FAILURE MODES EFFECTS ANALYSIS (FMEA) – CIL HARDWARE
NUMBER:04-2-RV02 -X

SUBSYSTEM NAME: AUXILIARY POWER UNIT (APU)
REVISION: 1 09/17/98

PART DATA

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
LRU	:RELIEF VALVE WRIGHT COMPONENTS	ME284-0544 0002/0003 11292-1/-2

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
RELIEF VALVE IS IN THE APU FUEL PUMP SEAL CAVITY DRAIN SYSTEM BETWEEN THE BURST DISK AND OVERBOARD VENT AND RELIEVES AT 28 TO 42 PSIA.

QUANTITY OF LIKE ITEMS: 3
ONE PER APU

FUNCTION:
CONTAINS AND RELIEVES THE PRESSURE AT 28 TO 42 PSIA IN THE APU FUEL PUMP SEAL CAVITY DRAIN SYSTEM IF SUFFICIENT FUEL HAS LEAKED THROUGH THE PUMP SEAL TO CRACK THE OVERBOARD RELIEF VALVE.

FAILURE MODES EFFECTS ANALYSIS FMEA -- NON-CIL FAILURE MODE
NUMBER: 04-2-RV02-01

REVISION#: 1 09/02/98

SUBSYSTEM NAME: AUXILIARY POWER UNIT (APU)
LRU: RELIEF VALVE **CRITICALITY OF THIS**
ITEM NAME: RELIEF VALVE **FAILURE MODE:** 1R3

FAILURE MODE:
FAILS TO RELIEVE

MISSION PHASE:

PL	PRE-LAUNCH
LO	LIFT-OFF
OO	ON-ORBIT
DO	DE-ORBIT
LS	LANDING/SAFING

VEHICLE/PAYLOAD/KIT EFFECTIVITY:

102	COLUMBIA
103	DISCOVERY
104	ATLANTIS
105	ENDEAVOUR

CAUSE:
CONTAMINATION

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN

A) PASS
B) N/A
C) PASS

PASS/FAIL RATIONALE:
A)
RELIEF VALVE CAN BE FUNCTIONALLY TESTED THROUGH THE TEST PORT ON THE BURST DISK AT VEHICLE TURN AROUND.

B)
N/A - STANDBY REDUNDANT ITEM

C)
A SINGLE CREDIBLE FAILURE EVENT CANNOT CAUSE LOSS OF ALL RELIEF VALVE REDUNDANCY

- FAILURE EFFECTS -

(A) SUBSYSTEM:
NONE FOR THE FIRST FAILURE

(B) INTERFACING SUBSYSTEM(S):

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- NON CIL FAILURE MODE NUMBER: 04-2-RV02-01

NONE FOR THE FIRST FAILURE.

(C) MISSION:
NONE WITHOUT ADDITIONAL FAILURES

(D) CREW, VEHICLE, AND ELEMENT(S):
NONE WITHOUT ADDITIONAL FAILURES.

(E) FUNCTIONAL CRITICALITY EFFECTS:
POSSIBLE LOSS OF CREW/VEHICLE AFTER THREE FAILURES:
(1) A GROSS LEAK AT AN APU FUEL PUMP SHAFT SEAL.
(2) FAILED CLOSED RELIEF VALVE MAY RESULT IN SUFFICIENT INCREASE OF THE CATCH BOTTLE PRESSURE TO CAUSE THE INTRUSION OF HYDRAZINE INTO THE GEARBOX RESULTING IN WAX FORMATION (POSSIBLE APU LOSS).
(3) LOSS OF ONE OF THE TWO REMAINING APU'S COULD POSSIBLY CAUSE LOSS OF CREW/VEHICLE.

- APPROVALS -

SS & PAE MANAGER	: D. F. MIKULA	:
SS & PAE ENGINEER	: K. E. RYAN	:
VEHICLE & SYSTEMS DESIGN	: M. A. WEISER	:
BNA SSM	: T. FARKAS, JR.	:
JSC MOD	: M. FRIANT	:
JSC NASA SR&A	: D. BEAUGH	: 11/4/98
USA/SAM	: M. BURKHART	: 11/6/98

11/6/98