

Celebration of X6A 10 years of Operation

WELCOME!

February 1st 2013

Brookhaven National Laboratory
National Synchrotron Light Source

Erik Johnson

Deputy ALD for Programs – Brookhaven National Laboratory Photon Sciences

Celebration of X6A 10 years of Operation

15 Years from the Starting!

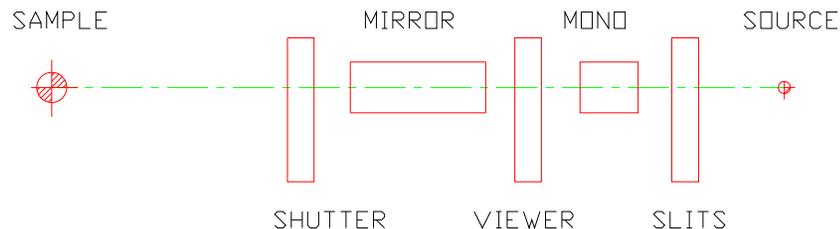
Settling in on X6A

BROOKHAVEN NATIONAL LABORATORY
NSLS Experimental Systems Group
MEMORANDUM

DATE: 1 October 1998
TO: Michael Hart
FROM: Erik D. Johnson
SUBJECT: X6 Beamline configuration for PX

The attached spreadsheet is a rough estimate of costs associated with modifying one of the X-6 beamlines for PX work. As shown in the block diagram below, this is a simple beamline with a bent cylinder focusing the source 1 to 1 at the sample. The major components assumed are :

Slit system	An NSLS design ladder type slit with a V slit for horizontal aperaturing
Monochromator	Channel cut with cooling built by the NSLS along the lines of the monochromators successfully built for X6A, X18, X26 and X27.
Viewer	Essentially a remote driven screen with a TV camera (also tank and pump)
Mirror	A bent cylinder, commercially procured with tank, bender, and remote control on the mirror position and orientation
Shutter	A NSLS designed shutter for the branch. This allows the optics to stay in the beam.



BLOCK DIAGRAM OF MAJOR BEAMLINE COMPONENTS

We were asked to put together a rough (quick) estimate for a Protein Crystallography beamline for an NIGMS proposal in late 1998.

The Pitch (excerpts from the 1999 proposal)

Brookhaven National Laboratory Plan to Construct and Operate Beamline X6A

The opportunity

Beamline X-6 recently has become available for re-development, following the departure of its PRT members to the Advanced Photon Source. It is sited in the first X-ray ring quadrant (X-1 to X-8), which was provided with biological support laboratories by the NSLS Structural Biology Addition, dedicated in April 1995. A majority of the structural biology beamlines are located in that area. The intellectual environment, the existing suite of beamlines, and the geography indicate that X-6 is a prime location for another structural biology beamline. Because of the close proximity of the X-5 hutch we need to build the X-6A station first.

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Your letter dated 16 September 1998 indicates five principles which will guide NIGMS in deciding on the support of beamline stations. The first four principles are comprehensively satisfied by the programs and on-going work of the existing consortium of five stations and the programs at X-4 (Howard Hughes Medical School) and X-9 (Albert Einstein Medical College and NIH Intra-mural). This proposal is to build a station specifically for crystallographic experiments (Principle 1). As the Birgeneau report and our own user surveys show, regional coverage is assured (Principle 2) because the NSLS is sited at the heartland of the national synchrotron radiation user community, based in the northeastern United States. We propose additional facilities and staffing to achieve expansion, and to increase efficiency and throughput by being symbiotic with the existing five station consortium which is partly funded by NIH (Principle 3). Although the proposed station is new, and therefore has no track record, it will be built and operated in accord with the proven track record of the seven existing structural crystallography stations at the NSLS (Principle 4).

Last but not least...

Principle 5: Access

We recognize and understand that access rights and privileges are *key issues* in your plan. The standard arrangement at NSLS is that the PRT receives 75% of the beamtime to use as it sees fit, and the other 25% accrues to the NSLS General User program. The PRT share includes time necessary for R&D and for improvements to the station. These activities are usually directed by the station scientist and generally include time for their independent research. Assuming NIGMS funded the full costs, then NIGMS would retain the right to schedule the 75% PRT time. This would guarantee that the PRT's requirements for preferred access were fully met. Within the range of possibilities, access time could be guaranteed for NIGMS grantees, as well as for those from other NIH institutes and for other qualified users. New investigators could be explicitly targeted by the PRT and would benefit, as would other General Users, from the extra 25% of beamtime, which the NSLS would make available.

Interestingly as the project actually progressed, we were instructed by NIH to make all of their 75% of time open user time.

The schedule from the original proposal

X6A NIGMS BEAMLINE PROJECT

TASK	Q1	Q2	Q3	Q4	Q5	Q6
SPECIFICATION	█					
MIRROR		ORDER			DELIVERY	
DETAILED DESIGN	█	█				
FABRICATION		█	█	█		
PREASSEMBLY				█		
HUTCH MODIFICATIONS				█		
BEAMLINE INSTALLATION				█	█	
INITIAL COMISSIONING					█	
MIRROR INSTALLATION						█
FINAL COMISSIONING						█
OPERATIONAL						█

How it Came out . . .



Building 725D
P.O. Box 5000
Upton, NY 11973-5000
Phone 631 344-8375
Fax 631 344-3238
stojanof@bnl.gov

managed by Brookhaven Science Associates
for the U.S. Department of Energy

Memo

date: 21 August, 2002

to: Charles Edmonds, Program Director NIGMS

from: Steven Dierker, NSLS Chairman

cc: Marc Allaire, Lonny E. Berman, Steve Hulbert, Chi-Chang Kao, Erik D. Johnson, D. Peter Siddons, Vivian Stojanoff

subject: X6A Progress and current Status

enclosures: NSLS X6A progress summary

The purpose of this *MEMORANDUM* is to present the progress that has been made and the current status of the NIGMS X6A structural crystallography beam line project at the NSLS. In summary the major components have been delivered and preliminary tests carried out. Transition between commissioning and normal user operation started July 1st. Currently two full time scientists staff the beam line and the hiring of an additional staff member with background in computer programming is underway.

MILESTONES

1998	Letter of intent
1999	Design and Layout of beam line X6A
2000	Beam line procurement and space definition
2001	Beam line optics construction Recruitment of two staff scientists Delivery of mirror and white beam slits Delivery of diffractometer and detector First data set collect at room temperature
2002	Cryogenic sample conditioner in place 3 mrad fan accepted by monochromator Commissioning starts April First external users, Rapid Data Access workshop First MAD experiment June Normal User Operation starts July