Photon Sciences Update

Steve Dierker
Associate Laboratory Director for Photon Sciences
UEC Town Meeting
November 10, 2011

Photon Sciences - Very Productive!

NSLS

- Users 2315 in 2011 (2,228 in 2010)
- 901 Publications submitted in 2011 (894 in 2010)
- Accelerators reliability still high
  - X-ray 95.4% , VUV 96.8 %

NSLS-II Project

- 65% complete at the end of October
- Accelerator Installation under way

NEXT Project

- Successful CD-1 review 8/31 – 9/1

ABBIX Project (NIH beamlines)

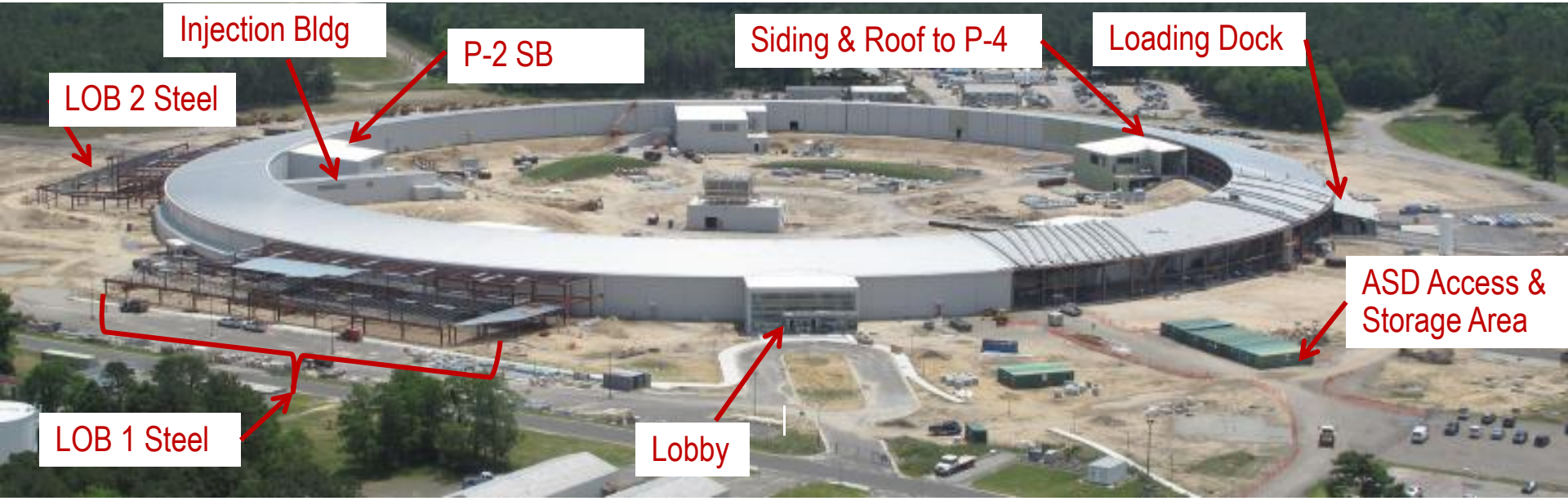
- CD-1 review to be held

Overall Status of NSLS-II Project

- Excellent progress
- Project is ~ 65% complete as of October 2011
- On schedule and on budget
  - Excellent technical, cost & schedule performance to date
  - Sound cost baseline with healthy remaining contingency
  - 15 month schedule float for CD-4
  - Risks well understood, tracked and managed
- Looking to Fiscal 2012
  - Substantial completion of Conventional Construction
  - Major installation in accelerator
  - Commissioning of Linac
  - Start of beamline installation

Conventional Construction Progress

6-13-2011



- Pentant 1 complete & ready for Beneficial Occupancy March 14
- Structural concrete & structural steel complete
- Enclosure work advanced to P- 4
- Utility installation complete in inner courtyard (some DI pipe backfill remains)
- MEP work underway throughout
- Electrical, water, steam, compressed air & sanitary utilities in place and energized

Conventional Construction Progress

8-26-2011

- Ring building construction progressing on budget and ahead of schedule
- LOB construction also progressing on budget and on schedule
- Pentant 1 and 2 beneficial occupancy received
- Accelerator installation in progress

Brookhaven National Laboratory – October 2011

Conventional Construction Progress

11-9-2011

- Ring building construction progressing on budget and ahead of schedule
- LOBs 1,2,3 framed in – 4,5 foundation work under way
- Pentant 1,2,3, RF, Injector, Compressor building beneficial occupancy
- Accelerator installation underway in P1, P2, Linac, RF area

NSLS-II Accelerator Installation

First Magnet Girder installed June 2011
By September 3 Installed
As of November 5 Installed

As of November Five Multipole girders in place

Additional Systems

- Utilities (water and electrical)
- Racks and Power Systems
- Storage Ring RF transmitter
- Linac
- PPS and EPS

Accelerator Installation

RF Transmitter

U.S. DEPARTMENT OF ENERGY

Accelerator Installation

Linac and Modulators

Installation From the Mezzanine

P1 Mezzanine by beamline 20B

Looking back to NSLS from NSLS-II

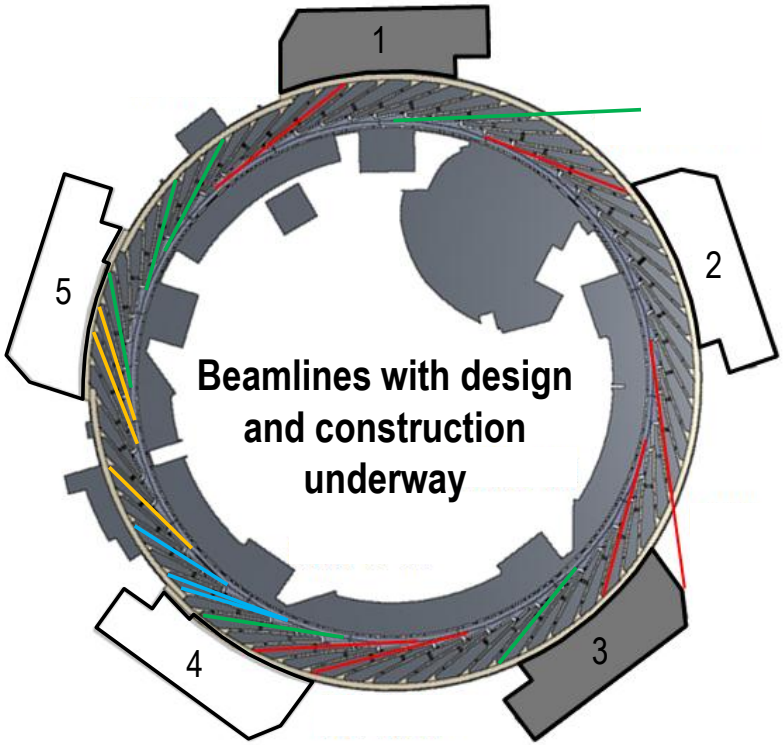
U.S. DEPARTMENT OF ENERGY

Key Project Milestones

Aug 2005	**CD-0**, Approve Mission Need	(Complete)
Jul 2007	**CD-1**, Approve Alternative Selection and Cost Range	(Complete)
Jan 2008	**CD-2**, Approve Performance Baseline	(Complete)
Jan 2009	**CD-3**, Approve Start of Construction	(Complete)
Feb 2009	Contract Award for Ring Building	(Complete)
Aug 2009	Contract Award for Storage Ring Magnets	(Complete)
May 2010	Contract Award for Booster System	(Complete)
Feb 2011	1st Pentant Ring Building Beneficial Occupancy	(Complete)
Mar 2011	Start Accelerator Installation	(Complete)
Feb 2012	Beneficial Occupancy of Entire Experimental Floor	
Apr 2012	Start LINAC Commissioning	
Jun 2012	Beneficial Occupancy of 1st LOB	
Oct 2012	Start Booster Commissioning	
May 2013	Start Storage Ring Commissioning	
Mar 2014	Projected Early Project Completion	
Jun 2015	**CD-4**, Approve Start of Operations	

NSLS-II Beamlines Underway

18 Beamline Construction Projects Underway
21 Simultaneous Endstations (SE)
28 Total Endstations (TE)



22 additional beamlines (25 SE) have been proposed by the user community and approved by the SAC and NSLS-II but are not yet funded

Beamline ConstructionProjects	SE	TE
NSLS-II Project Beamlines		
• Inelastic X-ray Scattering (IXS)	1	1
• Hard X-ray Nanoprobe (HXN)	1	1
• Coherent Hard X-ray Scattering (CHX)	1	1
• Coherent Soft X-ray Scat & Pol (CSX)	2	2
• Sub-micron Res X-ray Spec (SRX)	1	1
• X-ray Powder Diffraction (XPD)	1	1
NEXT MIE Beamlines		
• Photoemission-Microscopy Facility (ESM)	2	3
• Full-field X-ray Imaging (FXI)	1	1
• In-Situ & Resonant X-Ray Studies (ISR)	1	2
• Inner Shell Spectroscopy (ISS)	1	1
• Soft Inelastic X-ray Scattering (SIX)	1	1
• Soft Matter Interfaces (SMI)	1	2
NIH Beamlines		
• Frontier Macromolecular Cryst (FMX)	1	1
• Flexible Access Macromolecular Cryst (AMX)	1	1
• X-ray Scattering for Biology (LIX)	1	1
Type II Beamlines		
• Spectroscopy Soft and Tender (NIST)	2	6
• Beamline for Materials Measurements (NIST)	1	1
• Microdiffraction Beamline (NYSBC)	1	1
TOTAL	**21**	**28**

2011 Beamline Development Proposals

- 2011 BDP Call issued in February
  - 14 Beamline Development Proposals received
  - 50% new + 50% resubmissions
- SAC study panels have been formed and scheduled
  - Materials Science and Engineering
    - 17-18 November
    - 7 Proposals to review (MRE, MDM, HXT, ICT, HEX, HMP,XEM)
  - Biological and Medical Sciences
    - 1 December
    - 3 Proposals to review (MIT, HMX, LAX)
  - Spectroscopy and Spectromicroscopy
    - 6 December
    - 4 Proposals to review (XTX, SXS, SMF,VIS)