

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE

NUMBER: 60-PS-100-X

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SUBSYSTEM NAME: CRYO PALLET SLING

REVISION : 1 08/12/91

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
■ SRU	TURNBUCKLE	G-228

PART DATA

■ EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
LENGTH-ADJUSTABLE TURNBUCKLE

■ QUANTITY OF LIKE ITEMS: 2
TWO

■ FUNCTION:
PROVIDES A FLEXIBLE SUSPENSION FOR THE EDD CRYO PALLET SLING AND
PROVIDES LENGTH ADJUSTMENT FOR LEVELING THE SLING TRUNNICH FITTINGS.

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SUBSYSTEM: CRYO PALLET SLING

REVISION: 1 08/12/91 R

ITEM NAME: TURNBUCKLE

CRITICALITY OF THIS
FAILURE MODE: 2

FAILURE MODE:
LOSS OF SUSPENSION

MISSION PHASE:
GT GROUND TURNAROUND

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

CAUSE:
THREAD FAILURE, 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 SHACKLE PLATE TO THE YOKE 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, SUSPENDED BY A SINGLE TURNBUCKLE - POSSIBLE SEVERE DAMAGE TO THE CRYO PALLET.

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- (C) MISSION:
POSSIBLE SIGNIFICANT DELAY 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 OTHER EQUIPMENT, CAUSING SEVERE DAMAGE TO ORBITER SYSTEMS OR OTHER IMPACTED EQUIPMENT.
- (E) FUNCTIONAL CRITICALITY EFFECTS:
N/A

- DISPOSITION RATIONALE -

- (A) DESIGN:
THE TURNBUCKLE IS DESIGNED TO SUPPORT AT LEAST FIVE TIMES THE SPECIFIED STATIC LOAD. THE TURNBUCKLE IS FABRICATED FROM HIGH-STRENGTH STEEL AND PROTECTED AGAINST CORROSION. ATTACHMENT BOLTS ARE STANDARD NAS BOLTS.
- (B) TEST:
THE TURNBUCKLE IS TESTED AT THE SYSTEM LEVEL, WHERE THE CRYO PALLET SLING IS TESTED UNDER TWICE THE DESIGN LOADS. ~~THE TRACK TEST TRACK IS~~
~~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> 8/2/91
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> 8/12/91
NASA RELIABILITY	:		:	<u>7/14/91</u> <u>7/14/91</u> 10/18/91
NASA SUBSYSTEM MANAGER	:		:	<u>7/14/91</u> <u>7/14/91</u> 10/18/91
NASA QUALITY ASSURANCE	:		:	<u>7/14/91</u> <u>7/14/91</u> 10/18/91