

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :ACTUATION MECH-ET/ORB DOOR FMEA NO 02-4D-014700-2 REV:02/17/88

ASSEMBLY	:CENTERLINE LATCH ACTUATORS 1 AND 2	CRIT. FUNC:	1R
P/N RI	:MC452-0123-0003	CRIT. HDW:	2
P/N VENDOR:		VEHICLE	102 103 104
QUANTITY	:8	EFFECTIVITY:	X X X
	:EIGHT	PHASE(S):	PL LO X CO DO X LS

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

PREPARED BY:		APPROVED BY:	APPROVED BY (NASA):
DES	R. H. YEE	DES	<i>R. H. Yee for A.C. Ordway</i> SSM <i>[Signature]</i> 2/25/88
REL	J. S. MULLEN	REL	<i>[Signature]</i> REL <i>[Signature]</i>
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ITEM:
SWITCH, LIMIT LEFT AND RIGHT ET UMBILICAL DOOR CENTERLINE LATCH ACTUATORS 1 AND 2

FUNCTION:
PROVIDES THE MEANS TO MECHANICALLY DETECT THE CENTERLINE LATCH ACTUATORS END OF TRAVEL AND ELECTRICALLY SIGNAL ASSOCIATED LOGIC AND MEASUREMENT INPUTS AS REQUIRED FOR SEQUENTIAL CONTROL OPERATIONS AND TALKBACKS.
50V56A1S1,S2,S3,S4. 50V56A2S1,S2,S3,S4.

FAILURE MODE:
CONDUCTS INADVERTENTLY, PREMATURELY CLOSSES, SHORTS

CAUSE(S):
PIECE PART STRUCTURAL FAILURE, VIBRATION, MECHANICAL SHOCK, CONTAMINATION, FOREIGN OBJECT, DEBRIS

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

(A) FUNCTION DEGRADATION/LOSS OF REDUNDANCY.

(B) INADVERTENT CLOSURE OF ONE LIMIT SWITCH, COULD INHIBIT OPERATION OF ONE DRIVE MOTOR. THE REDUNDANT DRIVE WILL COMPLETE THE FUNCTION BUT AT A LOWER RATE. NO EFFECT-NORMAL MISSION.

(C,D) NO EFFECT FIRST FAILURE -- NEXT ASSOCIATED FAILURE PRECLUDES LATCH RELEASE/STOW AND UMBILICAL DOOR CLOSURE CAUSING POSSIBLE LOSS OF CREW/VEHICLE DUE TO DAMAGE CAUSED BY THERMAL EFFECTS IF THE DOORS CANNOT BE CLOSED AND FULLY LATCHED FOR SAFE RE-ENTRY.

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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. 4 - LIMIT SWITCH.

(B) GROUND TURNAROUND TEST

OPERATIONAL CHECKOUT OF ET DOOR CENTERLINE LATCH (EXTEND/LOCK); SINGLE MOTOR OPERATION (MOTOR 1, MOTOR 2) TO VERIFY THAT INDIVIDUAL LIMIT SWITCHES FUNCTION PROPERLY. FREQUENCY - ALL VEHICLES AT GROUND TURNAROUND.

(E) OPERATIONAL USE

AFTER THE SECOND FAILURE (DURING NOMINAL MANUAL LATCHING) THE CAPABILITY EXISTS TO REMOVE INHIBIT BY TURNING "OFF" THE MCA LOGIC SWITCH.