

SHUTTLE CRITICAL ITEMS LIST - ORBITER.

SUBSYSTEM : EPD&C - STAR TRKR DOORS FMEA NO 05-6EF-2003 -1 REV:10/29/87

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

PREPARED BY:		REDUNDANCY SCREEN:	A-PASS	B-PASS	C-PASS
DES	J KRAGER	APPROVED BY:			
REL	T KIMURA	DES	<i>[Signature]</i>	APPROVED BY (NASA):	<i>[Signature]</i>
QE	W SMITH	REL	<i>[Signature]</i>	SSM	<i>[Signature]</i>
		QE	<i>[Signature]</i>		

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 T
COMMON ACTUATOR FOR EACH STAR TRACKER -Y AND -Z DOOR SUBSYSTEM
33V73A6S2, S3 (S2 FOR SYSTEM 1 AND S3 FOR SYSTEM 2)

FAILURE MODE:
FAILS OPEN, SHORTS TO GROUND (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) LOSS OF HYBRID RELAY FUNCTION

(B) DOOR OPERATION WILL BE PERFORMED BY A SINGLE MOTOR AND TIME WILL BE
DOUBLED. WORST CASE - LOSS OF TRANSFER FUNCTION OF FOUR CONTACT SETS

(C,D) NONE - FIRST FAILURE. REDUNDANT DOOR MOTOR WILL COMPLETE DOOR
OPERATION AS REQUIRED. NEXT ASSOCIATED FAILURE RESULTS IN LOSS OF
CAPABILITY TO OPERATE BOTH DOORS. PROBABLE VEHICLE DAMAGE ON ENTRY DUE
TO THERMAL FLOW THROUGH OPEN DOOR(S).

(E) POSSIBLE LOSS OF CREW/VEHICLE DUE TO THE LOSS OF CAPABILITY TO CLOSE
BOTH STAR TRACKER DOORS DUE TO FAILURE OF BOTH SYSTEMS 1 AND 2 TOGGLE
SWITCHES (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 AN OPEN FAILURE OF ONE SWITCH, ONE STAR TRACKER DOOR WILL B CLOSED TO PRECLUDE THE POSSIBILITY OF A SECOND SWITCH FAILURE RESULTIN IN A TWO DOOR OPEN ENTRY. IMPACT TO MISSION IS SINGLE STAR TRACKER INERTIAL MEASUREMENT UNIT (IMU) ALIGNMENT