

FAILURE MODES EFFECTS ANALYSIS (FMEA) - NON-CIL HARDWARE
NUMBER:05-3-12310 -X

SUBSYSTEM NAME: DISPLAYS & CONTROLS

REVISION: 1 12/18/95

PART DATA

	PART NAME	PART NUMBER
	VENDOR NAME	VENDOR NUMBER
LRU	:CAUTION & WARNING ANNUNCIATOR	MC434-0089-0012

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
CAUTION & WARNING ANNUNCIATOR, PANEL F7A2

REFERENCE DESIGNATORS: 34V73A7A2

QUANTITY OF LIKE ITEMS: 1

FUNCTION:
PROVIDES 40 ILLUMINATED ANNUNCIATORS WHICH INDICATE SUBSYSTEM FAILURE
OR OUT OF TOLERANCE CONDITIONS. EACH ILLUMINATED ANNUNCIATOR CONTAINS
DUAL (REDUNDANT) LAMPS.

FAILURE MODES EFFECTS ANALYSIS FMEA - NON-CIL FAILURE MODE

NUMBER: 05-3-12310-02

REVISION#: 1 12/18/95

SUBSYSTEM NAME: DISPLAYS & CONTROLS

LRU: CAUTION & WARNING ANNUNCIATOR

ITEM NAME: CAUTION & WARNING ANNUNCIATOR

CRITICALITY OF THIS

FAILURE MODE: 1R3

FAILURE MODE:

POWER SUPPLY 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, VIBRATION, SHOCK, PIECE PART FAILURE

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 2CA 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 CAUTION & WARNING ANNUNCIATOR. 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>Jim D</u> 12/19/95
EDITORIALLY APPROVED	: JSC	: <u>John Deacy 1-2-96</u>
TECHNICAL APPROVED	: APPROVAL FORM	: 95-CIL-003-RF