducer is qualified in accordance with Rockwell International procurement specification, emergency oxygen assembly, bailout instructor.</p> <p>(2) Proof pressure tested to 4500 psi + 10/-0 psig</p> <p>(3) Burst pressure tested to 7500 psi + 10/-0 psig for 1 minute</p> <p>(4) Endurance cycling: Inlet pressure varied from 3800 psig to 250 psig and returned to 3800 psig. This process is repeated for 250 cycles.</p> <p>(5) O₂ material compatibility test: Inlet pressure varied from 3750 psig to 250 psig and returned to 3750 psig. Process repeated 100 cycles</p> <p>(6) 3750 psi leak test: No leakage is allowed</p> <p>(7) A similar system was live jumped at the Naval Weapons Center: 12 jumps from 25,000 feet, 4 jumps from 12,000 feet, 12 jumps from 10,000 feet, and 8 water drop jumps</p>

CRITICAL ITEMS LIST

ASSY NOMENCLATURE: REDUCER ASSEMBLY
ASSY P/N: 8835071

SYSTEM: CREW ESCAPE SYSTEM
SUBSYSTEM: EMERGENCY OXYGEN SYSTEM

DIVISION: A
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FMEA		NAME, QTY & DRAWING REF DESIGNATION	CRTY	FAILURE MODE AND CAUSE	FAILURE EFFECT OR ITO ITEM	RATIONALE FOR ACCEPTANCE
REF	REV					
542		REDUCER ASSEMBLY, (2) 8835071	1/1	<p>Mode: Reducer fails closed</p> <p>Cause: • Piece part failure • Contamination</p>	Loss of half or all available oxygen if second reducer fails	<p><u>Turnaround Testing</u> (in accordance with PIA 23025)</p> <ul style="list-style-type: none"> a. Intermittent external leak check at 3000 psig ± 100 - 0 psig b. 24-hour leak/decay check at 3000 psig ± 100 - 0 psig c. Proof pressure test to 4500 psig ± 100 - 0 psig every 4 years <p>3. Inspection:</p> <ul style="list-style-type: none"> a. 100 percent DCAS inspection on all parts b. Cleaned and inspected for cleanliness to Level 100A in accordance with JSCM 5.122, Contamination Control Plan. c. Black light test - inspected for external contamination d. After reducer is assembled, the reducer is x-ray inspected to verify all parts and proper assembly e. Visual inspection to conformance of drawings. f. All moving parts are examined to ensure that they operate freely without sticking or binding

CRITICAL ITEMS LIST

ASSY NOMENCLATURE: REDUCER ASSEMBLY

SYSTEM: CREW/ESCAPE SYSTEM

REVISION: A

ASSY P/N: 8825071

SUBSYSTEM: EMERGENCY OXYGEN SYSTEM

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FMEA		NAME, QTY & DRAWING REF DESIGNATION	CNTY	FAILURE MODE AND CAUSE	FAILURE EFFECT OR HAZARD	RATIONALE FOR ACCEPTANCE
REF	REV					
542		REDUCER ASSEMBLY, (2) 8825071	1/1	Mode: Reducer fails closed Cause: • Piece part failure • Contamination	Loss of half or all available oxygen if second reducer fails	<p><u>Turnaround Inspection</u> (in accordance with PMA 23029)</p> <ol style="list-style-type: none"> a. Visual inspection for damage b. Verify clean and inspected to cleanliness level 100A <p>4. Failure History: None. A similar reducer is used in the B-1 bailout system and Dryden Flight Research Center.</p> <p>5. Operational Use:</p> <ol 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 would be terminated prior to use of this equipment. e. In-flight checkout: None. Visual inspection of reducer/relief valve prior to use would not reveal failure.

PREPARED BY: R. Allison B. Sauer

SUPERSEDING DATE: 10/24/88

APPROVED BY: J. D. Schlosser

DATE: 5/2/89