

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - HYDRAULICS FMEA NO 05-6G -2068 -3 REV:02/19/88

ASSEMBLY : PNL R4	ABORT,	CRIT. FUNC:	1R
F/N RI : ME452-0102-7255	RTLS	CRIT. HDW:	2
P/N VENDOR:	VEHICLE	102	103 104
QUANTITY : 3	EFFECTIVITY:	X	X X
: THREE, 1/MPS/TVC ISOL	PHASE(S):	PL	LO X OO DO X LS
: VLV 1, 2, AND 3			

PREPARED BY:	J HERMAN	DES	APPROVED BY:	REDUNDANCY SCREEN: A-PASS B-PASS C-PASS
DES	T KIMURA	REL	APPROVED BY (NASA):	
REL	J COURSEN	QE	SSM	
QE			REL	

*Handwritten signatures and dates:*  
 Approved by: *[Signature]*  
 Rel: *[Signature]* 3/2/88  
 QE: *[Signature]* 3/4/88  
 EPD&C Rel: *[Signature]* 3/3/88  
 EPD&C SSM: *[Signature]* 3-4-88

ITEM:

SWITCH, TOGGLE, 2 POLE 3 POSITION, LEVER LOCK, MOMENTARY, "MPS/TVC ISOL VLV", "OPEN/CLOSE"

FUNCTION:

PROVIDES MANUAL CONTROL FOR OPENING OR CLOSING OF THE MPS/TVC HYDRAULIC ISOLATION VALVES 1, 2, AND 3 BY CONTROLLING POWER TO THE APPLICABLE LATCHING SOLENOIDS. 32V73A4S25, S26, S27

FAILURE MODE:

PREMATURE OPERATION, SHORTS - POLE TO POLE AND ADJACENT CONTACTS (ROLLER/SPRING), SWITCH FAILS IN VALVE CLOSED POSITION

CAUSE(S):

PIECE-PART STRUCTURAL FAILURE, CONTAMINATION, MECHANICAL SHOCK, VIBRATION

EFFECT(S) ON:

(A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE (E) FUNCTIONAL CRITICALITY:

(A) PREMATURE POWER TO "CLOSE" SOLENOID OF MPS/TVC HYDRAULIC ISOLATION VALVE

(B) DURING ASCENT, FAILURE WOULD RESULT IN INADVERTENT CLOSURE OF THE NORMALLY "OPEN" ISOLATION VALVE. LOSS OF VALVE CONTROL FOR ONE ENGINE AND LOSS OF ONE OF TWO HYDRAULIC SYSTEMS TO THE TVC ACTUATORS ON TWO ENGINES. ALSO, LOSS OF ONE OF THREE ET UMBILICAL RETRACT ACTUATORS FOR EACH UMBILICAL PLATE.

(C) ABORT DECISION REQUIRED

(D) FIRST FAILURE - NO EFFECT

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(E) POSSIBLE LOSS OF CREW/VEHICLE WITH TWO FAILURES: THIS FAILURE DURING MAX Q THROTTLE DOWN, WHICH RESULTS IN ONE ENGINE IN HYDRAULIC LOCKUP AT LOW THROTTLE, PLUS LOSS OF SECOND HYDRAULIC SYSTEM (LOSS OF SECOND ENGINE VALVE CONTROL AND LOSS OF GIMBAL CONTROL FOR ONE ENGINE) DURING ASCENT. CRITICALITY 1 FOR SSME INDUCED RTLS

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

V58AQC.010, "MPS/TVC HYD ISOL VALVE VERIF" (PERFORMED PRIOR TO EACH FLIGHT OR FOR LRU REPLACEMENT). VERIFY VALVE RESPONDS TO SWITCH COMMANDS.

V58AQC.031, "MPS/TVC HYD ISOL VLV ELECT DRVR VERIF" (PERFORMED PRIOR TO EACH FLIGHT). VERIFY DRIVERS ARE NOT FAILED ON.

(E) OPERATIONAL USE

NONE (VALVE SWITCH INACCESSIBLE)