

## FAILURE MODES EFFECTS ANALYSIS (FMEA) - CIL HARDWARE

NUMBER:05-60-200716 -X

SUBSYSTEM NAME: EPD&amp;C-GUIDANCE, NAVIGATION, &amp; CONTROL (05-1)

REVISION: 0 07/12/88

## PART DATA

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	:AFT MCA-1	V070-765410
LRU	:AFT MCA-2	V070-765420
LRU	:AFT MCA-2	V070-765620
LRU	:AFT MCA-1	V070-765630
SRU	:RELAY MODULE	ME455-0131-0002
SRU	:RELAY MODULE	ME455-0131-0003
SRU	:RELAY MODULE	ME455-0131-1002
SRU	:RELAY MODULE	ME455-0131-1003

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:  
RELAY MODULE, ATVC DEADFACE

REFERENCE DESIGNATORS: 55V76A115K97  
55V76A115K98  
54V76A114K97  
54V76A114K98

QUANTITY OF LIKE ITEMS: 4  
FOUR - ONE PER ATVC

FUNCTION:  
CONTROLS THE LATCHING RELAY WHICH PROVIDES A DEADFACING FUNCTION TO THE 26 VOLTS AC EXCITATION POWER FROM THE ATVC'S TO THE SRB DIFFERENTIAL PRESSURE TRANSDUCERS FOLLOWING SRB SEPARATION.

## FAILURE MODES EFFECTS ANALYSIS FMEA - NON-CIL FAILURE MODE

NUMBER: 06-60-200716-01

REVISION#: 1 01/22/96

SUBSYSTEM NAME: EPD&amp;C-GUIDANCE, NAVIGATION, &amp; CONTROL (05-1)

LRU: AFT MCA-1, 2

ITEM NAME: RELAY MODULE

CRITICALITY OF THIS

FAILURE MODE: 1R3

FAILURE MODE:  
PREMATURE CLOSURE.

MISSION PHASE: LO LIFT-OFF

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

## CAUSE:

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

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN	A) PASS
	B) N/A
	C) PASS

## PASS/FAIL RATIONALE:

A)

B)

B SCREEN NOT APPLICABLE DUE TO ATVC FUNCTIONAL REDUNDANCY. LOSS OF ANY OF THE FOUR ATVC'S IS READILY APPARENT DURING FLIGHT USE.

C)

CORRECTING ACTION: NONE

CORRECTING ACTION DESCRIPTION:

- FAILURE EFFECTS -

(A) SUBSYSTEM:

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - NON-CIL FAILURE MODE  
NUMBER: 05-60-200716-01**

LOSS OF 26 VOLT AC EXCITATION TO ONE OF FOUR SRB DIFFERENTIAL PRESSURE TRANSDUCERS.

**(B) INTERFACING SUBSYSTEM(S):**

LOSS OF CAPABILITY TO BYPASS ONE OF FOUR SRB THRUST VECTOR CONTROL CHANNELS.

**(C) MISSION:**

NO EFFECT.

**(D) CREW, VEHICLE, AND ELEMENT(S):**

NO EFFECT FOR FIRST FAILURE. SECOND FAILURE (LOSS OF ANOTHER ATVC AND ITS ASSOCIATED ISOLATION VALVE DRIVER, DUE TO AN ATVC POWER SWITCH FAILURE WHERE ALL THREE CONTACTS ARE SHORTED TO GROUND) RESULTS IN A THREE AGAINST ONE FORCE FIGHT. FLIGHT CONTROL SYSTEM CAN TOLERATE THIS CONDITION. THIRD FAILURE (ADDITIONAL FAILURE IN ANOTHER THRUST VECTOR CONTROL CHANNEL) RESULTS IN A TWO AGAINST TWO FORCE FIGHT WHICH COULD RESULT IN A LOSS OF VEHICLE.

**(E) FUNCTIONAL CRITICALITY EFFECTS:**

CRITICALITY 1R BECAUSE LOSS OF SRB AND MPS THRUST VECTOR CONTROL MAY CAUSE LOSS OF CREW/VEHICLE.

---

**- APPROVALS -**

---

EDITORIALLY APPROVED  
EDITORIALLY APPROVED  
TECHNICAL APPROVAL

: RI  
: JSC  
: APPROVAL FORM

: Jim De 1/21/96  
: Tom Leary 2-12-96  
: 95-CIL-004-RI