

# 12GeV Commissioning and Initial Physics Plans

Arne Freyberger  
Operations Dept.  
Accelerator Division  
JLAB

*January 13, 2012*

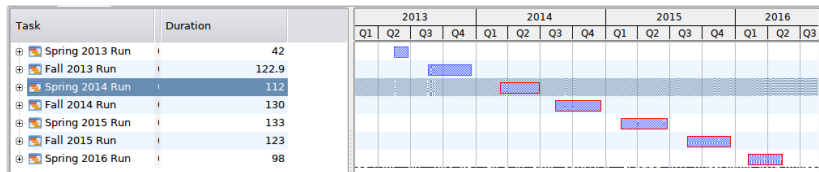
# Outline

- 1 6MSD Lessons
- 2 12 GeV Strawman

What can we learn from the 6MSD in regards to 12GeV commissioning and the initial physics program?

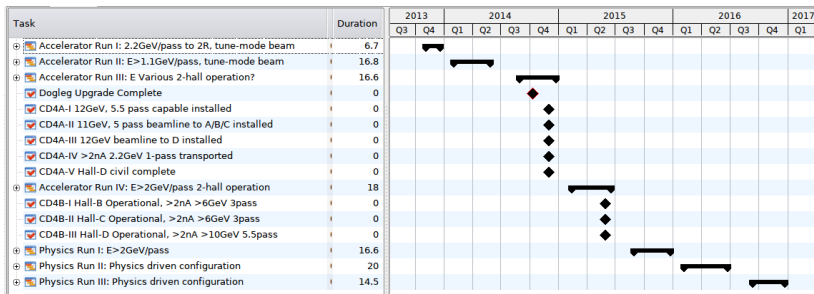
- Potential for damaging (destroying) equipment is non-zero.
- Impact of the loss of beam line components can be large in terms of scheduling and waiting for repaired components.
  - There will be a need to be flexible the first few years as the weakest elements are flushed out of the system.
- Machine will be a challenge to commission and understand.
- Beam Quality may not be completely under control.
  - C100 for example
  - Pathlength

# 12 GeV Strawman: circa 2010



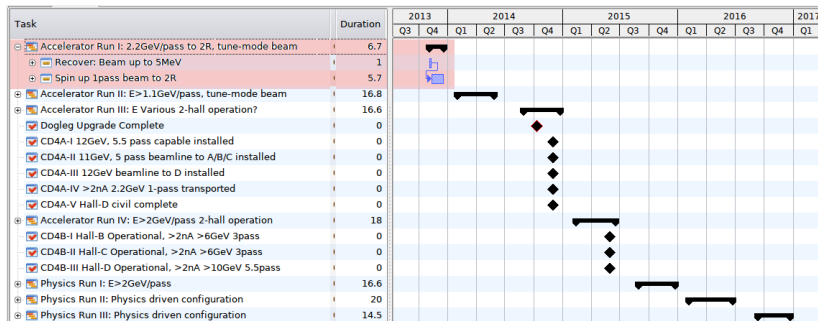
- Assumes 12 month shutdown (might be longer)
- Assumes 35 weeks of operation per Fiscal Year (might be less)
- Assumes 2 run periods per year (Spring/Fall) (might be more efficient to have one long run period Sept→May).

# 12 GeV Generic Strawman: circa 2012



- Same plan with names that aren't tied to dates.
- Assumes a 16 Month Shutdown
- There is a possibility of Physics during the later Accelerator runs.
- Lets walk through this one run at a time.

# Accelerator Run I



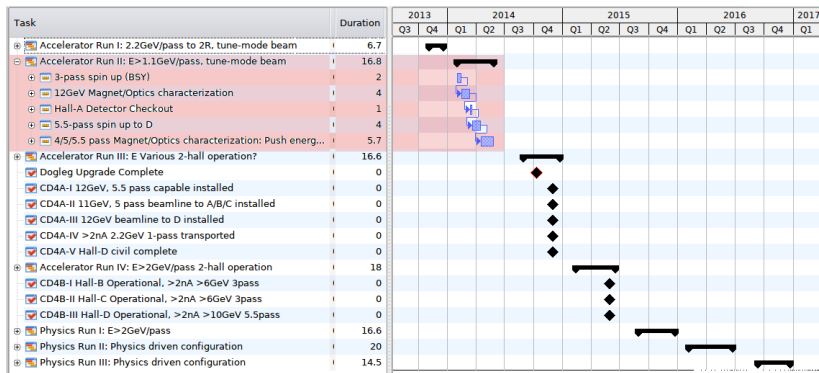
Duration 6 weeks

Goal 1-pass spin up, with RF at 2.2 GeV per pass

Risks RF and Magnets....

Physics No!

# Accelerator Run II

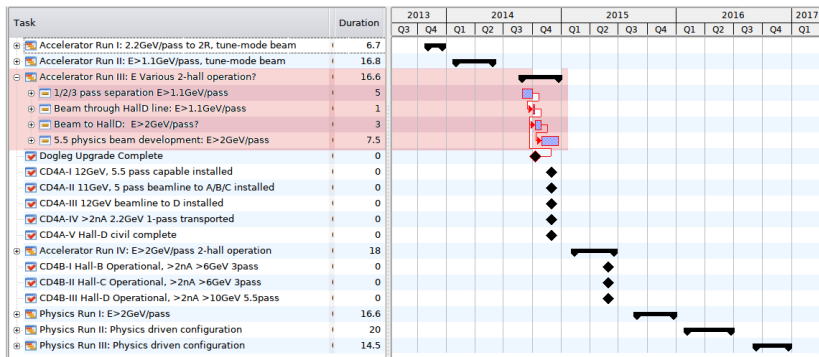


**Duration** 17 weeks

**Goal** 3-pass spin up, with a stretch goal of 5.5 pass spin up. Magnet and beam transport characterization.

**Issues** Pathlength system will restrict energy configuration. Injector C100 must be installed before this run.

# Accelerator Run III



**Duration** 17 weeks

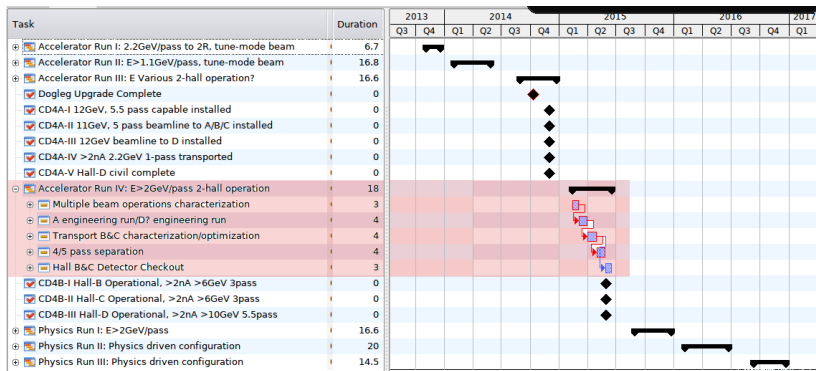
**Goal** 1/2/3 pass separation, 5.5pass beam characterization.

**Issues** Need upgraded doglegs (pathlength) for this run.

**Physics** Beam to Hall-D, 3wk for transport tests. Hall-A physics (passes 1/2/3) if separators work and beam quality acceptable?



# Accelerator Run IV



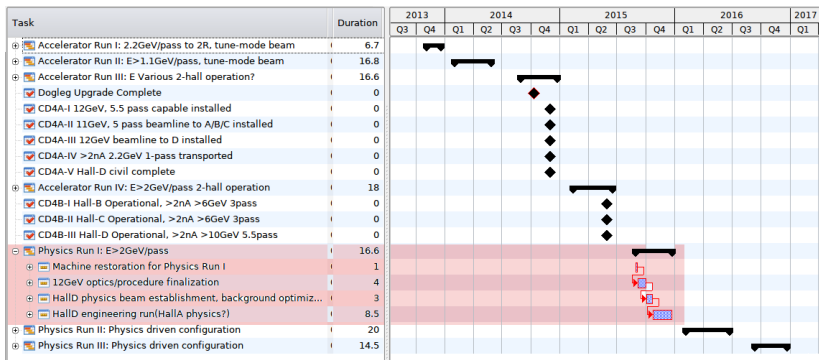
**Duration** 18 weeks

**Goal** 2-hall operations, 4&5 pass separation

**Issues** Separators, physics quality beam?

**Physics** Hall-A engineering/Physics run (passes 1/2/3),  
B&C detector tests,

# Physics Run I



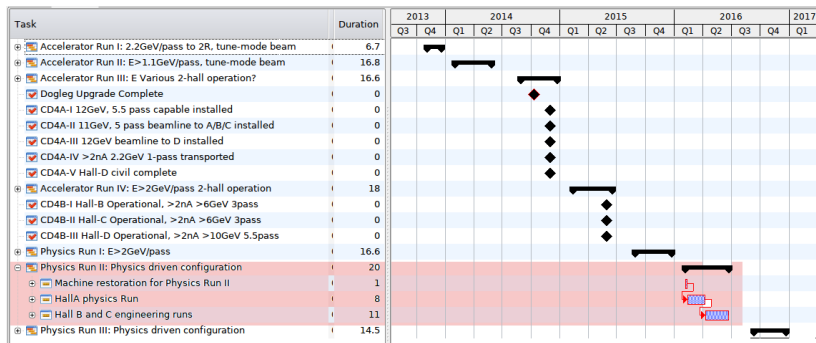
**Duration** 17 weeks

**Goal** Beam optics procedure finalization, 3-hall operation

**Issues** Hopefully fewer than last run.

**Physics** Hall-D engineering run, Hall-A Physics, Hall-B/C?

# Physics Run II



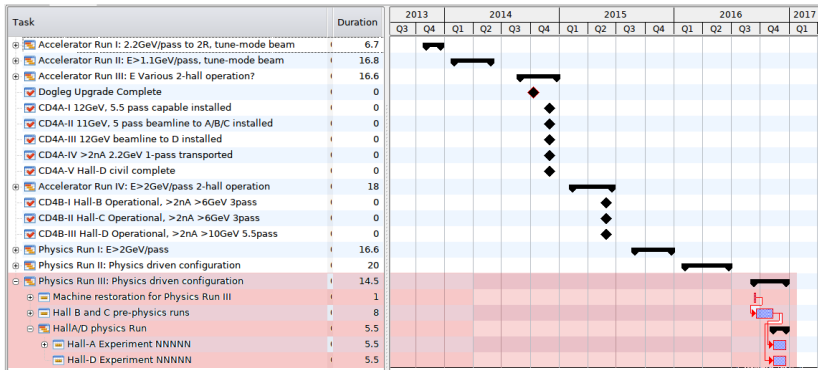
**Duration** 20 weeks

**Goal** 3-hall operation, 5-pass capable

**Issues** Hopefully fewer than last run.

**Physics** Hall-A Physics, Hall B&C engineering runs

# Physics Run III



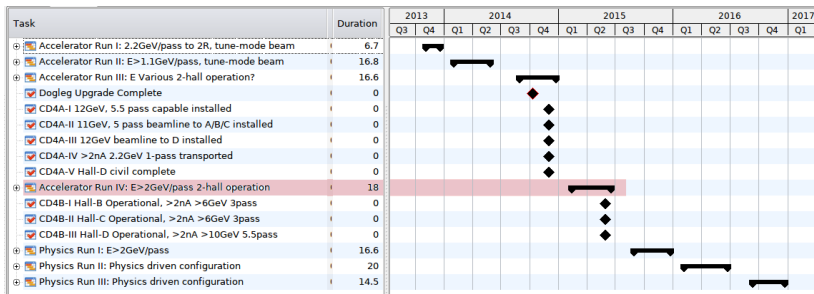
Duration 15 weeks

Goal 3-hall operation, 5-pass capable

Issues Hopefully fewer than last run.

Physics Physics in all halls

# Summary



- This is the baseline plan, based on
  - 16 Month Shutdown
  - 35 weeks of operation per year
  - Two 17.5'ish week run periods per year, with 8.5'ish week *downs* between runs.
- It will be changed to accommodate reality
- First beam to Hall-C in Accelerator Run IV: Present guess is Feb-May 2015