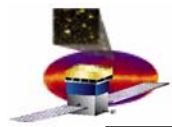


# Outline

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- **PASS/FAIL tests from SVAC**
  - **Changing definitions**
- **E2E Trigger rate tests**
  - **Some implementation details**



# E2E tests – Trigger & Data Flow

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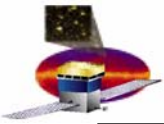
- **What are they ?**
  - **1 out 4 recommended tests by the End-to-end Test committee**
    - They take the longest time as far as data taking is concerned ( ~ 1 week)
  - **Tests using cosmic rays (focus on that for today's talk)**
    - The key is to create a baseline run used for reference to compare distributions
    - Comparisons to be made from runs with different instrument conditions
- **When are they done?**
  - **When 2 and 16 towers and the LAT are in the grid**
    - Get as much experience as we can with EM2 and 1 tower
- **Pass/Fail Criteria (TBR – see next slides)**
  - **Conditional Pass (integration continues if passes the following criteria)**
    - Trigger and Data Flow system does not hang
    - No transport errors
    - Data is analyzable (Quick look – automated reports)
  - **Final “Pass/Fail” Criteria (Detailed analysis)**
    - Muon distributions should not change when comparing data with and without high rate triggers
      - » Need to choose which distributions to look and which cuts to use
      - » Not straightforward because it involves SAS reconstruction



# PASS/FAIL criteria revisited

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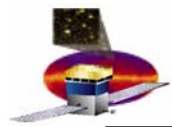
- After discussions with Steve, Bill and Pat we realized that semantics can kill us ...
  - **Pass/Fail has a well defined meaning for aerospace**
    - we should minimize confusion by NOT using it for SVAC activities
  - **For the E2E tests in this talk the real pass/fail criteria should be**
    - No hangs
    - No transport errors
    - Data is analyzable
  - **Data analyzability means**
    - **Instrument is working OK**
      - Will most likely be already addressed by the online through the I&T scripts
        - » Who is defining the distributions that we will be plotting?
        - » Can we have a presentation in this meeting and in the VRVS analyses meeting?
      - SVAC will provide a cross check offline using automated reports
  - **Cosmic ray data will be reconstructed using SAS software**
    - This is part of the detailed analysis effort
    - turnaround time is 2 weeks (TBR as we get more experience)
    - Automated Reports at the end of each run will be produced at the RECON level (as an added bonus) but will NOT used to determine pass or fail



# E2E Trigger Rate test

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- **What is it?**
  - **A test that overlays a Poisson distribution of external triggers at different rates on the top of the regular LAT triggers**
- **When do we need to implement?**
  - **EM2 (Aug 20)**
    - Need TKR & CAL & ACD if possible
    - Need to evaluate if criteria for hanging and transport errors should be more loose to allow “graceful recoveries”
    - Test phase debugging hardware and test
    - Debugging phase for SAS software and implementation of quick look reports
  - **First tower (Sep 12)**
    - First real test with hardware and SAS software
    - Use it as a learning curve
    - Evaluate quick look report
    - Evaluate turnaround time for final pass/fail criteria (1 or 2 weeks)
  - **Two towers (Sep 12)**
    - This is when we do the real test for the first time



# One of the tests - E2E Trigger rate test

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- **When do we need to implement?**
  - **EM2 (Aug 20)**
    - Need TKR & CAL & ACD if possible
    - Need to evaluate if criteria for hanging and transport errors should be more loose to allow “graceful recoveries”
    - Test phase debugging hardware and test
    - Debugging phase for SAS software and implementation of quick look reports
  - **First tower (Sep 21)**
    - First real test with hardware and SAS software
    - Use it as a learning curve
    - Evaluate quick look report
    - Evaluate turnaround time for final pass/fail criteria (~ 2 weeks)
  - **Two towers (Oct 12)**
    - This is when we do the real test for the first time



# Infrastructure for Trigger rate test

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- Need a pattern generator for trigger rates
  - JJ and Mike suggested that we get a hardware generator
    - Software may have glitches and needs time to implement and test
    - Hardware provides more flexibility in the testing program (i.e. turn a knob and get different rate)
- Implementation Tasks
  - Research to get the right generator (led by Gary in coordination with JJ and Mike?)
    - Needs to happen ASAP if we want to make it for the EM2, especially if there is lead time in getting the hardware and testing it
    - Need ~ 3K from I&T Particle Tests budget
    - May have TTL output which needs to be changed to LVDS, so some work may be needed
  - Implement interface to GASU
    - Mike is working on it and believes will be available for EM2 (Aug 20 time frame)
    - May require one day of work at most one day from Online to get the functionality implemented (seems straightforward, but Ric is the one who has a say on it...)
  - How to record the configuration?
    - Need to capture which rate we dialed in and make this propagate into the electronic log book for the data runs
    - This is usually done by parsing XML files from online into ORACLE database
      - » If it is not in the online output we can not see it !
    - Not sure how to solve this one...
  - Who coordinates this implementation to ensure all pieces are there for EM2?