Status of Onboard Filter & Ground Software Integration

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Tasks

- Integrate onboard filter with GlastRelease
- Verify filter logic and function
  - Compare Event Display & ntuple variable distributions with filter status code output
- Extract info from filter
  - Examine filter track finding
  - Use other quantities calculated in filter
- Use filter to evaluate impacts on science performance (mainly effective area & FOV). Guide for iteration on filter algorithms. Best fidelity by using identical code.
Integration Status

- A few minor changes have been made so that the filter compiles under Windows.
- The filter is integrated into Gleam via a C++ wrapper, which calls it once for each triggered event.
- Input to the filter are digis formatted by the EbfWriter package:
  - EbfWriter puts one EBF formatted event into the TDS.
  - The filter takes this event from the TDS and processes it.
- The filter returns a 32-bit status code that contains basic information on event processing and the veto bits.
- Write the 32-bit status code to the MeritTuple as two words: (FilterStatusCodeHi and FilterStatusCodeLo).
- Continuing detailed checking of everything now.
Integration Status…continued

- Information about tracks, etc., not yet extracted
  - This is the next main task after the logic is verified
- The “OnboardFilter” and “EbfWriter” packages are uploaded to CVS, but not yet included in the Gleam and GlastRelease requirements files
- Documentation on the filter’s logic is being updated for public release
Verifying the Filter’s Logic

- Going through events to verify that the filter works as desired
  - Looking at the event display, ntuple variables, and filter status code – checking for consistency
  - Stepping through filtered events with debugger
  - Checking logic, missed tracks, etc.
- Until operation is verified, we don’t recommend that it be used for analysis
  - The possible logic change may impact the veto rate significantly
Next Steps

- Finish integration into GlastRelease
- Finish verification of logic and function
- Extract filter-generated info (tracks, etc.). Make tracks and other objects available in the TDS.
- Calculate impacts on science performance. Evaluate tracking algorithm.