

Centralized Schedule/ Beamtime Usage

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*A U.S. Department of Energy
Office of Science Laboratory
Operated by The University of Chicago*



Outline

- **DOE Mandate**
- **Task Force Formation**
- **Identification of Required Tasks**
- **Implementation and Progress**
- **FY 03 Statistics**
- **Lessons Learned / Path Forward**



IG Audit

- **Audit of ALS and SSRL (August 2001- March 2002)**
- **Audit covered beamline utilization from FY 1999-FY 2001**
- **18 ALS beamlines were selected & observed 4 times each
(72 total observations)**
- **Finding: at ALS, 35% idle time rate over total number of
available shifts.**



IG Memo. to DOE Secretary

- **The Office of BES concurred with the finding and recommendations and will require:**
 1. Centralized scheduling systems at all user facilities.
 2. Annual reporting of actual use of synchrotron facilities, and

The above two requirements will be used while reviewing the facilities.



DOE Mandate

Basic Energy Sciences (BES) Annual Facilities Questionnaire

FY 2003 Supplemental Reporting Requirements

BES Synchrotron Radiation Light Sources

Summary Table of Beam Line Usage

Facility: _____

A	B	C	D	E	F
	Name of beam line	% of FY beam line was useable	# of hours SCHEDULED on beam line	# of hours DELIVERED to beam line	# of hours that researchers USED the delivered time
1					
2					



Task Force Formation

- **Charge**

- Investigate and design a system for providing accurate and traceable information yielding reliable statistics to the DOE.

- **Members**

Randy Alkire (SBC)

Roy Emerson (ASD)

Bruce Glagola (AOD)

Yeldez Amer (AOD)

Lisa Keefe (IMCA CAT)

Susan Strasser (AOD)

Kevin Beyer (AOD)

Roger Klaffky (AOD) Chairman

Marcia Wood (AOD)

Trudy Bolin (XFD)

Dennis Mills (ALD)

David Cookson (CARs)

John Quintana (DND)

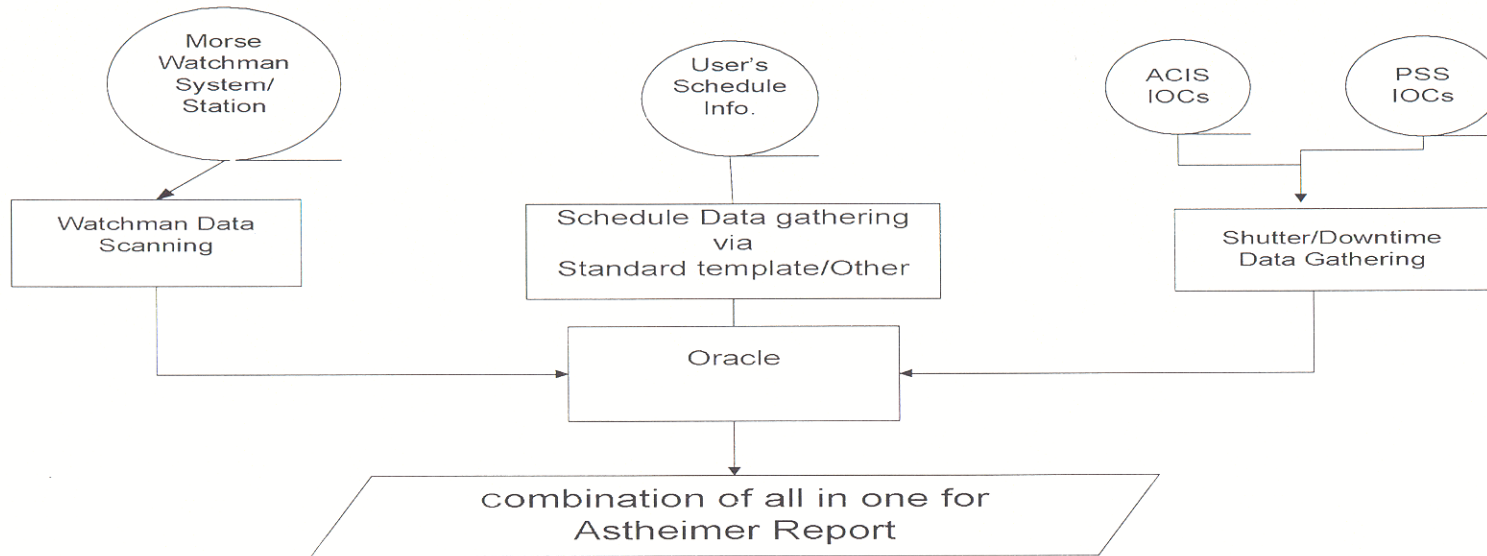
- **Identification of Marching Steps**

- Gather schedule commitments from each sector

- Implement a Watchman System on each station

- Record PSS data for shutter and beamline downtime

Centralized Schedule and Beam Time Usage



Beamline Usage Data for X-ID-C

2003-1 Rur

	Feb 03 (552 hrs)			Mar 03 (624 hrs)			Apr 03 (408 hrs)				
	00-08	08-16	16-24	00-08	08-16	16-24	00-08	08-16	16-24		
1	0 1 X	- 0 X	0 0 X	1	0 0 X	1 0 X	0 0 X	1	0 0 X	- 1	0 1 X
2	0 0 X	0 0 X	0 0 X	2	0 0 X	0 0 X	0 0 X	2	1 1 X	- 0 X	0 0 X
3	0 1 X	- 0 X	- 1	3	0 0 X	- 0 X	0 1	3	0 0 X	- 0 X	0 0 X
4	- 1	0 0 X	0 0 X	4	- 1	0 0 X	- 0 X	4	1 0 X	0 0 X	0 0 X
5	0 1 X	0 0 X	0 0 X	5	0 0 X	0 0 X	0 0 X	5	- 0 X	- 0 X	0 0 X
6	0 0 X	0 0 X	0 0 X	6	- 0 X	0 0 X	0 0 X	6	0 1 X	0 0 X	0 0 X
7	0 1 X	0 0 X	0 0 X	7	0 0 X	0 0 X	0 0 X	7	- 0 X	- 1	- 1
8	0 0 X	0 0 X	0 0 X	8	0 0 X	0 0 X	0 0 X	8	- 1	- 1	- 1
9	0 1 X	0 0 X	0 0 X	9	0 0 X	0 0 X	0 0 X	9	- 1	- 0 X	0 0 X
10	1 1 X	- 1	- 1	10	0 0 X	- 1	- 1	10	1 0 X	0 0 X	0 0 X
11	- 1	- 1	- 1	11	- 1	- 1	- 1	11	0 0 X	0 0 X	0 0 X
12	- 1	0 0 X	0 0 X	12	- 1	0 0 X	- 0 X	12	1 1 X	0 0 X	0 0 X

A	B	C	D	E	F
	Name of beam line	% of FY beam line was useable	# of hours SCHEDULED on beam line	# of hours DELIVERED to beam line	# of hours that researchers USED the delivered time
1					
2					

Beamline Usage Data

- Joins the schedule with WM and PSS data
- Unused beam time shifts are color coded yellow
- Machine studies/maintenance are color coded (grey)
- Filtered viewing (logged in user's CAT's sector(s) only)
- Link to PSS, Schedule and Watchman data





Beamline Usage Data for 15-ID-C

2003-1 Run

Scheduled Experiments Total Hours: 680
 (A) Total Available Shifts: 206
 (B) Scheduled Experiments Total Shifts: 85
 100*B/A: 41.26%

Jan 03 (0 hrs)				Feb 03 (176 hrs)			Mar 03 (344 hrs)			Apr 03 (160 hrs)					
	00-08	08-16	16-24		00-08	08-16	16-24		00-08	08-16	16-24		00-08	08-16	16-24
1	-	-	-	1	- 1	- 1	- 1	1	0 0 X	0 0 X	0 0 X	1	0 0 X	- 1	0 0 X
2	-	-	-	2	0 1	- 1	- 1	2	0 0 X	1 0 X	0 0 X	2	0 0 X	- 0 X	0 0 X
3	-	-	-	3	- 1	- 1	- 1	3	0 0 X	- 0 X	0 1	3	0 0 X	- 0 X	0 0 X
4	-	-	-	4	- 1	0 0	- 0	4	- 1	0 0 X	- 0 X	4	0 0 X	0 0 X	0 0 X
5	-	-	-	5	- 1	0 0	- 0	5	0 0 X	0 0 X	0 0 X	5	- 0 X	- 0 X	0 0 X
6	-	-	-	6	- 0	0 0	- 0	6	- 0 X	0 0 X	0 0 X	6	0 0 X	0 0 X	0 0 X
7	-	-	-	7	- 0	- 0	- 0	7	0 0 X	- 0 X	0 0 X	7	- 0 X	- 1	- 1
8	-	-	-	8	- 0	- 0	- 0	8	0 0 X	0 0 X	0 0 X	8	- 1	- 1	- 1
9	-	-	-	9	- 0	- 0	- 0	9	0 0 X	0 0 X	0 0 X	9	- 1	- 0 X	0 0 X
10	-	-	-	10	- 0	- 1	- 1	10	0 0 X	- 1	- 1	10	0 0	0 0	0 0
11	-	-	-	11	- 1	- 1	- 1	11	- 1	- 1	- 1	11	1 0	- 0	- 0
12	-	-	-	12	- 1	0 0	- 0	12	- 1	- 1	- 1	12	- 0	- 0	- 0
13	-	-	-	13	- 0	- 0	- 0	13	- 1	- 1	- 1	13	- 0	- 0	- 0
14	-	-	-	14	- 0	- 0	- 0	14	- 1	- 1	- 1	14	- 0	- 0	- 1
15	-	-	-	15	- 1	- 0	- 0	15	- 1	- 1	- 1	15	- 1	0 0	- 0
16	-	-	-	16	- 0	- 0	- 0	16	- 1	- 1	0 1	16	- 0	- 0	- 0
17	-	-	-	17	- 1	- 0	- 0	17	- 1	- 1	0 1	17	- 0	- 0	- 1
18	-	-	-	18	- 0	- 1	0 1	18	- 1	- 1	0 1	18	- 0	- 0	- 0
19	-	-	-	19	- 1	- 1	- 1 X	19	- 1	- 1	- 1	19	- 0	- 0	- 0
20	-	-	-	20	1 1 X	0 0 X	- 0 X	20	- 1	- 1	- 1	20	- 0	1 0	- 0
21	-	-	-	21	0 1 X	0 0 X	0 0 X	21	- 1	- 1	- 1	21	- 1	- 1	- 1
22	-	-	-	22	0 0 X	0 0 X	0 0 X	22	- 1	- 1	- 1	22	- 1	- 1	- 1
23	-	-	-	23	0 0 X	0 0 X	- 0 X	23	- 1	- 1	- 1	23	- 1	- 1	- 1
24	-	-	-	24	0 0 X	- 1	- 1	24	- 1	- 1	- 1	24	- 1	- 1	- 1
25	-	-	-	25	- 1	- 1	- 1	25	- 1	- 1	- 1	25	- 1	- 1	- 1
26	-	-	-	26	- 1	0 0 X	0 0 X	26	- 1	0 0 X	0 0 X	26	- 1	- 1	- 1
27	-	-	-	27	0 0 X	0 0 X	0 0 X	27	0 1 X	- 0 X	0 0 X	27	- 1	- 1	- 1
28	-	-	-	28	0 0 X	0 0 X	0 0 X	28	0 0 X	0 0 X	0 0 X	28	- 1	- 0	- 1
29	-	- 1	- 1					29	0 0 X	0 0 X	0 0 X	29	- 1	- 0	- 1
30	- 1	- 1	- 1					30	0 0 X	0 0 X	0 0 X	30	- 1	- 1	- 1
31	- 1	- 1	- 1					31	0 0 X	- 0 X	0 0 X				

	No Beam	0 0	Station Attended, Shutter Open	1 0	Station Unattended, Shutter Open
X	Scheduled Beamtime	0 1	Station Attended, Shutter Closed		Station Unattended, Shutter Closed



Beamline Usage and PSS Data for 2-ID-D

Feb 2003	Shift	User Experiments	Beamline Usage Status	Sample Period	Delivered Beam	PSS Code	Time Lost					
							Global Offline	ACIS Shutter Permit	APS Enable	User Key	PSS Error	EPS Permit
1	00:00			240	240	Shutter Closed (1)	0	0	240	0	0	240
				240	240		0	0	240	0	0	240
	08:00	Beamline commissioning B. Lai SRI-96		240	240	Shutter Open (0)	0	0	71	0	0	47
				240	240		0	0	0	0	0	0
	16:00	Beamline commissioning B. Lai SRI-96	Station Attended (0)	240	240	Shutter Open (0)	0	0	0	0	0	0
				240	240		0	0	0	0	0	0
2	00:00	Beamline commissioning B. Lai SRI-96		240	148	Shutter Open (0)	0	0	0	0	0	0
				240	170		0	55	0	0	0	0
	08:00	Beamline commissioning B. Lai SRI-96	Station Attended (0)	240	240	Shutter Open (0)	0	0	0	0	0	0
				240	240		0	0	0	0	0	0
	16:00	Beamline commissioning B. Lai SRI-96	Station Attended (0)	240	240	Shutter Open (0)	0	0	0	0	0	0
				240	240		0	0	0	0	0	0
3	00:00	Beamline commissioning B. Lai SRI-96	Station Attended (0)	240	240	Shutter Open (0)	0	0	0	0	0	0
				240	240		0	0	0	0	0	0
	08:00	Beamline commissioning B. Lai SRI-96		240	240	Shutter Open (0)	0	0	0	0	0	0
				240	240		0	0	0	0	0	0
	16:00			240	0	Shutter Closed (1)	0	240	0	0	0	0
				240	0		0	240	0	0	0	0
4	00:00			240	0	Shutter Closed (1)	0	240	0	0	0	0
				240	0		0	240	0	0	0	0
	08:00	X-ray fluorescence imaging and microspectrosc studies of metal-microbe and mineral-metal-microbe associations K. Kemner	Station Attended (0)	240	229	Shutter Open (0)	0	11	0	0	0	11
				240	240		0	0	0	0	0	0

Schedule Data – Web Display

- **Monthly view of the schedule for a sector**
- **Filtered viewing (CAT's sector(s) only)**
- **Traverse sectors if applicable**
- **Traverse months**
- **Color coding of scheduled downtimes (machine studies/maint.)**



◀ Sector 2 ▶

◀ OCTOBER 2003 ▶



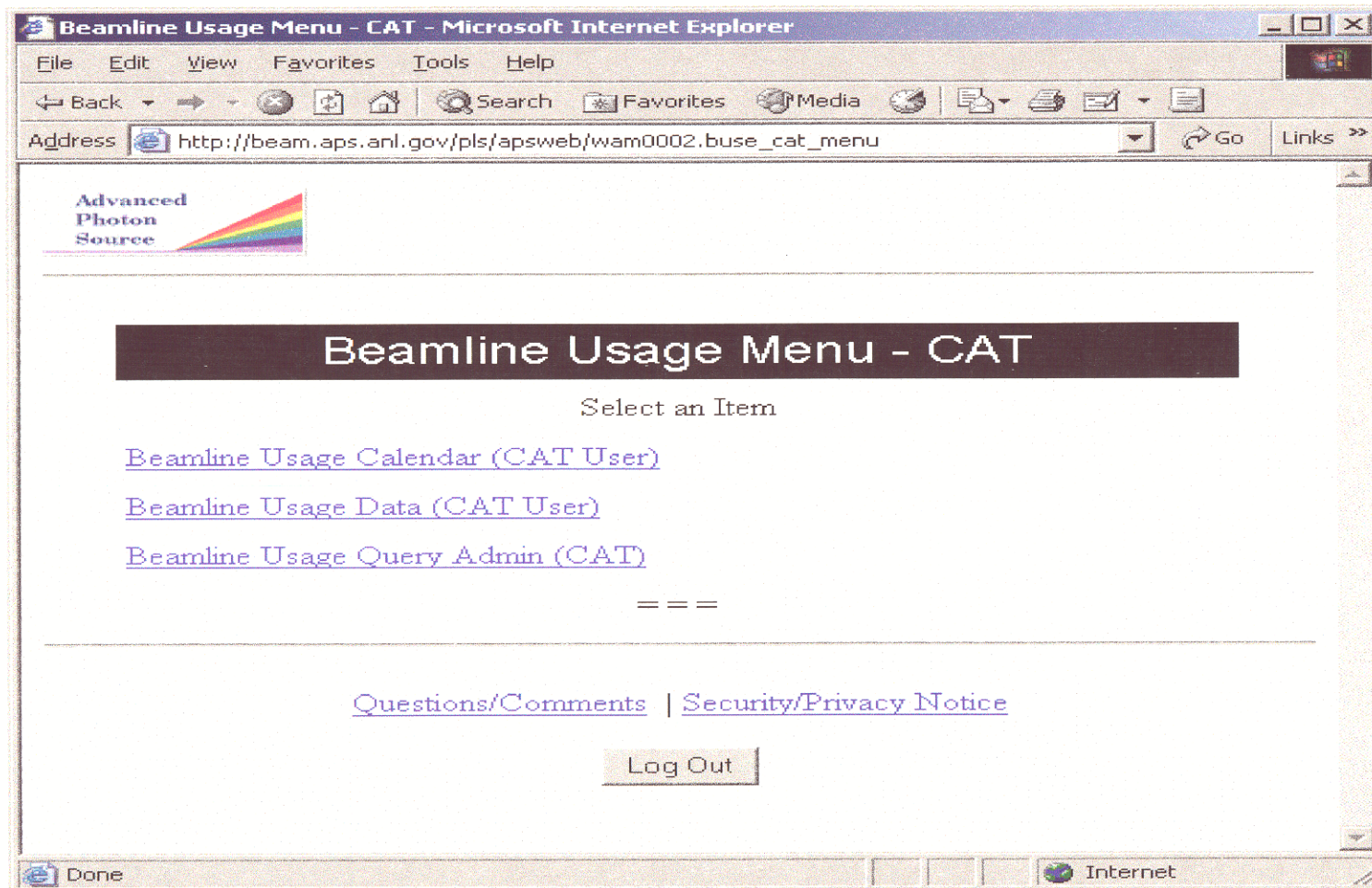
	Sunday			Monday			Tuesday			Wednesday			Thursday			Friday			Saturday		
										1			2			3			4		
	00	08	16	00	08	16	00	08	16	00	08	16	00	08	16	00	08	16	00	08	16
2BMB										Machine Studies			F. DeCarlo SRI-0244								
2IDB																T. Hambley GUP-1236					
2IDD																Legnini SRI-0260					
2IDE																					
	5			6			7			8			9			10			11		
	00	08	16	00	08	16	00	08	16	00	08	16	00	08	16	00	08	16	00	08	16
2BMB	F. DeCarlo SRI-0244			Shifts for Studies						Donnley SRI-0072						Hu GUP-1366					
2IDB																					
2IDD	T. Hambley GUP-1236									C. Dillon GUP-1264											
2IDE	Legnini SRI-0260									Legnini SRI-0260			Glesne GUP-1427			Tsui GUP-1339					
	12			13			14			15			16			17			18		
	00	08	16	00	08	16	00	08	16	00	08	16	00	08	16	00	08	16	00	08	16
2BMB	Hu GUP-1366			Shifts for Studies						F. DeCarlo GUP-1526			F. DeCarlo SRI-0270			Seidler TBA					
2IDB										D. Paterson SRI-281			I. McNulty SRI-282			D. Paterson SRI-327					
2IDD	C. Dillon GUP-1264																				
2IDE	Tsui GUP-1339																				
	19			20			21			22			23			24			25		
	00	08	16	00	08	16	00	08	16	00	08	16	00	08	16	00	08	16	00	08	16
2BMB	Seidler TBA			Takeuchi GUP-1393			Shifts for Studies			Takeuchi GUP-1393			Ilavsky GUP-883			Y. Chu SRI-0242					
2IDB	D. Paterson SRI-327			??? GUP-RA																	
2IDD										B. Lai SRI-96			B. Lai GUP-4								
2IDE										Legnini SRI-0260			Baines GUP-1622								
	26			27			28			29			30			31					
	00	08	16	00	08	16	00	08	16	00	08	16	00	08	16	00	08	16			
2BMB	Y. Chu SRI-0242			Shifts for Studies						Gladfelter GUP-1408											
2IDB																					
2IDD	B. Lai GUP-4												K. Soni GUP-1601								
2IDE	Baines GUP-1622												Woloschak GUP-1546								

Watchman (WM) Data

- **Loaded daily into Oracle¹**
- **Fully automated loading**
- **Data can be corrected by the Watchman System Manager**

¹only loads newly scanned data

You have access: <http://beam.aps.anl.gov/busecat>



Sample of FY'03 Statistics

A	C	D	E	F
Sector	% of FY beamline was useable	# of hours SCHEDULED on beamline	# of hours DELIVERED to beamline	# of hours that researchers USED the delivered time
X BM	100.0	4912	4772.6	4724.6
C ID E*	39.0	2000	4772.6	1920
D ID	100.0	4912	4772.6	4740.6
B ID *	100.0	7896	4772.6	7888
F ID C	100.0	4912	4772.6	4763.6
V BM C	97.3	4784	4772.6	4618.3
H ID	100.0	4856	4772.6	4740.6
I ID B*	78.2	3872	4772.6	3636.3
J ID D*	24.1	1288	4772.6	1288
K BM*	88.4	4360	4772.6	4235
R ID*	91.3	4496	4772.6	4399.5
S ID*	77.0	3816	4772.6	3558.3
T ID*	12.2	720	4772.6	616



Lessons Learned/ Path Forward

- **Need a Master schedule template accessible on the web, where CATs can (with privileges) enter the information and change it as needed. (WIP)**
- **Have beam time usage data accessible to CAT reps. to view in a timely manner. Provisions for comments to capture any reason for unused shifts, have been added. (Complete)**
- **Resolve the issue of the Floor Coordinator scanning during the absence of the researchers. (WIP)**

Your suggestions and feedback are welcome!

