FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CIL HARDWARE
NUMBER: 05-6-2237 -X

SUBSYSTEM NAME: ELECTRICAL POWER DISTRIBUTION & CONTROL
REVISION: D 05/03/88

PART DATA

	PART NAME **VENDOR NAME**	**PART NUMBER** **VENDOR NUMBER**
LRU	: PANEL C3A7	V070-730285
SRU	: SWITCH, TOGGLE	ME452-0102-7352

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
SWITCH, TOGGLE, LEVER LOCK, 3P2P - EXTERNAL TANK SEPARATION SELECT

REFERENCE DESIGNATORS: 35V73A3A7S3

QUANTITY OF LIKE ITEMS: 1
ONE

FUNCTION:
PROVIDES CAPABILITY FOR CREW TO SELECT EITHER "AUTO" (GPC CONTROL) OR "MANUAL" (CREW CONTROL) MODE FOR SEPARATION FROM THE EXTERNAL TANK.

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :ELECT POWER DIST & CONT FMEA NO 05-6 -2237 -1 REV:05/03/88

ASSEMBLY :PANEL C3A7
P/N RI :ME452-0102-7352
P/N VENDOR:
QUANTITY :1
:ONE
:

CRIT.FUNC: 1R
CRIT. HDW: 2

VEHICLE	102	103	104
EFFECTIVITY:	X	X	X

PHASE(S): PL LO X OO DO LS

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

PREPARED BY:			APPROVED BY:	APPROVED BY (NASA):
DES	R	PHILLIPS	DES	SSM
REL	M	HOVE	REL	REL
QE	J	COURSEN	QE	QE

ITEM:
SWITCH, TOGGLE, LEVER LOCK, 3P2P - EXTERNAL TANK SEPARATION SELECT

FUNCTION:
PROVIDES CAPABILITY FOR CREW TO SELECT EITHER "AUTO" (GPC CONTROL) OR "MANUAL" (CREW CONTROL) MODE FOR SEPARATION FROM THE EXTERNAL TANK. 35V73A3A7S3

FAILURE MODE:
FAILS TO CONDUCT, FAILS TO CLOSE (TRANSFER), OPEN, INADVERTENTLY OPENS (MULTIPLE CONTACT SETS), SHORTS TO GROUND

CAUSE(S):
PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECHANICAL SHOCK, VIBRATION, PROCESSING ANOMALY

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

(A) LOSS OF MANUAL EXTERNAL TANK SEPARATION SELECT FUNCTION.

(B) LOSS OF EXTERNAL TANK SEPARATION INITIATION REDUNDANCY.

(C,D) FIRST FAILURE - NO EFFECT. DURING BOOST, PRIOR TO EXTERNAL TANK SEPARATION, IF AERODYNAMIC PARAMETERS ARE OUT OF LIMITS THEN AN INHIBIT EXISTS TO SEPARATION. THE CREW WILL MANUALLY TRY TO FLY THE VEHICLE BACK INTO LIMITS. IF THIS IS NOT POSSIBLE THEN THE CREW WILL ATTEMPT TO MANUALLY SEPARATE THROUGH THE USE OF EXTERNAL TANK SEPARATION SWITCHES (I.E. P.B. AND TOGGLE). IF EITHER OF THE SWITCHES FAIL OPEN THEN MANUAL SEPARATION CANNOT OCCUR AND COULD RESULT IN LOSS OF CREW/VEHICLE. THE CREW MUST INITIATE SEPARATION VIA KEYBOARD ENTRY USING OVERRIDE SPEC #51 ITEM 39 ENTRY, ALLOWING AUTOMATIC EXTERNAL TANK SEPARATION TO OCCUR.

BSYSTEM :ELECT POWER DIST & CONT FMEA NO 05-6 -2237 -1 REV:05/03/88

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

(E) POSSIBLE LOSS OF CREW/VEHICLE WITH SECOND FAILURE (OVERRIDE SPEC #51 FAILURE) DUE TO LOSS OF CONTROL/ELECTRICAL POWER NECESSARY FOR SEPARATION FUNCTION. "B" SCREEN IS PASS BECAUSE SEPARATION MODE SELECT SWITCH IS INSTRUMENTED AND DISPLAYED TO GROUND FLIGHT OPERATIONS PERSONNEL.

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

,B,C,D) DISPOSITION AND RATIONALE
REFER TO APPENDIX A, ITEM NO. 1 - TOGGLE SWITCH

) GROUND TURNAROUND TEST
VERIFY EXTERNAL TANK SEPARATION MANUAL SWITCH POSITIONS. ACTIVATE SWITCH AND MONITOR SEPARATION "AUTO", SEPARATION "MANUAL" ENABLE, AND SEPARATION INITIATE STIMULI. TEST PERFORMED ALL FLIGHTS.

) OPERATIONAL USE
FLIGHT CREW REQUIRED TO PROVIDE MANUAL BACKUP FOR EXTERNAL TANK SEPARATION VIA KEYBOARD ENTRY USING OVERRIDE SPEC #51 ITEM 39 ENTRY.