

# FAILURE MODES AND EFFECTS ANALYSIS

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REFERENCE DESIGNATOR:  
 NAME/QUANTITY: LBNP Controller 1  
 DRAWING REFERENCE: SED46105894-301

PROJECT: Orbiter  
 LRU NAME/QUANTITY: LBNPDS (1)  
 LRU PART NUMBER: SED46105885

SUBSYSTEM: LBNP  
 EFFECTIVITY: All Orbiters  
 (As Manifested)

FAILURE MODE NUMBER LBNP-5	CRITICALITY 3/1R	FAILURE EFFECT	FAILURE DETECTION METHOD
<b>FUNCTION</b> Regulates the amount of vacuum applied to the crewmember's lower body.		<b>END ITEM</b> Controller will expose the LBNP chamber to a higher vacuum.	<b>FLIGHT</b> 1. Digital (Electronic) Pressure Meter 2. Analog (Mechanical) Pressure Meter 3. Blood Pressure Measurement (via ABPM, SED46104770-307) 4. Contains ECG Monitoring
<b>FAILURE MODE AND CAUSE</b> Vacuum Solenoid Valve (normally closed)  Fails open/leaks  Cause: <ol style="list-style-type: none"> <li>1. Contamination</li> <li>2. Binding/Mechanical Failure</li> <li>3. Component failure in solenoid drive circuit (emitter-collector short) energizes solenoid valve.</li> </ol>		<b>MISSION</b> Loss of DSO objective	<b>GROUND</b> Yes, ECG Measurement 1. ECG Monitoring 2. Blood Pressure Monitoring or Chamber Pressure Monitoring
<b>REDUNDANCY SCREENS</b>  A - Pass B - Pass C - Pass	<b>REMAINING PATHS</b> <ol style="list-style-type: none"> <li>1. Automatic Relief Valve (opens at 65 mmHg)</li> <li>2. Manual Relief Valve</li> <li>3. Quick Disconnects</li> </ol>	<b>CREW/VEHICLE</b> Possible crewmember injury if exposure to excessive vacuum results in reduction of blood pressure and/or heart rate beyond acceptable limits.	<b>CORRECTIVE ACTION</b> <ol style="list-style-type: none"> <li>1. Automatic Relief Valve Opens (at-65mmHg)</li> <li>2. Open manual Relief Valve</li> <li>3. Manually Separate Walst Seal</li> <li>4. Disconnect any of two (2) quick Disconnectors</li> </ol>
<b>MISSION PHASE</b>	<b>TIME TO EFFECT</b>	<b>TIME TO CORRECT</b>	<b>REMARKS</b>
ORBIT	MINUTES	SECONDS	
		<b>INTERFACE</b> None	