SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - OMS

FMEA NO 05-6L -2127 -1 REV:10/30/87

ASSEMBLY :AFT MCA 1,3
P/N RI :MC455-0135-0001
P/N VENDOR:
QUANTITY :16
:SIXTEEN
:(TWO PER VALVE)

CRIT. FUNC: 1R
CRIT. HDW: 2

VEHICLE EFFECTIVITY:	102	103	104
	X	X	X

PHASE(S): PL LO X OO DO X LS

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

PREPARED BY:
DES D SOVEREIGN
REL F DEFENSOR
QE J COURSEN

APPROVED BY:
DES
REL 11-12-87
QE

APPROVED BY (NASA):
SSM
REL 12-7-87
QE
EPDC SSM for WC Stagg

ITEM:
RELAY, HYBRID, 4 POLES, NONLATCHING, LEFT AND RIGHT OMS - OXIDIZER AND FUEL TANK ISOLATION VALVE A AND B "CLOSE" CIRCUIT.

FUNCTION:
UPON RECEIVING THE PROPER STIMULI FROM THE GENERAL PURPOSE COMPUTER (GPC) THROUGH FLIGHT MDMS OR CREW PANEL SWITCHES, THE HYBRID RELAY CONTACTS CONNECT THE PROPER AC PHASE VOLTAGE TO ENERGIZE DRIVE MOTORS TO CLOSE THE ASSOCIATED OXIDIZER AND FUEL TANK ISOLATION VALVE A AND B OF THE LEFT OR RIGHT OMS. 54V76A114K41, 42, 45, 46, 57, 58, 61, 62. 56V76A116K58, 60, 64, 65, 68, 69, 72, 73.

FAILURE MODE:
FAILS TO TRANSFER, FAILS TO CONDUCT, FAILS TO CLOSE.

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

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

(A) LOSS OF ABILITY TO ENERGIZE THE AFFECTED AC MOTOR VALVE DRIVE CIRCUIT.

(B) LOSS OF ABILITY TO CLOSE ONE TANK ISOLATION VALVE (FUEL OR OXIDIZER, A OR B) OF ONE OMS POD. PRECLUDES PROPELLANT ISOLATION CAPABILITY; LIMITS CROSSFEED OPERATIONS.

(C,D) FIRST FAILURE HAS NO EFFECT.

(E) POSSIBLE LOSS OF CREW/VEHICLE DUE TO FAILURE OF OMS ENGINE AND TANK ISOLATION VALVE TO CLOSE - MAY RESULT IN GAS INGESTION TO GOOD OMS ENGINE DURING CROSSFEED.

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - OMS FMEA NO 05-6L -2127 -1 REV:10/30/87

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

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

(B) GROUND TURNAROUND TEST
V43CA0.070 - REDUNDANT CIRCUIT VERIFICATION (PERIODIC) - ORB/POD; PERFORMED FOR FIRST FLIGHT AND AT FIVE FLIGHT INTERVALS OR FOR LRU RETEST PER FIGURE V43Z00.000 OR FOR ORBITER DISRUPTED COPPER PATHS. FUNCTIONAL CHECKOUT OF AC MOTOR VALVE CONTROL CIRCUITS PER FIGURE V43CA0.070-2.

V43CA0.072 - REDUNDANT CIRCUIT VERIFICATION; PERFORMED EACH FLIGHT (AFTER FIRST FLIGHT). FUNCTIONAL CHECKOUT OF AC MOTOR VALVE CONTROL CIRCUITS PER FIGURE V43CA0.070-2.

V43CB0.165 - AC MOTOR VALVE ACTUATOR SNIFF CHECK; PERFORMED EACH FLIGHT. ALL AC MOTOR VALVE ACTUATORS CHECKED FOR PRESENCE OF PROPELLANT VAPORS.

V43CF0.010 - PROPELLANT SERVICING TO FLIGHT LOAD; PERFORMED EACH FLIGHT. ALL AC MOTOR VALVES CYCLED DURING LOADING OPERATION.

(E) OPERATIONAL USE
NO ACTION FOR FIRST FAILURE, VALVE IS NORMALLY OPEN. IF ENGINE FAILURE REQUIRES CROSSFEED, USE PROPELLANT FROM OPPOSITE POD FIRST TO AVOID GAS INGESTION.