

## SRB CRITICAL ITEMS LIST

SUBSYSTEM: ELECTRICAL AND INSTRUMENTATION

ITEM NAME: Integrated Electronic Assembly (IEA), Forward (Logic and Networks Distributor and OF Signal Conditioner)

PART NO.: 10400-0329

FM CODE: A10

ITEM CODE: 50-01-01-02

REVISION: Basic

CRITICALITY CATEGORY: 1R

REACTION TIME: Seconds

NO. REQUIRED: 1

DATE: March 1, 2002

CRITICAL PHASES: Boost

SUPERCEDES: March 31, 1998

FMEA PAGE NO.: D-11A

ANALYST: C. Webster/S. Finnegan

SHEET 1 OF 3

APPROVED: S. Finnegan

CN 044

FAILURE MODE AND CAUSES: Loss of power to three of four RGAs caused by:

- o Solid State Switches fail open (RGA #1 or RGA #2)  
and
- o Wiring Harnesses fail open (RGA #3 or RGA #4)

FAILURE EFFECT SUMMARY: Loss of power to three RGAs leads to loss of vehicle rate detection resulting in flight instability and loss of mission, vehicle and crew. Two success paths remain after the first failure. Operation is not affected until three paths are lost.

NOTE: RGAs 1 and 3 are located on the Left SRB. RGAs 2 and 4 are located on the Right SRB. This failure mode requires separate failures in both SRBs, causing loss of two RGAs in one SRB and loss of a third RGA in the other SRB. Solid State Switch failing open applies to RGA #1 and RGA #2 only

### REDUNDANCY SCREENS AND MEASUREMENTS

- 1) Pass-Rate Gyro 1, 2, 3 and 4 Pitch SMRDs B79X1845X, B79X2845X, B79X1846X and B79X2846X. Rate Gyro 1, 2, 3 and 4 Yaw SMRDs B79X1848X, B79X2848X, B79X1849X and B79X2849X.
- 2) Pass - Same as screen No. 1.
- 3) Pass - No credible causes.

### RATIONALE FOR RETENTION:

#### A. DESIGN:

##### 1. System Description

See Appendix A, Section 1, Paragraph (s) B & I

2. Component Description

See Appendix A, Section 2, Paragraph (s) A,E(2),F(2)

B. TESTING

1) VENDOR RELATED:

See Appendix A, Section 3, Paragraph(s) A(6), B

2) KSC RELATED:

See Appendix A, Section 3, Paragraph B

3) SYSTEM FUNCTIONAL/FAILURE MODE UNIQUE:

SRB Forward Skirt Assembly Checkout (ACO) - Forward Skirt Stand Alone Test - The RGA power ON and SMRD tests are verified per 10REQ-0021, para. 1.2.2.19.1. (All Failure Causes)

Prelaunch Tests - Shuttle Interface Test (SIT) - The RGA power On, SMRD, and Null tests are verified per OMRSD File II, Vol. 1, Requirement Number S00000.640. (All Failure Causes)

Terminal Countdown Demonstration Test (TCDDT) - The SRB RGA power activation is verified per OMRSD File II, Vol. 1, Requirement Number S00FF0.215. (All Failure Causes)

Launch Countdown - The SRB RGA power activation is verified per OMRSD File II, Vol. 1, Requirement Number S00FF0.215. (All Failure Causes)

Last Test of Failure Mode Prior to Launch - Launch Countdown verification per OMRSD File II, Vol. 1, Requirement Number S00FF0.215 verifies SRB RGA power activation. (All Failure Causes)

CN 044

C. INSPECTION

1) VENDOR RELATED:

See Appendix A, Section 4, Paragraph(s) A,E,F

2) KSC RELATED:

See Appendix A, Section 5, Paragraph(s) A.(1),A.(2)(b),B.(1)(b)

D. FAILURE HISTORY

Failure Histories may be obtained from the PRACA database.

E. OPERATIONAL USE

Not applicable to this failure mode.

F. WAIVERS/DARS

See Appendix E, Para. 2,4,5,7-15.