

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EW&I/LAND GEAR & CNTRL FMEA NO 05-7BA-2002 -1 REV: 03/17/89

LOCATION : 67V70 LH J BOX
 P/N RI QUANTITY
 1. NB6GE14-19XXXX 1

CRIT. FUNC: 1
 CRIT. HDW: 1

VEHICLE	102	103	104	105
EFFECTIVITY	X	X	X	X

PHASE(S): PL LO OO DO X LS

REDUNDANCY SCREEN: A- N/A B- N/A C- N/A

APPROVED BY (NASA):

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ITEM:

CONNECTOR, PLUG, 19 #20 CONTACTS - LANDING GEAR DOWN CONTROL CIRCUIT.

FUNCTION:

PROVIDES MATE/DEMATE CAPABILITY FOR WIRING THAT CONTAINS COMMANDS FOR ENERGIZING THE LANDING GEAR CONTROL OR THE LANDING GEAR DUMP CONTROL VALVE SOLENOID. 67V77W61P115

FAILURE MODE:

PIN-TO-PIN SHORT (GROUND)

CAUSE(S):

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

EFFECT(S) ON:

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

(A) INADVERTENTLY PROVIDES A GROUND RETURN PATH AROUND THE LANDING GEAR DOWN RELAY CONTACTS FOR THE LANDING GEAR CONTROL OR THE LANDING GEAR DUMP CONTROL VALVE SOLENOID CIRCUITS.

(B) LANDING GEARS WILL BE DEPLOYED UPON ACTIVATION OF ARM SWITCH.

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(C,D) LANDING GEARS WILL BE EXTENDED AS SOON AS ARM SWITCH IS ACTIVATED BECAUSE LANDING GEAR DOWN RELAY CONTACTS HAS BEEN BYPASSED WITH A SHORT TO GROUND PATH WITH CONTACTS P-N, J-H, OR J-T SHORTING. THIS MAY OCCUR AT A TIME WHEN THERE IS A LIGHT WEIGHT VEHICLE, STRONG HEAD WINDS AND LOW VEHICLE ENERGY WHICH COULD LAND VEHICLE SHORT OF RUNWAY AND MAY CAUSE VEHICLE DAMAGE RESULTING IN POSSIBLE LOSS OF CREW/VEHICLE.

REFERENCE CIL 05-6BA-2115-3

DISPOSITION & RATIONALE:

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

(A,B,C,D) DISPOSITION AND RATIONALE

REFER TO APPENDIX K, ITEM NO. 1 - TYPE NB CONNECTOR, CIRCULAR, MINIATURE

(B) GROUND TURNAROUND TEST

VERIFY LANDING GEAR CIRCUITRY OPERATION BY TESTING: ARM AND DOWN PUSHBUTTON SWITCHES, ARM/DOWN RESET SWITCH, CORRESPONDING LIGHT INDICATORS, AND HYDRAULIC VALVE OPERATIONS. TESTS ARE PERFORMED FOR EVERY FLIGHT AND LRU REPLACEMENT.

(E) OPERATIONAL USE

GEAR IS NORMALLY ARMED AT TWO THOUSAND FOOT ALTITUDE WHICH ASSURES MAKING THE RUNWAY THRESHOLD EXCEPT FOR THE WORSE CASE COMBINATION OF LIGHT WEIGHT VEHICLE, STRONG HEAD WINDS AND LOW VEHICLE ENERGY. CREW TRAINS IN SHUTTLE TRAINING AIRCRAFT AT TWO THOUSAND FOOT ALTITUDE TO MAKE FLIGHT ADJUSTMENTS TO COMPENSATE FOR INADVERTENT GEAR EXTENSION. IF DOWN RELAY FAILS CLOSED PRIOR TO ARM SWITCH ACTIVATION, CREW WILL DELAY "ARM" UNTIL IT IS SAFE TO DEPLOY LANDING GEAR. CREW WILL SEE "DOWN" PBI LIGHT ON AND THE GROUND WILL SEE THE ASSOCIATED TELEMETRY MEASUREMENT ON WHEN DOWN SWITCH FAILS.