SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - MAN ARM S&RL JETT FMEA NO 05-6ID-2027 -1 REV:08/17/88

ASSEMBLY :PANEL A14
P/N RI :ME452-0102-7257
P/N VENDOR:
QUANTITY :3
:THREE
:

CRIT. FUNC: 1
CRIT. HDW: 1

VEHICLE EFFECTIVITY:	102 X	103 X	104 X

PHASE(S): PL LO OO X DO LS

REDUNDANCY SCREEN: A- ~~N/A~~ B- ~~N/A~~ C- ~~N/A~~

PREPARED BY:		APPROVED BY:	APPROVED BY (NASA): 9-12-88
DES	C STRONG	DES	SSM
REL	T KIMURA	REL	REL
QE	J COURSEN	QE	QE

ITEM:
SWITCH, TOGGLE, HERMETIC SEAL, 2 POLE 3 POSITION - PORT FORWARD LATCH, MID LATCH, OR AFT LATCH JETTISON/GUILLOTINE

FUNCTION:
EMERGENCY SYSTEM - PROVIDES THE CREW WITH THE MANUAL CAPABILITY TO INITIATE PYRO GUILLOTINE AND JETTISON FUNCTIONS FOR THE PORT RMS RETENTION LATCHES SYSTEMS A AND B. ALSO, THE SWITCH PROVIDES A PATH FOR GROUND RESET OF THE ASSOCIATED DEADFACE RELAYS THROUGH THE LEVER-LOCKED CENTER POSITION "SAFE" CONTACTS. RMS JETTISON IS USED ONLY IN THE EVENT THAT THE RMS CANNOT BE SAFELY SECURED AND RETURNED TO THE STOWED POSITION. 36V73A14S30, 31, 32

FAILURE MODE:
FAILS OPEN, SHORT-TO-CASE (GROUND), FAILS CLOSED, CONTACT-TO-CONTACT SHORT, POLE-TO-POLE SHORT

CAUSE(S):
PIECE PART STRUCTURAL FAILURE, CONTAMINATION, VIBRATION, MECHANICAL SHOCK, PROCESSING ANOMALY

EFFECT(S) ON:
(A)SUBSYSTEM (B)INTERFACES (C)MISSION (D)CREW/VEHICLE:

(A) LOSS OF ELECTRICAL CONTROL TO THE ASSOCIATED RMS JETTISON FUNCTIONS

(B) SINGLE CONTACT FAILURE OPEN WOULD PREVENT ONE SYSTEM FROM INITIATING GUILLOTINE OR RETRACTOR FUNCTIONS NECESSARY FOR JETTISON OF THE REMOTE MANIPULATOR ARM (DUE TO THE ABSENCE OF A REQUISITE FIRE 1 OR FIRE 2 SIGNAL TO THE ASSOCIATED PICS). SIMILARLY, A SINGLE INADVERTENT CONTACT CLOSURE WOULD INHIBIT ONE SYSTEM FROM INITIATING A GUILLOTINE OR RETRACTOR FUNCTION (DUE TO THE PRESENCE OF A FIRE 2 SIGNAL BEFORE THE ASSOCIATED PIC CAPACITOR BANKS HAVE COMPLETED CHARGING).

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EFFECT(S) ON (CONTINUED):
(A)SUBSYSTEM (B)INTERFACES (C)MISSION (D)CREW/VEHICLE:

(C,D) AFTER PRIMARY MPM STOW SYSTEM HAS FAILED, A JETTISON/GUILLOTINE SWITCH MULTIPOLE FAILURE OPEN OR MULTIPOLE SHORT TO CASE RESULTS IN BOTH A AND B SYSTEM PICS NOT RECEIVING THE NECESSARY FIRE 1 AND FIRE 2 SIGNALS TO TRIGGER PIC FIRING FOR A GIVEN MPM. A MULTIPOLE SWITCH FAILURE CLOSED WOULD RESULT IN PREMATURE FIRE COMMANDS BEING RECEIVED BY SYSTEM PICS BEFORE THEY HAD COMPLETED ARMING. FAILURE EFFECT IN EITHER CASE: AFFECTED MPM WILL NOT BE JETTISONED; PAYLOAD BAY DOORS CANNOT BE CLOSED FOR ENTRY; PROBABLE LOSS OF CREW/VEHICLE.

DISPOSITION & RATIONALE:
(A)DESIGN (B)TEST (C)INSPECTION (D)FAILURE HISTORY (E)OPERATIONAL USE:

(A-D) DISPOSITION AND RATIONALE
REFER TO APPENDIX A, ITEM NO. 1 - TOGGLE SWITCH

(B) GROUND TURNAROUND TEST
"RMS JETTISON VERIFICATION", VERIFIES THAT THE PYRO INITIATOR CONTROLLER (PIC) ARM, FIRE, AND SWITCH SCAN CIRCUITS ARE OPERATIONAL. TESTS ARE PERFORMED FOR ALL FLIGHTS WHEN THE RMS IS FLOWN AND WITH ALL PYROS SAFED AND NSI NO-GO SIMULATORS INSTALLED.

(E) OPERATIONAL USE
NONE