DUNE 35-ton Simulation and Reconstruction News and Announcements

Tom Junk, Michelle Stancari, Tingjun Yang, Mark Convery
Fermilab, SLAC

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Dates
Releases
Other News

Important Dates

September Collaboration Meeting
Fermilab, September 2, 3, 4, 5 (Weds – Sat.)
https://indico.fnal.gov/conferenceDisplay.py?confId=10100

LBNC – meeting in conjunction with the September
DUNE Collaboration Meeting
https://indico.fnal.gov/conferenceDisplay.py?confId=10193
Many sessions of this are closed, but there are open LBNF
talks on Thurs. Sep. 3, and plenary talks on Sunday Sep. 6 (task forces)
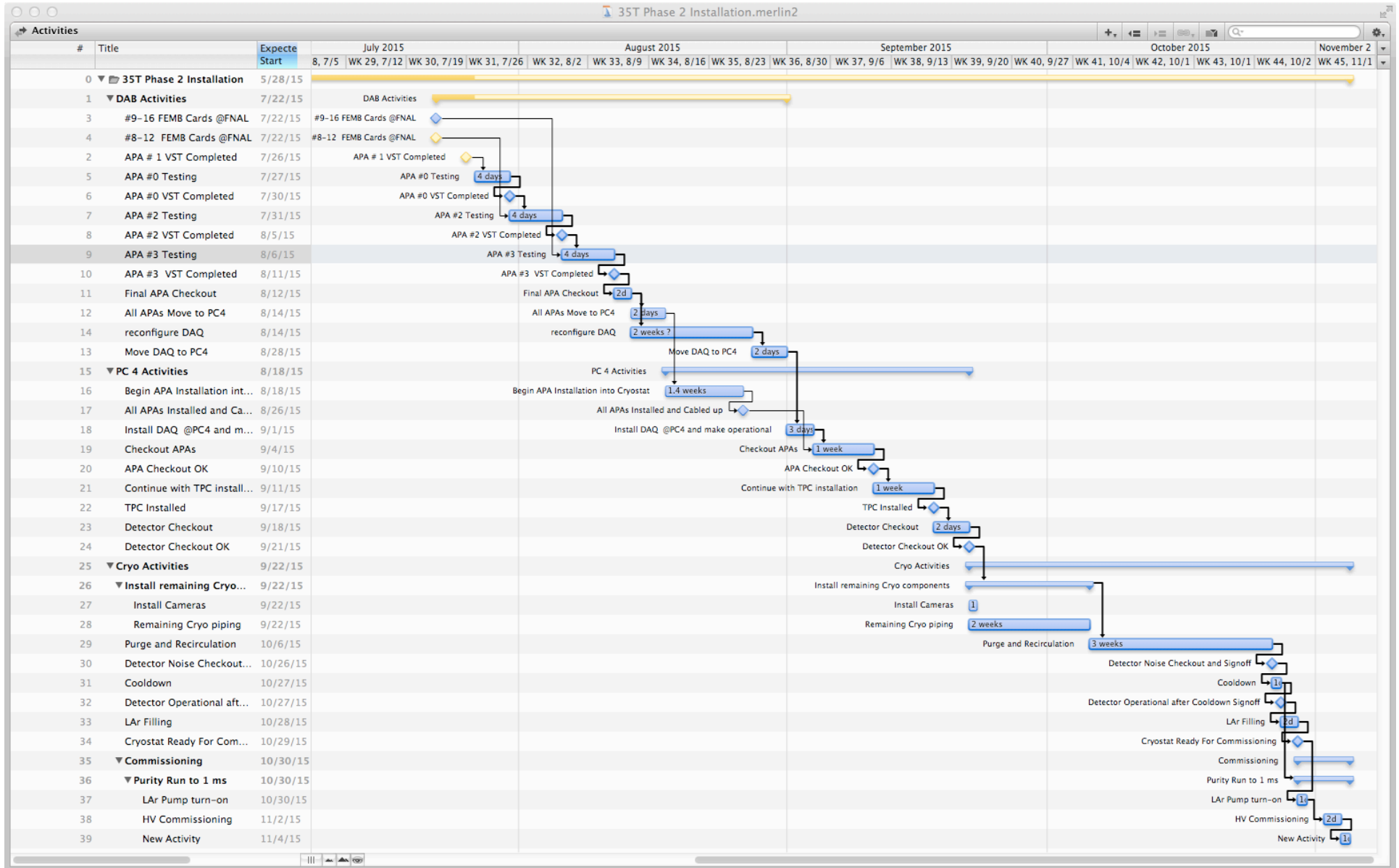
January 2016 Collaboration meeting
University of Texas at Arlington, January 12, 13, 14, 15 (Tues – Fri.)
https://indico.fnal.gov/conferenceDisplay.py?confId=10276

Current Status

A. Hahn
Monday

- ## APAs
  - 3 APAs have been moved to PC4
    - 7 Board-2 (long APA, first to be installed)
    - 4 Board (Top short APA)
    - 3 Board (Bottom short(est) APA)
  - 7 Board -1 APA still at DAB
    - Waiting for FEMB to arrive from BNL
      - Current mounted FEMB tends to be missing 48/128 channels
    - Other needs
      - Faraday Shield to be attached
      - JTAG test
      - We are using this APA to test the Potted Flange Board
    - Could be finished by this afternoon to be shipped tomorrow or on Wednesday to PC4 (don't think this is impacting the schedule

- ## APA Installation begins today!
  - Jack Fowler (Duke), Dan Wenman (PSL), and Bob Kubinski (FNAL)

8/24/15

MCC 4.0 Report from Tingjun

MCC 4.0 is almost finished.

The horizontal muon sample is still running.
FD samples coming next.

The detailed information can be found at:
https://cdcvs.fnal.gov/redmine/projects/lbne-fd-sim/wiki/LBNE35T4APASamples

- Please use the LArForum: http://www.larforum.org/forum/

- cvmfs   E. Snider, Aug. 25

  - The oasis instance of cvmfs is going offline permanently TODAY!!
    - /cvmfs/oasis.opensciencegrid.org/fermilab/products/larsoft
    - May already be gone…

  - New path
    - /cvmfs/fermilab.opensciencegrid.org/products/larsoft
    - Will need to change anything that refers to file paths on cvmfs

  - No changes needed to local client configuration

  Should have already received email notifications about all this

DUNE CVMFS specific – Dave Adams is working to build a bundle for DUNE – we had
packaged separately lbnecode, dune_pardata, lbneutil, and lbne_raw_data, as packages,
but would like to bundle dunetpc, dune_pardata, duneutil, and dune_raw_data.
Needs the lbne_raw_data tarball installed in the dune area

Short reports

- **Profiling and optimization**

  Leader: Jim Kowalkowski

  – Evaluate the use of GEANT4 in LArSoft using LARIAT simulation as a model

  1) physics lists
  2) geometry use and energy deposition
  3) stepping and other GEANT4 parameters

  4) code speed
  5) upstream detector integration (if time)

  – Held a kick-off meeting yesterday (Aug 24)

  - Plan is to devote 40 to 60 hours over the course of four weeks
  - Final report due Sept 21
  - Work to be carried out by Krzysztof Genser and Hans Wenzel

  First recommendation:
  - G4 team **strongly recommends** migrating to GEANT4 **v4.10.1p02** ASAP
    - Suggest doing this **before optimization work begins**
  - Currently at v4.9.6, which has inferior low energy physics, among other things

  Comments??   7

I said DUNE 35t/FD wasn't wedded to any particular version of GEANT4. Your opinion?

Short reports

- ## CI system upgrade and operations
  Vito di Benedetto

  - CI system interface improvements continue under a new phase of work

  - Targeted at implementing features and improvements identified during the v2 CI upgrade project

  - A number of new commands and features already available

    - Vito will present these at an upcoming LArSoft Coordination Meeting

- ## Common document repository

  - Have initiated contact with INSPIRE support

    - Will be meeting with them within the next week

  - Expect progress in time for the next meeting

Current activities

- Factorization of basic services

    - DatabaseUtil: preliminary version by GP, needed as dependency of...

    - LArProperties: Jonathan Paley completing the work

    - DetectorProperties: Brandon Eberly or Jonathan Paley (?) have volunteered after LArProperties is completed.

- After the services are factorized, focus will move to reconstruction algorithms

    - CosmicTracker

    - TrackKalman3DHit

    - fuzzyCluster

    - RawHitFinder

    - others

Event Display Improvements

Erica reported on Aug. 25 that MicroBooNE data events were taking 300 sec to draw over the network using the event display. ~80M rectangles drawn (overlapping)

Optimized to coalesce nearby data and show only the ~15K pixels per view that fit on a typical screen.

G. Petrillo,
Aug. 25

- The current status
  - Implemented in larveventdisplay branch feature/gp_FasterDigits
  - A number of known glitches

  Please test it and report the glitches that you feel need to be fixed

  Gianluca will request merging no later than two weeks from now

- But what about the other 15%??
  - Birks correction is called for each digit
    - It queries LArProperties for two bits of information that might be in the DB
      - Currently there is no DB...
    - Those bits check whether there is a DB connection. This check is expensive
  - The solution:
    - Made the check cheap
    - This change is already in lardata

Space Charge Simulation

See Mike Mooney's talk at last week's meeting.

MicroBooNE (and we) would like to see this pushed into larsoft sooner rather than later.

But several changes requested before pushing it – remove the hard-coded hard cut at 50 cm on TPC max. drift to enable space charge at all (cuts out small 35t TPC's), and remove CoordinateType fcl parameter.

Too late for MCC 4.0. Release already cut.

Defaults to "off"

But we would like to start using it. Field maps already installed in dune_pardata (but do not include effects of fluid flow or negative ions)

SpaCE program – makes the maps and visualizes them – to be pushed to GitHub

Computing Bits

lbnegpvm01.fnal.gov through lbnegpvm10.fnal.gov now have "convenience names" of dunegpvm01.fnal.gov through dunegpvm10.fnal.gov.

But $HOSTNAME still translates to lbnegpvm*. Probably need to cut over to entirely DUNE after a transition period, so this was the right thing to do.

After reading Lynn's build time summary, it looks like having a machine with more than four cores will speed up builds. More than 20 might be a waste though.

I had requested coalescing lbnegpvm07, 08, 09, and 10 together into one 16-core VM, but apparently 4 cores is the limit. Ed Simmonds suggested requesting separate hardware.
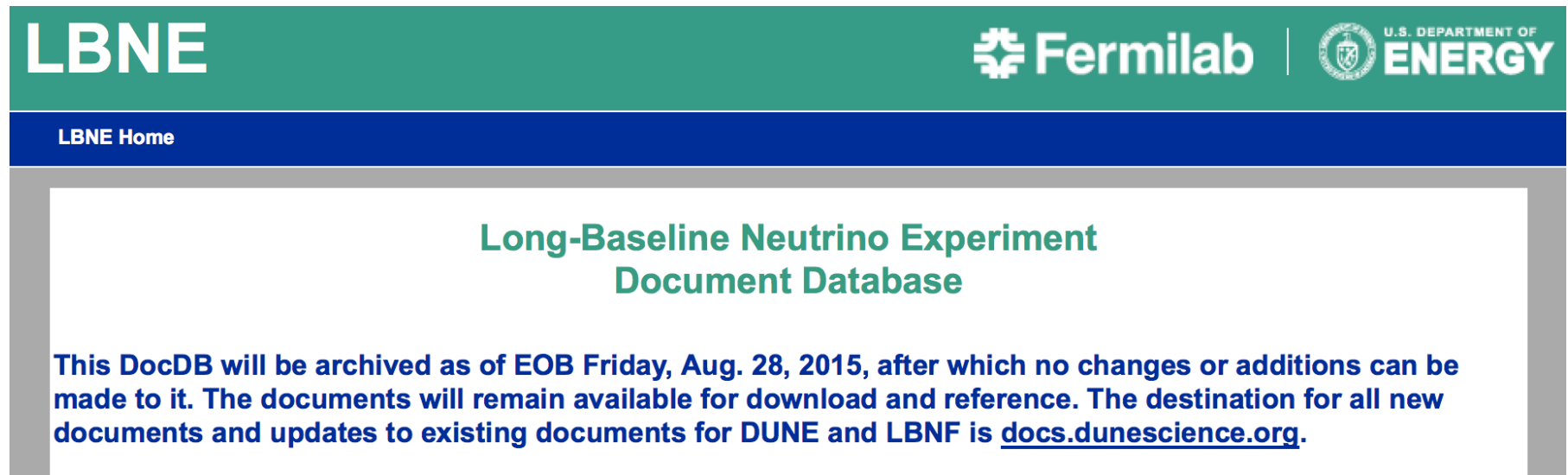
Service desk ticket put in for a build machine with 16 cores. More and we'll probably run into disk issues.

Freezing LBNE

lbnecode and lbneutil now no longer accepts pushes – you can still check out the code and read it, just not push new changes

Use dunetpc and duneutil instead!

Need to add this to the wikis.

LBNE   **Fermilab** | **U.S. DEPARTMENT OF ENERGY**

LBNE Home

**Long-Baseline Neutrino Experiment
Document Database**

This DocDB will be archived as of EOB Friday, Aug. 28, 2015, after which no changes or additions can be made to it. The documents will remain available for download and reference. The destination for all new documents and updates to existing documents for DUNE and LBNF is docs.dunescience.org.