

**SSME FMEA/CIL  
REDUNDANCY SCREEN**

Component Group: Combustion Devices  
 CIL Item: A700-08  
 Part Number: R5009004  
 Component: Oxidizer Preburner  
 FMEA Item: A700  
 Failure Mode: Partial blockage of fuel to baffles.

Prepared: A. Kay  
 Approved: T. Nguyen  
 Approval Date: 9/8/99  
 Change #: 1  
 Directive #: CCBO ME3-01-5238

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Phase	Failure / Effect Description	Criticality Hazard Reference
SMC 4.1	Fuel starvation to the ASI core causes overheating and damage to the HPOTP turbine section resulting in turbine failure. Loss of vehicle.  Redundancy Screens. SINGLE POINT FAILURE: N/A	1 ME-BSS ME-EGA,C, MF BSM

SSME    3A/CIL  
DESIGN

Component Group:    Combustion Devices  
CIL Item:            A700-08  
Part Number:        RS009004  
Component:         Oxidizer Preburner  
FMEA Item:         A700  
Failure Mode:       Partial blockage of fuel to baffles.

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Design / Document Reference

FAILURE CAUSE:    A: Contamination

THE FUEL IS FILTERED TO 400-MICRONS AT THE EXTERNAL TANK (1). THE LIQUID HYDROGEN IS SUPPLIED TO THE BAFFLES (2) BY 4 SLOTS ON THE BAFFLE SUPPORT PINS (3). THE SLOTS ACT AS A FILTER TO MINIMIZE BLOCKAGE OF THE EXIT CRIFICE.

(1) CD 13M15020; (2) RS009010; (3) RS009028

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**SSME FMEA/CIL  
INSPECTION AND TEST**

Component Group: Combustion Devices  
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 FMEA Item: A700  
 Failure Mode: Partial blockage of fuel to baffles.

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Failure Causes	Significant Characteristics	Inspector(s) / Test(s)	Document Reference
A	INJECTOR OXIDIZER PREBURNER BAFFLE PIN  CLEANLINESS	INJECTORS AND BAFFLES CLEANLINESS IS VERIFIED PER SPECIFICATION REQUIREMENTS.  ALL UPSTREAM COMPONENTS ARE INSPECTED AND CLEANED PER SPECIFICATION REQUIREMENTS.	RS009004 RS009010 RS009026  RA1610-005 RL10001
	ASSEMBLY INTEGRITY	FURNACE BRAZE IS INSPECTED PER SPECIFICATION REQUIREMENTS.  BAFFLE IS RADIOGRAPHICALLY INSPECTED FOR EXCESS BRAZE ALLOY IN FUEL PASSAGES PER SPECIFICATION REQUIREMENTS.  BAFFLE FLOW PATH IS FLOW TESTED PER SPECIFICATION REQUIREMENTS.  THE HOT FIRE TESTING AND 2ND E & M INSPECTION VERIFY COOLANT FLOW AND PREBURNER INTEGRITY.  AFTER EACH FLIGHT A VISUAL INSPECTION IS PERFORMED TO CHECK FOR EVIDENCE OF THERMAL DAMAGE TO THE INJECTOR OUTLET AND TURBOPUMP INLET AREA.	RA1607-010 RA0115-006  RL00968 RL00050-04 RL00056-05 RL00056-07 CMRSD V41 BU0,040

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Failure History: Comprehensive failure history data is maintained in the Problem Reporting database (PRAMS/PRACA).  
 Reference: NASA letter SA2186/308 and Rockwellcody letter BR009761.

Operational Use: Not Applicable.

**SSME FMEA/CIL  
WELD JOINTS**

Component Group: Combustion Devices  
 CIL Item: A700  
 Component: RS009004  
 Part Number: Oxidizer Preburner  
 A700

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Component	Basic Part Number	Weld Number	Weld Type	Class	Root Side Not Access	Critical Initial		Comments
						Flaw Size Not	Defectable	
						HCF	LCF	
OPB CHAMBER	RS009003	1,2	GTAW	I	X	X	X	(A050)
OPB CHAMBER	RS009003	1(60DEG)	GTAW	II	X	X	X	(A050)
OPB INJECTOR	RS009004	1	EBW	II	X	X	X	
OPB INJECTOR	RS009004	2	EBW	I	X			
OPB INJECTOR	RS009004	3	GTAW	I	X			
OPB INJECTOR	RS009004	9	EBW	II	X			
OPB INJECTOR	RS009004	28	FBW	II	X			
OPB INJECTOR	RS009004	29	EBW	II	X			
OPB BODY	RS009007	1	GTAW	II	X			(A050)
OPB BODY	RS009007	2	EBW	II	X			(A050)
OPB BODY	RS009007	3	EBW	I				(A050)
OPB BODY	RS009007	4 (OPT)	GTAW	I	X			(A050)
OPB BODY	RS009007	10,11	GTAW	I	X	X	X	(A050)
OPB BODY	RS009007	12	GTAW	I	X		X	(A050)
OPB BODY	RS009007	13	GTAW	I	X	X	X	(A050)
OPB BODY	RS009007	14	GTAW	I	X	X	X	(A050)
OPB BODY	R0018067	1	GTAW	II	X	X	X	
OPB BODY	R0018067	2	EBW	I	X			
OPB BODY	R0018067	6	GTAW	I	X			
OPB BODY	R0018067	7	GTAW	I	X			
OPB FUEL MANIFOLD	RS009013	9(OPT)10 (OPT)	GTAW	I		X	X	(A050)
OPB FUEL MANIFOLD	RS009013	11 (OPT)	GTAW	I		X	X	(A050)
OPB FUEL MANIFOLD	RS009013	13 (OPT)	GTAW	I	X			(A050)
OPB OXID INLET	RS009014	6-E	GTAW	I		X		
OPB LINER	RS009015	2-17	GTAW	II	X			(A050)
OPB ASI FUEL LINE	RS009024	1	GTAW	I	X	X	X	(A050)
OPB CHAMBER	RS009003	3 (OPT) 4 (OPT)	GTAW	I		X	X	(A050)
OPB CHAMBER	RS009003	5 (OPT)	GTAW	I		X	X	(A050)
OPB CHAMBER	RS009003	6 (OPT)	GTAW	I	X			