



# Outline

SNUMI WGM  
October 31, 2006

- DR Agenda Change –
  - Nancy will give Phase II talk vs. Ioanis
  - List of breakout talks
  - Suggestion of giving reviewers memory sticks vs. binders?
- SNUMI Shutdown Schedule Assumptions/Plans
- SNUMI Organization Chart Updates
- Status of CDR and RLS
  - 1 page cost summary
- SNUMI's Review Web Page
- AIPs (Phase I & Phase II)



# Breakout Talks

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## Tuesday, November 14

3:30 – 4:30 PM 60' Booster and Main Injector I. Kourbanis

Proton Plan SNUMI Related Goals

Eric Prebys

Main Injector Collimators and RF

Ioanis Kourbanis

3:30 – 4:30 PM 60' Recycler: injection line, extraction line P. Derwent

Transfer Line Design Overview

Meiqin Xiao

Transfer Line Magnets

Dan Broemmelsiek/Dave Johnson

Installation Schedule

Rob Reilly



# Breakout Talks

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## Tuesday, November 14

3:30 – 4:30 PM 60' NuMI: primary proton line, decay pipe & hadron absorber M. Martens

Primary Beamline

Decay Pipe and Absorber

RAW Water Systems Upgrades

Sam Childress

Bob Wands

Maurice Ball

3:30 – 4:30 PM 60' Management/Cost/Schedule/Strategy (Phase I + II) N. Grossman

(more cost details, greater schedule and resource profile detail)



# Breakout Talks

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## Wednesday, November 15

- 8:30 - 10:30 AM Recycler: kickers, slip-stacking scheme, RF systems P. Derwent  
Kickers (Schedule and Resources) Christine/Chris  
Slip Stacking Issues Kiyomi/Phil  
RF Dave Wildman  
Instrumentation Martin Hu
- 8:30 - 10:30 AM NuMI: target chase cooling, target and horns M. Martens  
Targets Mike Martens  
Horns Jim Hysten  
Target Chase Cooling Andy Stefanik  
Alignment Issues Salman Tariq  
Striplines Dave Tinsley  
Chase Reconfiguration Salman Tariq  
Shutdown Schedule Rob Reilly
- 8:30 - 10:30 AM Management/Cost/Schedule/Strategy (phase I +II) N. Grossman  
SNUMI EA, SAD and ISM Plans N. Grossman



# Breakout Talks

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October 31, 2006

## Wednesday, November 15

- |                  |  |                       |
|------------------|--|-----------------------|
| 10:30 – 12:30 PM | Overview of Phase II                           | I. Kourbanis          |
|                  | 45' SNUMI Phase II - more technical details    | I. Kourbanis          |
|                  | 20' RF Upgrades                                | J. Reid               |
|                  | 15' Target Hall Upgrades                       | M. Martens            |
| 10:30 – 12:30 PM | Civil Construction (phase I + II)              | D. Bogert             |
|                  | 30' Civil Construction Phase I                 | E. McCluskey          |
|                  | 30' Civil Construction Phase II                | D. Bogert             |
| 10:30 – 12:30 PM | Radiation safety/shielding (phase I + II)      | T. Leveling/K. Vaziri |
|                  | 20' Accelerator Radiation Safety, more details | T. Leveling           |
|                  | 20' NuMI Radiation Safety, more details        | K. Vaziri             |
|                  | 20' NuMI Radioactive Component Handling        | P. Hurh               |



# Shutdown Schedule

(our assumptions)

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- Based on
  - Desire to have kicker PS buildings done, so can use for kicker construction in 2009
  - Desire to collect at least  $4E20$  POT for MINER $\nu$ A on low energy target (400kW)
  - NO $\nu$ A estimates of a 5 kT detector ready by Feb 2011
    - NO $\nu$ A interested in medium energy neutrinos
  - Estimate of Recycler and NuMI shutdown lengths
  - Tight schedule for completion of 700 kW capable horns.
- This implies:
  - MINER $\nu$ A operation at ~400 kW during year 2010
  - A shutdown in 2011 to reconfigure NuMI target hall
  - Commissioning for 700 kW operations and NO $\nu$ A begin in 2011



## Shutdown Schedule (our assumptions)

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- 2007 shutdown: Civil penetrations for buildings completed
  - Means we need the money right after the review
  - Starts June 2 and is 39 work days
- FY2008 shutdown
  - Starts June 2 and is 39 work days
- Fall 2009 shutdown: accelerator phase I work installed/completed
  - Starts Oct. 1 and ends March 19 (5.6 month shutdown)
  - Need to check the paths that lead to this length of shutdown
  - Shutdown length driven mostly by kickers (not ready to install at start of shutdown)
    - Makes shutdown 3 weeks longer (Recycler MI-30 straight section next)
  - NuMI Target Hall:
    - Upgrade Chiller, Extend Stripline, Install Dummy Horn Module
    - Upgrade RAW systems, Upgrade Work Cell



## Shutdown Schedule (our assumptions)

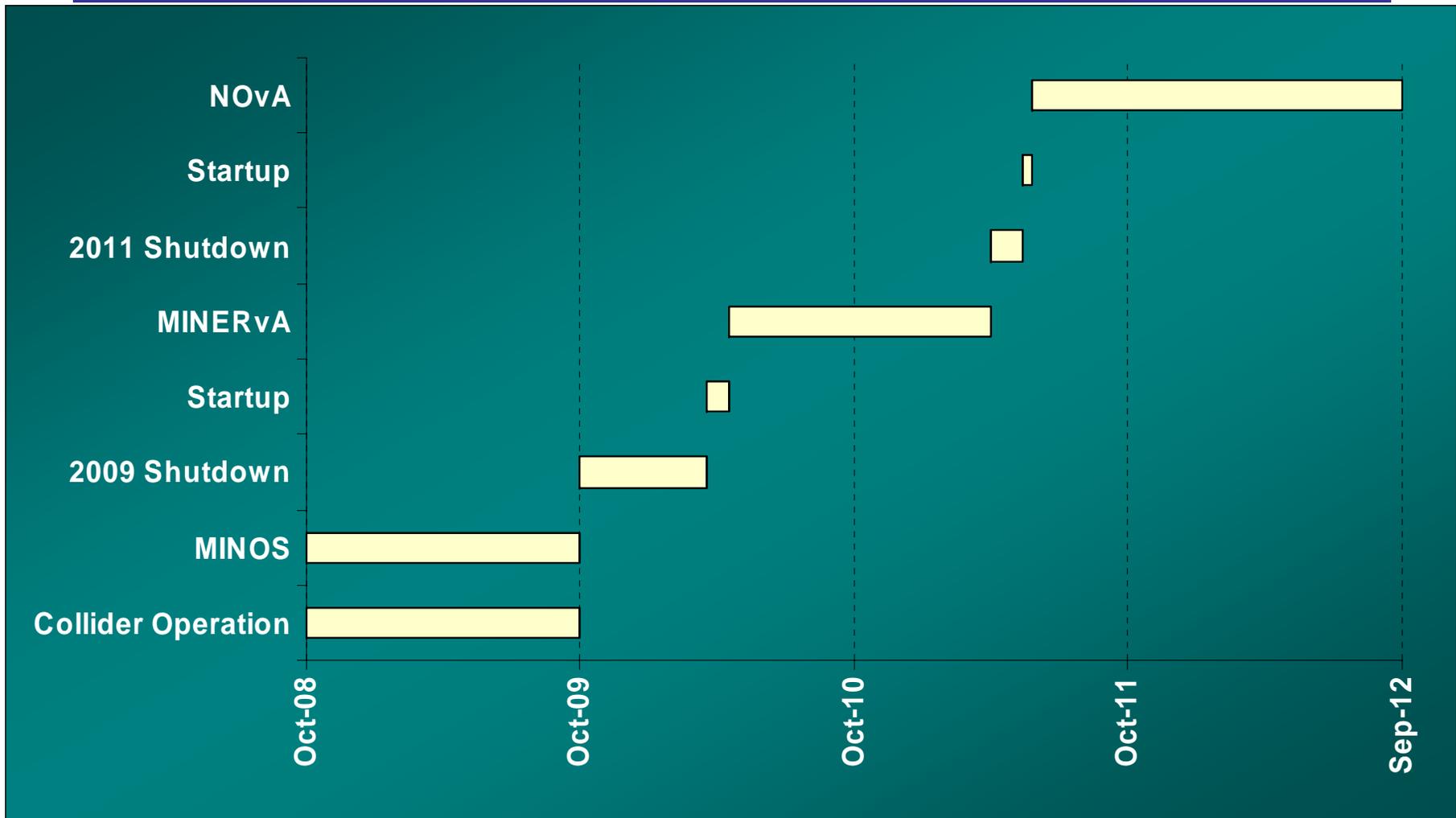
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October 31, 2006

- 1 year of running with NuMI LE target, horns as they are now for MINERvA (400kW)
  - 2011 shutdown starts 1 year after 2009 shutdown (3/1/11)
  - Length driven by NuMI Target Hall work (~ 6 weeks)
    - Change NuMI from LE to ME configuration
    - Remove Horn 2, relocate dummy module, install new horn 2
    - Replace Horn 1 with new design
    - Replace low energy target with medium energy target



# Shutdown Schedule (our assumptions)

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October 31, 2006

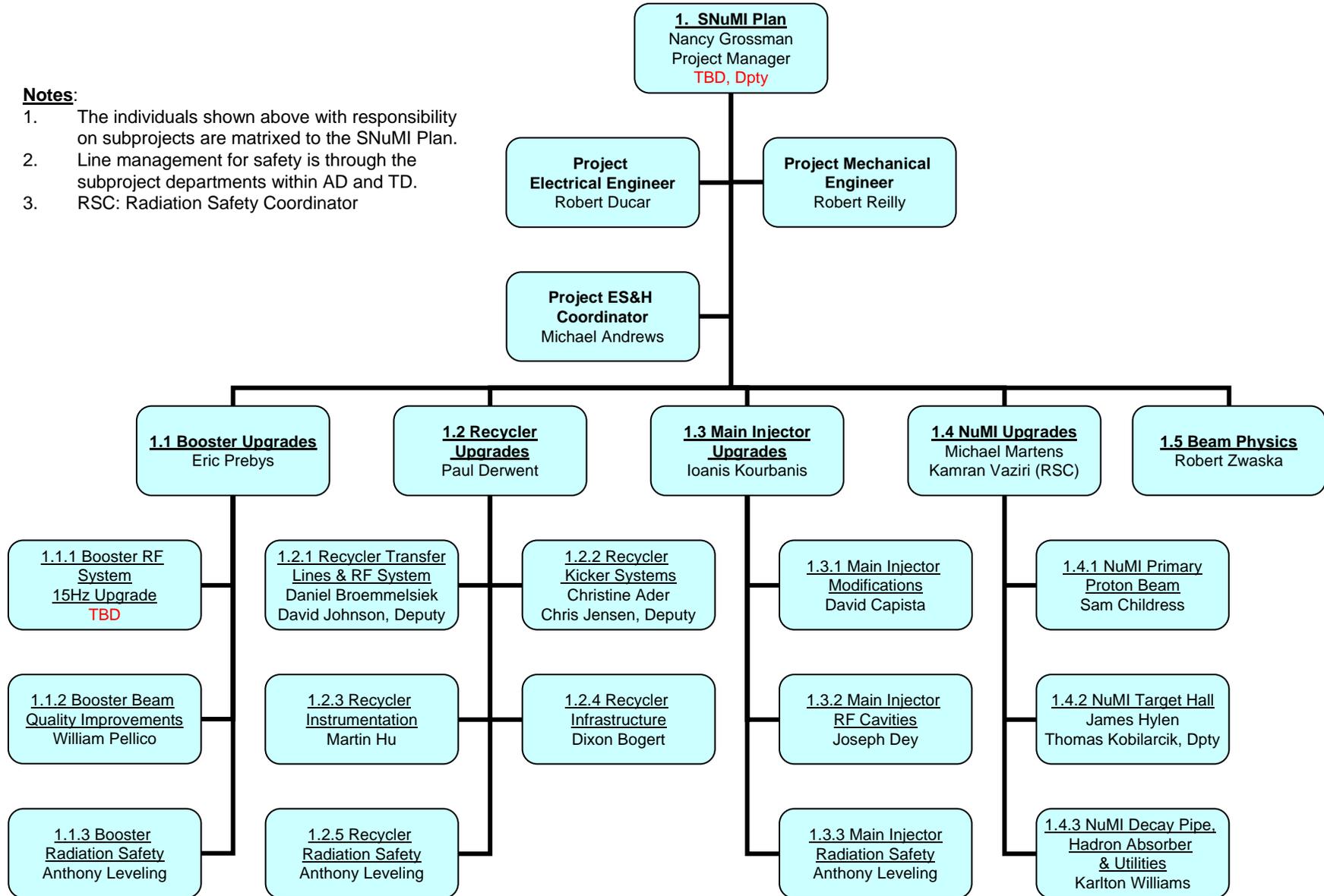


# SNuMI Organizational Chart by WBS

October 24, 2006

**Notes:**

1. The individuals shown above with responsibility on subprojects are matrixed to the SNuMI Plan.
2. Line management for safety is through the subproject departments within AD and TD.
3. RSC: Radiation Safety Coordinator





# Project Documents Status

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- CDR
  - NuMI Section needs editing
  - Cost and schedule section needs updating/charts
  - Proton Project section in complete
  - Complete Nov. 7 and post
- Project Management Plan
  - Complete Draft PMP by 11/7
- Drafting up NEPA Project Information Form for phase I
  - Need to find out if we can get a categorical exclusion



## Project Documents Status: RLS

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Have had problems with disappearing information (an entire file, notes in the note field, milestone categories....discomforting)

- A couple costs need to be updated (civil, communications infrastructure – several \$100K missing)
- Bigger things not done (and won't be done for the review):
  - Minimal resource leveling
  - Milestones VERY preliminary and have no schedule contingency
  - Critical path needs to be looked at more closely – especially for NuMI for the second shutdown
  - Systematic top down review – need a closer check of NuMI TH costs/labor/durations

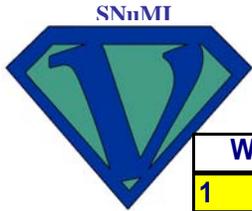


# Project Documents Status: RLS

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## Small things not done:

- Milestone definitions
- WBS dictionary
- Most, but not all pre-procurement (and other) design reviews included
- Extract spares to separate tasks (not done in accelerator part)
- Only easy, large procurements broken into procure/receive
- Many long tasks we should consider splitting
- Break out designers vs. drafters and add in task managers



# Project Overall Costs (snapshot)

SNUMI WGM  
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WBS	Task Name	% Cont.	M&S Cost	Labor Cost	Total Cost
<b>1</b>	<b>SNUMI</b>	<b>0</b>	<b>\$19,209</b>	<b>\$10,712</b>	<b>\$29,921</b>
<b>1.1</b>	<b>Booster Upgrades</b>	<b>0</b>	<b>\$518</b>	<b>\$139</b>	<b>\$657</b>
1.1.1	Booster RF System 15 Hz Upgrade	0	\$518	\$132	\$650
1.1.2	Booster Beam Quality & Losses	0	\$0	\$0	\$0
1.1.3	Radiation Safety	0	\$0	\$7	\$7
<b>1.2</b>	<b>Recycler Upgrades</b>	<b>0</b>	<b>\$11,381</b>	<b>\$4,517</b>	<b>\$15,898</b>
1.2.1	Recycler Ring Modifications	0	\$2,744	\$1,740	\$4,484
1.2.2	Recycler Kicker Systems	0	\$5,721	\$2,466	\$8,187
1.2.3	Recycler Instrumentation	0	\$1,208	\$91	\$1,299
1.2.4	Recycler Infrastructure	0	\$1,678	\$9	\$1,687
1.2.5	Recycler Radiation Safety	0	\$30	\$209	\$239
1.2.6	Recycler Reviews	0	\$0	\$3	\$3
1.2.7	Milestones	0	\$0	\$0	\$0
<b>1.3</b>	<b>Main Injector Upgrades</b>	<b>0</b>	<b>\$1,091</b>	<b>\$571</b>	<b>\$1,662</b>
1.3.1	MI Modifications	0	\$195	\$337	\$532
1.3.2	MI RF Cavities	0	\$871	\$160	\$1,031
1.3.3	MI Radiation Safety	0	\$25	\$74	\$99
<b>1.4</b>	<b>NuMI Upgrades</b>	<b>0</b>	<b>\$6,101</b>	<b>\$2,665</b>	<b>\$8,766</b>
1.4.1	NuMI Primary Proton Beam	0	\$789	\$415	\$1,204
1.4.2	NuMI Target Hall	0	\$4,953	\$2,073	\$7,027
1.4.3	NuMI Decay Pipe/Hadron Absorber/Utilities	0	\$358	\$177	\$535
<b>1.5</b>	<b>Beam Physics</b>	<b>0</b>	<b>\$35</b>	<b>\$477</b>	<b>\$512</b>
1.5.1	SNUMI Demands on Proton Plan	0	\$0	\$65	\$65
1.5.2	Machine & Process Analysis	0	\$35	\$398	\$433
1.5.3	Proton Plan Projections	0	\$0	\$13,689	\$13,689
<b>1.6</b>	<b>Project Management</b>	<b>0</b>	<b>\$82,500</b>	<b>\$2,342,887</b>	<b>\$2,425,387</b>
1.6.1	Communications Infrastructure	0	\$0	\$0	\$0
1.6.2	Accelerator Shutdowns	0	\$0	\$0	\$0
1.6.2	Fermi Management & Administration	0	\$82,500	\$2,342,887	\$2,425,387
1.6.4	Project Milestones	0	\$0	\$0	\$0



## SNUMI's Review Web page

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### **Director's Review of SNUMI, November 14-16, 2006**

(under construction)

[Link to the Directorate Web Page for this review](#)

### **Review Overview Information**

Agenda (pdf - linked to talks) – or other (Alan/Dean)

[http://www-accel-proj.fnal.gov/snumi/reviews/dir\\_rev\\_agenda\\_10\\_14\\_06.html](http://www-accel-proj.fnal.gov/snumi/reviews/dir_rev_agenda_10_14_06.html)

List of Prepared Breakout Talks (pdf)

Video and Phone Connection Numbers (doc)

### **General Reference Material**

Overview of SNUMI

Organization Chart

SNUMI Cost Summary Chart

SNUMI Parameters

Conceptual Design Report

Draft Project Management Plan



## AIP's: Phase I and Phase II

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- Phase I civil is ~\$2M (does not include ~25% contingency)
  - Work needs to start now in order to put penetrations in in 2007 shutdown
- Phase II civil is ~\$11M (does not include ~40% contingency)
  - AP4 extraction from Booster and injection to accumulator (~\$5.4M)
  - AP5 extraction from Accumulator into MI8 (~\$5.8M)
  - Neither of these include the 40% contingency
  - Work on the beamline lattice will yield much more accurate cost estimates