

12GeV Commissioning and Initial Physics Plans

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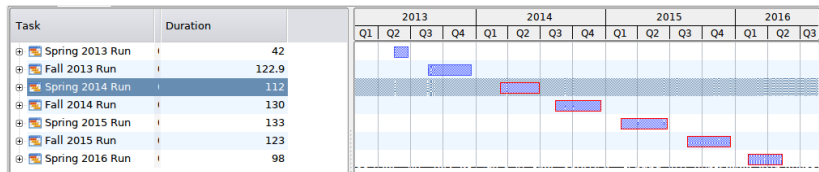
December 14, 2011

- 1 6MSD Lessons
- 2 12 GeV Strawman

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

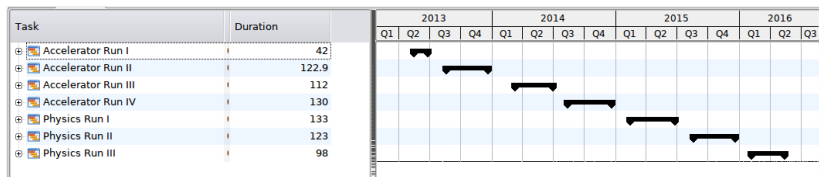
- Potential for damaging (destroying) equipment is non-zero.
- Impact of the loss of beam line components can be large in terms of scheduling and waiting for repaired components.
 - There will be a need to be flexible the first few years as the weakest elements are flushed out of the system.
- Machine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

12 GeV Strawman



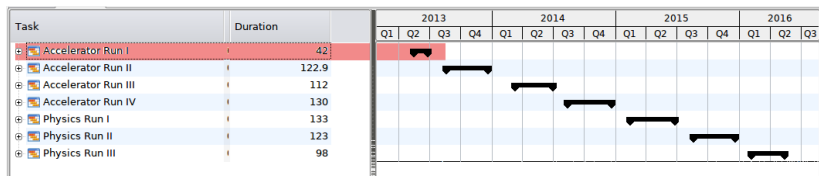
- Assumes 12 month shutdown (might be longer)
- Assumes 35 weeks of operation per Fiscal Year (might be less)
- Assumes 2 run periods per year (Spring/Fall) (might be more efficient to have one long run period Sept→May).

12 GeV Generic Strawman



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

Accelerator Run I



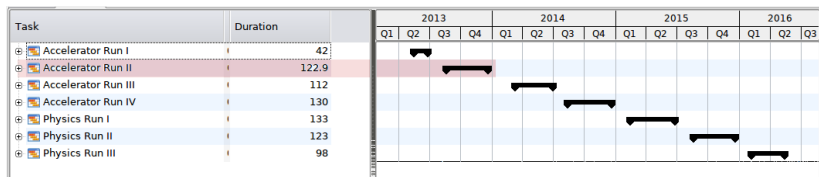
Duration 6 weeks

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

Risks RF and Magnets....

Physics No!

Accelerator Run II



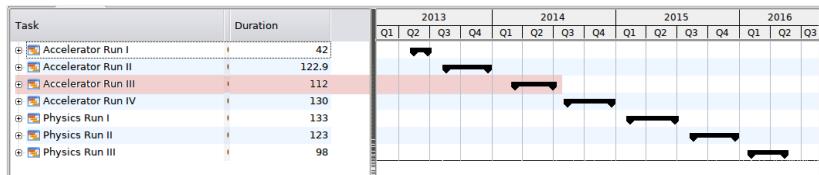
Duration 17.5 weeks

Goal 3-pass spin up, with a stretch gold 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.

Physics Beam to Hall-A, 1wk for detector checkout.

Accelerator Run III



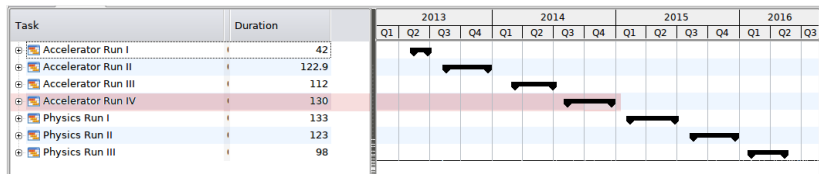
Duration 16 weeks

Goal 1/2/3 pass separation, Beam to Hall-D, 5.5pass beam characterization. 12GeV beam.

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



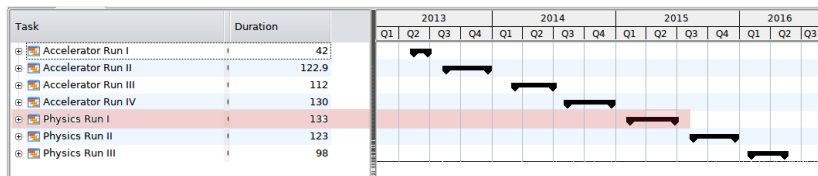
Duration 18.6 weeks

Goal 2-hall operations, First beam to B&C, B&C transport characterization, 4&5 pass separation(at end of run).

Issues Separators, physics quality beam?

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

Physics Run I



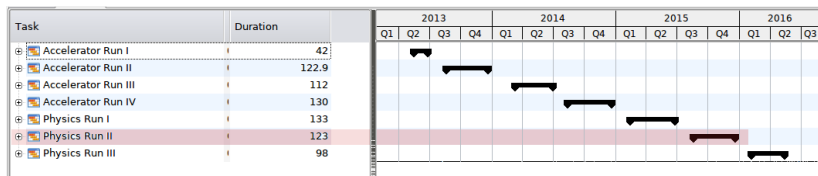
Duration 19 weeks

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



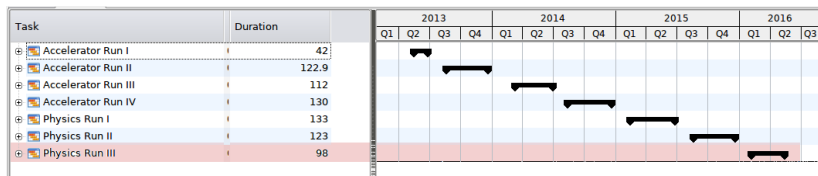
Duration 17.6 weeks

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



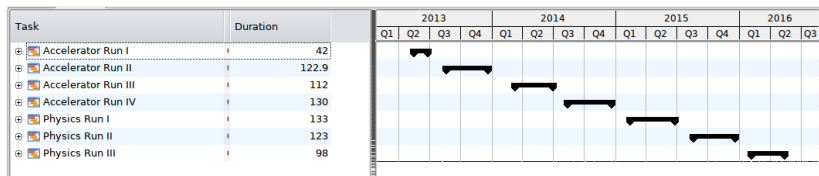
Duration 14 weeks

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
 - A 12 month shutdown
 - 35 wks of operation per year
 - Two 17.5'ish run periods per year, with 8.5'ish *downs* between runs.
- It will be changed to accommodate reality
- Hall-A Physics optimistically could occur in Accelerator Run III, but Run IV is probably more realistic.