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Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603739N / Navy Logistic Productivity
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COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
Total Program Element	51.489	2.803	3.857	3.884	-	3.884	4.024	4.242	4.206	4.291	Continuing	Continuing
2955: <i>JEDMICS</i>	47.864	2.803	2.880	2.837	-	2.837	2.981	3.224	3.168	3.232	Continuing	Continuing
3223: <i>Logistics R&D</i>	3.625	0.000	0.977	1.047	-	1.047	1.043	1.018	1.038	1.059	Continuing	Continuing

A. Mission Description and Budget Item Justification

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ADVANCED COMPONENT DEVELOPMENT AND PROTOTYPES because it includes all efforts necessary to evaluate integrated technologies, representative models or prototype systems in a high fidelity and realistic operating environment.

Includes development and evaluation of incentive systems for improving the productivity of civilian and military personnel. Identifies barriers to increased productivity and evaluates the effect of removing them. Develops techniques for easing the introduction of new technology to the work place. Identifies and evaluates methods for improving the quality of work-life.

Excludes civilian and military manpower and their related costs and military construction costs which are included in appropriate Management and Support elements in this program.

B. Program Change Summary (\$ in Millions)	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021 Base</u>	<u>FY 2021 OCO</u>	<u>FY 2021 Total</u>
Previous President's Budget	2.913	3.857	3.943	-	3.943
Current President's Budget	2.803	3.857	3.884	-	3.884
Total Adjustments	-0.110	0.000	-0.059	-	-0.059
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.110	0.000			
• Program Adjustments	0.000	0.000	-0.057	-	-0.057
• Rate/Misc Adjustments	0.000	0.000	-0.002	-	-0.002

Change Summary Explanation

The increase to project 3223 from FY 2020 to FY 2021 is to accommodate additional material studies and analysis of Clothing Protection for the Warfighter.

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Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603739N / Navy Logistic Productivity				Project (Number/Name) 2955 / JEDMICS			
COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
2955: JEDMICS	47.864	2.803	2.880	2.837	-	2.837	2.981	3.224	3.168	3.232	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In FY85 Congress directed the Services and Defense Logistics Agency to permanently capture, manage and control engineering data in digital format so it would be available to support competitive spares re-procurement. The Joint Engineering Data Management Information & Control System (JEDMICS) program manages and controls 100,000,000 engineering images and has 13,000 authorized users responsible for over 77,000 user sessions per month. Over 1.2 million digital images are retrieved each month. New data and new users are added each month as DoD re-engineers its business processes to take advantage of digital data that is managed and controlled for corporate reuse. The JEDMICS system is deployed at 5 interoperable sites that service user locations worldwide. Data stored in JEDMICS is used for Logistics Support, Spares re-procurement, Weapons Systems procurement, Engineering, Maintenance, Distribution, Manufacturing, Air National Guard and Deployed Engineering Technical Services organizations. JEDMICS facilitates work process re-design since it brings the electronic drawings to the desktop, shop floor or flight line in real time eliminating walk, wait and slack time to retrieve drawings. Additionally, Administrative Lead Time, Repair Turn Around Time, Engineering Change Proposal processing time, demilitarization time, and all cycle times dependent on engineering data have decreased with the real time availability of digital engineering data. JEDMICS also facilitates Electronic Commerce since it produces digital technical data packages that can be forwarded along with an electronic order. Funds are for Commercial Off The Shelf (COTS) test, evaluation and integration. JEDMICS development efforts are required to integrate and test COTS upgrades.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: JEDMICS Development	2.751	2.828	2.785	0.000	2.785
Articles:	-	-	-	-	-
Description: Conduct development efforts associated with JEDMICS software releases. Conduct COTS requirements definition, evaluation, integration and testing of annual baseline releases. Conduct technology insertion of the JEDMICS system that is required to protect the \$21B digital data asset managed in JEDMICS.					
These annual releases are necessary to incorporate changes that are essential to keeping the system running within the Navy's Enterprise. They include Service mandated Information Technology changes, storage capability increases for emerging engineering data formats, changes to accommodate commercial hardware and software end-of-life product obsolescence, and defenses for newly recognized Information Assurance vulnerabilities affecting the systems various software applications.					
FY 2020 Plans:					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Develop and integrate JEDMICS Software Release 3.0.21. FY 2021 Base Plans: Develop and integrate JEDMICS Software Release 3.0.22 FY 2021 OCO Plans: N/A FY 2020 to FY 2021 Increase/Decrease Statement: FY20-21 decrease due to requirement integration cost.					
Title: JEDMICS Test <div style="text-align: right;">Articles:</div> Description: Conduct test and readiness reviews and functional performance tests on JEDMICS system. FY 2020 Plans: Complete DT of JEDMICS Software Release 3.0.20. Initiate DT of JEDMICS Software Release 3.0.21. FY 2021 Base Plans: Complete DT of JEDMICS Software Release 3.0.21. Initiate DT of JEDMICS Software Release 3.0.22. FY 2021 OCO Plans: N/A	0.026 -	0.026 -	0.026 -	0.000 -	0.026 -
Title: JEDMICS Evaluation & Review <div style="text-align: right;">Articles:</div> Description: Conduct technical evaluations and configuration control reviews of JEDMICS system. FY 2020 Plans: Conduct technical evaluations and review for JEDMICS Software Release 3.0.22. FY 2021 Base Plans: Conduct technical evaluations and review for JEDMICS Software Release 3.0.23. FY 2021 OCO Plans: N/A	0.026 -	0.026 -	0.026 -	0.000 -	0.026 -
Accomplishments/Planned Programs Subtotals	2.803	2.880	2.837	0.000	2.837

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C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

Competitively awarded requirements type contract for engineering, design, development and test efforts. Performance-based reviews conducted quarterly by the Project Management Office.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603739N / Navy Logistic Productivity	Project (Number/Name) 2955 / JEDMICS
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Support (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Development Support	TBD	TBD : TBD	0.000	0.000		0.160	Oct 2019	0.160	Oct 2020	-		0.160	0.000	0.320	-
Software Development	Various	Northrop Grumman Information : McLean, VA	41.702	2.751	Nov 2018	2.668	Nov 2019	2.625	Nov 2020	-		2.625	Continuing	Continuing	Continuing
Prior Year Support no Longer Funded in Budget Year or Out years	Various	Various : Various	1.862	0.000		0.000		0.000		-		0.000	0.000	1.862	-
Subtotal			43.564	2.751		2.828		2.785		-		2.785	Continuing	Continuing	N/A

Remarks
Remarks: Funds are for development efforts associated with Commercial Off The Shelf (COTS) obsolescence on the fully deployed COTS Intensive Joint Engineering Data Management Information & Control System. Funds are for COTS evaluation, integration, and test and evaluation. The common baseline will be maintained and obsolete COTS software and hardware will be replaced. Baseline releases will protect joint interoperability, upgrade operating systems for security patches and supportable versions, support integration to replace obsolete COTS, and upgrade the Oracle database to supportable versions.

Test and Evaluation (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental Test & Evaluation	MIPR	WR-ALC/TILAB : Robins AFB, GA	2.598	0.026	Oct 2018	0.026	Oct 2019	0.026	Oct 2020	-		0.026	Continuing	Continuing	Continuing
Subtotal			2.598	0.026		0.026		0.026		-		0.026	Continuing	Continuing	N/A

Remarks
Supports testing and evaluation of baseline releases in a user environment.

Management Services (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Support	WR	Naval Air Warfare Center : NAS Patuxent River, MD	0.320	0.015	Oct 2018	0.015	Oct 2019	0.015	Oct 2020	-		0.015	Continuing	Continuing	Continuing
Travel	Various	Various : Various	0.299	0.011	Jul 2019	0.011	Jul 2020	0.011	Jul 2021	-		0.011	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy **Date:** February 2020

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Management Services (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prior Year Mgmt no Longer Funded in Budget Year or Out years	Various	Various : Various	1.083	0.000		0.000		0.000		-		0.000	0.000	1.083	-
Subtotal			1.702	0.026		0.026		0.026		-		0.026	Continuing	Continuing	N/A

Remarks
Supports program compliance reviews and program related travel by government employees.

	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	47.864	2.803	2.880	2.837	-	2.837	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy **Date:** February 2020

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JEDMICS	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025							
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q				
Aquisition Milestones																																
IOC		▲				▲				▲				▲				▲				▲				▲				▲		
Requirements: Service IPT/ECPs				▼				▼				▼				▼				▼				▼				▼				▼
Contract Award	●				●				●				●				●				●				●				●			
Software & Hardware Evaluation/Integration	Release 3.0.20				Release 3.0.21				Release 3.0.22				Release 3.0.23				Release 3.0.24				Release 3.0.25				Release 3.0.26							
Test & Evaluation Milestones																																
Risk Assesment			■				■				■				■				■				■				■				■	
Developmental/Functional Testing				▬				▬				▬				▬				▬				▬				▬				▬
Alpha/Beta Testing				▬				▬				▬				▬				▬				▬				▬				▬
Deliveries																																
Engineering Change Package		▼				▼				▼				▼				▼				▼				▼				▼		

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy **Date:** February 2020

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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
JEDMICS				
Aquisition Milestones: IOC: IOC Release 3.0.19	2	2019	2	2019
Aquisition Milestones: IOC: IOC Release 3.0.20	2	2020	2	2020
Aquisition Milestones: IOC: IOC Release 3.0.21	2	2021	2	2021
Aquisition Milestones: IOC: IOC Release 3.0.22	2	2022	2	2022
Aquisition Milestones: IOC: IOC Release 3.0.23	2	2023	2	2023
Aquisition Milestones: IOC: IOC Release 3.0.24	2	2024	2	2024
Aquisition Milestones: IOC: IOC Release 3.0.25	2	2025	2	2025
Aquisition Milestones: Requirements: Service IPT/ECPs: Service IPT/ECPs Release 3.0.21	4	2019	4	2019
Aquisition Milestones: Requirements: Service IPT/ECPs: Service IPT/ECPs Release 3.0.22	4	2020	4	2020
Aquisition Milestones: Requirements: Service IPT/ECPs: Service IPT/ECPs Release 3.0.23	4	2021	4	2021
Aquisition Milestones: Requirements: Service IPT/ECPs: Service IPT/ECPs Release 3.0.24	4	2022	4	2022
Aquisition Milestones: Requirements: Service IPT/ECPs: Service IPT/ECPs Release 3.0.25	4	2023	4	2023
Aquisition Milestones: Requirements: Service IPT/ECPs: Service IPT/ECPs Release 3.0.26	4	2024	4	2024
Aquisition Milestones: Requirements: Service IPT/ECPs: Service IPT/ECPs Release 3.0.27	4	2025	4	2025
Aquisition Milestones: Contract Award: 2019 Contract Award	1	2019	1	2019
Aquisition Milestones: Contract Award: 2020 Contract Award	1	2020	1	2020
Aquisition Milestones: Contract Award: 2021 Contract Award	1	2021	1	2021

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603739N / Navy Logistic Productivity	Project (Number/Name) 2955 / JEDMICS
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Aquisition Milestones: Contract Award: 2022 Contract Award	1	2022	1	2022
Aquisition Milestones: Contract Award: 2023 Contract Award	1	2023	1	2023
Aquisition Milestones: Contract Award: 2024 Contract Award	1	2024	1	2024
Aquisition Milestones: Contract Award: 2025 Contract Award	1	2025	1	2025
Aquisition Milestones: Software & Hardware Evaluation/Integration: Software Hardware Evaluation/Integration Release 3.0.20	1	2019	3	2019
Aquisition Milestones: Software & Hardware Evaluation/Integration: Software Hardware Evaluation/Integration Release 3.0.21	1	2020	3	2020
Aquisition Milestones: Software & Hardware Evaluation/Integration: Software Hardware Evaluation/Integration Release 3.0.22	1	2021	3	2021
Aquisition Milestones: Software & Hardware Evaluation/Integration: Software Hardware Evaluation/Integration Release 3.0.23	1	2022	3	2022
Aquisition Milestones: Software & Hardware Evaluation/Integration: Software Hardware Evaluation/Integration Release 3.0.24	1	2023	3	2023
Aquisition Milestones: Software & Hardware Evaluation/Integration: Software Hardware Evaluation/Integration Release 3.0.25	1	2024	3	2024
Aquisition Milestones: Software & Hardware Evaluation/Integration: Software Hardware Evaluation/Integration Release 3.0.26	1	2025	3	2025
Test & Evaluation Milestones: Risk Assesment: Risk Assessment Release 3.0.20	3	2019	3	2019
Test & Evaluation Milestones: Risk Assesment: Risk Assessment Release 3.0.21	3	2020	3	2020
Test & Evaluation Milestones: Risk Assesment: Risk Assessment Release 3.0.22	3	2021	3	2021
Test & Evaluation Milestones: Risk Assesment: Risk Assessment Release 3.0.23	3	2022	3	2022
Test & Evaluation Milestones: Risk Assesment: Risk Assessment Release 3.0.24	3	2023	3	2023
Test & Evaluation Milestones: Risk Assesment: Risk Assessment Release 3.0.25	3	2024	3	2024
Test & Evaluation Milestones: Risk Assesment: Risk Assessment Release 3.0.26	3	2025	3	2025
Test & Evaluation Milestones: Developmental/Functional Testing: Developmental/Functional Testing Release 3.0.20	4	2019	4	2019

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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Test & Evaluation Milestones: Developmental/Functional Testing: Developmental/Functional Testing Release 3.0.21	4	2020	4	2020
Test & Evaluation Milestones: Developmental/Functional Testing: Developmental/Functional Testing Release 3.0.22	4	2021	4	2021
Test & Evaluation Milestones: Developmental/Functional Testing: Developmental/Functional Testing Release 3.0.23	4	2022	4	2022
Test & Evaluation Milestones: Developmental/Functional Testing: Developmental/Functional Testing Release 3.0.24	4	2023	4	2023
Test & Evaluation Milestones: Developmental/Functional Testing: Developmental/Functional Testing Release 3.0.25	4	2024	4	2024
Test & Evaluation Milestones: Developmental/Functional Testing: Developmental/Functional Testing Release 3.0.26	4	2025	4	2025
Test & Evaluation Milestones: Alpha/Beta Testing: Alpha/Beta Testing Release 3.0.20	4	2019	1	2020
Test & Evaluation Milestones: Alpha/Beta Testing: Alpha/Beta Testing Release 3.0.21	4	2020	1	2021
Test & Evaluation Milestones: Alpha/Beta Testing: Alpha/Beta Testing Release 3.0.22	4	2021	1	2022
Test & Evaluation Milestones: Alpha/Beta Testing: Alpha/Beta Testing Release 3.0.23	4	2022	1	2023
Test & Evaluation Milestones: Alpha/Beta Testing: Alpha/Beta Testing Release 3.0.24	4	2023	1	2024
Test & Evaluation Milestones: Alpha/Beta Testing: Alpha/Beta Testing Release 3.0.25	4	2024	1	2025
Test & Evaluation Milestones: Alpha/Beta Testing: Alpha/Beta Testing Release 3.0.26	4	2025	4	2025
Deliveries: Engineering Change Package: Engineering Change Package Release 3.0.19	2	2019	2	2019
Deliveries: Engineering Change Package: Engineering Change Package Release 3.0.20	2	2020	2	2020
Deliveries: Engineering Change Package: Engineering Change Package Release 3.0.21	2	2021	2	2021
Deliveries: Engineering Change Package: Engineering Change Package Release 3.0.22	2	2022	2	2022
Deliveries: Engineering Change Package: Engineering Change Package Release 3.0.23	2	2023	2	2023

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy **Date:** February 2020

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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Deliveries: Engineering Change Package: Engineering Change Package Release 3.0.24	2	2024	2	2024
Deliveries: Engineering Change Package: Engineering Change Package Release 3.0.25	2	2025	2	2025

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy										Date: February 2020		
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603739N / Navy Logistic Productivity				Project (Number/Name) 3223 / Logistics R&D			
COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
3223: Logistics R&D	3.625	0.000	0.977	1.047	-	1.047	1.043	1.018	1.038	1.059	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Stable annual funding is required to facilitate implementation and execution of a robust, flexible Logistics R&D program that will provide the means for Naval Supply Systems Command (NAVSUP) to effectively pursue solutions to mission-related capability and technology gaps. The NAVSUP Logistics R&D program has an established infrastructure and business process for ensuring that R&D funds are applied to projects that address high priority enterprise needs established in accordance with OPNAV goals and the NAVSUP Commander's Guidance.

From a process perspective, Logistics R&D investments are governed by a NAVSUP enterprise-wide Executive Steering Group (ESG) chaired by the NAVSUP Vice Commander, and comprised of SES and Command leadership representatives. The ESG ratifies capability and technology gaps identified by all activities within the enterprise, and then assesses and prioritizes all proposed Logistics R&D initiatives in accordance with their potential for filling the established gap and generating return on investment.

The established Logistics R&D business management process has currently identified capability/technology gaps in the following general areas: 1) the need to develop formalized food service management techniques that focus on increased efficiency of new and existing systems and facilities. 2) the need to modernize quality of life (QOL) services to improve overall services, offer additional desired features and reduce total ownership costs, 3) the need to assess clothing protection for the warfighter in areas of thermal/flame threats, protective footwear, and physical (hearing, vibration, etc.) clothing/accessories, 4) the need to develop logistics data access and information sharing through enhanced Graphical User Interfaces (GUI) and web-based data services, 5) the need to develop a capability that allows Integrated Logistics Support (ILS) repair and modernization tools, 6) the need to leverage breakthrough technologies to improve supply chain processing. This modest R&D investment will establish a NAVSUP Logistics R&D Program to explore additional technologies and significantly increase potential cost savings.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: Supply Chain Optimization	0.000	0.355	0.125	0.000	0.125
Articles:	-	-	-	-	-
Description: Enable innovation in our supply chain processes in the areas of data sciences, logistics IT application development, and quality engineering through incorporation of Science, Technology, Engineering, and Math (STEM) projects performed by interns and academia.					
Perform market research on emerging supply chain technologies and methods that could be adopted to support the DoN/DoD material supply chain.					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
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Developed a new functionality (software supporting data structure and migration of current data) within Ordinance Information System (OIS) that provides visibility of serialized assets use and requirements.

FY 2020 Plans:
 Additive Manufacturing/3D Printing: Continue to drive towards SECNAV Additive Manufacturing (AM) goals and enable NAVSUP logistics innovation projects. Integrate AM as an order fulfillment strategy to increase readiness and improve maintenance and sustainment operations through reducing long-lead times and eliminating obsolescence-related issues. Furthermore, the technology enables improvements to current systems (e.g., weight reduction, part count reduction, increased system performance) through designs that are not possible by conventional manufacturing techniques. (\$112K)

Data Sciences and Logistics Engineering STEM Projects: Continued innovation in our supply chain processes in the areas of Data Sciences, Data Analytics, Logistics IT application development, and Quality Engineering through incorporation of Science, Technology, Engineering, and Math (STEM) projects performed by computer science interns and academia, which allows us to bridge the gaps in new methods of data utilization and industry trends. (\$43K)

Artificial Intelligence (AI) for custom code: Develop an AI solution to allow for business constraints to be dynamically adapted to current solutions, whether a Commercial Off the Shelf (COTS), Government Off the Shelf (GOTS) or a custom solution. DoD unique business rules exist while multiple systems implement business rules with differing logic. Given the DoD unique business rules that exist and multiple systems that implement business rules in many different ways, the AI can learn from all of those existing applications. The objective is for AI development that can automate learning to ensure the gaps that exist in out-of-the box solutions are identified and implemented before a product is released. (\$100K)

Artificial Intelligence for (AI) for Information Assurance (IA) vulnerabilities: Current IA processes require many highly qualified resources. IA and security processes require extensive hours to accomplish vital tasks that keep our Sailors' data safe and this dependency on humans introduces risk. Develop an AI automated learning solution to ensure future vulnerabilities that could be exploited to gain unauthorized system access to enterprise logistics systems are identified and corrected before the vulnerability is exploited. Specific areas to be addressed will include non-stop and true continuous monitoring of enterprise logistics IT systems. The AI

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
<p>solution developed will provide consistent, secure, and scalable security measures to be implemented during all phases of the development cycle in a flexible, scalable and agile means. (\$100K)</p> <p>FY 2021 Base Plans: Supply Capabilities Repository to Lower Costs of Contracts, Reduce Lead-Time of Spare Parts Procurements, and Lower Risk of Supply Chain Availability: The current method for finding sources for Critical Application Items (CAI) and Non-Critical Items (NC) are based on employee corporate knowledge of different vendor capabilities and calling a company to see if they have capacity and interest. Newer employees generally know few sources and may not know all the capabilities associated with each vendor. NAVSUP needs to create a Sourcing Portal with a repository listing of companies and capabilities. As requirements are submitted by NAVSUP without any or enough sources, an employee should review the drawing to find requirements, enter the requirements into the repository, and receive a list of compatible companies' contact information. This repository and workflow will increase the pool of known companies and their capabilities for any part thereby increasing competition and lowering lead-time and the costs to the Navy. Development of this Sourcing Portal will mitigate risk to the supply chain by providing a broad and complete visibility of vendor's capacity and capability. (\$125K)</p> <p>FY 2021 OCO Plans: N/A</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: Decrease reflects resources moving to "Clothing Protection for the Warfighter".</p>					
<p>Title: Readiness through Logistics Solutions</p> <p align="right">Articles:</p> <p>Description: Supply chain improvements are required to support logistics efficiency and Fleet readiness through logistics solutions technological improvements. Develop technological capabilities that improve Naval Logistics in part or in its record (from manufacture, storage, delivery, use, maintenance, and disposal).</p> <p>FY 2020 Plans: RFID Interface: Perform case study assessment of Next Generation RFID technology and Real Time Location System (RTLS) graphical user interface scalability. FY 2019 prototype must be proofed via tangible real-world industrial environments. Case studies will demonstrate technology by monitoring logistics information such as forklift flow optimization and aviation aircraft engine monitoring at long term storage facilities. (\$361K)</p> <p>FY 2021 Base Plans:</p>	0.000 -	0.361 -	0.150 -	0.000 -	0.150 -

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
<p>NAVSUP Augmented Reality (AR) Initiative: NAVSUP Business Systems Center (BSC) is an epicenter for technology Insertion for Navy. In addition, BSC provides end-to-end program management and lifecycle management for Business Systems and a variety of DoD Information Systems. An emerging technology at the forefront of the commercial sector is Virtual/Mixed Reality (VR). VR has vast proven industrial applications for supporting training, warfighting simulations, system maintenance, collaboration and logistics. Augmented Reality harnesses the power of virtual reality while creating an enhanced version of reality created by the use of technology to add digital information to any space. NAVSUP has a requirement to assess emerging VR/MR technologies to fully understand and evaluate the following: a) The technological maturity of the hardware and software, b) The full costs of VR/MR systems and implementation parameters, c) The capabilities and "ready now" use cases involving supply and maintenance applications, and d) the system architectures required to support VR/MR systems, to include security postures. NAVSUP will perform a series of technical demonstrations and hands on workshops for the technical teams. The purpose of the engagements will be to use several VR/MR systems and study the applications including the Microsoft HoloLense 2 Platform, Blippar, Meta 2, MagicLeap One, Smart Reality, AccuVein, Bosh augmented understanding of the technology, the supporting architecture and the strengths/limitations of the VR capability. Specific use cases will involve maintainers and warehouse operations. (\$150K)</p> <p>FY 2021 OCO Plans: N/A</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: Decrease reflects resources moving to "Clothing Protection for the Warfighter".</p>					
<p>Title: Clothing Protection for the Warfighter</p> <p align="right">Articles:</p> <p>Description: Identify challenges to effectively manage durability and safety aspects of common work/combat uniforms for the warfighter. Eliminate risk of hazardous factors such as fire, weather, and general wear/tear to maximize readiness and strength in Fleet uniforms. Assist with specifications associated with permanent press finish related to the rollout of the Navy's Type III uniform.</p> <p>FY 2020 Plans: "Green" Laundering Services: Validate new "green" shipboard laundering formulas for Navy uniforms subject to shipboard laundering. The new "green" formulation is a replacement of harsh chemicals with high acidity, with an enzymatic detergent that requires lower water temperatures and lower water consumption wash cycles, and a</p>	0.000	0.261	0.772	0.000	0.772
	-	-	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
<p>potential reduction of the wear and fading effects on uniforms, as well as a reduction of these chemical products stowed on-board in large quantities. Validation will allow NAVSUP to understand the effects of the chemicals on appearance, color change, and special finishes on Navy uniforms. An updated shipboard formulation will further support OPNAV's Environmental Readiness Program. (\$75K)</p> <p>Product Lifecycle Management (PLM) digital platform: Enhance efficiency in the management and standardization of materials documentations in support of uniform development of USN Uniforms and Materials. Over the years, the Navy Clothing and Textile Research Facility (NCTRF) has amassed extensive data on USN uniforms, fabrics and trims. With each garment and material update, multiple files must be created or amended manually and then stored in various server locations. As time goes on, employees transition and files multiply; the man hours to locate, research and review information on current uniforms and materials has increased. Incorporation of a PLM digital platform will streamline the garment creation process and reduce costs by effectively managing USN uniforms and materials with a product lifecycle management tool. Effort includes development, trial and inclusion of this tool into navy clothing and textile research efforts. (\$61K)</p> <p>Navy Boot Enhancement: Develop, select and integrate Foreign Object Damage (FOD) and slip resistant outsole. An evaluation conducted in FY18 revealed that the outsole of the current boot was not FOD-resistant and has poor split resistance in flight deck environments. Determine the characteristics of an outsole (tread design and rubber compound) that meet the FOD-resistance and slip requirements of multiple Navy environments. The objective is to develop a common outsole that meets or exceeds safety boot requirements for all Navy communities and work environments. (\$75K)</p> <p>E-yarn Development for embedded garment performance monitoring: Initiate a study related to the incorporation of e-yarns to support monitoring of personnel data to support safety goals. Technology changes driving new ship design will require a real-time connection between the ship and the sailor for delivery and receipt of information and data to and from the sailor. The challenge is connecting all the systems together with the sailor into intelligible human-system interfaces, so that, the ship of the future will be securely controlled by fewer sailors located anywhere on board. Study will research innovative multi-functional garment systems with embedded technologies to become the structure for robust human-systems interface. (\$50K)</p> <p>FY 2021 Base Plans: 3D Virtual Design Software for Improving Uniform Fit and Providing Virtual Prototypes: This new capability will address a need for quick, affordable, and accurate prototyping. The system will provide a capability to bypass</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
<p>the time consuming process of multiple physical prototypes for any type of item whether it be dress, utility, or chemical-biological, resulting in a better fitting garment in a shorter amount of time. (\$100K)</p> <p>Sensor Data Validation and System Verification of Articulating Thermal Sensing Manikin for use in a Flame Filled Environment: Develop a methodology of characterizing each sensor response in place and evaluate the capabilities and performance of the Articulating Thermal Sensing Manikin (ARTHESMA) system and integration with the systems at the Ouelette Thermal Test Facility in Natick, MA. (\$75K)</p> <p>Analysis of Impact on Navy Uniforms by Proposed Change of Navy Shipboard Wash Chemicals: Investigate the acceptability of the product system change from Ecolab Solid Surge Navigator Systems to Ecolab Aquanomic Biocare System for shipboard laundry and is there is any effect/change on uniform care labels. This new greener approach in shipboard laundry systems has the potential to reduce energy costs, lower water consumption and through this evaluation determine if there are reduced negative effects that current washing has on material. (\$90K)</p> <p>Improved Flame Resistance Variant Coverall (I2FRV): Management of organizational clothing will be streamlined by eliminating three (3) coveralls/70 NSNs from the system. Sailors will benefit by receiving a more functional coverall which can work in multiple shipboard environments, eliminating the need for storage and management of multiple coverall types. (\$75K)</p> <p>Improved Shipboard Flame Resistance (FR) Jacket: The goal of this effort is to develop an improved cold weather shipboard FR jacket with a modernized design which meets or exceeds current requirements, while being cheaper, lighter weight, and space-saving. Current jacket design and materials in the system have not been evaluated in over 20 years. (\$100K)</p> <p>Standardization of Identification Markings and Technology for Organizational Clothing Worn by Navy Sailors in Surface Warfare Operations: This will establish a standard identification requirement for U.S. Navy organizational clothing and provide a recommendation for integrating the most effective technology solutions into both Sailor's work environment and uniform/personal equipment without adverse impact to the mission. (\$90K)</p> <p>Identification of Sustainability Implementation Opportunities to Navy Clothing and Equipment throughout the Acquisition Life Cycle: Innovate the uniform supply chain by exploring sustainability in areas such as manufacturing process, use of recycled materials, repurposing surplus material, and recycling and reclaiming end items while implementing more closed loop systems and creation of circular product lifecycles.</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy	Date: February 2020
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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
(\$75K) Standard Sizing to Incorporate into Body Scanners: The objective is to establish standardized sizes for uniforms and input the data into current developmental Body Scanner Technology. This project will validate the necessity of standardized sizes in order for the Body Scanner technology to accurately predict a Sailor's uniform size.					
(\$77K) Validation of Wissler Apparel Requirement Model (WARM) and expansion of protective clothing database for the model to predict thermal status in Extreme Environments: The project objective is to select a stable FORTRAN code for Wissler's model to run WARM (graphical user interface based). Using the Navy Clothing and Textile Research Facility's (NCTRF) submersible thermal manikin (NEMO) expand the database of localized thermal properties of current and new anti-exposure suits as well as protective garments used to support extreme climate operations. Predict safe exposure limits, and provide garment design guidelines to achieve required mission requirements.					
(\$90K) FY 2021 OCO Plans: N/A FY 2020 to FY 2021 Increase/Decrease Statement: Increase reflects an emphasis for innovative projects within "Clothing Protection for the Warfighter".					
Accomplishments/Planned Programs Subtotals	0.000	0.977	1.047	0.000	1.047

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

NAVSUP R&D executed through firm fixed price negotiated contracts and NAVSUP support. Performance-based reviews conducted quarterly by the Project Management Office.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy **Date:** February 2020

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Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Effective Food Service Management	C/FFP	Various : Various	0.000	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Quality of Life Services Modernization & Cost Reduction (Initiative 1)	C/FFP	BSC : Mechanicsburg, PA	0.259	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Quality of Life Services Modernization & Cost Reduction (Initiative 2)	C/FFP	Various : Various	1.037	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Readiness through Logistics Solutions	C/FFP	Various : Various	1.203	0.000		0.355	Dec 2019	0.150	Dec 2020	-		0.150	Continuing	Continuing	Continuing
Clothing Protection for the Warfighter	C/FFP	NCTRF : Natick, MA	1.126	0.000		0.361	Oct 2019	0.772	Oct 2020	-		0.772	Continuing	Continuing	Continuing
Supply Chain Optimization	C/FFP	Various : Various	0.000	0.000		0.261	Dec 2019	0.125	Dec 2020	-		0.125	Continuing	Continuing	Continuing
Subtotal			3.625	0.000		0.977		1.047		-		1.047	Continuing	Continuing	N/A

Remarks
There were no FY19 projects.

	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	3.625	0.000	0.977	1.047	-	1.047	Continuing	Continuing	N/A

Remarks
In previous plans, NAVSUP forecast budget requirements based on projections rooted in the current year's capability gaps. As our priorities and Strategic Guidance evolves so does our budget requirements. Through leveraging new technologies, NAVSUP will enhance efforts for supply ashore and distant support. We will strengthen our supply chain information technology and management solutions for supply and financial requirements. We will collaborate with partners to improve the quality-of-life experiences and expand services to deployed forces. NAVSUP will continue to build an ethical and effective workforce dedicated to the mission by developing new technological programs that are advantageous to the warfighter. We will reduce risk and minimize vulnerabilities to protect against disruptions to supply chain and business systems. All of our actions will follow a culture of moral excellence to successfully execute the current and future missions of NAVSUP.

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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy **Date:** February 2020

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Logistics R&D	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025					
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q		
Supply Chain Optimization																														
Contract Award					◆						◆																			
Developmental/Functional Testing					—																									
Implementation												■														■				
Readiness through Logistics Solutions																														
Contract Award					◆						◆																			
Developmental/Functional Testing					—																									
Implementation												■														■				
Clothing Protection for the Warfighter																														
Contract Award				◆							◆																			
Developmental/Functional Testing				—																										
Implementation												■														■				

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy **Date:** February 2020

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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Logistics R&D				
Supply Chain Optimization: Contract Award: FY 2020 Contract Award	2	2020	2	2020
Supply Chain Optimization: Contract Award: FY 2021 Contract Award	2	2021	2	2021
Supply Chain Optimization: Developmental/Functional Testing: FY 2020 Developmental/Functional Testing	3	2020	3	2021
Supply Chain Optimization: Developmental/Functional Testing: FY 2021 Developmental/Functional Testing	3	2021	3	2022
Supply Chain Optimization: Implementation: FY 2020 Implementation	4	2021	4	2021
Supply Chain Optimization: Implementation: FY 2021 Implementation	4	2022	4	2022
Readiness through Logistics Solutions: Contract Award: FY 2020 Contract Award	2	2020	2	2020
Readiness through Logistics Solutions: Contract Award: FY 2021 Contract Award	2	2021	2	2021
Readiness through Logistics Solutions: Developmental/Functional Testing: FY 2020 Developmental/Functional Testing	3	2020	3	2021
Readiness through Logistics Solutions: Developmental/Functional Testing: FY 2021 Developmental/Functional Testing	3	2021	3	2022
Readiness through Logistics Solutions: Implementation: FY 2020 Implementation	4	2021	4	2021
Readiness through Logistics Solutions: Implementation: FY 2021 Implementation	4	2022	4	2022
Clothing Protection for the Warfighter: Contract Award: FY 2020 Contract Award	1	2020	1	2020
Clothing Protection for the Warfighter: Contract Award: FY 2021 Contract Award	1	2021	1	2021
Clothing Protection for the Warfighter: Developmental/Functional Testing: FY 2020 Developmental/Functional Testing	2	2020	2	2021
Clothing Protection for the Warfighter: Developmental/Functional Testing: FY 2021 Developmental/Functional Testing	2	2021	2	2022
Clothing Protection for the Warfighter: Implementation: FY 2020 Implementation	3	2021	3	2021

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy **Date:** February 2020

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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Clothing Protection for the Warfighter: Implementation: FY 2021 Implementation	3	2022	3	2022