EO 3-SAA09IT09-001   S050234KO

Critical Item: Transformer Card

Find Number: 77-03026 8 ea.

Criticality Category: 1S

APR 2 8 1999

SYSTEM

Hypergol Vapor Detection Sys

AREA	CRIT	TOTAL LRU'S
LOA	1S	8

SAA No:	09IT09-001	System/Area:	LPS/CCMS/FR1/FR2/CR3
NASA Part No:	NONE	PMN/ Name:	L72-3564-02 RCVS III
Mfg/ Part No:	Electrospace Systems Inc./ 77-03026	Drawing/ Sheet No:	MCR7655 VOL. III 5.5.1 (REV K)

Function: This RCVS Critical Item is used in support of a critical user system. It provides impedance matching for a 124 OHM balanced interface with a 50 OHM unbalanced interface

Critical Failure Mode/Failure Mode No: * Failure Mode - Loss of output/09IT09-001.502

* Transformer Card failures would result in loss of communication between a FEP and HIM resulting in loss of the data path for the critical system being monitored/controlled.

Failure Cause: Electrical/Electronic failure of LRU piece part

Failure Effect:

SYSTEM	FAILURE EFFECT	CRIT
Hypergol Vapor Detection System (LOA)	Loss of output signal will fail to provide the console operator with an input that would indicate a leak in the hypergol propellant servicing system. Loss of the capability to detect a leak during hazardous operations could result in loss of life and/or vehicle. Time to effect: Immediate. Detection method: Software detects loss of communication.	1S

I - 539

Transformer Card (Continued)

ACCEPTANCE RATIONALE

APR 2 8 1993

Design: The Transformer Card was designed per the requirements of the following documents.

1. CP09IT0910: General design requirements specification for LPS/CCMS.
2. CP09IT0917: Contract end item assembly specifications for V&DA for LPS/CCMS.

These specifications support the Shuttle design and procurement philosophy procurement of hardware that is not undergoing development but to procure "off-the-shelf hardware" and to maximum extent possible parts previously qualified through proven design.

Test: Rigorous sets of acceptance tests were performed to verify performance and design requirements of the LPS/CCMS. This process occurred on each end item from "In Process Assembly" phase to "Site Acceptance". Master control procedures (MCPs) 78K-M401 and 78K-M701 were utilized for acceptance testing by MMC. Following this acceptance testing IBM performed integrated testing of each set. Test procedures KSC-LPS-IB-056, Book 3 and KSC-LPS-IB-105, Book 5 were utilized.

Hypergol Vapor Detection Sys

- OMI V3542 "Hypergol Vapor Detection System operations support (LPS)" provides an end-
. to-end verification of the system (LPS/HVDS). System verification is performed prior to all hazardous operations which utilize this system.

- During loading operations, personnel are stationed on the RSS to provide visual monitor.

Fixed Hydrogen Leak Detection Sys (FCSS) LOA

- OMI V3541 "Hydrogen Leak & Fire Detection System operational support (LPS)" provides an end-to-end verification of the system (LPS/Fixed Hydrogen Leak Detection Sys FCSS - LOA). System verification is performed prior to any hazardous operations that utilize this system.

Inspection: OMRSD, File VI requires verification of primary and backup power be performed every 90 days. Verify relay operations be performed every 180 days on the remote control video switch which contains this LRU. Proper operation is verified by each user system as part of the end-to-end verification of their integrated system.

Failure History:

The PRACA Data Base was used for this analyses (time frame APR. 88 to Sep. 90). There were no Problem Reports initiated on Transformer Cards that relate to failure modes depicted on this CIL sheet. There is a total population of 527 Transformer cards installed in various CCMS Station Sets. In the basic SAA the timeframe of Jan. 84 to Mar. 88 was used with 1 Problem Report identified from a total population of 417 cards installed. Operation use varies from 7 days a week, 24 hours a day to as required.

Transformer Card (Continued)

Operational Use:

- Correcting Action:

  Troubleshooting required to isolate and replace failed unit.

- Timeframe:

  Varies, troubleshooting required.