

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - GIL HARDWARE
NUMBER: 02-2A-021105 -X**

SUBSYSTEM NAME: FLIGHT CONTROL MECH - RUDDER SPEED BRAKE & BF
REVISION: 0 1/07/88

PART DATA

	PART NAME	PART NUMBER
	VENDOR NAME	VENDOR NUMBER
ASSY	BODY FLAP ACTUATION	MC621-0056-0083
SRU	ORIFICE (#1) SUPPLY LINE	

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
ORIFICE (#1), SUPPLY LINE

REFERENCE DESIGNATORS:

QUANTITY OF LIKE ITEMS: 3
THREE

FUNCTION:
DOWNSTREAM OF THE CONTROL VALVE HYDRAULIC BRAKE INLET CIRCUIT, THE ORIFICE RESTRICTS THE SUPPLY OF HYDRAULIC FLUID TO THE MOTOR TO THE SYSTEM DESIGN FLOWRATE.

FAILURE MODES EFFECTS ANALYSIS FMEA -- CIL FAILURE MODE

NUMBER: 02-2A-021105- 02

REVISION#: 1 08/07/98

SUBSYSTEM NAME: FLIGHT CONTROL MECH - RUDDER SPEED BRAKE & BF

LRU:

**CRITICALITY OF THIS
FAILURE MODE: 1R3**

ITEM NAME: ORIFICE (#1), SUPPLY LINE

FAILURE MODE:

RESTRICTED OR NO FLOW

MISSION PHASE: DO DE-ORBIT

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) FAIL
- C) PASS

PASS/FAIL RATIONALE:

A)

B)

FAILS REDUNDANCY SCREEN "B" SINCE THE 100% RATE IS OPERATIONALLY ACCEPTABLE AND IS UNDETECTABLE.

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:

LOSS OF HYDRAULIC FLUID TO ONE HYDRAULIC MOTOR. COUPLED HYDRAULIC BRAKE IS RELEASED WITH HYDRAULIC FLUID PRESSURE WHEN BODY FLAP IS COMMANDED. HOWEVER, ORIFICE RESTRICTION ALSO PREVENTS REMAINING TWO MOTOR RPM/TORQUE OUTPUTS FROM BACKDRIVING INOPERATIVE MOTOR; BODY FLAP TORQUE

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OUTPUTS FROM BACKDRIVING INOPERATIVE MOTOR; BODY FLAP OPERATES AT 100% RATE.

(B) INTERFACING SUBSYSTEM(S):
NONE.

(C) MISSION:
LOSS OF MISSION, CREW/VEHICLE AFTER THREE FAILURES - THIS FAILURE AND LOSS OF REMAINING TWO HYDRAULIC MOTOR RPM/TORQUE INPUTS INTO SUMMER DIFFERENTIALS.

(D) CREW, VEHICLE, AND ELEMENT(S):
SAME AS (C)

-DISPOSITION RATIONALE-

(A) DESIGN:
ORIFICE PROTECTED BY 100 MICRON FILTER IN BODY FLAP CONTROL MODULE. 5 MICRON ABSOLUTE FILTER IN HYDRAULIC POWER SYSTEM SUPPLY LINE UPSTREAM OF ORIFICE.

(B) TEST:
QUALIFICATION TESTS: PERFORMANCE, OPERATING LIFE AND IMPULSE CYCLING
ACCEPTANCE TESTS: OPERATING HINGE MOMENT AND SURFACE RATE, FUNCTIONAL
GROUND TURNAROUND TEST
ANY TURNAROUND CHECKOUT TESTING IS ACCOMPLISHED IN ACCORDANCE WITH OMRSD.

(C) INSPECTION:
RECEIVING INSPECTION
MATERIAL AND PROCESSES CERTIFICATIONS ARE VERIFIED.

CONTAMINATION CONTROL
CONTAMINATION CONTROL PLAN AND PRACTICES ARE VERIFIED. CLEANLINESS TO LEVEL 190 VERIFIED BY INSPECTION.

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ASSEMBLY/INSTALLATION
COMPONENTS ARE VAPOR DEGREASED WHEN FABRICATION IS COMPLETED.

CRITICAL PROCESSES
MACHINING DIMENSIONS AND CORROSION CONTROL PROVISIONS ARE VERIFIED BY INSPECTION.

TESTING
CERTIFICATION OF ACCEPTANCE TESTS VERIFIED BY INSPECTION.

HANDLING/PACKAGING
HANDLING AND PACKAGING REQUIREMENTS ARE VERIFIED.

(D) FAILURE HISTORY:
CURRENT DATA ON TEST FAILURES, FLIGHT FAILURES, UNEXPLAINED ANOMALIES, AND OTHER FAILURES EXPERIENCED DURING GROUND PROCESSING ACTIVITY CAN BE FOUND IN THE PRACA DATA BASE.

(E) OPERATIONAL USE:
NONE.

- APPROVALS -

EDITORIALLY APPROVED : BNA : J. Kamusa 8-18-98
TECHNICAL APPROVAL : VIA APPROVAL FORM : 95-CIL-009_02-2A