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PRINT DATE: 05/11/95

FAILURE MODES EFFECTS ANALYSIS (FMEA) - CRITICAL HARDWARE
NUMBER: 05-6J-2263 -X

SUBSYSTEM NAME: EPD&C MAIN PROPULSION SYSTEM

REVISION: 11/10/94

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	: AFT LCA 1	MC450-0057-0001
SRU	: CONTROLLER, HYBRID DRIVER	MC477-0263-0002

PART DATA

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
CONTROLLER, HYBRID DRIVER (HDC), TYPE III - LH2 HIGH POINT BLEED VALVE OPEN
SOLENOID (LV79).

REFERENCE DESIGNATORS: 54V76A121J6 (f)
54V76A121J3 (69)

QUANTITY OF LIKE ITEMS: 2
TWO

FUNCTION:
CONDUCTS MAIN BUS POWER TO OPEN SOLENOID OF LH2 HIGH POINT BLEED VALVE.
THE TWO HDCs III ARE IN SERIES.

**FAILURE MODES EFFECTS ANALYSIS (FMEA) – NONCRITICAL FAILURE MODE
NUMBER: 05-6J-2263 - 01**

	REVISION#	05/11/95
SUBSYSTEM NAME: EPD&C MAIN PROPULSION SYSTEM		
LRU: AFT LCA 1		CRITICALITY OF THIS
ITEM NAME: CONTROLLER, HYBRID DRIVER		FAILURE MODE: 1R3

FAILURE MODE:
LOSS OF OUTPUT, FAILS TO CONDUCT, FAILS TO TURN "ON"

MISSION PHASE:
PL PRELAUNCH

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) PASS
	B) PASS
	C) PASS

PASS/FAIL RATIONALE:
A)

B)

C)

CORRECTING ACTION: NONE

REMARKS/RECOMMENDATIONS:
NONE

- FAILURE EFFECTS -

(A) SUBSYSTEM:
LOSS OF ABILITY TO ENERGIZE OPEN SOLENOID.

(B) INTERFACING SUBSYSTEM(S):
HIGH POINT BLEED VALVE PREMATURELY CLOSES. GH2 WILL ACCUMULATE IN LH2 17-INCH MANIFOLD PRIOR TO ENGINE START RESULTING IN A LAUNCH SCRUB.

FAILURE MODES EFFECTS ANALYSIS (FMEA) - NONCRITICAL FAILURE MODE
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LCC MONITORS LH2 17-INCH MANIFOLD DISCONNECT AND HIGH POINT BLEED TEMPERATURE TRANSDUCERS UP TO T-31 SECONDS TO VERIFY BY THE ABSENCE OF GH2 THAT THE HIGH POINT BLEED VALVE REMAINS OPEN. ADDITIONALLY, THE BLEED VALVE CLOSE POSITION SWITCH IS VERIFIED OFF BETWEEN START OF SLOW FILL (APPROXIMATELY T-6 HOURS) AND T-31 SECONDS (ENGINEERING REQUIREMENT).

(C) MISSION:
LAUNCH SCRUB.

(D) CREW, VEHICLE, AND ELEMENT(S):
NO EFFECT - FIRST FAILURE

(E) FUNCTIONAL CRITICALITY EFFECTS:
1R/3, 4 PATH SCENARIO. TIME FRAME - PRELAUNCH.

- 1) HDC FAILS TO CONDUCT CAUSING HIGH POINT BLEED VALVE (PV22) TO CLOSE.
- 2) HIGH POINT BLEED VALVE (PV22) CLOSE INDICATION FAILS OFF.
- 3) LH2 17-INCH MANIFOLD DISCONNECT TEMPERATURE TRANSDUCER ERRONEOUSLY INDICATES WITHIN LCC LIMITS.
- 4) FACILITY HIGH POINT BLEED TEMPERATURE TRANSDUCER ERRONEOUSLY INDICATES WITHIN LCC LIMITS.

ACCUMULATED GH2 WILL BE INGESTED INTO THE ENGINES AT START, RESULTING IN POSSIBLE UNCONTAINED ENGINE DAMAGE DUE TO PUMP CAVITATION. POSSIBLE LOSS OF CREW/VEHICLE.

- APPROVALS -

PRODUCT ASSURANCE ENGR : T. K. KIMURA
DESIGN ENGINEERING : J. L. PECK

T. K. Kimura 5/11/95
J. L. Peck 5/15/95