SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - FWD-RCS FMEA NO 0S-6KF-2214 -2 REV:11/03/87

ASSEMBLY :FWD LCA 1,2,3
P/N RI :MC477-0262-0002
P/N VENDOR:
QUANTITY :5
:FIVE
:

CRIT. FUNC: 1R
CRIT. HDW: 3

VEHICLE EFFECTIVITY:	102	103	104
	X	X	X

PHASE(S): PL LO X OO DO LS

REDUNDANCY SCREEN: A-PASS B-FAIL C-PASS

PREPARED BY:		APPROVED BY:	APPROVED BY (NASA):
DES	D SOVEREIGN	DES	SSM
REL	J BEEKMAN	REL	REL
QE		QE	QE

ITEM:
HYBRID DRIVER CONTROLLER (HDC) TYPE II - FORWARD RCS REACTION JET DRIVER 1 AND 2 (MANIFOLD 1 THROUGH 5) DRIVER POWER AND LOGIC.

FUNCTION:
UPON COMMAND THROUGH CREW OPERATED MANUAL SWITCHES AND RELATED LOGIC, TH DRIVER CONDUCTS, SENDING A STIMULUS TO AN ASSOCIATED REMOTE POWER CONTROLLER (RPC) TO ENERGIZE REACTION JET DRIVER FORWARD (RJDF) 1 OR 2 (MANIFOLDS 1 THROUGH 5) FOR DRIVER POWER SUPPLY AND LOGIC CIRCUITS. 81V76A16ARJ4-86,114. 82V76A17ARJ4-87. 83V76A18ARJ4-86,87.

FAILURE MODE:
INADVERTENT OPERATION, SHORT, INADVERTENTLY CONDUCTS.

CAUSE(S):
PIECE PART FAILURE, CONTAMINATION, MECHANICAL AND THERMAL SHOCK, VIBRATION.

EFFECT(S) ON:
(A)SUBSYSTEM (B)INTERFACES (C)MISSION (D)CREW/VEHICLE

(A) ENABLES THE ASSOCIATED REMOTE POWER CONTROLLER TO CONDUCT.

(B) NO EFFECT - THE REACTION JET DRIVER FORWARD BUS IN SERIES MUST FIRST BE ENERGIZED BEFORE RCS DRIVERS CAN BE POWERED. A THIRD, RELATED FAILUR IN AN RCS DRIVER WOULD BE REQUIRED BEFORE A PREMATURE FIRING WOULD OCCUR.

(C,D) NO EFFECT.

(E) FUNCTIONAL CRITICALITY EFFECT - POSSIBLE LOSS OF CREW/VEHICLE DUE TO LOSS OF PROPELLANT RESERVES NECESSARY FOR TO PERFORM EXTERNAL TANK SEPARATION AFTER AN UNCONTROLLABLE THRUSTER FIRING HAS OCCURRED. REQUIRES 5 OTHER FAILURES (RJD BUS RELAY FAILS ON, RJD FAILS ON, MANIFOLD VALVE FAILS OPEN, TANK ISOLATION VALVE FAILS OPEN, MAIN BUS FAILS ON) BEFORE EFFECT IS MANIFESTED. FIRST FAILURE OF STRING NOT DETECTABLE IN FLIGHT DUE TO LACK OF MONITORING MEASUREMENTS.

DISPOSITION & RATIONALE:
(A)DESIGN (B)TEST (C)INSPECTION (D)FAILURE HISTORY (E)OPERATIONAL USE

(A-D) FOR DISPOSITION AND RATIONALE REFER TO APPENDIX B, ITEM NO. 1 - HYBRID DRIVER.

(B) GROUND TURNAROUND TEST
COMPONENT CHECKED OUT EVERY FLIGHT DURING GROUND TURNAROUND VIA THE GUIDANCE, NAVIGATION, AND CONTROL (GN&C) ORBITER MAINTENANCE REQUIREMENTS AND SPECIFICATIONS DOCUMENT (CMRSD) REQUIREMENTS FOR CHECKING THE PRIMARY AND VERNIER REACTION JET DRIVER POWER. THE TESTING CONSISTS OF CYCLING THRUSTER REACTION JET DRIVER LOGIC AND DRIVER SWITCHES WHILE MONITORING VEHICLE INSTRUMENTATION TO DETERMINE IF COMPONENTS HAVE FAILED.

(E) OPERATIONAL USE
NO ACTION FOR FIRST FAILURE - NOT DETECTABLE. IF JET FAILS ON, ISOLATE FAILURE BY CLOSING ASSOCIATED MANIFOLD VALVE.