CRITICAL ITEMS LIST

Reference Designator: N/A
Part Name (Qty): Anti-G Suit Assy (1)
Drawing Reference: SED33105746

Project: Government Furnished Equipment
LRU Name (Qty): ACES Anti-G Suit (1)
LRU Part No.: SED33105746

Subsystem: CES
Effectivity: All Orbiters

Failure Mode Number	Criticality	Failure Effect	Retention Rationale
5.1.1	1R/2		

FUNCTION

Provides orthostatic protection during entry phase of mission by providing gas counter pressure on body lower extremities

Failure Mode and Cause

Mode: Leakage/rupture

Cause:

1. Defective material
2. Leaking interface connection at pressure connection assembly connection

Redundancy Screens	Remaining Paths - 1
A-Pass B-N/A C-Pass	One crewmember can safely land vehicle

Mission Phase	Time to Effect	Time to Correct
Entry	Seconds	N/A

END ITEM

Loss of anti-g garment pressure/orthostatic protection

Mission

N/A

Crew/Vehicle

Loss of vehicle/crew if both commander and pilot blackout

Interface

N/A

1. DESIGN FEATURES TO MINIMIZE FAILURE MODE

A. The bladder material (tri-laminate Goretex) is ultrasonically sealed
B. Bladder is protected by Nomex material restraint layer
C. Garment worn underneath the ACES coverall for additional protection

2. TEST OR ANALYSIS TO DETECT FAILURE MODE

A. Acceptance Test (P528/CEE-1046)

1. Anti-g suit structural test at 5.6 psig for 15 minutes (no damage)
2. Anti-g suit leak test at 2.5 psig for 15 minutes (50 sccm max)

B. Certification

1. Anti-g suit certified by similarity to CSU-13, 5 bladder type anti-g suit that has been in use by DOD for over 30 years and NASA since STS-1
2. Material configuration cycle test (500 cycles)

C. Turnaround Testing

1. Anti-g suit structural test at 36 months, 5.6 psig for 5 minutes (no damage)
2. Anti-g suit leak test at 2.5 psig for 5 minutes (PIA) (spec: 100 sccm max)

3. INSPECTION

A. Acceptance Inspection (P528/CEE-1144)

1. Government source inspection for seam assembly, cementing, sewing procedures during assembly
2. Visual inspection of restraint for defects during assembly

Prepared BY: R.E. Hopper Supersedes Date: N/A Approved By: R.W. Gaume

CRITICAL ITEMS LIST

Reference Designator: N/A
Part Name (Qty): Anti-G Suit Assy (1)
Drawing Reference: SED33106746

Project: Government Furnished Equipment
LRU Name (Qty): ACES Anti-G Suit (1)
LRU Part No.: SED33106746

Subsystem: CES
Effectivity: All Orbiters

Failure Mode Number 0.1.1	Criticality 1R/2	Failure Effect	Retention Rationale
FUNCTION Provides orthostatic protection during entry phase of mission by providing gas counter pressure on body lower extremities		**END ITEM** Loss of anti-g garment pressure/orthostatic protection **Mission** N/A **Crew/Vehicle** Loss of vehicle/crew if both commander and pilot blackout **Interface** N/A	B. Turnaround Inspection (P528/CEE-1148) 1. Inspection of seams, restraint layer for physical damage/structural integrity (PIA) 4. FAILURE HISTORY None - A virtually identical anti-g suit has been in use in the Shuttle program since STS-1 and is currently in use with the LES 5. OPERATIONAL USE A. Operational effect of failure - Possible loss of crew if commander and pilot both blackout B. Crew action - None C. Crew training - Crew is trained in proper use of the anti-g suit assembly D. Mission constraints - None E. Inflight checkout - None - Crew could inspect anti-g suit but not repair or replace defective suit
Failure Mode and Causes Mode: Leakage/rupture Cause: 1. Defective material 2. Leaking interface connection at pressure connection assembly connection			
Redundancy Screens A-Pass B-N/A C-Pass	**Remaining Paths - 1** One crewmember can safely land vehicle		
Mission Phase	**Time to Effect**	**Time to Correct**	
Entry	Seconds	N/A	

Prepared BY: P.E. Hooper

Superseding Date: N/A

Approved By: B.W. Sauser

July 9, 1994