# CRITICAL ITEMS LIST



REFERENCE DESIGNATOR: F2
NAME/QUANTITY: FUSE/1
DRAWING REFERENCE: 10120-20022

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

SUBSYSTEM: NONE
EFFECTIVITY: All Orbiters

| FAILURE MODE NUMBER | CRITICALITY |
|---|---|
| 5 | 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<br>B – Pass<br>C – Pass | Replace fuse<br>Use backup IFM box |

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

**FAILURE EFFECT**

**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"

**RETENTION RATIONALE**

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





IFM BOX 2

REFERENCE DESIGNATOR: F2
NAME/QUANTITY: FUSE/1
DRAWING REFERENCE: 10120-20022

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.

D-8

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