

Special Test Request Form		STR Number 14
Part 1 – Test Definition Section		
Test Title: Trigger Timing Scans: TKR TACK and TEM Diagnostics Latching	Test Requestor: Su Dong	
<p>Test Purpose and Justification: This STR proposal has two parts: 1) To make a controlled TACK scan for more precise optimization of TKR signal latching, 2) and a timing scan of the TEM diagnostic data latching.</p> <ol style="list-style-type: none"> 1. The existing standard trigger TACK scan test uses the TKR trigger itself to get a faster data collection to save testing time. The TKR trigger delay unfortunately doesn't allow one to see the TACK peak clearly as it cannot reach earlier times when signal latching drop. This STR proposal is to use muon telescope trigger only to gather a consistent set of data, including the very early time points. The result of this is important for TACK settings in various TKR standard tests to allow the TACK settings for various charge injection related tests to closely follow that for the equivalent setting for real muons. Some standard TKR tests are currently being held until we obtain some results from this STR. 2. There also have been confusion regarding the interpretation of TEM diagnostic data recently. A systematic scan of the TEM diagnostic data latching delay and stretch will allow a more precise understanding and obtain an optimized best setup for the diagnostic data. 		
<p>Test Description: These tests include 2 parts:</p> <ol style="list-style-type: none"> 1) TKR TACK scan with muon telescope: Based on the present trigger TACK scan test setup and operate on one selected tower (tower 1) and with muon telescope placed vertically above and below the tower. Trigger on muon telescope only, with the GEM TREQ delay for EXT set to zero. Set the GEM trigger window width to minimum. Scan through TKR TACK=0,5,10,15,20 with 10,000 muon telescope triggers per point. Examine TKR hit multiplicity online and offline to determine the optimal TACK setting. Total time ~9 hours. 2) TEM diagnostic data latching test: Based on present trigger efficiency test setup and operate on all towers which are available in the grid. Use muon telescope (vertical over tower 1), CAL and TKR triggers to take muon data from all towers at various TEM diagnostic data latching settings. We envisage to take data at 8 different diagnostic data latching configurations (CAL and TKR adjusted simultaneously) with 20 min data at each point. Total test time ~3 hours. 		
<p>GSE Configuration: GASU based teststand and the muon telescope at building 33. Muon telescope is placed vertically over tower 1.</p>		
<p>LAT Configuration: The tower in bay 1 is required. The test is to be run with any other towers available at the time of execution. A total of 6 towers is expected, but not required. Both tests should have the one-shot enabled with the baseline value.</p>		
<p>Expected Results/Acceptance Criteria: Expected results: Optimized TKR TACK setting and optimized TEM trigger diagnostic data latching settings. Recommendation for the one-shot duration that has the highest capture rate for diagnostics.</p>		

Expected Duration:

12 hours, not including overhead. However, the two tests can be scheduled in two separate sessions.

Expected Analysis Duration:

Part of results will be available online. Offline results 1 week after test completion. The one-shot duration recommendation will be available one working day after the completion of the test.

Test Procedure:

Similar procedure as official trigger tests, with only adjustments of trigger delay and diagnostic data latching parameters online, by Hiro Tajima or Martin Kocian.

Test Script:

Test scripts are the official trigger scripts:

Test 1) TRG/Scripts/multiTowerTimeInSuite.py

Test 2) TRG/Scripts/triggerdata.py

Part 2 – Impact Assessment Section			
Procedure development:			
The procedure is the similar to existing trigger tests for test, only a few configuration parameters need to be altered for each test.			
Script development and checkout:			
Test scripts are the standard trigger test scripts already in place.			
Impact to schedule:			
The total testing time is ~2 shifts.			
Risk Assessment:			
Procedure does not have additional risks beyond the standard trigger tests.			
Required Resources:			
GASU based teststand, muon telescope and TKR charge injection associated equipment at building 33. Muon telescope is needed for the two tests. Needs Hiro Tajima or Martin Kocian to be present for parameter changes. Needs presence of an operator for equipment power on/off at start and end of the test.			
Other Affected Parties:			
Part 3: Signature Approval:			
Required Authorizations	Printed Name	Signature	Date
Quality	Joe Cullinan	(Signature on file)	6/29/05
I&T	Elliott Bloom	(Signature on file)	6/28/05
Program Office	Lowell Klaisner or Dick Horn	(Signature on file)	6/28/05
Systems Engineering	Pat Hascall	(Signature on file)	6/29/05
Affected S/S managers	N/A		
Instrument Scientist	Steve Ritz or Eduardo do Couto e Silva	(Signature on file)	6/28/05
DAQ	Mike Huffer	(Signature on file)	6/28/05
Other	N/A		
Other	N/A		
Other	N/A		