

SSME FMEA/CIL
REDUNDANCY SCREEN

Component Group: Orifices
 CIL Item: N724-01
 Part Number: RS010428
 Component: GOX Control Valve Inlet Orifice (O24)
 FMEA Item: N724
 Failure Mode: Orifice restricted or blocked.

Prepared: D. Early
 Approved: T. Nguyen
 Approval Date: 7/25/00
 Change #: 1
 Directive #: CCB D ME3-01-5638

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Phase	Failure / Effect Description	Criticality Hazard Reference
S 4.1	<p>Loss of Pogo accumulator GOX flow; controller Pogo GOX flow check results in controller and vehicle commanded shutdown. Mission scrub. Loss of vehicle due to loss of Pogo suppression may result if failure is not detected.</p> <p>Redundancy Screens: ORIFICE SYSTEM, SENSOR SYSTEM: UNLIKE REDUNDANCY</p> <p>A: Pass - Redundant hardware items are capable of checkout during normal ground turnaround. B: Pass - Loss of a redundant hardware items is detectable during flight. C: Pass - Loss of redundant hardware items could not result from a single credible event.</p>	1R ME-G8M
M 4.1	<p>Loss of Pogo accumulator GOX flow. Loss of vehicle.</p> <p>Redundancy Screens: SINGLE POINT FAILURE: N/A</p>	1 ME-B3A,M,C, ME-G8M

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DESIGN

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Design / Document Reference

FAILURE CAUSE: A: Contamination.

THE LOX SUPPLY SYSTEM IS DESIGNED TO FILTER LOX IN TWO STEPS, AN 800-MICRON FILTER AT THE E.T. INTERFACE (1) AND A 100- MICRON FILTER AT THE ANTI-FLOOD VALVE (2). CLEANLINESS REQUIREMENTS ARE ESTABLISHED TO REDUCE THE POSSIBILITY OF ORIFICE BLOCKAGE (3). ENGINE SYSTEMS ARE CLEANED TO APPLICABLE MEDIA CLEANLINESS REQUIREMENTS (3). THE ANTI-FLOOD VALVE DETAIL PARTS AND TEST FIXTURES ARE CLEANED PRIOR TO ASSEMBLY (3). ASSEMBLY AND TEST ARE PERFORMED IN A CLEAN ROOM (4). LUBRICANTS ARE NOT ALLOWED FOR ASSEMBLY OR TEST (4). COMPONENT LEVEL TEST FLUIDS ARE NITROGEN AND HELIUM, WHICH MEET THE HARDWARE CLEANLINESS REQUIREMENTS (3). THE COMPONENT PARTS AND SUBASSEMBLY ARE FREE OF VISIBLE FOREIGN PARTICLES AT THE TIME OF ASSEMBLY (4). THE ORIFICE SIZE IS LARGER THAN ACCEPTABLE PARTICULATES.

(1) ICD13M15000; (2) RS007083; (3) RL10001; (4) RL00460

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INSPECTION AND TEST

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Failure Causes	Significant Characteristics	Inspection(s) / Test(s)	Document Reference
A	LINE		RS007285
	CLEANLINESS OF COMPONENTS	THE ASSEMBLY AND UPSTREAM COMPONENTS ARE CLEANED PER SPECIFICATION REQUIREMENTS.	RL10001
		ASSEMBLY INSTALLATION IS VERIFIED TO BE IN A CONTROLLED ENVIRONMENT.	RQ0711-600
	PRE-FLIGHT CHECKOUT	FLOW THROUGH ORIFICE IS VERIFIED PER SPECIFICATION REQUIREMENTS. (LAST TEST)	OMRSD V41BP0.015

Failure History: Comprehensive failure history data is maintained in the Problem Reporting database (PRAMS/PRACA)
 Reference: NASA letter SA21/88/308 and Rocketdyne letter 88RC09761.

Operational Use: Not Applicable.