PRINT DATE: 12/18/96

FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CIL HARDWARE
NUMBER: 02-1B-044 -X

SUBSYSTEM NAME: LANDING/DECELERATION - BRAKE/SKID CONTROL SYS
REVISION: 0 09/19/88

PART DATA

	PART NAME **VENDOR NAME**	**PART NUMBER** **VENDOR NUMBER**
	: FLIGHT CONTROLS	
LRU	: YAW-BRAKE CONTROL PEDALS	V070-573001

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
YAW NOSE WHEEL STEERING CONTROL PEDALS

QUANTITY OF LIKE ITEMS: 1
LEFT-RIGHT ASSEMBLY

FUNCTION:
THE LINKAGE SYSTEM WHOSE MOTION OPERATES THE RUDDER SURFACE CONTROL, AND NOSE WHEEL STEERING.

PRINT DATE: 12/18/96

FAILURE MODES EFFECTS ANALYSIS FMEA – CIL FAILURE MODE
NUMBER: 02-1B-044- 02

REVISION#: 0 12/20/96
SUBSYSTEM NAME: LANDING/DECELERATION - BRAKE/SKID CONTROL SYS
LRU: YAW-BRAKE CONTROL PEDALS
ITEM NAME: YAW-BRAKE CONTROL PEDALS
CRITICALITY OF THIS FAILURE MODE: 1R2

FAILURE MODE:
LOSS OF FUNCTION.

MISSION PHASE: DO DE-ORBIT

VEHICLE/PAYLOAD/KIT EFFECTIVITY:

102	COLUMBIA
103	DISCOVERY
104	ATLANTIS
105	ENDEAVOUR

CAUSE:
JAMMED, STRUCTURAL FAILURE, BUNGEE FAILURE, DEBRIS.

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN

A) PASS
B) PASS
C) PASS

PASS/FAIL RATIONALE:
A)

B)

C)

- FAILURE EFFECTS -

(A) SUBSYSTEM:
LOSS OF CONTROL OF BRAKES BY THE AFFECTED PEDALS.

(B) INTERFACING SUBSYSTEM(S):
SAME AS (A).

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(C) MISSION:
NO EFFECT FIRST FAILURE - CREW MEMBER REDUNDANCY (THERE ARE TWO INDEPENDENT SETS OF BRAKE CONTROL PEDALS). POSSIBLE LOSS OF MISSION/ CREW/VEHICLE IF THE SECOND SET OF PEDALS FAIL.

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

(E) FUNCTIONAL CRITICALITY EFFECTS:

-DISPOSITION RATIONALE-

(A) DESIGN:
THE LINKAGES ARE DESIGNED AND FABRICATED IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF MIL-STD-1333, MIL-A-8865, MIL-B-8584 AND AFSC DH2-2. A COVER IS PROVIDED IN THE LINKAGE AREA TO KEEP OUT DEBRIS.
DESIGN MINIMUM FACTOR OF SAFETY IS 1.4.

(B) TEST:
QUALIFICATION TESTS: THE BRAKE CONTROL PEDALS ARE TESTED TO 100 PERCENT LIMIT LOAD IN ACCORDANCE WITH MIL-A-8865. NO PERMANENT DEFORMATION IS ALLOWED.

ACCEPTANCE/CHECKOUT - APPLICATION OF SPECIFIED FORCE VERSUS POSITION OF PEDAL ROTATIONALLY FOR BRAKES AND LONGITUDINALLY FOR YAW (RUDDER AND NOSE WHEEL STEERING) PER ML0308-0049. IN FLIGHT, THE PEDALS ARE OPERATED PRIOR TO RE-ENTRY TO ASSURE THAT A JAM HAS NOT OCCURRED.

OMRSD: BRAKE PEDAL/HYDRAULIC DYNAMIC INSTABILITY; DURING THIS TEST EACH BRAKE PEDAL IS PUMPED TO 1/4, 1/2, 3/4 AND FULL STROKE WHILE IT'S ADJACENT PEDAL IS HELD IN THE FULLY DEPRESSED POSITION THE CORRESPONDING BRAKE PRESSURES ARE VERIFIED.

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

CONTAMINATION CONTROL
CORROSION PROTECTION PER MA0608-301 IS VERIFIED BY INSPECTION.

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ASSEMBLY/INSTALLATION
ALL ASSEMBLY PARTS AND COMPONENTS ARE VERIFIED BY INSPECTION (TOOLING FIXTURES INCLUDED). ELECTRICAL BOND AND TEST IS VERIFIED BY INSPECTION. CRITICAL DIMENSIONS ARE VERIFIED BY INSPECTION.

CRITICAL PROCESSES
INSTALLATION OF THREADED FASTENERS IS VERIFIED BY INSPECTION, INCLUDING TORQUING REQUIREMENTS. INSTALLATION OF BLIND FASTENERS AND RIGGING ARE VERIFIED BY INSPECTION.

NONDESTRUCTIVE EVALUATION
PENETRANT INSPECTION OF DETAIL PARTS PER MTO501-504 IS VERIFIED BY INSPECTION.

TESTING
ATP IS VERIFIED BY INSPECTION.

(D) FAILURE HISTORY:
NONE.

(E) OPERATIONAL USE:
PEDALS ARE CHECKED DURING FLIGHT CONTROL SYSTEM CHECKOUT WHICH IS DONE ONE DAY PRIOR TO ENTRY. THE OTHER CREW MEMBER WILL ASSUME CONTROL OF BRAKING.

- APPROVALS -

EDITORIALLY APPROVED	: RI	: Robert J. Hall Jr. 12/18/96
EDITORIALLY APPROVED	: JSC	: Tom Searcy Jr.
TECHNICAL APPROVAL	: VIA JSC	:96-CIL-011