

EXECUTIVE RISK ASSESSMENT SUMMARY

HAZARD REPORT NUMBER: LW-PS-RAES-4A	DATE: 7/96
REV. LETTER:	REV. DATE:
PART NUMBER: 950001-1	LRU NUMBER: SED39129185
TITLE: Unable to release crew from restraint system.	1. SEVERITY: Catastrophic 2. LIKELIHOOD OF OCCURRENCE: Improbable 3. CLASSIFICATION: Controlled
CAUSE: A. Restraint system inertia reel fails to release.	REDUNDANCY SCREENS: A - Pass B - Pass C - Pass
FMEA: LWS-PS-RAES-4A Criticality: 1R/2 Name/Quantity: Inertia reel/1 Function: Restrains crew member's upper torso. Failure Mode: Internal components of inertia reel fail resulting in no movement of upper torso restraint.	Cause: Contamination, excessive use, piece-part defect Failure detection: Crew notices no movement of shoulder belts.
Corrective Action: Manually adjust shoulder tension using shoulder adjustment buckle	
EFFECT: Time to Effect: Immediate Time to Correct: Minutes Failure Effect: Inertia reel not capable of providing tension adjustment of shoulder belt. Possible crew member injury/Possible lack of reach to perform critical functions.	REMAINING PATHS: 1. Shoulder belt manual adjustment buckle
CONTROL/RETENTION RATIONALE: DESIGN: 1. Designed for minimum access for contamination. 3. Restraint system harness will be designed to withstand vibrational loads associated with Launch, RTLS and Landing. TEST: 2. Functional test performed before and after each certification test and acceptance testing with QA participation. INSPECTION: FAILURE HISTORY: OPERATIONAL USE: MAINTAINABILITY:	

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VERIFICATION:

1. During assembly all parts are checked to be clean.
- 2a. PDA 4.2.8.10, PIA 4.2.8.10 Verify the inertial reel manual lock functionality. Move the inertia reel controller to manual lock position. The inertia reel shall prevent the lead-in strap from extending more than 1/2 inch when pulled forward. Allow the inertia reel to partially retract the lead-in strap from its previous position. As before, the inertia reel shall limit travel to 1/2 inches or less.
- 2b. PDA 4.2.8.12, PIA 4.2.8.12 Verify the inertia reel automatic lock functionality. Extend the lead-in strap approximately nine inches with the inertia reel controller in the automatic lock position. Hold the lead-in strap with one hand and strike the strap sharply with the other hand. The inertial reel shall lock the strap with a maximum payout of 1.5 inches or less. Slowly release the lead-in strap to eliminate the load. The inertia reel shall then fully retract the lead-in strap.
3. A vibration test has been performed (QVT TPS FV9620123) to the acceptance levels listed below and approved by EM2:

<u>Frequency Range (Hz)</u>	<u>Level</u>		
20	0.00053	g ² /Hz	
150	0.030	g ² /Hz	
350	0.030	g ² /Hz	
1000	0.030	g ² /Hz	
2000	0.0075	g ² /Hz	Overall = 6.1 grms