

## PFR-120 Title: P2 Propellant Pressure decreased during shipment

Assembly : RCS		SubAssembly : Pressure Valve		
Component :		<b>Units Affected:</b>	Units fixed:	
Originator: Ellen Taylor		- X	- 0	
Organization: Swales/UCB		<b>Date:</b> 11/30/05		
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<b>Failure Occurred During (Check one</b> $$				
$\sqrt{\text{Functional test}}$ $\Box$ Qualification test $\Box$ S/C Integration $\Box$ Launch operations $\Box$ Other (Flight Assy)				
Environment when failure occurred:				
√ Ambient	$\Box$ Vibration	□ Shock		
Thermal	Vacuum	Thermal-Vacuum	□ EMI/EMC	
Problem Description				

(In this section it is important to document the specific symptoms which exhibited the problem. In the event we see it happen again, we would like to know as much as possible.)

During the P2 Probe post-ship Aliveness Test on 11/30/05, the propellant pressure read 21 psi instead of the expected value of 50 psi when the pressure transducer was turned on. The expected value of 50 psi was determined from the pre-ship recorded value, so the lower value indicated a possible leak.

## **Analyses Performed to Determine Cause**

(How do we know how the failure happened? Was it a bad part, bad handling, what?)

Using a He sniffer, all RCS valves were checked the morning of 12/1/05. The sniffer indicated about  $5x10^{-5}$  sccm on SV3. No other valves read anything. The torque on each valve was then checked. SV1 & 4 valves were at their full torque of 30in-lbs, SV2 was at 1/2 of flight @ 30in-lbs, and SV3 was loose. SV3 was then torqued to 30in-lbs (1/2 flight). The valve was resniffed after a 1/2 hour and picked up nothing. During this activity, the tank pressure dropped about 2 psi to 18-19 psi, probably because SV3 was so loose that it opened momentarily with light finger pressure.

## **Corrective Action/ Resolution**

(How do we fix the unit? And how do we make sure it doesn't happen again?)

SV3 had been hand-tightened only at Swales prior to shipment. For future shipments, the valves should be tightened to ½ flight torque. The pressure panel will be sent from Swales to UCB to re-pressurize to 50 psi and the pressure will continue to be monitored at UCB to ensure the loosened valve was the only leak source. This PFR can be closed if the pressure does not change for 2 weeks after re-pressurization.

Acceptance: MAM: Ron Jackson	_; MSE: Ellen Taylor
PM: Peter Harvey	_; Cognizant Engineer
Date of Closure	

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