

Special Test Request Form		STR Number 27X
Part 1 – Test Definition Section		
Test Title: ACD ROI veto logic and ACD inefficiency test		Test Requestor: Eduardo do Couto e Silva, Eric Charles and Anders. W. Borgland
<p>Test Purpose and Justification:</p> <ol style="list-style-type: none"> Verify that the ACD Region of Interest (ROI) veto logic in the GEM works. Find the 'holes' in the ACD ROI coverage when in veto mode. 		
<p>Test Description:</p> <ol style="list-style-type: none"> Collect 4h of muon data with 8 towers and ACD in flight configuration with the ACD ROI set to veto mode i.e. Each tower would have a corresponding ROI and we would not trigger if there is a coincidence between the tower and the corresponding ROI. The ACD thresholds should be set as close as possible to the expected on-orbit thresholds, currently 0.3 MIP. The 4h of data should be taken as a single run. Collect 1h of muon data with 8 towers and ACD in the same configuration as #1, but now we trigger on the coincidence between a tower and the corresponding ROI. Note that this uses the Veto mode of the GEM, but that the corresponding trigger engine will be set to trigger the event. Collect 1h of muon data with 8 towers and ACD in the same configuration as trigger STR 24: ACD trigger efficiency. The ACD will not be allowed to trigger. <p>Configurations #1 and #2 are mutually exclusive and the sum of the two data samples will be equal to the one from configuration #3. This will greatly help the analysis of any problems we see in the Veto run (configuration #1).</p> <p>TEM diagnostics should be enabled in all configurations if possible.</p> <p>The main purpose of the test is configuration #1. In case of time or manpower problems we could drop #2 and #3.</p>		
<p>GSE Configuration:</p> <p>Current configuration used for 8 tower and ACD data taking under LATTE 4.x</p>		
<p>LAT Configuration:</p> <p>Eight towers in the grid with the ACD, EM GASU and EM PDU.</p>		
<p>Expected Results/Acceptance Criteria:</p> <p>Expected results:</p> <ol style="list-style-type: none"> Offline analysis of the 'holes' in the ACD ROI coverage. Offline analysis to confirm that the ROI veto logic worked. <p>Acceptance criteria: Data taking completes with no errors.</p>		
<p>Expected Duration:</p> <p>7h including setup.</p>		
<p>Expected Analysis Duration:</p> <p>One week</p>		
<p>Test Procedure:</p> <p>Same as any SVAC run with the configurations modified as described above. Tests 2 and 3 should each be split into two 30 min runs. Test 1 should be taken as a single run.</p>		
<p>Test Script:</p> <p>Data taking script for 8 towers and ACD in flight configuration with the ACD ROI set to veto mode and a second script where we trigger on the coincidence of a tower and the corresponding ROI. Script for configuration #3 will be the one used for the trigger STR.</p>		

Part 2 – Impact Assessment Section

Procedure development:

Procedure used for data taking with 8 towers and ACD: No impact.

Script development and checkout:

1. SVAC needs to define the ROI for 8 towers. This has been completed.
2. Online needs to write a script for data taking with 8 towers and ACD in flight configuration with the ACD ROI set to veto mode and where we don't trigger on this condition, and a second script where we trigger on the coincidence of a tower a the corresponding ROI. They can be based on the current End2End run B-2. If possible, TEM diagnostics should be enabled for all test scripts.

Impact to schedule:

No impact.

Risk Assessment:

Procedure does not have any risk.

Required Resources:

1. Eight towers and ACD in the grid, EM GASU and EM PDU.
2. Presence of an operator to power on and off the instrument at test start and end and to run the test scripts..
3. Please notify Anders W. Borgland when the tests starts.

Other Affected Parties:

1. SVAC: Neds to define the ROI for 8 towers. This has been completed.
2. Online: Needs to write the test scripts.

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		
Other	N/A		
Other	N/A		
Other	N/A		
Other	N/A		