

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CIL HARDWARE

NUMBER: 02-2A-021113 -X

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

REVISION: 0 02/07/88

PART DATA

	PART NAME	PART NUMBER
	VENDOR NAME	VENDOR NUMBER
ASSY	: BODY FLAP ACTUATION	MC621-0056-0083
SRU	: POSITION TRANSDUCER	

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
POSITION TRANSDUCER

REFERENCE DESIGNATORS:

QUANTITY OF LIKE ITEMS: 1
ONE ASSEMBLY REQUIRED

FUNCTION:

ONE ASSEMBLY OF FOUR TRANSDUCERS TRANSMIT ELECTRICAL SIGNALS TO AVIONICS RELATIVE TO POWER DRIVE UNIT (PDU) OUTPUT REVOLUTIONS PROPORTIONAL TO SURFACE POSITION.

FAILURE MODES EFFECTS ANALYSIS FMEA - CIL FAILURE MODE

NUMBER: 02-2A-021113-02

REVISION#: 1 08/07/98

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

LRU:

CRITICALITY OF THIS

ITEM NAME: POSITION TRANSDUCER

FAILURE MODE: 1/1

FAILURE MODE:

LOSS OF MECHANICAL INPUT/ELECTRICAL OUTPUT, ALL FOUR BODY FLAP
TRANSDUCERS

MISSION PHASE: DO DE-ORBIT

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

CAUSE:

TRANSDUCER DRIVE TRAIN FAILURE

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 BODY FLAP SURFACE POSITION FEEDBACK, RESULTING IN LOSS OF BODY FLAP
FUNCTION.

**FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CIL FAILURE MODE
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(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:
BRUSHLESS-QUADRUPLE RVDT WITH NO ELECTRICAL CONNECTIONS TO ROTOR. THERE ARE FOUR ISOLATED STATOR WINDINGS. SPLINES HEAT TREATED PER CP09-9310 CHDF01. TRANSDUCER DRIVE TRAIN IS OVERSIZED FOR IMPOSED LOAD.

(B) TEST:
QUALIFICATION TESTS: LIFE CYCLE TEST, VIBRATION TEST AT POWER DRIVE UNIT (PDU) ASSEMBLY (20 TO 2,000 HZ RANDOM), AND THERMAL CYCLE TEST (-40 DEG F +275 DEG F).

ACCEPTANCE TESTS: INCLUDES INPUT POWER CHARACTERISTICS, OUTPUT PHASING, OUTPUT SIGNAL CHARACTERISTICS, SCALING, ACCURACY, TRACKING, NULL VOLTAGE, AND PHASE SHIFT.

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

(C) INSPECTION:
RECEIVING INSPECTION
COMPONENT MATERIAL AND HEAT TREAT CERTIFICATIONS ARE REQUIRED. SPECIAL MATERIAL REQUIREMENTS ARE IDENTIFIED IN CERTIFICATIONS.

ASSEMBLY/INSTALLATION
POSITION TRANSDUCER ASSEMBLY INSTALLATION/TORQUES ARE VERIFIED BY INSPECTION.

**FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CIL FAILURE MODE
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CRITICAL PROCESSES
HEAT TREATING IS VERIFIED BY INSPECTION

TESTING
ATP IS VERIFIED BY INSPECTION. PERFORMANCE LEVELS DURING POSITION
TRANSDUCER ATP AND DURING PDU' ATP VERIFIED BY INSPECTION.

(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
TECHNICAL APPROVAL : VIA APPROVAL FORM

J. Komura 8-18-98
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