

PFR-172 Title: K1 Battery relay changed state during EGSE Rack #2 Check-out

Assembly : EGSE			SubAssembly : DAC			
Component :			Units Affected:	Units fixed:		
Originator: Ellen Taylor			EGSE Rack #2	EGSE Rack #2		
0	2					
Organization: Swales/UCB			Date: 5/02/06 (Date Found)			
Phone: (510) 643-4054			Email : ertaylor@ssl.berkeley.edu			
Failure Occurred During (Check one $$						
\Box Functional test \Box Qualification test $\sqrt{S/C}$ Integration \Box Launch operations \Box Other (Flight Assy				ns 🗆 Other (Flight Assy)		
Environment when failure occurred:						
√ Ambient	□ Vibration		□ Shock	□ Acoustic		
Thermal	Vacuum		Thermal-Vacuum	□ EMI/EMC		

During EGSE Rack #2 Check-out on 5/2/06, the K1 relay switched states. The Probe was turned on using the DPC. Because of problems with the EGSE Rack #2 configuration, telemetry was not available, however the DPC current was a little low (767mA) and the battery relay, K1 light was on. K2 was not on. No commands to turn on the battery had been sent.

Problem Description

See Mark Lewis E-mail, Subject: New GSE not working yet + battery relay anomaly, Date: Wednesday, May 03, 2006.

Analyses Performed to Determine Cause

The battery current was matched and the battery relay turned off at the GSE. The battery voltage immediately dropped by 0.1V, indicating that the battery relay really was on, and the DPC was giving the battery voltage a bit of a lift.

No mechanism (command or otherwise) is available to turn on only one of the battery relays and not the other. Therefore, the DaqScan 2000 DAC which controls the switches on the Umbilical Drawer was hypothesized to be the source of the anomaly. By default on EGSE Rack #2, the DAC comes up with all switches **high**. This causes high-level voltages to be sent to the Probe all at once. 56V to turn off the Battery Relays and 28V to turn on the Battery Relays would be sent at the same time. (On EGSE Rack #1, the DAC comes up with all switches **low**).

Corrective Action/ Resolution

Even though the DAC switches were set to off and the anomaly occurred after a couple of nominal turn ons, it was determined that the default **high** condition or similar configuration was the most likely cause of the problem. As the default configuration is unsafe for the Probe, power from the DAC was removed and it will not be used. The DAC is only used to remotely control the Umbilical switches - a capability that is never used.

Acceptance:		
MAM: Ron Jackson	; MSE: Ellen Taylor	
PM: Peter Harvey	; Cognizant Engineer	



Problem/Failure Report THM_PFR_172

Date of Closure_____