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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604727N / <i>JNT Standoff Weapon Systems</i>
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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	899.139	0.424	16.225	73.744	-	73.744	99.759	84.994	53.627	26.142	6.948	1,261.002
2068: <i>Joint Standoff Weapon (JSOW)</i>	899.139	0.424	16.225	73.744	-	73.744	99.759	84.994	53.627	26.142	6.948	1,261.002

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): 766

A. Mission Description and Budget Item Justification

JSOW Extended Range (ER) development provides a JSOW variant with powered flight, avionics upgrades, and improved software enabling operations at tactically significant ranges of greater than 200nm, to kinetically engage adversary surface combatants and land targets. Additionally, the JSOW ER capability fundamentally supports the Navy's strategy of intelligent, Network Enabled Weapons in order to apply effective and lethal firepower from secure positions. The FY2021 budget request supports planning and engineering work beginning in FY2020 with a targeted Early Operational Capability (EOC) in FY2024 for F/A-18E/F. This effort leverages demonstration funding from OSD in FY2018 and FY2019, transitioning capability to the Navy.

The Joint Standoff Weapon (JSOW) is an air-to-ground weapon designed to attack a variety of targets during day, night, and adverse weather conditions. JSOW will enhance aircraft survivability as compared to current interdiction weapon systems by providing the capability for launch aircraft to standoff outside the range of most target area surface-to-air threat systems. The JSOW launch-and-leave capability will allow several target kills per aircraft sortie. The JSOW program first developed a baseline weapon for use against fixed area targets. JSOW is a Navy led joint Navy/Air Force program. JSOW utilizes a "common truck" for both AGM-154A and AGM-154C variants. Through adherence to international standards for weapons interfaces, weight, and dimension considerations, JSOW is compatible with Air Force and North Atlantic Treaty Organization aircraft.

The JSOW Unitary (AGM-154C-1) variant includes a Network Enabled Weapon moving maritime target capability. The AGM-154C-1 capability enables the weapon to be integrated with the network and attack sea moving maritime targets via real-time pre-and post-launch targeting updates. JSOW will continue to conduct analysis and development of solutions to system integration challenges, and continual enhancement of warfighter effectiveness in the employment of the JSOW weapon system. The FY 2019 funding included the integration of new functionality into the joint mission planning systems and precision guided munitions planning system. JSOW C-1 Initial Operational Capability was achieved in June 2016. JSOW C-1 Full Operational Capability was achieved in August 2017.

This program is funded under SYSTEM DEVELOPMENT AND DEMONSTRATION because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirement prior to full-rate production decision.

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B. Program Change Summary (\$ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	0.441	18.725	63.677	-	63.677
Current President's Budget	0.424	16.225	73.744	-	73.744
Total Adjustments	-0.017	-2.500	10.067	-	10.067
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-2.500			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.017	0.000			
• Program Adjustments	0.000	0.000	10.000	-	10.000
• Rate/Misc Adjustments	0.000	0.000	0.067	-	0.067

Change Summary Explanation

Funding increases in FY2021 to account for updated JSOW ER program plan, and the addition of NSA mandated crypto modernization effort on legacy JSOW C-1.

Additionally, the Department misaligned \$11M intended for LRASM NSA mandated crypto modernization development to the JSOW ER budget.

Schedule:

Incorporate JSOW ER events

Technical: N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy										Date: February 2020		
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604727N / JNT Standoff Weapon Systems				Project (Number/Name) 2068 / Joint Standoff Weapon (JSOW)			
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
2068: Joint Standoff Weapon (JSOW)	899.139	0.424	16.225	73.744	-	73.744	99.759	84.994	53.627	26.142	6.948	1,261.002
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 766

A. Mission Description and Budget Item Justification

JSOW Extended Range (ER) development commences in FY 2020 providing a JSOW variant with powered flight, avionics upgrades, and improved software enabling operations at tactically significant ranges of greater than 200nm, to kinetically engage adversary surface combatants and land targets. Additionally, the JSOW-ER capability fundamentally supports the Navy's strategy of intelligent, Network Enabled Weapons in order to apply effective and lethal firepower from secure positions. The FY 2021 budget request supports planning and engineering work beginning in FY 2020 with a targeted Early Operational Capability (EOC) in FY 2024 for F/A-18E/F. This effort leverages demonstration funding from OSD in FY 2018 and FY 2019, transitioning capability to the Navy.

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

	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Title: JSOW ER	0.000	15.786	45.596	0.000	45.596
Articles:	-	-	-	-	-
<p>Description: JSOW ER program development efforts include activities to support the development and incorporation of an Extended Range (ER) variant of the JSOW into the US Navy's operational inventory.</p> <p>FY 2020 Plans: FY 2020 continues JSOW ER demo technology transition pursuing a middle tier acquisition approach for full development of a fieldable JSOW ER. Primary focus is refinement of the JSOW-ER configuration by leveraging funded demonstration efforts to conduct engineering support activities that utilizes the demonstration results as well as Small Diameter Bomb II (SDBII) avionics development and test to define the JSOW-ER design. Efforts include the System Requirements Review (SRR) milestone review; system architecture and design work and evaluation; hardware and software planning, integration and qualification; and verification and validation of critical design attributes.</p> <p>FY 2021 Base Plans: JSOW ER development will continue under a rapid acquisition plan to expedite the fielding of capability to the Fleet. Primary focus is refinement of the JSOW ER configuration to attain a design supporting a production prototype configuration by leveraging the final demonstration results as well as SDBII avionics development and test to define the JSOW ER design. Efforts include system architecture and design work and evaluation;</p>					

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Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604727N / JNT Standoff Weapon Systems	Project (Number/Name) 2068 / Joint Standoff Weapon (JSOW)

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
<p>hardware and software planning, integration and qualification; verification and validation of critical design attributes, and F/A-18E/F software integration activities.</p> <p>FY 2021 OCO Plans: N/A</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: The FY 2020 to FY 2021 increase of \$18.810 million is for JSOW ER Insensitive Munitions testing, Integrated test efforts and developmental test efforts.</p> <p>Due to late endgame adjustments, \$11M of funding intended to be provided to LRASM for NSA mandated crypto modernization efforts was incorrectly included in the JSOW ER budget.</p>					
<p>Title: JSOW Mission Planning Systems</p> <p align="right">Articles:</p> <p>Description: JSOW program development efforts include new mission planning functionality required for Network Enabled Weapon (NEW) moving target capability for the JSOW-C-1.</p> <p>FY 2020 Plans: Legacy JSOW C-1 efforts include JSOW baseline C-1 integration and interoperability path forward; continued network interoperability efforts for JSOW C-1; continue software improvement efforts; initiate efforts to migrate JSOW mission planning software from the contractor owned Common Weapon Planning Environment (CWPE) to the Government owned Precision Guidance Mission Planning System (PGMPS) common component.</p> <p>FY 2021 Base Plans: FY 2021 will execute NSA mandated Crypto Modernization updates to communications software. FY 2021 also continues legacy JSOW C-1 efforts include JSOW baseline C-1 integration and interoperability path forward; continued network interoperability efforts for JSOW C-1; continue software improvement efforts; continue efforts to migrate JSOW mission planning software from the contractor owned Common Weapon Planning Environment (CWPE) to the Government owned Precision Guidance Mission Planning System (PGMPS) common component.</p> <p>FY 2021 OCO Plans: N/A</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement:</p>	0.424	0.439	28.148	0.000	28.148
	-	-	-	-	-

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Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604727N / JNT Standoff Weapon Systems	Project (Number/Name) 2068 / Joint Standoff Weapon (JSOW)

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
The FY 2020 to FY 2021 increase of \$27.709 million is due to JSOW C-1 NSA mandated Crypto Modernization updates to communications software.					
Accomplishments/Planned Programs Subtotals	0.424	16.225	73.744	0.000	73.744

C. Other Program Funding Summary (\$ in Millions)											
Line Item	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
• WPN/2230: JSOW	1.330	0.000	0.000	-	0.000	34.200	78.800	107.000	140.556	135.972	2,773.106

Remarks
FY 2021 - BLI 2230. No funding is required.

D. Acquisition Strategy
The JSOW ER acquisition strategy includes the development, integration, test, qualification and production of a moving maritime target (MMT), Stationary Land Target (SLT) and Relocatable Land Target (RLT) capability. This program plans to utilize Middle Tier Acquisition authorities to apply innovative technologies to rapidly develop and field the new JSOW ER capability. The contracting strategy for JSOW line of weapons is planned to be sole source for the life of the program. JSOW ER will use cost-type contracts to rapidly transition the already-prototyped Extended Range variant of the AGM-154 into a production configuration via the Middle Tier Acquisition framework. The schedule is phased to leverage the existing engineering team that conducted successful powered-flight demonstrations, and affordably transition of the production line from its current operations supporting foreign sales to domestic Extended Range quantities. Fixed-price contracts will be used for procurement.

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

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604727N / JNT Standoff Weapon Systems	Project (Number/Name) 2068 / Joint Standoff Weapon (JSOW)
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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			
JSOW Prior Year Prod Dev no longer funded in the FYDP	SS/CPIF	Various : Various	803.876	0.000		0.000		0.000		-		0.000	0.000	803.876	-
JSOW ER Product Development	SS/CPIF	Raytheon Missile Systems : Tucson, AZ	0.000	0.000		13.046	Mar 2020	28.366	Oct 2020	-		28.366	0.000	41.412	-
JSOW C-1 Communications Software updates	SS/CPFF	Raytheon Missile Systems : Tucson, AZ	0.000	0.000		0.000		27.700	Nov 2020	-		27.700	0.000	27.700	-
Misaligned LRASM CM Dev	TBD	TBD : TBD	0.000	0.000		0.000		11.000	Oct 2020	-		11.000	0.000	11.000	-
Subtotal			803.876	0.000		13.046		67.066		-		67.066	0.000	883.988	N/A

Remarks
 JSOW C-1 Communications Software updates with Raytheon Missiles Systems supports NSA mandated Crypto Modernization updates to communications software.
 Increase in JSOW ER Product Development supports ramp up in extended range development efforts.
 Department misaligned funds intended for LRASM NSA mandated crypto modernization effort within the JSOW ER budget.

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			
JSOW Software Development	SS/CPFF	Various : Various	6.832	0.413	Jun 2019	0.421	Mar 2020	0.429	Nov 2020	-		0.429	6.948	15.043	15.043
JSOW Government Support	WR	NAWCAD : Patuxent River, MD	0.000	0.011	Jul 2019	0.018	Mar 2020	0.269	Nov 2020	-		0.269	0.000	0.298	-
JSOW Prior year Support no longer funded in the FYDP	Various	Various : Various	8.007	0.000		0.000		0.000		-		0.000	0.000	8.007	-
JSOW ER Government Support	WR	NAWCAD : Patuxent River, MD	0.000	0.000		1.500	Nov 2019	1.560	Nov 2020	-		1.560	15.000	18.060	-
JSOW ER Government Support	WR	NAWCWD : China Lake, CA	0.000	0.000		0.500	Nov 2019	3.600	Nov 2020	-		3.600	20.000	24.100	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy												Date: February 2020			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 5				PE 0604727N / JNT Standoff Weapon Systems				2068 / Joint Standoff Weapon (JSOW)							
Support (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Subtotal			14.839	0.424		2.439		5.858		-		5.858	41.948	65.508	N/A
Test and Evaluation (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
JSOW ER Test and Evaluation	WR	COMOPTEVFOR : Norfolk, VA	0.000	0.000		0.000		0.000		-		0.000	20.000	20.000	-
JSOW Prior year T&E no longer funded in the FYDP	Various	Various : Various	54.920	0.000		0.000		0.000		-		0.000	0.000	54.920	-
Subtotal			54.920	0.000		0.000		0.000		-		0.000	20.000	74.920	N/A
Management Services (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
JSOW Prior year Mgmt no longer funded in the FYDP	Various	Various : Various	25.504	0.000		0.000		0.000		-		0.000	0.000	25.504	-
JSOW ER Government Support	WR	NAWCAD : Patuxent River, MD	0.000	0.000		0.700	Nov 2019	0.760	Nov 2020	-		0.760	4.000	5.460	-
JSOW ER Travel	Various	NAVAIR : Patuxent River, MD	0.000	0.000		0.040	Nov 2019	0.060	Nov 2020	-		0.060	0.500	0.600	-
Subtotal			25.504	0.000		0.740		0.820		-		0.820	4.500	31.564	N/A
			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			899.139	0.424		16.225		73.744		-		73.744	66.448	1,055.980	N/A
Remarks															

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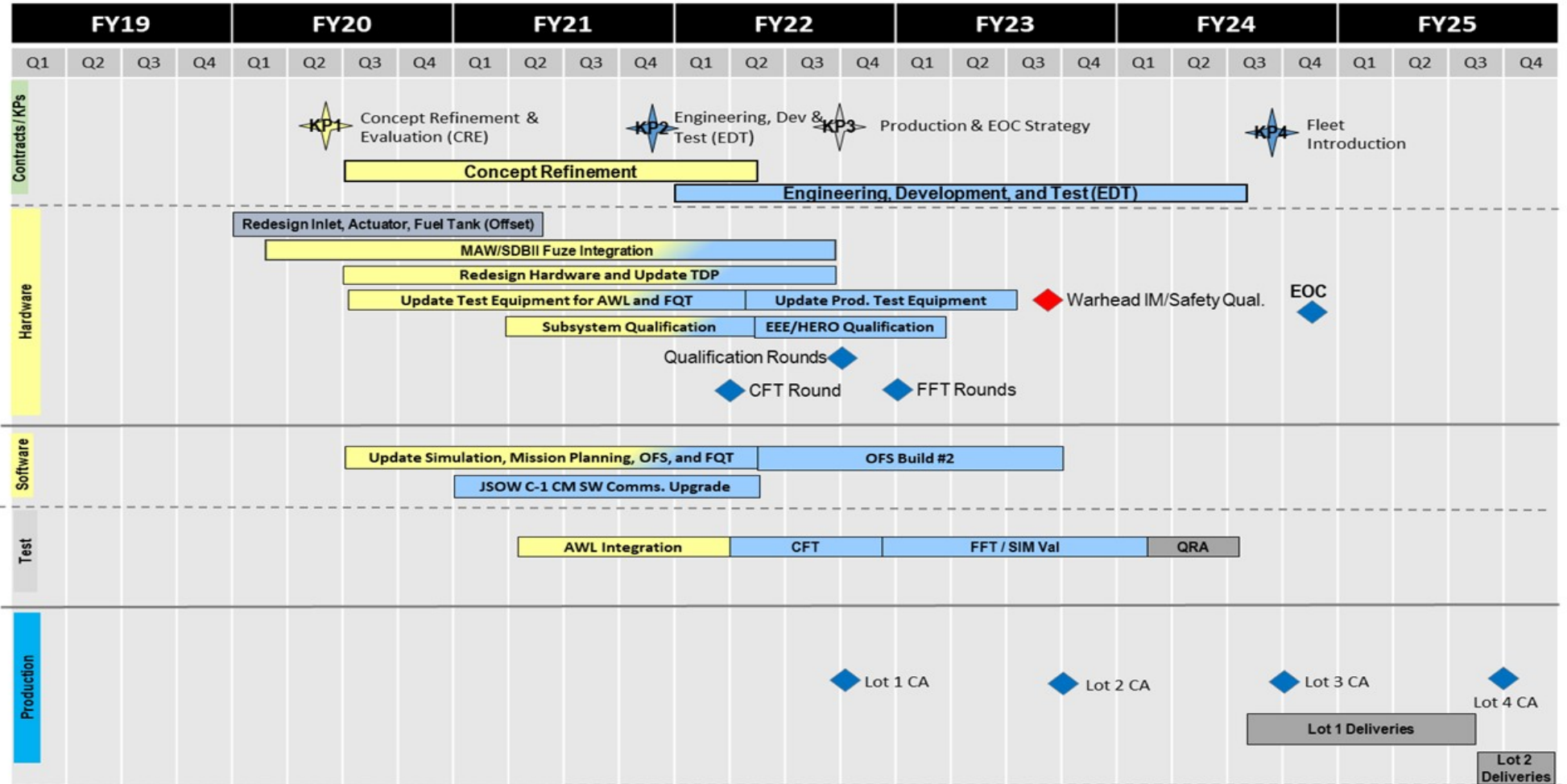
Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy

Date: February 2020

Appropriation/Budget Activity
1319 / 5

R-1 Program Element (Number/Name)
PE 0604727N / JNT Standoff Weapon
Systems

Project (Number/Name)
2068 / Joint Standoff Weapon (JSOW)



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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604727N / JNT Standoff Weapon Systems	Project (Number/Name) 2068 / Joint Standoff Weapon (JSOW)

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Joint Standoff Weapon				
Acquisition Milestones: Milestones: JSOW ER EOC	4	2024	4	2024
Systems Development: JSOW ER Concept Refinement	3	2020	2	2022
Systems Development: JSOW ER Engineering Development & Test	1	2022	3	2024
Systems Development: Software Development: Software Development	3	2020	3	2023
Systems Development: Software Development: JSOW C-1 CM SW Comms. upgrade	1	2021	2	2022
Test and Evaluation: Test and Evaluation: JSOW ER Integrated Test	2	2021	3	2024
Test and Evaluation: Test and Evaluation: Quick Reaction Assessment (QRA)	1	2024	3	2024
Production Milestones: Contract Awards: Production Lot 1 Award	4	2022	4	2022
Production Milestones: Contract Awards: Production Lot 2 Award	4	2023	4	2023
Production Milestones: Contract Awards: Production Lot 3 Award	4	2024	4	2024
Production Milestones: Contract Awards: Production Lot 4 Award	4	2025	4	2025
Deliveries: JSOW ER Lot 1 Deliveries	3	2024	3	2025
Deliveries: JSOW ER Lot 2 Deliveries	3	2025	4	2025