150

SHUTTLE CRITICAL ITEMS LIST - ORBITER NUMBER: 05-6J-2060-X

SUBSYSTEM NAME: EPD&C - MAIN PROPULSION (03-1)

REVISION : 1 02/07/90

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
■ LRU :	PANEL R4	V070-730278
■ SRU :	SWITCH, TOGGLE	ME452-0102-7354

■ EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
TOGGLE SWITCH (THREE POLES, THREE POSITIONS, CENTER LEVER LOCKED), LH2 RELIEF SHUTOFF VALVE CLOSE SOLENOID (LV25).

■ REFERENCE DESIGNATORS: 32V73A4S18

■ QUANTITY OF LIKE ITEMS: 1
ONE

■ FUNCTION:
PROVIDES MANUAL CONTROL OF POWER TO CLOSE SOLENOID OF LH2 RELIEF SHUT-OFF VALVE.

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EPD&C - MAIN PROP. FMEA NO 05-6J -2060 -3 REV:04/25/88

ASSEMBLY :D & C PANEL R4 CRIT. FUNC: 1R
P/N RI :ME452-0102-7354 CRIT. HDW: 2
P/N VENDOR: VEHICLE 102 103 104
QUANTITY :1 EFFECTIVITY: X X X
:ONE PHASE(S): PL X LO X OO DO LS
:

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

PREPARED BY: APPROVED BY: APPROVED BY (NASA):
DES J BROWN DES EPDC SSM
MPS SSM
REL F DEFENSOR REL EPDC REL
MPS REL
QE D MASAI QE QE

ITEM:
TOGGLE SWITCH (THREE POLES, THREE POSITIONS, CENTER LEVER LOCKED), LH2 RELIEF SHUTOFF VALVE CLOSE SOLENOID (LV25).

FUNCTION:
PROVIDES MANUAL CONTROL OF POWER TO CLOSE SOLENOID OF LH2 RELIEF SHUTOFF VALVE. 32V73A4S18.

FAILURE MODE:
FAILS CLOSED, CONTACT-TO-CONTACT SHORT, POLE-TO-POLE SHORT - "OPEN" COMMAND CONTACTS.

CAUSE(S):
PIECE PART STRUCTURAL FAILURE, CONTAMINATION, VIBRATION, MECHANICAL SHOCK, PROCESSING ANOMALY.

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

(A) INADVERTENT SWITCH OPEN COMMANDS INHIBITING CLOSE HDCs.

(B) INADVERTENT OPENING OF LH2 RELIEF SHUTOFF VALVE (PV8).

(C,D) NO EFFECT - FIRST FAILURE.

(E) 1R/2, 1 SUCCESS PATH AFTER FIRST FAILURE.
TIME FRAME - PRELAUNCH AND ASCENT.
1) SWITCH OPEN CONTACTS FAIL CLOSED CAUSING LH2 RELIEF SHUTOFF VALVE (PV8) TO OPEN. FEEDLINE RELIEF VALVE (RV6) WILL PREVENT OVERBOARD LEAKAGE OF LH2 (RELIEF VALVE CRACK PRESSURE IS ABOVE NOMINAL SYSTEM OPERATING PRESSURE).
2) RELIEF VALVE (RV6) FAILS TO REMAIN CLOSED.

LH2 WILL DUMP OVERBOARD RESULTING IN LOSS OF PROPELLANT AND POSSIBLE PREMATURE ENGINE SHUTDOWN. FIRE/EXPLOSION HAZARD EXTERIOR TO THE VEHICLE. POSSIBLE VIOLATION OF ET MINIMUM STRUCTURAL REQUIREMENTS DUE TO REDUCED ULLAGE PRESSURE. POSSIBLE LOSS OF CREW/VEHICLE.

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

(A-D) DISPOSITION AND RATIONALE:
REFER TO APPENDIX A, ITEM NO. 1 - TOGGLE SWITCH.

(B) GROUND TURNAROUND TEST
COMPLETE ELECTRICAL VERIFICATION V41ABO.080 "O" EVERY FLIGHT.

(E) OPERATIONAL USE
FLIGHT: NO CREW ACTION CAN BE TAKEN.

GROUND: OMI S1004 SEQUENCE TITLED "EMERGENCY PROCEDURE FOR MAJOR LEAK OR FIRE IN THE ORBITER AFT FUSELAGE" CONTAINS SAFING SEQUENCE OF EVENTS FOR MAJOR LEAKS IN THE HYDROGEN SYSTEMS.