

CRITICAL ITEMS LIST

ASSY NOMENCLATURE: EXHALATION VALVE

SYSTEM: CREW ESCAPE SYSTEM

REVISION

ASSY P/N: FTB33-3

SUBSYSTEM: LAUNCH ENTRY SLUT

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FMEA		NAME, QTY & DRAWING REF DESIGNATION	CRITY	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	RATIONALE FOR ACCEPTANCE
REF	REV					
3.4.2		EXHALATION VALVE (2), 18951G-02	2/IR	<p>3.4.2 Mode: Valve fails closed</p> <p>Cause: • defective material • contamination</p>	Buildup of carbon dioxide if second valve fails	<p>1. DESIGN FEATURES TO MINIMIZE FAILURE MODE</p> <p>a. The exhalation valve is in current use by the Air Force.</p> <p>b. The valve is a mica disc.</p> <p>c. The case and seat is aluminum.</p> <p>d. The spring is phosphor bronze under calibrated compression.</p> <p>e. The valve opens at 1.65 ± 0.15 inches H₂O at a minimum input flow which shall not exceed 25 cc/minute.</p> <p>f. Resistance at flows of 0 to 95 slpm, 3.0 inches H₂O maximum; 0 to 2 slpm, 0.3 inch H₂O maximum above pressure setting.</p> <p>2. TEST OR ANALYSIS TO DETECT FAILURE MODE</p> <p>a. <u>Acceptance Testing</u></p> <p>(1) Flow of 25 cc/minute, at 70 psig - back pressure should read 1.65 ± 0.15 inches H₂O</p> <p>(2) Flow of 2 slpm, at 70 psig - back pressure should not increase more than 0.3 inch H₂O.</p> <p>(3) Flow of 95 slpm, at 70 psig - back pressure should be less than 3.0 inches H₂O</p> <p>b. <u>Certification Test</u></p> <p>(1) High altitude chamber Test, Brooks Air Force Base.</p> <p>(a) Unmanned testing series of gradual ascents and descents from ground level to 100,000 feet and rapid decompressions</p>

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SUPERSEDING DATE:

APPROVED BY: J. O. SCHLOSSER

DATE

CEE/LES-16

CRITICAL ITEMS LIST

ASSY NOMENCLATURE: EXHALATION VALVE

SYSTEM: CREW ESCAPE SYSTEM

REVISION:

ASSY P/N: F1833-5

SUBSYSTEM: LAUNCH ENTRY SUIT

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FMEA		NAME, QTY & DRAWING REF DESIGNATION	CRITY	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	RATIONALE FOR ACCEPTANCE
REF	REV					
3.4.2		EXHALATION VALVE (2), 189516-02	2/18	<p>3.4.2 Mode: Valve fails closed</p> <p>Cause: • defective material • contamination</p>	Buildup of carbon dioxide if second valve fails	<p>(b) Manned test series</p> <ol style="list-style-type: none"> 1 Gradual ascents and descents to 100,000 feet. 2 Rapid decompression to 90,000 feet 3 Endurance runs rapid decompression to 100,000 feet for 37 minutes. <p>(2) Live jumped at Naval Weapons Center.</p> <ol style="list-style-type: none"> (a) At 200 knots, 25,000 feet, four jumps. (b) At 110 knots, 10,000 feet, four jumps. (c) At 110 knots, 6,000 feet, four jumps. (d) At 170 knots, 15,000 feet, four jumps. (e) At 185 knots, 20,000 feet, four jumps. (f) Water drop at 30 feet per second (fps), two jumps. (g) Water drop at 27 fps, two jumps. <p>c. <u>Turnaround Test</u> (In accordance with PIA 23033)</p> <ol style="list-style-type: none"> (1) Flow of 25 cc/minute, at 70 psig - back pressure should read 1.65 ± 0.15 inches H₂O (2) Flow of 2 slpm, at 70 psig - back pressure should not increase more than 0.3 inch H₂O. (3) Flow of 95 slpm, at 70 psig - back pressure should be less than 3.0 inches H₂O. <p>3. INSPECTION</p> <ol style="list-style-type: none"> a Visual inspection of parts for defects. b One hundred percent visual inspection during assembly c Visual inspection on glyptal seal for defect d Visual inspection for contamination.

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REE/LES-17

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CRITICAL ITEMS LIST

ASSY NOMENCLATURE: EXHALATION VALVE

SYSTEM: CREW ESCAPE SYSTEM

REVISION

ASSY P/N: F1033-5

SUBSYSTEM: LAUNCH ENTRY SUIT

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FMEA		NAME, QTY & DRAWING REF DESIGNATION	CRITY	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	RATIONALE FOR ACCEPTANCE
REF	REV					
3.4.1		EXHALATION VALVE (2), 18951G-02	2/1R	<p>3.4.2 Mode: Valve fails closed</p> <p>Cause:</p> <ul style="list-style-type: none"> • defective material • contamination 	Buildup of carbon dioxide if second valve fails	<p>e. Verify flows are within specifications of the acceptance test.</p> <p>f. Verify exhalation valve is cleaned to level 300 in accordance with JSCM 5322</p> <p><u>Turnaround Inspection:</u> In accordance with PIA 23033)</p> <p>a. Visual inspection of parts for defects.</p> <p>b. One hundred percent visual inspection during assembly.</p> <p>c. Visual inspection on glyptal seal for defect.</p> <p>d. Visual inspection for contamination.</p> <p>e. Verify flows are within specifications of the acceptance test.</p> <p>f. Verify exhalation valve is cleaned to level 300 in accordance with JSCM 5322.</p> <p>4. FAILURE HISTORY None. This exhalation valve is used by the Air Force in high altitude suits for high performance aircraft and Dryden Flight Research Center.</p> <p>5. OPERATIONAL USE</p> <p>a. Operational Effect of Failure - Possible loss of crewmember if both valves fail.</p> <p>b. Crew Action - None</p> <p>c. Crew Training - Not applicable</p> <p>d. Mission Constraints - None.</p> <p>e. In-Flight Checkout - None. Crew could inspect anti-suffocation valve, but could not repair or replace a defective valve.</p>

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CEE/LES-18