PRINT DATE: 09/14/00

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- NON-CIL HARDWARE
NUMBER:05-2P-300ULP -X

SUBSYSTEM NAME: GPS THREE STRINGS

REVISION: 0 04/09/97

PART DATA

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	:PRE-AMPLIFIER SHASON MICROWAVE CORPORATION	ME473-0119-0001 LA10230-10F

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
UPPER AND LOWER PRE-AMPLIFIERS / FILTERS. TWO STAGE 20 DB HYBRID AMPLIFIERS. FREQUENCY RANGE BETWEEN 1.2 TO 1.6 GHZ. GAIN IS 10 DB MINIMUM, NOISE FIGURE OF 3.25 DB. UTILIZE 28 VDC AT 150 MA. ATTENUATION AT <1150 MHZ AND AT >1700 MHZ.

REFERENCE DESIGNATORS:
40V74A154
40V74A155
22V74A171
22V74A172
22V74A174
22V74A175

QUANTITY OF LIKE ITEMS: SIX
THREE UPPER AND THREE LOWER

FUNCTION:
THE PREAMPLIFIER AMPLIFIES AND BAND PASS FILTERS RECEIVED SIGNALS FROM THE ANTENNA BEFORE PASSING THROUGH THE COMBINER FOR INPUT TO THE GPS RECEIVER.

PRINT DATE: 10/19/99

FAILURE MODES EFFECTS ANALYSIS FMEA -- NON-CIL FAILURE MODE
NUMBER: 05-2P-300ULP-02

REVISION#: A 10/14/99

SUBSYSTEM NAME: GPS SINGLE STRING
LRU: PRE-AMPLIFIERS/FILTERS, UPPER & LOWER
ITEM NAME: PRE-AMPLIFIERS/FILTERS, UPPER & LOWER

CRITICALITY OF THIS FAILURE MODE: 1R3

FAILURE MODE:
NOISEY OUTPUT, EXCESSIVE OUT OF BAND RF

MISSION PHASE: DO DE-ORBIT

VEHICLE/PAYLOAD/KIT EFFECTIVITY:

102	COLUMBIA
103	DISCOVERY
104	ATLANTIS
105	ENDEAVOUR

CAUSE:
PIECE PART FAILURE (MECHANICAL STRESS, VIBRATION), CONTAMINATION, ELECTRICAL STRESS, THERMAL STRESS, PROCESSING ANOMALY

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN

A) PASS
B) N/A
C) PASS

PASS/FAIL RATIONALE:
A)

B)

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:
EXCESSIVE NOISE OR RF SIGNALS OUTSIDE THE OPERATING BAND CAN OVERLOAD THE INPUT TO THE GPS RECEIVER. THIS CAUSES LOSS OF ONE OF THREE GPS STRINGS.

(B) INTERFACING SUBSYSTEM(S):

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- NON-CIL FAILURE MODE
NUMBER: 05-2P-300ULP-02

FAILED GPS OUTPUTS ARE IGNORED AND THE OUTPUTS OF THE REMAINING GPS' ARE USED.

(C) MISSION:
NO EFFECT

(D) CREW, VEHICLE, AND ELEMENT(S):
NO EFFECT - FIRST FAILURE. OPERATIONS CONTINUE WITH TWO REMAINING GPS RECEIVERS. NO EFFECT - SECOND FAILURE ON ANOTHER STRING. OPERATIONS CONTINUE WITH ONE REMAINING GPS RECEIVER. POSSIBLE LOSS OF CREW/VEHICLE AFTER THIRD FAILURE OF REMAINING STRING (NOISEY OUTPUT, EXCESSIVE RF, OR LOSS OF GPS OUTPUT).

(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 : J. R. SWANSON