

May 4, 2005

Special Test Request Form	STR Number 9
Part 1 – Test Definition Section	
Test Requestor: Gary Godfrey and Tune Kamae	
<p>Test Purpose and Justification: The LAT needs a bias-free trigger and latch efficiency measurement. We propose to add two small scintillators to the existing LAT Muon Telescope and record times (GPS) of the muon crossings during selected 2-Tower tests. The Muon Telescope data will be recorded independently of the Tower A&B readout. We will correlate the recorded Muon Telescope times with the trigger times recorded in the LAT events by the standard data acquisition. Muon crossings that did not trigger the 2-Towers will be interpreted as an overall inefficiency. We will compare the measured overall inefficiency with that predicted by Monte Carlo.</p>	
<p>Test Description: The test operates parasitically during 2-Tower testing. The test will record Muon Telescope times on the BGO DAQ, totally independent of the 2-Tower test DAQ, while E2E and SVAC runs are occurring. After the test, muon telescope data will be compared with the pipe-line output from the 2-Tower test.</p>	
<p>GSE Configuration:</p> <ol style="list-style-type: none"> 1) The existing E2E and SVAC test configuration for the Two Towers. 2) Two small scintillators (7.5" x 15") added to the existing LAT Muon Telescope (making a coincidence of 4 scintillators). Note that the standard E2E and SVAC tests will still only see a two fold coincidence of the large scintillators as originally planned. The 4 fold is used only in the separated data stream used for this test. 3) The BGO DAQ configured to record GPS times from the muon telescope events (rather than the BGO). The Muon Telescope will only trigger the BGO DAQ, not the Two Towers. 	
<p>LAT Configuration:</p> <ol style="list-style-type: none"> 1) The existing E2E and SVAC tests' upright orientation for the Two Towers. 2) The 4 scintillator Muon Telescope will be placed around the LAT so that every ray that goes through the small scintillators must go through the two towers. 	
<p>Expected Results/Acceptance Criteria:</p> <p>Expected results: TKR trigger and latching efficiencies and any position dependence over the areas illuminated. Acceptance Criteria: None. The results will be written as a report and fed back to the collaboration.</p>	
<p>Expected Duration:</p> <p>Entire 2-Tower test interval with no additional time needed. The BGO DAQ will run simultaneously with E2E and SVAC tests that are already in the schedule.</p>	
<p>Expected Analysis Duration:</p> <p>4 weeks after test completion.</p>	
<p>Test Procedure:</p> <ol style="list-style-type: none"> 1) Set up the 4 scintillator muon telescope so that all rays through the two small scintillators pass through the two towers. 2) Start/stop the MUON acquisition program (on the BGO DAQ computer) within a few minutes of the Start/Stop of the E2E and SVAC test runs. 	

Test Script:

No new scripts.

Part 2 – Impact Assessment Section

Procedure development:

A minimal change is needed to all procedures for which the new data taking is operative. The procedure change required is to perform the same action as simultaneously Starting/Stopping BGO runs when Tower A was taking Van de Graaff data, except that MUON rather than BGO is typed.

Script development and checkout:

None. The E2E and SVAC test scripts are the existing ones. The program MUON for the BGO DAQ is already written and tested.

Impact to schedule:

None. No additional time is needed.

Risk Assessment:

None. The successful completion E2E and SVAC tests are **not** contingent on the Muon runs being successfully recorded by the BGO DAQ.

Required Resources:

The BGO DAQ (done), the LAT Muon Telescope, two additional small scintillators (already installed), ~5 days of Gary Godfrey’s time setting up the apparatus and writing docs, ~5 days of Tune Kamae’s time, ~2 weeks of Tune Kamae’s post-doc’s time analyzing the data, and ~1/4 day I&T electrical engineer’s time to modify the AIDS for E2E and SVAC data taking. The AIDS will call out LAT-PS-06614 (Procedure for Taking Simultaneous Muon Telescope and LAT Data) when all E2E and SVAC runs are executed for the 2-Tower test.

Other Affected Parties:

Reviewers.

Part 3: Signature Approval:

Required Authorizations	Printed Name	Signature	Date
Quality	Joe Cullinan		
I&T	Elliott Bloom		
Program Office	Lowell Klaisner or Dick Horn		
Systems Engineering	Pat Hascall		
Affected S/S managers	N/A		
Instrument Scientist	Steve Ritz or Eduardo do Couto e Silva		
	N/A		
Other	N/A		
Other	N/A		
Other	N/A		

