CRITICAL ITEMS LIST

ASSY NOMENCLATURE *REDUCER ASSEMBLY* SYSTEM *CREW ESCAPE SYSTEM* REVISION A

ASSY P/N *8825071* SUBSYSTEM *EMERGENCY OXYGEN SYSTEM* PAGE 26 OF 39

FMEA REF	FMEA REV	NAME, QTY & DRAWING REF DESIGNATION	CRIT'Y	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	RATIONALE FOR ACCEPTANCE
5 4 J		RELIEF VALVE (2), 8825071	2/1R	Mode: Relief valve fails closed Cause: • Contamination • Piece part failure • Defective material	Downstream pressure will exceed maximum allowable on hoses if reducer fails open, loss of available oxygen	1. Design Features. a. Metal to metal seat on low pressure side supports spring load, prevents sticking b. Poppet head provides metal seat on low pressure side of seal, limits squeeze on resilient seal ring. Prevents water and dirt from entering valve c. Reseat pressure is 100 psig minimum d. Crack pressure is 130 psig nominal, 140 psig maximum with an operating tolerance for cracking pressure of 5 percent. e. Operating temperature -60°F to 250°F f. O-ring material is neoprene AMS 3242 2. Test or Analysis to Detect Failure. a. <u>Acceptance Test</u>. (1) Flow test of relief valve: Cracking pressure test: 130 psig ± 10 psig Reseat pressure test: 100 psig minimum Flow test: 100 Lpm minimum (2) Functional test at 3000 psi high pressure and 250 psi low pressure system leak test for 24 hours (3) Functional test after cleaning and reassembly

CRITICAL ITEMS LIST

ASSY NOMENCLATURE: *REDUCER ASSEMBLY* SYSTEM: *CREW ESCAPE SYSTEM* REVISION A

ASSY P/N 8025071 SUBSYSTEM: *EMERGENCY OXYGEN SYSTEM* PAGE 27 OF 39

FMEA REF	FMEA REV	NAME, QTY & DRAWING REF DESIGNATION	CRIT'Y	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	RATIONALE FOR ACCEPTANCE
543		RELIEF VALVE (2), 8025071	2/1R	Mode: Relief valve fails closed Cause: • Contamination • Piece part failure • Defective material	Downstream pressure will exceed maximum allowable on hoses if reducer fails open, loss of available oxygen	(4) Relief valve cracking pressure test between 140 ± 10 psig at 3000 psig + 100 - 0 psig (5) Functional test at 30 slpm for 10 minutes minimum at 70 ± 10 psig. After 10 minutes, flow is increased to 90 slpm until gauge reads empty (6) The material is certified by the supplier by physical/chemical tests. b. <u>Certification</u> (1) A similar reducer is qualified in accordance with Rockwell International procurement specification, emergency oxygen assembly, bailout instructor (2) Proof pressure tested to 4500 psi + 100-0 psig (3) Burst pressure tested to 7500 psi + 100-0 psig for 1 minute. (4) Endurance cycling. Inlet pressure varied from 3000 psig to 250 psig and returned to 1000 psig. This process is repeated for 250 cycles. (5) O_2 material compatibility test. Inlet pressure varied from 3750 psig to 250 psig and returned to 3750 psig. Process repeated for 100 cycles (6) 3750 psi leak test. No leakage is allowed (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

PREPARED BY *R. Allison/R. Sauser* SUPERSEDING DATE 10/24/88 APPROVE! DATE 3/2/89

CRITICAL ITEMS LIST

ASSY NOMENCLATURE: *REDUCER ASSEMBLY*

ASSY P/N: *8825071*

SYSTEM: *CREW ESCAPE SYSTEM*

SUBSYSTEM: *EMERGENCY OXYGEN SYSTEM*

REVISION: *A*

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FMEA REF	FMEA REV	NAME, QTY & DRAWING REF DESIGNATION	CRIT'Y	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	RATIONALE FOR ACCEPTANCE
5 & 3		RELIEF VALVE (2), 8825071	2/1R	Mode: Relief valve fails closed Cause: • Contamination • Piece part failure • Defective material	Downstream pressure will exceed maximum allowable on hoses if reducer fails open, loss of available oxygen	Turnaround Testing (In accordance with PIA 23029) a Internal/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 psi + 10/-0 psig every 4 years I. Inspection a 100 percent DCAS inspection on all parts b Cleaned and inspected for cleanliness to Level 100A in accordance with JSCM 5322, Contamination Control Plan c After reducer is assembled, the reducer is x-ray inspected to verify all parts and proper assembly d Inspected for conformance to drawings e Dimensional inspection f Inspect for Krytox lubricant g 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 *8025079* SUBSYSTEM: *EMERGENCY OXYGEN SYSTEM* PAGE *29* OF *39*

FMEA REF	FMEA REV	NAME, QTY & DRAWING REF DESIGNATION	CRIT'Y	FAILURE MODE AND CAUSE	FAILURE EFFECTS on ITEM	RATIONALE FOR ACCEPTANCE
543		RELIEF VALVE (3), 8025071	2/1R	Mode: Relief valve fails closed Cause: • Contamination • Piece part failure • Defective material	Downstream pressure will exceed maximum allowable on hoses if reducer fails open, loss of available oxygen	Turnaround inspection (In accordance with PIA 23029) a. Visual inspection for damage b. Verify clean and inspected to cleanliness level 100A 4. Failure History. None. A similar reducer is used in the B-1 bailout system and Dryden Flight Research Center. 5. Operational Use. a. Operational effect of failure: No effect without additional failure. If reducer also fails open, O_2 hose may rupture leading to possible loss of crewmember. b. Crew action: None. c. Crew training: Not applicable. 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. Sauser* SUPERSEDING DATE: *10/24/88* APPROVED: CEE/EOS-26 DATE: *9/1/89*