PRINT DATE. 12/29/95

FAILURE MODES EFFECTS ANALYSIS (FMEA) --NON-CIL HARDWARE
NUMBER: M5-6MR-B022-X

SUBSYSTEM NAME: ORBITER DOCKING SYSTEM

REVISION: 0 OCT. 1995

		PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU		POWER SWITCHING UNIT (PSU) RSC-E	MC621-0087-1003 33Y.5114.007
1) SRU	:	CONNECTOR	CYW23-19/27-B-1-B
2) SRU	:	CONNECTOR	CYW=<C-1-32/22-B1-1-B
3) SRU	:	CONNECTOR	CYW=<C-1-50/27-B1-1-B
LRU		DSCU RSC-E	MC621-0087-1005 33Y.5212.007
1) SRU	:	CONNECTOR	CYW=<C-1-50/27-B1-1-B

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
1) CONNECTOR, PLUG, 19 PINS: X3, X4 - a) PSU MN A AND MN B SUPPLY POWER - b) APDS LOGIC BUSES (A, B, & C.)
2) CONNECTOR, PLUG, 32 PINS: X252: a) PSU -CI1 AND -CI2, APDS ACTUATORS POWER BUSES RETURN - b) APDS LOGIC BUSES (A, B, & C) RETURN.
3) CONNECTOR, PLUG, 50 PINS: X253 a) PSU +CI1 AND +CI2 APDS ACTUATORS POWER BUSES b) APDS LOGIC BUSES (A, B, & C.)
4) CONNECTOR, PLUG, 50 PINS: X216 APDS LOGIC BUSES (A, B, & C) DSCU.

REFERENCE DESIGNATORS: 40V53A1A1X3
40V53A1A1X4
40V53A1A1X252
40V53A1A1X253
40V53A1A2X216

QUANTITY OF LIKE ITEMS: 5
(FIVE)

FUNCTION:
CONNECTOR ITEMS 1) THROUGH 3) PROVIDE MATE/DEMATE CAPABILITY FOR WIRES WHICH PROVIDE THE ORBITER MPCAs MN A AND MN B, THE APDS LOGIC BUSES (A, B, & C,) AND THE CI1 AND CI2 (SUPPLIES AND RETURNS) TO THE PSU. CONNECTOR ITEMS 4) PROVIDES MATE/DEMATE CAPABILITY FOR WIRES WHICH PROVIDE THE APDS LOGIC BUSES (A, B, & C) TO THE DSCU.

ORIGINAL

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- NON-CIL FAILURE MODE
NUMBER: M5-6MR-B022- 01

REVISION# 0 OCT, 1995

SUBSYSTEM NAME: ORBITER DOCKING SYSTEM
LRU: MC621-0087-1003
ITEM NAME: CONNECTORS

CRITICALITY OF THIS FAILURE MODE: 1R3

FAILURE MODE:
INADVERTENT DEMATE

MISSION PHASE:
OO ON-ORBIT

VEHICLE/PAYLOAD/KIT EFFECTIVITY: 104 ATLANTIS

CAUSE:
A) PIECE PART FAILURE, B) CONTAMINATION, C) VIBRATION, D) MECHANICAL SHOCK, E) PROCESSING ANOMALY

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

CRITICALITY 1R2 DURING INTACT ABORT ONLY (AVIONICS ONLY)? NO

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

PASS/FAIL RATIONALE:
A)
N/A
B)
N/A
C)
N/A

METHOD OF FAULT DETECTION:
TELEMETRY AND PANEL INDICATION CAN BE USED TO MONITOR LOGIC BUSES CONNECTOR STATUS.

MASTER MEAS. LIST NUMBERS:
V53X0790E
V53X0791E
V53X0792E

CORRECTING ACTION:
NONE.

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FAILURE MODES EFFECTS ANALYSIS (FMEA) – NON-CIL FAILURE MODE
NUMBER: M5-6MR-B022-01

- FAILURE EFFECTS -

(A) SUBSYSTEM:
DISABLES CAPABILITY TO PROVIDE MPCAs MN A AND MN B POWER, APDS LOGIC BUSES (A, B, & C.) AND THE CI1 AND CI2 (SUPPLIES AND RETURNS) TO THE PSU AND/OR LOSS OF APDS LOGIC BUSES (A, B, & C) TO THE DSCU.

(B) INTERFACING SUBSYSTEM(S):
LOSS OF CAPABILITY TO EXTEND/RETRACT THE DOCKING RING AND ACTIVATE THE CAPTURE LATCHES.

(C) MISSION:
POSSIBLE LOSS OF MISSION, IF FAILURE IS DETECTED PRIOR TO DOCKING.

(D) CREW, VEHICLE, AND ELEMENT(S):
FIRST FAILURE - NO EFFECT.

(E) FUNCTIONAL CRITICALITY EFFECTS:
POSSIBLE LOSS OF CREW OR VEHICLE AFTER THREE FAILURES.
1) CONNECTOR INADVERTENTLY DEMATES DURING THE DOCKING PROCESS - ALL APDS LOGIC BUSES WOULD BE LOST RESULTING IN THE INABILITY TO RETRACT THE DOCKING RING AND OPEN THE CAPTURE LATCHES.

DESIGN CRITICALITY (PRIOR TO OPERATIONAL DOWNGRADE, DESCRIBED IN F): 1/1

(F) RATIONALE FOR CRITICALITY CATEGORY DOWNGRADE:
2) INABILITY TO PERFORM IFM TO DRIVE CAPTURE LATCHES OPEN) - UNABLE TO OPEN CAPTURE LATCHES.
3) FAILURE OF EVA TO REMOVE 96 BOLTS - COMPLETE LOSS OF ALL UNDOCKING CAPABILITY.

- TIME FRAME -

TIME FROM FAILURE TO CRITICAL EFFECT: DAYS
TIME FROM FAILURE OCCURRENCE TO DETECTION: SECONDS
TIME FROM DETECTION TO COMPLETED CORRECTIVE ACTION: HOURS
TIME REQUIRED TO IMPLEMENT CORRECTIVE ACTION LESS THAN TIME TO EFFECT?
YES
RATIONALE FOR TIME TO CORRECTING ACTION VS TIME TO EFFECT:
CREW WOULD HAVE SUFFICIENT TIME TO PERFORM IFM OR EVA.
HAZARDS REPORT NUMBER(S) : ORBI 401A
HAZARD DESCRIPTION:
INABILITY TO SEPARATE ORBITER AND MIR.

- APPROVALS -

PRODUCT ASSURANCE ENGR : M. NIKOLAYEVA

DESIGN ENGINEER : B. VAKULIN

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