

CRITICAL ITEMS LIST

ASSY NOMENCLATURE: ANTI-G CONTROLLER

SYSTEM: CREW ESCAPE SYSTEM

REVISION

ASSY P/N: 3378-0001-2

SUBSYSTEM: LAUNCH ENTRY SUIT

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FMEA		NAME, QTY & DRAWING REF DESIGNATION	CRIT'Y	FAILURE MODE AND CAUSE	FAILURE EFFECT OR FWD ITEM	RATIONALE FOR ACCEPTANCE
REF	REV					
3.14.1	1	ANTI-G CONTROLLER (1), 18951G-02	Z/IR	<p>3.14.1 Mode: Falls closed or excessive leakage</p> <p>Cause:</p> <ul style="list-style-type: none"> • piece part failure • contamination 	Anti-G garment will not inflate	<p>1. DESIGN FEATURES TO MINIMIZE FAILURE MODE</p> <ul style="list-style-type: none"> a. Incorporate ejection escape suit controller design b. Designed to withstand a minimum of 500 cycles. <p>2. TEST OR ANALYSIS TO DETECT FAILURE MODE</p> <ul style="list-style-type: none"> a. <u>Acceptance Testing</u> <ul style="list-style-type: none"> (1) Leak test, 275 scc/minute maximum at 100.0 ± 5.0 psig for 5 minutes (detent in "0" position and "2.5" position). (2) Flow test; 250 slpm minimum at 100.0 ± 5.0 psig (detent in 2.5 position) (3) Pressure setting test, apply 100.0 ± 5.0 psig inlet pressure, rotating control knob to each pressure setting ± 1.5 psig. (4) Proof pressure test, 250 ± 5.0 psig inlet pressure and 5.25 ± 0.1 psig outlet pressure for 1 minute. (5) Fill duration test, 100.0 ± 5.0 psig inlet pressure the bladder pressure shall be 2.5 ± 0.1 psig at less than 30 seconds when control knob is in detent 2.5 position. b. <u>Certification Test</u> <ul style="list-style-type: none"> (1) Anti-G suit (AGS) structural test $5.6 \pm .02$ psig for 5 minutes. (2) AGS relief valve test, open at 3.0 ± 0.2 psig. (3) AGS leak test, 50.0 scc/minute maximum at 2.5 ± 0.2 psig for 15 minutes (4) Hose assembly leak test, "0" scc/minute at 75.0 ± 5.0 psig for 5 minutes maximum.

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CRITICAL ITEMS LIST

ASSY NOMENCLATURE: ANTI-G CONTROLLER

SYSTEM: CREW ESCAPE SYSTEM

REVISION:

ASSY P/N: 3378-0001-3

SUBSYSTEM: LAUNCH ENTRY SUIT

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FMEA		NAME, QTY & DRAWING REF DESIGNATION	CRIT'Y	FAILURE MODE AND CAUSE	FAILURE EFFECT OR END ITEM	RATIONALE FOR ACCEPTANCE
REF	REV					
3.14.1		ANTI-G CONTROLLER (1), 18951G-02	2/1R	<p>3.14.1 Mode: Fails closed or excessive leakage</p> <p>Cause: • piece part failure • contamination</p>	Anti-G garment will not inflate	<p>(5) Pressurization and control assembly (PCA) leak test, 275 scc/minute maximum at 75.0 ± 5.0 psig for 1 minute.</p> <p>(6) PCA flow test, 14 slpm minimum at 75.0 ± 5.0 psig.</p> <p>(7) PCA pressure setting test, ± 0.25 psig at each detent position</p> <p>(8) AGS assembly leak test, 325 scc/minute maximum at 75.0 ± 5.0 psig for 15 minutes maximum with PCA in 2.5 psig position.</p> <p>(9) Certified for 500 cycles</p> <p>C. Turnaround Testing (In accordance with PIA 23033)</p> <p>(1) Anti-G suit (AGS) structural test $5.6 \pm .02$ psig for 5 minutes.</p> <p>(2) AGS relief valve test, open at 3.0 ± 0.2 psig.</p> <p>(3) AGS leak test, 50.0 scc/minute maximum at 2.5 ± 0.2 psig for 15 minutes.</p> <p>(4) Hose assembly leak test, "0" scc/minute at 75.0 ± 5.0 psig for 5 minutes maximum.</p> <p>(5) Pressurization and control assembly (PCA) leak test, 275 scc/minute maximum at 75.0 ± 5.0 psig for 1 minute</p> <p>(6) PCA flow test, 14 slpm minimum at 75.0 ± 5.0 psig.</p> <p>(7) PCA pressure setting test, ± 0.25 psig at each detent position</p> <p>(8) AGS assembly leak test, 325 scc/minute maximum at 75.0 ± 5.0 psig for 15 minutes maximum with PCA in 2.5 psig position</p>

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CRITICAL ITEMS LIST

ASSY NOMENCLATURE - ANTI-G CONTROLLER

SYSTEM - CREW ESCAPE SYSTEM

REVISION:

ASSY P/N: 3378-0001-3

SUBSYSTEM: LAUNCH ENTRY SUIT

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FMEA		NAME, QTY & DRAWING REF DESIGNATION	CMTY	FAILURE MODE AND CAUSE	FAILURE EFFECT ON END ITEM	RATIONALE FOR ACCEPTANCE
REF	REV					
3.14.	1	ANTI-G CONTROLLER (1), 18951G-02	2/1R	<p>3.14.1 Mode: Fails closed or excessive leakage</p> <p>Cause: a piece part failure a contamination</p>	Anti-G garment will not inflate	<p>3. INSPECTION</p> <p>a. <u>Manufacturing Inspection.</u></p> <p>(1) Examination for conformance with drawings</p> <p>(2) Receiving inspection on PCA for visual defects.</p> <p>(3) Verify minimum leakage</p> <p>(4) During operational and pressure testing, PCA is inspected for evidence of any failure</p> <p>b. <u>Turnaround Inspection.</u> (In accordance with PRA 23033)</p> <p>(1) Verify minimum leakage.</p> <p>(2) During operational and pressure testing, PCA is inspected for evidence of any failure.</p> <p>4. FAILURE HISTORY</p> <p>None. The anti G controller has been used on all previous STS flights.</p> <p>5. OPERATIONAL USE</p> <p>a. Operational Effect of Failure: Crewmember could black out. Possible loss of crew if both pilot and commander blackout.</p> <p>b. Crew Action - None.</p>

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CRITICAL ITEMS LIST

ASSY NOMENCLATURE: ANTI-G CONTROLLER

SYSTEM: CREW ESCAPE SYSTEM

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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					
3.14.1	1	ANTI-G CONTROLLER (1), 189S1G-02	2/1R	<p>3.14.1 Mode: Fails closed or excessive leakage</p> <p>Cause: <ul style="list-style-type: none"> • piece part failure • contamination </p>	Anti-G garment will not inflate	<ul style="list-style-type: none"> c. Crew Training - Crew is trained in the proper use of the anti-G suit. d. Mission Constraints - None e. In-flight Checkout - None. Crew could not repair or replace a defective G suit controller.

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