

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - HYDRAULICS FMEA NO 05-6G -2071 -2 REV: 02/19/88

ASSEMBLY : AFT LCA 1, 2, AND 3
 P/N RI : MC477-0263-0002
 P/N VENDOR:
 QUANTITY : 3
 : THREE
 :

	VEHICLE	102	103	104
EFFECTIVITY:		X	X	X
PHASE(S):	PL	LO X OO	DO X LS	

PREPARED BY: DES J HERMAN REL T KIMURA QE J COURSEN

REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS

APPROVED BY: DES *[Signature]* REL *[Signature]* QE *[Signature]*

APPROVED BY (NASA): SSM *[Signature]* REL *[Signature]* QE *[Signature]*

[Handwritten notes: 3-29-88, 3/2/88, 3/4/88, 3-4-88]

ITEM: CONTROLLER, HYBRID DRIVER, HDC TYPE 3 - "MPS/TVC" HYDRAULIC ISOLATION VALVE 1, 2, AND 3 CLOSE CONTROL CIRCUIT

FUNCTION: PROVIDES THE MEANS TO REMOTELY SWITCH THE CLOSING SOLENOID COIL CIRCUIT FOR THE MPS/TVC HYDRAULIC ISOLATION VALVES 1, 2, AND 3, WHEN COMMANDED. 54V76A121AR(J11-V), 55V76A122AR(J11-N), 56V76A123AR(J11-G)

FAILURE MODE: INADVERTENT OUTPUT, CONDUCTS PREMATURELY

CAUSE(S): PIECE-PART FAILURE, MECHANICAL SHOCK, THERMAL STRESS, VIBRATION, CONTAMINATION

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

- (A) LOSS OF REDUNDANCY
- (B) LOSS OF INTERFACE REDUNDANCY. FIRST FAILURE - NO EFFECT. A SECOND DRIVER IN THE BUS RETURN LINE MUST ALSO OPERATE BEFORE AN ERRONEOUS ISOLATION VALVE "CLOSE" CONDITION WOULD OCCUR - LOSS OF ONE OF TWO HYDRAULIC SUPPLIES TO AN AFFECTED TVC ACTUATOR, LOSS OF ONE ENGINE THROTTLE CONTROL, AND LOSS OF ONE OF THREE ET UMBILICAL RETRACT ACTUATORS FOR EACH UMBILICAL PLATE.
- (C, D) FIRST FAILURE - NO EFFECT

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(E) POSSIBLE LOSS OF CREW/VEHICLE AFTER THREE FAILURES: THIS FAILURE, PLUS FAILURE OF THE HDC TYPE 4 "RETURN" DRIVER DURING MAX Q THROTTLE DOWN, PLUS LOSS OF A SECOND HYDRAULIC SYSTEM DURING MAX Q THROTTLE DOWN. THIS WOULD RESULT IN TWO ENGINES LOCKED UP AT LOW THRUST LEVEL, PLUS LOSS OF GIMBALING FOR ONE ENGINE (REQUIRES ENGINE SHUTDOWN)(CRITICALITY 1). ALSO RESULTS IN LOSS OF TWO ET UMBILICAL RETRACT ACTUATORS PER PLATE (CRITICALITY 1).

SCREEN B FAILS BECAUSE FAILURE IS NOT FLIGHT DETECTABLE UNTIL SECOND FAILURE OCCURS (HDC TYPE 4 DRIVER FAILS ON).

DISPOSITION & RATIONALE:

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

(A-D) DISPOSITION AND RATIONALE

REFER TO APPENDIX B, ITEM NO. 1 - HYBRID DRIVER

(B) GROUND TURNAROUND TEST

V58A00.031, "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)