

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CIL HARDWARE

NUMBER: 02-2C-C01-CV-C -X

SUBSYSTEM NAME: FLIGHT CONTROL MECH

REVISION: 0

12/04/87

PART DATA

	PART NAME	PART NUMBER
	VENDOR NAME	VENDOR NUMBER
LRU	:ELEVON ACTUATOR	MC621-0014
	MOOG	
SRU	:CHECK VALVE	

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:

CHECK VALVE

QUANTITY OF LIKE ITEMS: 4

ONE PER ACTUATOR

FUNCTION:

PREVENTS ELEVON SURFACE MOVEMENT DURING ACTUATOR HYDRAULIC SELECTION.

FAILURE MODES EFFECTS ANALYSIS FMEA -- CIL FAILURE MODE

NUMBER: 02-2C-C01-CV-C-08

REVISION#: 1 08/20/98

SUBSYSTEM NAME: FLIGHT CONTROL - ELEVON ACTUATOR

LRU: ELEVON ACTUATOR

ITEM NAME: CHECK VALVE

CRITICALITY OF THIS

FAILURE MODE: 1/1

FAILURE MODE:

FAILS CLOSED

MISSION PHASE:

LO LIFT-OFF

DO DE-ORBIT

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

CAUSE:

CONTAMINATION, JAMMED

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 ONE ACTUATOR FUNCTION.

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(B) INTERFACING SUBSYSTEM(S):

LOSS OF CONTROL FOR ONE ELEVON SURFACE.

(C) MISSION:

POSSIBLE LOSS OF MISSION, CREW/VEHICLE. LOSS OF FUNCTION CAN RESULT IN LOSS OF VEHICLE CONTROL.

(D) CREW, VEHICLE, AND ELEMENT(S):

SAME AS (C)

-DISPOSITION RATIONALE-

(A) DESIGN:

COMPONENT IS PROTECTED BY SYSTEM FILTRATION OF 5 MICRON FILTER AND CLEARANCES WITHIN THE CHECK VALVE ARE IN EXCESS OF 100 MICRONS. INTERNAL PARTS OF THE CHECK VALVE ARE IDENTICAL IN MATERIALS, FORM, FIT AND FUNCTION TO THE SHUTTLE QUALIFIED ROCKWELL CHECK VALVES, ME284-0434, WHICH ARE USED THROUGHOUT THE HYDRAULIC SUBSYSTEM.

(B) TEST:

QUALIFICATION: THE CHECK VALVE IS CYCLED 20,000 TIMES DURING ENDURANCE TESTING, IN CONJUNCTION WITH SWITCHING VALVE COMPONENT TEST.

ACCEPTANCE: SWITCHING VALVE/ACTUATOR PERFORMANCE TESTS VERIFY CHECK VALVE IS OPERATIONAL. FLUID FROM ACTUATOR IS VERIFIED TO MEET CLEANLINESS LEVEL 190 PER MAO110-301.

GROUND TURNAROUND TEST

ANY TURNAROUND CHECKOUT TESTING IS ACCOMPLISHED IN ACCORDANCE WITH OMRSD.

(C) INSPECTION:

RECEIVING INSPECTION

MATERIAL CERTIFICATIONS ARE VERIFIED BY INSPECTION.

CONTAMINATION CONTROL

VERIFIED TO BE IN COMPLIANCE DURING ASSEMBLY AND TEST. FLUID SAMPLE VERIFIED PRIOR TO SHIPMENT.

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ASSEMBLY/INSTALLATION

CRITICAL CHARACTERISTICS/DIMENSIONS VERIFIED BY INSPECTION. INSTALLATION PERFORMED IN CLEAN ROOM ENVIRONMENT. ENVIRONMENT IS VERIFIED PER MOOG CONTAMINATION CONTROL PLAN.

TESTING

CHECK VALVE FLOW IS VERIFIED AT THE COMPONENT LEVEL PRIOR TO INSTALLATION AND DURING ATP. ROCKWELL DESIGN AND QUALITY PERSONNEL, WITH NASA PARTICIPATION, CONDUCT A DETAILED ACCEPTANCE REVIEW OF THE HARDWARE AT THE VENDOR'S FACILITY, PRIOR TO THE SHIPMENT OF EACH END ITEM COVERED BY CONTROL PLAN. ATP VERIFICATION IS MIP FOR RI QA REPRESENTATIVE.

(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
TECHNICAL APPROVAL

: BNA
: VIA APPROVAL FORM

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