CRITICAL ITEMS LIST

ASSY NOMENCLATURE: *HELMET HOLDOOWN ASSEMBLY* SYSTEM: *CREW ESCAPE SYSTEM* REVISION:

ASSY P/N: *40040P-81* SUBSYSTEM: *LAUNCH ENTRY SUIT*

FMEA REF	FMEA REV	NAME, QTY & DRAWING REF DESIGNATION	CRIT'Y	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	RATIONALE FOR ACCEPTANCE
3.7.1		HELMET HOLDOOWN ASSEMBLY (1), 189516-02	2/1R	3.7.1 Mode: Webbing assembly fails Cause: •defective material	Decrease in visibility and mobility	1. DESIGN FEATURES TO MINIMIZE FAILURE MODE a The webbing is made of nylon. b Tie down cable is 1,000 pound cable. c Cable/ring turn around is aluminum tubing 2. TEST OR ANALYSIS TO DETECT FAILURE MODE a. Acceptance Testing. (1) Suit structural test. 5.6 ± 0.2 psig for 15 minutes. (2) Tie down cable is pull tested to 400 pounds b. Certification Test. (1) High altitude chamber test, Brooks Air Force Base. (a) Unmanned testing series. 1 Gradual ascent/descent to 100,000 feet. 2 Rapid decompression to 90,000 feet. 3 Endurance runs rapid decompression to 100,000 feet for 37 minutes (b) Manned testing series 1 Gradual ascent/descent to 100,000 feet. 2 Rapid decompression to 90,000 feet 3 Endurance runs rapid decompression to 100,000 feet for 37 minutes

PREPARED BY: *R. L. ALLISON* SUPERSEDING DATE: APPROVED BY: *L. Q. SCHLOSSER* DATE:

CEE/LES-21

CRITICAL ITEMS LIST

ASSY NOMENCLATURE: *HELMET HOLDDOWN ASSEMBLY* ASSY P/N: *40088P-01*

SYSTEM: *CREW ESCAPE SYSTEM* SUBSYSTEM: *LAUNCH ENTRY SUIT*

REVISION:

FMEA REF	FMEA REV	NAME, QTY & DRAWING REF DESIGNATION	CRIT'Y	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	RATIONALE FOR ACCEPTANCE
3.7.1		HELMET HOLDDOWN ASSEMBLY (1), 18951G-02	2/1R	3.7.1 Mode: Webbing assembly fails Cause: • defective material	Decrease in visibility and mobility	c. Turnaround Testing. (In accordance with PIA 23033) (1) Suit structural test, 5.6 ± 0.2 psig for 15 minutes. 3. INSPECTION a. Inspection webbing material for defects b. Inspect assembly after installed on suit. c. Inspect webbing after structural test. d. Inspect webbing during suit structural test. Turnaround inspection. (In accordance with PIA 23033) a. Inspection webbing material for defects. b. Inspect assembly after installed on suit c Inspect webbing after structural test. d. Inspect webbing during suit structural test 4. FAILURE HISTORY None. This helmet holddown assembly is used by the Air Force in high altitude suits for high performance aircraft and Dryden Flight Research Center.

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PREPARED BY: *R. L. ALLISON* SUPERSEDING DATE APPROVED BY *J. O. SCHLOSSER* DATE:

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CRITICAL ITEMS LIST

ASSY NOMENCLATURE: *HELMET HOLDDOWN ASSEMBLY* SYSTEM: *CREW ESCAPE SYSTEM* REVISION:

ASSY P/N. *40848P-01* SUBSYSTEM: *LAUNCH ENTRY SUIT*

FMEA REF	FMEA REV	NAME, QTY & DRAWING REF DESIGNATION	CRIT'Y	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	RATIONALE FOR ACCEPTANCE
3.7.1		HELMET HOLDDOWN ASSEMBLY (1), 18951G-02	2/1R	3.7.1 Mode: Webbing assembly fails Cause: • defective material	Decrease in visibility and mobility	5. OPERATIONAL USE a. Operational Effect of Failure - Possible loss of crew if both pilot and commander's assemblies fail. b. Crew Action - None. c. Crew Training - Not applicable d. Mission Constraints - None. e. In-Flight Checkout - None during ascent or entry. On-orbit crew might be able to use the in-flight maintenance kit to repair a failed holddown assembly.

PREPARED BY: *R. L. ALLISON* SUPERSEDING DATE. APPROVED BY: *J. O. SCHLOSSER* DATE

CEE/LES-23

CRITICAL ITEMS LIST

ASSY NOMENCLATURE: *GAS CONTAINER ASSEMBLY* SYSTEM: *CREW ESCAPE SYSTEM* REVISION:

ASSY P/N: *40014G-018Y* SUBSYSTEM *LAUNCH ENTRY SUIT*

FMEA REF	FMEA REV	NAME, QTY & DRAWING REF DESIGNATION	CRIT'Y	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	RATIONALE FOR ACCEPTANCE
3.8.1		GAS CONTAINER ASSEMBLY (Counter Pressure Garment) [1], 18951G-02	1/1	3.8.1 Mode: Leakage or separation of gas bladder Cause: • overstress • defective material	Unable to maintain suit pressure	1. DESIGN FEATURES TO MINIMIZE FAILURE MODE a. Material is polyurethane b. The gas container is ultrasonic (heat) sealed. c. The restraint layer and restraint cover are exterior to the gas container and function as protective covers. d. This configuration is currently used in various Department of Defense flight suits. e. The configuration is utilized in the extravehicular mobility unit 2. TEST OR ANALYSIS TO DETECT FAILURE MODE a. Acceptance Testing. (1) Production lot samples are tested to ensure the desired construction strength (2) Leak tested at 3.0 ± 0.2 psig for 15 minutes, 130.0 sc/minute maximum allowable leak rate. (3) Proof pressure tested at two-times the operational pressure. (4) Restraint and gas container are structural tested at 5.6 ± 0.2 psig for 15 minutes (5) Coverall assembly systems *pressurization*/leak test system #1: 2,400 sc/minute maximum at 145.0 ± 10.0 mmHg (6) Coverall assembly systems pressurizat-on/leak test system #2: 2,400 sc/minute maximum at 110.0 ± 10.0 mmHg Certification Testing a. Overstress test to four times operational pressure (7.8 psi), 11.2 psi

PREPARED BY: *R. L. ALLISON* SUPERSEDING DATE: APPROVED BY: *J. O. SCHLOSSER* DATE:

CEE/CES-24

CRITICAL ITEMS LIST

ASSY NOMENCLATURE: *GAS CONTAINER ASSEMBLY* SYSTEM *CREW ESCAPE SYSTEM* REVISION

ASSY P/N *40814G-91BY* SUBSYSTEM: *LAUNCH ENTRY SUIT* PAGE *25* OF *60*

FMEA REF	FMEA REV	NAME, QTY & DRAWING REF DESIGNATION	CRIT'Y	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	RATIONALE FOR ACCEPTANCE
3.8.1		GAS CONTAINER ASSEMBLY (Counter Pressure Garment) (1), 18951G-82	1/1	3.8.1 Mode: Leakage or separation of gas bladder Cause: • overstress • defective material	Unable to maintain suit pressure	b Certification Test. (1) High altitude chamber test, Brooks Air Force Base (a) Unmanned testing series. 1 Gradual ascent/descent to 100,000 feet. 2 Rapid decompression to 90,000 feet. 3 Endurance runs rapid decompression to 100,000 feet for 37 minutes (b) Manned testing series. 1 Gradual ascent/descent to 100,000 feet 2 Rapid decompression to 90,000 feet 3 Endurance runs rapid decompression to 100,000 feet for 37 minutes c. Turnaround Test (in accordance with PIA 23033) (1) Leak tested at 3.0 ± 0.2 psig for 15 minutes, 130 scc/minute maximum allowable leak rate. (2) Restraint and gas container are structural tested at 5.6 ± 0.2 psig for 15 minutes. J. INSPECTION a One hundred percent verification of all cementing and stitching operations. b. One hundred percent visual inspection for leakage c Visual inspection of link net for defects. d One hundred percent inspection during assembly.

PREPARED BY: *N. L. ALLISON* SUPERSEDING DATE: APPROVED BY: *J. O. SCHLOSSER* DATE:

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CRITICAL ITEMS LIST

ASSY NOMENCLATURE: *GAS CONTAINER ASSEMBLY* SYSTEM *CREW ESCAPE SYSTEM* REVISION

ASSY P/N: *40074G-01BY* SUBSYSTEM *LAUNCH ENTRY SUIT*

FMEA REF	FMEA REV	NAME, QTY & DRAWING REF DESIGNATION	CRIT'Y	FAILURE MODE AND CAUSE	FAILURE EFFECT On END ITEM	RATIONALE FOR ACCEPTANCE
3.8.1		GAS CONTAINER ASSEMBLY (Counter Pressure Garment) (1). 189516-02	1/1	3.8.1 Mode: Leakage or separation of gas bladder Cause: ▪ overstress ▪ defective material	Unable to maintain suit pressure	Turnaround Inspection. (In accordance with PIA 23033) a. One hundred percent visual inspection for leakage. b. Visual inspection of link net for defects. 4. FAILURE HISTORY None. The gas container is used by the Air Force in high altitude suits for high performance aircraft and Dryden Flight Research Center. 5. OPERATIONAL USE a. Operational Effect of Failure - Possible loss of crewmember. b. Crew Action - None. c. Crew Training - Not applicable. d. Mission Constraints - None. e. In Flight Checkout - None. Crew could not repair or replace a defective gas container assembly

PREPARED BY: *K. L. ALLISON* SUPERSEDING DATE APPROVED BY: *J. D. SCHLOSSEN* DATE:

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