

FAILURE MODES EFFECTS ANALYSIS (FMEA) - CIL HARDWARE
NUMBER: M5-6MB-2207-G -X

SUBSYSTEM NAME: ELECTRICAL POWER GENERATION - CRYO, GENERIC
REVISION: 8 09/09/92

PART DATA

	PART NAME	PART NUMBER
	VENDOR NAME	VENDOR NUMBER
LRU	: MID PCA 1	V070-764400
LRU	: MID PCA 2	V070-764430
SRU	: CONTROLLER, HYBRID DRIVER	MC477-0263-0002

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
CONTROLLER, HYBRID DRIVER (HDC), TYPE III - H2 MANIFOLD 1 AND 2 ISOLATION VALVES - OPEN POSITION

REFERENCE DESIGNATORS: 40V76A25AR19
 40V76A25AR20
 40V76A26AR19
 40V76A26AR20

QUANTITY OF LIKE ITEMS: 4
FOUR, TWO PER H2 MANIFOLD VALVE CIRCUIT

FUNCTION:
CONTROLS POWER TO OPEN H2 MANIFOLD 1 AND 2 ISOLATION VALVES. CONTROL CIRCUITRY IS INDEPENDENT FOR EACH MANIFOLD.

FAILURE MODES EFFECTS ANALYSIS FMEA -- CIL FAILURE MODE

NUMBER: M5-6MB-2207-G-01

REVISION#: 9 04/16/96

SUBSYSTEM NAME: ELECTRICAL POWER GENERATION - CRYO, GENERIC

LRU: MID PCA 1

CRITICALITY OF THIS

ITEM NAME: CONTROLLER, HYBRID DRIVER

FAILURE MODE: 2/2

FAILURE MODE:

LOSS OF OUTPUT, FAILS TO CONDUCT, FAILS TO TURN "ON"

MISSION PHASE: OO ON-ORBIT

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

CAUSE:PIECE PART FAILURE, CONTAMINATION, VIBRATION, MECHANICAL SHOCK,
PROCESSING ANOMALY, THERMAL STRESS

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN	A) N/A
	B) N/A
	C) N/A

PASS/FAIL RATIONALE:

A)

B)

C)

- FAILURE EFFECTS -**(A) SUBSYSTEM:**LOSS OF ABILITY TO CONDUCT POWER IN RESPONSE TO AN H2 MANIFOLD VALVE
"OPEN" SWITCH COMMAND.

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(B) INTERFACING SUBSYSTEM(S):

LOSS OF ABILITY TO MANUALLY OPEN THE H2 MANIFOLD VALVE WITH THE PANEL SWITCH.

(C) MISSION:

(CRIT 2/2) POSSIBLE LOSS OF MISSION DUE TO ASSOCIATED MANIFOLD VALVE FAILING CLOSED RESULTING IN ONE TANK BEING ISOLATED TO A SINGLE FUEL CELL. MISSION TERMINATED WHEN THE HYDROGEN IN THAT TANK IS CONSUMED.

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

NO EFFECT - FIRST FAILURE

(E) FUNCTIONAL CRITICALITY EFFECTS:

(CRIT 2/2) POSSIBLE LOSS OF MISSION DUE TO ASSOCIATED MANIFOLD VALVE FAILING CLOSED RESULTING IN ONE TANK BEING ISOLATED TO A SINGLE FUEL CELL. MISSION TERMINATED WHEN THE HYDROGEN IN THAT TANK IS CONSUMED.

-DISPOSITION RATIONALE-

(A) DESIGN:

REFER TO APPENDIX B, ITEM NO. 1 - HYBRID DRIVER

(B) TEST:

GROUND TURNAROUND TEST

ANY TURNAROUND CHECKOUT TESTING IS ACCOMPLISHED IN ACCORDANCE WITH OMRSD. THE OMRSD DATA PROVIDED BELOW IS NO LONGER BEING KEPT UP-TO-DATE. IF THERE IS ANY DISCREPANCY BETWEEN THE GROUND TESTING DATA PROVIDED BELOW AND THE OMRSD, THE OMRSD IS THE MORE ACCURATE SOURCE OF THE DATA.

HDC IS FUNCTIONALLY VERIFIED IN FLIGHT. PERFORM GROUND TURNAROUND TEST WHEN VALID VERIFICATION IS UNOBTAINABLE IN FLIGHT OR AFTER LRU REPLACEMENT.

(C) INSPECTION:

REFER TO APPENDIX B, ITEM NO. 1 - HYBRID DRIVER

(D) FAILURE HISTORY:

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CURRENT DATA ON TEST FAILURES, FLIGHT FAILURES, UNEXPLAINED ANOMALIES, AND OTHER FAILURES EXPERIENCED DURING GROUND PROCESSING ACTIVITY CAN BE FOUND IN THE PRACA DATA BASE. THE FAILURE HISTORY DATA PROVIDED IN APPENDIX B IS NO LONGER BEING KEPT UP-TO-DATE.

(E) OPERATIONAL USE:

NO CREW ACTION AFTER FIRST FAILURE.

- APPROVALS -

PAE MANAGER	: P. STENGER-NGUYEN	<i>P. Stenger-Nguyen</i>
PRODUCT ASSURANCE ENGR	: J. NGUYEN	<i>J. Nguyen</i>
DESIGN ENGINEERING	: T. D. NGUYEN	<i>T. D. Nguyen</i>
EDITORIALLY APPROVED	: JSC	<i>JSC</i>
TECHNICAL APPROVAL	: VIA APPROVAL FORM	: 96-CIL-012_M5-6MB