

**FAILURE MODES EFFECTS ANALYSIS (FMEA) - GIL HARDWARE**  
**NUMBER: 07-2D-ES9 -X**

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

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**PART DATA**

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	<b>PART NAME</b>	<b>PART NUMBER</b>
	<b>VENDOR NAME</b>	<b>VENDOR NUMBER</b>
LRU	: SLIDE ASSEMBLY	MC623-0015-0007 D102900
SRU	: INTERCONNECT HOSE	AE708001-1 AEROQUIP

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**QUANTITY OF LIKE ITEMS: 1**

**FUNCTION:**

CONNECTS RESERVOIR TO ASPIRATOR. HOSE IS FLEXIBLE AND FIXED IN PLACE WHEN SLIDE IS FOLDED/STOWED OR DEPLOYED. HOSE ALLOWS GAS PASSAGE AT 400 PSI DURING SLIDE INFLATION FOR TWO TO THREE SECONDS. HOSE REMAINS PRESSURIZED TO 2 3/4 PSI AFTER INFLATION OF SLIDE. HOSE DIAMETER IS 1.06 IN O.D., LENGTH IS 27 IN., SLEEVE LENGTH IS 3 IN.

**REFERENCE DOCUMENTS:** D103030 ISI  
D102900 ISI

**FAILURE MODES EFFECTS ANALYSIS FMEA - CIL FAILURE MODE**

NUMBER: 07-2D-E59-02

REVISION#: 1 09/02/98

SUBSYSTEM NAME: CREW ESCAPE - EMERGENCY EGRESS SLIDE

LRU: SLIDE ASSEMBLY

CRITICALITY OF THIS

ITEM NAME: INTERCONNECT HOSE

FAILURE MODE: 1R2

**FUNCTIONAL CRITICALITY/**

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

**FAILURE MODE:**

LEAKAGE/RUPTURE

**MISSION PHASE:**

LS LANDING SEQUENCE

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

**CAUSE:**

MECHANICAL SHOCK, DETERIORATING O-RING, MATERIAL DEFECT

CRITICALITY 1/1 DURING INTACT ABORT ONLY? YES

LS LANDING SEQUENCE

<b>REDUNDANCY SCREEN</b>	A) PASS
	B) FAIL
	C) PASS

**PASS/FAIL RATIONALE:**

A)

B)

"B" SCREEN FAILS BECAUSE THERE IS NO TEST AVAILABLE TO DETECT FOR THIS FAILURE IN FLIGHT.

C)

**METHOD OF FAULT DETECTION:**

CREW OBSERVATION OF SLIDE DEPLOYMENT.

**FAILURE MODES EFFECTS ANALYSIS (FMEA) – CIL FAILURE MODE  
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**CORRECTING ACTION: MANUAL**

**CORRECTING ACTION DESCRIPTION:**

CREW WILL USE DESCENT DEVICE (SKY GENIE) THROUGH SIDE HATCH OR OVERHEAD WINDOW. FOR PARTIAL INFLATION, FIRST TWO CREWMEMBERS TO EGRESS CAN HOLD SLIDE FOR OTHER CREWMEMBERS.

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**- FAILURE EFFECTS -**

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**(A) SUBSYSTEM:**

SLIDE FAILS TO INFLATE.

**(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 LOSS OF CREW IF RAPID EMERGENCY EGRESS IS REQUIRED.

**(E) FUNCTIONAL CRITICALITY EFFECTS:**

AFTER OTHER SUBSYSTEM FAILURES OCCUR REQUIRING THE USE OF THE EMERGENCY SYSTEM, A SINGLE FAILURE OF THE INTERCONNECT HOSE CAN RESULT IN POSSIBLE INJURY/LOSS OF CREW.

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**- TIME FRAME -**

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**TIME FROM FAILURE TO CRITICAL EFFECT: SECONDS**

**TIME FROM FAILURE OCCURRENCE TO DETECTION: SECONDS**

**TIME FROM DETECTION TO COMPLETED CORRECTING ACTION: N/A**

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**IS TIME REQUIRED TO IMPLEMENT CORRECTING ACTION LESS THAN TIME TO EFFECT?**  
NO

**RATIONALE FOR TIME TO CORRECTING ACTION VS TIME TO EFFECT:**  
EMERGENCY EGRESS USING SKY GENIE WOULD EXCEED MAXIMUM ALLOWABLE TIME OF 60 SECONDS.

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**-DISPOSITION RATIONALE-**

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**(A) DESIGN:**

TECHNOLOGY BASE ESTABLISHED IN COMMERCIAL AIRLINE HARDWARE. PROVEN COMPONENTS IN INFLATION SYSTEM. HOSE MATERIAL IS NYLON WITH POLYOLEFIN SLEEVES AND STAINLESS STEEL FITTINGS. HOSE CONNECTIONS ARE TORQUED TO 85 IN-LB.

**(B) TEST:**

ACCEPTANCE TESTS OF SLIDE INCLUDE TWO DEPLOYMENT TESTS.

QUALIFICATION TESTS OF SLIDE INCLUDE 40 DEPLOYMENT TESTS. HOSE CERTIFIED BY SUPPLIER.

PERIODIC MAINTENANCE INCLUDES INFLATION TEST AND REPACKING OF SLIDE EVERY 18 MONTHS PER ISI DOCUMENT 35-D102900.

**GROUND TURNAROUND TEST**

ANY TURNAROUND CHECKOUT TESTING IS ACCOMPLISHED IN ACCORDANCE WITH OMRSD.

**(C) INSPECTION:**

**RECEIVING INSPECTION**

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

**CONTAMINATION CONTROL**

CLEANLINESS OF SIGNIFICANT SURFACES TO LEVEL GC (GENERALLY CLEAN) OF MA0110-301 IS VERIFIED BY INSPECTION.

**ASSEMBLY/INSTALLATION**

CYLINDER PRESSURE VERIFIED BY GAUGE READING. ASPIRATOR DOOR SEAL VERIFIED DURING IN-PROCESS TEST. LANYARD HANDLE/CABLE CONNECTOR VERIFIED AT FINAL INSPECTION. TORQUE REQUIREMENT AT HOSE CONNECTION VERIFIED. HOSE ROUTING IN SLIDE PACK VERIFIED AT FINAL INSPECTION. REGULATOR OPERATION VERIFIED DURING IN-PROCESS TEST.

**FAILURE MODES EFFECTS ANALYSIS (FMEA) -- CIL FAILURE MODE  
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PARTS PROTECTION AND HANDLING PROVISIONS ARE VERIFIED BY INSPECTION.

**TESTING**

ASPIRATOR DOOR SEAL VERIFIED DURING ATP. REGULATOR OPERATION VERIFIED DURING ATP.

**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. FAA GENERIC FAILURE DATA INDICATES TWO FAILURES IN THIS FAILURE MODE IN APPROXIMATELY 3000 DEPLOYMENTS.

**(E) OPERATIONAL USE:**

OPERATIONAL EFFECT OF FAILURE: POSSIBLE LOSS OF LIFE.

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

CREW TRAINING: CREW IS TRAINED IN ABOVE PROCEDURE.

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

INFLIGHT CHECKOUT: NONE.

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**- APPROVALS -**

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EDITORIALLY APPROVED : BNA : J. Kumura 9-3-98  
TECHNICAL APPROVAL : VIA APPROVAL FORM : 96-CIL-032-07-2D