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PRINT DATE: 03/18/96 10/19/94

FAILURE MODES EFFECTS ANALYSIS (FMEA) - NONCRITICAL HARDWARE
NUMBER: M5-6MR-0032-X

SUBSYSTEM NAME: ORBITER DOCKING SYSTEM

REVISION: 1 SEP 30, 1995

| | PART NAME VENDOR NAME | PART NUMBER VENDOR NUMBER |
|-----|------------------------------|------------------------------|
| LRU | : DOCKING SYSTEM POWER PANEL | V828-730150 |
| SRU | : TOGGLE SWITCH | MC452-0102-7705 |

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
SWITCH, TOGGLE, 2P2P, MOMENTARY ON - DEPRESS VENT & VENT ISOL SYS 1 MN A,
DEPRESS VENT & VENT ISOL SYS 2 MN B.

REFERENCE DESIGNATORS: 35V73A7A3S5
35V73A7A3S6
35V73A7A3S7
35V73A7A3S8

QUANTITY OF LIKE ITEM: 4
(FOUR)

FUNCTION:
THE SWITCHES PROVIDE MANUAL ACTIVATION OF THE DEPRESS VENT & VENT ISOL
SYS 1 MN A, AND THE DEPRESS VENT & VENT ISOL SYS 2 MN B.

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**FAILURE MODES EFFECTS ANALYSIS (FMEA) - NONCRITICAL FAILURE MODE
NUMBER: M5-6MR-0032- 01**

REVISION# 1 SEP 30, 1995

SUBSYSTEM NAME: ORBITER DOCKING SYSTEM
LRU: MC452-0102-7705
ITEM NAME: TOGGLE SWITCH

CRITICALITY OF THIS
FAILURE MODE: 1R3

FAILURE MODE:
FAILS OPEN IN THE "OPEN" POSITION, FAILS CLOSED IN THE "CLOSED" POSITION, POLE-
TO-POLE SHORT, SHORT TO CASE, SHORT TO GROUND

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) PASS
 B) PASS
 C) PASS

PASS/FAIL RATIONALE:

- A)
- B)
- C)

METHOD OF FAULT DETECTION:
INDICATOR (VISUAL CUE) DESIGNATORS DS2, DS4, DS5, AND DS6.

MASTER MEAS. LIST NUMBERS: V64X0141E
 V64X0142E
 V64X0143E
 V64X0144E
 V64X0145E
 V64X0146E
 V64X0147E
 V64X0148E

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**FAILURE MODES EFFECTS ANALYSIS (FMEA) - NONCRITICAL FAILURE MODE
NUMBER: M5-GMR-0032-01**

CORRECTING ACTION:

USE REDUNDANT DEPRESSURIZATION VALVE/SWITCH TO DEPRESSURIZE DOCKING
BASE. NONE

- FAILURE EFFECTS -

(A) SUBSYSTEM:

LOSS OF CAPABILITY TO ACTIVATE THE DE-PRESSURIZATION OR ISOLATION VALVE
CIRCUITS.

(B) INTERFACING SUBSYSTEM(S):

INABILITY TO DEPRESSURIZE THE VESTIBULE.

(C) MISSION:

NO EFFECT.

(D) CREW, VEHICLE, AND ELEMENT(S):

FIRST FAILURE - NO EFFECT.

(E) FUNCTIONAL CRITICALITY EFFECTS:

POSSIBLE LOSS OF CREW OR VEHICLE AFTER FOUR FAILURES (ODS MATED TO MIR).

1) SWITCH FAILS OPEN. LOSS OF REDUNDANCY. USE REDUNDANT SWITCH/VALVE FOR
DEPRESSURIZATION.

2) REDUNDANT SWITCH FAILS OPEN. CANNOT DEPRESSURIZE VESTIBULE OR AIRLOCK.
(THE UPPER AIRLOCK HATCH CANNOT WITHSTAND A NEGATIVE PRESSURE
DIFFERENTIAL. THE AIRLOCK CANNOT BE DEPRESSURIZED UNTIL THE VESTIBULE IS
DEPRESSURIZED.)

3) FAILURE OF FIFTH HATCH (BETWEEN TUNNEL ADAPTER AND EXTERNAL AIRLOCK) TO
SEAL. CANNOT ISOLATE TUNNEL ADAPTER FROM EXTERNAL AIRLOCK. CANNOT
PERFORM A NOMINAL EVA OUT OF "C" HATCH. (CRITICALITY 2R3)

4) CRIT 1 CONDITION OCCURS WHICH REQUIRES AN EVA. CANNOT PERFORM
CONTINGENCY EVA. POSSIBLE LOSS OF CREW OR VEHICLE. (CRITICALITY 1R3)

- TIME FRAME -

TIME FROM FAILURE TO CRITICAL EFFECT: DAYS

TIME FROM FAILURE OCCURRENCE TO DETECTION: MINUTES

TIME FROM DETECTION TO COMPLETED CORRECTIVE ACTION: MINUTES#A

TIME REQUIRED TO IMPLEMENT CORRECTIVE ACTION LESS THAN TIME TO EFFECT?
YES#A

HAZARDS: DM10HA06(F). ODS-14

EVA HAZARDS. INABILITY TO PERFORM CONTINGENCY EVA.

- APPROVALS -

PRODUCT ASSURANCE ENGINEERING
DESIGN ENGINEERING

:R. BLACKWELL
:T. NGUYEN

R. Blackwell
T. Nguyen