

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL HARDWARE
NUMBER: M5-6MR-B028-X**

SUBSYSTEM NAME: ORBITER DOCKING SYSTEM

REVISION: 1 OCT, 1995

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	DSCU RSC-E	MC521-0087-1002 33Y.5212.005

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
LINE REPLACEABLE UNIT (LRU) DSCU - DOCKING SYSTEM CONTROL UNIT.

REFERENCE DESIGNATORS: 40V53A1A2

QUANTITY OF LIKE ITEMS: 1
(ONE)

FUNCTION:

THE DSCU IS USED TO IMPLEMENT THE AUTOMATED DOCKING SEQUENCE AND TO RECEIVE AND PROCESS THE COMMANDS FROM THE APDS CONTROL PANEL. THE UNIT PROVIDES TELEMETRY TO THE DCUs AND STATUS INDICATION TO THE APDS CONTROL PANEL.

OUTPUT FUNCTIONS:

1. PROVIDES HI-ENERGY DAMPERS POWER AND CONTROL.
2. PROVIDES CONTROL FOR DOCKING RING EXTENSION AND RETRACTION.
3. PROVIDES FIXERS POWER AND CONTROL.
4. PROVIDES HOOKS OPENING AND CLOSING CONTROL.
5. PROVIDES CAPTURE LATCHES OPENING AND CLOSING CONTROL.
6. PROVIDES TELEMETRY TO THE DCUs AND STATUS INDICATION TO THE APDS PANEL.

FAILURE MODES EFFECTS ANALYSIS (FMEA) - CIL FAILURE MODE

NUMBER: M5-6MR-B020-01

REVISION# 1 SEPT 1, 1995

SUBSYSTEM NAME: ORBITER DOCKING SYSTEM

LRU: MCG21-0087-1002

ITEM NAME: DSCU

CRITICALITY OF THIS

FAILURE MODE: 2R3

FAILURE MODE:

LOSS OF POWER/CONTROL SIGNAL TO ONE OF THREE HI-ENERGY DAMPERS

MISSION PHASE:

OO ON-ORBIT

VEHICLE/PAYLOAD/KIT EFFECTIVITY: 104 ATLANTIS

CAUSE:

MULTIPLE INTERNAL COMPONENT FAILURES

CRITICALITY 1R1 DURING INTACT ABORT ONLY? NO

CRITICALITY 1R2 DURING INTACT ABORT ONLY (AVIONICS ONLY)? NO

REDUNDANCY SCREEN

- A) PASS
- B) FAILS
- C) FAILS

PASS/FAIL RATIONALE:

A)

B)

"MASKED" BY REDUNDANT CONTROL SIGNAL

C)

REDUNDANT SIGNAL ROUTED THROUGH THE SAME CONNECTOR

METHOD OF FAULT DETECTION:

NONE

MASTER MEAS. LIST NUMBERS:

NONE

- FAILURE EFFECTS -

(A) SUBSYSTEM:

DEGRADATION OF REDUNDANCY FOR PROVIDING POWER AND CONTROL SIGNAL TO ONE OF THREE HI-ENERGY DAMPERS.

(B) INTERFACING SUBSYSTEM(S):

FIRST FAILURE - NO EFFECT.

(C) MISSION:

FIRST FAILURE - NO EFFECT.



RSC
Energy

Proprietary Data

FAILURE MODES EFFECTS ANALYSIS (FMEA) - CIL FAILURE MODE
NUMBER: M5-6MR-0028-01

(D) CREW, VEHICLE, AND ELEMENT(S):
 NO EFFECT.

(E) FUNCTIONAL CRITICALITY EFFECTS:
 POSSIBLE LOSS OF MISSION AFTER TWO FAILURES. 1) LOSS OF ONE OF THREE HI-ENERGY DAMPERS CONTROL SIGNALS. 2) LOSS OF SECOND ASSOCIATED HI-ENERGY DAMPERS CONTROL SIGNAL RESULTING IN LOSS OF ALL THREE HI-ENERGY DAMPERS. POTENTIAL LOSS OF MISSION DUE TO EXCESSIVE LOADS ON THE MECHANISMS WHICH MAY PRECLUDE DOCKING.

DESIGN CRITICALITY (PRIOR TO OPERATIONAL DOWNGRADE, DESCRIBED IN F): 2R3

(F) RATIONALE FOR CRITICALITY CATEGORY DOWNGRADE:
 N/A (THERE ARE NO WORKAROUNDS TO CIRCUMVENT THIS FAILURE.)

-DISPOSITION RATIONALE-

(A) DESIGN:
 REFER TO APPENDIX I, ENERGIA HARDWARE.

(B) TEST:
 REFER TO APPENDIX I, ENERGIA HARDWARE.

DSCU CIRCUIT OPERATION IS VERIFIED DURING GROUND CHECKOUT. ANY TESTING IS ACCOMPLISHED IN ACCORDANCE WITH OMRSD.

(C) INSPECTION:
 REFER TO APPENDIX I, ENERGIA HARDWARE.

(D) FAILURE HISTORY:
 REFER TO APPENDIX I, ENERGIA HARDWARE.

(E) OPERATIONAL USE:
 NONE

- APPROVALS -

PRODUCT ASSURANCE ENGR	M. NIKOLAYEVA	
DESIGN ENGINEER	B. YAKULIN	
NASA SS/MA		
NASA SUBSYSTEM MANAGER		
NASA EPD&C SUBSYSTEM MANAGER:		

[Handwritten signatures and dates]
 9/21/95
 9/22/95
 9/21/95



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