

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- NON-CIL HARDWARE
NUMBER:05-6PP-3005SW -X

SUBSYSTEM NAME: GPS THREE STRING

REVISION: 0 04/09/97

PART DATA

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	:PANEL 07	VO70-730390
SRU	:SWITCH, TOGGLE	ME452-0102-7601

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
SWITCH, TOGGLE, 1-POLE, 2-POSITION

REFERENCE DESIGNATORS: 33V73A7S37
33V73A7S39
33V73A7S41
33V73A7S43
33V73A7S45
33V73A7S47

QUANTITY OF LIKE ITEMS: 6
SIX

FUNCTION:
SWITCHES POWER TO THE UPPER OR LOWER GPS PREAMPLIFIER.

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NUMBER: 05-6PP-3005SW-01

REVISION#: A 10/14/99

SUBSYSTEM NAME: GPS THREE STRING

LRU: PANEL O7

ITEM NAME: SWITCH, TOGGLE

CRITICALITY OF THIS
FAILURE MODE: 1R3

FAILURE MODE:
FAILS OPEN, SHORT-TO-CASE

MISSION PHASE: DO DE-ORBIT

VEHICLE/PAYLOAD/KIT EFFECTIVITY:	102	COLUMBIA
	103	DISCOVERY
	104	ATLANTIS
	105	ENDEAVOUR

CAUSE:
PIECE PART STRUCTURAL FAILURE, CONTAMINATION, VIBRATION, MECHANICAL SHOCK,
PROCESSING ANOMALY

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN

- A) PASS
- B) PASS
- C) PASS

PASS/FAIL RATIONALE:
A)

B)

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:
LOSS OF POWER TO ONE PREAMPLIFIER.

(B) INTERFACING SUBSYSTEM(S):
LOSS OF PREAMPLIFIER RESULTS IN LOSS OF GPS SIGNALS FROM ONE OF TWO
ANTENNAS FOR ONE OF THREE GPS RECEIVER STRINGS. CAUSES PARTIAL LOSS OF

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SATELLITE RECEPTION COVERAGE FOR ONE GPS RECEIVER BUT ALLOWS THAT GPS RECEIVER TO CONTINUE FUNCTIONING.

(C) MISSION:
NO EFFECT

(D) CREW, VEHICLE, AND ELEMENT(S):
NO EFFECT - FIRST FAILURE. OPERATIONS CONTINUE WITH PARTIAL RECEPTION LOSS OF ONE GPS RECEIVER STRING. NO EFFECT - SECOND FAILURE ON THE SAME STRING. LOSS OF ONE GPS RECEIVER STRING. OPERATIONS CONTINUE WITH TWO REMAINING STRINGS. POSSIBLE LOSS OF CREW/VEHICLE AFTER THIRD AND FOURTH FAILURE WHERE THE TWO REMAINING GPS RECEIVERS FAIL (LOSS OF OUTPUT, ERRONEOUS OUTPUT) DUE TO INABILITY TO MAKE LANDING SITE.

(E) FUNCTIONAL CRITICALITY EFFECTS:
NO EFFECT

- TIME FRAME -

TIME FROM FAILURE TO CRITICAL EFFECT: N/A

TIME FROM FAILURE OCCURRENCE TO DETECTION: SECONDS

TIME FROM DETECTION TO COMPLETED CORRECTING ACTION: N/A

IS TIME REQUIRED TO IMPLEMENT CORRECTING ACTION LESS THAN TIME TO EFFECT?
N/A

RATIONALE FOR TIME TO CORRECTING ACTION VS TIME TO EFFECT:
N/A

- APPROVALS -

PRODUCT ASSURANCE ENGR : M. HOLTHAUS
DESIGN ENGR : G.J. SCHWARTZ

Mark Holthaus 10/19/99
G.J. Schwartz 10-19-99