

Overview of APS-U Beamline Installation Schedule and Review of Recent Activity



Robert P. Winarski

APS-U Beamline Installation Coordinator Argonne National Laboratory

APSUO/PUC Meeting

July 27, 2022



Beamline Installation Scope

- Major installations (Feature Beamline and Major Enhancements) at 14 beamlines (13 currently operating)
 - Shielded enclosure contract includes:
 - Installation, modification and removal of shielded stations
 - Electrical, lighting, cable trays, PSS wiring
 - Contract work (BPA) to prepare sectors for construction and utility reconnection:
 - Disconnect and reconnect electrical, piping, network, cable trays
 - Installation of beamline optics, components, instruments
- Minor enhancement installations (optics, instruments) at 8 other beamlines (APS and CATs)
- New wall collimators and front-end exit tables for almost every ID beamline (BPA)
- Realignment of BM beamlines





Projected Schedule for ID and BM Beamlines

DO NO HARM BEAMLINES

Realign Cant and checkout Ready for Commissioning 13-ID GSECCARS Swap FE exit table Realign Cant and checkout Ready for Commissioning

27-ID checkout Ready for Commissioning

4 25-ID

16-ID HP Swap FE exit table Realign Cant and checkout Ready for Commissioning 21-ID LSCAT Swap FE exit table Realign Cant and checkout Ready for Commissioning 23-ID GMCA Swap FE exit table Realign Cant and checkout Ready for Commissioning 24-ID NECAT Swap FE exit table Realign Cant and checkout Ready for Commissioning 35-ID DCS on EE ou

- Schedules for ID installations designed around shielded enclosure installation (component delivery) dates from vendors
- ID front-end and BM work based on dark time schedule

			Tool: Manage	Duration	Ca	Charles I.		Qtr 2, 2022	Qtr 3, 2022 Qtr 4, 2022 Qtr 1, 2023 Qtr 2, 2023 Qtr 3, 2023 Qtr 4, 2023 Idd Ave Max Max	Qtr 1, 2024
cia	inc	bd		Duration + S	start		- 26 2022	Apr May Jun	Juli Aug sep Oct Nov Dec Jan Feb Mar Apr May Jun Juli Aug sep Oct Nov Dec	ec Jan Fe
วเบ	11 15	5U	4 Ontics Receipt	195 days: Ju	uly 1, 2022	March 20	20, 2025			
- 0			Primary Mirro	195 days Ju	uly 1, 2022	022 November	2023			
			Monochromot	tor 22 days N	March 1, 2022	March 20 2	30, 2022			
llation			CRI	22 days IV	March 1, 2023	March 20, 2	2023			
ιαι	IUI		KR Substrates	22 days liv	viarcii 1, 2025	Iviar cir 30, 2	2023			
			KB Substrates	using 22 days it	anuary 1, 2022	2 January 20	2022			
			4 Photon Dolivoru	Receipt 71 days A	anuary 1, 202.	5 January 30,	2023			
			Slite	A ave A	April 1, 2023	May 20, 202	12			
			Masks	22 days iv	viay 1, 2023	April 20, 20.	23			
			Collimators	22 days A	April 1, 2023	April 30, 20	123			
			Commators	22 uays A	April 1, 2025	April 30, 20	123			
			Transports	1 day 1	ulu 10, 2023	April 30, 20	23			
			Vacuum Hards	i day ji	uly 10, 2023	July 10, 202	.5			
			Controls	⊿ 1-ID		172 days? April	1, 2023	November 28,	3, 2023	
			Control Room			20 days April	1, 2023	April 30, 2023	3	
~ "	~		4 Instruments Por	DMM		22 days April	1, 2023	April 30, 2023	3	
()[WAYS			22 days? May	1, 2023	May 30, 2023		
			SAXS	Slits		22 days May	1.2023	May 30, 2023		
			Detectors	Collimators			-,	.,,		
			4 Ream Delivery I	Shutter						
			- Seam Derivery I	A Ream Delivery Install-Mar		45 days A	unt 20, 2022	October 21 2	1022	
			New Enclosure	- beam belivery installation		45 days Augu	151 50, 2025	October 31, 2	2023	<u></u>
			Flectric/Cable	Front End work		LU days Augu	1st 30, 2023	September 12	2, 2023	P
			Water/Air	DMM		5 days Sept	ember 13, 2023	September 19	9, 2023	1
			Notwork	Beam Conditioning		10 days Sept	ember 20, 2023	October 3, 202	23	• 1
										i h
	2 days	April 18, 2023	April 19, 202	23				ų		i
1	1 day	April 18, 2023	April 18, 202	/3				1		1
1	1 day	April 19, 2023	April 19, 202	/3						
f	6 days	April 18, 2023	April 25, 20	BM DO NO HARM BEAMLINES						_
5	5 days	April 18, 2023	April 24, 20	A 1-BIVI	43 days	July 19, 2023	September 15,	2023		
1	1 day	April 25, 2023	April 25, 20	Removal of beamine components	12 days	July 19, 2023	July 25, 2023			
8	8 days	April 25, 2023	May 4, 202	Wait	5 days	August 11 2023	August 17, 2023	3		_
7	2 days	April 25, 2023	April 26, 20	Mechanical utilities rework	5 days	August 18, 2023	August 24, 2023	3		_
5	5 days	April 27, 2023	May 3, 202	Electrical utilities rework	5 days	August 18, 2023	August 24, 2023	3		
:	1 day	May 4, 2023	May 4, 202	⊿ Realign beamline	20 days	August 18, 2023	September 14,	2023		_
	8 days	April 27, 2023	May 8, 202	Move transport	6 days	August 18, 2023	August 25, 2023	3	1 I I I I I I I I I I I I I I I I I I I	
	2 days	April 27, 2023	April 28, 20	Move mini-enclosure	8 days	August 18, 2023	August 20, 2020			
-	E dava	May 1, 2022					August 29, 2023	3		
	5 0 30 6		May 5 202	Replace Guilotines	8 days	August 18, 2023	August 29, 2023	3	2 2	
	5 days 1 day	May 8, 2023	May 5, 202	Replace Guilotines Install/Realign	8 days 15 days	August 18, 2023 August 25, 2023	August 29, 2023 August 29, 2023 September 14,	3 3 2023		
	5 days 1 day	May 8, 2023	May 5, 202 May 8, 202	Replace Guilotines Install/Realign Ready for Commissioning	8 days 15 days 1 day	August 18, 2023 August 25, 2023 September 15, 202	August 29, 2023 August 29, 2023 September 14, 2 September 15, 2	3 3 2023 2023		
1	5 days 1 day 11 days	May 1, 2023 May 8, 2023 May 1, 2023	May 5, 202 May 8, 202 May 15, 20	Replace Guilotines Install/Realign Ready for Commissioning 2-BM	8 days 15 days 1 day 72 days	August 18, 2023 August 25, 2023 September 15, 202 July 13, 2023	August 29, 2023 August 29, 2023 September 14, 2 September 15, 2 October 20, 202	3 3 2023 2023 23		
1	5 days 1 day 11 days 2 days	May 1, 2023 May 8, 2023 May 1, 2023 May 1, 2023	May 5, 202 May 8, 202 May 15, 20 May 2, 202	Replace Guilotines Install/Realign Ready for Commissioning 2-BM Removal of beamline components	8 days 15 days 1 day 72 days 5 days	August 18, 2023 August 25, 2023 September 15, 202 July 13, 2023 July 13, 2023	August 29, 2023 August 29, 2023 September 14, 2 September 15, 2 October 20, 202 July 19, 2023	3 3 2023 2023 23		
1	1 days 1 day 11 days 2 days 5 days	May 1, 2023 May 8, 2023 May 1, 2023 May 1, 2023 May 8, 2023	May 5, 202 May 8, 202 May 15, 20 May 2, 202 May 12, 20	Replace Guilotines Install/Realign Ready for Commissioning * 2-BM Removal of beamline components Replace FE Wall Collimator	8 days 15 days 1 day 72 days 5 days 12 days	August 18, 2023 August 25, 2023 September 15, 202 July 13, 2023 July 13, 2023 July 20, 2023 August 7, 2022	August 29, 2023 August 29, 2023 September 14, 22 September 15, 0 October 20, 202 July 19, 2023 August 4, 2023	3 3 2023 2023 23		
: : : : : : : : : : : : : : : : : : :	5 days 1 day 11 days 2 days 5 days 1 day	May 1, 2023 May 8, 2023 May 1, 2023 May 1, 2023 May 8, 2023 May 15, 2023	May 5, 202 May 8, 202 May 15, 20 May 2, 202 May 12, 20 May 15, 20	Replace Guilotines Install/Realign Ready for Commissioning +2-BM Removal of beamline components Replace FE Wall Collimator Wait Machanical utilities caused	8 days 15 days 1 day 72 days 5 days 12 days 34 days	August 18, 2023 August 25, 2023 September 15, 202 July 13, 2023 July 13, 2023 July 20, 2023 August 7, 2023	August 29, 2022 August 29, 2023 September 14, 23 September 15, October 20, 202 July 19, 2023 August 4, 2023 September 21, 25 September 21,	3 3 2023 2023 23 2023 2023 2023		
: : : : : : : : : : : : : : : : : : :	1 days 1 day 11 days 2 days 5 days 1 day 14 days	May 1, 2023 May 8, 2023 May 1, 2023 May 1, 2023 May 8, 2023 May 15, 2023 May 3, 2023	May 5, 202 May 8, 202 May 15, 20 May 2, 202 May 12, 20 May 15, 20 May 22, 20	Replace Guilotines Install/Realign Ready for Commissioning *2-BM Removal of beamline components Replace FE Wall Collimator Wait Mechanical utilities rework Electrical utilities rework	8 days 15 days 1 day 72 days 5 days 12 days 34 days 5 days 5 days	August 18, 2023 August 25, 2023 September 15, 202 July 13, 2023 July 13, 2023 July 20, 2023 August 7, 2023 September 22, 202 September 22, 202	August 29, 2023 August 29, 2023 September 14, September 15, October 20, 202 July 19, 2023 August 4, 2023 September 21, 23 September 28, September 28, September 29, 2023	3 3 2023 2023 23 2023 2023 2023 2023 2023		
1 1 2	1 days 11 days 2 days 5 days 1 day 14 days 2 days	May 1, 2023 May 8, 2023 May 1, 2023 May 1, 2023 May 8, 2023 May 15, 2023 May 3, 2023	May 5, 202 May 8, 202 May 15, 20 May 2, 202 May 12, 20 May 15, 20 May 22, 20 May 4, 202	Replace Guilotines Instal/Realign Ready for Commissioning 22-BM Removal of beamline components Replace FE Wall Collimator Wait Mechanical utilities rework Electrical utilities rework Realign beamline	8 days 15 days 1 day 72 days 5 days 12 days 34 days 5 days 5 days 20 days	August 18, 2023 August 25, 2023 September 15, 202 July 13, 2023 July 13, 2023 July 20, 2023 August 7, 2023 September 22, 202 September 22, 202 September 22, 202	August 29, 2023 August 29, 2023 September 14, 23 September 15, October 20, 202 July 19, 2023 August 4, 2023 September 21, 23 September 28, 23 September 18, 70	3 3 2023 2023 23 2023 2023 2023 2023 2023 2023 2023 2023 2023		-
	1 day 1 day 2 days 2 days 5 days 1 day 14 days 2 days 5 days 5 days	May 1, 2023 May 8, 2023 May 1, 2023 May 1, 2023 May 8, 2023 May 15, 2023 May 3, 2023 May 15, 2023	May 5, 202 May 8, 202 May 15, 20 May 2, 202 May 12, 20 May 12, 20 May 42, 202 May 4, 202 May 19, 20	Replace Guilotines Install/Realign Ready for Commissioning *2-BM Removal of beamline components Replace FE Wall Collimator Wait Mechanical utilities rework Electrical utilities rework Electrical utilities rework Idealing beamline Move transport	8 days 15 days 1 day 72 days 5 days 12 days 34 days 5 days 5 days 20 days 5 days	August 18, 2023 August 25, 2023 September 15, 202 July 13, 2023 July 13, 2023 July 20, 2023 August 7, 2023 September 22, 202 September 22, 202 September 22, 202 September 22, 202	August 29, 2022 September 14, 23 September 15, October 20, 202 July 19, 2023 August 4, 2023 September 21, 23 September 28, 24 September 28, 25 October 19, 202 October 19, 202 23 September 28, 23 September 28, 23 September 28, 23 September 28, 23 September 28, 23 September 28, 23 September 28, 24 September 28, 25 September 28, 26 September 28, 27 September 28, 28 September 28, 29 September 28, 29 September 28, 20 September 20, 20 September 28, 20 September 28, 2	3 3 2023 2023 23 2023 2023 2023 2023 23 2023		
: : : : : : : : : : : : : : : : : : :	1 days 1 day 11 days 2 days 5 days 1 day 14 days 2 days 5 days 1 day 1 day	May 1, 2023 May 8, 2023 May 1, 2023 May 1, 2023 May 8, 2023 May 15, 2023 May 3, 2023 May 15, 2023 May 15, 2023 May 22, 2023	May 5, 202 May 8, 202 May 15, 20 May 2, 202 May 12, 20 May 15, 20 May 22, 20 May 4, 202 May 19, 20 May 22, 20	Replace Guilotines Install/Realign Ready for Commissioning * 2-BM Removal of beamline components Replace FE Wall Collimator Wait Mechanical utilities rework Electrical utilities rework # Realign beamline Move transport Move mini-enclosure	8 days 15 days 1 day 72 days 5 days 12 days 34 days 5 days 5 days 20 days 5 days 7 days	August 18, 2023 August 25, 2023 September 15, 202 July 13, 2023 July 20, 2023 August 7, 2023 September 22, 202 September 22, 202 September 22, 202 September 22, 202 September 22, 202	August 29, 2023 September 14, 23 September 14, 23 September 14, 24 September 15, October 20, 202 July 19, 2023 August 4, 2023 September 24, 23 September 24, 23 September 28, 24 September 28, 25 September 28, 26 September 28, 27 September 28, 28 September 28, 29 September 28, 20 September 28, 20 September 28, 20 September 28, 21 September 28, 22 September 28, 23 September 28, 24 September 28, 25 September 28, 26 September 28, 27 September 28, 28 September 28, 29 September 28, 20 September 28, 20 September 28,	3 3 2024 2025		
: : : : : : : : : : : : : : : : : : :	1 days 1 day 11 days 2 days 5 days 1 day 14 days 2 days 5 days 5 days 1 day 17 days	May 8, 2023 May 8, 2023 May 1, 2023 May 1, 2023 May 15, 2023 May 3, 2023 May 3, 2023 May 15, 2023 May 22, 2023 May 22, 2023	May 5, 202 May 8, 202 May 15, 20 May 12, 202 May 12, 20 May 12, 20 May 22, 20 May 4, 202 May 19, 20 May 29, 20	Replace Guilotines Instal/Realign Ready for Commissioning 2-2-BM Removal of beamline components Replace FE Wall Collimator Wait Mechanical utilities rework Electrical utilities rework Electrical utilities rework / Realign Deamline Move transport Move mini-enclosure Replace Guilotines	8 days 15 days 1 day 72 days 5 days 12 days 34 days 5 days 5 days 20 days 5 days 7 days 7 days	August 18, 2023 August 25, 2023 September 15, 202 July 13, 2023 July 13, 2023 July 20, 2023 August 7, 2023 September 22, 202 September 22, 202 September 22, 202 September 22, 202 September 22, 202	August 29, 2023 August 29, 2023 September 14, 23 September 15, October 20, 202 July 19, 2023 August 4, 2023 September 21, 23 September 24, 23 September 28, October 2, 2023 September 28, 20 October 2, 2023 September 28, October 2, 2023	3 3 2023 2023 203 2023 2023 2023 2023 2023 2023 2023 3 3 3		
: 2 2 2 2 2 2 2 1 1 1 1	1 day 1 day 11 days 2 days 5 days 1 day 14 days 2 days 5 days 1 day 17 days 2 days 2 days	May 1, 2023 May 8, 2023 May 1, 2023 May 1, 2023 May 2, 2023 May 3, 2023 May 3, 2023 May 15, 2023 May 15, 2023 May 5, 2023	May 5, 202 May 8, 202 May 2, 202 May 12, 20 May 12, 20 May 12, 20 May 4, 202 May 19, 20 May 22, 20 May 22, 20 May 8, 202	Replace Guilotines Install/Realign Ready for Commissioning *2-BM Removal of beamline components Replace FE Wall Collimator Wait Mechanical utilities rework Electrical utilities rework Electrical utilities rework * Realign beamline Move transport Move mini-enclosure Replace Guilotines Install/Realign	8 days 15 days 1 day 72 days 5 days 12 days 34 days 5 days 5 days 20 days 5 days 7 days 7 days 15 days	August 18, 2023 August 25, 2023 September 15, 2023 July 13, 2023 July 13, 2023 July 13, 2023 July 20, 2023 August 7, 2023 September 22, 202 September 22, 202 September 22, 202 September 22, 202 September 22, 202 September 22, 202 September 22, 202	August 29, 2023 August 29, 2023 September 14, 23 September 15, October 20, 200 July 19, 2023 August 4, 2023 September 12, September 28, 23 September 28, 24 October 19, 203 September 28, 3 October 19, 203 September 28, 3 October 19, 203 Sottober 2, 2022 3 October 2, 2023 3 3 3 3 3 3 3 3 3 3 3 3 3 <td< td=""><td>3 3 2023 2023 2023 2023 2023 2023 2023 2023 3 3 2023 203 20</td><td></td><td></td></td<>	3 3 2023 2023 2023 2023 2023 2023 2023 2023 3 3 2023 203 20		
	1 days 1 day 11 days 2 days 5 days 1 day 14 days 2 days 5 days 1 day 17 days 2 days 2 days 5 days 5 days	May 8, 2023 May 8, 2023 May 1, 2023 May 1, 2023 May 1, 2023 May 8, 2023 May 15, 2023 May 3, 2023 May 22, 2023 May 22, 2023 May 5, 2023 May 5, 2023	May 5, 202 May 8, 202 May 15, 20 May 12, 20 May 15, 20 May 22, 20 May 4, 202 May 19, 20 May 22, 20 May 29, 20 May 8, 202 May 8, 202	Replace Guilotines Install/Realign Ready for Commissioning *2-BM Removal of beamline components Replace FE Wall Collimator Wait Mechanical utilities rework Electrical utilities rework Electrical utilities rework # Realign beamline Move transport Move mini-enclosure Replace Guilotines Install/Realign Ready for Commissioning	8 days 15 days 1 day 72 days 5 days 12 days 34 days 5 days 5 days 20 days 5 days 7 days 7 days 15 days 15 days 1 day	August 18, 2023 August 25, 2023 September 13, 2023 July 13, 2023 July 13, 2023 August 7, 2023 September 22, 202 September 22, 202 September 22, 202 September 22, 202 September 22, 202 September 22, 202 September 22, 202	August 29, 2023 September 14, 23 September 15, 24 September 15, 25 September 15, 26 July 19, 2023 August 4, 2023 September 20, 203 3 September 28, 23 October 2, 2023 30 October 2, 2023 30 October 20, 203 0ctober 20, 203 October 20, 203	3 3 2023 2023 2023 2023 2023 2023 2023 2023 2023 2023 3 3 3 3 2023 2023 2023 2023 203 20		-
	1 days 1 days 11 days 2 days 5 days 1 day 14 days 2 days 2 days 1 day 17 days 5 days 5 days 1 day	May 8, 2023 May 1, 2023 May 1, 2023 May 1, 2023 May 1, 2023 May 1, 2023 May 3, 2023 May 3, 2023 May 3, 2023 May 2, 2023 May 5, 2023 May 5, 2023 May 2, 2023 May 2, 2023	May 5, 202 May 8, 202 May 15, 20 May 12, 20 May 12, 20 May 12, 20 May 4, 202 May 4, 202 May 22, 20 May 22, 20 May 29, 20 May 8, 202 May 26, 20 May 29, 20	Replace Guilotines Instal/Realign Ready for Commissioning 2-2-BM Removal of beamline components Replace FE Wall Collimator Wait Mechanical utilities rework Electrical utilities rework Electrical utilities rework / Realign beamline Move transport Move mini-enclosure Replace Guilotines Instal/Realign Ready for Commissioning *5-BM	8 days 15 days 1 day 72 days 5 days 12 days 34 days 5 days 5 days 20 days 5 days 7 days 7 days 15 days 16 day 48 days	August 18, 2023 August 25, 2023 September 13, 2023 July 13, 2023 July 13, 2023 August 7, 2023 September 22, 202 September 22, 202 June 26, 2023	August 29, 2023 August 29, 2023 September 14, 203 September 14, October 20, 200 July 19, 2023 September 21, September 22, September 23, September 24, 23 September 28, 23 October 19, 200 23 October 19, 201 23 October 19, 202 3 October 19, 202 October 19, 202 October 19, 202 October 20, 202	3 2023 2023 2023 23 2023 2023 2023 2023 23 3 3 3 3 3 3 3 3 3 3		-
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	5 days 1 day 11 days 2 days 5 days 1 day 14 days 2 days 5 days 1 day 17 days 2 days 5 days 1 day 17 days 2 days 1 day 1 day	May 8, 2023 May 8, 2023 May 1, 2023 May 1, 2023 May 1, 2023 May 15, 2023 May 3, 2023 May 3, 2023 May 5, 2023 May 5, 2023 May 5, 2023 May 22, 2023 May 22, 2023 May 22, 2023 May 22, 2023	May 5, 202 May 8, 202 May 15, 20 May 12, 20 May 12, 20 May 22, 20 May 22, 20 May 22, 20 May 20, 20 May 20, 20 May 8, 202 May 26, 20 May 26, 20 May 29, 20	Replace Guilotines Install/Realign Ready for Commissioning *2-BM Removal of beamline components Replace FE Wall Collimator Wait Mechanical utilities rework Electrical utilities rework Electrical utilities rework * Realign beamline Move transport Move mini-enclosure Replace Guilotines Install/Realign Ready for Commissioning *5-BM Removal of beamline components	8 days 15 days 1 day 72 days 5 days 12 days 34 days 5 days 5 days 20 days 7 days 7 days 15 days 15 days 44 days 5 days 6 days 6 days 7 days	August 18, 2023 August 25, 2023 September 15, 2023 July 13, 2023 July 13, 2023 July 20, 2023 August 7, 2023 September 22, 202 September 22, 202 September 22, 202 September 22, 202 September 29, 202 October 20, 2023 June 26, 2023	August 29, 2023 August 29, 2023 September 14, October 20, 200 July 19, 2023 September 14, 2000 July 19, 2023 September 24, 2000 September 28, 2000 September 28, 2000 Cotober 4, 2023 October 2, 2023 June 30, 2023 June 30, 2023	3 3 2023 203 20		-
: : : : : : : : : : : : : : : : : : :	1 day 1 day 11 days 2 days 5 days 1 day 14 days 2 days 5 days 1 day 17 days 2 days 5 days 1 day 18 days 2 days	May 8, 2023 May 1, 2023 May 1, 2023 May 1, 2023 May 1, 2023 May 1, 2023 May 2, 2023 May 3, 2023 May 2, 2023 May 5, 2023 May 5, 2023 May 22, 2023 May 29, 2023 May 9, 2023	May 5, 202 May 8, 202 May 15, 20 May 12, 202 May 12, 20 May 12, 20 May 22, 20 May 29, 20 June 1, 202	Replace Guilotines Install/Realign Ready for Commissioning *2-BM Removal of beamline components Replace FE Wall Collimator Wait Mechanical utilities rework Electrical utilities rework Electrical utilities rework 4 Realign beamline Move transport Move mini-enclosure Replace Guilotines Install/Realign Ready for Commissioning 4 5-BM Removal of beamline components Replace FE Wall Collimator	8 days 15 days 1 day 72 days 5 days 5 days 34 days 5 days 5 days 5 days 7 days 7 days 15 days 15 days 14 day 8 days 5 days 12 days 15 days 15 days 14 days 15 days 15 days 14 days 15 days 15 days 14 days 15 days 15 days 15 days 14 days 15 days 15 days 15 days 15 days 14 days 15 days 15 days 15 days 15 days 15 days 15 days 15 days 15 days 15 days 16 days 17 days 17 days 18 days	August 18, 2023 August 25, 2023 September 13, 2023 July 13, 2023 July 13, 2023 August 7, 2023 September 22, 202 September 22, 202 September 22, 202 September 22, 202 September 22, 202 September 22, 202 June 26, 2023 June 26, 2023	August 29, 2023 August 29, 2023 September 14, 23 September 14, October 20, 200 July 19, 2023 September 28, August 4, 2023 September 28, September 28, September 28, September 28, September 28, September 28, October 19, 200 October 20, 200 October 20, 200 October 20, 200 October 20, 200 July 18, 2023 July 18, 2023	8 8 2023 2023 23 2023 23 2023 2023 2023 2023 2023 23 23 3 3 3		-



Feature Beamlines and Major Enhancements

- Schedules reflect construction activities, infrastructure buildouts, beamline installation, safety systems, and final installation checks
- Not detailed are preconstruction removal activities (about two months prior), standard beamline commissioning activities
- All work utilizes e-traveler and CDB systems

					Qtr 2,	2022		Qtr 3, 2022		Qtr 4, 202	2	Qtr 1, 2	2023	Q	tr 2, 2
Task Name	Duration	Start	Finish 👻	Mar	Apr	May	Jun	Jul Aug	Sep	Oct N	lov Dec	Jan	Feb I	Mar /	(pr
	323 daysr	July 1, 2022	September 26, 2023					l							
A Optics Receipt	195 days	July 1, 2022	March 30, 2023					I		_	_			1	
Primary Wirrors	22 days	November 1, 2022	November 30, 2022										_	_	
Monochromator	22 days	March 1, 2023	March 30, 2023												
CRL	22 days	March 1, 2023	March 30, 2023												
KB Substrates	22 days	July 1, 2022	July 30, 2022												
KB Mount/Housing	22 days	January 1, 2023	January 30, 2023											_	
A Photon Delivery Receipt	/1 daysr	April 1, 2023	July 10, 2023											1	
Slits	22 days	May 1, 2023	May 30, 2023											_	
Masks	22 days	April 1, 2023	April 30, 2023												
Collimators	22 days	April 1, 2023	April 30, 2023												
Shutters	22 days	April 1, 2023	April 30, 2023												
Iransports	1 day	July 10, 2023	July 10, 2023												
Vacuum Hardware															
Controls	20 days	December 1, 2022	December 28, 2022												
Control Room	129 days?	October 1 2022	March 30, 2023												
WAXS	22 days	October 1, 2022	October 30, 2022												
SAXS	22 days	March 1, 2022	March 30, 2022												
Detectors	22 days	Waren 1, 2025	Waren 30, 2023												
Ream Delivery Installation	247 days	Sentember 19, 2022	August 29, 2023						_						_
Enclosure teardown	48 days	September 19, 2022	November 23, 2022												
New Enclosure (D.F.I.)	90 days	November 24, 2022	March 29, 2023								+				
Electric/Cable trav	15 days	March 30, 2023	April 19, 2023											Ļ	
Water/Air	10 days	March 30, 2023	April 12, 2023											+	
Network	10 days	April 20, 2023	May 3, 2023												'
Contols	20 days	May 4, 2023	May 21, 2022												
EQE clean lin	5 days	October 3, 2022	October 7, 2023												
EE Wall Collimator/Exit table	10 days	May 21, 2022	lune 12, 2022												
Primary Mirror	10 days	lune 14, 2023	June 27, 2023												
Monochromator	5 days	June 14, 2023	Julie 27, 2023												
CPI	5 days	Julie 28, 2023	July 4, 2023												
CRL Beem Conditioning	20 days	July 5, 2025	July 11, 2023												
Transcente	Zudays	July 5, 2025	August 1, 2023												
Alianment	Juays	August 2, 2023	August 8, 2023												
Alighthetic Utility Tio ins	E dave	August 2, 2023	August 13, 2023												
Other The	5 days	August 16, 2023	August 22, 2023												
PSS validation	5 days	August 23, 2023	August 29, 2023												
BLEPS checkout	5 days	August 23, 2023	August 29, 2023												
Final Installion Check	20 days	August 30, 2023	September 26, 2023												
A Instruments Installation	50 days	June 1, 2023	August 9, 2023												
Assemble	40 days	June 1, 2023	July 26, 2023												
resting	10 days	July 27, 2023	August 9, 2023												
Final Instrument Checkout	20 days	August 10, 2023	September 6, 2023												
49-ID CSSI	416 days?	July 1, 2022	February 2, 2024												
4 Uptics Receipt	216 days?	July 1, 2022	April 30, 2023					1							1
Primary Mirror	22 days	April 1, 2023	April 30, 2023				_								
DC M	22 days	March 1 2022	March 20, 2022	1											



Jun Jul Aug Sep Oct Nov Dec Jan



Minor Enhancements

- Shorter durations, limited to systems that are being modified
- Involve similar procedures to full beamline buildouts
- Expecting more beamline staff (XSD and CAT) involvement





ID and BM Schedules

- Coordination with beamline staff
- Access to FOEs requires removal of beamline components
- Scope of work has been identified
- Work handled through BPA and APS-U techs

DO NO HARM BEAMLI		ILINES				
4	27-ID		2 days	April 18, 2023	April 19, 2023	
	checkout		1 day	April 18, 2023	April 18, 2023	
	Ready for Commis	sioning	1 day	April 19, 2023	April 19, 2023	
	25-ID	0	6 days	April 18, 2023	April 25, 2023	
	Realign Cant and c	checkout	5 days	April 18, 2023	April 24, 2023	
	Ready for Commis	sioning	1 day	April 25, 2023	April 25, 2023	
	13-ID GSECCARS	0	8 days	April 25, 2023	May 4, 2023	
	Swap FE exit table		2 days	April 25, 2023	April 26, 2023	
	Realign Cant and checkout Ready for Commissioning 4 16-ID HP Swap FE exit table Realign Cant and checkout		5 davs	April 27, 2023	May 3, 2023	
			1 day	May 4, 2023	May 4, 2023	
			8 davs	April 27, 2023	May 8, 2023	
			2 days	April 27, 2023		
			5 days	May 1, 2023	May 5, 2023	
	REAMLINES			, 1, 1010		
-BM	Servicine S	43 days	July 19, 2023	September 15, 2023		
Removal of beam	line components	5 days	July 19, 2023	luly 25, 2023		
Replace FE Wall C	Collimator	12 days	July 26, 2023	August 10, 2023		
Wait		5 days	August 11, 2023	August 17, 2023		
Wait Mechanical utilities rework		5 days	August 18, 2023	August 24, 2023		
Electrical utilities rework		5 days	August 18, 2023	August 24, 2023		
Realign beamline		20 days	August 18, 2023	September 14, 2023		
Move transport	t	6 days	August 18, 2023	August 25, 2023		
Move mini-encl	osure	8 days	August 18, 2023	August 29, 2023		
Replace Guilotir	nes	8 days	August 18, 2023	August 29, 2023		
Install/Realign		15 days	August 25, 2023	September 14, 2023		
Ready for Commi	issioning	1 day	September 15, 2023	September 15, 2023		
-BM		72 days	July 13, 2023	October 20, 2023		
Removal of beam	line components	5 days	July 13, 2023	July 19, 2023		
Replace FE Wall C	Collimator	12 days	July 20, 2023	August 4, 2023		
Wait		34 days	August 7, 2023	September 21, 2023		
Mechanical utilities rework		5 days	September 22, 2023	September 28, 2023		
Electrical utilities rework		5 days	September 22, 2023	September 28, 2023		
Realign beamline		20 days	September 22, 2023	October 19, 2023		
Move transport		5 days	September 22, 2023	September 28, 2023		
Move mini-encl	osure	7 days	September 22, 2023	October 2, 2023		
Replace Guilotir	nes	7 days	September 22, 2023	October 2, 2023		
Install/Realign		15 days	September 29, 2023	October 19, 2023		
Ready for Commi	issioning	1 day	October 20, 2023	October 20, 2023		
-BM		48 days	June 26, 2023	August 30, 2023		
Removal of beam	line components	5 days	June 26, 2023	June 30, 2023		
Replace FE Wall Collimator		12 days	July 3, 2023	July 18, 2023		
Wait		0 days	July 18, 2023	July 18, 2023		
Mochanical utiliti	os rowork	5 days	Info 10 2022	Info 25, 2022		



Work on Feature Beamlines and Major Enhancements

- Requires coordination with currently operating research programs
 - Ramping down user programs (XSD management)
 - Possible operation of adjacent beamlines during construction
 - Removing and relocating beamline components and infrastructure (CDB)
 - Preparing sectors for enclosure and utility work
 - Installing beamline components and infrastructure
 - Preparing beamlines for commissioning
 - Preparing beamlines for user operations





Team Approach for Beamline Installation Work

- Project resources will be assigned to beamline work
- Management is assigning the individual beamline leads (Construction Lead and Installation Coordinator for each beamline that will be modified for APS-U)





Coordination Challenges for APS-U Installation Activities

- Resources (people) will be strained as the project enters the year-long shutdown and upgrade of the accelerator
- There is close coordination between the beamline, front-end and accelerator installation coordinators
- Plan to have a dedicated team working directly on beamline installations





Budgeted Labor Resources for Installation Work

Based on the projected technician resources needed for 25-ID installation work and the installation tasks needed for all the featured and major enhancement beamline installations, we have determined that we will need a dedicated team for beamlines from January 2022 through November 2024:

Technician Type	Estimated Days (Jan 22- Nov 24)	Number needed per year					
Vacuum	2620	4					
Water	1260	2					
Survey	1125	2					
Safety Interlocks	1170	2					
Network	450	1					
Controls	800	2					



Beamline Installation Schedule

Current Schedule - June 2022

- During accelerator removal and installation we anticipate possible technician shortages:
 - Vacuum
 - Water/Mechanical
 - Survey
 - Safety Interlocks
- Technician groups need to be coordinated (example: installation of RSS components requires multiple tech types working together)





19-ID (ISN) and 20-ID (HEXM)

- Installation of 7-m tall by 20-m long shielded enclosure (20-ID-E) for HEXM began on June 28
- Shielded door and roof labyrinths will be installed for ISN concrete enclosure (19-ID-D)







APSUO/PUC Meeting July 27, 2022

Beamline Installation Status (Completed in 2021)

28-ID IDEA Status

- IDEA is a testing phase beamline for APS-U that will become CHEX Beamlines starting in 2023
- Beamline is operational
- Completion of work with local contractors and technicians (COVID impact)
- Problems: APS approval processes, available technicians, inertia, IS delays, BPA agreement





APSUO/PUC Meeting July 27, 2022

Beamline Installation Status (Deliver to XSD in July 2022)

25-ID ASL Status

- Canted beamline relocates two current XSD programs (20-ID and 11-ID)
- Shielded enclosures completed June 2021 (COVID delays)
- Beamline installation started November 2021
- Mirror systems and monochromators installed and tested in March and May 2022 (COVID delays)
- Shielding validation competed in June 2022
- XSD operation in July 2022
- Problems: COVID, APS approval processes, available technicians, inertia, BPA agreement





Questions?

Contact Information:

Robert Winarski x9921 winarski@anl.gov

Thomas Gog x0320 gog@anl.gov



