

PAGE: 1

PRINT DATE: 09/26/89

SHUTTLE CRITICAL ITEMS LIST - ORBITER NUMBER: 05-6R-320601-X

SUBSYSTEM NAME: EPD&C - INSTRUMENTATION (05-6R)

REVISION : 2 09/26/89

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	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
■ LRU :	PANEL 017	V070-730397
■ SRU :	SWITCH, TOGGLE	ME452-0102-7301

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■ EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:

■ REFERENCE DESIGNATORS: 33V73A17S13

QUANTITY OF LIKE ITEMS: 1

■ FUNCTION:

PROVIDES CONTROL POWER TO RPC'S 6,7,& 33 THAT SUPPLY POWER TO  
SIGNAL CONDITIONERS 0L1 AND 0L2.

PAGE: 2

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SUBSYSTEM: EPD&C - INSTRUMENTATION (05-6R)  
LRU :PANEL 017  
ITEM NAME: SWITCH, TOGGLE

CRITICALITY OF THIS  
FAILURE MODE:1R2

■ FAILURE MODE:  
FAILS OPEN, SHORTS TO CASE (GROUND)

MISSION PHASE:

PL PRELAUNCH  
LO LIFT-OFF  
OO ON-ORBIT  
DO DE-ORBIT  
LS LANDING SAFING

VEHICLE/PAYLOAD/KIT EFFECTIVITY: 102 COLUMBIA  
: 103 DISCOVERY  
: 104 ATLANTIS  
: 105 ENDEAVOUR

■ CAUSE:  
PIECE PART STRUCTURAL FAILURE, CONTAMINATION, VIBRATION,  
MECHANICAL SHOCK, PROCESSING ANOMALY

CRITICALITY 1/1 DURING INTACT ABORT ONLY? Y  
RTLS RETURN TO LAUNCH SITE

■ REDUNDANCY SCREEN A) PASS  
■ B) PASS  
■ C) PASS

PASS/FAIL RATIONALE:

■ A)  
■ B)  
■ C)

■ MASTER MEAS. LIST NUMBERS: V7552160E

- FAILURE EFFECTS -

■ (A) SUBSYSTEM:  
LOSS OF CONTROL BUS POWER TO RPC'S THAT SUPPLY MAIN BUS POWER TO

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DEDICATED SIGNAL CONDITIONERS OLI AND OL2.

- (B) INTERFACING SUBSYSTEM(S):  
LOSS OF DSC OLI AND OL2 FUNCTION.
- (C) MISSION:  
FIRST FAILURE: POSSIBLE EARLY MISSION TERMINATION DUE TO LOSS OF CRITICAL DATA.
- (D) CREW, VEHICLE, AND ELEMENT(S):  
FIRST FAILURE: LOSS OF BOTH OSC'S AND UP TO 120 VEHICLE MEASUREMENTS.  
SECOND FAILURE: LOSS OF DSC MEASUREMENTS MAY CONCEAL A CRITICAL SUBSYSTEM FAILURE WHICH MAY CAUSE LOSS OF CREW/VEHICLE.

CRIT 1/1 RTLS ABORT EFFECTS  
LOSS OF SWITCH RESULTS IN A LOSS OF POWER TO OSC'S OLI AND OL2 WHICH PROCESS UP, DOWN AND YAW LEFT AFT JET CHAMBER PRESSURES. AS A RESULT, THESE CHAMBER PRESSURES DROP TO ZERO, CAUSING REDUNDANCY MANAGEMENT TO DESELECT 2 JETS IN THE SAME DIRECTION WHICH COULD RESULT IN POSSIBLE RECONTACT WITH THE EXTERNAL TANK DURING SEPARATION IN AN RTLS ABORT, AND/OR CAUSE EXCESSIVE ROLL/YAW EXCEEDING FLIGHT CONTROL LIMITS FOR MM602 TAKEOVER.

- (E) FUNCTIONAL CRITICALITY EFFECTS:

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- DISPOSITION RATIONALE -  
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- (A) DESIGN:  
REFER TO APPENDIX A, ITEM NO.1 - TOGGLE SWITCH
- (B) TEST:  
REFER TO APPENDIX A, ITEM NO.1 - TOGGLE SWITCH  
GROUND TURNAROUND TEST: POWER REDUNDANCY TESTS ON ALL DSC'S ARE PERFORMED DURING TURNAROUND.
- (C) INSPECTION:  
REFER TO APPENDIX A, ITEM NO.1 - TOGGLE SWITCH
- (D) FAILURE HISTORY:  
REFER TO APPENDIX A, ITEM NO. 1 - TOGGLE SWITCH
- (E) OPERATIONAL USE:  
NONE

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- APPROVALS -

RELIABILITY ENGINEERING:	J. R. GODWARD	:	<u>M. A. [Signature]</u>
RELIABILITY ENGINEERING:	R. GREGORIAN	:	<u>R. Gregorian</u>
RELIABILITY ENGINEERING:	M. HOVE	:	<u>M. Hove</u>
DESIGN ENGINEERING	: R. V. BURNS	:	<u>R. V. Burns</u>
DESIGN ENGINEERING	: T. V. HO	:	<u>T. V. Ho</u>
DESIGN ENGINEERING	: J. MORGAN	:	<u>J. Morgan</u>
DESIGN ENGINEERING	: L. C. MUCHOW	:	<u>L. C. Muchow</u>
DESIGN ENGINEERING	: L. A. SHOCKLEY	:	<u>L. A. Shockley</u>
QUALITY ENGINEERING	: E. GUTIERREZ	:	<u>E. Gutierrez</u>
NASA SUBSYSTEM MANAGER	: J. Miller	:	<u>J. Miller (Enr)</u>
NASA EPO&C RELIABILITY :		:	<u>[Signature] 10/13/89</u>
NASA QUALITY ASSURANCE :		:	<u>[Signature]</u>
NASA EPO&C SUBSYS MGR :	F. ALANIS	:	<u>F. Alanis 11/14/89</u>
NASA OI RELIABILITY :		:	<u>CMK [Signature] 10/13/89</u>