CRITICAL ITEMS LIST

REFERENCE DESIGNATOR: F1 | PROJECT: IFM BREAKOUT BOX | SUBSYSTEM: NONE
NAME/QUANTITY: FUSE/1 | LRU NAME/QUANTITY: IFM BREAKOUT BOX/2 | EFFECTIVITY: All Orbiters
DRAWING REFERENCE: 10120-20022 | LRU PART NUMBER: SED39121772

FAILURE MODE NUMBER	CRITICALITY	FAILURE EFFECT	RETENTION RATIONALE
4	2/1R		

FUNCTION

Fuse outlet 1 provides fuse protection for the IFM breakout box (outlet 1) and downstream equipment

FAILURE MODE AND CAUSE

Mode: Fuse opens prematurely
Cause: Defective material

REDUNDANCY SCREENS	REMAINING PATHS
A – Pass B – Pass C – Pass	Replace fuse Use backup IFM box

MISSION PHASE	TIME TO EFFECT	TIME TO CORRECT
Orbit/Landing	Minutes	Immediate

END ITEM

No power output at outlet 1; loss of redundant power to CWE

MISSION

None

CREW/VEHICLE

This failure followed by failure of the remaining Orbiter essential bus powering the CWE would create an undetected fuel cell emergency due to loss of fuel cell coolant pump

INTERFACE

See "End Item" and "Crew/Vehicle"

A. DESIGN – The part is a miniature cartridge fuse with leads. It is rated at 5 A, with a capacity to interrupt 1,000 A at 60 V, and is not to exceed 3 g. The current load used to power the C&W System is nominally .7 A.

B. TESTS – The part is screened and qualified to the requirements of Rockwell International specification MC451-0010. Tests and inspections are done on the entire product to check burn-in (100 percent rating, 2-hr minimum), terminal strength (2 in-lb, 1 min) examination of product vibration (sinusoidal sweep), leakage, dc resistance, and radiographics. Tests and inspections are done on a sample from each lot to check terminal strength, vibration (random), leakage, dc resistance, radiographics, and time current characteristics. The tests and inspections done on a periodic basis for qualification include dc resistance, case leakage, time current characteristics,

PREPARED BY Luis Vazquez | REVISION Basic | SUPERSEDING DATE: 8/91 | DATE: 8/91

CRITICAL ITEMS LIST

REFERENCE DESIGNATOR: F1
NAME/QUANTITY: FUSE/1
DRAWING REFERENCE: 80120-28022

PROJECT: IFM BREAKOUT BOX
LRU NAME/QUANTITY: IFM BREAKOUT BOX/2
LRU PART NUMBER: SED39121772

SUBSYSTEM: NONE
EFFECTIVITY: All Orbiters

RETENTION RATIONALE (Concluded)

terminal strength, thermal shock, humidity, interrupting capacity, mechanical shock, and vibration. A visual and mechanical examination is also performed.

C. INSPECTION – The part is inspected according to the requirements of Rockwell International specification MC451-0010, which includes visual inspections and burn-in and screening tests as described in item 2. In addition, Rockwell International periodically audits the device manufacturer to ensure that the design, processing assembly, inspection, and testing of devices are adequately controlled.

D. FAILURE HISTORY – None. There have not been any documented failures of a fuse to function on the Orbiter program.

E. OPERATIONAL USE –

1. Fuse failure would be annunciated in Orbiter failure scenario 2. The fuse failure may be detected in Orbiter failure scenario 1 by indicator lights on the IFM breakout box. The fuse could then be replaced.

2. The second failure, loss of the Orbiter essential bus, would be detected by the ground except during LOS. There would be 5-10 min (9 min nominal) available to shut down the affected fuel cell.

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