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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Navy **Date:** April 2022

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 0604014N / <i>F/A-18 Infrared Search and Track (IRST)</i>
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
Total Program Element	283.645	81.838	48.793	40.069	-	40.069	21.590	13.976	0.004	0.004	0.000	489.919
2069: <i>F/A-18 Infrared Search and Track (IRST)</i>	283.645	81.838	48.793	40.069	-	40.069	21.590	13.976	0.004	0.004	0.000	489.919

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): P510

A. Mission Description and Budget Item Justification

The AN/ASG-34A(V)1 F/A-18E/F Infrared Search and Track (IRST) system is a long-wave infrared sensor that provides a passive, out-of-band, alternate fire control system capable of detecting, tracking and engaging airborne targets, at long range, in a heavy electronic attack or radar-denied environment. IRST Block II is the primary out-of-band fire-control system for the F/A-18E/F, critical to organic passive air-to-air kill-chains required to compete with peer adversaries. Enables F/A-18E/F lethality by providing a passive means to detect, track, and target aircraft in highly contested environments in support of the objectives outlined in the National Defense Strategy. IRST enhances survivability by providing a fire-control solution without the need to radiate in the RF spectrum. The IRST system can autonomously, or in combination with other sensors, support the guidance of beyond-visual-range missiles including AIM-120C/D and AIM-9X Block II. The F/A-18E/F IRST system is an evolutionary Navy acquisition program with Block I and Block II capabilities. The USN is committed to further development of this component of the passive kill chain.

This budget request supports Block II development and testing of a redesigned Infrared Receiver (IRR) and processor, enabling full Capabilities Development Document (CDD) capability over a larger field of regard.

IRST was previously funded under Program Element 0204136N F/A-18 Squadrons and has been transferred to Program Element 0604014N F/A-18 Infrared Search and Track.

B. Program Change Summary (\$ in Millions)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Previous President's Budget	84.190	48.793	0.000	-	0.000
Current President's Budget	81.838	48.793	40.069	-	40.069
Total Adjustments	-2.352	0.000	40.069	-	40.069
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.352	0.000			
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000

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• Adjustments to Budget Year	-	-	40.069	-	40.069
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Change Summary Explanation

Cost: The FY 2023 funding request was reduced by \$8.514 million to account for the availability of prior year execution balances.

Technical: F/A-18E/F IRST Block II will now reach IOC in Q2 FY2024. This returns the program to the original planned IOC date prior to the attempt to accelerate IRST Block II fielding. An improved contracting strategy is being executed and the program schedule has been refined in line with the new Acquisition Program Baseline that has been implemented in FY22. This will bring critical out-of-band detection and weapon-quality-track capability against advanced air threats.

Schedule:

- Accelerated Gate 6/CSB from Q4 FY22 to Q2 FY22
- Updated IOC from Q4 FY22 to Q2 FY24
- Updated Block II ECP Hardware Development from Q3 FY22 to Q1 FY23
- Updated Block I/II EDM Conversions from Q4 FY22 to Q2 FY23
- Updated Block II EDM (Golden Assets) from Q2 FY22 to Q4 FY22
- Removed H16 OPEVAL
- Added H18 IT 1QFY21-1QFY23
- Added H18 OT 4QFY23-3QFY23
- Added DT-C2 completing Q3 FY23
- Updated IOT&E start from Q3 FY21 to Q4 FY23
- Updated VCD from Q4 FY22 to Q4 FY25
- Updated IROC Deliveries beginning Q1 FY22 to Q4 FY22
- Updated LRIP 6 from Q1 FY22 to Q4 FY22

FY 2023 funding increase reflects the fact that the FY 2022 President's Budget request did not include out-year funding.

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Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy **Date:** April 2022

Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604014N / F/A-18 Infrared Search and Track (IRST)	Project (Number/Name) 2069 / F/A-18 Infrared Search and Track (IRST)
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COST (\$ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
2069: F/A-18 Infrared Search and Track (IRST)	283.645	81.838	48.793	40.069	-	40.069	21.590	13.976	0.004	0.004	0.000	489.919
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: P510

Note

Infrared Search and Track (IRST) was funded in FY16 and prior under PE 0204136N / F/A-18 Squadrons, PU 1662 F/A-18 Improvements. Funding was realigned to a new PU 2069 / F/A-18 IRST in FY17 and then transferred to a new PE 0604014N / F/A-18 IRST under PU 2069 / F/A-18 IRST in FY18.

A. Mission Description and Budget Item Justification

The AN/ASG-34A(V)1 F/A-18E/F Infrared Search and Track (IRST) system is a long-wave infrared sensor that provides a passive, out-of-band, alternate fire control system capable of detecting, tracking and engaging airborne targets, at long range, in a heavy electronic attack or radar-denied environment. IRST Block II is the primary out-of-band fire-control system for the F/A-18E/F, critical to organic passive air-to-air kill-chains required to compete with peer adversaries. Enables F/A-18E/F lethality by providing a passive means to detect, track, and target aircraft in highly contested environments in support of the objectives outlined in the National Defense Strategy. IRST enhances survivability by providing a fire-control solution without the need to radiate in the RF spectrum. The IRST system can autonomously, or in combination with other sensors, support the guidance of beyond-visual-range missiles including AIM-120C/D and AIM-9X Block II. The F/A-18E/F IRST system is an evolutionary Navy acquisition program with Block I and Block II capabilities. The USN is committed to further development of this component of the passive kill chain.

This budget request supports Block II development and testing of a redesigned Infrared Receiver (IRR) and processor, enabling full Capabilities Development Document (CDD) capability over a larger field of regard.

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

	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Infra-Red Search and Track (IRST)	81.838	48.793	40.069	0.000	40.069
Articles:	-	-	-	-	-
Description: Technology Development (TD) and Engineering and Manufacturing Development (EMD) of a fully integrated airborne IRST sensor for the F/A-18E/F.					
Block II is an engineering change to the Block I system which redesigns the Infrared Receiver (IRR) and processor to provide full Capabilities Development Document (CDD) capability over a larger field of regard. Block II will provide longer-range passive detection and tracking performance which enhances warfighting capability through improved engagement timelines and increased situational awareness.					

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Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604014N / F/A-18 Infrared Search and Track (IRST)	Project (Number/Name) 2069 / F/A-18 Infrared Search and Track (IRST)

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
<p>FY 2022 Plans: Continue IRST Block II Development Phase 2 (EMD) effort. Conduct Block II flight testing for completion of flight worthiness qualification testing and verification of correction of deficiencies identified in Block II Operational Test. Conduct engineering and logistics analysis for potential redesigns stemming from Operational Testing (OT) and emerging Super Hornet Block III requirements.</p> <p>FY 2023 Base Plans: Complete IRST Block II Development Phase 2 (EMD) effort. Conduct Block II flight testing for verification of correction of deficiencies identified in Block II Operational Test. Begin implementation of redesigns & changes identified as part of engineering and logistics analysis.</p> <p>FY 2023 OCO Plans: N/A</p> <p>FY 2022 to FY 2023 Increase/Decrease Statement: Decrease in funds from FY2022 to FY2023 of \$8.724 million is due to a planned ramp down in activities related to the IRST Block II Development Phase 2 (EMD) effort as the EMD phase nears completion.</p>					
Accomplishments/Planned Programs Subtotals	81.838	48.793	40.069	0.000	40.069

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
• APN/0515: Infrared Search and Track (IRST)	97.426	138.827	144.699	-	144.699	250.433	78.334	39.248	40.261	295.465	1,084.693

Remarks

D. Acquisition Strategy
F/A-18E/F Block II IRST is an ECP to the Block I system employing an incremental approach to development and integration. The F/A-18E/F IRST Block II Pre-Development IPR-1 was conducted in October 2017 and the Block II ECP achieved Milestone C on 4 December 2018. Based on lead times required for some hardware components and urgency of need, development is being executed incrementally with some concurrency with production activities. The concurrency risk was accepted based on proven technology elements, high confidence in design stability, and a planned demonstration of readiness for production at rate.
The incremental approach to development presently underway has been impacted by first article HW delays. Despite delays, data from the incremental development continues to support confidence in the design stability with a plan to demonstrate manufacturing readiness for full rate by Q4 FY2022. Flight-testing of the new critical

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<p>technology began in 2019 with Block I AV6+ systems. Further development of the Block II hardware continued in parallel with the extended fleet demo with flight testing beginning in November 2019 on a Block II capital asset and continuing in March 2020 with prototype sensors which contain all critical HW elements to evaluate Block II performance. The prototype systems are fully integrated with the aircraft and contain all SW elements needed to deliver Capability Development Document (CDD) performance. Analysis of Multi-plane testing of the prototype systems conducted in 2021 has shown considerable margin to CDD Key Performance Parameters. Prototype systems continue to support integration with the F/A-18E/F Advanced Mission Computer software through flight testing with SCS H16. The final hardware configuration is slated to begin flight testing in Q4 FY2022. Based on the revised APB and program schedule, F/A-18E/F IRST Block II is on track to IOC in Q2 FY2024, bringing critical out-of-band detection and weapon-quality-track capability against advanced air threats.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy **Date:** April 2022

Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604014N / F/A-18 Infrared Search and Track (IRST)	Project (Number/Name) 2069 / F/A-18 Infrared Search and Track (IRST)
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Product Development (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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			
Primary Development (Hardware/Software) Infra-Red Search and Track	Various	Boeing : St. Louis, MO	159.341	42.043	Dec 2020	29.767	Dec 2021	6.405	Dec 2022	-		6.405	4.134	241.690	241.690
Primary Development	Various	NSMA : Various	79.801	31.839	Nov 2020	10.839	Nov 2021	26.628	Nov 2022	-		26.628	20.514	169.621	-
Prior Year Prod Dev no longer funded in FYDP	Various	Various : Various	15.638	0.000		0.000		0.000		-		0.000	0.000	15.638	-
Subtotal			254.780	73.882		40.606		33.033		-		33.033	24.648	426.949	N/A

Remarks
FY23 decrease in Boeing hardware and software development due to ramp down of development activity after system IOC's

Support (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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	WR	NAWCWD : China Lake, CA	4.371	0.894	Nov 2020	0.954	Nov 2021	0.681	Nov 2022	-		0.681	3.147	10.047	-
Development Support	WR	NAWCAD : Patuxent River, MD	4.287	0.200	Nov 2020	1.808	Nov 2021	0.200	Nov 2022	-		0.200	0.400	6.895	-
Development Support	WR	NAVSUP : Mechanicsburg, PA	0.041	0.020	Nov 2020	0.000		0.020	Nov 2022	-		0.020	0.040	0.121	-
Prior Year Support no longer funded in FYDP	Various	Various : Various	2.162	0.000		0.000		0.000		-		0.000	0.000	2.162	-
Subtotal			10.861	1.114		2.762		0.901		-		0.901	3.587	19.225	N/A

Remarks
FY23 reduction due to the program transitioning from development into production.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy **Date:** April 2022

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Test and Evaluation (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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	WR	NAWCAD : Patuxent River, MD	5.284	2.328	Nov 2020	2.532	Nov 2021	2.948	Nov 2022	-		2.948	4.625	17.717	-
Developmental Test & Evaluation	WR	NAWCWD : China Lake, CA	9.776	3.969	Nov 2020	2.375	Nov 2021	2.463	Nov 2022	-		2.463	0.000	18.583	-
Operational Test & Evaluation	Various	OPTEVFOR : VX-9	0.422	0.529	Jul 2021	0.453	Jul 2022	0.679	Jul 2023	-		0.679	2.624	4.707	-
Subtotal			15.482	6.826		5.360		6.090		-		6.090	7.249	41.007	N/A

Remarks
FY23 increase for IOT&E moving from FY22 to FY23

Management Services (\$ in Millions)				FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 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			
Travel	Various	NAVAIR : Patuxent River, MD	0.062	0.016	Oct 2020	0.045	Oct 2021	0.045	Oct 2022	-		0.045	0.090	0.258	-
Program Management Support - MISC	Various	NAWCAD : Patuxent River, MD	2.460	0.000		0.020	Oct 2021	0.000		-		0.000	0.000	2.480	-
Subtotal			2.522	0.016		0.065		0.045		-		0.045	0.090	2.738	N/A

Remarks
FY23 decrease due to the program transitioning from development into production.

	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		283.645	81.838	48.793	40.069	-	40.069	35.574	489.919	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy

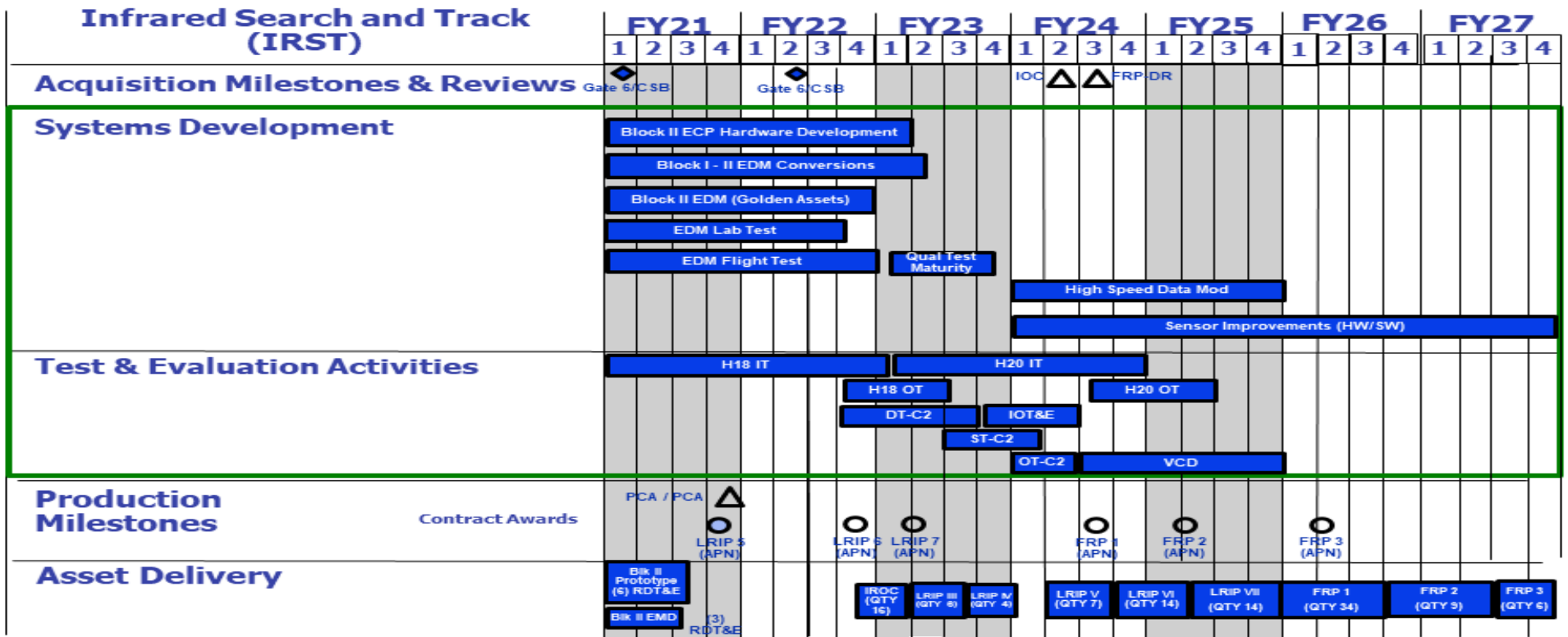
Date: April 2022

Appropriation/Budget Activity
1319 / 4

R-1 Program Element (Number/Name)
PE 0604014N / F/A-18 Infrared Search and Track (IRST)

Project (Number/Name)
2069 / F/A-18 Infrared Search and Track (IRST)

F/A-18 Infrared Search and Track (IRST)



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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604014N / F/A-18 Infrared Search and Track (IRST)	Project (Number/Name) 2069 / F/A-18 Infrared Search and Track (IRST)

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Infra-Red Search and Track				
Acquisition Milestones: Milestones: Full Rate Production Decision Review (FRP DR)	3	2024	3	2024
Acquisition Milestones: Milestones: Gate 6 / CSB (IPR 1)	1	2021	1	2021
Acquisition Milestones: Milestones: Gate 6 / CSB (IPR 2)	2	2022	2	2022
Acquisition Milestones: Milestones: Initial Operating Capability (IOC)	2	2024	2	2024
System Development: Engineering and Manufacturing Development: Block II ECP Hardware Development	1	2021	1	2023
System Development: Engineering and Manufacturing Development: Block I/II EDM Conversions	1	2021	2	2023
System Development: Engineering and Manufacturing Development: Block II EDM (Golden Assets)	1	2021	4	2022
System Development: Development Testing: EDM Lab Test	1	2021	4	2022
System Development: Development Testing: EDM Flight Test	1	2021	4	2022
System Development: Development Testing: Qual Test Maturity	1	2023	4	2023
System Development: Development Testing: High Speed Data Mod	1	2024	4	2025
System Development: Development Testing: Sensor Improvements (HW/SW)	1	2024	4	2027
Test and Evaluation: Operational Testing: SCS H18 Integration Testing	4	2021	1	2023
Test and Evaluation: Operational Testing: SCS H20 Integration Testing	1	2023	4	2024
Test and Evaluation: Operational Testing: SCS H18 Operational Testing	4	2022	3	2023
Test and Evaluation: Operational Testing: SCS H20 Operational Testing	3	2024	2	2025
Test and Evaluation: Operational Testing: DT-C2	4	2022	3	2023
Test and Evaluation: Operational Testing: IRST IOT&E	4	2023	2	2024
Test and Evaluation: Operational Testing: ST-C2	3	2023	1	2024

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Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy **Date:** April 2022

Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0604014N / <i>F/A-18 Infrared Search and Track (IRST)</i>	Project (Number/Name) 2069 / <i>F/A-18 Infrared Search and Track (IRST)</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Test and Evaluation: Operational Testing: OT-C2	1	2024	2	2024
Test and Evaluation: Operational Testing: FOT&E (VCD)	3	2024	4	2025
Production Milestones: Contract Awards: Block II ECP Delta PCA	4	2021	4	2021
Production Milestones: Contract Awards: Block II LRIP 5 (APN)	4	2021	4	2021
Production Milestones: Contract Awards: Block II LRIP 6 (APN)	4	2022	4	2022
Production Milestones: Contract Awards: Block II LRIP 7 (APN)	1	2023	1	2023
Production Milestones: Contract Awards: Block II FRP 1 (APN)	3	2024	3	2024
Production Milestones: Contract Awards: Block II FRP 2 (APN)	1	2025	1	2025
Production Milestones: Contract Awards: Block II FRP 3 (APN)	1	2026	1	2026
Production Milestones: Asset Delivery: Block II Prototype Test Assets (RDTE)	1	2021	3	2021
Production Milestones: Asset Delivery: Block II EDM Test Assets (RDTE)	1	2021	3	2021
Production Milestones: Asset Delivery: IROC (QTY 16)	4	2022	1	2023
Production Milestones: Asset Delivery: LRIP 3 (Block II Lot 1 - Qty 6)	2	2023	3	2023
Production Milestones: Asset Delivery: LRIP 4 (Block II Lot 2 - Qty 4)	3	2023	4	2023
Production Milestones: Asset Delivery: LRIP 5 (Block II Lot 3 - Qty 7)	2	2024	3	2024
Production Milestones: Asset Delivery: LRIP 6 (Block II Lot 4 - Qty 14)	4	2024	1	2025
Production Milestones: Asset Delivery: LRIP 7 (Block II Lot 5 - Qty 14)	2	2025	4	2025
Production Milestones: Asset Delivery: FRP 1 (Block II Lot 4 - Qty 34)	1	2026	3	2026
Production Milestones: Asset Delivery: FRP 2 (Block II Lot 5 - Qty 9)	4	2026	2	2027
Production Milestones: Asset Delivery: FRP 3 (Block II Lot 6 - Qty 6)	3	2027	4	2027