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**FAILURE MODE EFFECTS ANALYSIS/CRITICAL ITEMS LIST**

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FMEA NUMBER: EC-MUT-11	ORIGINATOR: JSC	PROJECT: EDFT-04
PART NAME: END EFFECTOR ASSY	LRU PART NUMBER: SEG33106880-301,303,305,307	QUANTITY: 1
PART NUMBER: SEG33106890-301 -303	LRU PART NAME: MUT	SYSTEM: DTO 671
DRAWING: SEE P/N	SUBSYSTEM: EVA	EFFECTIVITY: STS-76 & Subsequent

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**CRITICALITY:**CRITICAL ITEM? YES \_\_\_\_\_ NO   \*  SUCCESS PATHS: 3  
SUCCESS PATHS REMAINING: 2CRITICALITY CATEGORY: 1R/3**REDUNDANCY SCREENS:**

- A - 1.) C/O PRELAUNCH: PASS
  - 2.) C/O ON ORBIT: N/A for NSTS
  - B - 3.) DETECTION FLIGHT CREW: PASS
  - 4.) DETECTION GROUND CREW: N/A for NSTS
  - C - 5.) LOSS OF REDUNDANCY FROM SINGLE CAUSE: PASS
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**FUNCTION:** The MUT end effector can be used for translating ORUs or as a crew restraint device. The end effector can be clamped to either a dogbone or 25 mm handrail for restraining an EVA crewmember. For translating ORUs the MUT will clamp onto a handrail located on the ORU. The MUT end effector uses an ECOM assembly which attaches to the ECOM socket on the MUT base assembly.

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**FAILURE MODE:** End effector jaws inadvertently releases. (ORU translation scenario)

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**CAUSE:** Wear, piece part defect, and/or thermal distortion.

**FAILURE DETECTION:** Visual.

**REMAINING PATHS:** Second ball lock, in primary locking mechanism and secondary jaw lock.

**EFFECT/MISSION PHASE:** EVA

**CORRECTIVE ACTION:** MUT should not be used and should be stowed away for deorbit and landing.

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**-FAILURE EFFECTS-**

**END ITEM:** MUT can no longer be used with the failed end effector, therefore the MUT must be stowed away.

**INTERFACE:** None.

**MISSION:** Partial loss of remaining DTO objectives.

**CREW/VEHICLE:** Loose ORU could impact the EMU, injuring EVA crewmember, or vehicle.

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**HAZARD INFORMATION:**HAZARD: YES  NO  \*

HAZARD ORGANIZATION CODE: N/A

HAZARD NUMBER: N/A

TIME TO EFFECT: Seconds.

TIME TO DETECT: Seconds.

TIME TO CORRECT: Seconds.

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REMARKS:

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**-RETENTION RATIONALE-**

(A) DESIGN: N/A

(B) TEST: N/A

(C) INSPECTION: N/A

(D) FAILURE HISTORY: N/A

(E) OPERATIONAL USE: N/A

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PREPARED BY: M.D. Garner

REVISION:

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