Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force	**Date:** March 2023
Appropriation/Budget Activity 3620F: *Research, Development, Test & Evaluation, Space Force* / BA 8: *Software and Digital Technology Pilot Programs*	**R-1 Program Element (Number/Name)** PE 1208248SF / *Space Command & Control - Software Pilot Program*

COST ($ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	0.000	155.553	122.326	0.000	122.326	123.422	126.137	128.715	133.365	Continuing	Continuing
68A035: *SSA/BMC2*	-	0.000	155.553	122.326	0.000	122.326	123.422	126.137	128.715	133.365	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The FY 2018 National Defense Authorization Act (Sections 873/874) directed the Office of the Secretary of Defense (OSD) to streamline software development. The Space C2 program is an OSD pilot initiative in which all lifecycle funding is tracked under Budget Activity 8 (BA 8), Software and Digital Technology Pilot Programs, beginning in FY 2021. Pilot programs enable the execution of modern software development practices encompassing development, procurement, modification and maintenance activities within a single RDT&E appropriation in this PE.

In FY 2023, PE 1203614SF, JSpOC Mission System, Project 68A035 SSA/BMC2 efforts were transferred to PE 1208248SF, Enterprise Space BMC2, Project 68A035 SSA/BMC2 for Space Command and Control (Space C2) software program transparency.

The Space Force is developing a Space C2 and Space Domain Awareness (SDA) capability for the Combined Force Space Component Commander (CFSCC) and the Joint Task Force - Space Defense (JTF-SD). The Space C2 program provides a collaborative environment that will enhance and modernize SDA and Battle Management C2 (BMC2) capabilities; create decision-relevant views of the space and multi-domain environment; rapidly detect, track and characterize objects of interest; identify / exploit traditional and non-traditional sources; perform space threat analysis; and enable efficient distribution of data across the Space Surveillance Network (SSN). The program maintains enterprise infrastructure, platform and data services, and develops mission applications to enable responsive, resilient operational-level Space C2 capabilities for the National Space Defense Center (NSDC), Combined Space Operations Center (CSpOC), 18th Space Defense Squadron (SDS) and other C2 centers. Employing an agile-based Rapid Delivery Framework with a 90-day Program Increment (PI) construct fosters a collaborative and integrated environment for the community to effectively plan and deliver C2 capabilities. The enterprise-wide system provides a common government infrastructure and processes to allow C2 capabilities at USSF operational Deltas to rapidly address the evolving and dynamic threat. The program also identifies shared/common platform, infrastructure, and data layer solutions to support open frameworks and architectures across the enterprise ground portfolio. Funding includes technical studies, development, experimentation, integration and related support costs.

In FY 2023 this Program Element also includes effort for the Cyber Halo Innovation Research Program (CHIRP) based on a Congressional add. CHIRP will continue collaboration between Space Systems Command (SSC), universities/colleges, and industry with a mission to drive innovation and to create a pipeline of talent in cyber security with the specialized expertise to protect mission-critical, space-borne assets from cyber threats by adversaries.

Space acquisition must respond with speed and agility to emerging adversary threats. SSC has transformed the organization and implementation of space acquisition to an enterprise approach, to increase innovation and resiliency, leveraging international, commercial, and mission partnerships, and managing program/project priorities

according to an integrated unclassified/classified enterprise space architecture. Expanding the appropriate acquisition authorities and contract mechanisms to deliver capability sooner, SSC will strategically execute experimentation, prototyping, risk reduction, and other efforts to develop new or repurpose existing capabilities.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Space C2 for weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392SF and 1206398SF.

This program is in Budget Activity 8, Software and Digital Technology Pilot Program because this budget activity includes funding provided for expenses necessary for agile development, test and evaluation, procurement, production and modification, and the operation and maintenance of these programs.

B. Program Change Summary ($ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	0.000	155.053	122.584	0.000	122.584
Current President's Budget	0.000	155.553	122.326	0.000	122.326
Total Adjustments	0.000	0.500	-0.258	0.000	-0.258
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-4.500			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	5.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-0.258	0.000	-0.258

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2022	FY 2023
Project: 68A035: *SSA/BMC2*		
Congressional Add: *Cyber Halo Innovation Research Program (CHIRP) Development*	0.000	5.000
Congressional Add Subtotals for Project: 68A035	0.000	5.000
Congressional Add Totals for all Projects	0.000	5.000

Change Summary Explanation

FY 2023: +0.500 Congressional add is the net increase resulting from -4.500M unjustified cost growth Space C2 sustainment mark and +5.00M for Cyber Halo Innovation Research Program (CHIRP).

FY 2024: -0.258M consisting of (1) -0.806M to realign funding to APPN 3410, PE 1207804SF (SAG 13C), for fiscal policy compliance as Space Systems Command (SSC) establishes Headquarters functions and a Chief Information Office (CIO) for integrated cybersecurity, and (2) +0.548M for inflation adjustment.

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force	Date: March 2023
Appropriation/Budget Activity 3620F: *Research, Development, Test & Evaluation, Space Force* / BA 8: *Software and Digital Technology Pilot Programs*	**R-1 Program Element (Number/Name)** PE 1208248SF / *Space Command & Control - Software Pilot Program*

C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
Title: Enterprise Space BMC2 Development	0.000	111.459	85.738

Description: This program delivers a robust and responsive Space Domain Awareness (SDA) and Battle Management Command and Control (BMC2) capability to meet emerging threats. The program will deliver capability for decision makers trying to prevent a conflict from extending to space, or winning it if it does. Capabilities and associated infrastructure include, but are not limited to, the following: SDA, Indications & Warning (I&W), Planning & Tasking, Theater & Coalition Support, Transmit/Receive, Space Control, Tactical Operations and Common Data Management Layer, Platforms and Infrastructure; and Cyber and Threat Warning. The program maintains foundational DevSecOps enablers such as, but not limited to, Data as a Service, Zero Trust Architecture, Platform Support, Continuous Improvement/Continuous Deployment (CI/CD) toolchain, and infrastructure and inherent sustainment efforts that are an integral part of the agile software development process. Other activities include dedicated Systems Engineering & Integration (SE&I), Test & Evaluation (T&E), Model Based Systems Engineering (MBSE) and prototype Validation & Verification to support these efforts.

FY 2023 Plans:
Continue to plan and develop a message standard compliant open architecture to support both the SDA and BMC2 missions to meet dynamic emerging threats. The enterprise architecture and platform/infrastructure will modernize and deliver new capabilities in the NSDC, CSpOC, and other operations centers supporting SDA, BMC2, Theater Support, Data Analytics & Visualization, and Modeling & Simulation tools. Efforts will enhance the scalability, performance, and reliability of the platform. Continue developmental, system engineering and contracting efforts to integrate best in breed commercial, contractor, and government applications through the release of multiple incremental software capability in program increments 16-19 drops throughout FY 2023. FY 2023 funding will allow the program to conduct studies to identify shared platform, infrastructure, and data layer solutions that will inform future concepts and activities in support of enterprise open frameworks and architectures, as well as risk reduction activities, technical analysis for common platform, infrastructure and data layers for ground and communication systems to build upon. Rapidly respond to implement system resiliency, cybersecurity and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, experimentation, prototyping, etc.

FY 2024 Plans:
Continue to plan and develop a message standard compliant open architecture to support both the SDA and BMC2 missions to meet dynamic emerging threats. The enterprise architecture and platform/infrastructure will modernize and deliver new capabilities in the NSDC, CSpOC, and other operations centers supporting SDA, BMC2, Theater Support, Battle Space Awareness, and Planning & Tasking & Electronic Warfare tools. Enhance the scalability, performance, and reliability of the platform. These requirements will include design, enablement services, security, services necessary for authority to operate (ATO), engineering, network and platform architecture, reliability testing, prototyping efforts to increase platform, communications, and network capabilities, data science, data engineering, reinforcement learning, machine learning, artificial intelligence, product management

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
services. Continue development, system engineering and contracting efforts to integrate best in breed commercial, contractor, and government applications through the release of multiple incremental software capability in program increments 20-23 drops throughout FY 2024. FY 2024 funding will allow the program to implement system resiliency, cybersecurity, and situational awareness necessary to operate in the contested space domain, conduct studies to identify shared platform, infrastructure, and data layer solutions that will inform future concepts and activities in support of enterprise open frameworks and architectures, as well as risk reduction activities, technical analysis for common platform, infrastructure and data layers for ground and communication systems to build upon. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, experimentation, prototyping, etc. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 decreased due to reduced effort on SDA, BMC2, and Theater Support applications and infrastructure.			
Title: Space C2 Procurement ***Description:*** Provides hardware, software, technical documents, integration, testing and associated support to modernize and enhance Space C2 infrastructure for operations centers. ***FY 2023 Plans:*** SSC will procure Commercial and Government Off The Shelf (COTS/GOTS) hardware and software necessary to host and field critical applications as well as refresh existing hardware in use at Vandenberg Space Force Base (VSFB) and Schriever Space Force Base (SSFB). Activities may include but are not limited to program office support, studies, technical analysis, etc. ***FY 2024 Plans:*** SSC will procure Commercial and Government Off The Shelf (COTS/GOTS) hardware and software necessary to host and field critical applications as well as refresh existing hardware in use at Space Force locations. Activities may include but are not limited to program office support, studies, technical analysis, etc. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 increased slightly due to minor variations in COTS/GOTS hardware and software costs.	0.000	2.326	2.436
Title: Space C2 Sustainment ***Description:*** The program maintains existing capability for the CSpOC, NSDC and other C2 centers. These tasks include maintaining the Commercial Off The Shelf (COTS) software database, removing and canceling decommissioned systems and unused tools, adding new tools required for ongoing support of the system, maintaining data support systems, and maintaining day to day software operations which continuously ensures and optimizes reliability, security, resiliency, availability, flexibility and scalability of the warfighter tools.	0.000	36.768	34.152

Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force	Date: March 2023
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C. Accomplishments/Planned Programs ($ in Millions)	FY 2022	FY 2023	FY 2024
FY 2023 Plans: SSC will continue to fund government software centers, laboratories, and contractors for supporting the update, maintenance and modification, integration, configuration management and cybersecurity requirements of infrastructure and legacy software associated hardware. The program maintains foundational DevSecOps enablers such as, but not limited to, Data as a Service, Platform Support, continuous Improvement/Continuous Deployment (CI/CD) toolchain, and infrastructure and inherent sustainment efforts that are an integral part of the agile software development process. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, experimentation, prototyping, etc. ***FY 2024 Plans:*** SSC will continue to fund government software centers, laboratories, and contractors for supporting the update, maintenance and modification, integration, configuration management and cybersecurity requirements of infrastructure and legacy software associated hardware. The program maintains foundational DevSecOps enablers such as, but not limited to, Data as a Service, Platform Support, continuous Improvement/Continuous Deployment (CI/CD) toolchain, and infrastructure and inherent sustainment efforts that are an integral part of the agile software development process. Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, experimentation, prototyping, etc. ***FY 2023 to FY 2024 Increase/Decrease Statement:*** FY 2024 decreased due to platform and infrastructure configuration maturation allowing for increased efficiencies.			
Accomplishments/Planned Programs Subtotals	0.000	150.553	122.326

	FY 2022	FY 2023
Congressional Add: Cyber Halo Innovation Research Program (CHIRP) Development ***FY 2022 Accomplishments:*** N/A ***FY 2023 Plans:*** Funds will be used for continued collaboration between Space Systems Command (SSC), universities/colleges, and industry with a mission to drive innovation and to create a pipeline of talent in cyber security to fill positions at SSC that includes but is not limited to: network security, cyber analysis, incident response, cyber policy, data architecture, continuity of operations, data analytics, machine learning, artificial intelligence, and secure software development. Activities may include, but are not limited to program office support, studies, technical analysis, experimentation, prototyping, etc.	0.000	5.000
Congressional Adds Subtotals	0.000	5.000

Exhibit R-2, **RDT&E Budget Item Justification:** PB 2024 Air Force	**Date:** March 2023
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D. Other Program Funding Summary ($ in Millions)

N/A

Remarks

E. Acquisition Strategy

The Space Force is employing agile software development practices such as flexible requirements, frequent user interaction, and rapid delivery and deficiency retirement. The program acquires tools and capabilities through an agile-based Rapid Delivery Framework that delivers and sustains new features and capabilities through a CI/CD pipeline with 90-day Program Increments. This strategy focuses on rapidly delivering capability to warfighters and leveraging commercial, industry and government partners. Currently there are multiple contractors performing on competitively-awarded contracts with no single prime contractor responsible for the entire ecosystem.

Space C2 entered the planning phase of the Software Acquisition Pathway May 21 while continuing to execute as an OSD DEVSECOPS pathfinder program. The program is updating its acquisition strategy to align with this pathway and will continue to execute in a DevSecOps environment in accordance with guidance provided by DoD Instruction 5000.87.

In FY 2023 CHIRP will implement Congressional direction by utilizing contracts currently in place with Pacific Northwest National Laboratory (PNNL).

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3620F / 8	**R-1 Program Element (Number/Name)** PE 1208248SF / *Space Command & Control - Software Pilot Program*	**Project (Number/Name)** 68A035 / *SSA/BMC2*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Space C2 Applications Development	Various	Various : Various	-	0.000		91.653	Nov 2022	64.405	Nov 2023	-		64.405	Continuing	Continuing	-
Space C2 Platform Sustainment	Various	Various : Various	-	0.000		12.968	Dec 2022	10.502	Dec 2023	-		10.502	Continuing	Continuing	-
Space C2 Infrastructure Sustainment	Various	Various : Various	-	0.000		3.600	Nov 2022	3.600	Nov 2023	-		3.600	Continuing	Continuing	-
Space C2 Enterprise Systems Engineering & Integration (Development)	Various	Various : Various	-	0.000		2.860	Nov 2022	3.595	Nov 2023	-		3.595	Continuing	Continuing	-
Space C2 Data as a Service Sustainment	Various	Various : Various	-	0.000		20.200	Nov 2022	20.050	Nov 2023	-		20.050	Continuing	Continuing	-
Space C2 Procurement	TBD	TBD : TBD	-	0.000		2.326	Mar 2023	2.436	Mar 2024	-		2.436	Continuing	Continuing	-
Space C2 Technical Mission Analysis (Development)	RO	Aerospace : El Segundo, CA	-	0.000		2.000	Jan 2023	2.000	Jan 2024	-		2.000	Continuing	Continuing	-
CHIRP	TBD	PNNL : Richland, WA	-	0.000		5.000	Apr 2023	0.000		-		0.000	0.000	5.000	5.000
SBIR/STTR	Allot	TBD : TBD	-	0.000		0.000	Oct 2022	4.263	Oct 2023	-		4.263	Continuing	Continuing	-
		Subtotal	-	0.000		140.607		110.851		-		110.851	Continuing	Continuing	N/A

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Space C2 Test	Various	Various : Various	-	0.000		1.600	Dec 2022	1.600	Dec 2023	-		1.600	Continuing	Continuing	-
		Subtotal	-	0.000		1.600		1.600		-		1.600	Continuing	Continuing	N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force		Date: March 2023
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2022 Cost	FY 2022 Award Date	FY 2023 Cost	FY 2023 Award Date	FY 2024 Base Cost	FY 2024 Base Award Date	FY 2024 OCO Cost	FY 2024 OCO Award Date	FY 2024 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
FFRDC	RO	Various : Various	-	0.000		6.500	Dec 2022	5.500	Dec 2023	-		5.500	Continuing	Continuing	-
A&AS	Various	Various : Various	-	0.000		6.346	Dec 2022	4.025	Dec 2023	-		4.025	Continuing	Continuing	-
Other	Various	Various : Various	-	0.000		0.500	Oct 2022	0.350	Oct 2023	-		0.350	Continuing	Continuing	-
		Subtotal	-	0.000		13.346		9.875		-		9.875	Continuing	Continuing	N/A

	Prior Years	FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	0.000		155.553		122.326		-		122.326	Continuing	Continuing	N/A

Remarks

Exhibit R-4, **RDT&E Schedule Profile:** PB 2024 Air Force		**Date:** March 2023
Appropriation/Budget Activity 3620F / 8	**R-1 Program Element (Number/Name)** PE 1208248SF / *Space Command & Control - Software Pilot Program*	**Project (Number/Name)** 68A035 / *SSA/BMC2*

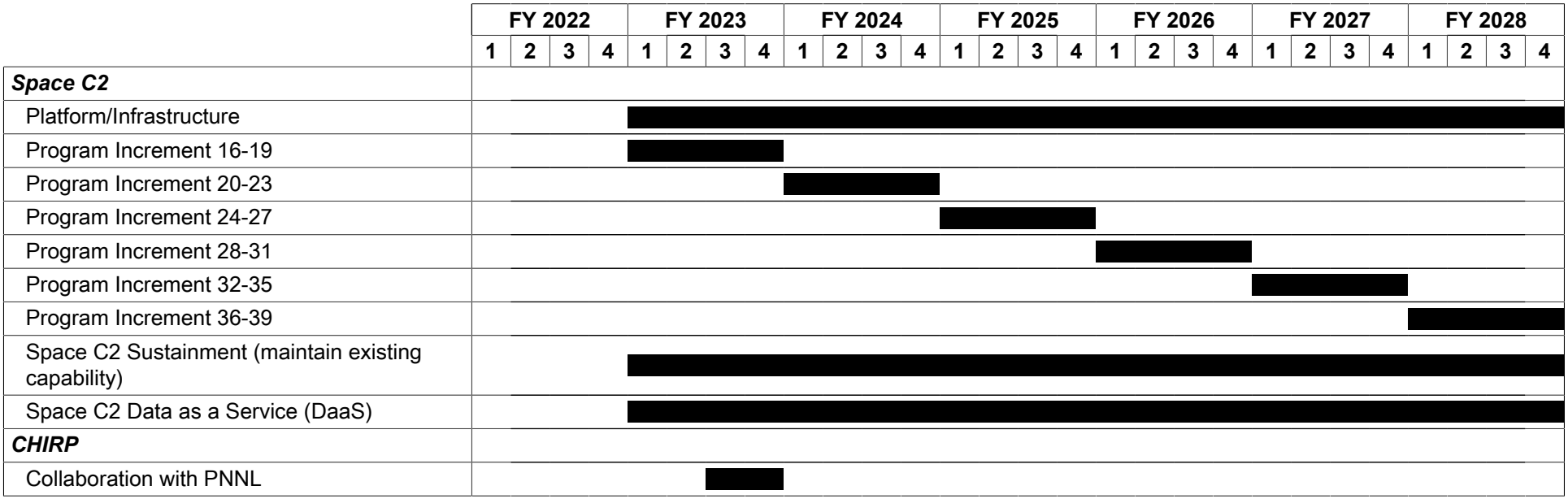

Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3620F / 8	**R-1 Program Element (Number/Name)** PE 1208248SF / *Space Command & Control - Software Pilot Program*	**Project (Number/Name)** 68A035 / *SSA/BMC2*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Space C2				
Platform/Infrastructure	1	2023	4	2028
Program Increment 16-19	1	2023	4	2023
Program Increment 20-23	1	2024	4	2024
Program Increment 24-27	1	2025	4	2025
Program Increment 28-31	1	2026	4	2026
Program Increment 32-35	1	2027	4	2027
Program Increment 36-39	1	2028	4	2028
Space C2 Sustainment (maintain existing capability)	1	2023	4	2028
Space C2 Data as a Service (DaaS)	1	2023	4	2028
CHIRP				
Collaboration with PNNL	3	2023	4	2023