CRITICAL ITEMS LIST

REFERENCE DESIGNATOR: FIGURE 4-2
NAME/QUANTITY: LATCHING MECHANISM/2
DRAWING REFERENCE: SED39122120-302

PROJECT: INTELSAT VI-F3 REBOOST MISSION
LRU NAME/QUANTITY: MAIN BEAM ASSEMBLY/1
LRU PART NUMBER: SED39122120-302

SUBSYSTEM: CAPTURE BAR/1
EFFECTIVITY: STS-49

FAILURE MODE NUMBER	CRITICALITY
Intelsat-003	2/2

FUNCTION

Completely secure Intelsat to capture bar

FAILURE MODE AND CAUSE

Mode:

Fails to move so as to secure Intelsat to capture bar

Cause(s):

1. Piece part(s) failure: any piece part except automatic trigger (see FMEA no. 004)
2. Galling
3. Contamination

REDUNDANCY SCREENS	REMAINING PATHS
A – N/A B – N/A C – N/A	None

MISSION PHASE	TIME TO EFFECT	TIME TO CORRECT
Capture	Instantaneous	None

FAILURE EFFECT

END ITEM

Unable to capture Intelsat

MISSION

Unable to complete Intelsat mission objectives

CREW / VEHICLE

None

INTERFACE

None

RETENTION RATIONALE

A. DESIGN:
- Designed to safety factor of 2.0 per PRD, and structural analysis (report # 91-1975) per certification plan, except latch springs which are designed to a safety factor of 1.4 and which will be proof tested to certify them for flight use.
- Materials are selected for this environment to prevent galling, binding, and any type of adverse friction.
- Materials are: CRES 15-5 PH, AL alloy 6061-T6, AL alloy 7075-T73, AL bronze, and stainless steel.

(Continued on next page)

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CRITICAL ITEMS LIST

REFERENCE DESIGNATOR: FIGURE 4-3
NAME/QUANTITY: LATCHING MECHANISM/2
DRAWING REFERENCE: SED39122820-302

PROJECT: INTELSAT VI-F3 REBOOST MISSION
LRU NAME/QUANTITY: MAIN BEAM ASSEMBLY/1
LRU PART NUMBER: SED39122120-303

SUBSYSTEM: CAPTURE BAR/1
EFFECTIVITY: STS-49

FAILURE MODE NUMBER	CRITICALITY	
Intelsat-003 (Continued)	2/2	

RETENTION RATIONALE (CONTINUED)

B. TEST:
- PDA
  - Functional checkout and test
- Acceptance test
  - Acceptance testing includes vibration and thermal vacuum testing. The vibration test was conducted per the table shown below.

Intelsat Capture Bar Hardware Acceptance Vibration Environment		
X-axis	20 – 80 Hz	+ 3.0 dB/oct
6.1 G_{rms}	80 – 350 Hz	.04 G^2/Hz
	350 – 2000 Hz	– 3.0 dB/oct
	20 Hz	.01 G^2/Hz
	45 Hz	.0355 G^2/Hz
Y-axis	70 Hz	.0355 G^2/Hz
6.52 G_{rms}	80 Hz	.04 G^2/Hz
	350 Hz	.04 G^2/Hz
	390 Hz	.0355 G^2/Hz
	600 Hz	.0355 G^2/Hz
	2000 Hz	.007 G^2/Hz
Z-axis	20 – 80 Hz	+ 3.0 dB/oct
6.1 G_{rms}	80 – 350 Hz	.04 G^2/Hz
	350 – 2000 Hz	– 3.0 dB/oct

- Certification
  - Manned thermal vacuum test: – 80 ± 10 °F at 10^{-5} torr; 150 °F at 10^{-10} torr certified by analysis.
  - Low temperature component test to – 110 °F.
  - Sine sweep: The resonant frequency is below 35 Hz, therefore, a modal survey will be conducted.

  Random vibration testing was conducted per the table shown on the following page.

(Concluded on next page.)

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REVISION:
SUPERSEDING DATE:
DATE: 9/91

CRITICAL ITEMS LIST

REFERENCE DESIGNATOR: FIGURE 4-2
NAME/QUANTITY: LATCHING MECHANISM/2
DRAWING REFERENCE: SED39122120-302

PROJECT: INTELSAT VI-F3 REBOOST MISSION
LRU NAME/QUANTITY: MAIN BEAM ASSEMBLY/1
LRU PART NUMBER: SED39122120-302

SUBSYSTEM: CAPTURE BAR/1
EFFECTIVITY: STS-49

FAILURE MODE NUMBER	CRITICALITY	
Intelsat-003 (Concluded)	2/2	

RETENTION RATIONALE (CONCLUDED)

Intelsat Capture Bar Hardware Vibration Environments		
X-axis	20 – 80 Hz	+ 3.0 dB/oct
7.84 G_{rms}	80 – 350 Hz	.067 G^2/Hz
	350 – 2000 Hz	– 3.0 dB/oct
	20 Hz	.017 G^2/Hz
	45 Hz	.060 G^2/Hz
Y-axis	70 Hz	.060 G^2/Hz
8.48 G_{rms}	80 Hz	.067 G^2/Hz
	350 Hz	.067 G^2/Hz
	390 Hz	.060 G^2/Hz
	600 Hz	.060 G^2/Hz
	2000 Hz	.012 G^2/Hz
Z-axis	20 – 80 Hz	+ 3.0 dB/oct
7.84 G_{rms}	80 – 350 Hz	.067 G^2/Hz
	350 – 2000 Hz	– 3.0 dB/oct

Hardware was functionally tested before and after vibration testing.

- Structural limit test per approved certification plan for a safety factor of 1.4 for limit loads and analysis for a safety factor of 2.0 for ultimate loads. Certification will be accomplished by testing and/or analysis. On the component level, structures will be individually tested as approved by the NSTS Structures and Mechanics working group.

The following environments will be certified by analysis per the certification plan:

1. Natural temperature
2. Pressure
3. Fungus
4. Hail
5. Humidity
6. Lightning
7. Ozone
8. Meteoroids
9. Salt spray
10. Sand/dust
11. Induced high temperature
12. Induced pressure
13. Shock
14. Life
15. Solar Radiation
16. Cycle

C. INSPECTION:
- Manufacturing
  - Inspect for damage or material degradation
- PDA
  - Inspect for damage or material degradation
  - Verify successful completion of interface test
  - Verify conformance to drawing

D. FAILURE HISTORY: None

E. OPERATIONAL USE:
- If the auto trigger fails, the crewmember will activate the manual trigger.
- The crew is trained in this procedure.
- There is no operational solution if both triggers fail.
- Flight crew will cycle latches for operation in orbit.

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