

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CRITICAL HARDWARE

NUMBER: G6-1B-0300-X

SUBSYSTEM
ATTACHMENT -
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SUBSYSTEM NAME: RCRS FILTER/ADAPTER SET

REVISION : 1 09/03/91

	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
■ SRU :	FLEX HOSE TITEFEX	240606G4-020CH

PART DATA

- EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
FLEX HOSES, ASSORTED LENGTHS AS NEEDED
- QUANTITY OF LIKE ITEMS: 3
THREE, ONE PER ASSEMBLY
- FUNCTION:
PROVIDE INTERNAL GAS CONNECTIONS IN THE ASSEMBLY.

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SUBSYSTEM: RCRS FILTER/ADAPTER SET

ITEM NAME: FLEX HOSE

CRITICALITY OF THIS
FAILURE MODE: 2-

FAILURE MODE:
RUPTURE/LEAKAGE

MISSION PHASE:
GT GROUND TURNAROUND

VEHICLE/PAYLOAD/KIT EFFECTIVITY: EDO MISSION ONLY
: 102 COLUMBIA
: 105 ENDEAVOUR

CAUSE:
STRUCTURAL FAILURE, MECHANICAL STRESS (VIBRATION, MECHANICAL SHOCK),
THERMAL STRESS

CRITICALITY 1/1 DURING INTACT ABORT ONLY? N/A

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

PASS/FAIL RATIONALE:

- A)
- B)
- C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:
LOSS OF PROPER FLOW THROUGH THE AFFECTED HOSE...

(B) INTERFACING SUBSYSTEM(S):
LOSS OF PROPER TRANSFER OF GASES BETWEEN PNEUMATIC PANEL AND THE ORBITER
OR CO2 ANALYZER. LOSS OF CO2 OR DILUTION OF GASES SAMPLED FROM THE
RCRS BED OUTLET AIRSTREAM MAY CAUSE ERRONEOUS CO2 MEASUREMENT AND MASK
THE FAILURE OF THE RCRS BED(S) TO REMOVE CO2 FROM THE RCRS INLET

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AIRSTREAM. POSSIBLE DELAY IN CHECKOUT OF THE RCRS.

■ (C) MISSION:

~~NO EFFECT~~ FIRST FAILURE ERRONEOUS CO2 MEASUREMENT MASKS RCRS FAILURE
 CAUSING LOSS OF MISSION WHEN FAILURE IS DISCOVERED AT CHECKOUT WITH CONCENTRATION
 OF CO2 IN THE CABIN AT A LEVEL THAT IS UNACCEPTABLE FOR CREW SURVIVAL.

■ (D) CREW, VEHICLE, AND ELEMENT(S):

POSSIBLE LOSS OF GROUND PERSONNEL DUE TO HIGH CONCENTRATION OF CO2 OR
 GN2 IN THE CREW COMPARTMENT.

■ (E) FUNCTIONAL CRITICALITY EFFECTS:

POSSIBLE LOSS OF CREW/VEHICLE DURING AN 600ITER LEO MISSION DUE TO THE
 FOLLOWING SCENARIO: 1) FLEX HOSE TRANSPORTING SAMPLE GASES FROM THE
 RCRS BED OUTLET AIRSTREAM FAILS - SAMPLE GASES CORRUPTED - ERRONEOUS
 CO2 MEASUREMENT BY THE CO2 ANALYZER, MASKING THE FAILURE OF THE RCRS
 BED(S) TO REMOVE CO2 FROM THE RCRS INLET AIRSTREAM, 2) DURING A
 MISSION, EXCESS CO2 ALARMS AND/OR THE LITHIUM HYDROXIDE CARTRIDGES
 FAIL, RESULTING IN THE BUILDUP OF DISABLING LEVELS OF CO2 IN THE CABIN
 ATMOSPHERE - LOSS OF CREW/VEHICLE.

- DISPOSITION RATIONALE -

■ (A) DESIGN:

THE FLEX HOSES ARE DESIGNED TO WITHSTAND PRESSURES OF AT LEAST THIRTY
 TIMES THE SPECIFIED WORKING PRESSURE. THE HOSES ARE RUBBER JACKETED
 WITH A TEFLON LINER. ALL HOSES ARE CLEANED PER MA0110-301, LEVEL 200,
 PRIOR TO ASSEMBLY. ALL FLEX HOSE FITTINGS ARE ASSEMBLED PER MA0102-306,
 AND ARE TORQUED TO CLASS 1. CLEANLINESS IS MAINTAINED TO MA0110-311.

■ (B) TEST:

THE FLEX HOSES ARE TESTED AT THE ASSEMBLY LEVEL; THE PROOF TEST USING
 GN2 AT 150 PSIG FOR 3 MINUTES, AND THE LEAKAGE TEST USING GN2 AT 100
 PSIG FOR ONE MINUTE, WITH LEAKAGE NOT TO EXCEED 10 TO THE MINUS 4 SCCS
 (MSFC SPEC 384A)

■ (C) INSPECTION:

ALL PARTS ARE INSPECTED FOR WEIGHT, WORKMANSHIP, FINISH, DIMENSIONS,
 CLEANLINESS, MATERIALS AND PROCESSES. MATERIAL AND PROCESS CERTIFICA-
 TIONS ARE VERIFIED BY INSPECTION. ACCEPTANCE TEST PROCEDURES ARE
 APPROVED BY QUALITY ASSURANCE AND VERIFIED BY INSPECTION.

■ (D) FAILURE HISTORY:

THERE IS NO REPORTED FAILURE HISTORY OF THIS ASSEMBLY IN THE PRACA
 SYSTEM.

■ (E) OPERATIONAL USE:

N/A

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- APPROVALS -

RELIABILITY MANAGER	:	M P. RAGUSA	:	<u>M.P. Ragusa</u>
DESIGN MANAGER	:	D. R. CABLE	:	<u>D.R. Cable</u>
QUALITY MANAGER	:	O. J. BUTTNER	:	<u>O.J. Buttner 9/3/91</u>
NASA RELIABILITY	:		:	<u>J.P. Staudinger 1/2/92</u>
NASA SUBSYSTEM MANAGER	:		:	<u>A. Vulliamy 2/10/92</u>
NASA QUALITY ASSURANCE	:		:	<u>J.M.</u>