

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE

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SUBSYSTEM NAME: CRYO PALLET SLING

REVISION : 1 08/12/91

PART NAME
VENDOR NAME

PART NUMBER
VENDOR NUMBER

SRU : YOKE ASSEMBLY 6070-540031

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
CRYO PALLET SLING YOKE ASSEMBLY

QUANTITY OF LIKE ITEMS: 1
ONE

FUNCTION:
PROVIDES FOR CONNECTION OF THE ADJUSTMENT TURNBUCKLES TO THE EDD CRYO
PALLET SLING SPREADER BAR ASSEMBLY.

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SUBSYSTEM: CRYO PALLET SLING

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ITEM NAME: YOKE ASSEMBLY

CRITICALITY OF THIS
FAILURE MODE:2

■ FAILURE MODE:
LOSS OF FLEXIBLE JOINT

MISSION PHASE:
GT GROUND TURNAROUND

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

■ 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:
PARTIAL LOSS OF ATTACHMENT OF THE EDO CRYO PALLET SLING YOKE ASSEMBLY
TO THE SPREADER BAR ASSEMBLY.

■ (B) INTERFACING SUBSYSTEM(S):
PARTIAL LOSS OF ATTACHMENT OF THE HOIST TO THE CRYO PALLET SLING AND
SUSPENDED EDO CRYO PALLET, EDO CRYO PALLET AND CRYO PALLET SLING WILL
SWING FREE, PARTIALLY SUSPENDED - POSSIBLE SEVERE DAMAGE TO THE EDO CRYO
PALLET.

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- (C) MISSION:
POSSIBLE SIGNIFICANT DELAY IN OR LOSS OF AN ORBITER EDO MISSION.
- (D) CREW, VEHICLE, AND ELEMENT(S):
EDO CRYO PALLET AND ATTACHED CRYO PALLET SLING MAY IMPACT THE ORBITER OR NEARBY EQUIPMENT, CAUSING SEVERE DAMAGE TO ORBITER SYSTEMS OR OTHER IMPACTED EQUIPMENT.
- (E) FUNCTIONAL CRITICALITY EFFECTS:
N/A

- DISPOSITION RATIONALE -

- (A) DESIGN:
THE YOKE ASSEMBLY IS DESIGNED TO SUPPORT AT LEAST FIVE TIMES THE SPECIFIED STATIC LOAD. THE YOKE ASSEMBLY IS FABRICATED FROM HIGH-STRENGTH STEEL AND PROTECTED AGAINST CORROSION. ATTACHMENT BOLTS ARE STANDARD NAS BOLTS.
- (B) TEST:
THE YOKE ASSEMBLY IS TESTED AT THE SYSTEM LEVEL, WHERE THE CRYO PALLET SLING IS TESTED UNDER TWICE THE DESIGN LOADS. THE PROPERTIES ARE VERIFIED CURRENT BEFORE 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

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- APPROVALS -

RELIABILITY MANAGER	:	M. P. RAGUSA	:	<u>M. P. Ragusa</u>	8/13/91
RELIABILITY ENGINEERING	:	H. R. HILDRETH	:	<u>H. R. Hildreth</u>	
DESIGN MANAGER	:	A. J. RICHARDS	:	<u>A. J. Richards</u>	
DESIGN ENGINEERING	:	D. NGO	:	<u>D. Ngo</u>	
QUALITY MANAGER	:	O. J. BUTTNER	:	<u>O. J. Buttner</u>	8/13/91
NASA RELIABILITY	:		:	<u>[Signature]</u>	10/18/91
NASA SUBSYSTEM MANAGER	:		:	<u>[Signature]</u>	10/18/91
NASA QUALITY ASSURANCE	:		:	<u>[Signature]</u>	10/18/91