

<b>Special Test Request Form</b>	<b>STR Number 33</b>
<b>Part 1 – Test Definition Section</b>	
<b>Test Title: Verification that readout of the CAL is causing retriggering in flight mode</b>	<b>Test Requestor: Anders W. Borgland</b>
<p><b>Test Purpose and Justification:</b></p> <p>Analysis of the SVAC runs has revealed that we have a retriggering effect when in flight mode. For 8 towers we systematically discard 2 events due to LAT busy for every event we read out (with the CAL in normal readout mode). With 4-range readout of the CAL this increases to 4 events discarded per event read out. This can be seen with the GEM discarded counter. Preliminary analysis reveals a time structure for the discarded events. The effect is also seen in 2, 4 and 6 tower data. We have no information that can tell us which trigger(s) issued the requests as these retriggerers occur during the time LAT is dead due to readout.</p> <p>The hypothesis is that the retriggering is caused by the readout of the CAL enabling CAL LO and/or CAL HI. To confirm this we propose three cosmic ray test runs. One baseline run, one run where we don't allow CAL LO to open the trigger window and one run where we don't allow CAL HI to open the trigger window, and one run where neither CAL LO nor CAL HI are allowed to open the trigger window. We will then use the GEM discarded counter to look at the retriggering rate in the two test runs.</p> <p>Any change in the retriggering rate would confirm that the (re)trigger requests are coming from CAL LO and/or CAL HI. We would also be able to see if the time structure changes.</p>	
<p><b>Test Description:</b></p> <ol style="list-style-type: none"> <li>1. Collect 30 minutes of muon data with SVAC End2End run with ID B-2. This would be the baseline run.</li> <li>2. Collect 30 minutes of muon data in the same configuration as #1 except CAL LO is not allowed to open the trigger window.</li> <li>3. Collect 30 minutes of muon data in the same configuration as #1 except CAL HI is not allowed to open the trigger window.</li> <li>4. Collect 30 minutes of muon data in the same configuration as #1 except neither CAL LO nor CAL HI are allowed to open the trigger window. This configuration is SVAC B-23</li> </ol>	
<p><b>GSE Configuration:</b></p> <p>Current configuration used for 8 towers under LATTE 4.x</p>	
<p><b>LAT Configuration:</b></p> <p>Eight towers in the grid with EM GASU and EM PDU.</p>	
<p><b>Expected Results/Acceptance Criteria:</b></p> <p>Offline results: Analysis of retriggering rate and time structure.</p> <p>Acceptance criteria: Data taking completes with no errors. If time is short the run length can be shortened to 20 min.</p>	
<p><b>Expected Duration:</b></p> <p>3h including setup</p>	
<p><b>Expected Analysis Duration:</b></p> <p>1 day</p>	
<p><b>Test Procedure:</b></p> <p>Same as previously taken 8 tower SVAC B-2 runs.</p>	
<p><b>Test Script:</b></p> <p>Uses SVAC End2End runs with ID B-2, B-21, B-22 and B-23..</p>	

<b>Part 2 – Impact Assessment Section</b>			
<b>Procedure development:</b> Procedure will be written step-by-step in a work order.			
<b>Script development and checkout:</b> Two new e2e configuration files need to be made for the new runs.			
<b>Impact to schedule:</b> 0 or ½ shift, depending on the situation.			
<b>Risk Assessment:</b> Procedure does not carry any risks.			
<b>Required Resources:</b> 2-hrs of Lester time. Note that he is currently working on ACD receiving test validation. ½ hr of Brian time to write the work order. ½ shift of test conductor/operator time to power-on, execute work order, and power-off instrument.			
<b>Other Affected Parties:</b>  SVAC: Analysis of the data			
<b>Part 3: Signature Approval:</b>			
Required Authorizations	Printed Name	Signature	Date
Quality	Joe Cullinan	(Signature on file)	8/26/05
I&T	Elliott Bloom	(Signature on file)	8/26/05
Program Office	Lowell Klaisner or Dick Horn	(Signature on file)	8/25/05
Systems Engineering	Pat Hascall	(Signature on file)	8/26/05
Affected S/S managers	N/A		
Instrument Scientist	Steve Ritz or Eduardo do Couto e Silva	(Signature on file)	8/26/05
Other	N/A		
Other	N/A		
Other	N/A		
Other	N/A		