

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE

NUMBER: G0-PS-104-X

S0502704

ATTACH#5

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SUBSYSTEM NAME: CRYO PALLET SLING

REVISION : 0 04/21/92 W

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
SRU :	TRUNNION FITTING ASSEMBLY	G070-540027

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
CRYO PALLET SLING TRUNNION FITTING ASSEMBLY

QUANTITY OF LIKE ITEMS: 2
TWO, ONE PER EDO CRYO PALLET LONGERON TRUNNION

FUNCTION:
PROVIDES FOR ATTACHMENT OF THE EDO CRYO PALLET LONGERON TRUNNIONS TO THE CRYO PALLET SLING. MAIN ATTACHMENT POINTS FOR THE CRYO PALLET SLING TO THE CRYO PALLET.

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SUBSYSTEM: CRYO PALLET SLING

ITEM NAME: TRUNNION FITTING ASSEMBLY

CRITICALITY OF THE
 FAILURE MODE: 2

FAILURE MODE:
 LOSS OF RETENTION CAPABILITY

MISSION PHASE:
 GT GROUND TURNAROUND

VEHICLE/PAYLOAD/KIT EFFECTIVITY: 102 COLUMBIA
 : 105 ENDEAVOUR
 : EDO MISSION ONLY

CAUSE:
 ATTACHMENT BOLT FAILURE, RETAINING PIN FAILURE, EXCESSIVE WEAR

CRITICALITY 1/1 DURING INTACT ABORT ONLY? N/A

REDUNDANCY SCREEN A) N/A
 B) N/A
 C) N/A

PASS/FAIL RATIONALE:

A)

B)

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:

LOSS OF ATTACHMENT OF THE CRYO PALLET SLING TO ONE EDO CRYO PALLET TRUNNION.

(B) INTERFACING SUBSYSTEM(S):

LOSS OF SUPPORT OF ONE EDO CRYO PALLET TRUNNION, (EDO CRYO PALLET WEIGHT IMPOSED ON THE TOP ATTACHMENT ASSEMBLY - POSSIBLE DEFORMATION OF THE TOP ATTACHMENT) PALLET SWINGS. POSSIBLE DAMAGE TO THE EDO CRYO PALLET.

(C) MISSION:

POSSIBLE SIGNIFICANT DELAY TO OR LOSS OF AN ORBITER EDO MISSION.

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(D) CREW, VEHICLE, AND ELEMENT(S):
POSSIBLE DAMAGE TO VEHICLE, IF DAMAGE OCCURS DURING INSTALLATION.

(E) FUNCTIONAL CRITICALITY EFFECTS:
PALLET MOVEMENT IS MINIMAL, SINCE PALLET IS ATTACHED TO THE TOP ATTACHMENT ASSEMBLY. IN ADDITION, THE GROUND TIE ROPE PROVIDES MOVEMENT RESTRICTION IN CASE OF TRUNNION FITTING ASSEMBLY FAILURE.

- DISPOSITION RATIONALE -

(A) DESIGN:

THE TRUNNION FITTING ASSEMBLY IS DESIGNED TO SUPPORT AT LEAST FIVE TIMES THE SPECIFIED STATIC LOAD. THE TRUNNION FITTING ASSEMBLY IS FABRICATED FROM HIGH-STRENGTH STEEL AND PROTECTED AGAINST CORROSION. ATTACHMENT BOLTS ARE STANDARD NAS BOLTS.

(B) TEST:

THE TRUNNION FITTING ASSEMBLY IS TESTED AT THE SYSTEM LEVEL, WHERE THE CRYO PALLET SLING IS TESTED UNDER TWICE THE DESIGN LOADS. THE CRACK PROPAGATION IS MONITORED CURRENTLY FROM EACH USE.

(C) INSPECTION:

ALL PARTS ARE INSPECTED FOR WEIGHT, WORKMANSHIP, FINISH DIMENSIONS, CLEANLINESS, MATERIALS AND PROCESSES. MATERIAL AND PROCESS CERTIFICATION ARE VERIFIED BY INSPECTION. ACCEPTANCE TEST PROCEDURES ARE APPROVED BY QUALITY ASSURANCE AND VERIFIED BY INSPECTION

(D) FAILURE HISTORY:

THERE ARE NO REPORTED FAILURES IDENTIFIED IN THE PRACA DATA BASE.

(E) OPERATIONAL USE:

N/A

- APPROVALS -

RELIABILITY ENGINEERING:	M. ALVAREZ	:	<u>M. Alvarez</u>
RELIABILITY MANAGER	: M. P. RAGUSA	:	<u>M. P. Ragusa 4-22-92</u>
DESIGN MANAGER	: A. J. RICHARDS	:	<u>A. J. Richards 4-23-92</u>
DESIGN ENGINEERING	: D. NGO	:	<u>D. Ngo 4-22-92</u>
QUALITY ENGINEERING	: O. J. BUTTNER	:	<u>O. J. Buttner 4-23-92</u>
NASA RELIABILITY	:	:	<u>W. B. Steinhilber 5/18/92</u>
NASA SUBSYSTEM MANAGER	:	:	<u>Donald L. Wagner 5/14/92</u>
NASA QUALITY ASSURANCE	:	:	<u>W. C. Williams 5/14/92</u>