

APS Upgrade Update

Stuart Henderson

September 10, 2015

DOE CD-1 Review

DOE Office of Project Assessment (OPA) Review of APS-U is scheduled for

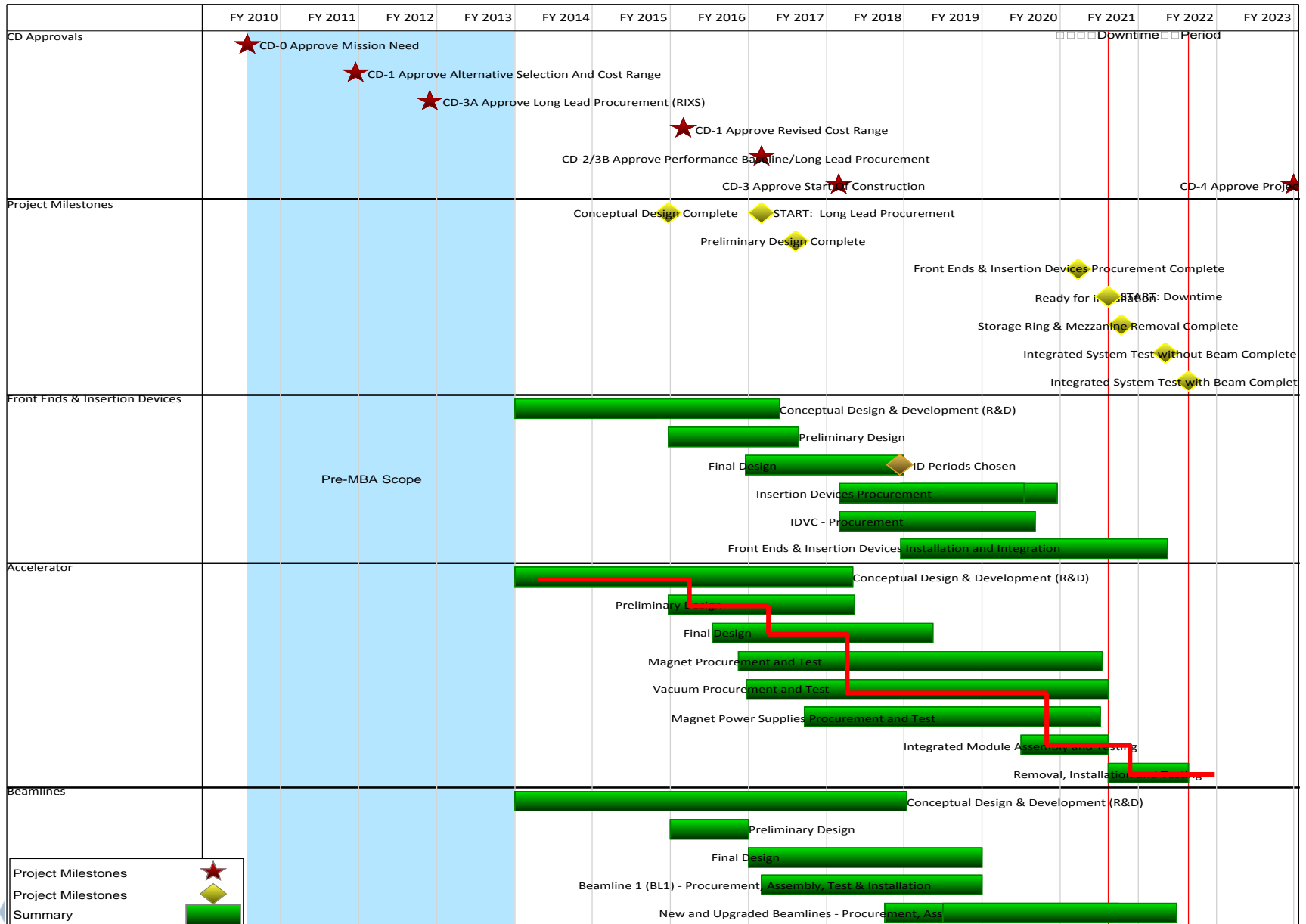
September 22-24, 2015

To-do before CD-1 Review

- ✓ Finish Draft PPEP and provide info for Acquisition Strategy
- ✓ Respond to all ESAC and PMAC Recommendations
- ✓ Respond to Director's Review Recommendations
- ✓ Assemble full "prior to CD1" recommendation list
 - Update CDR (Science chapter, front-matter)
- ✓ Write draft APSU MOUs with Lab & PSC
- ✓ Update Requirements Document and Configuration Management Document
 - Clean up Functional Requirements Documents
 - Assemble parameter list
- ✓ Job PDs for full-time project ES&H and QA position
- ✓ Assemble Spares list
 - Assemble R&D Plan
- ✓ Analyze Scope contingency
- ✓ Discuss Storage Ring disposal strategy with the lab
- ✓ Complete Life Cycle Cost Analysis
- ✓ Review Risk Registry
- ✓ Re-run Risk / Contingency Analysis

APS Upgrade Summary Project Schedule

APS-U Project Summary Project



Proposed APS-U Key Performance Parameters

Key Performance Parameter	Thresholds (Performance Deliverable)	Objectives
Storage Ring Energy	> 5.7 GeV, with systems installed for 6 GeV operation	6 GeV
Beam Current	> 25 mA in top-up with systems installed for 200 mA operation	200 mA in top-up
Horizontal Emittance	< 150 pm-rad	75 pm-rad
Brightness @ 20 keV ¹	> 2 x 10 ²⁰	2.5 x 10 ²¹
Brightness @ 65 keV ²	> 2 x 10 ¹⁹	6 x 10 ²⁰
New MBA Beamlines	5	6

¹photons/sec/0.1% BW/mm²/mrad²; determined from a 2.75 cm period, 2.4 m long permanent magnet undulator

²photons/sec/0.1% BW/mm²/mrad²; determined from a 1.6 cm period, 1.5 m long superconducting undulator

- The threshold KPPs are the minimum parameters against which the project's performance is measured at completion.
- The objective KPPs describe the technical goals of the project.

CD-1 Review: Subcommittees and Reviewers

DOE/SC (CD-1) Review of the
Advanced Photon Source-Upgrade (APS-U) Project
September 22-24, 2015

Kin Chao, DOE/SC, Chairperson

SC1

Accelerator Physics

* David Robin, LBNL
Mikael Eriksson, MAX IV
John Schmerge, SLAC

SC2

Accelerator Systems

* Karen White, ORNL
Will Oren, TJNAF
Jim Rose, BNL
Jim Sebek, SLAC

SC3

Experimental/Beamline

* David Fritz, SLAC
Alex Hexemer, LBNL
Zhong Zhong, BNL

SC4

Front Ends / Insertion Devices

* Toshi Tanabe, BNL
Michael Rowen, SLAC
Sasha Temnykh, Cornell U

SC5

Accelerator Removal / Installation

* Richard Boyce, SLAC
Benjamin Scott, SLAC
Steve Virostek, LBNL

SC6

Environment, Safety and Health

* Mike Andrews, FNAL
Jim Floyd, LBNL

SC7

Cost and Schedule

* Angus Bampton, PNNL
Carolyn Galayda, SLAC
Tony Mennona, BNL

SC8

Project Management

* Kem Robinson, LBNL
Frank Crescenzo, DOE/BHSC
Steve Meador, DOE/SC
Lori Plummer, SLAC

Observers

Harriet Kung, DOE/SC
Jim Murphy, DOE/SC
Ed Stevens, DOE/SC
Phil Kraushaar, DOE/SC
Peter Lee, DOE/SC
Ron Lutha, DOE/ASO
Frank Gines, DOE/ASO
Adam Bihary, DOE/FSO

LEGEND

SC Subcommittee
* Chairperson

COUNT: 26 (excluding observers)



CD-1 Review Week

- The week of Sept. 21 we will have two concurrent events:
- Sept. 21-23: Independent Cost Review (ICR)
 - This is a requirement for DOE Projects of our size
 - It is largely a “process” review
 - Three reviewers who will independently assess our cost estimate
 - Pete Bako (DOE/APM), Doug Gray (consultant)
- Sept. 22-24: CD-1 OPA Review (a.k.a. “the CD1 Review”)
 - 26 reviewers in 8 subcommittees

CD-1/ICR Review Agenda

OPA CD-1 Review

Tues Sept. 22

8:00 – 9:00 Committee Executive Session

9:00 – 2:15 Plenary Session

2:15 – 3:30 Tour (SR tunnel, mezzanine, EAA)

3:45 – 5:00 Breakout Sessions

Weds Sept. 23

8:00 – 1:00 Subcommittee Breakout

1:00 – 3:00 Cost and Schedule drilldowns

Thurs Sept. 24

12:00 – 1:00 Closeout

Independent Cost Review

Mon Sept. 21

1:00 – 2:30 Project Introduction

2:30 – 5:00 Cost walkthroughs

Tues Sept. 22

8:00 – 10:30 Joint with OPA Review

10:30 – 5:00 Cost walkthroughs

Weds Sept. 23

8:00 – 2:00 Exec. Session (and response to questions)

2:00 – 3:00 ICR Closeout

Upcoming Events and Workshops

■ Upcoming Events

- *DOE OPA Review September 22-24*
- *Visit to IHEP Beijing September 28-29*
- *Meetings of MAC, ESAC, PMAC in late fall, early winter*

■ Upcoming Conferences and Workshops

- *Low Emittance Ring Workshop at ESRF September 15-17*
- *DLSR, DESY Hamburg (Nov.-Dec.)*