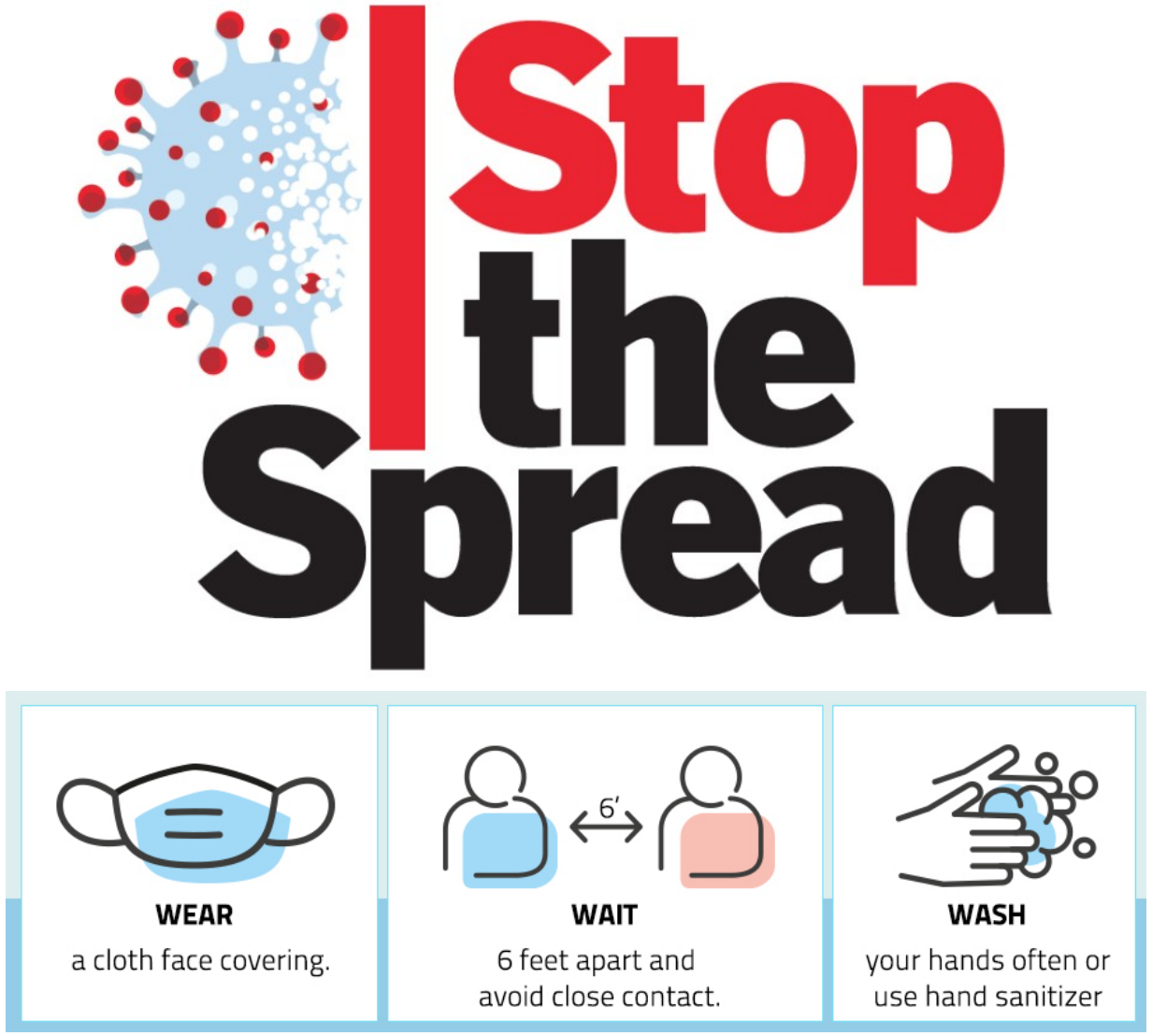
PSC ALL-HANDS MEETING
OCTOBER 30, 2020

STEPHEN STREIFFER
Deputy Laboratory Director for Science & Technology
Interim Director, Advanced Photon Source
Interim Associate Laboratory Director, Photon Sciences

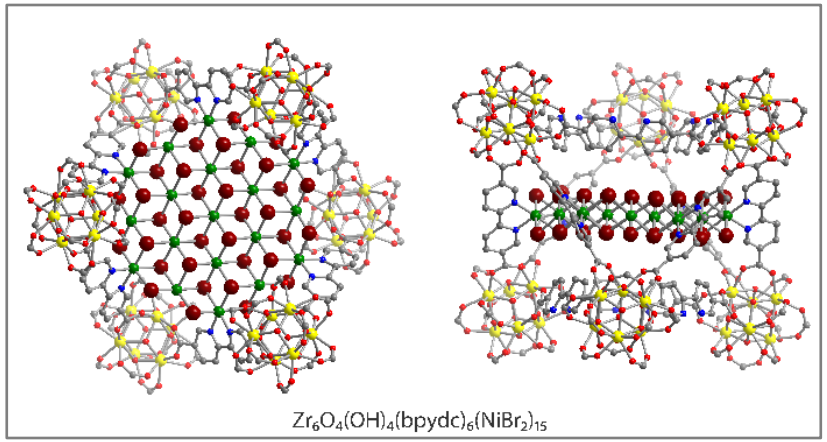
AGENDA

- Science Highlights
- Safety
- APS Operations – FY20 Budget
- Argonne & PSC Operations Status
- ASD Highlights
- SARS CoV-2 Research at the APS
- Current Events
- APS Upgrade Update
- PSC PULSE CLIMATE Survey
- In Memoriam

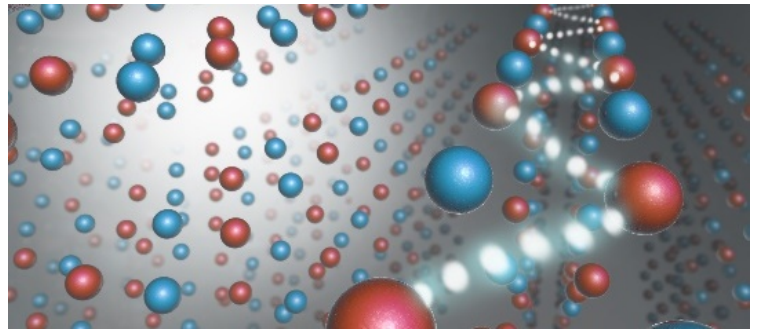


FY20 SCIENCE HIGHLIGHTS

- Elucidated atomic structure of novel isolated 2D metal halide nanosheets with confined magnetic domains, with potential applications in novel magnetic devices (*Nature)*: just one example of APS's essentiality for the discovery of new materials, their properties, and their functionality
- Discovered and explained unprecedented superelasticity by entangled ordered and disordered crystal structures, which opens opportunities for new elastic strain engineering (*Nature Materials)*
- Imaged, in ultra-fast x-ray experiments, metal particles and melt pools in 3D metal printing to track structural changes on the fast time scale of a laser and observe spatter and other defect-related phenomena (*Science*)
- Implemented a new technique (3D-ΔPDF) to image 3D atomic correlations using high-energy single crystal diffuse x-ray scattering and applied it to understand intercalated battery electrode materials, in a collaboration between Argonne's X-ray Sciences and Materials Science divisions (*Nature Materials)*



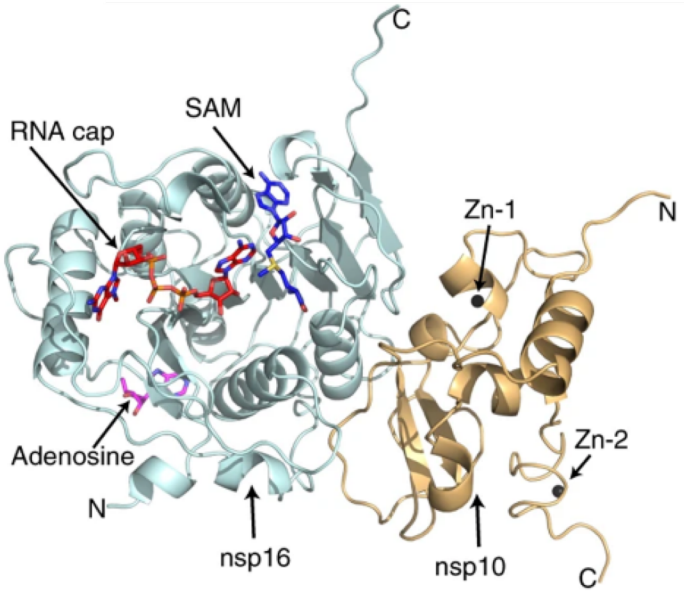
"Confinement of atomically defined metal halide sheets in a metal-organic framework," Gonzalez et al., *Nature* (https://www.nature.com/articles/s41586-019-1776-0)



"Reciprocal space imaging of ionic correlations in intercalation compounds," Krogstad et al., *Nature Materials* (https://www.nature.com/articles/s41563-019-0500-7)

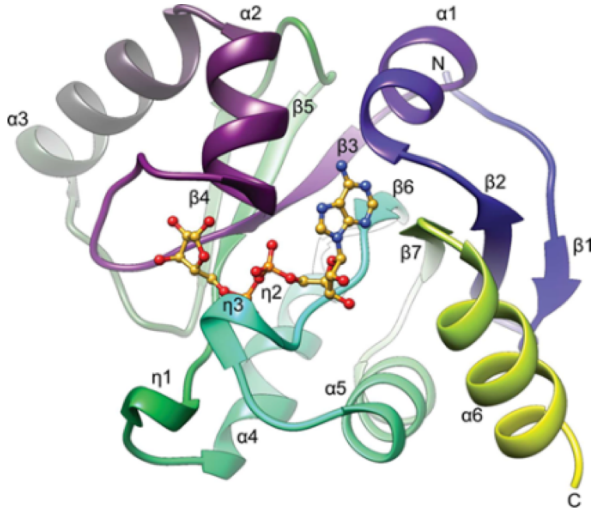
SARS COV-2 RESEARCH AT THE APS

- Data collected at APS beamlines have to date resulted in **94** structures deposited in the PDB.
- APS supported additional research related to COVID-19
  - X-ray imaging to study new filter materials for N95 masks
  - Small angle x-ray scattering to study SARS CoV-2 proteins
- The cumulative list of manuscripts on COVID-19-related research from work at the APS includes **14 peer-reviewed** publications and **20 pre-review** manuscripts posted on bioRxiv and Research Square
- Since the start of the pandemic **70** user groups, and **282** unique users have used **20** beamlines for a total of **8023** hours of beam time for COVID-19-related research.
  - The breakdown by technique each group has used is MX (64), imaging (1), SAXS (4), and XAS (1).



Structure of SARS-CoV-2 nsp16/nsp10 complex with RNA cap (red stick), and S-adenosyl methionine or SAM (blue stick)

"Structural basis of RNA cap modification by SARS-CoV-2," Viswanathan et al., *Nature Communications* (https://doi.org/10.1038/s41467-020-17496-8)



Structure of SARS-CoV-2 nsp3 ADRP. Ribbon diagram shows ADRP-APO2. ADPr ligand molecule is shown based on superposition with the ADRP–ADPr structure

"Crystal structures of SARS-CoV-2 ADP-ribose phosphatase: from the apo form to ligand complexes," Michalska et al, *International Union of Crystallography Journal* (https://doi.org/10.1107/S2052252520009653)

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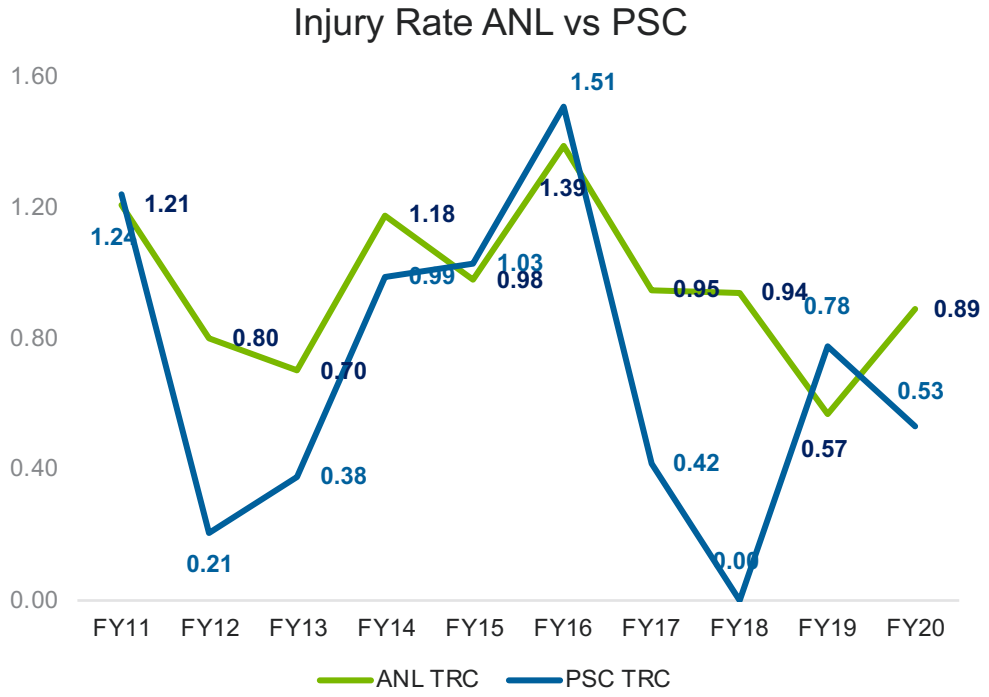
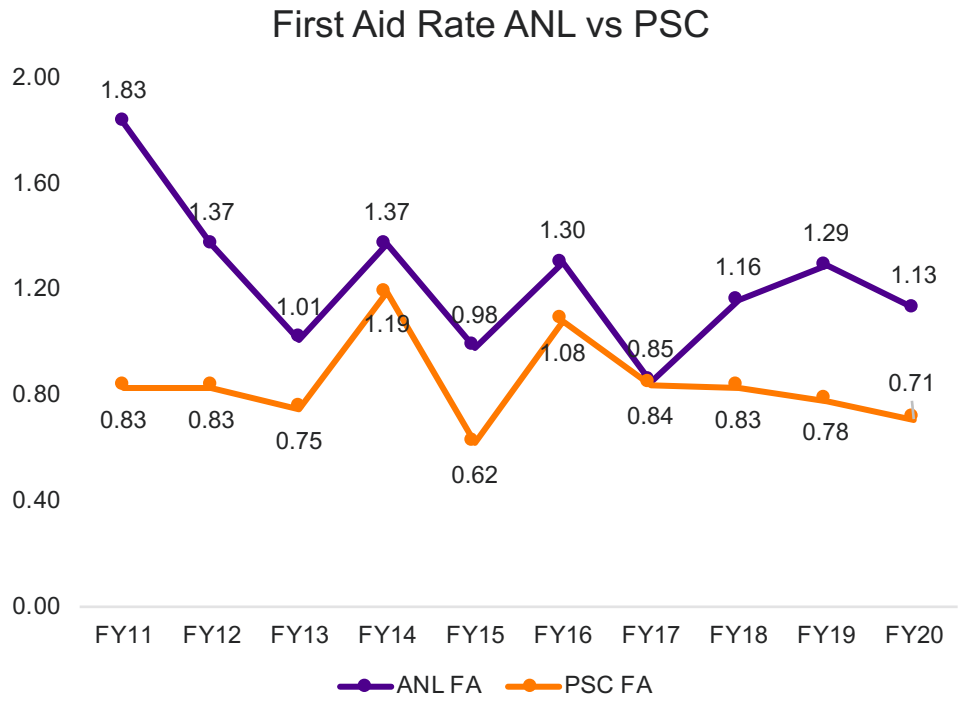
SAFETY

- **COVID-19 Controls Still in Place On-site**
  - Face coverings always required, properly worn over nose and mouth while on-site
    - Includes when entering and exiting through Laboratory gates
    - Should only be removed when you are alone in an enclosed workspace (personal office, laboratory, high bay, shop) or in designated eating areas, (i.e., face coverings must be worn in hallways, conference rooms, and beamline areas)
  - Washing: frequently wash hands w/soap & water (or alcohol-based sanitizer) for at least 20 sec
  - Social distancing: keep more than six feet away from another person
  - Occupancy limits: areas have been posted with max. occupancy to allow for social distancing
  - **Remember the 3 Ws:**
    - **Wear a face covering**
    - **Wash your hands**
    - **Watch your distance**
- **ANL COVID-19 Resources**
  - COVID-19/coronavirus FAQ
  - **Argonne's 24x7 COVID-19 Question Line** at 1-630-252-2555.

SAFETY

- **Photon Sciences FY20 Overall Safety Record Is Very Good**
- **Several TRC/DART cases:**
  - Neck and back strain, car accident while on business travel
  - Back strain while hanging copper pipe and getting in/out of overhead lift
  - Lumbar strain lifting a ~25-lb. plastic pallet rearranging lab area (APS-U)
- **Comparison with ANL:**





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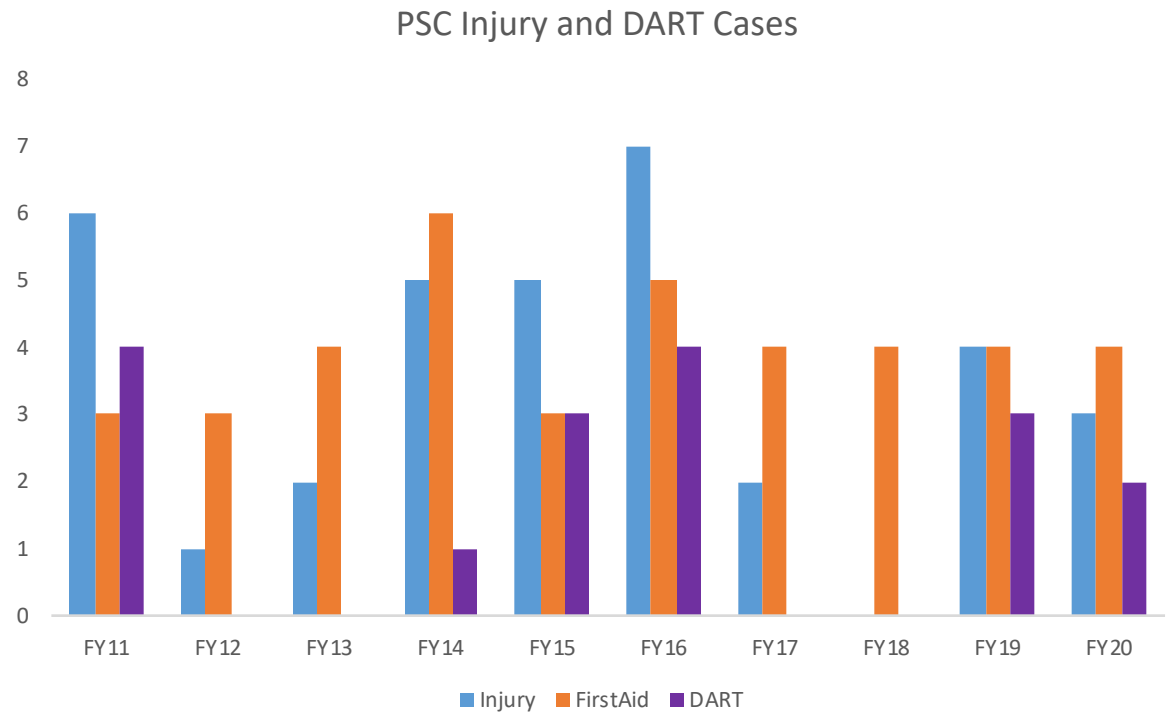
PSC STATISTICS

PSC	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20
Rates										
TRC	1.24	0.21	0.38	0.99	1.03	1.51	0.42	0.00	0.78	0.53
DART	0.83	0.00	0.00	0.20	0.62	0.87	0.00	0.00	0.58	0.04
First Aid	0.83	0.83	0.75	1.19	0.62	1.08	0.84	0.83	0.78	0.71
Cases										
TRC	6	1	2	5	5	7	2	0	4	3
DART	4	0	0	1	3	4	0	0	3	2
First Aid	4	4	4	6	3	5	4	4	4	4



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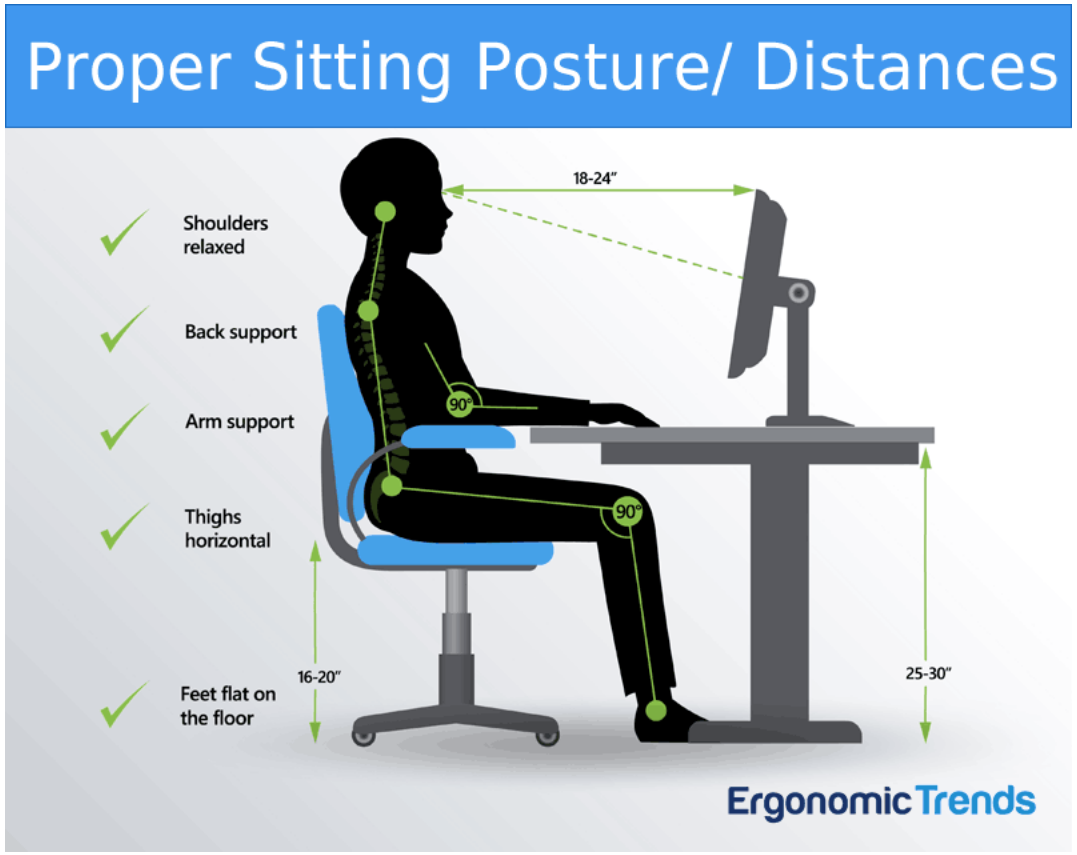
SAFETY

- Telecommuting Safety
  - General Workspace: Floors clear and free from phone line, cables, electrical cords, etc.
  - Fire Safety: Working smoke and carbon monoxide detectors in or near your workspace
  - Electrical Safety: Sufficient outlets or power strips equipped with circuit breakers
  - Computer Workstations: Apply ergonomic self-assessment checklist and ergonomics techniques
    - Virtual ergonomics evaluations available by completing ANL-9D via XINK.
  - Breaks, Stretching and Meditation Sessions available on Bluejeans, hosted by HEW



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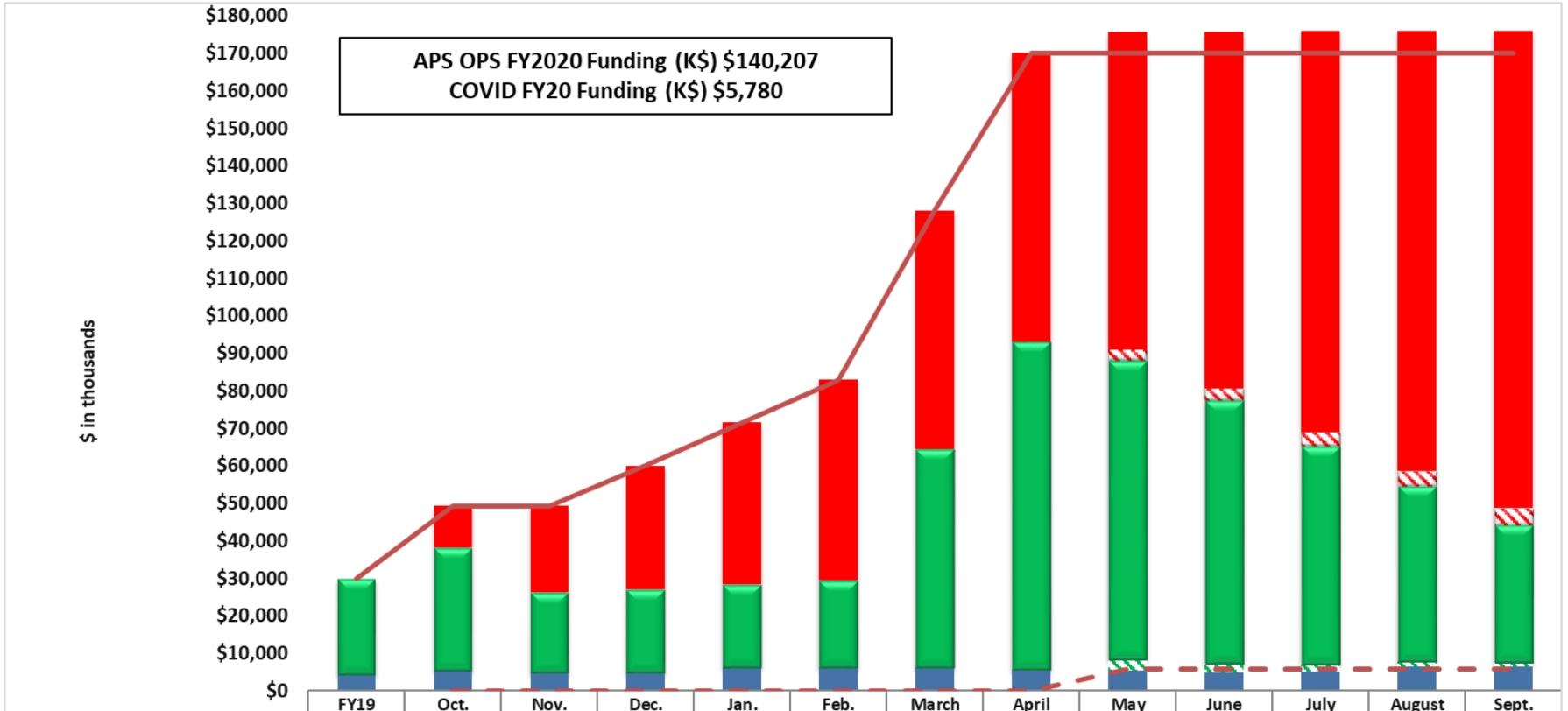
APS OPERATIONS & COVID-19 – FY20 BUDGET



	FY19	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July	August	Sept.
APS OPS Expenditures		$11,012	$22,923	$32,969	$43,104	$53,433	$63,600	$76,888	$84,917	$95,171	$106,842	$117,191	$127,172
COVID Expenditures		$0	$0	$0	$0	$0	$0	$0	$2,745	$3,286	$3,762	$4,043	$4,411
APS OPS Unencumbranced	$25,644	$32,982	$21,463	$22,184	$22,398	$23,391	$58,450	$87,508	$79,751	$70,181	$58,272	$47,033	$36,911
COVID Unencumbranced		$0	$0	$0	$0	$0	$0	$0	$3,035	$2,440	$1,822	$1,311	$928
APS OPS Encumbrances	$4,296	$5,254	$4,862	$4,925	$6,096	$6,160	$6,065	$5,641	$5,369	$4,695	$5,034	$5,922	$6,064
COVID Encumbrances		$0	$0	$0	$0	$0	$0	$0	$0	$54	$196	$426	$440
APS OPS BA Planned	$29,940	$49,248	$49,248	$60,078	$71,597	$82,984	$128,115	$170,037	$170,037	$170,047	$170,147	$170,147	$170,147
COVID BA Planned		$0	$0	$0	$0	$0	$0	$0	$5,780	$5,780	$5,780	$5,780	$5,780

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USER STATISTICS

	FY16	FY17	FY18	FY19	FY20
Total Users	5521	5742	5704	5426	4016
First-time Users	1959	2121	2011	2020	1189
% First-time Users	35%	37%	35%	37%	30%

All remote access users counted

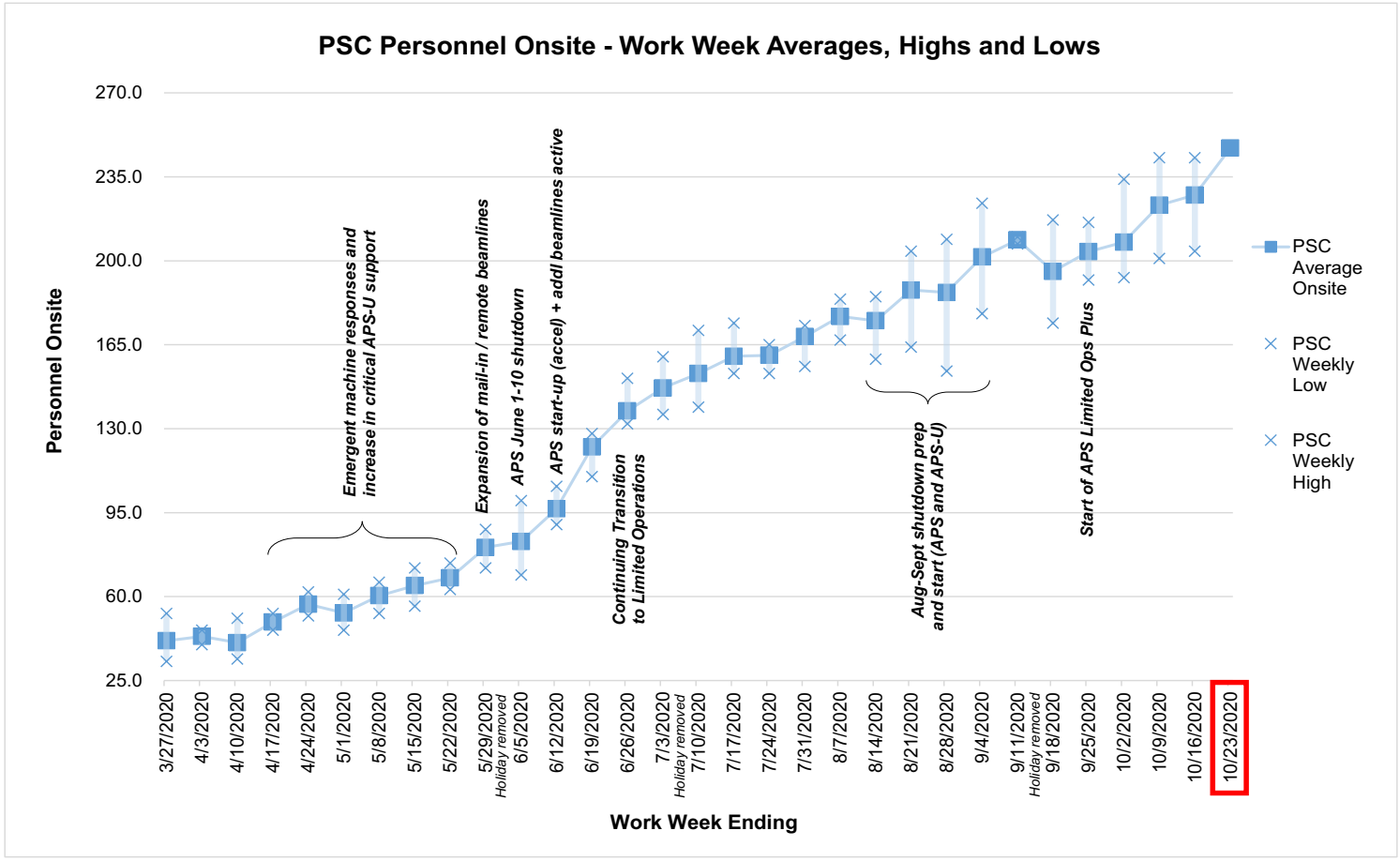
One user per remote access ESAF

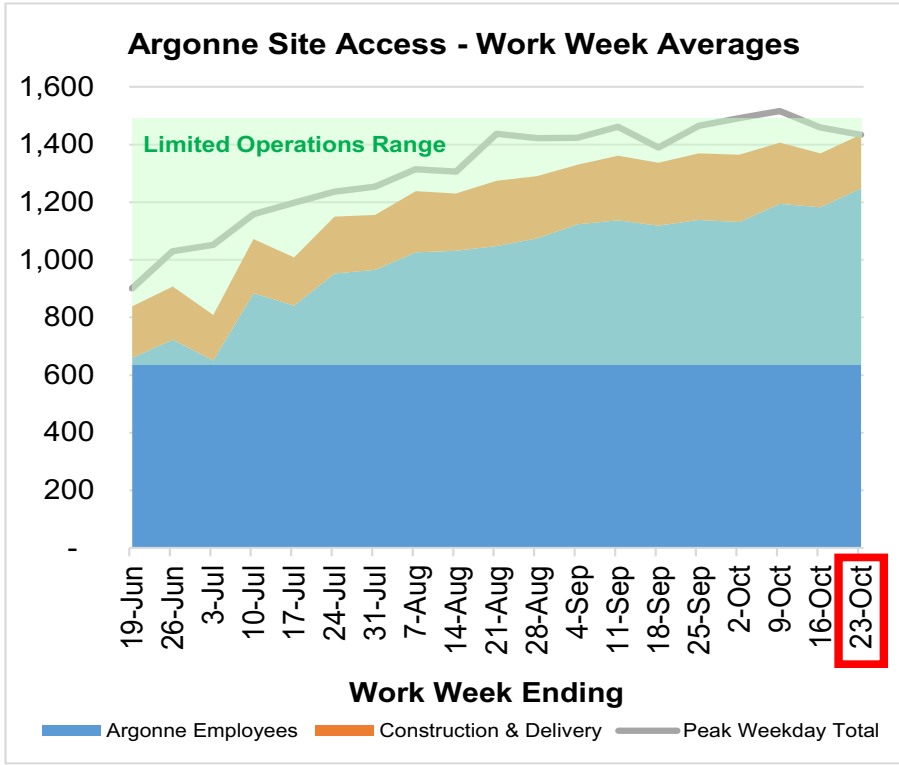
ARGONNE & PSC OPERATIONS STATUS

- Argonne remains in Limited Operations phase, as does PSC
- PSC able to increase onsite employee base slightly as of late Sept., referred to locally as “Limited Operations Plus”

Argonne Site Status:

- Minimum Safe Ops
- **Limited Operations**
- Normal Operations with Flexible Telework
- Normal Operations





= *Partial work week at time of reporting*

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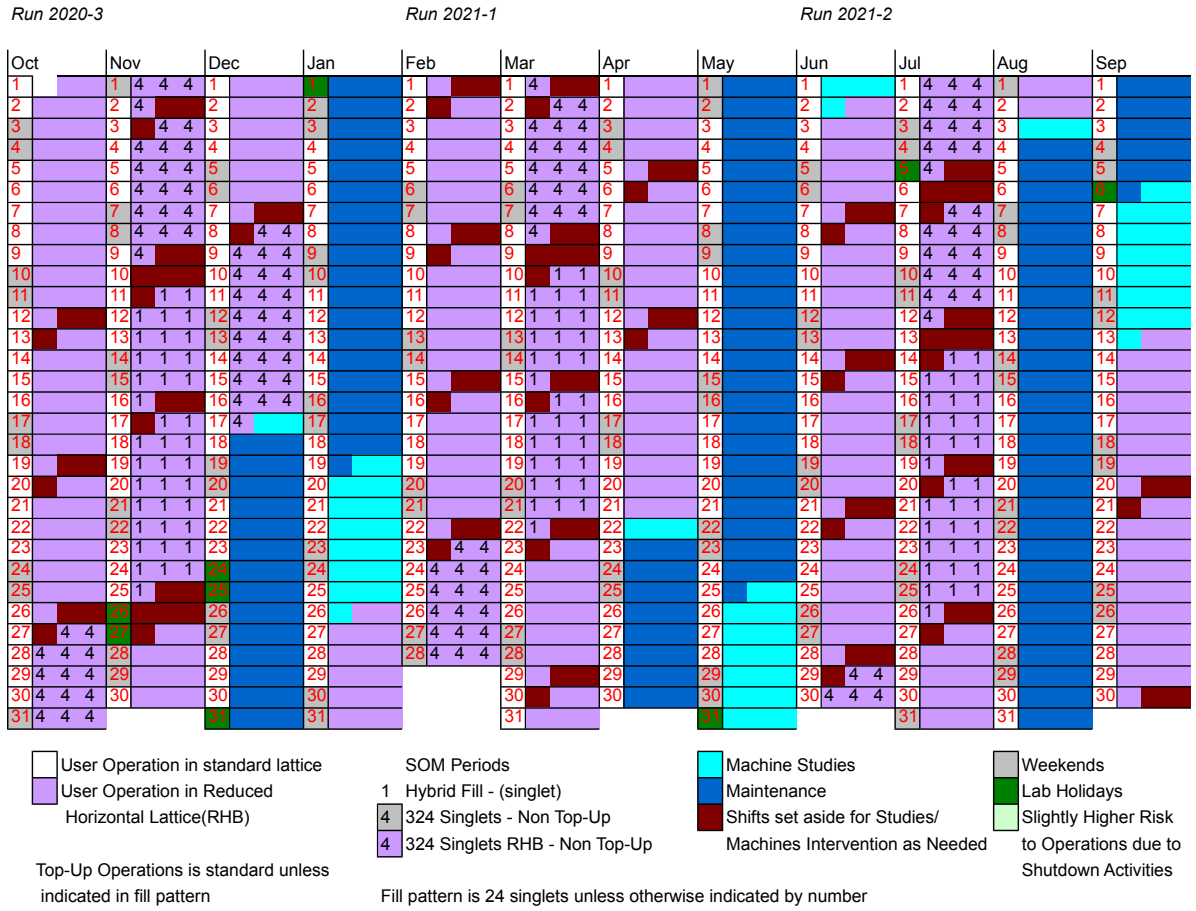
APS IN LIMITED OPERATIONS

- Accelerator:
  - Two recent large downtimes:
    - Oct 9-10: Solid-state disk failure (primary and back-up) which hosted accelerator controls virtual machines and softIOCs. Resolved by temporary storage fix, until SSDs replaced on Oct. 19, after which will have additional NetApp storage (NFS) redundancy.
    - Oct 11-12: Vacuum degradation, eventually traced to PS1 shutter in 19-ID front end. PS1 replaced on Monday Oct. 19 intervention. Bake-out and return of beamline to service estimated after Monday Oct 26.

FY21 LONG-RANGED SCHEDULE POSTED

APS Long-Range Operations Schedule



Breakdown of User Shifts by Fill Pattern

Number of 8-hour User Shifts

	24 Singlets - Top-Up	*Hybrid Fill - Top-Up*	*324 Singlets - Non Top-Up*	*Total Shifts*	*Total Hours*
2020-3	99	39	63	201	1608
2021-1	152	33	36	221	1768
2021-2	137	33	33	203	1624
SUM	388	105	132	625	5000

Impacts:

- Provides more balanced maintenance lengths:
  - April/May: 32 days
  - Aug./Sep.: 33 days
- Sufficient for planned APS Upgrade installation projects
- User run 2021-3 longer than usual

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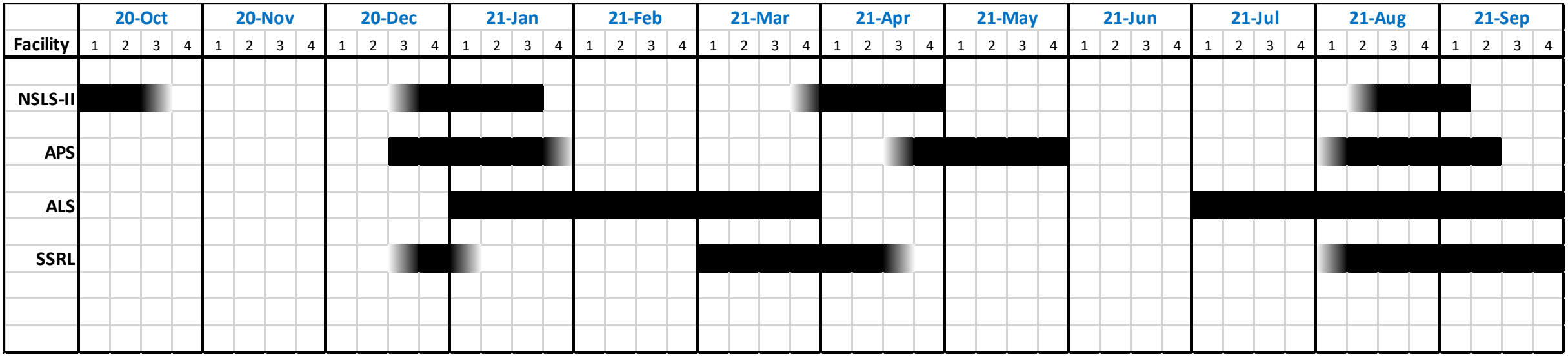
FY21 DARK TIME ACROSS FOUR U.S. STORAGE RINGS

- If schedules hold, no beam time available for 3.5 weeks in Aug./Sep. 2021



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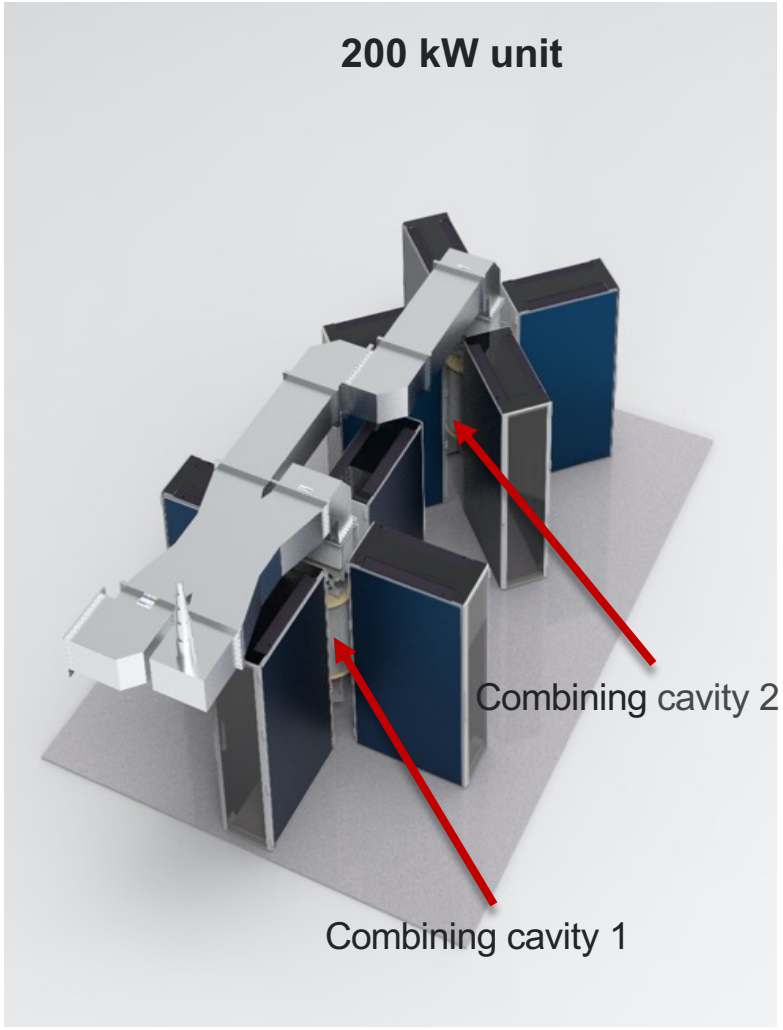
ASD: UPDATE ON SOLID-STATE POWER AMPLIFIERS

LDRD-funded engineering development phase is complete. Bids under evaluation for procurement of first 200-kW unit for APS test.

- Critical effort to replace obsolete MW-class klystrons driving storage ring RF system
- All SSPA prototype testing is complete
- Technical plan has been reviewed and endorsed by external storage ring RF experts from ESRF, SLAC, ALS, and NSLS-II
- $25M RFP issued in early July. Bids are now back and under evaluation
- Nominal plan is to purchase 2 units/year until complete (14 units total)
- First storage ring cavity test with 200-kW SSPA planned for mid-2021



ASD: STATUS OF APS LINAC REFURB

Linac RF system needs refurbishment to meet APS-U requirements

- Structures:
  - We are building a linac RF test stand that will allow the conditioning of structures/SLEDs without impacting operations.
- RF sources:
  - We have ordered two new Canon/Toshiba klystrons and two Scandinova k400 modulators. Cost of ~$2M.
- New Electron Guns
  - A redesigned electron gun has been installed over August shutdown, addressing many troublesome issues with current guns. If successful, we will replace all guns with the new design.
- Digital RF, Timing system upgrade, modern power supplies, etc.
- **Final system will allow us to run linac at peak energy of 530 MeV, allowing some overhead to operate 24/7 at 475 MeV.**

ASD: FEATURED ARTICLE IN APS/USER NEWS ON MCR OPERATORS

On duty 24/7 since the start of the shelter-in-place in March

- Randy Flood (Group Leader)
- Dmitriy Ronzhin
- Dee Wayer
- Kyle Berg
- Steve LaBuda
- Megan Kimbro
- Ted Grodecki
- Ted Davis
- Eric Smith
- Sean Orne
- Lisa Berkland

Working at Nearly the Speed of Light: The APS Main Control Room Operators

Someone has to drive this machine, especially when it's travelling at nearly the speed of light.

Meet (most of) the Main Control Room (MCR) operators who are part of the Accelerator Systems Division in the Advanced Photon Source (APS) at the U.S. Department of Energy's Argonne National Laboratory.

Every hour of every day, rain or shine, pandemic or no, when the APS is generating x-rays the MCR Group operators, under the direction of Group Leader Randy Flood, monitor electrons that reach roughly 99.99999973% of the speed of light as they race through the incredibly complex technology of the APS particle accelerators, on the way to producing the high-brightness x-ray beams prized by thousands of researchers who use the APS each year.







CURRENT EVENTS

New Leaders

- Vadim Sajaev: Associate Division Director, Accelerator Systems Division

Sajaev

- Xiaobiao Huang, from SLAC (SPEAR3): Physics Group Leader, Accelerator Systems Division

Huang

- Mathew Cherukara: Computational X-Ray Science Group Leader, X-ray Sciences Division

Cherukara

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CURRENT EVENTS CONT'D.

- To date, **2,029** refereed journal articles were published in calendar year 2019
  - Of the 2,029 articles, 14% were in DOE-designated high-impact journals
  - Drop over last several years in high-impact percentage correlates with increased user publications in *Nature Communications,* which is not included in the high-impact list
- With ORNL, ran the **22nd National School on Neutron and X-ray Scattering**
- Staff recognition
  - **Johannes Steinmann**: Frank Sacherer Prize for early-career researchers, awarded by the European Physical Society Accelerator Group
  - **Brian Toby**: 2020 American Crystallographic Association Council President
  - **Jim Kerb**y, Chief Project Officer, APS Upgrade Project: Argonne Board of Governors Award for Outstanding Accomplishment in Collaborative Research
  - **Yang Ren**
    - 2020 Gopal K. Shenoy Award for Excellence in Beamline Science, selected by APS Users Organization
    - 2020 Distinguished Performance Award from Argonne Board of Governors for his work developing and advocating for high-energy scattering methods at the APS

Steinmann

Toby

Kerby

Ren

CURRENT EVENTS CONT'D.

- **Deming Shu**, Senior Engineer for High Precision Instrumentation in XSD, named an Argonne Distinguished Fellow

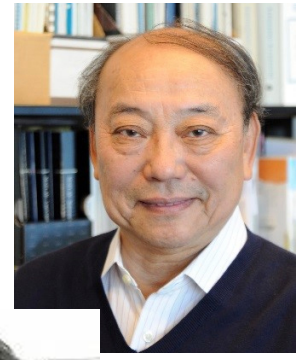
- **Yu-Sheng Chen**, research professor at the University of Chicago and Operations Manager for the ChemMatCARS Sector 15 beamllnes, named the recipient of the 2020 DECTRIS Award

- **Ming Du and Chris Jacobsen** (both PSC) awarded 250,000 node hours on the Argonne Leadership Computing Facility's Theta computer by the DOE's Advanced Scientific Computing Research program Leadership Computing Challenge

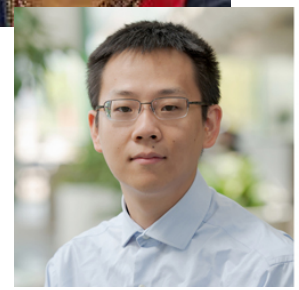
- Northwestern University organic chemist and APS user **William Dichtel** named the National Laureate in Chemistry by the 2020 Blavatnik National Awards for Young Scientists

- Janssen Research & Development, LLC, has joined **IMCA-CAT**

Deming Shu



Yu-Sheng Chen



Ming Du, Chris Jacobsen

William Dichtel

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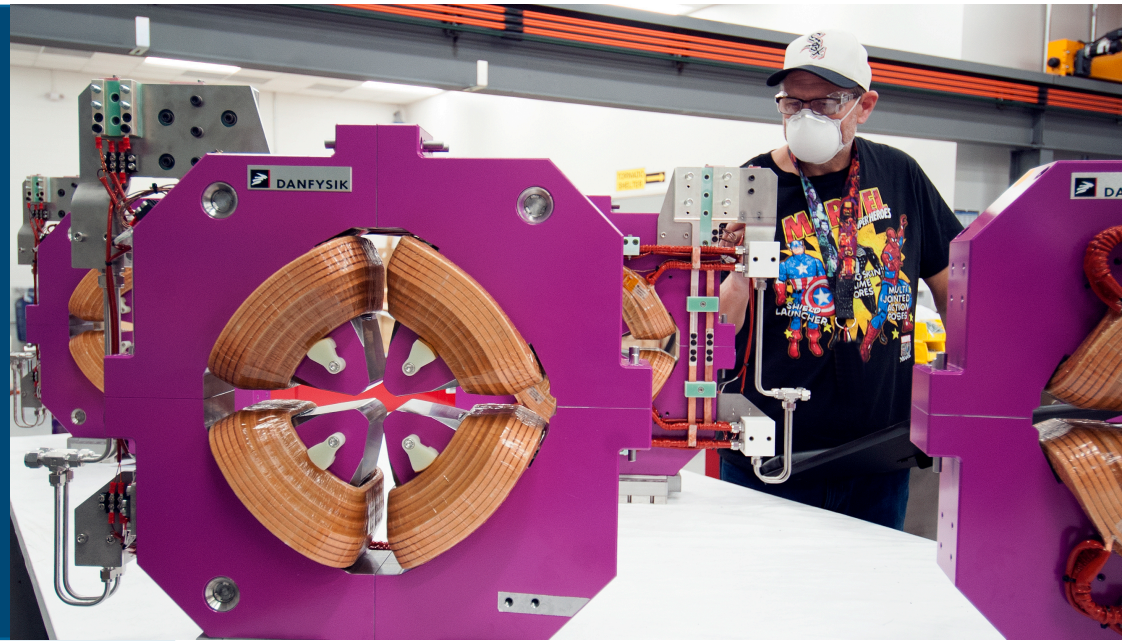
APS-U Update



APS-U Update

- DESPITE COVID-19, FY20 was a very good year for the Upgrade
- Costed $85M; Costed and Encumbered **$148M!** in FY20
- Adequate funding on hand to cover any effects of continuing resolutions; FY21 budget authority will be adequate to keep APS-U going full speed ahead
- Successful DOE review September 2020; effects of COVID, maintaining momentum and project schedule were major topics
  - Overall delays, potential future delays due to COVID may impact schedule, total project cost → too soon to be sure
  - Completion of all designs is critical at this time; will be closely tracked
  - Project aiming to finish ongoing transition from design to assembly phase in first half of FY21
- Team working well both on-site and remotely, and with our many vendors, to keep work progressing as best as possible
- Continue to strive to enable new science with the Upgrade as soon as possible

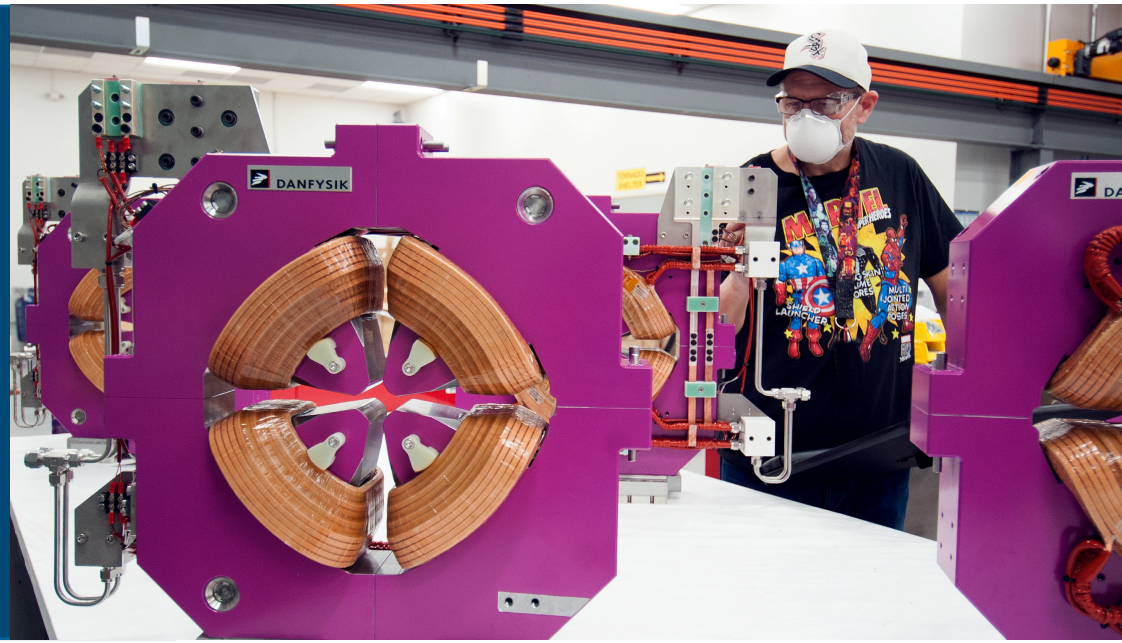
Long Beamline Building

- Ceremonial groundbreaking July 22, 2020
- Real work begins this month!

Summary

- The Upgrade is >58% costed and obligated after a very good FY20, despite everything thrown at (all of) us
- **Thank you for your continued efforts to work and advance the Upgrade, and PSC as a whole, under very trying conditions**
- FY21 will be pivotal to our success as we shift from ordering equipment to assembly
- **Continued efforts to evaluate our work environment, and work in a safe manner — for everyone — needs our collective utmost attention**
- Meeting new challenges – even unfortunate, unexpected ones – requires the best people; **fortunately, that is exactly what PSC and the Upgrade have**
- Please continue to be safe, and take care of yourself, your family, and your friends
- We look forward to another great year ahead

Pulse Climate Survey



SURVEY BACKGROUND

- The laboratory initiated a short “pulse” survey to assess how key climate indicators had changed since the 2017 Climate Survey was conducted
- In collaboration with WFD Consulting, a task force selected items to repeat from prior surveys and designed new questions to assess the lab’s response to the COVID-19 pandemic along with a question to assess, overall, the lab’s progress towards creating a safe, welcoming and inclusive workplace
- The Pulse Climate Survey was conducted from June 9 to July 3, 2020
- The lab-wide response rate was 70%, higher than both 2015 (59%) and 2017 (62%)

PSC	LABORATORY				PSC			
	2015	2017	2020	Delta*	2015	2017	2020	Delta*
Number of Respondents	1,784	2,011	2,672†		272	284	503†	
Response Rate	59%	62%	70%		54%	54%	79%	
1. AREA OF CONCERN: Disrespectful and Inappropriate Behavior								
During the past 12 months, have you observed someone at Argonne do or say something that you judged to be offensive, hurtful, intimidating, hostile or exclusionary (e.g. left out, ignored) to you or another lab employee? (% responding "yes.") *Refer to "Action Taken" tab for employee responses to incident.).*	26%	29%	31%	⇔	24%	28%	30%	⇔
ACTION: Focus on Creating a Safe, Welcoming and Inclusive Environment								
Laboratory focus on Core Values positively influenced my thinking or behavior. (% yes)	N/A	40%	62%	⇧	N/A	48%	53%	⇔
In the last 18 months, to what extent has Argonne made progress in creating a safe, welcoming and inclusive environment? (% moderate or large extent)	N/A	N/A	81%		N/A	N/A	81%	
RESULTS: Climate Survey Measures								
My supervisor constructively confronts inappropriate words and actions. (% agree/strongly agree)	58%	60%	70%	⇧	59%	63%	73%	⇧
Leadership creates a work environment in which it is safe to constructively confront inappropriate words and actions: (% agree/strongly agree)								
• The Laboratory Director	N/A	N/A	83%		N/A	N/A	80%	
• The Deputy Lab Director for Operations	N/A	N/A	73%		N/A	N/A	73%	
• My ALD or Senior Director	N/A	N/A	77%		N/A	N/A	83%	
• My Division Director	65%	69%	82%	⇧	63%	73%	82%	⇧
People in my division seem unaware of behaviors that are hurtful or exclusionary to others. (% agree/strongly agree)	22%	23%	17%	⇩	23%	19%	17%	⇔

PSC	LABORATORY				PSC			
	2015	2017	2020	Delta*	2015	2017	2020	Delta*
2. AREA OF CONCERN: Lack of Trust, Inclusion and Respect								
I am reluctant to speak up about issues that concern me for fear it will affect my performance review or career. (% agree/strongly agree)	N/A	25%	21%	⇩	N/A	22%	18%	⇔
At Argonne, diversity of opinion and perspective is valued and respected. (% agree/strongly agree)	66%	66%	74%	⇧	63%	70%	77%	⇧
ACTION: Core Values Focus on Psychological Safety, Respect, and Teamwork**								
Increased communication and transparency about key lab developments and personnel matters positively influenced my thinking or behavior. (% yes)	N/A	36%	70%	⇧	N/A	36%	66%	⇧
Increased communication and transparency about key divisional developments and personnel matters positively influenced my thinking or behavior. (% yes)	N/A	27%	58%	⇧	N/A	28%	55%	⇧
Conversations with Kearns positively influenced my thinking or behavior. (% yes)	N/A	N/A	32%		N/A	N/A	28%	
Having a laboratory ombuds positively influenced my thinking or behavior. (% yes)	N/A	N/A	35%		N/A	N/A	30%	
RESULTS: Climate Survey Measures								
My supervisor communicates with me in an open, two-way manner. (% agree/strongly agree)	77%	77%	84%	⇧	78%	81%	87%	⇧
My supervisor encourages team members to contribute different points of view. (% agree/strongly agree)	73%	73%	81%	⇧	68%	71%	78%	⇧

PSC	LABORATORY				PSC			
	2015	2017	2020	Delta*	2015	2017	2020	Delta*
3. AREA OF CONCERN: Inconsistent Talent Development and Utilization								
I am satisfied with my opportunities to learn and grow professionally at Argonne. (% agree/strongly agree)	61%	64%	74%	↑	60%	69%	74%	↔
ACTION: Focus on Professional Development & Career Opportunities**								
Having more opportunities for professional development and skill-building workshops through the Leadership Institute positively influenced my thinking or behavior. (% yes)	N/A	29%	28%	↔	N/A	32%	23%	↓
Having more opportunities for networking and interaction in my directorate positively influenced my thinking or behavior. (% yes)	N/A	24%	22%	↔	N/A	24%	18%	↓
RESULTS: Climate Survey Measures								
My supervisor sets clear expectations for success in my current job. (% agree/strongly agree)	63%	62%	73%	↑	59%	68%	73%	↔
My supervisor provides constructive feedback that helps me improve. (% agree/strongly agree)	59%	60%	74%	↑	59%	66%	72%	↑

EXPERIENCED OFFENSIVE/EXCLUSIONARY BEHAVIOR AND ACTION TAKEN	LABORATORY				PSC			
	2015	2017	2020	Delta *	2015	2017	2020	Delta *
During the past 12 months, have you observed someone at Argonne do or say something that you judged to be offensive, hurtful, intimidating, hostile or exclusionary (e.g. left out, ignored) to you or another lab employee? (% responding "yes.")	26%	29%	31%	⟷	24%	28%	30%	⟷
What did you do, if anything? (multiple responses allows)	**2015**	**2017**	**2020†**	**Delta ***	**2015**	**2017**	**2020 †**	**Delta ***
Number of respondents who answered "Action Taken" Question:	**413**	**546**	**803**		**55**	**71**	**150**	
I spoke to a colleague about the incident	40%	52%	46%	▲	27%	38%	44%	⟷
I spoke to a friend or family member about the incident	41%	45%	41%	⟷	35%	41%	36%	⟷
I informed my supervisor about the incident	29%	33%	32%	⟷	29%	28%	25%	⟷
I spoke to the person who initiated the behavior	30%	31%	31%	⟷	22%	34%	30%	⟷
I was the bystander and spoke to the recipient to offer support	25%	28%	16%	▲	20%	23%	10%	▲
I did nothing	23%	17%	19%	⟷	33%	28%	24%	⟷
I spoke to Employee Relations or HR	11%	11%	8%	▲	13%	10%	4%	▲
I called the anonymous reporting hotline about the incident	<1%	<1%	<1%	⟷	0%	0%	0%	⟷
I spoke to the Laboratory Ombuds	New Office in 2018		9%		New Office in 2018		3%	

***Delta triangle represents a statistically significant difference between 2017 and 2020 responses but does not interpret the finding as positive or negative. An arrow represents no change between 2017 and 2020.**

†In 2020, 427 lab individuals (11% of total) were invited in error to take the survey: 81 contingent workers, 326 students and 20 visitors. Because the survey is anonymous, their participation rate could not be determined or their surveys excluded.

COVID QUESTION RESPONSES		2020	2020
Indicate your assessment of Argonne's response to the COVID-19 pandemic in each of the following areas:		**LAB**	**PSC**
Communicating with employees about actions Argonne is taking	% Very Good/ Excellent	77%	80%
	% Good	16%	16%
	% Fair/Poor	7%	4%
Providing new or enhanced resources and services to support employee health, well-being and safety	% Very Good/ Excellent	72%	75%
	% Good	19%	18%
	% Fair/Poor	9%	7%
Providing the tools necessary to be as productive as possible	% Very Good/ Excellent	69%	73%
	% Good	20%	18%
	% Fair/Poor	11%	9%
Providing opportunities for connecting with coworkers to maintain relationships and morale	% Very Good/ Excellent	63%	63%
	% Good	23%	25%
	% Fair/Poor	14%	12%

PSC PULSE CLIMATE SURVEY RESULTS

Creating a Safe, Welcoming, Inclusive Environment

- Supervisors behavior rating improved (communication, team-building, and addressing inappropriate behavior).
- Division Directors' leadership in creating safe working environment up 9%
- Reports of offensive, hurtful, intimidating behavior at more than 1 in 4 (unchanged from 2017) ⇨ targeted area for improvement

Talent Development and Utilization

Areas for Improvement:

- Professional development and career opportunities
- Directorate interaction and networking opportunities
- Leadership Institute professional development and workshop opportunities

RESPONSE PLAN PULSE CLIMATE SURVEY

November 2020

Divisional Directors and DEI Representatives

- Review results, identify and target areas of improvement
- Host a Division listening session or conduct focus groups to capture input from staff

December 2020

PSC DEI Council

Analyze data (survey & focus group)

Develop recommendations based on finding

January 2021

Elaborate PSC response plan

Share PSC Pulse Climate Response Plan with Laboratory DEI Committee

Work on implementation with ALD & DDs

IN MEMORIAM

- Andre McKenzie, AES Senior Electro-mechanical Technician, passed away on July 11, 2020

Andre McKenzie

- Tom Padilla, PSC Human Resources Manager, passed away on August 27, 2020

Tom Padilla

- Jonathan Montgomery, XSD Senior Scientific Associate, passed away on October 6, 2020

Jonathan Montgomery