

FAILURE MODES EFFECTS ANALYSIS (FMEA) – NON-GIL HARDWARE
NUMBER:05-3-12305 -X

SUBSYSTEM NAME: DISPLAYS & CONTROLS

REVISION: 1 12/18/95

PART DATA

	PART NAME	PART NUMBER
	VENDOR NAME	VENDOR NUMBER
LRU	:PANEL F2	VO70-730400
LRU	:PANEL F4	VO70-730402
SRU	:SWITCH, PUSHBUTTON	ME452-0060-4109

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
C&W MASTER ALARM PUSHBUTTON SWITCH

REFERENCE DESIGNATORS: 34V73A2S1
 34V73A4S1

QUANTITY OF LIKE ITEMS: 2
 2 FORWARD STATION

FUNCTION:
 PROVIDES MASTER ALARM LIGHT AND RESET CAPABILITIES TO FLIGHT CREW.

FAILURE MODES EFFECTS ANALYSIS FMEA - NON-CIL FAILURE MODE

NUMBER: 05-3-12305-06

REVISION#: 1 12/18/95

SUBSYSTEM NAME: DISPLAYS & CONTROLS

LRU: PANELS F2, F4

ITEM NAME: SWITCH, PUSHBUTTON

CRITICALITY OF THIS
FAILURE MODE: 1R3FAILURE MODE:
SHORT TO GROUND

MISSION PHASE:	PL	PRE-LAUNCH
	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:
CONTAMINATION, INTERNAL STRUCTURAL FAILURE, VIBRATION, MECHANICAL SHOCK,
PROCESSING ANOMALY.

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN	A) PASS
	B) PASS
	C) PASS

PASS/FAIL RATIONALE:

A)

B)

C)

CORRECTING ACTION: MANUAL

CORRECTING ACTION DESCRIPTION:

THE FLIGHT CREW MUST CONTINUALLY MONITOR FAULT SUMMARY MESSAGES ON THE
DISPLAY UNIT (CRT) FOR ESSENTIAL ZCA BUS LOSS UNTIL C&W POWER SUPPLY B IS

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REDUNDANTLY POWERED THROUGH AN IFM PROCEDURE, OR UNTIL FUEL CELL 2 IS PLACED IN STANDBY.

- FAILURE EFFECTS -

(A) SUBSYSTEM:

LOSS OF PRIMARY CAUTION & WARNING. LOSS OF POWER TO THE PRIMARY C&W POWER SUPPLY DUE TO ACTIVATION OF ESSENTIAL BUS OVERLOAD CIRCUIT PROTECTION (PANEL 013, CB1 TRIP).

(B) INTERFACING SUBSYSTEM(S):

NO EFFECT, FIRST FAILURE.

(C) MISSION:

NO EFFECT, FIRST FAILURE.

(D) CREW, VEHICLE, AND ELEMENT(S):

NO EFFECT, FIRST FAILURE.

(E) FUNCTIONAL CRITICALITY EFFECTS:

IF THE SECONDARY C&W POWER SUPPLY OR ESSENTIAL BUS 2CA FAILS, THE RESULT WILL BE THE LOSS OF ALL C&W AURAL AND VISUAL ALARMS. LOSS OF ALL C&W REQUIRES THE ORBITER TO EXECUTE NEXT PLS DEORBIT. THE LOSS OF CREW/VEHICLE MAY RESULT IF A TIME CRITICAL CONDITION IS NOT ANNUNCIATED, I.E. ESSENTIAL BUS FAILURE WILL SIMULTANEOUSLY INTERRUPT FUEL CELL COOLANT PUMP OPERATION, CREATING A TIME CRITICAL EMERGENCY CONDITION. THE CREW MUST TAKE REMEDIAL ACTION WITHIN NINE MINUTES OF ESSENTIAL BUS FAILURE TO AVOID A CATASTROPHIC FUEL CELL FAILURE.

DESIGN CRITICALITY (PRIOR TO DOWNGRADE, DESCRIBED IN (F)): 1R2

(F) RATIONALE FOR CRITICALITY DOWNGRADE:

AFTER THE FIRST FAILURE THE CREW WILL PERFORM AN IFM TO REDUNDANTLY POWER C&W POWER SUPPLY B AND PRECLUDE A SINGLE FAILURE (ESSENTIAL 2CA BUS LOSS) FROM RESULTING IN AN UNANNUNCIATED TIME CRITICAL CATASTROPHIC FUEL CELL FAILURE.

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- APPROVALS -

EDITORIALLY APPROVED	: RI	: <u>Sumda 12/19/95</u>
EDITORIALLY APPROVED	: JSC	: <u>Sumda 1-2-96</u>
TECHNICAL APPROVED	: APPROVAL FORM	: 95-CIL-003-R1