FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE

NUMBER: G0-PS-103-X

SUBSYSTEM NAME: CRYO PALLET SLING

REVISION : 0 04/21/92 W

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
SRU :	EXTENSION TUBE ASSEMBLY	G070-540028

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
CRYO PALLET SLING EXTENSION TUBE ASSEMBLY

QUANTITY OF LIKE ITEMS: 2
TWO

FUNCTION:
PROVIDES FOR SUSPENSION OF THE EDO CRYO PALLET SLING TRUNNION FITTING ASSEMBLIES FROM THE PALLET SLING SPREADER BAR ASSEMBLY.

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE

NUMBER: G0-PS-103-01

REVISION: 0 04/21/92 W

SUBSYSTEM: CRYO PALLET SLING

ITEM NAME: EXTENSION TUBE ASSEMBLY

CRITICALITY OF THIS FAILURE MODE: 2

FAILURE MODE:
LOSS OF FLEXIBLE JOINT

MISSION PHASE:
GT GROUND TURNAROUND

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

CAUSE:
ATTACHMENT BOLT 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.

'AILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL FAILURE MODE
NUMBER: G0-PS-103-01

(D) CREW, VEHICLE, AND ELEMENT(S):
POSSIBLE DAMAGE TO VEHICLE, IF FAILURE 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 EXTENSION TUBE FAILURE.

- DISPOSITION RATIONALE -

(A) DESIGN:
THE EXTENSION TUBE ASSEMBLY IS DESIGNED TO SUPPORT AT LEAST FIVE TIMES THE SPECIFIED STATIC LOAD. THE EXTENSION TUBE ASSEMBLY IS FABRICATED FROM HIGH-STRENGTH STEEL AND PROTECTED AGAINST CORROSION. ATTACHMENT BOLTS ARE STANDARD NAS BOLTS.

(B) TEST:
THE EXTENSION TUBE ASSEMBLY IS TESTED AT THE SYSTEM LEVEL, WHERE THE CRYO PALLET SLING IS TESTED UNDER TWICE THE DESIGN LOADS. [illegible] CURRENT PRIOR TO 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	[signature]
RELIABILITY MANAGER	M. P. RAGUSA	[signature] 4-28-92
DESIGN MANAGER	A. J. RICHARDS	[signature] 4-23-92
DESIGN ENGINEERING	D. NGO	[signature] 4-22-92
QUALITY ENGINEERING	O. J. BUTTNER	[signature] 4/23/92
NASA RELIABILITY		for 5/4/92 [signature] 5/18/92
NASA SUBSYSTEM MANAGER		[signature] 5/14/92
NASA QUALITY ASSURANCE		[signature] 5/13/92