

FAILURE MODES EFFECTS ANALYSIS (FMEA) - CIL HARDWARE
NUMBER: 07-2D-ES11 -X

SUBSYSTEM NAME: CREW ESCAPE - EMERGENCY EGRESS SLIDE
REVISION: 0 08/01/88

PART DATA

	PART NAME	PART NUMBER
	VENDOR NAME	VENDOR NUMBER
LRU	: SLIDE ASSEMBLY	MC623-0015-0007
SRU	: HATCH COVER SLIDE LATCH	V070-660148

QUANTITY OF LIKE ITEMS: 2

FUNCTION:

SIDE HATCH COVER (SLIDE SUPPORT ASSEMBLY ATTACHMENT ON HATCH COVER) PROVIDES ATTACHMENT POINTS FOR EMERGENCY EGRESS SLIDE DURING "HATCH-OPEN" CONTINGENCY MODE. CONTAINS TWO LATCHES FOR ATTACHING SLIDE SUPPORT ASSEMBLY.

FAILURE MODES EFFECTS ANALYSIS FMEA – CIL FAILURE MODE

NUMBER: 07-2D-ES11- 02

REVISION#: 1 09/02/98

SUBSYSTEM NAME: CREW ESCAPE - EMERGENCY EGRESS SLIDE

LRU: SLIDE ASSEMBLY

CRITICALITY OF THIS

ITEM NAME: HATCH COVER SLIDE LATCH

FAILURE MODE: 1R3

FUNCTIONAL CRITICALITY/

REQUIRED FAULT TOLERANCE/ACHIEVED FAULT TOLERANCE: 1R/2/1

FAILURE MODE:

INADVERTENT RELEASE OF ONE OR BOTH LATCHES.

MISSION PHASE:

LS LANDING SEQUENCE

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

CAUSE:

STRUCTURAL FAILURE OF HATCH GIRT LATCH, INCORRECTLY ATTACHED.

CRITICALITY 1/1 DURING INTACT ABORT ONLY? NO

REDUNDANCY SCREEN

- A) PASS
- B) FAIL
- C) PASS

PASS/FAIL RATIONALE:

A)

LATCH OPERATION CAN BE VERIFIED ON GROUND.

B)

LATCH VERIFICATION IN FLIGHT IS NOT FEASIBLE.

C)

LATCHES ARE PHYSICALLY SEPARATED AND INDEPENDENT.

METHOD OF FAULT DETECTION:

CREW OBSERVATION

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CORRECTING ACTION: MANUAL

CORRECTING ACTION DESCRIPTION:

NONE. REMAINING CREW WILL USE DESCENT DEVICE (SKY GENIE) THROUGH SIDE HATCH OR OVERHEAD WINDOW.

REMARKS/RECOMMENDATIONS:

CREWMEMBERS ARE TRAINED TO ENGAGE LATCHES AND VERIFY ENGAGEMENT BY PULLING SLIDE SUPPORT.

- FAILURE EFFECTS -

(A) SUBSYSTEM:

NO EFFECT IF SINGLE LATCH RELEASES. SLIDE DISENGAGES IF BOTH LATCHES RELEASE AND UPWARD FORCE IS APPLIED TO SLIDE.

(B) INTERFACING SUBSYSTEM(S):

NONE

(C) MISSION:

NONE

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

OTHER SUBSYSTEM FAILURES MUST OCCUR BEFORE USE OF THE EMERGENCY SYSTEM IS REQUIRED. POSSIBLE INJURY TO CREWMEMBER IN THE PROCESS OF VEHICLE EGRESS.

(E) FUNCTIONAL CRITICALITY EFFECTS:

AFTER OTHER SUBSYSTEM FAILURES OCCUR REQUIRING THE USE OF THE EMERGENCY SYSTEM, THREE FAILURES (TWO LATCHES PLUS UPWARD FORCE) COULD RESULT IN INJURY/ LOSS OF CREW.

- TIME FRAME -

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TIME FROM FAILURE TO CRITICAL EFFECT: IMMEDIATE

TIME FROM FAILURE OCCURRENCE TO DETECTION: IMMEDIATE

TIME FROM DETECTION TO COMPLETED CORRECTING ACTION: N/A

**IS TIME REQUIRED TO IMPLEMENT CORRECTING ACTION LESS THAN TIME TO EFFECT?
N/A**

**RATIONALE FOR TIME TO CORRECTING ACTION VS TIME TO EFFECT:
HATCH OPEN MODE IS CONTINGENCY, HATCH JETTISONED IS EMERGENCY MODE.**

-DISPOSITION RATIONALE-

(A) DESIGN:

THERE ARE TWO LATCHES ON THE SIDE HATCH COVER FOR THE SLIDE SUPPORT ATTACHMENTS. THE LATCHES ARE SPRING LOADED. ONCE THEY ARE LATCHED, THE LATCH PINS MUST BE PULLED BACK TO UNLATCH. BOTH UNLATCH LEVERS ARE ACCESSIBLE FROM THE TOP OF THE SIDE HATCH COVER. BOTH LEVERS MUST BE PUSHED BY A 15-30 LB FORCE SIMULTANEOUSLY TO UNLATCH. RELEASE ACCOMPLISHED ONLY BY UPWARD FORCE ON SUPPORT ASSEMBLY WITH BOTH LATCHES UNLOCKED. WEIGHT OF CREWMEMBER ON SLIDE ASSISTS RETENTION OF SLIDE SUPPORT ATTACHMENTS IN HATCH COVER LATCHES.

(B) TEST:

ACCEPTANCE TESTS INCLUDE FUNCTIONAL CHECK OF LATCHES. ALSO, LATCHES ARE FIT CHECKED DURING CEIT AND PER TECH ORDER INSTALLATION MO72-661651.

QUALIFICATION TESTS OF SLIDE (16 DEPLOYMENT TESTS WITH HATCH OPEN) DO NOT INCORPORATE FLIGHT LATCHES IN SIMULATED HATCH COVER.

GROUND TURNAROUND TEST

ANY TURNAROUND CHECKOUT TESTING IS ACCOMPLISHED IN ACCORDANCE WITH OMRSD.

(C) INSPECTION:

RECEIVING INSPECTION

CERTIFICATIONS OF PROCESSES AND MATERIALS INCLUDING STRENGTH, COMPOSITION, HEAT TREAT AND CORROSION PROTECTION ARE VERIFIED BY INSPECTION.

CONTAMINATION CONTROL

CORROSION PROTECTION PER MA0608-301.

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ASSEMBLY/INSTALLATION
MACHINE TOLERANCING PER MA0103-304. THREADED FASTENERS INSTALLED PER
MA0101-301.

CONFORMANCE OF DETAIL PARTS AND ASSEMBLY TO DRAWING REQUIREMENTS ARE
VERIFIED BY INSPECTION. PARTS PROTECTION AND HANDLING PROVISIONS ARE
VERIFIED BY INSPECTION.

TESTING
ATP VERIFIED BY INSPECTION

HANDLING/PACKAGING
PROPER PACKAGING TO LEVEL A OF MIL-STD-794 IS 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:
OPERATIONAL EFFECT OF FAILURE: POSSIBLE LOSS OF LIFE IF BOTH LATCHES
DISENGAGE SIMULTANEOUSLY WITH LIFTING OF SLIDE OFF HATCH.

CREW ACTION: BRING SKY GENIE DOWN FROM FLIGHT DECK AND EGRESS USING
CARABINERS.

CREW TRAINING: CREW IS TRAINED IN ABOVE PROCEDURE.

MISSION CONSTRAINTS: NONE. MISSION WOULD BE TERMINATED PRIOR TO USE OF
SLIDE.

INFLIGHT CHECKOUT: NONE.

- APPROVALS -

EDITORIALLY APPROVED : BNA
TECHNICAL APPROVAL : VIA APPROVAL FORM *J. Kumura 9-3-98*
: 96-CIL-032_07-2D