

# E906/SeaQuest AEM

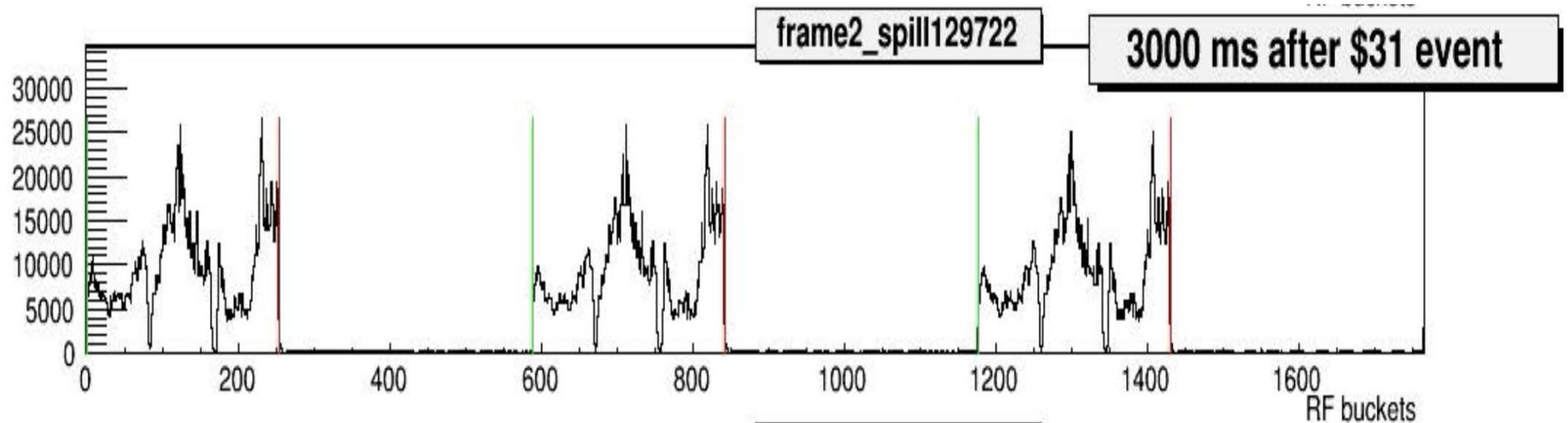
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# Critical Path Items

- Beam quality improvement/tuning
- Achieving higher overall beam intensity
- Beam Cerenkov inhibit and trigger deadtime readouts
- Trigger Checkout

# Beam Status

- Three major activities over the past week:
  - Time-in Cerenkov inhibit to veto high intensity RF buckets
  - Foil calibration for NM3ION
  - We are now running with 3 booster batches filled with 2 turn injection. Intensity per bucket as low as possible, while increasing per-spill intensity.

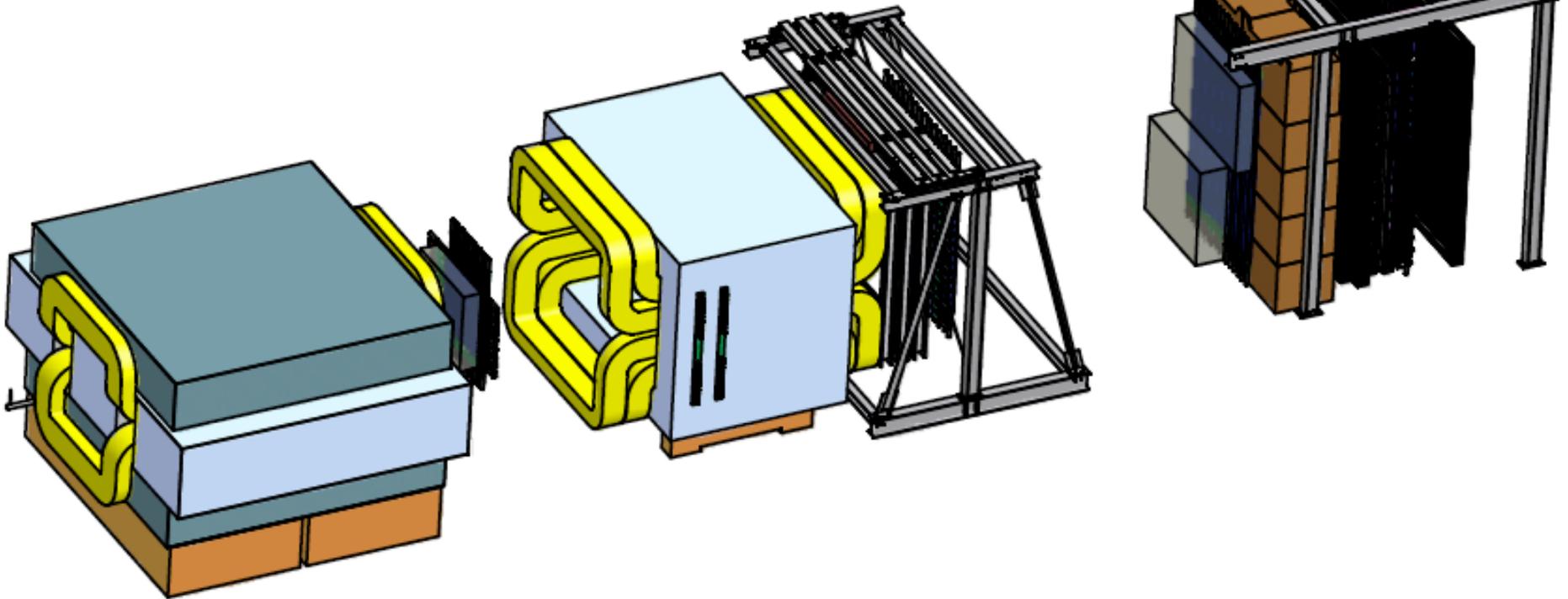


# Beam Status

- In the near future:
  - Increase to 6 booster batches? Need to understand losses in the Main Injector.
  - Replace box SWIC – culprit for radiation monitor trip during the last 6 booster run?
  - Get inhibit and trigger information out of the Cerenkov. We are still fighting off bugs in the firmware. Another try expected this week with updated firmware. Calculate:
    - % protons inhibited due to high intensity RF buckets
    - % protons rejected due to DAQ deadtime
    - # protons in RF bucket where DAQ triggered
    - % protons accepted (note: inhibit and deadtimes may overlap)

# Spectrometer

- All detectors working.
- Liquid target cooldown next week.



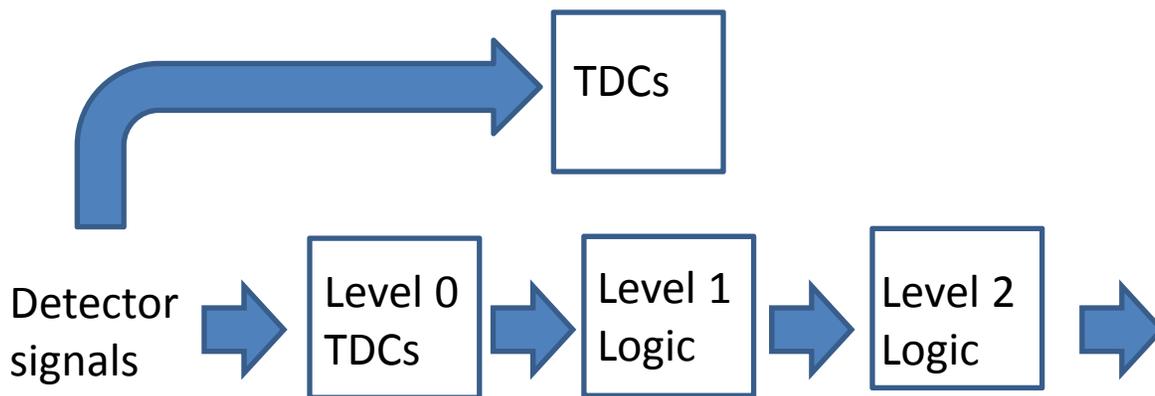
# Trigger

- We have multiple trigger firmware with different roads available:
  - Target Drell-Yan
  - Target J/Psi
  - Dump Drell-Yan
  - Dump J/Psi

Level 1 – Check detector hits and timing to find matching roads

Level 2 – Coincidence between top and bottom trajectories (di-muon)

- CAMAC discriminator summed output saturates → NIM diagnostic trigger.
- Several bugs uncovered for the TDCs.
- Main problem at the moment is understanding the “purity” of triggers fired, particularly at high rates.



Compare trigger logic input with output.

- Some triggers “should not have” fired
- Some triggers “should have” fired but didn’t

# Critical Path Items

- Beam quality improvement/tuning
- Achieving higher overall beam intensity
  - Tuning on-going and making progress
  - Running 5 booster batches, 2 turn injection,  $1E12$  ppp, ~35% duty factor
- Beam Cerenkov inhibit and trigger deadtime readouts
- Trigger Checkout
  - Readout board firmware being debugged. 53MHz readout is good. Another iteration expected this week to fix inhibit and trigger encoding.
  - Trigger studies on-going. Several bugs uncovered.