PRINT DATE: 08/18/98

FAILURE MODES EFFECTS ANALYSIS (FMEA) – CIL HARDWARE
NUMBER: 02-2A-021116 -X

SUBSYSTEM NAME: FLIGHT CONTROL MECH - RUDDER SPEED BRAKE & BF
REVISION: 0 02/02/88

PART DATA

	PART NAME / **VENDOR NAME**	**PART NUMBER** / **VENDOR NUMBER**
ASSY	BODY FLAP ACTUATION	MC521-0056-0083
SRU	SUMMING LINKS, PDU	

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
SUMMING LINKS POWER DRIVE UNIT (PDU)

REFERENCE DESIGNATORS:

QUANTITY OF LIKE ITEMS: 2
ONE ASSEMBLY

FUNCTION:
TWO SUMMING LINKS MECHANICALLY GANG THREE CONTROL VALVE SPOOLS TO SIMULTANEOUSLY PORT HYDRAULIC FLUID TO THREE HYDRAULIC MOTOR/BRAKE ASSEMBLIES WITH ANY ONE OF THREE CHANNEL UP OR DOWN COMMANDS.

PRINT DATE 08/16/98

FAILURE MODES EFFECTS ANALYSIS FMEA -- CIL FAILURE MODE

NUMBER: 02-2A-021116- 01

REVISION#: 1 08/07/98

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

LRU:

ITEM NAME: SUMMING LINKS, PDU

CRITICALITY OF THIS FAILURE MODE: 1/1

FAILURE MODE:
SUMMING LINKS JAMMED

MISSION PHASE: DO DE-ORBIT

VEHICLE/PAYLOAD/KIT EFFECTIVITY:

102	COLUMBIA
103	DISCOVERY
104	ATLANTIS
105	ENDEAVOUR

CAUSE:
CONTAMINATION, SEIZED BEARING/PIVOT

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN

A) N/A
B) N/A
C) N/A

PASS/FAIL RATIONALE:
A)

B)

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:
LOSS OF CONTROL OF HYDRAULIC POWER TO THREE HYDRAULIC MOTORS. RESULTING IN LOSS OF BODY FLAP FUNCTION.

FAILURE MODES EFFECTS ANALYSIS (FMEA) – CIL FAILURE MODE
NUMBER: 02-2A-021116-01

(B) INTERFACING SUBSYSTEM(S):
NONE

(C) MISSION:
LOSS OF MISSION. CREW/VEHICLE.

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

-DISPOSITION RATIONALE-

(A) DESIGN:
LINKAGE ENCLOSED FOR CONTAMINATION PROTECTION. 500# MINIMUM UNJAMMING FORCE AVAILABLE FROM EACH POWER VALVE TO SHEAR CONTAMINANTS. BEARING DESIGNED FOR B-10 LIFE OR 1000 HOURS MINIMUM.

(B) TEST:
QUALIFICATION TESTS: HUMIDITY, SALT FOG, SAND AND DUST, VIBRATION (20- 2000 HZ), SHOCK, PERFORMANCE, OPERATING LIFE (400 MISSION DUTY CYCLES) AND 100,000 PRESSURE IMPULSE CYCLES.

ACCEPTANCE TESTS: OPERATING HINGE MOMENT AND SURFACE RATE, FAILURE MODE TEST, AND FUNCTIONAL TEST

GROUND TURNAROUND TEST
ANY TURNAROUND CHECKOUT TESTING IS ACCOMPLISHED IN ACCORDANCE WITH OMRSD

(C) INSPECTION:
RECEIVING INSPECTION
MATERIAL AND PROCESSES CERTIFICATION VERIFIED.

CONTAMINATION CONTROL
CONTAMINATION CONTROL PROCESS PROCEDURES VERIFIED. ASSEMBLY VERIFIED TO BE FREE OF PARTICULATES.

ASSEMBLY/INSTALLATION
ASSEMBLY OPERATIONS VERIFIED BY SHOP TRAVELER MANDATORY INSPECTION POINTS (MIPS). BEARING LUBRICATION IS VERIFIED BY INSPECTION.

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CRITICAL PROCESSES
HEAT TREATMENT PER SPECIFICATION REQUIREMENTS IS VERIFIED BY INSPECTION

NONDESTRUCTIVE EVALUATION
MAGNETIC PARTICLE INSPECTION IS VERIFIED BY INSPECTION.

TESTING
CERTIFICATIONS OF ACCEPTANCE TESTS VERIFIED.

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	: SNA	: J. Kamura 8-18-98
TECHNICAL APPROVAL	: VIA APPROVAL FORM	: 95-CIL-009_02-2A