

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - STAR TRACK DOORS FMEA NO 05-6EF-2003 -2 REV: 10/29/87

ASSEMBLY : PANEL 06		CRIT. FUNC:	1R	
P/N RI : ME452-0102-7406		CRIT. EDW:	2	
P/N VENDOR:	VEHICLE	102	103	104
QUANTITY : 2	EFFECTIVITY:	X	X	X
: TWO, 1/STAR TRACKER DOOR	PHASE(S):	PL	LC	OC X DC X LS
: -Y AND - Z, SYS 1 AND 2				

		REDUNDANCY SCREEN:	A-PASS	B-PASS	C-PASS
PREPARED BY:		APPROVED BY:	APPROVED BY (NASA):		
DES J KRAGER		DES <i>R.V. Quinn</i>	SSM <i>John M. ...</i>		
REL T KIMURA		REL <i>TE ...</i>	REL <i>D ...</i>		
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ITEM:

SWITCH, TOGGLE (4 POLE 3 POSITION), STAR TRACKER DOOR CONTROL, SYSTEMS AND 2

FUNCTION:

PROVIDES OPEN/CLOSE CONTROL OF STAR TRACKER DOORS. REDUNDANT MOTORS & COMMON ACTUATOR FOR EACH STAR TRACKER -Y AND -Z DOOR SUBSYSTEM 13V73A6S2, S3 (S2 FOR SYSTEM 1 AND S3 FOR SYSTEM 2)

FAILURE MODE:

INADVERTENT OPERATION, SHORTS (ROLLER/SPRING) MULTIPLE CONTACT SETS

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) NO EFFECT - FIRST FAILURE

(B) LOSS OF REDUNDANCY. SWITCH FAILURES RESULTING FROM INTERNAL MULTIPLE SHORTING MAY PROVIDE CONFLICTING SIGNALS TO ASSOCIATED RELAYS RESULTING IN TRIPPING CIRCUIT BREAKER OF 3-PHASE AC POWER SOURCE (THIS EFFECT WILL OCCUR WHEN THE MCA LOGIC SWITCH IS IN THE "ON" POSITION.)

(C,D) NO EFFECT - FIRST FAILURE. REDUNDANT MOTOR WILL COMPLETE THE FUNCTION.

(E) POSSIBLE LOSS OF CREW/VEHICLE DUE TO INTERNAL FAILURES OF BOT SWITCHES SUCH THAT BOTH STAR TRACKER DOORS CANNOT BE CLOSED RESULTING IN DAMAGE UPON ENTRY DUE TO THERMAL FLOW THROUGH.

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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. 1 - TOGGLE SWITCH

(B) GROUND TURNAROUND TEST

"STAR TRACKER - Y DOOR OPEN-MTR 1 AND 2", VERIFIES OPENING OF SYSTEM AND 2 STAR TRACKER Y DOOR. "STAR TRACKER - Y DOOR CLOSE- MTR 1 AND 2, VERIFIES CLOSING OF SYSTEM 1 AND 2 STAR TRACKER Y DOOR. "STAR TRACKER Z DOOR OPEN - MTR 1 AND 2", VERIFIES OPENING OF SYSTEM 1 AND 2 STAR TRACKER Z DOOR. "STAR TRACKER - Z DOOR CLOSE - MTR 1 AND 2," VERIFIE CLOSING OF SYSTEM 1 AND 2 STAR TRACKER Z DOOR. ALL OF THE ABOVE TEST ARE PERFORMED PRIOR TO EACH FLIGHT OR AFTER LRU REPLACEMENT.

(E) OPERATIONAL USE

FOLLOWING A FAILED CLOSED SWITCH IN THE DOOR OPEN POSITION, ONE STAR TRACKER DOOR WILL BE CLOSED TO PRECLUDE THE POSSIBILITY OF A SECOND SWITCH FAILURE RESULTING IN A TWO DOOR OPEN ENTRY.